

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
 WATER QUALITY STANDARDS AND)
 EFFLUENT LIMITATIONS FOR THE) R08-9
 CHICAGO AREA WATERWAY SYSTEM AND) (Rulemaking-
 THE LOWER DES PLAINES RIVER:) Water)
 PROPOSED AMENDMENTS TO 35 Ill.)
 Adm. Code Parts 301, 302, 303,)
 and 304)

TRANSCRIPT OF PROCEEDINGS had in the
 above-entitled cause before HEARING OFFICER MARIE
 TIPSORD, called by the Illinois Pollution Control
 Board, pursuant to notice, taken before MARGARET R.
 BEDDARD, a Notary Public within and for the County of
 Kane, State of Illinois, and a Certified Shorthand
 Reporter of said state, at Room N-505, 160 North
 LaSalle Street, Chicago, Illinois, on the 3rd day of
 March, A.D. 2009, at 10:00 a.m.

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PRESENT:

MS. MARIE TIPSORD, Hearing Officer
MR. G. TANNER GIRARD, Chairman
MR. THOMAS JOHNSON, Member
MR. ANAND RAO, Member
MS. ALISA LIU, Member
DR. SHUNDAR LIN, Member
MR. GARY BLANKENSHIP, Member

Appearing on behalf of the Illinois
Pollution Control Board

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794
BY: MS. DEBORAH WILLIAMS
MS. STEPHANIE DIERS
MR. ROBERT SULSKI
MR. SCOTT TWAIT

BARNES & THORNBURG
One North Wacker Drive, Suite 4400
Chicago, Illinois 60606
BY: MR. FREDRIC P. ANDES

Appeared on behalf of the Metropolitan
Water Reclamation District

REPORTED BY MARGARET R. BEDDARD, CSR.

E X H I B I T S

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EXHIBIT

MARKED FOR ID

No. 211	7
No. 212	10
No. 213	12
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No. 215	15
No. 216	17
No. 217	23
No. 218	30
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1 HEARING OFFICER TIPSORD: Good morning,
2 everyone. My name is Marie Tipsord. I've been
3 appointed by the Board to serve as hearing officer in
4 this proceeding entitled Water Quality Standard and
5 Effluent Limitations for the Chicago Area Waterway
6 System and the Lower Des Plaines River: Proposed
7 Amendments to 35 Ill. Adm. Code Parts 301, 302, 303,
8 and 304. The docket number is R08-9.

9 With me this morning, to my immediate left,
10 is Acting Chairman G. Tanner Girard, presiding board
11 member. To his immediate left is Board member
12 Shundar Lin. To my very far right is Board member
13 Thomas Johnson. To his left is Board member Gary
14 Blankenship. To my immediate right is Anand Rao, and
15 to his right is Alisa Liu from our technical staff.
16 And I believe that's it for today.

17 This is our tenth set of hearings to be
18 held in this proceeding. I think, as near as I can
19 remember, this is actually our 24th day of hearing --
20 25th? I've been corrected. It's our 25th day of
21 hearing. The purpose of today's hearing is to
22 continue hearing testimony from the participants
23 other than the proponent, the Illinois Environmental
24 Protection Agency.

1 At the close of the February 17, 2009,
2 hearing, we had finished with 26 of the witnesses --
3 or 26 pieces of testimony from the Metropolitan Water
4 Reclamation District of Greater Chicago. We will
5 continue with the District today starting with Steve
6 McGowan, David Zenz, John Mastracchio, Jennifer
7 Wasik, and Thomas Granato. We will generally take
8 the testimony, as if read, mark it as an exhibit.
9 Mr. Granato was the subject of a previous motion to
10 be able to read his testimony. I granted it
11 previously, and I will grant it again today. So
12 Mr. Granato will read his testimony into the record.

13 After we've marked the pre-filed testimony
14 as an exhibit, we will then proceed to questions for
15 the testifier beginning with the pre-filed questions,
16 which came to the Illinois Environmental Protection
17 Agency and the Environmental Law & Policy Center.

18 Anyone may ask a follow-up question. You
19 need not wait until your turn to ask a question. I
20 do ask that you raise your hand and wait for me to
21 acknowledge you. After I have acknowledged you,
22 please state your name and whom you represent before
23 you begin your questions. Please speak one at a
24 time. If you are speaking over each other, the court

1 reporter will not be able to get your questions on
2 the record.

3 Please note that any questions asked by a
4 Board member or staff are intended to help build a
5 complete record for the Board's decision and not to
6 express any preconceived notion or bias.

7 I plan to take about an hour for lunch
8 today and go until around 5:00. Then, if we have to
9 start again tomorrow, we'll start at 9:00 a.m.

10 Dr. Girard?

11 DR. GIRARD: Good morning. On behalf of the
12 Board, I welcome everyone to another day of hearing
13 in this rulemaking. The Board is extremely grateful
14 for all the hard work everyone's putting into this.
15 We have over 200 exhibits and a couple dozen days of
16 hearing. We have a very substantial record. The
17 Board is grateful for that hard work. It will help
18 us to make a better decision. We look forward to the
19 testimony and questions today. Thank you.

20 HEARING OFFICER TIPSORD: Thank you.

21 With that, Mr. Andes, would you like to
22 begin?

23 MR. ANDES: Here is Mr. McGowan's testimony.

24 HEARING OFFICER TIPSORD: All right. Let's have

1 Mr. McGowan sworn in.

2 MR. ANDES: Was he already sworn in?

3 HEARING OFFICER TIPSORD: Yeah. We'll swear him
4 in again just to be on the safe side.

5 MR. ANDES: Okay.

6 (WHEREUPON, the witness was duly
7 sworn.)

8 HEARING OFFICER TIPSORD: It's been so long ago.
9 We can swear him in again.

10 MR. ANDES: That's fine.

11 We will need this.

12 HEARING OFFICER TIPSORD: I have been handed
13 pre-filed testimony of Steven McGowan. If there's no
14 objection, we'll mark this as Exhibit 211.

15 Seeing none, it's Exhibit 211.

16 (WHEREUPON, said document was marked
17 Exhibit No. 211, for identification,
18 as of 3-3-09.)

19 MR. ANDES: Before we get started on the
20 questions, I did want to mention that there were
21 questions raised when Dr. McGowan previously
22 testified concerning the sources of electrical power.
23 That was raised in the disinfection testimony. The
24 issue also applies to the dissolved oxygen testimony.

1 Dr. McGowan's done some additional analysis to track
2 down the information that was requested and to see
3 how it affects his conclusions. We have some
4 additional information to present. We can do that
5 first just to show that information.

6 HEARING OFFICER TIPSORD: Yeah. Let's begin
7 with that.

8 MR. ANDES: Okay. Great.

9 HEARING OFFICER TIPSORD: By the way, happy
10 square root day.

11 DR. MCGOWAN: 3-3-09.

12 HEARING OFFICER TIPSORD: Go ahead.

13 MR. ANDES: Dr. McGowan, let me ask you to
14 explain. There were questions raised last hearing
15 that you testified at concerning what the District's
16 sources of electrical power were, coal, nuclear,
17 et cetera, and how that would affect your analysis.
18 You had done analysis based on regional information,
19 so the question was whether you had been able to find
20 specific information for the District that would
21 change your conclusions.

22 Do you want to go from there and explain
23 what you've done since then?

24 DR. MCGOWAN: Yes. There were questions. We

1 used the regional approach, which was recommended by
2 EPA, which was an eGRID system.

3 MS. WILLIAMS: Excuse me. I would like you to
4 clarify which EPA, for the record.

5 DR. MCGOWAN: United States.

6 And some questions were raised is there
7 something that's more specific, specifically could we
8 look at their bills and see where the source of power
9 came from. We were able to do some investigation
10 based on information that was collected through --
11 from an energy supplier, Integrys. They buy energy
12 from two sources, PJM, and MISO. And we've got
13 information to hand out that explains the background
14 and the acronyms of those. And, in short, we were
15 able to do a blend of where the two energy sources
16 came from from the two suppliers and come up with
17 another emission factor, if you will, which is what
18 we did the first time around.

19 MR. ANDES: So why don't we start with the
20 information you used that's specific to the District.

21 DR. MCGOWAN: Correct.

22 MR. ANDES: I'll give you a copy of that.

23 I'll add that as an exhibit. This is a
24 document from Integrys, I-n-t-e-g-r-y-s, entitled

1 Electricity Sources and Emissions.

2 HEARING OFFICER TIPSORD: If there's no
3 objection, we will mark the document from Integrys,
4 Electricity Sources and Emissions, Average Amount of
5 Emissions and Amount of Nuclear Waste, we will mark
6 that as Exhibit 212.

7 MS. WILLIAMS: I would like a second to review
8 before I decide if I have an objection.

9 HEARING OFFICER TIPSORD: There's an additional
10 couple of copies up here if someone didn't get them.

11 MS. WILLIAMS: I have no objection.

12 HEARING OFFICER TIPSORD: Seeing no objection,
13 we'll mark this as Exhibit 212.

14 (WHEREUPON, said document was marked
15 Exhibit No. 212, for identification,
16 as of 3-3-09.)

17 DR. MCGOWAN: As you can note on the second page
18 of the handout, there is something that's known as --
19 that's referred to as unknown sources on the second
20 page in the table. It says unknown approximately
21 29 percent. And what we were able to do was
22 determine that that is from what's called the MISO
23 pool. Although we weren't able to get absolute
24 specific information, we were able to go to the MISO

1 website, and they gave a general breakdown of where
2 their power supply is from. So we were able to get a
3 blended percentage, if you will, of where we thought
4 the power supply was coming from. I believe you have
5 the handout for that.

6 MR. ANDES: So then for this time period, the
7 12 months ending September 30, 2008, there
8 were 40 percent -- am I right -- 40 percent
9 coal-fired power, 24 percent nuclear, a few other
10 percentages, and then 29 percent that you needed to
11 investigate?

12 DR. MCGOWAN: Correct.

13 MR. ANDES: And further investigation was with
14 the MISO pool?

15 DR. MCGOWAN: Correct.

16 MR. ANDES: And we have a document that's
17 entitled Midwest ISO, Energizing the Heartland,
18 Corporate Information. It's a two-page document.

