

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: )  
 WATER QUALITY STANDARDS AND ) R08-09  
 EFFLUENT LIMITATIONS FOR THE ) (Rulemaking-  
 CHICAGO AREA WATERWAY SYSTEM ) Water  
 AND THE LOWER DES PLAINES )  
 RIVER: PROPOSED AMENDMENTS )  
 TO 35 Ill. Adm. Code Parts 301, )  
 302, 303 and 304 )

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**STATE OF ILLINOIS  
Pollution Control Board**

REPORT OF THE PROCEEDINGS held in the

above entitled cause before Hearing Officer Marie  
 Tipsord, called by the Illinois Pollution Control  
 Board, taken by Steven Brickey, CSR, for the State  
 of Illinois, 100 West Randolph Street, Chicago,  
 Illinois, on the 27th day of June, 2011,  
 commencing at the hour of 10:00 a.m.

A P P E A R A N C E S

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I N D E X

THE WITNESS: ADRIENNE NEMURA

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1 MS. TIPSORD: Good morning,  
2 everyone. My name is Marie Tipsord and I've been  
3 appointed by the Board to serve as Hearing Officer  
4 in this proceeding entitled Water Quality  
5 Standards and Effluent Limitations for the Chicago  
6 Area Waterway System and Des Plaines River  
7 Proposed Amendments to 35 Ill. Adm. Code 301, 302,  
8 303 and 304. This is Docket Number R08-9  
9 Subdocket C.

10 With me today to my immediate  
11 right is acting Chairman G. Tanner Girard, the  
12 presiding Board Member. To his right, Board  
13 Member Andrea Moore and to her right is Board  
14 Member Carrie Zalewski. To my far left is Board  
15 Member Thomas Johnson and to my immediate left is  
16 Alisa Liu from our technical unit. I just want to  
17 note for the record that both Anna Rao and Gary  
18 Blankenship are heading downstate for a hearing in  
19 Edwardsville tomorrow so they won't be able to be  
20 here. We're getting a lot of rulemakings and  
21 we're actually bumping up against one another. We  
22 actually had rulemaking hearings on the same day.  
23 So Member Blankenship is sorry to be missing us,  
24 but he is driving in this rain.

1 Today's hearing is the eighth  
2 day of hearing in Subdocket C. It is the 51st day  
3 overall in this proceeding. Today, we will hear  
4 the testimony of Adrienne Nemura and she will be  
5 questioned first by the IEPA, then Prairie Rivers  
6 Network and the Sierra Club. Ms. Nemura filed  
7 written responses to her pre-filed questions.  
8 Both the testimony and each set of answers will be  
9 marked as an exhibit and entered as if read.  
10 However, if there is a follow up to a specific  
11 question in order to keep the record clear and so  
12 that we are all on the same page we'll read the  
13 question and the answer into the record before we  
14 begin following.

15 Anyone may ask a question. I do  
16 ask that you raise your hand, wait for me to  
17 acknowledge you. After I have acknowledged you,  
18 please state your name and whom you represent  
19 before you begin your questions. Please speak one  
20 at a time. If you're speaking over each other,  
21 the court reporter will not be able to get your  
22 questions on the record. Please note that any  
23 question asked by a Board Member or staff are  
24 intended to help build a complete record for the

1 Board's decision and not to address any  
2 preconceived notion or bias. I would also like to  
3 take this opportunity to introduce to you four of  
4 the Board's summer interns. We have Ethan  
5 Pressly, Vermont Law School, Kristen Carl --  
6 sorry, Kristen, from DePaul. We have John Clark  
7 from SIU, great law school, and Erica Yee from  
8 Kent. Also a good law school. I happen to be  
9 partial to some. Dr. Girard?

10 MR. GIRARD: Good morning. Welcome  
11 to Hearing Day 51, is that right?

12 MS. TIPSORD: Mm-hmm.

13 MR. GIRARD: Hearing Day 51 in this  
14 rulemaking. We appreciate all the time and effort  
15 all the participants have put into this. We look  
16 forward to the testimony and questions today.  
17 Thank you.

18 MS. TIPSORD: With that, does anyone  
19 have anything preliminarily? Great. Let's have  
20 Ms. Nemura sworn in and we'll get her testimony.

21 WHEREUPON:

22 ADRIENNE NUMERA

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

1 MS. TIPSORD: Do you have a copy of  
2 Ms. Nemura's testimony to be admitted into the  
3 record?

4 MR. ANDES: I do. So you want the  
5 testimony and both sets of answers, is that right?

6 MS. TIPSORD: Yes.

7 MR. ANDES: All right.

8 MS. TIPSORD: Do you have those? If  
9 you do, that's great. We'll mark them all at  
10 once.

11 MR. ANDES: I have the testimony and  
12 both sets of answers. There's one attachment to  
13 one of the sets of answers that I don't have with  
14 me. We had difficulty printing it out this  
15 morning. I can have a copy sent over if you need  
16 it.

17 MS. TIPSORD: Okay. That's -- is  
18 that the District's report on dissolved oxygen?

19 MR. ANDES: Yes.

20 MS. TIPSORD: I thought I had a copy  
21 of that one. I do have a copy of that. I have a  
22 clean copy. So we'll put that one in now.

23 MR. ANDES: Okay.

24 MS. TIPSORD: If there's no

1 objection, we will mark the pre-filed testimony of  
2 Adrienne D. Nemura as Exhibit 465. Seeing none,  
3 it's Exhibit 465.

4 (Document marked as Hearing  
5 Exhibit No. 465 for  
6 identification.)

7 MS. TIPSORD: And the pre-filed  
8 responses to the IEPA's questions, their first.  
9 We'll mark as Exhibit 466 if there's no objection.  
10 Seeing none, it's Exhibit 466.

11 (Document marked as Hearing  
12 Exhibit No. 466 for  
13 identification.)

14 MS. TIPSORD: And, Fred, did this go  
15 with the District or with the Agency?

16 MR. ANDES: Prairie Rivers  
17 responses.

18 MS. TIPSORD: We'll amend them then.  
19 And then the answers to Prairie Rivers Network,  
20 Sierra Club, we'll mark as Exhibit 467 if there's  
21 no objection. Seeing none, it's Exhibit 467.

22 (Document marked as Hearing  
23 Exhibit No. 467 for  
24 identification.)



1 MS. TIPSORD: And the attachment to  
2 those responses which is Monitoring and Research  
3 Department Report Number 09-50 Continuous  
4 Dissolved Oxygen Monitoring in the Deep Draft  
5 Chicago Waterway System During 2008 dated August  
6 2009 from the Metropolitan Water Reclamation  
7 District of Greater Chicago will be marked as  
8 Exhibit 468 if there's no objection. Seeing none,  
9 it's Exhibit 468.

10 (Document marked as Hearing  
11 Exhibit No. 468 for  
12 identification.)

13 MS. TIPSORD: And, Ms. Williams, or,  
14 Ms. Diers?

15 MS. WILLIAMS: Fred, did you want to  
16 put the proposed regulatory language as an exhibit  
17 also before you reference it?

18 MR. ANDES: We can do that if  
19 there's going to be questions about that.

20 MS. TIPSORD: It has already been  
21 marked as a public comment. So we can just refer  
22 to that as a public comment number. It was not  
23 initially marked as a public comment, but we  
24 backed up and put it in.

1 MS. WILLIAMS: Do you know the  
2 number offhand?

3 MS. TIPSORD: Yes. PC 1031, since  
4 it came in with the pre-filed answers, John just  
5 included it and when I realized -- when I started  
6 looking at pre-filed answers, I realized I hadn't  
7 put it in as a public comment because I figured  
8 we'd be talking about it.

9 MS. WILLIAMS: Thank you. For the  
10 record, PC 1031 is the District's proposed aquatic  
11 use and dissolved oxygen water quality standards  
12 and implementation procedures filed with the Board  
13 on June 17th, 2011. Just to be clear. If I have  
14 a follow up on one of her answers, you'd like me  
15 to read the question into the record and have her  
16 read the pre-filed answer and then follow up?

17 MS. TIPSORD: Yes, I think that  
18 makes the most sense.

19 MS. WILLIAMS: Good morning,  
20 Ms. Nemura. Good to have you back.

21 THE WITNESS: Good morning.

22 E X A M I N A T I O N

23 BY MS. WILLIAMS

24 Q. I am going to get us started off

1 with question three and see how it goes. Question  
2 three reads "On pages two to three of your  
3 pre-filed testimony, you state, quote, because it  
4 is not possible to eliminate or fully treat these  
5 wet weather sources in the foreseeable future, the  
6 impact of these events on dissolved oxygen levels  
7 in the CAWS needs to be considered when  
8 establishing the highest attainable designated  
9 uses for these waterways." Question A, how long  
10 do you consider, quote, foreseeable future?

11 A. At least until 2029, 18 years when  
12 TARP is fully implemented and probably longer. I  
13 believe a wet weather limited use will still be  
14 needed after TARP is fully implemented. This is  
15 because there will still be discharges from CSO'S  
16 and municipal separate storm sewers and overlaying  
17 runoff to the tributaries.

18 I don't see how these discharges  
19 can be eliminated or fully treated. This is going  
20 to be a long term issue.

21 MS. WILLIAMS: Can you tell us what  
22 contributions these municipal separate storm  
23 sewers and overlaying runoff to the tributaries,  
24 what contributions these sources make to low

1 dissolved oxygen levels?

2 A. No.

3 MR. ANDES: You mean you can't tell  
4 us what specific contributions?

5 THE WITNESS: Correct.

6 MR. ANDES: Can you discuss  
7 generally what kinds of contributions they make?

8 THE WITNESS: Yes. When the  
9 District analyzed the continuous dissolved oxygen  
10 monitoring, or CDOM data, they looked at the  
11 discharges of CSO's and the pumping stations and  
12 they did see dissolved oxygen impacts from these  
13 other sources at low rainfall events and these  
14 other sources would be significantly higher, in my  
15 opinion, during larger rainfall events.

16 BY MS. WILLIAMS:

17 Q. So explain what you mean in low  
18 rainfall events they saw an impact?

19 A. When there is rain, it takes a while  
20 for the interceptors to fill up that would trigger  
21 the gravity CSO's and then it takes larger rains  
22 when the Water Reclamation plants reach their  
23 practical maximum flow and then the pump stations  
24 need to operate.

1                   So even when you don't have  
2 CSO's or pump station events you do see impacts of  
3 other wet weather sources and based on general  
4 knowledge of the Chicago Area Waterways you would  
5 see significant impacts during the high flow  
6 events.

7                   For example, even when the  
8 District did a hypothetical simulation of their  
9 water quality model where they eliminated the  
10 gravity CSO's, you still had instances where  
11 dissolved oxygen was significantly impacted by  
12 other sources.

13               Q.       So let's talk about that. Will you  
14 clarify what hypothetical simulation you're  
15 referring to and whether it's in the record?

16               A.       In my previous testimony, I  
17 summarized results of the simulations that were  
18 conducted for the District with their water  
19 quality.

20               Q.       Can you identify more specifically  
21 where that is in the record?

22                       MR. ANDES: In her previous --

23 BY MS. WILLIAMS:

24               Q.       Are you saying you summarized that

1 or you provided that information?

2 A. I provided that information in my  
3 testimony.

4 Q. And which attachment?

5 MR. ANDES: I don't think we have  
6 that handy. We can provide that if you don't --

7 MS. WILLIAMS: You're saying you  
8 don't have the reference handy or you don't know  
9 whether it's in the record at this time?

10 MR. ANDES: We know it's in the  
11 record. We just don't know the specific  
12 attachment to her previous testimony.

13 MS. WILLIAMS: Okay. If you can  
14 find that at the break, that would be helpful  
15 because it wasn't clear to me.

16 BY MS. WILLIAMS:

17 Q. Can you tell us, Ms. Nemura, this  
18 hypothetical simulation, did it eliminate pump  
19 station discharges?

20 A. No.

21 Q. Why not?

22 A. The question that the District  
23 wanted to address with the simulation was if CSO  
24 discharges could be eliminated, would they be able

1 to -- what level of dissolved oxygen would be  
2 attained in the waterways.

3 Q. Would you agree that pump stations  
4 are really just very large CSO's that are  
5 collected together?

6 A. Because of the operational nature of  
7 the waterways where the District has to ensure the  
8 flooding of extreme proportions is limited, the  
9 CSO discharges that occur at the pump stations I  
10 think would represent a blend of CSO and very  
11 large storm water events.

12 Q. Would the wet weather limited use  
13 you proposed still be necessary if those  
14 discharges were eliminated?

15 A. Could you repeat the question?

16 Q. If the pump station discharges were  
17 eliminated, would the wet weather limited use  
18 still be necessary in your opinion?

19 A. I believe it would.

20 MR. ANDES: You believe it's --

21 BY MS. WILLIAMS:

22 Q. What do you base that on?

23 A. Because you still have dissolved  
24 oxygen impacts at locations that are not affected

1 by the pump station discharges during wet weather.

2 Q. So would any dissolved oxygen impact  
3 justify a wet weather limited use?

4 A. Within this unique system because of  
5 the wet weather sources that have to all be  
6 funneled to the Chicago Area Waterways, I suspect  
7 that you would still need a wet weather limited  
8 use provision.

9 Q. With regard to the modeling  
10 simulation you mentioned, you mentioned, I  
11 believe, that that hypothetical simulation  
12 concluded a wet weather limited use would still be  
13 needed, is that an accurate paraphrase of your  
14 testimony?

15 A. I did not say that.

16 Q. Can you correct -- what did it  
17 include?

18 A. The results of the simulation  
19 concluded that even if gravity CSO's would somehow  
20 be hypothetically eliminated, there would still be  
21 impacts to dissolved oxygen that would be below  
22 the dry weather criteria.

23 Q. What do you mean by dry weather  
24 criteria?



1           A.       Dry weather criteria would be the  
2 dissolved oxygen that is needed to protect the  
3 aquatic life under conditions that are not  
4 affected by wet weather sources.

5           MR. ANDES:   Were you talking there  
6 in terms of dry weather criteria about the IEPA's  
7 proposed criteria?

8           THE WITNESS:   Correct.

9           MR. ANDES:   In terms of gravity  
10 CSO's, let's talk for a minute about what you mean  
11 by that. Does that mean the several hundred CSO  
12 discharge points on the CAWS other than the pump  
13 stations?

14          THE WITNESS:   Correct.

15          MR. ANDES:   Do you believe it's at  
16 all feasible to eliminate every one of those  
17 stations?

18          THE WITNESS:   No.

19          MR. ANDES:   Do you believe it's  
20 feasible to eliminate the pump station CSO's?

21          THE WITNESS:   No.

22 BY MS. WILLIAMS:

23           Q.       Why not?

24           A.       When it rains, there's a tremendous

1 amount of water that is funneled to the manmade  
2 waterways and even if it were possible to somehow  
3 eliminate or significantly reduce the impervious  
4 area in the watershed that is receiving all this  
5 rainfall, I can't see what you would do with that  
6 water.

7 Q. Have you studied the engineering  
8 design of the Tunnel And Reservoir Project?

9 A. I have not.

10 Q. Do you know what -- I just want to  
11 be clear because we don't have the attachment in  
12 front of us from your testimony. What dissolved  
13 oxygen number did that hypothetical simulation  
14 target?

15 A. It was the Illinois EPA proposed  
16 criteria.

17 Q. And does that include 5.0 mg/L of  
18 dissolved oxygen in certain waters?

19 A. I'd have to check.

20 MR. ANDES: It appears attachment  
21 four to her previous testimony is what we're  
22 referring to. That's the testimony that was filed  
23 back in 2008.

24 MS. WILLIAMS: Thank you, Fred.

1 BY MS. WILLIAMS:

2 Q. Let's move onto question four. I  
3 think I'll be able to skip some of my follow ups  
4 on that question four. Are there benefits to  
5 elimination or treating CSO -- that's not question  
6 four. Sorry about that.

7 MR. ETTINGER: Sounded like a  
8 particularly good question.

9 MS. WILLIAMS: I noticed there was a  
10 misspelling in that.

11 BY MS. WILLIAMS:

12 Q. Question four. On page two of your  
13 pre-filed testimony you state that, quote, it is  
14 my professional opinion that a wet weather  
15 provision needs to be included in the water  
16 quality standards for protection of aquatic life  
17 uses in the CAWS, end quote. How will a wet  
18 weather provision help to protect aquatic life  
19 uses in the CAWS?

20 A. Let me clarify. There are water  
21 quality standards for protection of aquatic life  
22 use. This provision needs to be included in the  
23 standard because if there is no provision the  
24 standards cannot be attained and standards need to

1 be attainable. The standards will still be  
2 protective even with this provision as discussed  
3 in Ms. Wasik's testimony.

4 Q. What do you mean the standards need  
5 to be attainable? Where is the basis for that  
6 statement?

7 A. That is the basis of the whole use  
8 attainability analysis provision under the Clean  
9 Water Act.

10 Q. So would you agree that its use  
11 designations that are reviewed for their  
12 attainability under the Clean Water Act?

13 A. Under the Clean Water Act, you would  
14 set appropriate use designations that could be  
15 attainable and with respect to dissolved oxygen,  
16 for example, take the Cuyahoga River which is a  
17 dredged navigation system. They had chronically  
18 low dissolved oxygen. They had CSO discharges.  
19 They developed a computer model of the ship  
20 channel and they looked at hypothetical  
21 simulations with their model to determine whether  
22 the uses could be met and in order to determine  
23 whether the uses could be met you have to use some  
24 kind of associated criteria.

1 Q. Why?

2 A. Because if the uses you're trying to  
3 protect which is like the Cuyahoga deals with  
4 fish, fish need a certain level of dissolved  
5 oxygen at times to survive under the appropriate  
6 environmental conditions associated with where  
7 they're living.

8 So with the modeling that was  
9 done for the Cuyahoga, they looked at whether you  
10 could achieve the 5.0 mg/L dissolved oxygen that  
11 would be necessary to protect an assumed fish  
12 population and they learned that unless they were  
13 somehow to stop dredging meaning instead of a 20  
14 plus foot channel bring it back to, say, 10 to 12  
15 feet, there was no way they could ever achieve  
16 that 5.0 mg/L dissolved oxygen.

17 So that is how they determined  
18 that the appropriate aquatic life use for that  
19 system was during a particular season. It was  
20 suitable only for fish passage and then once they  
21 established that it was only suitable for fish  
22 passage they looked at what the appropriate  
23 dissolved oxygen criteria would be to accompany  
24 that use.

1 Q. So did the chicken come first or the  
2 egg?

3 A. I don't know how to answer your  
4 question.

5 Q. That's fine. I'll withdraw it. I  
6 don't think you answered the original question,  
7 which maybe we'll reword to make clearer. Isn't  
8 it true that its use is that needs to be  
9 attainable, that there's nothing in the Clean  
10 Water Act or elsewhere that says water quality  
11 criteria needs to be attainable?

12 A. Well, the Clean Water Act requires  
13 that once uses are established that the states  
14 also adopt water quality standards which consist  
15 of the designated uses, the narrative or numeric  
16 criteria and antidegradation provisions. So  
17 typically what is done under use attainability  
18 analysis is to not only look at, say, what is the  
19 appropriate -- or what is the current aquatic  
20 community, but also look at what could potentially  
21 be attainable if the physical and chemical  
22 parameters would be addressed and the physical and  
23 chemical parameters are often tied to what the  
24 appropriate criteria would be.

1 Q. Are you saying -- I just want to  
2 make sure I got my question answered. Does that  
3 mean your answer is, no, criteria must also be  
4 attainable?

5 A. If you're establishing the highest  
6 attainable use with the use attainability analysis  
7 and if the criterias that are needed to protect  
8 that use are also attainable, then the criteria  
9 would have to be attainable.

10 Q. What if you establish the highest  
11 attainable use, but for some reason the criteria  
12 was not attainable?

13 A. I don't understand how that's  
14 possible. Every use attainability analysis that  
15 I've been involved in or researched never looks at  
16 whether some use is attainable with criteria that  
17 cannot be met.

18 MR. ANDES: If the criterion is not  
19 attainable, doesn't it stand to reason then that  
20 the use is not attainable?

21 THE WITNESS: Yes.

22 BY MS. WILLIAMS:

23 Q. So you've looked at quite a few  
24 recreational use attainability analyses, right?

1           A.       I have, but I thought we were  
2       discussing aquatic life?

3           Q.       So you haven't looked at a situation  
4       where swimming is occurring currently unattainable  
5       as a use, but bacteria criteria can't be met?

6           A.       If you have a situation where under  
7       non-wet weather impacted conditions swimming can  
8       be attained, then you can say the use during these  
9       particular conditions is swimming. However,  
10       during wet weather when the bacteria levels are  
11       high that's why US EPA has included a provision  
12       like in Indiana where it's clear that during wet  
13       weather conditions the criteria cannot be met and,  
14       therefore, the use of swimming is not appropriate.

15                       That's the same thing, for  
16       example, in the Huron River watershed where I live  
17       a woman wanted to swim the entire length of the  
18       river and she actually had people calling her to  
19       say has it rained in this portion of the river and  
20       then she knew it wasn't safe to swim there and  
21       then she would delay her swim. So the concept of  
22       a wet weather limited use is appropriate even  
23       though the Huron River when it's not raining is  
24       safe for swimming.



1 MR. ANDES: Isn't there also a  
2 difference, and perhaps you can clarify this for  
3 us, between having an exceedance of a standard at  
4 one given point versus concluding that a given  
5 standard is not attainable in a given waterbody?

6 THE WITNESS: Yes.

7 MR. ANDES: Do you want to explain  
8 how those differ? If you have a temporary  
9 exceedance in a given waterbody, does that  
10 necessarily indicate that the use is not  
11 attainable?

12 THE WITNESS: No.

13 MR. ANDES: But here as to the CAWS,  
14 was it your testimony that during wet weather  
15 conditions this use is simply not attainable?

16 THE WITNESS: Yes.

17 BY MS. WILLIAMS:

18 Q. That will sort of segway into my  
19 next area. Let's skip ahead to question seven.  
20 I'm going to read the intro, but I'm going to ask  
21 a follow up related to 7B. On page four of your  
22 testimony, you state, quote, establishing a WWLU,  
23 which recognizes that there will be periods when  
24 the dissolved oxygen criteria cannot be met will

1 not result in degraded water quality, end quote.  
2 B, do dissolved oxygen values of zero mg/L  
3 constitute degraded water quality?

4 MS. TIPSORD: Just for the record,  
5 WWLU is wet weather limited use. That's the first  
6 time we've used it in a while.

7 MS. WILLIAMS: Thank you.

8 MS. TIPSORD: Go ahead, Ms. Nemura.

9 BY THE WITNESS:

10 A. If the resident fish are able to  
11 tolerate intermittent periods of zero dissolved  
12 oxygen, then I don't see how providing a wet  
13 weather limited use will degrade water quality.  
14 The wet weather limited use is based on the  
15 current understanding of wet weather impacts and  
16 will not result in more hours of low dissolved  
17 oxygen.

18 BY MS. WILLIAMS:

19 Q. Is it possible that these low  
20 dissolved oxygen levels are not tolerated by the  
21 highest attainable fish community in the CAWS?

22 A. The habitat study showed that  
23 habitat was limiting the fish community in the  
24 CAWS and the data showed that the resident fish

1 community was self supporting given the different  
2 types of pollution tolerant fish that were present  
3 in the system because --

4 Q. Are you saying the study concluded  
5 that DO was not limiting fish in the CAWS?

6 A. The study concluded that the  
7 limitations to the resident fish community were  
8 habitat driven.

9 Q. Primarily or solely?

10 A. There was -- the habitat factors  
11 that were evaluated showed that improvement -- if  
12 hypothetically you could improve those habitat  
13 factors, you might see a response -- a positive  
14 response in the fish community. The dissolved  
15 oxygen was a factor, but was insignificant.

16 Q. Didn't the study show that the  
17 highest quality fish community occurred in the  
18 areas with the lowest DO values?

19 MR. ANDES: Are you going to ask her  
20 the same questions you asked Mr. Bell because I  
21 don't want her to be put at the risk of  
22 inconsistent testimony? We'll just refer to his  
23 testimony. You already asked that question of  
24 him.

1 MS. WILLIAMS: I think she is  
2 interpreting that study differently than he  
3 testified so I would like to clarify her  
4 interpretation of the study. I don't think I'm  
5 going to ask her all the questions I asked  
6 Mr. Bell. That was a long day.

7 MR. ANDES: I assume you're not  
8 going to ask her any of the questions you asked  
9 Mr. Bell because that would be repetitive.

10 MS. WILLIAMS: I can repeat the  
11 question if you want.

12 MS. TIPSORD: Before we do that,  
13 let's be clear because we are starting fresh with  
14 a new transcript. We're talking about the CAWS  
15 habitat study done by Limnotech when we talk about  
16 the study and habitat study just for purposes of  
17 the record.

18 MS. WILLIAMS: The Habitat  
19 Evaluation Report. There's a Habitat Evaluation  
20 Report and a Habitat Improvement Report and I'm  
21 referring to the Habitat Evaluation Report, is  
22 that the one you're referring to?

23 THE WITNESS: Yes.

24 MS. TIPSORD: From Limnotech. Ask

1 your question again and I would agree if she is  
2 interpreting the study then if there's some  
3 inconsistency we'll have to clear that up.

4 BY MS. WILLIAMS:

5 Q. I would like to know if you agree  
6 that the study showed that the highest quality  
7 fish communities occurred in the areas with the  
8 highest DO values?

9 A. I don't agree with that.

10 Q. Did you also review the habitat  
11 improvement study?

12 A. Yes.

13 Q. Do you agree that study showed that  
14 fish would possibly benefit from improved DO  
15 values?

16 A. No.

17 Q. In 7B, you use the term tolerate.  
18 You say resident fish are able to tolerate  
19 intermittent periods of zero dissolved oxygen.  
20 Can you explain what you mean by tolerate?

21 A. They -- the resident fish community  
22 is primarily pollution tolerant fish and the data  
23 suggests that you can have these periods of low  
24 dissolved oxygen that the fish are either able to

1 tolerate or they are able to go to an adjacent  
2 segment to wait out the impacts of the wet  
3 weather.

4 Q. Now, when you say they are -- or --  
5 they tolerate or they avoid -- tolerate or avoid?

6 A. Avoid.

7 Q. Do we know which one or are you  
8 saying some fish tolerate and some avoid?

9 A. There is literature studies that  
10 have shown that even juvenile fish can experience  
11 dissolved oxygen levels that are less than 4.0 or  
12 5.0 mg/L and not show problems. So --

13 Q. For how long?

14 A. That was covered in Ms. Wasik's  
15 testimony, but under existing conditions there are  
16 low dissolved oxygen events that can occur for  
17 multiple days in a particular segment and the  
18 adjacent segments the dissolved oxygen is not low  
19 and if the fish were not able to tolerate or avoid  
20 these low dissolved oxygen pockets then you would  
21 see fish kills and we don't see fish kills,  
22 chronic fish kills in the system like I've seen in  
23 other systems.

24 Q. So I think what I'm just trying to

1 simply get at with my question is whether there's  
2 any science in this system that tells us whether  
3 these fish are able to tolerate dissolved oxygen  
4 or whether they leave if we know. Do we know?

5 A. There is some preliminary research  
6 that's being conducted to determine -- how these  
7 fish are able to tolerate or avoid these low  
8 dissolved oxygen pockets.

9 Q. What is the scope of that research?

10 A. It's a research project under the  
11 Water Environment Research Federation that  
12 Limnotech and the University of Illinois and other  
13 researchers are conducting.

14 MR. ETTINGER: Can I have one quick  
15 question?

16 MS. WILLIAMS: Yes.

17 MR. ETTINGER: I've been generally  
18 holding off this time, but you mentioned you had  
19 seen other systems with chronic fish kills. Which  
20 systems have you seen that were like that?

21 MS. TIPSORD: Albert, you need to  
22 identify yourself.

23 MR. ETTINGER: I am Albert Ettinger.  
24 I represent several environmental organizations in

1 this proceeding. Do you remember the question?

2 THE WITNESS: Yes. I was at the  
3 Metropolitan Washington Council of Governments in  
4 Washington DC and my responsibility was to  
5 evaluate water quality and water resources issues  
6 in the Potomac and Anacostia Rivers. The  
7 Anacostia is a little fresh estuary and because of  
8 the hydraulic conditions in estuary and because of  
9 impacts of wet weather sources there were periods  
10 during the summer where there were chronic fish  
11 kill problems due to low dissolved oxygen.

12 MR. ETTINGER: What is a chronic  
13 fish kill problem as opposed to an occasional fish  
14 kill problem?

15 THE WITNESS: A chronic fish kill  
16 problem is seeing fish kills that are reported and  
17 observable and quantifiable on an annual,  
18 semiannual basis and there is a direct correlation  
19 between these fish kills and the water quality  
20 conditions that are measured at the time.

21 Q. Is that the only one that you were  
22 studying or that you know of in which you  
23 experienced chronic fish kills that you were  
24 talking about?



1           A.       Yes.

2           Q.       Did the City of Washington then  
3 decide to just put up with it and change the  
4 standards applicable to the Potomac or did they  
5 take steps to address their CSO's?

6                   THE WITNESS: They have been taking  
7 steps to address their CSO's, but they only took  
8 those steps after extensive water quality studies  
9 to help determine whether corrective actions would  
10 improve the water quality conditions such that the  
11 water quality would not hopefully result in these  
12 fish kill situations and I, in particular, were  
13 involved in those studies.

14                   MR. ETTINGER: Thank you.

15           BY MS. WILLIAMS:

16           Q.       Let's move onto 11. Question 11.  
17 Explain how, quote, the appropriateness of the  
18 trigger and the maximum duration for applying a  
19 wet weather limited use designation could be  
20 examined periodically, end quote. A asks would  
21 the reexamination still be required?

22           A.       Not necessarily. The annual reports  
23 would contain the data needed to alert the  
24 District, Illinois EPA or a member of the public

1 that reexamination might be in order. Or if major  
2 changes were made to the operation of the Chicago  
3 Area Waterway System, the appropriateness of the  
4 wet weather limited use could be reexamined.

5 Q. Does the Agency have the burden of  
6 proving that the wet weather limited use  
7 designation is no longer needed?

8 MR. ANDES: I'm sorry. Are you  
9 talking about would Illinois EPA?

10 MS. WILLIAMS: Correct.

11 BY MS. WILLIAMS:

12 Q. Would Illinois EPA have the burden  
13 of proving to the Board that the wet weather  
14 limited use designation is no longer needed?

15 A. Well, the question was related to  
16 the trigger and the duration and in the annual  
17 reports that the District would prepare, they  
18 would provide data to the Agency about the trigger  
19 and the duration and how often the wet weather  
20 limited use was actually needed.