19 HEARING OFFICER TIPSORD: If there's no
20 objection, we'll mark this as Exhibit 213.

21 MS. WILLIAMS: I'd like a minute to review it.

22 I have no objection to this exhibit.

23 HEARING OFFICER TIPSORD: Seeing no objection,
24 we'll mark it Midwest ISO, Energizing the Heartland,

1 Corporate Information, as Exhibit 213.

2 (WHEREUPON, said document was marked
3 Exhibit No. 213, for identification,
4 as of 3-3-09.)

5 DR. MCGOWAN: So then, based on this information
6 that we looked at -- do you have the table -- we put
7 a table together that presented our original
8 calculation using the eGRID system versus what we
9 recalculated with the new blend of energy supply.

10 MR. ANDES: We have that as a poster and copies.
11 It's titled Sources of Electricity Supply.

12 HEARING OFFICER TIPSORD: If there's no
13 objection, we'll mark this as Exhibit 214.

14 Seeing none, it's Exhibit 214.

15 (WHEREUPON, said document was marked
16 Exhibit No. 214, for identification,
17 as of 3-3-09.)

18 DR. MCGOWAN: So essentially what this did was
19 this indicated a bit of a different mix of the energy
20 supply. I'll just go down because I don't know if
21 everybody has a copy or can see the board. But the
22 percentage of coal-based supply went from 72.8
23 percent to 55.3.

24 MR. ANDES: So the initial numbers -- The eGRID

1 numbers are the ones in your testimony --

2 DR. MCGOWAN: Correct.

3 MR. ANDES: -- based on a regional mix of power
4 sources?

5 DR. MCGOWAN: Correct.

6 MR. ANDES: And then the new numbers -- The new
7 numbers are based on the more District-specific
8 information that you gathered?

9 DR. MCGOWAN: Yes. The first column would be
10 what was originally submitted in the testimony, and
11 the second column is recalculated based on the PJM
12 and MISO pool that we just discussed.

13 MR. ANDES: So can you explain how the mix of
14 sources changed?

15 DR. MCGOWAN: There was a slight decrease --
16 There was a decrease in coal. There were increases
17 in gas and oil. Nuclear had a slight increase. And
18 then other relative minor increases. So what we were
19 able to do was, using these percentages of power
20 supply, we were able to recalculate emission factors
21 and then recalculate essentially the emissions -- the
22 carbon dioxide emissions and greenhouse gas emissions
23 as CO2. We were able to recalculate those.

24 HEARING OFFICER TIPSORD: For the record, when

1 you were speaking about the eGRID numbers, you're
2 talking about the testimony you gave that was entered
3 as Exhibit 133 and not the testimony from today?

4 DR. MCGOWAN: No. It would be the testimony
5 today. The testimony I gave previously was specific
6 to the disinfection piece.

7 HEARING OFFICER TIPSORD: Okay. I was double
8 checking.

9 MR. ANDES: But the sources of power were the
10 same for both pieces of testimony?

11 DR. MCGOWAN: Yes.

12 HEARING OFFICER TIPSORD: Thank you.

13 MR. ANDES: So then, based on this adjusting mix
14 of sources of electric power, you recalculated the
15 emission estimates?

16 DR. MCGOWAN: Correct.

17 MR. ANDES: And we'll talk through what those
18 estimates are. I have another exhibit titled
19 Comparison of GHG Emission Estimates Based on
20 Original and Updated Emission Factors. We have that
21 on a poster as well.

22 HEARING OFFICER TIPSORD: If there's no
23 objection, we'll mark this as Exhibit 215.

24 Seeing none, it's Exhibit 215.

1 (WHEREUPON, said document was marked
2 Exhibit No. 215, for identification,
3 as of 3-3-09.)

4 MR. ANDES: And actually this is not a poster.

5 Why don't you explain your recalculations,
6 Mr. McGowan? And you did these for the disinfection
7 as well as for --

8 DR. MCGOWAN: Correct.

9 So, if you recall from the previous
10 testimony, what we did was we were able to calculate
11 tons of CO2 per year and then greenhouse gas
12 emissions as tons of CO2 per year equivalence, and we
13 were able to convert those for tons of CO2 into
14 equivalent number of trees that might be required to
15 absorb that CO2. Or, in the case of the greenhouse
16 gas emissions, we were able to convert that into an
17 equivalent number of cars per year that would emit
18 that amount of greenhouse gas on this table.

19 The bottom line for all of this is it's
20 about 13 to 14 percent less than our original
21 estimates if we went with the Integrys/PJM/MISO pool,
22 the recalculation of where the energy sources came
23 from, as opposed to our original calculations done
24 from the eGRID sources.

1 MR. ANDES: So, for example, in terms of
2 equivalent in cars per year for UV, the emissions
3 were the equivalent initially of 16,400 cars and the
4 updated was number 14,200 cars; is that correct?

5 DR. MCGOWAN: Correct.

6 MR. ANDES: So then this shows higher estimates,
7 both in terms of CO2 emissions in tons per year and
8 trees planted per year, and your GHG emissions in
9 terms of cars per year changed by a 13 to 14 percent
10 amount when you've gone the District-specific mix?

11 DR. MCGOWAN: Correct.

12 MR. ANDES: So now we have an updated chart
13 specifically on DO, which is titled Summary of
14 Electrical Consumption and Air Emissions for Resolved
15 Oxygen Aeration.

16 DR. RAO: Mr. McGowan, I had a question. In the
17 table that you just handed in as Exhibit 215, could
18 you explain why there's no change in the percent
19 increase or base line?

20 DR. MCGOWAN: Excuse me. Which?

21 DR. RAO: Exhibit 215. It's the comparison
22 of --

23 DR. MCGOWAN: Yes. Why there is no percent
24 increase in base line?

1 DR. RAO: Yeah.

2 DR. MCGOWAN: We're showing a percent increase
3 over the base line of, for UV, 33 percent. There is
4 an increase.

5 DR. RAO: No, no. What I'm saying is, with
6 updated numbers, there's no change in that?

7 MR. ANDES: Their base line changed, too, right?

8 DR. MCGOWAN: Oh, I'm sorry. This would
9 be the -- This is an amount of energy use -- the
10 percent increase of energy use, so the energy use
11 stayed the same. What changed was the mix of the
12 sources. The amount of energy stayed the same.
13 Those percentages were based on the amount of energy.

14 DR. RAO: Okay. Thanks.

15 HEARING OFFICER TIPSORD: If there's no
16 objection, we will mark Summary of Electrical
17 Consumption and Air Emissions for Dissolved Oxygen
18 Aeration as Exhibit 216.

19 Seeing none, it's Exhibit 216.

20 (WHEREUPON, said document was marked
21 Exhibit No. 216, for identification,
22 as of 3-3-09.)

23 MR. ANDES: So, as I understand it, this chart
24 shows the information, from your testimony, based on

1 the eGRID sources and then changes based on the more
2 site specific -- more specific to the District mix.
3 And can you summarize the new numbers?

4 DR. MCGOWAN: Yes. Essentially, the first
5 column under eGRID Sources are the numbers that were
6 submitted as part of the pre-filed testimony that was
7 submitted, I guess, today. And we wanted to show how
8 that would compare.

9 So, Mr. Rao, you can see here the increase
10 in electric use, getting to your question, stays the
11 same at 74,200,000, as does the equivalent energy use
12 for the number of homes. So the energy consumption
13 hasn't changed. That's why the percent increase over
14 base line doesn't change.

15 However, the increase in CO2 emissions, the
16 first way we calculated it, would be 57,700 tons per
17 year versus now 49,800. The equivalent number of
18 trees would go from 8.9 million down to 7.7 million,
19 the greenhouse gas emissions from 57,900 tons of CO2
20 equivalence per year to 50,100, and the greenhouse
21 gas emissions -- the number of equivalent cars would
22 go from 9600 to 8300.

23 DR. RAO: Thank you.

24 MS. DEXTER: Can I ask a couple of questions to

1 clarify something? Jessica Dexter with the ELPC.

2 Does MWRD currently have a contract with --
3 an area contract with Integrys? Is that why you
4 chose Integrys as --

5 DR. MCGOWAN: Yeah. The District sent us --
6 This came from the District, so this, I believe, is
7 where their energy sources come from. I don't know
8 about all the contractual relationships.

9 MS. DEXTER: Do you know whether or not they
10 have other contractual options available to them?

11 DR. MCGOWAN: I am -- I'm not aware of what
12 those would be.

13 MS. DEXTER: So I understand, you've said a
14 number of times that you've got a blend of PJM and
15 MISO power, but I wasn't sure if I understood you to
16 say that you filled in all of the unknown resources
17 with MISO?

18 DR. MCGOWAN: Correct. If you look at the
19 footnote on the first page of that handout,
20 Footnote 1 under the table --

21 HEARING OFFICER TIPSORD: That's Exhibit 212.

22 DR. MCGOWAN: -- 71 percent of the energy --
23 Integrys energy service that was purchased originated
24 from PJM and 29 percent of the energy purchased

1 originated from the MISO pool. PJM pool attributes
2 are from the PJM system, and the MISO attributes are
3 currently unknown. So that's the 29 percent.

4 So that's when we went and said, "Well, it
5 wouldn't be good to just say we don't know where that
6 is. We'd like to at least, if we don't know exactly
7 where it's coming from, get as best information as
8 we could." We went to the MISO website. They showed
9 how they had a typical breakdown -- what their
10 typical breakdown was.

11 MS. DEXTER: And one more question.

12 On Exhibit 213, the appropriate information
13 for MISO, on the map on the right-hand side of the
14 first page, the one that shows the market footprint,
15 is there any significance to the fact that this does
16 not show the Chicagoland area as being part of the
17 MISO market?

18 DR. MCGOWAN: I don't know about that. We did
19 not investigate where all of their supply is because
20 it may be that they supply it through Integrys and
21 don't supply it directly. But I don't know.

22 MS. WILLIAMS: Can I ask a related follow-up?

23 MS. DEXTER: Yeah.

24 MS. WILLIAMS: Mr. McGowan, did you contact MISO

1 directly, or did you just rely on the information you
2 found on their website?

3 DR. MCGOWAN: We relied on the information from
4 their website.

5 MS. WILLIAMS: Thank you.

6 MS. DEXTER: That's all I have for now.

7 MS. WILLIAMS: I have one last follow-up.

8 Mr. McGowan, last time I asked you whether
9 you had calculated these air emission impacts on a
10 per-customer or per-gallon-of-water-treated basis,
11 and I believe you answered no; is that correct?