21 Q. Will the District have to prove that  
22 the trigger and the duration was still needed?

23 A. I don't understand your question.

24 MR. ANDES: Is it accurate to say

1 that you believe on a long-term basis the limited  
2 use will be needed, it's just a question of the  
3 specific details of it?

4 THE WITNESS: Yes.

5 MS. TIPSORD: I guess what  
6 Ms. Williams may be trying to get at when you say  
7 reexamine would you envision this part of the  
8 rulemaking, would you envision this part of the  
9 District's permit would be reexamined periodically  
10 to look at this trigger or would this be set in a  
11 rule? I mean, how do you envision this  
12 reexamination working?

13 THE WITNESS: I believe that the  
14 District as part of their permit requirement would  
15 be required to provide annual reports that  
16 contained all of the continuous dissolved oxygen  
17 monitoring data, all of the rainfall data, and  
18 evaluation of the dissolved oxygen conditioning  
19 during dry and wet weather periods. They would  
20 also include specific details about when the wet  
21 weather limited use was actually needed which  
22 would include which rainfall events were  
23 associated with that.

24 Until something significant were

1 to happen, say, you know, TARP was fully  
2 implemented or the diversions associated with Lake  
3 Michigan water if you could somehow get more fresh  
4 water into the system or there were some major  
5 efforts to reduce storm water or tributary loads  
6 or other problems that the data would show that  
7 this wet weather limited use was still needed in  
8 each of those annual reports.

9 At any time as part of the  
10 triennial water quality standards review process,  
11 someone could say we've been looking at these  
12 reports and we have been looking at, you know,  
13 conditions that suggest that perhaps the wet  
14 weather limited use is no longer appropriate for  
15 this particular segment, for example, then the  
16 data would be available to suggest that perhaps  
17 the standards should be changed for that  
18 particular location.

19 MR. ANDES: So would it ordinarily  
20 be the case that Illinois EPA would initiate that  
21 change in their rule?

22 THE WITNESS: Yes.

23 BY MS. WILLIAMS:

24 Q. Good. Now, we're back to my first

1 question. Would the Agency have the burden of  
2 proving to the Board in that context that the wet  
3 weather limited use designation is no longer  
4 needed or would MWRD be required to demonstrate  
5 that the wet weather limited use is still  
6 required?

7 A. I don't know the Agency rules.

8 Q. If a higher use were to become  
9 attainable, would it be required to be adopted?

10 A. Yes.

11 Q. Let's jump onto 13. This should be  
12 quick. Question 13, will the wet weather limited  
13 use still work if the Board adopts the Agency's  
14 aquatic life use designations rather than the  
15 categories proposed by MWRDGC? Why or why not?

16 A. Possibly. Additional study would  
17 probably be needed to evaluate what facilities  
18 would be needed during dry weather, but I believe  
19 a wet weather limited use would still be needed.

20 Q. A, explain why the wet weather  
21 limited use is not needed for the category three  
22 waters in MWRD's proposal?

23 A. There is no minimum dissolved oxygen  
24 criteria associated with the narrative criteria

1 for category three waters.

2 Q. So it's your testimony that the wet  
3 weather limited use is not needed for category  
4 three based on the criteria that's been proposed,  
5 is that correct?

6 A. The category three waters have a  
7 separate designated use associated with them and  
8 those category three waters do not include or  
9 would not include numeric criteria and the  
10 narrative criteria would be used to protect the  
11 fish that use those category three waters. And  
12 the wet weather limited use is needed for category  
13 one or category two waters because there is a  
14 numeric criteria associated with those uses that  
15 cannot be met during wet weather.

16 Q. So when I ask the question the wet  
17 weather limited use isn't needed for the category  
18 three waters based on the criteria proposed, the  
19 answer is yes? It was just a yes or no question.  
20 I think you answered it yes?

21 A. The category three waters have a  
22 different aquatic life use and they do not --

23 Q. So do the category one and two,  
24 correct? They have their own use also; one, two

1 and three?

2 A. Right.

3 Q. So the reason that the category  
4 three waters do not need the overlaying additional  
5 wet weather use as you're calling it is because of  
6 the different criterion, correct?

7 A. No, they have a different use.

8 Q. B, does the narrative criteria  
9 applicable to these waters allow the dissolved  
10 oxygen levels to fall to zero?

11 A. At times, these waters already have  
12 dissolved oxygen less than 1.0 mg/L and sometimes  
13 zero. So adopting narrative criteria would not  
14 allow anything worse. However, the narrative  
15 criteria still protects against adverse impact  
16 such as fish kills.

17 Q. Explain how the narrative criteria  
18 proposed by MWRD protects against adverse impacts?

19 A. It would be -- that provision would  
20 be included in the water quality standards.

21 Q. But how does the provision that is  
22 proposed to be included in the water quality  
23 standard and I'll reference it if I can -- would  
24 be the proposed 302.405(d), I believe. How does

1 that provision -- what about that language would  
2 protect against adverse impacts?

3 A. Can you repeat the question, please?

4 Q. The original question was how does  
5 the narrative criteria protect against adverse  
6 impacts?

7 A. With the narrative as --

8 Q. What part of the narrative? What  
9 narrative language? How?

10 A. The proposal states in Public  
11 Comment 1031 Section 302.405(d) for the Chicago  
12 Area Waterway System severely limited aquatic life  
13 waters listed in Section 303.234 waters must  
14 maintain sufficient dissolved oxygen  
15 concentrations to prevent offensive conditions as  
16 required in Section 302.203 of this part.

17 Q. Let's stop at that first sentence.  
18 Does that first sentence help protect against  
19 adverse impacts?

20 A. Yes.

21 Q. Okay. How?

22 A. Offensive conditions.

23 Q. So that's directed towards impacts  
24 on aquatic life?



1           A.       It could be odor. It could be other  
2 things.

3           Q.       Go ahead.

4           A.       The next sentence says "Quiescent  
5 and isolated sectors listed in this section must  
6 maintain sufficient dissolved oxygen  
7 concentrations to protect their limited ecological  
8 functions and transient aquatic communities."

9           Q.       So how does that protect aquatic  
10 life uses?

11          A.       I'm sorry?

12          Q.       How does that protect the  
13 residents -- what does that do to protect against  
14 adverse impacts? That's your term. Adverse  
15 impacts.

16          A.       It says that -- it essentially is  
17 saying that you have a resident fish community  
18 already. You have those quiescent and isolated  
19 segments in the waterways that have certain  
20 habitat and flow and dissolved oxygen conditions  
21 and those segments are supporting a current fish  
22 community that exists throughout waterways. They  
23 did play a role in supporting that fish community  
24 and so the narrative language requiring conditions

1 to be supportive of their limited ecological  
2 function and transient -- and used by transient  
3 aquatic communities must be preserved.

4 MR. ANDES: So if --

5 BY MS. WILLIAMS:

6 Q. What is a transient aquatic  
7 community?

8 A. It means that the fish may at times  
9 swim into these segments, but they don't stay  
10 within that segment on a routine basis because  
11 take, for example, Bubbly Creek where its subject  
12 to rapid changing functions or changing conditions  
13 if the fish were to hang out in Bubbly Creek  
14 during some of these events, there more than  
15 likely would be fish kills.

16 MR. ANDES: But they don't actually  
17 hang out there?

18 THE WITNESS: Correct.

19 MR. ANDES: And if you had a  
20 situation where there were adverse impacts such  
21 that the limiting current functions weren't  
22 supported or the limited fish community right now  
23 were not supported or adversely effected so your  
24 reading of that would be a violation of this

1 narrative standard?

2 THE WITNESS: Yes.

3 MR. ETTINGER: How would we know  
4 that?

5 THE WITNESS: Fish monitoring data  
6 would be used as well as -- there have been other  
7 systems. For example, on the Shenandoah, for  
8 example, in my native State of Virginia where the  
9 anglers have actually noted a decline in the fish  
10 community or problems with their typical fish  
11 community and have alerted state agencies that  
12 they're seeing a problem. That could be used to  
13 trigger a study. The Agency could say data is  
14 suggesting that this is a problem and they could  
15 require additional study in the District's permits  
16 at any time.

17 MR. ETTINGER: Okay.

18 BY MS. WILLIAMS:

19 Q. So do you consider all of Bubbly  
20 Creek to be an isolated sector?

21 A. I'm sorry?

22 Q. Do you consider all of Bubbly Creek  
23 to be an isolated sector?

24 A. Yes.

1 Q. Do you know how long it is?

2 A. How long Bubbly Creek is?

3 Q. Yes.

4 A. I did it one time. I can't recall.

5 Q. Do all -- are all of the waters  
6 listed under category three both quiescent and  
7 isolated all the time or some of the time?

8 A. Quiescent some of the time.

9 Q. So does the water have to be both  
10 quiescent and isolated for this standard to apply?

11 A. The standard includes a list of the  
12 segments that belong in category three.

13 Q. So is the conclusion that when it  
14 says "Quiescent and isolated sectors listed in  
15 this section," does that mean all the sections  
16 listed are quiescent and isolated or only the ones  
17 that are quiescent and isolated have this  
18 criteria?

19 A. Right. That is a general  
20 description. Ms. Wasik's testimony includes the  
21 reasons as to why certain segments are considered  
22 category three segments.

23 Q. Do you know if any of the category  
24 three segments besides Bubbly Creek were studied

1 for this proceeding?

2 MR. ANDES: Can you clarify what you  
3 mean by study?

4 BY MS. WILLIAMS:

5 Q. Any way. Was habitat data,  
6 biological data, chemical data studied in any way?

7 A. Ms. Wasik's testimony included  
8 information about why the segments are different  
9 from category one or category two waters.

10 Q. I agree, but I think that testimony  
11 also indicated those were not studied. So I'm  
12 trying to see if you can help me understand how we  
13 will justify this lower use category for waters  
14 that have not been studied, if you know?

15 MR. ANDES: Let me see if I can  
16 expand the net.

17 MS. WILLIAMS: Can she answer first  
18 or no?

19 MR. ANDES: Go ahead.

20 BY THE WITNESS:

21 A. Can you repeat your question,  
22 please?

23 MS. WILLIAMS: Steven, can you read  
24 it back?

1 (Whereupon, the record was read  
2 as requested.)

3 BY THE WITNESS:

4 A. Well, for example, the Grand Calumet  
5 River which was not evaluated by Limnotech during  
6 the physical habitat assessment exhibits stagnant  
7 conditions during dry weather. 75 percent of the  
8 sediment samples showed toxicity. Between 2001  
9 and 2008, only three fish species were collected  
10 from the Grand Calumet River. Other information  
11 regarding beneficial use impairments on the Grand  
12 Calumet River can be found on the US EPA website  
13 as an area of concern and there are stagnant  
14 conditions during dry weather and a preponderance  
15 of fine, green, organic toxic sediments and that  
16 is why the District proposed to designate the  
17 Grand Calumet River as a category three water.

18 Q. Do you know --

19 A. So I don't agree these systems  
20 weren't, quote, studied.

21 Q. So you feel they were studied. Can  
22 you tell us what is the collateral channel that's  
23 listed? In this list of segments, we have South  
24 Fork South Branch Chicago River, A, B, Grand

1 Calumet River, C, North Branch Canal. Can you  
2 tell us where that is?

3 A. The Collateral Channel is across the  
4 river from Bubbly Creek along the Chicago Sanitary  
5 and Ship Canal just south of Bubbly Creek.

6 Q. That might help. That might merit  
7 some clarification at some point. Is there any  
8 map that identifies the other off channel slips  
9 that are referred to in this last item?

10 A. There are maps within specifics. I  
11 would have to defer to the District.

12 MR. ETTINGER: I think I put in an  
13 exhibit at the last hearing that had proposed for  
14 a number of those.

15 MS. WILLIAMS: Have you looked at  
16 all --

17 MR. ANDES: I'm sorry. I can't hear  
18 anything --

19 MR. ETTINGER: You'll recall we put  
20 in some documents that I think originated with the  
21 wetlands initiative that I got from the Corps of  
22 Engineers that contain proposals from many of  
23 those waterbodies and identified them in the  
24 process.

1 THE WITNESS: That was where you  
2 were asking Mr. Bell about wetlands?

3 MR. ETTINGER: Right. Exactly.

4 BY MS. WILLIAMS:

5 Q. Let's move onto question 15.

6 Explain why the WWLU is a use designation rather  
7 than a site specific criteria.

8 A. Use designation is more  
9 representative of what exists. During dry  
10 weather, the dissolved oxygen conditions across  
11 the Chicago Area Waterway System are similar for  
12 periods of time and fish might have to swim a long  
13 ways to find different conditions. During wet  
14 weather, not all of the segments are affected at  
15 the same time. If the dissolved oxygen is  
16 depleted, the fish appear to move to the adjacent  
17 segment to avoid the low dissolved oxygen. The  
18 dissolved oxygen then recovers as the slug of low  
19 dissolved oxygen moves through the system.

20 Therefore, the wet weather  
21 limited use recognizes the aquatic use is  
22 different during wet weather conditions. In my  
23 opinion, you need to establish the appropriate  
24 aquatic life use first and then determine the



1 dissolved oxygen criteria to support the uses.

2 Q. So with regard to your last  
3 sentence, was that how Bubbly Creek was  
4 determined? Aquatic life use was established  
5 first and then the dissolved oxygen criteria to  
6 support that use?

7 A. There are no dissolved oxygen  
8 criteria, numeric criteria, proposed for Bubbly  
9 Creek.

10 Q. So that sentence only applies when  
11 you're doing your numeric criteria?

12 A. The narrative criteria proposed for  
13 Bubbly Creek are intended to support the aquatic  
14 life use in Bubbly Creek.

15 Q. You state in this paragraph that  
16 fish appear to move through the system. How do we  
17 know that?

18 A. Because in the segments where the  
19 dissolved oxygen goes down to, say, zero for six  
20 days, if there were fish there and they didn't  
21 move, you would probably see fish kills.

22 Q. Do fish sense dissolved oxygen the  
23 way they would sense temperature or physical  
24 movements?

1           A.       Physical movements.

2           Q.       Let's just stick with temperature.

3       Do fish sense dissolved oxygen the way they would  
4       sense temperature change?

5           A.       There is literature that suggests  
6       that fish can detect and avoid low dissolved  
7       oxygen conditions and the fish kills that occur --  
8       and I apologize to Mr. Ettinger, I have studied  
9       fish kills on other systems such as the White  
10      River in Indiana.

11                   MR. ETTINGER: That was ammonia.

12                   THE WITNESS: No. There are also  
13      dissolved oxygen fish kills on the river.

14                   MR. ETTINGER: Oh. Thank you.

15                   THE WITNESS: They have explainable  
16      reasons.

17      BY THE WITNESS:

18           A.       In some rivers, you will find during  
19      low flow conditions that fish are trapped in, say,  
20      an area of the river that they can't swim out of  
21      and because of the high heat and the oxygen demand  
22      in the water or in the sediment, the dissolved  
23      oxygen drops and the fish die because they can't  
24      get away from the low dissolved oxygen conditions.

1 BY MS. WILLIAMS:

2 Q. Can you explain how the goal aquatic  
3 life use for these waters would change with the  
4 weather?

5 A. I don't understand your question.

6 Q. A wet weather limited use, correct,  
7 does the goal for the waters change when the wet  
8 weather conditions are triggered?

9 A. The goal for the waterways is to  
10 establish the highest attainable use for aquatic  
11 life and based on all of the information the  
12 resident fish community, which is a community of  
13 pollution tolerant fish with multiple species that  
14 can support their existence, including predators,  
15 that is the goal for the waterways because of the  
16 unique nature of the waterways. There needs to be  
17 an understanding that during certain times and  
18 certain locations during wet weather you can't  
19 expect the conditions to support the resident fish  
20 community. They have to move to adjacent fish  
21 communities to avoid being adversely impacted by  
22 the low DO conditions that occur during wet  
23 weather.

24 Q. So I -- does this make sense? The

1 fish have to move, right? Is that what you just  
2 said? Because of the low DO conditions, the fish  
3 will have to move?

4 A. Under certain conditions, yes.

5 Q. Which is, I think, a little  
6 different than your earlier statement that they  
7 either tolerate it or they move, but what I'm  
8 hearing you say now is we need the wet weather  
9 limited use because the fish have to move out of  
10 these areas?

11 A. I think you're simplifying what I  
12 said.

13 Q. That's probably true.

14 A. This is a very highly complex system  
15 where transient, low, dissolved oxygen conditions  
16 occur and my testimony is that those -- the wet  
17 weather impacts affect a particular location at a  
18 particular time and the impacts can range from,  
19 say, 3.5 mg/L at times down to zero mg/L at times,  
20 but it occurs in an isolated area and then as the  
21 slug of low dissolved oxygen water moves through  
22 the system because of reiteration, oxygen recovers  
23 and then it's possible for fish to come back and  
24 do their usual thing.

1                   So it's a highly transient  
2 situation. Not all segments are affected at the  
3 same time. The dissolved oxygen conditions are  
4 highly variable as is the impacts of wet weather.  
5 So trying to simplify my testimony to it's either,  
6 you know, avoid or tolerate, it's a mix of both.

7           Q.       Let's move onto question 18. Why  
8 are there no continuous dissolved oxygen monitors  
9 listed for the South Fork of the South Branch of  
10 the Chicago River?

11          A.       Since the District is proposing  
12 narrative criteria for Bubbly Creek, there are no  
13 numeric dissolved oxygen criteria proposed. The  
14 wet weather limited use designation, therefore,  
15 doesn't make sense for Bubbly Creek and a  
16 continuous dissolved oxygen monitor is not needed  
17 for evaluating compliance.

18          Q.       Okay. So I just have a really quick  
19 follow up. What I really wanted to get out of  
20 this question, is there actually a monitor on  
21 Bubbly Creek and it's just not listed or is there  
22 no monitor?

23          A.       There are two monitors currently  
24 operational on Bubbly Creek.

1 Q. Thank you. Question 19, why are  
2 there no CDOM's listed for the Chicago River Main  
3 Stem?

4 A. The District had operated a station  
5 at Clark Street from 1998 to 2009. The dissolved  
6 oxygen was above the general use criterion and the  
7 station was not impacted by the water reclamation  
8 plant effluents so the District notified Illinois  
9 EPA that they would discontinue the station.

10 Q. Can you explain -- based on your  
11 answer, can you explain why the Chicago River Main  
12 Stem is a category two water rather than a  
13 category one main water?

14 A. Based on my answer?

15 Q. That the dissolved oxygen is above  
16 the general use criterion and the station was not  
17 impacted by water reclamation plant effluents.  
18 Why is the Chicago River Main Stem, therefore, not  
19 in the higher use category?

20 A. As stated in Ms. Wasik's testimony,  
21 the Chicago River Main Stem was borderline in  
22 terms of the habitat index and, therefore, was a  
23 candidate for category one waters, but in terms of  
24 the habitat improvement potential the physical

1 nature of the Chicago River and/or sediment  
2 toxicity indicated that they belonged in the  
3 category two rather than the category one.

4 The Chicago River demonstrates  
5 no potential for habitat improvement due to 97  
6 percent vertical wall armored banks and the lack  
7 of overhanging vegetation and bank pocket areas.  
8 As stated on page 49 of the Habitat Improvement  
9 Report, quote, because of the developed urban  
10 nature of the riparian land of the Chicago River,  
11 it is assumed that any measure requiring  
12 significant use of that riparian land for habitat  
13 improvement would be infeasible, end quote.

14 Q. What page are you reading from?

15 A. Page seven of her testimony.

16 MS. TIPSORD: Ms. Wasik's testimony  
17 is Exhibit 461 for the record.

18 BY MS. WILLIAMS:

19 Q. Let's move onto question 20. Is the  
20 CDOM network you describe in your testimony a  
21 mandatory component of the wet weather limited use  
22 proposal? Are there a mandatory number of  
23 monitoring locations?

24 A. Continuous dissolved oxygen

1 monitoring is mandatory to assess the wet weather  
2 limited use hours and I described the District's  
3 2011 monitoring program in my testimony. Changes  
4 may need to be made to the program for a number of  
5 reasons including technical reasons (biofouling,  
6 navigational disturbance, et cetera) or safety  
7 reasons (if location is contributing to  
8 work-related injuries during  
9 deployment/retrieval).

10 In the event that the District  
11 were to propose a change to the program, Illinois  
12 EPA should be notified and given an opportunity to  
13 approve the change before it was implemented.

14 Q. What happens if EPA objects?

15 MR. ANDES: Are you speaking of US  
16 EPA or Illinois EPA?

17 MS. WILLIAMS: I'm sorry.

18 BY MS. WILLIAMS:

19 Q. What happens if Illinois EPA  
20 objects?

21 A. Objects to what?

22 Q. The change in the program.

23 A. I believe that the District and the  
24 Agency would need to discuss the objection and



1 reach an appropriate decision.

2 Q. What if the Agency's decision is it  
3 objects?

4 A. Can you repeat that question,  
5 please?

6 Q. What if the Agency's appropriate  
7 decision is that it objects to what the district  
8 wants to do?

9 A. Well, if after discussing the  
10 objection with the District, the Agency could  
11 require that the District keep the monitor in  
12 place and the Board wouldn't have to be involved.

13 Q. I'm not sure if you answered the  
14 last sentence of this question. Are there a  
15 mandatory number of monitoring locations?

16 A. I don't believe that a mandatory  
17 number of monitoring locations would be  
18 appropriate. The District's current network has  
19 evolved over time. At times, there are -- there  
20 is a need to gather more information based on what  
21 previous information is telling you. So the  
22 District may want to include a new monitor for a  
23 particular reason. On the other hand, there are  
24 times when you have a monitor that is operational

1 and you have established a sufficient record and  
2 other information suggests that that monitor may  
3 be redundant with another monitor so trying to  
4 mandate the number and locations of these monitors  
5 might not be in the Agency's interest.

6 Q. So the answer is no?

7 A. Correct.

8 MR. ANDES: The proposal that has  
9 been submitted includes CDOM stations in each  
10 reach other than Bubbly Creek, am I correct?

11 THE WITNESS: And the Chicago River.

12 MR. ANDES: And you would expect  
13 that you would continue to need some CDOM stations  
14 in each of these reaches, am I right?

15 THE WITNESS: Yes.

16 BY MS. WILLIAMS:

17 Q. Where in the proposal does it have  
18 that?

19 A. For example, now the District -- the  
20 District has monitoring out in the system now and  
21 that was included in a letter to the Agency and in  
22 my testimony I described that if the District  
23 wanted to make modifications to that program,  
24 including discontinuing a station or perhaps

1 adding a new station, they would notify Illinois  
2 EPA at least 60 days in advance of that change to  
3 give the Agency opportunity to comment or object.

4 Q. And if the Agency objects, they  
5 can't implement the change, correct?

6 A. I couldn't hear you.

7 Q. If the Agency objects, they can't  
8 implement the change, correct?

9 A. That would be my understanding.

10 Q. Question 22, is the rain gauge  
11 network you describe in your testimony a mandatory  
12 component of the wet weather limited use proposal?

13 A. The District would need to continue  
14 to operate a rain gauge network as they have been  
15 doing for other purposes. I don't think it would  
16 be appropriate for someone to mandate where rain  
17 gauges should be located. As long as they, the  
18 District, had gauges that could be considered  
19 representative for interpreting the data at each  
20 continuous dissolved oxygen monitoring station, I  
21 believe this is suspicion. The District could,  
22 however, notify the Agency about changes to its  
23 rainfall monitoring program.

24 Q. How would that initial determination

1 of representativeness be made?

2 A. In evaluating the continuous  
3 dissolved oxygen monitoring data and in crafting  
4 this wet weather limited use proposal, the current  
5 rain gauge network that the District operates,  
6 which is much more extensive than that provided by  
7 the National Weather Service, is sufficient in my  
8 opinion for interpreting the dissolved oxygen  
9 data.

10 MS. WILLIAMS: Can you repeat that?

11 (Whereupon, the record was read  
12 as requested.)

13 BY MS. WILLIAMS:

14 Q. So when I asked how  
15 representativeness would be determined, it's in  
16 your judgment that it is representative, is that  
17 the answer?

18 A. Yes.

19 Q. Why couldn't we just use any rain  
20 data that's available? If it's raining, it's  
21 raining, right? Weather Service has data. I'm  
22 sure there are other organizations that take data.  
23 Why would only the District's rain gauges be used  
24 to trigger the wet weather events?

1           A.       The District's rain gauge network  
2 they rely upon that to operate the Chicago Area  
3 Waterway System and that includes their pump  
4 station. That's includes, you know, drawing down  
5 the levels in the waterways in the event of  
6 impending storms and they purposely established a  
7 network that would provide them with good spatial  
8 coverage across the watershed that affects the  
9 waterways. If there was detailed, say, radar data  
10 that were available or other detailed data that  
11 were available that represented rainfall  
12 conditions in the segments where a particular CDOM  
13 were located, I assume that that could also be  
14 used, but the purpose is to find the rain gauge,  
15 gauges that are providing data that show how the  
16 wet weather sources in that particular segment are  
17 affecting the dissolved oxygen. So you would  
18 need -- if the District's rain gauge data has been  
19 evaluated and shown to be representative, you  
20 would need to look at any other rainfall data and  
21 make sure it's of sufficient quality and  
22 representativeness as well before it could be  
23 considered. Because this is such a large  
24 geographic area, if you were to rely on, say, rain

1 gauge data in the North Shore to evaluate  
2 dissolved oxygen conditions that are occurring in  
3 the Calumet River, that would be, in my opinion,  
4 highly inappropriate.

5 Q. I'm not sure this was clear from  
6 your testimony, but my reading of the language now  
7 in the proposal is that changes to the rain gauge  
8 network would be handled the same way as changes  
9 to the dissolved oxygen monitoring network,  
10 correct?

11 A. The rain gauges as I said before  
12 that the District operates serve a multitude of  
13 functions and functions that occur before using  
14 those data to interpret the wet weather limited  
15 use. Therefore, the District could notify the  
16 Agency, but I personally don't believe that the  
17 Agency should have as much control over decisions  
18 related to the rain gauge network because it  
19 relates to many other important purposes for the  
20 waterways. The District, however, has operated  
21 the current rain gauge network for quite some time  
22 and it's my understanding it does not intend to  
23 modify that network.

24 Q. Okay. I'll just flag for your

1 counsel it appears that language treats them both  
2 the same.

3 MR. ANDES: Can you point to which  
4 particular language you're speaking of?

5 MS. WILLIAMS: Sure. 302.406(a).

6 BY MS. WILLIAMS:

7 Q. Let's move onto question 27.

8 MS. LIU: Ms. Williams, may I follow  
9 up on your question 26, please?

10 MS. WILLIAMS: Yes. Absolutely.

11 MS. LIU: Ms. Nemura, the District's  
12 proposed provision at Section 303.236(b) sets  
13 forth that, quote, the wet weather limited use  
14 designations shall be triggered in a given  
15 waterway segment by precipitation of 0.25 inches  
16 per day or more in the drainage basin to that  
17 segment, end quote. Along with the discussions  
18 that we were having earlier, could you please  
19 clarify whether or how the District has delineated  
20 the drainage basin for the various segments? Is  
21 that something that needs to be in the record at  
22 this point?

23 THE WITNESS: In my testimony, in  
24 Table 3 on page nine, we have identified for the

1 individual Chicago Area Waterway segments which  
2 rain gauges are appropriate for evaluating the wet  
3 weather limited use. The District could provide  
4 information perhaps on the specific -- I don't  
5 want to get too technical, but Thiessen polygons  
6 associated with those individual rain gauges.

7 On the other hand, it could also  
8 be indicated that these specific rain gauges  
9 should be used for these -- located at these  
10 locations should be used for evaluating the data  
11 in these particular segments.

12 BY MS. WILLIAMS:

13 Q. What kind of polygons did you say?

14 THE WITNESS: Thiessen,  
15 T-H-I-E-S-S-E-N.

16 MS. DEXTER: Debbie, do you mind if  
17 I ask a follow up?

18 MS. WILLIAMS: No.

19 MS. DEXTER: Jessica Dexter for the  
20 Environment Law and Policy Center. When you have  
21 data that comes from multiple rain gauges, how do  
22 you decide which controls or do you combine the  
23 data? Do you take the highest one out of the two  
24 or five that you see? How do you decide which one



1 triggers the standard?

2 THE WITNESS: Right. We look to the  
3 data associated with each rain gauge in a segment  
4 and we use the maximum.

5 MS. DEXTER: Out of any of the  
6 ranges?

7 THE WITNESS: Out of any of the  
8 ranges.

9 MS. DEXTER: Thank you.

10 MR. ANDES: If we can go back to one  
11 issue just to clarify for a moment that  
12 Ms. Williams brought up. On the issue of changes  
13 to the rain gauge, it's correct that the proposed  
14 language before 302.406(a) indicates that Agency  
15 approval would be needed as to the rain gauge  
16 network changes as well. The District doesn't  
17 believe that that is absolutely necessary given  
18 the other purposes rain gauges are installed for,  
19 but is willing to agree to subject those changes  
20 to Agency proposal and that's why the language in  
21 the proposal reflects that.

22 MS. WILLIAMS: Thank you.

23 BY MS. WILLIAMS:

24 Q. Let's move onto question 27. What

1 percentage of time are the CDOM's not operational?  
2 What percentage of the data does not meet MWRDGC's  
3 Quality Assurance Quality Control guidelines? How  
4 will the Agency determine that MWRDGC is not  
5 excluding data that demonstrates a DO violation?

6 A. The data for calculating the period  
7 of time in 2006 that the continuous dissolved  
8 oxygen monitors are not operational or data  
9 rejected are in Table 7 of my testimony. In  
10 general, the continuous dissolved oxygen monitors  
11 provided valid data about 96 percent of the  
12 calendar year.

13 I did not evaluate what  
14 percentage of the data does not meet QAQC  
15 guidelines, Quality Assurance Quality Control.  
16 The District does that calculation and all of the  
17 dissolved oxygen data I used met the QAQC  
18 guidelines. The District has QAQC guidelines that  
19 they follow because these instruments are subject  
20 to drift and fouling. It is not uncommon that  
21 some of the readings need to be excluded.

22 This is done before comparing  
23 the data to water quality standards. I am sure  
24 the District could provide the excluded data if

1 the Agency or others want to review it.

2 Q. What are the District's QAQC  
3 guidelines?

4 A. They are identified in the  
5 continuous dissolved oxygen monitoring annual  
6 reports.

7 Q. How do they compare to other  
8 organizations that use continuous data such as  
9 Illinois EPA or USGS?

10 A. In general?

11 Q. Yes, in general.

12 A. In general, they are consistent.

13 Q. There are some differences, I  
14 assume, then by saying they're consistent, but  
15 they're not the same or do they follow one or the  
16 other?

17 A. I don't have the specific details.  
18 The QAQC guidelines have to do with the specific  
19 instruments that are used. They have to do with  
20 how frequently the probes are changed in and out  
21 and, you know, the District has extensive  
22 experience working with these monitors over a  
23 decade and the frequency with which they switch  
24 these monitors every couple weeks is fairly

1 rigorous and I'm sure they would be happy to  
2 provide those procedures, you know, in detail.