12 DR. MCGOWAN: I believe that's correct.

13 MS. WILLIAMS: When you went back and
14 recalculated these figures as far as how many trees
15 and how many cars, did you consider adding per gallon
16 of water treated or per customer to that calculation?

17 DR. MCGOWAN: No. We did not do those
18 calculations.

19 MS. WILLIAMS: Why not?

20 DR. MCGOWAN: We didn't think it was
21 appropriate.

22 MS. WILLIAMS: At this time, Fred --

23 I'm first, right?

24 HEARING OFFICER TIPSORD: Yes.

1 MS. WILLIAMS: I believe most of my remaining
2 questions for this witness would probably be more
3 appropriate for Dr. Zenz. I think last time a lot of
4 the questions I had drafted he deferred to Dr. Zenz.
5 So I don't really have a preference of whether I go
6 through them and we swear in Dr. Zenz or whether I
7 sort of reserve the ones that I think are better for
8 Dr. Zenz. It's really up to you.

9 HEARING OFFICER TIPSORD: If it's okay with you
10 and Mr. McGowan doesn't mind staying up, we can go
11 ahead and put Dr. Zenz in as a witness, and they can
12 help each other out answering questions.

13 MR. ANDES: Sure. Dr Zenz is right here.

14 HEARING OFFICER TIPSORD: Let's swear Dr. Zenz
15 in again. I know he's been previously sworn, but
16 it's been a while.

17 (WHEREUPON, the witness was duly
18 sworn.)

19 HEARING OFFICER TIPSORD: Will we have some
20 additional testimony entered?

21 MR. ANDES: Yes.

22 HEARING OFFICER TIPSORD: If there's no
23 objection, we will enter the pre-filed testimony of
24 David R. Zenz, Dissolved Oxygen Enhancement Study, as

1 Exhibit 217.

2 Seeing none, it's Exhibit 217.

3 (WHEREUPON, said document was marked
4 Exhibit No. 217, for identification,
5 as of 3-3-09.)

6 MS. WILLIAMS: I believe I did not ask --

7 HEARING OFFICER TIPSORD: Ms. Williams, you're
8 going to have to speak up. We have some noise back
9 here.

10 MS. WILLIAMS: I'm going to start with my
11 pre-filed question number 17 that I reserved last
12 time. That is, when did the District ask CTE to
13 develop an integrated approach for meeting dissolved
14 oxygen standards?

15 DR. ZENZ: Well, the best way to describe that
16 is to give you the date for the notice to proceed,
17 which is the time when the District allows us to
18 begin work on a project. That was October 1, 2007.
19 Once the notice to proceed is given, we have to take
20 care of certain contractual issues. We did not have,
21 what we call, a kick-off meeting until November 8,
22 2007. That's the actual start of actually work on
23 the project itself.

24 MS. WILLIAMS: It's okay with me if you look at

1 the Board.

2 HEARING OFFICER TIPSORD: This is not going to
3 work. If the witnesses are going to turn and face,
4 we may have to move Ms. Williams up.

5 DR. ZENZ: All right.

6 MS. WILLIAMS: You can continue. Are you done?

7 DR. ZENZ: I'm done.

8 MS. WILLIAMS: And explain why the study will
9 take until mid 2009 to complete.

10 DR. ZENZ: Well, I think part of your question
11 is the fact that CTE previously did a study of
12 dissolved oxygen enhancement. It produced a cost
13 estimate. But I just want to remind the Board that
14 those cost estimates, which are contained in the
15 EPA's proposal to the Board, only included the North
16 Shore Channel, north and south branches of the
17 Chicago River, and Bubbly Creek. So we did not
18 prepare previously any cost estimates for the
19 Sanitary and Ship Canal or for the Calumet Water
20 System, including the Cal-Sag Channel.

21 Also, in that study, because of the way
22 that IEPA wanted to see the information, we didn't
23 look at it in an integrated way. For example, on
24 Bubbly Creek, we looked at Bubbly Creek solely by

1 itself assuming no other dissolved oxygen enhancement
2 systems were in operation except those that were in
3 existence at the time. You can sort of understand
4 that, if we were going to be looking at this study in
5 an integrated way, we would assume that stations in
6 place meeting dissolved oxygen concentrations up in
7 the northern section, and that would influence and
8 impact the size and the location of stations, for
9 example, on Bubbly Creek or, for that matter, further
10 downstream. So this study is -- that we're doing now
11 is integrated, so we're going to be looking not only
12 at places we already looked at, but places we didn't
13 look at.

14 Also, in our previous study, we were using
15 a version of the Marquette model which we felt and
16 Marquette felt needed to be improved or enacted upon.
17 There were issues with the way he handled SOD. There
18 were issues with the way he handled CSO's and on and
19 on. The study includes not only our cost estimating
20 process, but also there was time needed for Marquette
21 University to go ahead and refine and update its
22 model. There was a similar amount of effort on the
23 part of them to do that. So that part of the study
24 was built into it.

1 Secondly, previously -- in our previous
2 cost estimates, we didn't do any really specific cost
3 estimates for the individual sites. We didn't look
4 at the sites. We didn't look at their topography,
5 whether we had to fill or back fill. None of that
6 was done.

7 Also, our cost estimating procedures were,
8 what I would call, rough. We just really didn't have
9 the scope of work or the budget to do a regular cost
10 estimation. In this case we do. We will do actual
11 field investigations of all these individual sites.
12 And you'll notice in our rough cost estimation, which
13 we did present to the Board, we felt that, even
14 though we were in the midst of our study, we should
15 give you some idea of what the cost would be. That's
16 been presented in my testimony before you. We still
17 felt that we needed to look at the sites, determine
18 what their characteristics are, and so forth. So
19 that's all built into the study. And we're going to
20 do a more rigorous cost estimate, and we'll have a
21 little bit narrower limits on it than the ones we
22 presented to the Board.

23 And at this point, based on our schedule, I
24 know in my testimony I indicated that we would

1 probably be done in mid 2009. It looks like right
2 now the runs are taking much longer than what we
3 originally anticipated for Marquette University. We
4 probably won't be done until the fall.

5 Just to give you some idea of what's
6 involved in these runs, it takes -- just to make one
7 run, it takes two hours of computer time. Then you
8 have to investigate it. This is all being done, by
9 the way, by Marquette University. Marquette
10 University, you must understand, is not a
11 subcontractor to CTE. They are a direct
12 subcontractor to the District. So CTE does not have
13 any managerial control over what Marquette University
14 is doing. They're not a subcontractor. They work
15 directly for the District. And then the service is
16 provided back to CTE. We do not participate in the
17 improvements, developments, or the running of the
18 model

19 MS. WILLIAMS: I have a couple of follow-ups
20 from that, Dr. Zenz.

21 The first one is you described the rough
22 cost estimates, and I believe last time we spent
23 quite a bit of time talking about the Level 3 and
24 Level 4 cost estimate. Is it accurate to say you did

1 a Level 5 cost estimate for the dissolved oxygen
2 technology in your testimony?

3 DR. ZENZ: Yes. As indicated in my testimony,
4 we call it a rough cost estimate with a variability
5 of minus 30 percent to plus 50 percent. I would say
6 that that does qualify it as a Level 5 cost estimate

7 MS. WILLIAMS: And --

8 DR. ZENZ: Could I just follow up a little bit
9 more -- on that question a little bit more?

10 I think the cost estimate is probably more
11 plus than it's minus. I'm going to give you a few
12 examples. We did not include any supplemental
13 aeration for the Chicago River. I can explain that
14 in other detail if there's going to be a follow-up
15 question on that. For reasons of expediency and
16 complexity for the Chicago River, there is no -- in
17 our cost estimate, there is no supplemental aeration
18 for the Chicago River.

19 Also, we assumed in our cost estimate that
20 all the existing aeration stations are operating at
21 full capacity. We know, from discussions with the
22 District, that those stations, in order to operate at
23 full capacity, would require some improvements. We
24 did not include any cost for improvements to those

1 aeration stations. That would be additional.

2 We also think that it's going to be
3 necessary -- If we're going to meet the standards
4 100 percent of the time -- We've got 18 stations --
5 new proposed stations possibly. That's just an
6 estimate on our part at this point. We've got also
7 five SEPA stations, two Devon stations on Devon and
8 Webster Avenue. There would have to be some kind of
9 integrated control approach. We did not include any
10 cost for that because we simply could not do that in
11 the time frame we had. Remember we were doing these
12 cost estimates back in July.

13 MR. ANDES: If I can stop you there, Dr. Zenz,
14 for a minute. So the Board has an idea of what we're
15 talking about, I'd like for you -- We have some maps
16 which illustrate the stations you're speaking of.

17 DR. ZENZ: Sure.

18 MR. ANDES: The first one is titled CAWS
19 Aeration Station Locations Overview of Waterway
20 System. And I'll put up a poster.

21 MS. WILLIAMS: I have no objection to this
22 exhibit or anything like that. I just feel like
23 maybe we're getting a little more off into the
24 questions related specifically to Dr. Zenz's

1 testimony rather than the questions that came out of
2 Dr. McGowan's testimony, but he relied on Dr. Zenz.
3 Are you sure this is going to be a good way to
4 present information?

5 MR. ANDES: I think, in discussing his cost
6 estimates, it's important to have the perspective.
7 You're talking about 18 stations, et cetera. I think
8 this will make that clear to everyone.

9 HEARING OFFICER TIPSORD: I'm going to admit
10 this as Exhibit 218 if there's no objection.

11 CAWS Aeration Station Locations Overview of
12 the Waterway System Map is Exhibit 218 seeing no
13 objection.

14 (WHEREUPON, said document was marked
15 Exhibit No. 218, for identification,
16 as of 3-3-09.)

17 MR. ANDES: We have more detail we can get into
18 when we have Dr. Zenz's direct.

19 DR. ZENZ: It's a simple map showing the
20 locations of the stations. The red ones are the ones
21 we felt that would have to be added in order to get
22 100 percent compliance with the DO standards. To
23 make it clear, from the modeling that was done by
24 Marquette University to come up with the sizing and

1 locations of these stations, we plugged in
2 100 percent compliance with the EPA's proposed
3 standards, the A standard, which is the 3 1/2 to
4 4 milligram per liter standard, and the B standard,
5 which is the 3 1/2 milligram per liter standard year
6 round. So that's the basis --

7 MR. ANDES: To give further detail so people can
8 see sort of where these all are, we have a table
9 which is from the attachment to Dr. Zinn's testimony.
10 So this is already admitted. This is Table 4 from
11 the attachment to Dr. Zenz's testimony entitled
12 Locations of Proposed New Aeration Stations in the
13 Chicago Area Waterway System. So that gives the
14 actual mileage points for each of the stations
15 Dr. Zenz is talking about here.

16 HEARING OFFICER TIPSORD: Do you know what? I
17 know it's already in the record. Since it goes a
18 little bit with Exhibit 218, I'm going to go ahead
19 and admit this as an exhibit as well. If there's no
20 objection, I'll mark this as Exhibit 219.

21 (WHEREUPON, said document was marked
22 Exhibit No. 219, for identification,
23 as of 3-3-09.)

24 DR. ZENZ: Well, I was in the process of trying

1 to explain why I thought my cost estimate was
2 probably low and probably would be higher. I was
3 trying to explain why it might be as much as
4 50 percent higher.

5 You'll notice that there are no stations on
6 the Chicago River, which I already mentioned. One of
7 the issues why we really felt we really couldn't come
8 to grips with the cost was, well, what is -- if we
9 have to condemn land and buy land, what is the cost
10 of that land? Frankly, back in July we weren't in --
11 we weren't comfortable that we could come up with a
12 land cost that would be appropriate for the Chicago
13 area, not to mention what would be required for
14 demolition of whatever properties we would acquire.

15 MS. WILLIAMS: Dr. Zenz, what on earth makes you
16 think there would be a need for a station on the
17 Chicago River?

18 DR. ZENZ: Well, we know from modeling that was
19 done by Dr. Melching, that the Chicago River is only
20 about 90 percent compliance with the proposed
21 standards, so there's going to have to be -- Either
22 the standard's 100 percent compliance or it's not.
23 We're assuming it is. Then we're going to have to
24 have some kind of system of aeration on that

1 waterway.

2 Another issue with the waterway is it has a
3 stagnant condition, and that causes some of the
4 problems of how we would go about establishing
5 supplemental aeration stations when the river is
6 stagnant. We can't get any transfer of oxygen
7 downstream as the water moves, so that necessitates
8 the possibility of doing something with possible flow
9 augmentation. Then the issue is where does the water
10 come from? Where are we going to get it? This is an
11 issue which we're grappling with now at our
12 integrated strategy, but we were not in a position to
13 grapple with when we did our original cost estimate.

14 MS. WILLIAMS: What did you look at with regard
15 to compliance of the Chicago River with dissolved
16 oxygen standards?

17 DR. ZENZ: This was something that Dr. Melching
18 did using his model.

19 MS. WILLIAMS: You looked at a model. So are
20 you aware of any measured violations of dissolved
21 oxygen standards in the Chicago River?

22 HEARING OFFICER TIPSORD: I think you need to
23 clarify. Measured under the current standard or the
24 proposed standard?

1 MS. WILLIAMS: Are you aware of what standard is
2 currently applicable to the Chicago River, Dr. Zenz?
3 Is it a general use stream?

4 DR. ZENZ: Yeah. You're delving into an area
5 which requires a little bit of memory on my part. I
6 can't really answer your question. I really don't
7 know.

8 MR. ANDES: Let me clarify.

9 Your analysis was all premised on what it
10 would take to meet the proposed standards?

11 DR. ZENZ: Correct.

12 MS. WILLIAMS: And your analysis does not
13 include any measured violation of either the proposed
14 or the current standards, correct?

15 DR. ZENZ: Correct

16 MS. WILLIAMS: Thank you.

17 MR. ANDES: So, Dr. Zenz, if I understand,
18 you're saying that all the costs you projected and
19 all these 18 aeration stations -- you're saying that
20 there would probably be additional costs required to
21 deal with the issue on the Chicago River? You
22 haven't done that yet, but your report that you're
23 doing by the fall will assess that issue and the
24 additional cost?

1 DR. ZENZ: That's correct.

2 MS. WILLIAMS: And what level of cost estimate
3 will that report be considered under your analysis?

4 DR. ZENZ: Well, since we haven't done the cost
5 estimate, I'm not in a position to --

6 MS. WILLIAMS: You have to wait until you know
7 how much information you have to classify it?

8 DR. ZENZ: That's correct

9 MS. WILLIAMS: Okay. Great. Thanks.

10 Do you have anything, Fred? Do you want me
11 to move on?

12 MR. ANDES: Go ahead.

13 MS. WILLIAMS: Pre-filed question 18 for
14 Mr. McGowan.

15 DR. MCGOWAN: I think that one I deferred as
16 well last time you asked. It was asking about the
17 model, and we did not do --

18 MS. WILLIAMS: I didn't ask this question last
19 time, but I was expecting that you would defer this
20 to Dr. Zenz as well.

21 The question is, what is the time frame of,
22 quote, historical data you are referring to on page 2
23 of your dissolved oxygen testimony? I'll just -- I
24 think it would be good if I just read the sentence

1 that I'm quoting from on page 2. It says, "Based on
2 the modeling simulations and the historical DO data,
3 the following supplemental aeration was recommended
4 by CTE to meet the proposed DO standard." Does that
5 help, Dr. Zenz?

6 DR. ZENZ: Well, I read that same sentence
7 myself. We do talk to each other. I think what he
8 was referring to is the data that is in the model
9 itself. Obviously, if you know anything about
10 mathematical modeling, you will realize that it has
11 to be calibrated and verified based upon actual
12 sampling of the river itself. That whole exercise
13 was done by Dr. Melching. This question really
14 should be addressed to him, not to me. I'm not
15 familiar with what information he used to calibrate
16 and verify

17 MS. WILLIAMS: So the modeling simulations
18 that's referred to in that sentence are the Marquette
19 modeling?

20 DR. ZENZ: That's what I would assume

21 MS. WILLIAMS: And can you just sort of explain
22 for us -- We heard testimony last time from
23 Dr. Garcia. Can you explain -- about the modeling
24 work that he is doing with the University of

1 Illinois. Can you explain why you are relying on the
2 Marquette modeling rather than the U of I modeling?

3 DR. ZENZ: Well, I'll refer back to my testimony
4 here a little bit. Give me a second.

5 MR. ANDES: I guess one question I have -- My
6 understanding was the University of Illinois modeling
7 isn't done yet.

8 MS. WILLIAMS: Neither is the Marquette
9 modeling, as Dr. Zenz has explained to us. He needs
10 to rely on additional modeling from Marquette.

11 Isn't that what you testified, Dr. Zenz?

12 DR. ZENZ: The study includes an updating and
13 refinement of the Marquette model, that's correct.
14 We will be using that model for developing the sizing
15 and location of our aeration stations. And that --

16 MR. ANDES: But there was a set of completed
17 modeling done by Marquette that you relied on,
18 correct?

19 DR. ZENZ: For the rough cost estimate, that's
20 correct. Yes.

21 MR. ANDES: Okay.

22 DR. ZENZ: And I would say -- I'm trying to
23 characterize the model. He was in the process of
24 trying to refine his model at the time we did our

1 rough cost estimate. So he had made some refinements
2 to it, but not all of the ones that we expect the
3 model to have when we're doing our runs for the
4 integrated strategy. So it's different than the
5 model that was used for the so-called UIA studies
6 that were presented to the Board. But it also -- The
7 model we'll be using for our integrated strategy will
8 be different than that model.

9 MR. ANDES: It will be refined further?

10 DR. ZENZ: More refined.

11 MS. WILLIAMS: I just want to understand because
12 I thought -- You know, I think we all got a good
13 class lesson almost from Dr. Garcia about the
14 modeling work that needs to be done to really
15 understand this system, and I'm trying to understand
16 why you're relying on different modeling than the
17 three-dimensional modeling that's being developed by
18 Dr. Garcia?

19 DR. ZENZ: Well, again, I'll refer to my
20 testimony. I state in my testimony we feel, in
21 discussions with Marquette, and we think this updated
22 Marquette model provides a sufficient level of detail
23 for the studies that we're going to give you cost
24 statements for. We think it's sufficient for that

1 purpose.

2 By the way, Dr. Garcia agreed with that.
3 We had discussions with him. He said the Marquette
4 model is sufficient for CTE's purposes to come up
5 with a cost estimate for -- being that IEPA's
6 proposed standard's 100 percent of the time.

7 MR. ANDES: If I can clarify, is it accurate to
8 say that you had to do this rough cost estimate in
9 order to provide testimony under the deadlines
10 established in this proceeding?

11 DR. ZENZ: That's correct.

12 MR. ANDES: So the information available at that
13 time was Dr. Melching's?

14 DR. ZENZ: Correct.

15 MR. ANDES: Thank you.

16 MS. WILLIAMS: I guess what I'm sort of getting
17 at, I understand the cost estimate is an estimate and
18 you're using the available information. That is not
19 really what I'm trying to get at. I'm just trying to
20 understand, with regard to development of an
21 integrated -- what I think has been called an
22 integrated strategy for meeting dissolved oxygen,
23 would you recommend relying on the Marquette model as
24 being -- would you recommend that the Marquette

1 model's sufficient for developing that strategy?

2 DR. ZENZ: Well, I'll refer back to my testimony
3 again. We said, "This one-dimensional model" -- and
4 what I was referring to, of course, is
5 Dr. Melching's one-dimensional model -- "may not
6 describe the complex conditions that can exist in
7 some segments of the CAWS" -- Dr. Garcia has made
8 that pretty -- "including" -- For the court reporter,
9 let me repeat myself. "This one-dimensional model
10 may not describe complex conditions that can exist in
11 some segments of the CAWS, including impacts due to
12 density currents, sediment resuspension, and mixing
13 zone effects. Therefore, before proceeding to design
14 of a CAWS DO enhancement system, consideration should
15 be given to a more detailed modeling approach to
16 produce a final aeration system sizing and location."

17 To put it in words simple and
18 straightforward, for our purposes, to come up with a
19 cost estimate and a more -- shall we say a more
20 refined cost estimate, this is fine. If we're going
21 to design a system in the future, perhaps a model --
22 Dr. Garcia's model, some other model, or a refined
23 Marquette model, it would be a good idea to look
24 into. We're not prepared to say what that model is.