3 MS. TIPSORD: I just want to  
4 clarify. You talked about the continuous  
5 dissolved oxygen monitoring report. Is that, for  
6 example, August 2009, the Exhibit 468?

7 THE WITNESS: Yes.

8 BY MS. WILLIAMS:

9 Q. My technical advisors tell me your  
10 answer was focused on the QAQC of the use of the  
11 monitors, how you take the samples, how you  
12 monitor. What about the QAQC for the data once  
13 it's been downloaded and knowing whether you're  
14 going to be able to use it or not, what procedures  
15 do they use for that?

16 A. They have procedures that they  
17 follow when they evaluate the raw preliminary data  
18 and then they will either choose to throw that  
19 data out or to include it in the specific details.  
20 I would have to defer to the District.

21 Q. Do you know where they got their  
22 QAQC?

23 MR. ANDES: You could ask Ms. Wasik.  
24 She could probably answer that.

1 MS. WILLIAMS: Do you want me to do  
2 that?

3 MR. ANDES: Sure.

4 MS. WASIK: Hello. My name is  
5 Jennifer Wasik. I'm with the Water Reclamation  
6 District of Greater Chicago. As Adrienne  
7 mentioned, the annual report as well as our QAQC  
8 details the specifics as to how data might be  
9 rejected. Generally, it has to do with comparing  
10 the Sun data to a wet test that is run on the  
11 sample that's collected when the monitor is  
12 retrieved and if that exceeds a certain amount  
13 then we would -- I think it's 2.0 mg/L, it  
14 exceeded that amount. Then, we'd reject that  
15 period of data. Another criteria is if the Sun  
16 that we had in the waterway was retrieved and then  
17 was reading incorrectly from a water tank in our  
18 lab, we could reject the data based on that fact  
19 if the Sun was running irregularly and the final  
20 criteria for data rejection would be if the  
21 monitor that's redeployed is reading greater than  
22 2.0 mg/L defense in DO from the -- from the  
23 previous monitor.

24 So we actually remove the

1 monitor that is in the waterway and replace it  
2 with another one so the last reading from the one  
3 that we retrieve is different from the first  
4 reading from the one we put in, that is a red flag  
5 for us as well. The only other reason that we  
6 might reject data and this would be covered in one  
7 of those, but if we suspect a biofouling like  
8 algae growth or something like that on the probe  
9 we would retrieve it or if the probe was covered  
10 in sediment, for instance, after a wet weather  
11 flow that might have buried the monitor housing  
12 and some of the deep sedimented areas, but the  
13 very specific numbers and that sort of thing is as  
14 Adrienne said is available for your review in the  
15 exhibit that's attached to her testimony.

16 MS. WILLIAMS: But that doesn't have  
17 the quality? Does it have the QAQC provisions in  
18 there?

19 MS. WASIK: Yes.

20 MS. TIPSORD: I believe if you go to  
21 page three. For the record, Ms. Wasik was sworn  
22 in at our last hearing and since we've been  
23 discussing her testimony today she is still sworn  
24 in for purposes of this hearing.

1 MS. WILLIAMS: Just while we have  
2 Jennifer real quick one really quick thing I was  
3 curious about from the table that we've been  
4 referring to.

5 MR. ANDES: Which table is that?  
6 I'm sorry.

7 MS. WILLIAMS: Table 7. Is there  
8 something wrong at the Route 83 station?

9 MS. WASIK: Which table is this?

10 MS. WILLIAMS: Table 7 comparison of  
11 CDOM data for 2006.

12 MS. WASIK: In my testimony?

13 MS. TIPSORD: On page 15 of the  
14 pre-filed testimony.

15 MS. WILLIAMS: That table shows that  
16 station had 6,899 total hours which is quite a bit  
17 less than any of the others.

18 MS. WASIK: This is Route 83 on the  
19 Chicago Sanitary and Ship Canal?

20 MS. WILLIAMS: I think so, but it's  
21 not totally clear to me. It is.

22 MS. WASIK: This is one of the Suns  
23 that I believe is from January of 2011 --

24 THE COURT REPORTER: Louder, please,

1 from the very beginning.

2 MS. WASIK: Route 83 on the Chicago  
3 Sanitary and Ship Canal is subject to a lot of  
4 biofouling because of the channel walls and the  
5 lack of bridges in that area we were not able to  
6 mount a Sun housing on the channel. So we had a  
7 different method which was that it was attached to  
8 a chain and the chain -- stainless steel chain was  
9 attached to both sides of the channel. We had a  
10 lot of problems with this particular mounting  
11 technique because it brings the water quality  
12 monitors closer to the sediment and when there's  
13 resuspension of the sediments there are often --  
14 it would bury the water quality monitor. So for  
15 that reason and also for the fact that we had some  
16 personnel issues retrieving the chain water  
17 quality monitors and some injuries, we had to  
18 eliminate that station.

19 MS. WILLIAMS: Thank you.

20 BY MS. WILLIAMS:

21 Q. Question 28, what is the terminus of  
22 the Chicago Sanitary and Ship Canal as it was used  
23 in the WWLU proposal?

24 A. The confluence with the Des Plaines



1 River near River Mile 290.

2 Q. A, what use designations and water  
3 quality standards should the Board adopt for the  
4 Lower Des Plaines River?

5 A. I can't speak to what water quality  
6 standards the Board should adopt for the Lower Des  
7 Plaines because I have not studied that system.

8 Q. And I just want to be clear for the  
9 record that that includes both the Upper Dresden  
10 Island Pool and the Brandon Pool, correct?

11 A. Yes.

12 Q. Question 29. On page one of  
13 attachment one to your pre-filed testimony, you  
14 state that, quote, dissolved oxygen data collected  
15 from 2001 to 2008 from eight monitoring locations,  
16 end quote, were used in your analysis. Why did  
17 you limit your analysis to eight stations? How  
18 did you select the eight stations?

19 A. The District had done a lot of  
20 preliminary analysis and selected eight stations,  
21 one per reach, as the representative stations for  
22 analysis. Typically, the station that receives  
23 the most negative impact on dissolved oxygen was  
24 selected if the reach had more than one station.

1 These are the stations that were used in  
2 developing the proposed wet weather limited use  
3 that is discussed in attachment one.

4 In my testimony, I applied the  
5 wet weather limited use to all of the 16  
6 continuous dissolved oxygen monitoring stations so  
7 I did not limit my analysis to just eight  
8 stations.

9 Q. Can you take a look at Table 4 from  
10 your testimony on page ten? I'm trying to  
11 understand why that table lists ten stations.

12 A. Because these are the stations out  
13 of -- these are the stations out of the 16 that  
14 relate to the category one and category two  
15 waters.

16 Q. So the other six are located in  
17 category three quarters, is that correct?

18 A. Can I retract that?

19 Q. Sure.

20 A. For example, in Table 7, on page 15,  
21 there are 16 monitors and as Jennifer stated some  
22 of those monitors have been eliminated so we're  
23 down to step monitors that represent the category  
24 one/category two waters.

1 Q. So why do we say that we use eight?

2 A. In attachment one of my testimony,  
3 Table 1 on page three there are eight monitors  
4 listed representing a subset of the ten and when  
5 the District did their preliminary very detailed  
6 analysis of potential triggers that are listed in  
7 Table 2, they used those eight locations.

8 Q. Are you able to just quickly tell us  
9 which two in the list of ten are not in the eight?

10 A. Ten are not. Clark Avenue on the  
11 Chicago River has been discontinued. The  
12 attachment one did not include --

13 Q. Wait. I'm assuming there are six  
14 that have been discontinued, correct?

15 A. No.

16 Q. We have --

17 A. The easiest way to understand it is  
18 Table 1 of attachment one was used to evaluate  
19 what types of triggers might be suitable.

20 Q. Go ahead.

21 A. There were eight that were listed  
22 there. One of those eight, Clark Avenue, has been  
23 discontinued. After we determined what the  
24 appropriate trigger might be, I went back to all

1 of the 2001 to 2008 continuous dissolved oxygen  
2 monitoring stations that had been in operation and  
3 I evaluated all of those for the category one and  
4 category two waters. So, in 2006, on Table 7 of  
5 page 15 of my testimony there were 16 monitors for  
6 the category one and category two waters that were  
7 operational in 2006. Table 4 on page ten of my  
8 testimony says based on the District's current  
9 network of CDOM stations which ones fall in which  
10 segments and that's what is shown in Table 4.

11 Q. When you looked -- in the initial  
12 step of the process, when you looked at the data  
13 from the eight from the different stations, you  
14 didn't look at any stations on South Fork of the  
15 South Branch of the Chicago River, correct?

16 A. No.

17 Q. Question 31 --

18 MS. TIPSORD: You know what,  
19 Ms. Williams. We've been at this a couple of  
20 hours and it is lunchtime. I know we're getting  
21 close to being done with you, but let's go ahead  
22 and take an hour for lunch and we'll come back and  
23 finish with the Agency.

24

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

4 MS. TIPSORD: Let's go back on the  
5 record.

6 BY MS. WILLIAMS:

7 Q. I'll pick up with question 31. On  
8 page five of attachment one, you indicate that  
9 rainfall events of between 0.25 and 0.49 inches  
10 pump station CSO discharges occurred 21 percent of  
11 the time and gravity CSO discharges occurred 16  
12 percent of the time.

13 If CSO discharges did not occur  
14 during a large majority of the rainfall events of  
15 less than half an inch, why is 0.25 inches an  
16 appropriate trigger for a wet weather limited use  
17 designation?

18 A. CSO's are not the only source of  
19 dissolved oxygen impacting wet weather. There is  
20 also urban runoff, ungauged CSO's, storm sewer  
21 discharges and highway runoff. All of these  
22 sources combined with the CSO discharges that  
23 occur with rain less than one and a half inch to  
24 impact the dissolved oxygen. Therefore, a wet

1 weather limited use is needed for rainfall events  
2 less than one half inch. The District evaluated  
3 triggers less than 0.25 inches and chose to use  
4 the upper value of the triggers that were  
5 considered which were 0.05, 0.1 and 0.25 inches.

6 Other factors that need to be  
7 considered when thinking about frequency of these  
8 discharges are uneven rainfall distribution,  
9 ground conditions before precipitation and impact  
10 from non-point sources in the tributary. The  
11 District's analysis indicated that 0.25 inches of  
12 daily, cumulative rainfall generally brings  
13 elevated flow to the water reclamation plants,  
14 causes discharge from the combined sewer system or  
15 causes urban runoff.

16 Q. What percentage of the wet weather  
17 events in the 0.25 to 0.49 range results in  
18 violations of the proposed DO water quality  
19 standards?

20 A. Of the Agency's proposed standard?

21 Q. If you know or if you can answer the  
22 same question with regard to the District's  
23 proposal, I'll accept either answer.

24 A. I don't have that statistic.

1 Q. Do you know if it's less than all  
2 the time I assume then? Is it something less than  
3 every 0.25 rainfall event does not create low DO  
4 conditions, is that correct?

5 A. I can't answer that question.

6 Q. You don't know. Okay. So it could  
7 or could not? Either one?

8 A. I don't know.

9 Q. Question 32, in Table 4, on page  
10 ten, the following note is included at the bottom  
11 of the table. Quote, if a CDOM monitor was not  
12 operational for a period of time, those hours  
13 would not be included in the wet weather limited  
14 use analysis, end quote. Explain what not  
15 included in the analysis means in this context?

16 A. If data were missing for a  
17 particular station for a few days, those days  
18 would not be included in the calculations.  
19 Calculations would still be performed based on the  
20 other days where the station was operational.

21 Q. So I guess I just still don't  
22 understand the answer. Did you -- let's say --  
23 okay. Let me just ask a follow up to C. If data  
24 from the dates preceding the rain event was not

1 available, what was the default conclusion? Would  
2 you go to the next day before that?

3 A. Generally, except for periods where  
4 there might be biofouling or other reasons why the  
5 District believed a monitor to be unreliable or  
6 the readings from the monitor to be unreliable,  
7 there generally were measurements on the day  
8 before the wet weather events that were valid and  
9 we used those.

10 Q. You used them. Okay. If data was  
11 not available for the hour immediately preceding a  
12 rainfall event, would you go to the data from the  
13 previous hour?

14 A. Yes.

15 Q. What if data was not available on  
16 the day a trigger event was supposed to end? That  
17 might not be right. So you have a trigger and  
18 maybe the trigger means that the wet weather use  
19 can continue for four days, two days, four days,  
20 six days, if it's on -- at the point after two  
21 days when it's supposed to end, what would happen  
22 if there was no data there?

23 A. You would have no value that you  
24 could compare to the criterion. So it would be



1 counted as a dry weather -- if what I'm  
2 understanding your question to be, you have a  
3 trigger event. You have a dissolved oxygen  
4 reading the day before the trigger and the dry  
5 weather DO on that day met the dry weather  
6 criterion. So you have a candidate wet weather  
7 limited use. So for that trigger day and the  
8 following two days, you would look at those DO  
9 criterion or DO values and you would say "Did it  
10 meet the regular DO criterion?" and if it did, it  
11 was a wet weather limited use candidate, but you  
12 didn't need to exercise the use. If you had some  
13 hours during that period where it was below the  
14 dry weather criterion, then you needed to use the  
15 wet weather limited use.

16 So the wet weather period has  
17 ended. So now it's back into the dry weather and  
18 is your question what if you don't have data those  
19 days? Then, you just wouldn't have a value to  
20 assess against the dry weather criterion.

21 Q. What if you do the analysis -- when  
22 you just described the analysis, you had the  
23 trigger and you determined based on the proceeding  
24 DO that it's a potential candidate, why does it

1 matter to look at what the DO actually is during  
2 the wet weather period? I mean, once you've  
3 established that you're eligible, what is the  
4 significance of analyzing the period itself?

5 A. Well, by analyzing -- you have data  
6 for the period that the CDOM station is operable  
7 and as scientists and engineers and members of the  
8 public, you would want to know what is the water  
9 quality and -- so, in my mind, it's helpful to  
10 present a complete analysis of all the data.

11 The wet weather limited use is  
12 there because we know because of the very complex  
13 situations in the waterways that sometimes you  
14 might be eligible to apply the wet weather limited  
15 use, but the question would be do I really need it  
16 and the need point -- the need part comes from the  
17 side of the Clean Water Act enforcement side,  
18 which is if you have violations of the criteria  
19 the District is then subject to potential permit  
20 violations because they have to discharge from the  
21 pump stations and the city has to discharge from  
22 the CSO's. So it just becomes a question of  
23 compliance reporting.

24 Q. Report --

1 MR. ANDES: Aren't you actually --  
2 by saying this, the use wouldn't apply on the days  
3 where the DO is above the criterion, aren't you  
4 actually narrowing the applicability of the  
5 limited use?

6 THE WITNESS: Yes.

7 MR. ANDES: You're saying you only  
8 need it when it's necessary because of low DO, but  
9 if your DO is okay, you don't use it?

10 THE WITNESS: Yes.

11 BY MS. WILLIAMS:

12 Q. It seems like it's adding a layer of  
13 complexity for purposes of assessing attainment to  
14 go through all these steps is what I'm trying to  
15 understand. So I'm trying to understand from the  
16 point of view of someone trying to assess whether  
17 the wet weather limited use is attained, how would  
18 they go about doing that?

19 A. Well, I understand the complexity  
20 and that relates to a later question that the  
21 Agency asks me.

22 Q. I think it was earlier. I skipped  
23 it if you wanted to read it.

24 A. It would be simpler to say, okay,

1 ten percent of the time the DO don't have to meet  
2 the criterion in this situation, in this system,  
3 at this location, but because of the complexity of  
4 the impacts of wet weather, the question  
5 becomes -- let me back up.

6                   During dry weather, there's  
7 general agreement that if there are technologies  
8 that are available such as aerated flow  
9 augmentations or supplemental aeration, that the  
10 District should continue to apply those  
11 technologies to improve the dissolved oxygen  
12 during dry weather when a chronic low DO problem  
13 would be problematic for the resident fish  
14 population.

15                   During wet weather where you  
16 have these periodic slugs of low DO that you can't  
17 predict how low the DO is going to be, you can't  
18 predict how long the DO is going to be, but you  
19 know at various size rainfall events generally it  
20 seems that between two to six days is reasonable  
21 from a compliance perspective. That's what we're  
22 trying to get at and it appears complicated, but  
23 it's actually more protective than if you were to  
24 say, okay, ten percent of the time at this

1 location you can violate the DO criteria because  
2 that would allow you to, perhaps, have DO  
3 violations during dry weather versus wet weather  
4 and what we're trying to do is say we know the  
5 uses during wet weather at that location are going  
6 to be different. The fish are going to either  
7 avoid or tolerate the low DO levels that occur  
8 during wet weather.

9 So what we're trying to say is  
10 the District could be eligible to apply that wet  
11 weather limited use, you know, X percentage of the  
12 year, but we want to narrow it down when -- and  
13 report when do they actually need to use that. So  
14 in subsequent reports like right now in my  
15 testimony in Table 7 the column this says wet  
16 hours below the water quality criterion wet  
17 weather limited use excluded in 2006 it ranged  
18 from 0 to 2.4 percent.

19 Q. That's a lot lower than 10?

20 A. Right.

21 Q. Couldn't you set a number, though,  
22 that would more accurately model something like  
23 that?

24 A. Well, if you look at Table 6 which

1 shows the range from 2001 to 2008, you know, the  
2 maximum was as high as 19 percent. Now, that was,  
3 you know, in much earlier years, but it allows you  
4 to look at and say how -- is the District  
5 operating a system the way that they should be and  
6 are we minimizing the periods of time where the  
7 wet weather is -- the wet weather limited use is  
8 needed because if, for example, in these annual  
9 reports at a station you were to see that the wet  
10 weather limited use was needed 50 percent of the  
11 time you might go "Let's look at that a little  
12 closer and see why that is."

13 Q. It's correct, though, isn't it, that  
14 the wet weather use would potentially be available  
15 50 percent of the time based on when we look at  
16 the column wet hours above -- wait a minute.  
17 Maybe I should ask the question.

18 About what percentage of total  
19 hours would be eligible, would meet the trigger  
20 and be classified within the rainfall events in a  
21 typical year?

22 A. And I realize I was reading the  
23 wrong column. In Table 7, the column I was  
24 referring to should have been wet hours below the

1 water quality criterion wet weather limited use  
2 data and the range there is 0 to 6 percent.

3 Q. So is the column next to it the  
4 hours it wasn't needed, is that the hours I'm  
5 describing?

6 A. No, the wet hours below the water  
7 quality criterion where the wet weather limited  
8 use is excluded, those would essentially be  
9 considered violations.

10 Q. What about --

11 A. Those are days where the dissolved  
12 oxygen before the wet weather event happens. It  
13 was below the dry weather criterion and that's  
14 where you would want to, perhaps, have had more  
15 supplemental aeration or flow augmentation to get  
16 the dry weather DO up so you could take advantage  
17 if that wet weather limited use would apply.

18 Q. So why don't you explain the column  
19 wet hours above the WQC? What is that column?

20 A. Those are just hours -- those are  
21 hours that occurred during a wet weather period,  
22 but the dissolved oxygen was above the dry weather  
23 criteria.

24 Q. So for about half of the hours --

1 about half of the hours would fall into this  
2 category of you've had a wet weather event greater  
3 than half an inch?

4 A. 0.25 inches.

5 Q. So about half the hours would fall  
6 into the category of greater than 0.25 inches of  
7 rain have occurred or occurred -- or two to six  
8 days following that rain?

9 A. Right, and that's going to vary year  
10 to year depending on whether you had below or  
11 above normal precipitation because wet weather is  
12 complex and cannot meet the goal.

13 Q. And those occur mostly in the summer  
14 then based on your testimony? You wouldn't have  
15 it as much in the winter?

16 A. No, they occur year around.

17 Q. But snowfall is not considered a wet  
18 weather trigger event, correct?

19 A. The District's rain gauges do not  
20 report -- you can't anticipate when snowfall  
21 occurs. It lays on the ground until it warms up  
22 enough for it to melt and runoff into the storm  
23 sewers or the combined sewers. So by using the  
24 rain gauge data, you can't ascertain those snow



1 melt events.

2 Q. Right. So how does that -- are days  
3 with snowfall included in this wet hours above the  
4 WQC or would that only be rainfall and days  
5 following rainfall?

6 A. It would be rainfall. I mean, the  
7 gauges are heated. So whatever snow falls in that  
8 gauged area gets recorded, but --

9 Q. What box does it fall in? So if it  
10 snows and the gauge is heated and you can tell  
11 that you've had more than a quarter inch of  
12 precipitation, does that begin a wet weather day?

13 A. It could I guess, but generally the  
14 DO in the winter is going to be -- so these wet  
15 hours above the water quality criteria if you  
16 wanted you could analyze those and say what  
17 percentage of those were due to the melted snow  
18 that was measured by the rain gauge.

19 MR. ETTINGER: I'm a little  
20 confused. Albert Ettinger again. Your rule  
21 triggers on days, not hours, right?

22 THE WITNESS: The rule --

23 MR. ETTINGER: I mean, if it rains  
24 an inch in a day, I've got six succeeding days in

1 which I'm off?

2 THE WITNESS: Yes.

3 MR. ETTINGER: Okay. So aren't we  
4 kind of comparing the wrong things when we're  
5 comparing hours in your chart seven with days?

6 THE WITNESS: The reason we picked  
7 hours is because the minimum DO in the criterion  
8 is an instantaneous dissolved oxygen and the only  
9 way to compare the CDOM data against such a  
10 criterion is to use the instantaneous measurements  
11 which happen to be on an hourly basis.

12 MR. ETTINGER: That's what I'm  
13 saying. We can't really use your chart seven to  
14 estimate what the percentage of time will be  
15 subject to the wet weather standard, can we?

16 THE WITNESS: No -- well, you can if  
17 you say we have 24 hourly measurements in a day.  
18 During the wet weather limited use period, all 24  
19 hours are eligible for the wet weather limited use  
20 criterion or wet weather limited use provision.  
21 So we're going to look at the DO values during  
22 that wet weather period and let's say it's a  
23 quarter inch so we have three days so that's 72  
24 hourly measurements of DO during that wet weather

1 period. All we're doing is saying you're eligible  
2 for the wet weather limited use. Let's just  
3 report of those 72 hours how many were greater  
4 than 4.0 or 5.0 mg/L and how many were below 4.0  
5 or 5.0 mg/L and, if you wanted, the District could  
6 spit out statistics, you know, on what levels of  
7 DO were there.

8 MR. ETTINGER: The fact that you've  
9 got this allowance doesn't mean you have to use  
10 it?

11 THE WITNESS: Correct.

12 MR. ETTINGER: So it may be that, in  
13 fact, because you -- I like one as a number, it's  
14 easy, one and six. So I have one inch of rain and  
15 I have six days. It may, in fact, be that I'm  
16 only going to violate -- or it may happen that on  
17 a particular station it will come to pass that I  
18 will only violate one or two of those days, is  
19 that possible?

20 THE WITNESS: Then your DO would be  
21 less than 4.0 or 5.0.

22 MR. ETTINGER: Yes, that the DO  
23 would not go down that --

24 THE WITNESS: Correct.

1 MR. ETTINGER: It turns out you  
2 didn't need to have it for the full six days.

3 THE WITNESS: Correct.

4 MR. ETTINGER: So Table 7 is giving  
5 us an estimate as to how much time -- I'm sorry.  
6 How much time you will need, but it's not giving  
7 us an estimate as to how much time you'll get in  
8 terms of an allowance from the dissolved oxygen  
9 standard?

10 THE WITNESS: We could provide those  
11 statistics.

12 MR. ETTINGER: The way to do that  
13 would be just to look at weather data, right?

14 THE WITNESS: Correct.

15 MR. ETTINGER: Because any day in  
16 which we've got an inch of rain we know that the  
17 following six days were Scott-free.

18 THE WITNESS: Yes.

19 MR. ETTINGER: Okay.

20 MR. ANDES: You didn't say yes to  
21 Scott-free?

22 THE WITNESS: No.

23 MR. ETTINGER: Okay. Maybe it's  
24 Irish-free.

1 MR. ANDES: Isn't the issue not to  
2 be imputing any group if you can clarify what that  
3 means is that during those six days you would then  
4 review the data to determine which hours were  
5 below the DO criteria and, therefore, needed  
6 application of the limited use?

7 THE WITNESS: Correct.

8 MR. ETTINGER: Obviously, if you  
9 don't need it, then it didn't make any difference,  
10 but I don't think the Water Reclamation District  
11 is this clever or wanted to be this clever, but  
12 hypothetically I suppose if you had your six days  
13 you could release all your stored BOD in order to  
14 take use of the six days, but I'm not going to  
15 accuse them of that, but the point is you've got  
16 six days whether you use it or not.

17 THE WITNESS: The way the District  
18 operates their system, in my opinion, this wet  
19 weather limited use which is crafted around how  
20 they've been, you know, operating the system over  
21 the last seven to eight years and even before that  
22 it doesn't allow them somehow to get away with  
23 anything by, you know, if theoretically they could  
24 somehow change how they operate. They're still --

1 they still have to look at, you know, in terms of  
2 how they operate their CSO pump stations, which is  
3 if the plants can take additional wet weather flow  
4 they're supposed to send it to the plant as  
5 opposed to letting it go out the pump station.

6 MR. ETTINGER: Is this based upon  
7 your study of the NPDES permits? If you changed  
8 the standards, wouldn't we be able to change the  
9 permits so they're complying with the revised  
10 water quality standards?

11 THE WITNESS: They wouldn't need to  
12 revise their operating procedures when -- if this  
13 wet weather limited use was proposed because the  
14 operation of the CSO facilities is governed under  
15 the CSO control policy which requires that the  
16 District comply with the nine minimum controls  
17 which requires that they maximize the treatment of  
18 wet weather flow at the water reclamation plants  
19 and hence the terminology maximum proximal flow.

20 MR. ETTINGER: And you've studied  
21 how -- you've studied MWRD NPDES permits and you  
22 know those terms on the nine minimum controls are  
23 interpreted that way in this permit?

24 THE WITNESS: I have reviewed the

1 District's permit. I have provided training for  
2 US EPA on the CSO policy and EPA's guidance  
3 document which discuss how the policy should be  
4 implemented and it's my understanding that by  
5 adopting this wet weather limited use that the  
6 District would not change how they operate things  
7 because they could -- that would raise questions  
8 as to whether they are complying with the  
9 specification of the nine minimum controls.

10 MR. ETTINGER: Are you aware of the  
11 District ever taking a position in permit  
12 negotiations that because of the TARP system it  
13 did not need to comply with other portions of the  
14 nine minimum controls?

15 THE WITNESS: I'm not aware of that.

16 MR. ETTINGER: And that would be a  
17 silly position in your view.

18 THE WITNESS: I'm not aware of what  
19 they said or haven't said.

20 MR. ETTINGER: Thank you.

21 MS. DEXTER: Can I ask one follow up  
22 on this topic? When you were analyzing this data  
23 for Table 7 or otherwise, did you assess how often  
24 the District would have needed to use all of those

1 days with the two or four or six days after a wet  
2 weather event? If that question makes sense. For  
3 instance, if we had a one inch rainfall, did you  
4 look at it to see how often they needed six days  
5 after a one inch or more rainfall?

6 THE WITNESS: I didn't specifically  
7 look at that, but that could be provided.

8 MS. DEXTER: That would be nice.

9 BY MS. WILLIAMS:

10 Q. Let me ask a follow up of Jessica's  
11 follow up. So it rained an inch today and  
12 tomorrow we go out and the DO is below the  
13 District's proposed standard, then the next day we  
14 go out and it's above the standard, then the next  
15 day we go out and it's below the standard again,  
16 how would that be analyzed under the District's  
17 proposal?

18 A. You would treat the one day -- all  
19 the days that you just mentioned and some  
20 subsequent days as a wet weather limited use  
21 candidate and then you would evaluate the hours  
22 across those six days and say what percentage of  
23 the hours were below the dry weather criterion and  
24 what percentage of hours were above the criterion



1 or how many hourly values were below the criterion  
2 and how many hourly values were above the  
3 criterion and then the hours that were below the  
4 criterion you would say those are the hours that I  
5 needed the wet weather limited use provision for.

6 Q. So even if the system recovers  
7 following a wet weather event if the DO then again  
8 dips below in that six day period it can be  
9 classified as a wet weather limited use day?

10 A. Yes. And that's not surprising  
11 given, you know, the nature of these events.

12 MR. ANDES: So you could see an  
13 event where DO would come down and go back up and  
14 then come down again?

15 THE WITNESS: Yes.

16 BY MS. WILLIAMS:

17 Q. How do you know that the standard is  
18 not attainable when you see an event like that?

19 A. In general, the data don't follow  
20 that particular pattern that you described. It's  
21 possible, but in general that's not the pattern we  
22 see.

23 Q. So, generally, it goes down and it  
24 comes back up? It doesn't go as Fred described up

1 and down and up and down?

2 A. Yes.

3 Q. The last question I have is a quick  
4 clarification. On the last page of your answers,  
5 you identify an attachment to figure one. I don't  
6 know -- did everyone else have that? I don't  
7 think I had that attachment. If I'm the only one,  
8 I apologize.

9 MS. TIPSORD: Actually, I don't see  
10 it with the stuff that I printed off from the web  
11 either.

12 MR. ANDES: Well, we can certainly  
13 introduce it. I have it in my copy.

14 THE WITNESS: I had it in what you  
15 filed as well.

16 MS. TIPSORD: Yes, but I printed  
17 right off from what the clerk's office had.

18 MS. WILLIAMS: And I printed from  
19 off the disc.

20 MR. ANDES: Okay.

21 MS. TIPSORD: It appears to have not  
22 made it into the electronic version. Off the  
23 record.

24

1 (Whereupon, a discussion was had  
2 off the record.)

3 MR. ANDES: It's titled Figure 1  
4 Procedures for Calculating Compliance with  
5 Dissolved Oxygen Standards in the CAWS.

6 MS. WILLIAMS: Can I see it? Is  
7 that okay, Marie?

8 MS. TIPSORD: Mm-hmm.

9 MR. ANDES: Ms. Nemura can certainly  
10 walk that through.

11 MS. WILLIAMS: Is this in reference  
12 to question 16? Is that what this is?

13 MR. ANDES: It's in reference to a  
14 later question.

15 THE WITNESS: Yes.

16 BY MS. WILLIAMS:

17 Q. This is your exhibit to show that  
18 it's not too complicated, right?

19 A. Yes.

20 MS. WILLIAMS: That's all I have.  
21 Thank you.

22 MS. TIPSORD: If there's no  
23 objection, we will mark this as Figure 1  
24 Procedures for Calculating Compliance with

1 Dissolved Oxygen Standards in the CAWS as Exhibit  
2 469. Seeing none, it's Exhibit 469.

3 (Document marked as Hearing  
4 Exhibit No. 469 for  
5 identification.)