1 We haven't investigated it. But, based on our
2 discussions with Dr. Garcia and our discussions with
3 Dr. Melching, it's a very complex waterway.

4 You can see the District is very interested
5 in doing a better job through multi-dimensional
6 modeling of the system, and we think that that should
7 be definitely given consideration before a system
8 design takes place. Our project is -- We're not
9 designing. We're just trying to come up with a
10 reasonable set of aeration stations, sizing,
11 location, come up with a better cost estimate.

12 MS. WILLIAMS: So your contract does not include
13 design of a system?

14 DR. ZENZ: No

15 MS. WILLIAMS: Question 19, with regard to
16 supplemental aeration, is there -- if there is a
17 change in the design assumptions regarding the
18 frequency and duration the aeration stations would be
19 in operation or how many stations would be needed,
20 how would that change your energy consumption and air
21 emission figures?

22 DR. MCGOWAN: Yes. If there are changes in the
23 design assumptions and frequency in duration change
24 for the operation of these, there would certainly be

1 some changes in the air emissions. Ballpark, it's
2 fairly linear. There are some minor things that
3 change. More horsepower, more greenhouse gasses.
4 Let's horsepower, less kilowatt hours, less. And
5 it's generally a linear relationship.

6 MS. WILLIAMS: Thank you.

7 Question 20, have any dissolved oxygen
8 treatment technologies been considered that would not
9 have a long-term energy demand?

10 DR. MCGOWAN: That one I would -- did not get
11 into the evaluation of technology, so I'd like to
12 defer that to Dr. Zenz.

13 DR. ZENZ: Well, yes, we have considered
14 technologies which would not have a long-term energy
15 demand. In particular, there was a self-contained
16 solar-powered device which we became aware of when
17 the District asked us to take a look at it. This was
18 part of our long list/short list evaluation as part
19 of our integrated strategy. And this was a very,
20 very small device. The solar panel is probably only
21 about this big. It's used for small ponds and so
22 forth. After some investigation and discussion,
23 including a fairly long discussion at a workshop with
24 the District, we decided that it wouldn't have any

1 practical application to the District, so we rejected
2 it. That's the only type of system like that that we
3 have looked at.

4 MS. WILLIAMS: I'll start with question 22. You
5 may have just answered the first part of that.

6 HEARING OFFICER TIPSORD: Excuse me,
7 Ms. Williams.

8 Dr. Zenz, you indicated, in your testimony,
9 that it was this big. I need an explanation of that,
10 for the record.

11 DR. ZENZ: I think it was about three feet by
12 three feet. It was a relatively small panel. You
13 could pick it up. And I'm just approximating. I
14 don't have the actual figures in front of me.

15 HEARING OFFICER TIPSORD: Thank you.

16 Go ahead.

17 MS. WILLIAMS: Question 22, what energy
18 efficiency options were considered to reduce energy
19 consumption from disinfection and dissolved oxygen
20 enhancement? You described one example of a solar --

21 DR. ZENZ: Okay. I'm going to field that
22 question.

23 DR. MCGOWAN: I would defer -- This is my list.
24 Again, we weren't involved in those.

1 DR. ZENZ: So far in our investigations, we
2 have not come across anything that would result in a
3 substantial large reduction in energy consumption.
4 Having said that, we will -- In our cost estimate
5 process, we will be looking at variable speed drives,
6 energy efficient blowers, and things like that to try
7 to cut down on the energy consumption as much as
8 possible.

9 But, quite frankly, a lot of these issues
10 with regard to energy reduction really are more
11 geared towards the design phase where the engineer
12 begins his process of actually selecting equipment
13 and, you know, coming up with the plans and
14 specifications needed to come up with the equipment.
15 But we will make every effort to base our cost
16 estimate on the most energy efficient systems that we
17 can readily determine, and that will be reflected in
18 the operation and maintenance cost of our final cost
19 estimate.

20 MR. ANDES: You're speaking of the report you
21 would be writing in the fall on the integrated study?

22 DR. ZENZ: That's correct.

23 MR. ANDES: Thank you.

24 MS. WILLIAMS: And would you agree that only in

1 that phase will you have accurate estimates of energy
2 consumption?

3 DR. ZENZ: Well, it will be more accurate than
4 we have now. There's no doubt about it.

5 MS. WILLIAMS: Those are all the questions I had
6 for the McGowan portion. I mean, I can ask the Zenz
7 portion, or we can move on to other questioners.

8 HEARING OFFICER TIPSORD: Did anyone else have
9 any questions for Mr. McGowan?

10 MS. DEXTER: I have two, I believe. Let me just
11 review this for a second to make sure I know who they
12 should be directed to. I actually have four of my
13 pre-filed questions that I'll still ask. I'm going
14 to start with pre-filed question two from the
15 pre-filed Environmental Law & Policy Center
16 questions.

17 To your knowledge, has the District ever
18 done an environmental assessment like the ones you
19 did regarding DO enhancement and disinfection for any
20 of its other operations or for operations?

21 DR. MCGOWAN: I'm not familiar with other
22 projects that they may or may not have done.

23 MS. DEXTER: Do you know whether such an
24 assessment was done with regard to any phase or

1 portion of TARP?

2 DR. MCGOWAN: I am unaware of anything regarding
3 TARP. I wasn't involved in any of the TARP
4 facilities at all.

5 MS. DEXTER: Have you or, to your knowledge, has
6 anyone else ever attempted to calculate any favorable
7 environmental effects on land, air, energy use, or
8 other portion of the environment that might result
9 from enhanced dissolved oxygen levels in any portion
10 of the CAWS?

11 DR. MCGOWAN: This was originally asked for the
12 UV. When we did our analysis for UV, we found some
13 stormwater reduction. At this point in time for the
14 dissolved oxygen, since we didn't know what the
15 facilities were -- we stated that in our testimony --
16 we didn't look at stormwater or any of the other
17 aspects. All we were able to get our hands around
18 was the energy consumption at this point in time.
19 There were no physical buildings, structures, or
20 anything, so there wasn't a comprehensive analysis.
21 At this point in time, all we did look at was the
22 energy consumption -- the environmental impact of
23 energy consumption for dissolved oxygen.

24 MR. ANDES: If I can follow up on that.

1 Mr. McGowan, on disinfection, the one
2 decrease in stormwater runoff, as I recall, was
3 because some chlorine contact tanks would be removed?

4 DR. MCGOWAN: Correct.

5 MR. ANDES: So that would create some pervious
6 area where previously it was impervious?

7 DR. MCGOWAN: Correct. It would shrink the
8 footprint of the impervious areas, correct.

9 MR. ANDES: In fact, here, with construction of
10 18 new aeration stations and not removing anything,
11 as far as we know, no such change would be taking
12 place based on the current system as Dr. Zenz has
13 described?

14 DR. MCGOWAN: Yes. If they didn't replace
15 anything, all there would be would be an increase of
16 stormwater runoff.

17 MS. DEXTER: And my last question is pre-filed
18 question 6. Have you studied the effects of the work
19 necessary to meet existing dissolved oxygen
20 requirements applicable to the CAWS?

21 DR. MCGOWAN: No. We essentially took the
22 studies that were done by others, used the energy,
23 and did an environmental analysis on power
24 consumption and those types of things. So we were

1 not involved in the detailed analysis of the
2 dissolved oxygen in those waterways.

3 MS. DEXTER: So all of your estimates are based
4 on meeting the proposed standards in this rulemaking,
5 and none have been done for the new, but existing, DO
6 standards on these waterways?

7 DR. MCGOWAN: We took information generated by
8 others on the team.

9 MS. DEXTER: Thanks.

10 HEARING OFFICER TIPSORD: Okay. Anything else
11 for Mr. McGowan?

12 Thank you very much, Mr. McGowan.

13 DR. MCGOWAN: Thank you.

14 HEARING OFFICER TIPSORD: And then we can go
15 ahead and move to the pre-filed questions for
16 Dr. Zenz on dissolved oxygen.

17 MS. WILLIAMS: We covered my first question.

18 The second question, question three, why
19 did you change the compliance target from 90 percent
20 to 100 percent?

21 DR. ZENZ: Well, when we were doing the first
22 studies, the ones that were being done for the UIA,
23 we did not know what the IEPA would propose in the
24 way of dissolved oxygen standards for the system, so

1 we were in a position trying to figure out what it
2 would be. At the time we had hopes -- perhaps that's
3 the best way to describe it -- that IEPA would come
4 up with something less than 100 percent compliance.
5 We thought it would be probably something in the area
6 of 5 milligrams per liter, so we came up with
7 90 percent compliance at 5 milligrams per liter.

8 Obviously, that was not what IEPA came up
9 with. They came up with a 100 percent compliance
10 standard. Of course, if we're going to be of any
11 value to you, you want a cost estimate for meeting
12 the standard 100 percent of the time, so that's what
13 we did. It's as simple as that.

14 MS. WILLIAMS: Question four, how did the
15 improvements related to the completion of TARP factor
16 into your analysis of the amount of aeration and flow
17 augmentation needed to achieve 100 percent
18 compliance?

19 DR. ZENZ: Well, we had some discussions of this
20 issue when the project began. The question was what
21 are we going to assume in the way of TARP? Are we
22 going to assume that reservoirs are on line, or are
23 we not? And we decided that the reservoir situation
24 is a very long-term possible construction project and

1 that the information that would be most useful to the
2 Board we thought would be assuming that the
3 reservoirs were, in fact, not on line, but that all
4 the tunnels are on line. In fact, all the tunnels
5 are on line right now, as you probably know. So that
6 is the assumption that is made in the modeling and in
7 the sizing and location of the stations.

8 MS. WILLIAMS: When you say long term, when will
9 the reservoirs be completed?

10 DR. ZENZ: I have no idea.

11 MS. WILLIAMS: Do you know if it's going to be
12 before or after the time line outlined in your
13 testimony for these projects?

14 DR. ZENZ: I have no idea.

15 MR. ANDES: I think there's been prior testimony
16 by Mr. Lanyon in terms of the approximately 15-year
17 time frame for that, but we can refer back to his
18 testimony. And you can certainly ask Dr. Granato.