6 MS. WILLIAMS: Marie, would you mind  
7 asking John to post that or if Fred wants to get  
8 it to us?

9 MR. ANDES: We can send it to you.  
10 It's also worth noting that the answer to number  
11 16 actually -- the answer to 16 actually lays out  
12 the same six steps. So it's just showing it in a  
13 more visual format, but the answer to 16 does  
14 layout all six steps that were involved.

15 MS. TIPSORD: But John can scan  
16 these easily.

17 MS. WILLIAMS: Thank you.

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

21 E X A M I N A T I O N

22 BY MR. ETTINGER

23 Q. Let's start with three. On page two  
24 of your testimony, you state that it is not

1 possible to eliminate or fully treat these wet  
2 weather sources in the foreseeable future. Is it  
3 possible to eliminate or treat them partially?

4 MR. ETTINGER: Do I have to read the  
5 questions with the same bad grammar that they were  
6 written.

7 MS. TIPSORD: Since she answered  
8 them with the same bad -- no. Sorry.

9 BY THE WITNESS:

10 A. Once the Tunnel And Reservoir Plan,  
11 TARP, is completed, there will still be some CSO  
12 discharges. As to treatment for dissolved oxygen,  
13 it may be theoretically possible to provide some  
14 sort of additional treatment at some locations,  
15 but there would be constraints on land  
16 availability. Conventional treatment is not  
17 appropriate for deleted wet weather discharges and  
18 I'm not sure there are feasible alternatives for  
19 the high rate CSO discharges. The same is  
20 probably true for other wet weather discharges.

21 BY MR. ETTINGER:

22 Q. Okay. It may be theoretically  
23 possible to provide some sort of additional  
24 treatment at some locations. Are you aware of

1 places where people have treated CSO's?

2 A. For dissolved oxygen?

3 Q. Yes. As treatment to reduce the  
4 effect on dissolved oxygen?

5 A. Yes, and that typically involves  
6 tunnels to get the wet weather flow to the  
7 treatment plant.

8 Q. Well, other than what is typically  
9 done, is anything else ever done to improve or to  
10 treat CSO's to prevent sags in the dissolved  
11 oxygen level?

12 A. I'm not aware of a high rate -- CSO  
13 discharges are high rate discharges meaning  
14 conventional treatment methods where you can get  
15 rid of the BOD in the discharge. I'm not aware of  
16 treatment technologies that work well for  
17 dissolved oxygen.

18 Q. In addition to -- by deep tunnels,  
19 are you including any form of water storage?

20 A. Yes, store and convey would be the  
21 typical approach.

22 Q. Okay. So we wouldn't necessarily  
23 have to have a deep tunnel, we could have a lagoon  
24 or something else that would store the water until

1 we could send it to the sewage treatment plant?

2 A. Theoretically, yes.

3 Q. Okay. So if a community came to you  
4 and said "We have a problem with CSO's causing  
5 dissolved oxygen sags," you wouldn't just say  
6 "Build a deep tunnel or quit," right?

7 A. Well, I'm not an architectural -- I  
8 don't work for an AE firm so they wouldn't ask me  
9 that question.

10 MS. ALEXANDER: Yes. This is Ann  
11 Alexander for the Natural Resources Defense  
12 Council.

13 Are you familiar with the  
14 concept of green infrastructure?

15 THE WITNESS: I am.

16 MS. ALEXANDER: Did you consider in  
17 your analysis the possibility that green  
18 infrastructure systems could further reduce CSO  
19 discharges in this system?

20 THE WITNESS: Green infrastructure  
21 may have a role in further reducing CSO  
22 discharges.

23 MS. ALEXANDER: Do you have a view  
24 as to whether or not use of green infrastructure

1 in sufficient quantities could substantially  
2 reduce any CSO discharges that would remain  
3 following the completion of TARP?

4 THE WITNESS: It would surprise me.

5 MS. ALEXANDER: Why would it  
6 surprise you?

7 THE WITNESS: Green infrastructure  
8 is most successful in areas that have relatively  
9 large tracks of land that would be changed from  
10 their impervious nature to a more pervious nature  
11 or there are sufficiently sandy soils that would  
12 allow you to infiltrate a lot of storm water that  
13 you captured.

14 We do have clients in Washington  
15 DC, for example, where we did an extensive  
16 analysis of the potential for green infrastructure  
17 to reduce CSO discharges and from CSO basin to CSO  
18 basin it ranged from maybe a 5 percent reduction  
19 in CSO to a little over 20 percent, which is  
20 helpful, but does not get you all the way there  
21 towards substantially reducing the CSO.

22 MS. ALEXANDER: Are you familiar  
23 with any analysis that has been done specifically  
24 in the Chicago region regarding the potential of



1 CSO to reduce overflows and storm water  
2 discharges?

3 MR. ETTINGER: I think you meant  
4 green infrastructure to reduce?

5 THE WITNESS: Can you repeat your  
6 question?

7 MS. ALEXANDER: Are you familiar  
8 with any analysis that has been done specifically  
9 for the Chicago region concerning the potential of  
10 green infrastructure to reduce CSO discharges and  
11 storm water?

12 THE WITNESS: Only from what has  
13 been presented at various conferences.

14 MS. ALEXANDER: Can you name any  
15 specifics?

16 THE WITNESS: There was a wet  
17 weather partnership conference in Chicago two or  
18 three years ago where there was some information  
19 that was provided.

20 MS. ALEXANDER: Okay. Thank you.

21 BY MR. ETTINGER:

22 Q. The last sentence in your answer  
23 here confuses me. You say "I'm not sure there are  
24 feasible treatment alternatives for the high rate

1 CSO discharges. The same is probably true for  
2 other wet weather discharges." What does the  
3 other refer to there?

4 A. The other refers to urban -- other  
5 urban storm water tributary discharges which  
6 reflect the cumulative impact of suburb and some  
7 urban storm water discharges highway runoff.

8 Q. Are you saying that there's no  
9 feasible alternatives for treating any of those  
10 things?

11 A. I'm saying that feasible depends on  
12 whether controls can actually be implemented and  
13 given my experience in evaluating the sources and  
14 the impacts of wet weather discharges in general  
15 all of these require very long-term, highly  
16 capital intensive solutions that require changes  
17 in zoning and regulations that can take years to  
18 even get those in place and in the clients --

19 Q. Are you saying our new mayor is so  
20 bad that he is not going to be able to make any  
21 zoning changes in the City of Chicago?

22 A. I didn't say that. I hope you  
23 didn't hear me say that.

24 Q. I'm just wondering. I'm surprised

1 to hear a change in zoning would be seen as such  
2 an insuperable obstacle to doing something that we  
3 would say that it is unfeasible to do it?

4 A. Nothing is infeasible, but it does  
5 require large -- you know, large programs, a shift  
6 from, you know, having all these highly impervious  
7 areas around and even if the mayor were successful  
8 in implementing the best zoning regulations in the  
9 country, I question whether it would solve the  
10 problems in the Chicago Area Waterways.

11 The beauty of the District's  
12 proposal with this wet weather limited use is if  
13 you can get those changes in place, you can say  
14 we've been able to change how we do things. We've  
15 been able to fully implement green infrastructure  
16 to every time redevelopment of a parcel occurs  
17 have it be, you know, infiltrating or capturing  
18 and storing the first one to two inches of rain or  
19 whatever. You could then reassess whether the wet  
20 weather limited use is needed.

21 MR. ANDES: So let me understand you  
22 on that. So if measures are taken that reduce the  
23 number of hours and days where DO is under the --  
24 under the criteria, then the wet weather limited

1 use would be needed less and would then be  
2 triggered less?

3 THE WITNESS: Yes.

4 MR. ANDES: But you believe that it  
5 would still be necessary in some circumstances?

6 THE WITNESS: Yes.

7 MR. ANDES: Now, let me follow up on  
8 one other issue. We talked about feasible  
9 treatment alternatives. What treatment  
10 alternative would you generally use at, say, a  
11 waste water treatment plant to address dissolved  
12 oxygen issues?

13 THE WITNESS: You would have primary  
14 clarification. You would have enhanced  
15 nitrification and you would -- if that was  
16 insufficient, you could provide additional filters  
17 or some sort of biological conversion.

18 MR. ANDES: Is biological treatment  
19 generally a part of what you have at a waste water  
20 treatment plant?

21 THE WITNESS: Yes.

22 MR. ANDES: Would you be able to do  
23 that kind of system that you just described in  
24 individual CSO outfalls around the City of

1 Chicago?

2 THE WITNESS: No.

3 MR. ANDES: Why not?

4 THE WITNESS: Because you need space  
5 and you need sufficient space to allow time for  
6 the biological process to work.

7 MR. ANDES: Are there also issues in  
8 terms of treating dilute streams versus the  
9 streams you would ordinarily have at a waste water  
10 treatment plant?

11 THE WITNESS: Yes. The microbes  
12 that are able to breakdown the organic matter that  
13 contributes to the oxygen demand require a certain  
14 amount of food as in ways to be able to function.

15 MR. ANDES: Do you have that when  
16 you're dealing with dilute wet weather streams?

17 THE WITNESS: No.

18 MR. ANDES: Thank you.

19 MS. TIPSORD: Ms. Myers-Glen?

20 MS. MEYERS-GLEN: I was just --

21 MS. TIPSORD: Identify yourself for  
22 the record, please.

23 MS. MEYERS-GLEN: My name is Stacy  
24 Meyers-Glen and I'm with Openlands. As far as the

1 effectiveness of green infrastructure, are you  
2 aware of MWRD's efforts --

3 MS. TIPSORD: We lost you. There  
4 was noise in the background.

5 MS. MEYERS-GLEN: The Cook County  
6 Watershed Management Ordinance is an effort by  
7 MWRD to update their storm water standards for the  
8 first time in 30 years. Are you aware of the  
9 volume controls that they're proposing to  
10 implement, hopefully will be passing soon, to  
11 capture the first inch of rainfall using green  
12 infrastructure?

13 THE WITNESS: Not in detail.

14 MS. MEYERS-GLEN: And you mentioned  
15 roadway runoff, right? Are you aware that the  
16 Illinois State Toll Highway Authority has a push  
17 right now to incorporate green infrastructure  
18 practices all along the highways to start  
19 capturing runoff?

20 THE WITNESS: No.

21 MS. MEYERS-GLEN: Okay.

22 THE WITNESS: But those initiatives  
23 don't change my general opinion that it will  
24 take -- that there will still be events where you

1 will have wet weather runoff that will impact  
2 different segments of the CAWS.

3 MS. MEYERS-GLEN: But you're not  
4 aware of exactly what percentage of runoff these  
5 will help to capture, right?

6 THE WITNESS: Correct.

7 MR. ANDES: Is it also true that if  
8 these measures over time are successful in  
9 reducing the amount of wet weather flow going into  
10 the CAWS, it would then mean you would have to use  
11 the wet weather limited use less?

12 THE WITNESS: Yes.

13 MR. ANDES: Thank you.

14 BY MR. ETTINGER:

15 Q. See, my questions promote a lot more  
16 discussion than other peoples. So it's very  
17 helpful. What do you think is going to drive --  
18 let's go back. Is the Water Reclamation District  
19 the only party that is responsible for wet weather  
20 discharge to the Chicago Area Waterway System?

21 A. No. The MS4 entities are  
22 responsible for urbanized storm water runoff  
23 management and the highways obviously, the  
24 Department's of Transportation are responsible for

1 their storm water management.

2 Q. Probably some industries have direct  
3 runoff into the water, too?

4 A. Correct.

5 Q. And this rule would work to the  
6 benefit of all of those entities by making all of  
7 their discharges immune from attack for causing  
8 violations of the water quality standards, too,  
9 would they not?

10 A. No, they would not make them immune.

11 Q. Why not?

12 A. Because there are other provisions  
13 of storm water management that have to be met  
14 regardless of the dissolved oxygen in the Chicago  
15 Area Waterways.

16 Q. So basically you're relying on the  
17 technology base controls on storm water to protect  
18 us from any increases or operations by other  
19 entities that might affect dissolved oxygen in the  
20 Chicago Area Waterways?

21 A. There are other water quality based  
22 requirements for storm water discharges and --

23 Q. Most of them are in litigation?

24 MR. ANDES: Aren't you going to win



1 those?

2 MR. ETTINGER: Talk to MWRDGC.

3 BY THE WITNESS:

4 A. The other way to look at this is you  
5 need to put the prospective -- those other  
6 sources --

7 MS. TIPSORD: Ms. Nemura, I  
8 apologize. Would you guys -- you're right in the  
9 court reporter's ear. It's a little distracting.  
10 I'm sorry. Go ahead.

11 BY THE WITNESS:

12 A. You have to put those other  
13 discharges into perspective with the relative  
14 magnitude of their impact on dissolved oxygen or  
15 other water quality impacts and it's also true  
16 that in developing permit limits for those other  
17 types of highly variable discharges that the  
18 permit writer when he or she sits down to write a  
19 permit has to consider the variability in those  
20 types of discharges. So coming up with water  
21 quality based effluent limits for those storm  
22 water discharges can become a very complex  
23 exercise.

24 MR. ANDES: Let me clarify. In the

1 District's proposal, the last two MS4's, for  
2 example, isn't there a provision indicating that  
3 they will have to comply with all other  
4 requirements to ensure that they can use the wet  
5 weather limited use provision?

6 THE WITNESS: Yes.

7 MR. ANDES: That will include  
8 maximum extent practicable requirements under the  
9 MS4 program and any other conditions imposed in  
10 the storm water regulations?

11 THE WITNESS: Yes.

12 MR. ANDES: Is EPA proposing to make  
13 those regulations more stringent?

14 THE WITNESS: Yes.

15 MR. ANDES: So all those conditions  
16 would continue to apply?

17 THE WITNESS: Yes.

18 BY MR. ETTINGER:

19 Q. All the technology based conditions  
20 would continue to apply including the nine minimum  
21 controls which would be fully applicable to the  
22 Water Reclamation District whether or not it's  
23 building a TARP system?

24 A. Whatever is required under the

1 permit would still be in effect.

2 Q. But do you know what's required  
3 under the permit? Are they required to do all of  
4 the things that are required generally under nine  
5 minimum controls of other cities?

6 A. Yes, and they are also required to  
7 do more than what is required under the nine  
8 minimum controls in terms of operating the  
9 continuous dissolved oxygen monitoring network and  
10 providing reporting.

11 Q. And you would recommend that all of  
12 those main things be maintained in their permits  
13 in the future?

14 A. Yes.

15 Q. Is there -- four, are there benefits  
16 to elimination or treating CSO's in addition to  
17 reducing the effect of CSO's on dissolved oxygen  
18 levels?

19 A. Possibly, but treatment of CSO's to  
20 reduce the biochemical oxygen demand would not  
21 necessarily reduce bacteria.

22 Q. What sorts of pollutants can come  
23 out of CSO's?

24 A. Total suspended solids, metals.

1 MR. ANDES: Bacteria?

2 BY THE WITNESS:

3 A. Bacteria.

4 BY MR. ETTINGER:

5 Q. Endocrine disrupters?

6 MR. ANDES: Do you want to define  
7 what you're talking about with that term?

8 MR. ETTINGER: I think she knows.

9 MR. ANDES: For the record, let's  
10 just be clear. Before she answers the question,  
11 her understanding of that phrase may be different  
12 than yours.