19 MS. WILLIAMS: I think we've already addressed
20 Question 5.

21 Question 6, have you calculated these
22 costs, meaning the cost for dissolved oxygen
23 compliance, on a unit basis such as cost per million
24 gallons treated or cost per household?

1 DR. ZENZ: That's outside the scope of our
2 project. We have not been asked to make such
3 calculations.

4 MS. WILLIAMS: Question 7, why will it take
5 eight-and-a-half years to construct dissolved oxygen
6 enhancement in the CAWS?

7 DR. ZENZ: Well, I think the best way to answer
8 that question is to go over, at least in some detail,
9 the basis for the schedule that we presented in our
10 testimony.

11 First, we said it would take two years to
12 do pilot studies. Pilot studies were done as part of
13 the SEPA construction. This is going to be a
14 construction project that's going to be at least
15 \$500 million. That's the cost estimate we presented
16 to the Board. It's probably more, as I've said
17 before. If we are going to go forward with this --

18 By the way, supplemental aeration is not
19 done very much in the United States. We've got to
20 really look hard to find places that practice this.
21 So pilot plan studies we think are absolutely
22 necessary. They have to be planned. The pilots have
23 to be perhaps constructed or rented or something.
24 Many have to be run. And the report has to be

1 compiled. I think that's going to take two years.

2 The next part of our estimate, we said it's
3 going to take three-and-a-half years to design it.
4 There's a possibility of 18 different sites. We've
5 got to do field investigation, soil sampling, look at
6 the ground water table.

7 Land acquisition, we cannot be sure that
8 any of these sites can be effectively located on
9 District property. The District does own a lot of
10 property on the waterways, but there's also a lot of
11 property that they do not own. So land acquisition
12 could be a very difficult and time-consuming process.

13 The District has eminent domain. The
14 property owners have rights to protest offers that
15 are made. Three-and-a-half years I don't think is
16 unreasonable for the whole process to produce a
17 useful set of plans for construction.

18 We think it's going to take three years to
19 construct 18 different sites. 500 or \$600 million.
20 I think that's reasonable. I mean, I have no reason
21 to change my mind over that schedule. I'll stick
22 with it here. We, of course, will look at this again
23 when we do our integrated strategy, but right now I
24 have no reason to change it.

1 MS. WILLIAMS: So the second question, would
2 there be changes that could be made to speed up this
3 process, is your answer no?

4 DR. ZENZ: I have no information that would lead
5 me to believe that this could be speeded up.

6 MS. WILLIAMS: What options did you consider
7 that could have shortened the time frame?

8 DR. ZENZ: There are no options that we think
9 could -- I mean, when I presented this construction
10 estimate, we took considerable time to think about
11 it. There are no options -- no options that we think
12 could be taken to shorten this process.

13 MS. WILLIAMS: So does that mean that your
14 answer to Question 8 is yes? Do you believe these
15 construction schedules represent the earliest
16 reasonable date MWRD could achieve compliance with
17 dissolved oxygen?

18 MR. ANDES: Are we asking him from a legal
19 standpoint?

20 MS. WILLIAMS: It's a technical question.

21 MR. ANDES: So you're asking him as a technical
22 matter, not as a legal matter?

23 DR. ZENZ: I honestly believe that my schedule
24 is correct. When that construction would start, I

1 don't know. But the time frame that I have outlined
2 is the best we can come up with.

3 MS. WILLIAMS: So, Dr. Zenz, can you explain --
4 What's hard for me to accept about your construction
5 schedule here is that there is no efficiency in time
6 from the disinfection schedule that you've provided
7 for the plans, other than Stickney. So you are
8 confident that it will take as long to install
9 supplemental aeration as it will take to install
10 disinfection?

11 DR. ZENZ: Well, it turns out that they are
12 similar, but they were developed entirely
13 independent. There's no -- There was no connection
14 between the two. We didn't decide that both of those
15 should somehow be similar.

16 MS. WILLIAMS: We spent quite a bit of time when
17 you were here last time talking about the need for
18 pilot plans at all three facilities for disinfection.
19 I think I understood pretty well your take on that.
20 But please explain to me why you don't think that the
21 pilot studies done for the SEPA stations would be
22 sufficient for building additional aeration stations?

23 DR. ZENZ: At this point in time, we don't know
24 what technologies will come out of our integrated

1 strategy.

2 MR. ANDES: If I can interrupt a moment. Can
3 you explain what a SEPA station is relative to other
4 kinds of aeration stations? I'm not sure if people
5 understand that.

6 DR. ZENZ: Yeah. It's basically a waterfall
7 type of arrangement. It's not a cascade where you
8 have many, many steps as the water flows over this
9 cascade in sort of a sheet-like fashion. It's what
10 they call a plunging pool type of design where the
11 water comes over a weir and it plunges down five
12 feet. It's the typical drop into a pool of water
13 below. It's actually plunging. It creates most of
14 the aeration. It's not the fact that there's air on
15 either side of the waterfall. It's the plunging and
16 the turbulence that creates -- that's what the SEPA
17 station relies on.

18 Let me just say that one of the issues -- I
19 worked for the District at the time the SEPA stations
20 were first proposed by the engineering department.
21 As we began the process of looking at whether or not
22 you would proceed with the SEPA technology, we all
23 realized -- we spent time discussing this with the
24 Illinois Water Survey, that pilot studies were

1 absolutely necessary.

2 Now, you might think, well, it's just some
3 water coming over a weir and it drops into a pool.
4 What's the big deal? Why can't you build it? The
5 answer is that the information available in the
6 literature for the aeration just simply wasn't
7 available. So the pilot studies were actually
8 conducted and run by the Illinois State Water Survey.

9 The District constructed the actual SEPA
10 station model. They tried, you know, 15-foot drops
11 and five-foot drops, and all kinds of different
12 alternatives were tried. When you do these pilot
13 studies, you get a tremendous efficiency. You know
14 exactly what you've got at the end. If you don't do
15 them, you don't know what you're going to have at the
16 end.

17 MR. ANDES: In terms of these new 18 stations, do
18 you expect those to be perfect replications of the
19 SEPA stations already there or something entirely
20 different?

21 DR. ZENZ: We have gotten to the point where
22 there's no doubt that some of the technologies and
23 some of the stations will not be SEPA. They will not
24 be.

1 MR. ANDES: It will be --

2 DR. ZENZ: Other types of aeration systems. I
3 can tell you that.

4 MS. WILLIAMS: Can you explain in a little more
5 detail, Dr. Zenz --

6 DR. ZENZ: Well, I think --

7 MS. WILLIAMS: -- why you conclude and which
8 ones?

9 DR. ZENZ: Well, when we do our evaluations and
10 we have workshops, we try to look at the advantages
11 and the disadvantages of the technologies as much as
12 we can. We search the literature. We rely on
13 assistance and information coming from the District.
14 And it just looks like right now that the only two
15 places that SEPA would probably be a good fit would
16 be Bubbly Creek and the Chicago River right now and
17 that other technologies would be a better fit than
18 that.

19 I don't really want to go much further into
20 that because I don't want to start stating
21 conclusions before the Board. I'll just leave it at
22 that. It's very, very, very likely that the final
23 cost estimate will be based upon other technologies
24 than SEPA at least in part of the system.

1 MS. WILLIAMS: Did you mean main stem in the
2 Chicago River when you said that?

3 DR. ZENZ: I did. I did.

4 MS. WILLIAMS: Question 9, do you know how long
5 the existing SEPA stations took to construct?

6 DR. ZENZ: I didn't know, but I asked the
7 District. They told us. Construction contracts for
8 SEPA Stations 1, 2, and 5 were awarded in 1990, and
9 the SEPA stations -- Those stations went into
10 operation in 1994, so it took about four years to
11 construct from the time that construction was awarded
12 to construct those three stations. For SEPA Stations
13 3 and 4, the contract was awarded in 1989. They went
14 into operation in '92, so it took about three years.
15 And you'll notice that I estimated it would take
16 three years to construct the 18 stations.

17 MR. ANDES: So that's just construction time?
18 You aren't talking in terms of planning time,
19 et cetera?

20 DR. ZENZ: Oh, no.

21 Bear in mind, the way municipalities
22 construct projects, they get an engineer to produce a
23 set of plans and specifications. Then it has to be
24 bid. There's opportunity for the -- You don't

1 just give a set of plans and specifications for a
2 \$500 million project and say, "Give me your estimate
3 in one month." You have to give them 90 days. There
4 may be issues that will come up. So you can have --
5 A bid award might take six months from the time that
6 you actually have the design completed and ready to
7 go until you actually give a contract. I mean,
8 that's the way -- I mean, I've been in this business
9 for almost 40 years, and that's the way it goes.

10 MS. WILLIAMS: I don't think I have any other
11 questions for this witness.

12 HEARING OFFICER TIPSORD: Ms. Dexter?

13 MS. DEXTER: Again, pre-filed questions for
14 the Environmental Law & Policy Center.

15 HEARING OFFICER TIPSORD: Ms. Dexter, you need
16 to speak up a little bit and slow down a little bit.

17 MS. DEXTER: I will start with pre-filed
18 question number 1. Do you know -- Are the Chicago
19 area waterways currently and consistently meeting the
20 dissolved oxygen standards that are currently
21 applicable to them?

22 DR. ZENZ: I do not.

23 MS. DEXTER: Did you -- This is pre-filed
24 question 4. Did you consider the cost of

1 implementing controls necessary to meet the currently
2 applicable DO standards?

3 DR. ZENZ: That's outside the scope of our
4 contract. We are only to look -- Our project calls
5 to look at meeting the IEPA's proposed standards, and
6 that's it. We have no charge to do anything else.

7 MS. DEXTER: You have no idea of the rough
8 comparison between the two standards?

9 DR. ZENZ: No.

10 MS. DEXTER: How did the discharges from the
11 Calumet North Side or Stickney plants affect
12 dissolved oxygen levels in the CAWS?

13 DR. ZENZ: That is also not part of our study.
14 I think that question is best addressed to
15 Dr. Melching. If he, in fact, has looked at that as
16 part of his modeling approach, I don't know.

17 MS. DEXTER: Okay.

18 DR. ZENZ: But I can't answer that question.

19 MS. DEXTER: I'm going to ask pre-filed question
20 6, but I will ask it a little differently than it's
21 written.

22 DR. ZENZ: That's okay.

23 MS. DEXTER: In Attachment 2 to your pre-filed
24 testimony, there's Attachment A. On page 16 of

1 Attachment A of Attachment 2 to your testimony, there
2 is a figure labeled Figure 10. That's what this
3 question will be directed toward.

4 Right above Figure 10 it says -- it
5 explains that this is about the new aeration stations
6 in the Chicago River mainstem. It says, "The effect
7 of new aeration stations on DO concentrations in the
8 Chicago River mainstem is especially significant for
9 the period of October 2000 to May 2001. After May
10 2001, the effect of new aeration stations on DO in
11 the Chicago River mainstem diminishes." Can you
12 explain why that is?

13 DR. ZENZ: I can't, but I know Dr. Melching can
14 because this question was directed to him. This
15 attachment that you're referring to was prepared by
16 him. The modeling work that is done to present these
17 figures was done by him. I'm not going to venture --
18 I have an idea why that happens, but I'm not sure of
19 it, so I'm not going to say it. I think that's best
20 addressed to him.

21 MS. DEXTER: Did you take any effect of
22 phosphorus or nitrogen pollution on dissolved oxygen
23 levels into account in designing these studies?

24 DR. ZENZ: All I can tell you is that I know,

1 from discussions with Dr. Melching, that his model
2 includes taking into account the nitrogen species on
3 dissolved oxygen content and phosphorus. The details
4 of how that's done in his modeling I cannot tell you.
5 He is best for that. The model does account for
6 nitrogen and phosphorus impacts upon dissolved
7 oxygen. It does do that.

8 MS. DEXTER: Have you or CTI been involved in
9 the preparation of any studies designed to determine
10 the cost to Illinois discharges of treating for
11 phosphorus and nitrogen?

12 DR. ZENZ: Yes. In 2003, we prepared a report
13 for the Illinois Association of Wastewater Agencies.
14 They gave us a small contract to try to estimate the
15 cost of implementing a proposed -- Let me backtrack a
16 little bit.

17 This was because -- They asked us to
18 determine the cost for improving/modifying existing
19 municipal plants in order to meet nitrogen and
20 phosphorus standards. The reason they asked us to do
21 this cost estimate was because a year or two prior to
22 that IEPA -- excuse me -- United States Environmental
23 Protection Agency came out with new national water
24 quality standards for nitrogen and phosphorus. Since

1 they thought -- And IEPA is working on and continues
2 to work on coming up with standards. Because of that
3 national promulgation of nitrogen and phosphorus
4 standards, they thought that a cost estimate would be
5 helpful to IEPA, so they asked CTI to come up with
6 that cost estimate. That's a long answer.

7 MR. ANDES: And we have copies of that report on
8 disk, which we will provide. The report is titled
9 Technical Feasibility and Cost to Meet Nutrient
10 Standards in Illinois.

11 MS. WILLIAMS: Is this relevant to this
12 rulemaking?

13 MR. ANDES: She asked for it.

14 MS. WILLIAMS: Did you ask for this study?

15 MS. DEXTER: I asked about whether there were
16 studies.

17 HEARING OFFICER TIPSORD: Since he's mentioned
18 it, we're going to put it in the record. If there's
19 no objection, we'll mark this as Exhibit 220.

20 Seeing none, the CD-ROM Technical
21 Feasibility and Cost to Meet Nutrient Standards in
22 Illinois, David Zenz, is marked as Exhibit 220.

23

24

1 (WHEREUPON, said document was marked
2 Exhibit No. 220, for identification,
3 as of 3-3-09.)

4 MS. DEXTER: We, at this point, don't have any
5 idea how these two cost estimates might interrelate
6 with one another.

7 DR. ZENZ: I don't see how they do, to be
8 honest. I can't -- There's no correlation.

9 MR. ANDES: If I can clarify, that report is on
10 nutrient control.

11 DR. ZENZ: Correct.

12 MR. ANDES: The District's already provided some
13 estimates of what it thinks the cause of nutrient
14 control would be in Mr. Kunetz' testimony specific to
15 this.

16 MS. DEXTER: I'll move on to pre-filed
17 question 9.

18 In calculating the capital costs of the
19 work needed to meet the proposed dissolved oxygen
20 standards, when is it assumed that construction would
21 begin for each recommended project?

22 DR. ZENZ: Well, we made no assumptions. We
23 presented our cost estimate in June 2008 dollars. We
24 have no -- We have no information about when or if

1 construction --

2 MS. DEXTER: So essentially all of the costs
3 of -- the capital costs of this construction are
4 assumed to all take place basically instantaneously
5 with the --

6 DR. ZENZ: I guess the best way to describe it
7 is that the capital costs are in June 2008 dollars.
8 Therefore, if a contract was awarded in June of 2008,
9 that's what we think the cost would be for capital
10 costs. The operation and maintenance costs are also
11 in June 2008 dollars. For the year 2008-2009, that
12 would be the cost of -- the operation and maintenance
13 cost if the stations were operating in 2008-2009. So
14 if you want to change to some other time period, you
15 have to use an inflation factor to figure out what
16 the dollars would be. Again, I don't know when the
17 construction contract would be awarded or if it would
18 be awarded.

19 MS. DEXTER: In these cost estimates, you
20 haven't used either an inflation factor or a
21 discounting factor in updating your present value?

22 DR. ZENZ: Well, I want to simplify. The
23 capital costs are what it would take for the
24 concrete, steel, and all the rest of it to build it

1 in June 2008 dollars. There's no interest rate
2 assumed in that capital cost. The operation and
3 maintenance costs are also in June 2008 dollars.
4 There's no interest rate inflation factor, just what
5 we think the labor and the electricity would be for
6 that particular point in time.

7 Now, when we give you a present worth
8 factor, you know, I think that just causes more
9 confusion for the layperson that's trying to figure
10 out what the hell is this present worth factor. It's
11 really a somewhat fictitious number which we use to
12 compare estimates because we might be looking at an
13 estimate with a very high capital cost and a low
14 maintenance and operation cost. Another estimate
15 might be a very low capital cost, but high operation
16 and maintenance cost. We put those two numbers,
17 capital cost and operation and maintenance cost, into
18 one number, which we call present worth. That allows
19 us to compare these various alternatives. And that
20 requires assuming an interest rate and an inflation
21 factor.

22 When we tell you the capital cost, there's
23 no inflation factor. There's no interest rate.
24 That's the cost that it's going to cost you in June

1 of 2008 to build it. When we give you the operation
2 and maintenance cost, that's the cost that it's going
3 to cost at that point to run that, and it happens to
4 be the yearly cost. Then present worth is a
5 different story. I think sometimes we create more
6 confusion by present worth. Everybody always wants
7 to know the present worth. I hope I answered your
8 question.

9 MS. DEXTER: I think we did discuss this. I'm
10 not going to ask anymore questions on that.

11 Pre-filed question 10, are there other
12 studies, calculations, or worksheets that support the
13 estimates and calculations made in Attachments QQ,
14 PP, and OO of the IEPA initial filing?

15 DR. ZENZ: No. We always make a very concerted
16 effort in all our reports to include everything
17 either in the body of the report or as attachments,
18 all the spreadsheets for our cost estimates,
19 everything. What is in the report is all. There's
20 nothing else. We didn't leave anything out. We
21 tried to deliver everything to the client. It's all
22 there.

23 MS. DEXTER: I have no further questions for
24 this witness.

1 MS. WILLIAMS: I have one follow-up.

2 Exhibit 220 on the disk here, can you
3 explain, for the record, the difference between
4 Exhibit 220 and Exhibit 164 entitled POTW Nutrient
5 Removal in Illinois, Illinois Association of
6 Wastewater Agencies, 2003?

7 DR. ZENZ: You're going to have to really help
8 me here with all these numbers.

9 MR. ANDES: I believe, not having Exhibit 164 in
10 front of us, that was a power-point presentation
11 summarizing this report. I believe that's the case.

12 MS. WILLIAMS: Okay. Thank you.

13 HEARING OFFICER TIPSORD: Are there any other
14 questions for Dr. Zenz?

15 MR. ANDES: I have a couple of follow-ups.

16 HEARING OFFICER TIPSORD: Okay.

17 MR. ANDES: Dr. Zenz, one question I have is
18 about velocity at the aeration stations. As I
19 understand it, the current stations operate around
20 30 grams --

21 DR. ZENZ: Grams per second of oxygen, yeah.
22 That's the oxygen that would be put -- It's in metric
23 units. 30 grams per second is the amount of oxygen.
24 30 grams of oxygen per second has to be applied -- or

1 is supplied by the particular aeration station. In
2 fact, most of these stations, except for one, are all
3 80 grams per second.

4 MR. ANDES: So you think these stations would
5 mainly have to be run at 80 grams per second instead
6 of 30?

7 DR. ZENZ: That's correct.

8 MR. ANDES: What uncertainty does that
9 introduce? Can you just scale it up, or are there
10 other issues?

11 DR. ZENZ: Well, I mean, the model says that,
12 except for one station, which is 70 grams per second,
13 all the stations have to operate at 80 -- have to
14 provide 80 grams per second of oxygen to the waterway
15 in order to meet IEPA's proposed standards
16 100 percent of the time. I should say that's for one
17 year worth of data between October 1, 2000, and
18 September 30, 2001.

19 For that year, Dr. Melching has looked at
20 all the DO results and said, I provide these 18
21 stations, 17 of which are 80 grams per second of
22 oxygen being supplied to the water, and one being 70.
23 Plus, we have flow augmentation of the upper North
24 Shore Channel included in the modeling. We've got

1 flow augmentation of Bubbly Creek and flow
2 augmentation of that little stretch of the Calumet
3 River from the O'Brien Lock and Dam downstream. So
4 it would bring water to that if you look at a cost
5 estimate.

6 MR. ANDES: So we're talking about bubbling a
7 lot more water? 80 grams a second --

8 DR. ZENZ: Yeah. The Devon Avenue station is
9 probably about 25. These are, like, three times
10 bigger. They're pretty big. They're pretty big. If
11 it's a diffused aeration system, they're going to
12 cover a pretty big portion. There's going to be a
13 lot of bubbles.

14 MR. ANDES: Well, that leads to another
15 question. I want to delve into that a little bit,
16 particularly starting with the North Shore Channel,
17 and I have another map. This is titled CAWS Aeration
18 Station Locations Upper North Shore Channel. I have
19 a poster of this.

20 HEARING OFFICER TIPSORD: If there's no
21 objection, we will mark this map as Exhibit 221.

22 Seeing none, the CAWS Aeration Station
23 Locations Upper North Shore Channel map is marked as
24 Exhibit 221.

1 (WHEREUPON, said document was marked
2 Exhibit No. 221, for identification,
3 as of 3-3-09.)

4 MR. ANDES: Dr. Zenz, since I grew up in
5 Evanston and Skokie and my old house is on this map,
6 I have an unfair advantage. But let me ask you.

7 These are the three aeration locations that
8 would be proposed on the Upper North Shore Channel;
9 am I right?

10 DR. ZENZ: That is correct. These are three
11 stations, all of which are 80 grams per second.

12 MR. ANDES: And the first one is near Simpson
13 Street near Dyche Stadium? The second one is --

14 DR. ZENZ: I think that's Central Avenue.

15 MR. ANDES: Central Avenue right by the stadium?

16 DR. ZENZ: Yeah.

17 MR. ANDES: The second one is near Main Street?

18 DR. ZENZ: Simpson.

19 MR. ANDES: The first one is Central? The
20 second one is Simpson?

21 DR. ZENZ: It's just a little bit north of
22 Simpson.

23 MR. ANDES: Near the high school.

24 DR. ZENZ: You know it better than I do.

1 MR. ANDES: Yeah, I do.

2 And the third one is just near Main Street,
3 correct?

4 DR. ZENZ: Right.

5 MR. ANDES: And the locations of these three in
6 river miles, as I see on the chart, Table 4, are
7 337.9, 339.2, and 340.2. If my math is right, that's
8 about 2.3 miles between these three stations?

9 DR. ZENZ: Well, actually the distance between
10 the first one and the second one is only about a
11 mile, and the next one is a little bit over a mile.
12 They're pretty close together.

13 MR. ANDES: And you're talking pretty large
14 stations?

15 DR. ZENZ: Yeah.

16 MR. ANDES: Bubbling a lot of water?

17 DR. ZENZ: They should be.

18 MR. ANDES: And this is an area where we've
19 heard there's some recreational use?

20 DR. ZENZ: That's my understanding.

21 MR. ANDES: And can you tell us what your
22 understanding is of the impact that the bubbling has
23 in terms of the water quality?

24 DR. ZENZ: Well, we know, from our experience

1 with the Devon and Webster Avenue stations, that
2 boaters have a hard time getting past. In those
3 particular stations, you have a bore on shore. Then
4 you have a diffuser system in the bottom of the
5 river. You can probably intuitively understand that
6 the water level is just a little bit higher. You
7 have all this air. It creates a little bit of an
8 obstruction, and sometimes you have a hard time
9 getting past it. I've actually seen that. It
10 creates a little bit of a dam effect, and they have a
11 little trouble. It can be done. It is a little bit
12 of an obstruction. And aesthetically --

13 MR. ANDES: Are there any safety issues?

14 DR. ZENZ: Well, I don't know if it's an old
15 wives' tale or what. I'm probably getting off into
16 an area I should keep my big mouth shut. I know some
17 people said, if you ever fell into the river there,
18 you wouldn't be as buoyant as you'd like.

19 MR. ANDES: Buoyant in an area that's bubbling?

20 DR. ZENZ: Yeah. There's an old saying, if you
21 ever fall in an aeration tank, you'd sink real fast.
22 I don't know if that's true.

23 MR. ANDES: Let me ask you the same kind of
24 questions about the next exhibit, which is CAWS

1 Aeration Station Locations South Branch Chicago
2 River, Bubbly Creek, Chicago Sanitary and Ship Canal.

3 HEARING OFFICER TIPSORD: Dr. Lin has a
4 follow-up question first.

5 DR. LIN: You assign station number -- I mean,
6 mark the station number?

7 DR. ZENZ: Yeah, we didn't. I guess we should
8 have done that, Fred, so it follows the table. I
9 understand what you're saying.

10 HEARING OFFICER TIPSORD: But can you do that
11 now? Can you tell us now which one is which?

12 DR. ZENZ: Sure.

13 MR. ANDES: Let's go back for a minute.

14 On Upper North Shore Channel, are those
15 Stations 1, 2, and 3?

16 DR. ZENZ: Stations 1, 2, and 3 starting at the
17 top.

18 MR. ANDES: 1 is Central?

19 DR. ZENZ: Right

20 MR. ANDES: 2 is Simpson?

21 DR. ZENZ: Right.

22 MR. ANDES: And 3 is Main?

23 DR. ZENZ: That's correct.

24 MR. ANDES: Thank you.

1 DR. ZENZ: And I apologize. We probably should
2 have done that.

3 HEARING OFFICER TIPSORD: And then the new map,
4 CAWS Aeration Station Locations South Branch Chicago
5 River, Bubbly Creek, Chicago Sanitary and Ship Canal,
6 if there's no objection, we will mark that as
7 Exhibit 222. That's Exhibit 222.

8 (WHEREUPON, said document was marked
9 Exhibit No. 222, for identification,
10 as of 3-3-09.)

11 MR. ANDES: Dr. Zenz, why don't we walk through
12 where these stations are and what numbers they are.

13 DR. ZENZ: Well, the one that's the furthest
14 north just south of the junction of the Chicago River
15 mainstem with the South Branch, that's Station 4.

16 MR. TWAIT: I think Station 4 is on the North
17 Branch

18 MR. ANDES: Actually that would be 5, right?
19 Station 4 is up on the North Branch

20 DR. ZENZ: Yeah, you're right. I apologize.
21 We just don't have it on the map.

22 MR. ANDES: It's on the larger map of all the
23 aeration station locations, but here we're talking
24 about --

1 DR. ZENZ: It's 5. I apologize.

2 MR. ANDES: So the first three on the South
3 Branch are 5, 6, and 7; am I right?

4 DR. ZENZ: No, no. Up a little further.
5 That's 5.

6 MR. ANDES: So the three over on the right-hand
7 side of the map where -- for the transcript, are 5,
8 6, and 7?

9 DR. ZENZ: That's correct. As it says on the
10 table, 5 is just downstream of the junction with the
11 North Branch of the Chicago River. So that's 5. And
12 then 6 is the one -- oh, I don't know -- a mile or so
13 further downstream. And the last one on the South
14 Branch is 7.

15 MR. ANDES: That's at Halsted Street?

16 DR. ZENZ: Yes.

17 MR. ANDES: And those three are how far apart
18 based on the river miles?

19 DR. ZENZ: Between 5 and 6 is about -- It's
20 1.3 miles

21 MR. ANDES: And between 6 and 7?

22 DR. ZENZ: Is 1.2 miles.

23 MR. ANDES: So, again, we're talking about three
24 stations and about a two-and-a-half mile distance?

1 DR. ZENZ: Yes.

2 MR. ANDES: So that --

3 DR. ZENZ: There's a big sag there. That's why
4 they're so close together.

5 MR. ANDES: Okay.

6 DR. ZENZ: Big oxygen demand in that area.

7 MR. ANDES: And then you have three stations on
8 Bubbly Creek?

9 DR. ZENZ: That's correct.

10 MR. ANDES: And those are 8, 9, and 10, the
11 mouth, the mid point, and the head waters?

12 DR. ZENZ: Yeah. Eight is right at -- almost on the
13 South Branch, 9 is halfway down Bubbly Creek, and 10
14 at the beginning of the head waters.

15 MR. ANDES: And I know we don't have river miles
16 because Bubbly Creek is sort of different.

17 DR. ZENZ: Those are less than a mile apart.

18 MR. ANDES: Less than a mile between those three
19 stations?

20 DR. ZENZ: Yeah.

21 MR. ANDES: Okay. And then --

22 DR. ZENZ: In order of a half mile.

23 MR. ANDES: And then on the Sanitary and Ship
24 Canal, these are, I believe, Stations 11, 12, and 13

1 depicted?

2 DR. ZENZ: That's correct.

3 MR. ANDES: Because there are a couple more
4 stations farther south?

5 DR. ZENZ: Yes, there is.

6 MR. ANDES: They just aren't on this map?

7 DR. ZENZ: No, they're not on this map.

8 MR. ANDES: So these three stations, 11, 12, and
9 13, are about three-and-a-half miles apart total?

10 DR. ZENZ: Yeah. Eleven and 12 are exactly one mile
11 apart, and then between 12 and 13 about a mile and a
12 half. And the next one is a couple miles.

13 MR. ANDES: Again, these are the
14 80-gram-a-second stations? You said fairly large
15 stations?

16 DR. ZENZ: Yes.

17 MR. ANDES: To the extent there are any
18 recreational uses, the same issues as we talked about
19 on the North Shore Channel?

20 Okay. Thank you.

21 DR. ZENZ: And I'll just mention that, in our
22 integrated strategy, we will not just look at one
23 year of data. We will look at two years of data. So
24 these stations sizings could substantially increase

1 depending on what that situation is.

2 HEARING OFFICER TIPSORD: Anything further,
3 Mr. Andes?

4 MR. ANDES: No.

5 HEARING OFFICER TIPSORD: Anything else for
6 Dr. Zenz?

7 Dr. Zenz, thank you very much.

8 DR. ZENZ: You're welcome.

9 HEARING OFFICER TIPSORD: With that, we are
10 going to go ahead and take lunch. Let's try and be
11 back -- I have about 20 till now. Let's try and be
12 back right around 1:00 o'clock. Come back around
13 1:00. Thank you all.

14 (WHEREUPON, the hearing was adjourned
15 until 1:00 p.m., this same day.)

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1 STATE OF ILLINOIS)
2) SS:
3 COUNTY OF K A N E)
4

5 I, MARGARET R. BEDDARD, a Certified Shorthand
6 Reporter of the State of Illinois, do hereby certify
7 that I reported in shorthand the proceedings had at
8 the hearing aforesaid and that the foregoing is a
9 true, complete, and correct transcript of the
10 proceedings of said hearing as appears from my
11 stenographic notes so taken and transcribed by me.

12 IN WITNESS WHEREOF, I do hereunto set my hand at
13 Chicago, Illinois, this 24th day of March, 2009.

14

15

16

17

Margaret Beddard

18

Certified Shorthand Reporter

19

CSR Certificate No. 84-3565.

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22

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