13 BY MR. ETTINGER:

14 Q. Do you know what the endocrine  
15 disrupting chemicals are?

16 A. I do.

17 Q. What are they?

18 A. They are a suite of contaminants  
19 that can mimic the body's hormone systems and  
20 cause problems for aquatic life and other animals.

21 Q. Are endocrine disrupting chemicals  
22 sometimes present in CSO's?

23 A. Whether they are present in  
24 sufficient quantity to create a water quality

1 based effect I don't have information to suggest  
2 that is the case nor do I have information on what  
3 is affecting if there is potential to believe that  
4 endocrine disrupters are a problem for the Chicago  
5 Area Waterways.

6 There are areas in the country  
7 where researchers have observed potential effects  
8 of endocrine disrupters and they're studying the  
9 problem.

10 Q. And I don't know if I missed too  
11 much, but are you familiar with any efforts by US  
12 EPA to study endocrine disrupters in the Chicago  
13 Area Waterway System?

14 A. I don't know.

15 Q. Getting back to these feasible  
16 measures to address CSO's. Mr. Andes asked you a  
17 number of questions regarding biological treatment  
18 and the infeasibility of using biological  
19 treatment to treat CSO. Do you recall that?

20 A. Yes.

21 Q. That's often referred to as  
22 secondary treatment, right?

23 A. Yes.

24 Q. Are you aware of various forms of

1 primary treatment or are you aware of primary  
2 treatment being used as the CSO's?

3 A. You can have enhanced primary  
4 clarification. You know, high rate primary  
5 clarification, but the ability for it to address  
6 the soluble BOD is limited.

7 Q. It's limited, but will it do  
8 anything?

9 A. For some storm events, at some  
10 locations it may. It generally has been shown  
11 that it's difficult to have it effectively used as  
12 a way to treat a CSO discharge. The preferable  
13 way to treat a CSO discharge for BOD is to store  
14 and convey it to the treatment plant.

15 Q. You are aware, though, of systems in  
16 which they have an effect of settling pond at the  
17 end of a CSO that will settle out some portion of  
18 the first flush before it gets discharged?

19 A. At the end of an individual CSO?

20 Q. Yes. Some sort of discharging  
21 discharge point treatment?

22 MR. ANDES: With a settling pond?

23 BY THE WITNESS:

24 A. I don't know too many of those.

1 BY MR. ETTINGER:

2 Q. It's actually the primary treatment  
3 used by coal mines.

4 MR. ANDES: So the coal mines are a  
5 good example?

6 MR. ETTINGER: They'll tell you it's  
7 better than nothing and that's the question here.

8 BY MR. ETTINGER:

9 Q. Is it feasible to do things other  
10 than nothing?

11 MR. ANDES: Can I ask would you  
12 usually find for CSO's in the Chicago area you  
13 would have enough room as compared to a coal  
14 mining operation to locate settling ponds?

15 THE WITNESS: I don't know how that  
16 would work.

17 BY MR. ETTINGER:

18 Q. Do you know what the census figures  
19 are in the Chicago area as the change of  
20 population in the City of Chicago over the last  
21 ten years?

22 MR. ANDES: That leaves room for  
23 more settling ponds?

24 MR. ETTINGER: Probably.

1 BY MR. ETTINGER:

2 Q. Are you aware of the census figures?

3 A. No.

4 Q. I'm going to skip five. What is  
5 your understanding of when the TARP will be  
6 completed?

7 A. I believe that based on the most  
8 recent information (Exhibit 565 that the Board  
9 filed on January 3rd, 2011) TARP is currently  
10 scheduled to be completed in 2029.

11 Q. Are you aware of any legal  
12 requirements that it be scheduled in 2029?

13 A. No.

14 Q. You --

15 MR. ANDES: You don't know one way  
16 or the other?

17 THE WITNESS: No.

18 MS. TIPSORD: I need to ask a point  
19 of clarification. You refer to Exhibit 565. We  
20 don't have 565 exhibits yet.

21 THE WITNESS: My apologies.

22 MS. TIPSORD: Public Comment 565.

23 MR. ANDES: Yes.

24 THE WITNESS: Yes. I'm sorry.



1 MS. TIPSORD: Thank you.

2 BY MR. ETTINGER:

3 Q. We'll skip to eight because although  
4 it's a little redundant, but I just want to make  
5 clear. Do you believe MWRD will complete the TARP  
6 if all regulatory requirements that it do so are  
7 eliminated?

8 A. I am not aware of any proposals to  
9 eliminate the regulatory requirements to complete  
10 TARP.

11 Q. Do you believe there are regulatory  
12 requirements to complete TARP?

13 A. Yes.

14 Q. And where do you think those are  
15 located?

16 A. I believe those are located in the  
17 District's permit.

18 Q. In its current permit? In its  
19 current permit, they're required?

20 A. Yes.

21 Q. That permit would be reviewed in  
22 five years?

23 A. It could be reviewed at any time.

24 Q. Correct. And would there be a need

1 to build a TARP if there was no dissolved oxygen  
2 level scheduled?

3 A. I don't know the answer to that  
4 question.

5 Q. Would there be a little requirement  
6 that TARP be completed, but for the fact under the  
7 current situation the discharges by the  
8 Metropolitan Water District are causing violations  
9 of the dissolved oxygen standards?

10 A. I'm not aware of the District's  
11 situation in terms of negotiations with the EPA.

12 MR. ANDES: Is TARP also being built  
13 to your understanding for other reasons such as  
14 flood control?

15 THE WITNESS: Yes.

16 BY MR. ETTINGER:

17 Q. Is it legally required to build the  
18 TARP for flood control?

19 A. I'm not aware.

20 Q. Is there any set schedule now  
21 driving the completion of TARP as a matter of law?

22 A. I'm not aware.

23 Q. So if we take away legal  
24 requirements which now drive the District to

1 complete TARP, why do you think it will happen?

2 A. There's a lot of inertia.

3 Q. That's sort of been true.

4 MR. ANDES: Is there also anything  
5 to do with flood control?

6 THE WITNESS: Yes.

7 MR. ANDES: Is it required under  
8 their permit for reasons having nothing to do with  
9 dissolved oxygen control?

10 THE WITNESS: I can't answer that.

11 MR. ANDES: Okay.

12 BY MR. ETTINGER:

13 Q. I'm going to skip to ten.

14 MR. ANDES: One other question. Is  
15 it your understanding that it is part of the  
16 District's method of complying with the CSO  
17 policy?

18 THE WITNESS: Yes.

19 MR. ANDES: Which is incorporated in  
20 the Clean Water Act as a requirement?

21 THE WITNESS: Yes.

22 MR. ANDES: Does the CSO policy have  
23 anything to do with the dissolved oxygen or does  
24 it have --

1 THE WITNESS: Potentially.

2 MR. ANDES: It deals primarily with  
3 what parameter?

4 THE WITNESS: It deals primarily  
5 with the capture and treatment of CSO.

6 MR. ANDES: Does that address  
7 primarily bacterial issues?

8 THE WITNESS: Yes.

9 MR. ANDES: So that's the basis for  
10 the requirements at the current time.

11 THE WITNESS: Yes.

12 MR. ANDES: Is there any proposal to  
13 eliminate the CSO policy?

14 THE WITNESS: No. In fact, it's  
15 incorporated into the Clean Water Act.

16 MR. ANDES: Okay.

17 MS. WILLIAMS: Can I follow up real  
18 quick? Are you saying -- based on how you  
19 answered Fred's questions I wanted to follow up  
20 because I was a little surprised. If you worked  
21 with someone who had gone to the UAA to try to say  
22 there's no recreational activity occurring in a  
23 given waterbody, does that mean they don't have to  
24 follow the CSO long-term control plan, they don't

1 have recreational activity occurring?

2 THE WITNESS: The CSO control policy  
3 requires permittees with combined sewer overflows  
4 to fully implement the nine member controls.

5 They are then required to  
6 evaluate whether water quality standards can be  
7 violated and in doing that evaluation they can  
8 either go with the presumption approach, which is,  
9 say, 85 percent capture of the CSO to convince the  
10 Agency, specifically the Agency's permit writer,  
11 that by meeting that presumption approach, water  
12 quality standards will not be violated.

13 MR. ANDES: If I can interrupt you  
14 for a moment. Is that all part of developing a  
15 long-term control plan?

16 THE WITNESS: Yes. The evaluation  
17 of picking a presumption or a demonstration  
18 approach is in terms of developing a long-term  
19 control plan.

20 MS. WILLIAMS: Do you want to finish  
21 after the presumptive approach?

22 THE WITNESS: Yes. Or they can  
23 choose a demonstration approach where they collect  
24 water quality data. They do water quality

1 modeling to evaluate these specific levels of  
2 control that they could then demonstrate that  
3 water quality standards would be met or they can  
4 choose like for different segments of a waterway  
5 they could choose either the presumption or the  
6 demonstration approach and it's my understanding  
7 that when the District is evaluated even before  
8 the CSO policy was adopted by law into the Clean  
9 Water Act, the District evaluated what an  
10 appropriate level of CSO would be for the City of  
11 Chicago and that the Tunnel And Reservoir Plan,  
12 which is a phased approach, was the best way to  
13 control the CSO's in this particular system.

14 MS. WILLIAMS: And the presumption  
15 was that water quality standards would be met?  
16 All of them, right, not just bacteria, is that  
17 correct?

18 THE WITNESS: Right, and that was  
19 before the UAA was done.

20 MS. WILLIAMS: And now as we sit  
21 here today, you feel that they won't, water  
22 quality standards for DO will not be met by  
23 completion of TARP?

24 THE WITNESS: I'm saying that

1 because TARP will not adequately control all CSO  
2 discharges and these other wet weather sources  
3 which the data have shown can effect DO in the  
4 system even if CSO's are not discharging that it  
5 is appropriate if you're going to adopt what you  
6 believe to be the highest attainable use of this  
7 system that a wet weather limited use would be  
8 needed.

9 MS. WILLIAMS: Thank you.

10 BY MR. ETTINGER:

11 Q. Are you aware of any mandatory  
12 schedule for the completion of TARP under these  
13 nine minimum controls?

14 A. I'm not aware.

15 Q. Ten, have you seen data that is  
16 adequate to see daily changes in DO levels at --  
17 I'm going to drop ten. That was poorly written,  
18 but you wrote something else. Have you looked at  
19 any data that allowed us to trace diurnal swings  
20 in dissolved oxygen levels within any part of the  
21 CAWS?

22 A. I have not specifically evaluated  
23 the data from a perspective of what you just said.

24 Q. Have you -- you are familiar with

1 the phenomena in some systems where you'll --  
2 comparatively high dissolved oxygen levels are in  
3 daylight hours and comparatively low oxygen during  
4 the dark hours because of photosynthetic activity  
5 which is what you referred to here?

6 A. And respiration, yes.

7 Q. Okay. Would this proposal affect  
8 low DO levels caused by that activity?

9 A. What do you mean by affect?

10 Q. Would it change the legal  
11 implications of any violations of the dissolved  
12 oxygen level caused by photosynthetic activity as  
13 opposed to CSO?

14 A. This proposal would not affect  
15 conditions where you would have photosynthetic  
16 activity in periods outside of wet weather. So  
17 that would be -- that would include summertime  
18 when maybe you have a longer duration between wet  
19 weather events. If there were photosynthetic  
20 activity that would cause the DO to be violated  
21 during those conditions, then this would not  
22 affect that.

23 Q. Have you ever studied by looking at  
24 weather data how many days of the year for any



1 given year would have been subject to your wet  
2 weather standard?

3 A. Well, the wet weather limited use in  
4 general depending on the rainfall conditions could  
5 be as much as, say, 50 percent of the time and  
6 during drier years it would be less, but the  
7 important part is that the periods when you would  
8 actually need the wet weather limited use is less  
9 than that.

10 Q. That's true, but that wasn't my  
11 question. My question was have you looked at a  
12 typical year, say, 2009 and seen how many days  
13 based on the rainfall reports in that year would  
14 have been subject to the wet weather standard?

15 A. In Table 7 of my testimony, the  
16 count of wet hours is the period of time that you  
17 could potentially apply the wet weather limited  
18 use.

19 Q. That's not my question. That tells  
20 me the number of hours. I'm talking about the  
21 number of days. Theoretically, if it rained an  
22 inch every six days, the entire year would be  
23 subject to the wet weather standard, right?

24 A. Theoretically.

1 Q. Theoretically. Now, it doesn't do  
2 that fortunately here. So the question I'm asking  
3 is have you ever looked for any year and seen how  
4 many days were knocked out based on the rain  
5 charts for that year that we have from the past?

6 A. The days aren't being knocked out.  
7 They're just candidate days and I have looked at  
8 that and that data could be provided.

9 Q. You said you have looked at it?

10 A. Yes.

11 Q. Do you have any ballpark estimates  
12 for any year, 20 percent of the days, 2 percent of  
13 the days?

14 A. Yes. The table here that shows  
15 roughly 50 percent of the days is about right or  
16 the hours.

17 Q. Fifty percent --

18 A. Divide the hours by 24 and it's rule  
19 of thumb pretty close.

20 MR. ANDES: When you say 50 percent,  
21 you're referring to what number?

22 THE WITNESS: The count of hours.  
23 We have a total count of wet hours. Divide that  
24 by 24 and you get approximately the number of

1 days.

2 MR. ANDES: But that's wet hours.  
3 The number of hours -- percentage of hours where  
4 you determine the wet weather limited use is  
5 actually needed is far lower, correct?

6 THE WITNESS: Yes.

7 MR. ANDES: That was in what range?

8 THE WITNESS: That was maybe 6  
9 percent of the 50 percent.

10 MR. ANDES: At the highest?

11 THE WITNESS: At the highest.

12 BY MR. ETTINGER:

13 Q. This is all very interesting, but  
14 you're not answering my question. I'm not asking  
15 what percentage of the hours you would use. I'm  
16 asking how big is the suit, not how much do you  
17 fit into it. Do you see what I'm saying?

18 So it doesn't even -- answering  
19 my question doesn't require looking at the  
20 dissolved oxygen numbers at all. It just requires  
21 looking at the rain gauges and your regular or  
22 proposed regulation and we've agreed that  
23 hypothetically if it rained an inch every six days  
24 the entire year would be off. Now, it might be,

1 in fact, that you'll never use any of that. We'll  
2 have high DO levels that entire year. Who knows.  
3 But I'm just saying have you ever looked at the  
4 weather data versus your standard and seen how  
5 many days would be subject to the wet weather  
6 standard in that year?

7 A. And I apologize, but I thought I had  
8 answered that question by telling you that we took  
9 the rain gauge data. We looked at the wet weather  
10 trigger that has been proposed which includes the  
11 two, four, six days and in Table 7 I provide the  
12 number of hours where the wet weather limited use  
13 period is not even considered and the number of  
14 hours where the wet weather limited use period is  
15 considered.

16 MR. ANDES: So you were using days  
17 in that calculation to determine if it was in the  
18 right number of days after a wet weather event?

19 THE WITNESS: Correct.

20 MR. ANDES: But you were determining  
21 compliance by the particular hour in its DO date?

22 THE WITNESS: Correct.

23 MR. ANDES: So --

24 THE WITNESS: So it's roughly, for

1 2006, you know, as much as 50 percent of the time  
2 if not more.

3 BY MR. ETTINGER:

4 Q. So whatever half of 365 is, is the  
5 number of days that were potentially subject to no  
6 dissolved oxygen standard? It turns out you  
7 didn't need it all, but -- what is half of 365?  
8 190 days you could have had dissolved oxygen  
9 standards of zero in the entire system under this  
10 rule and it would have been legal?

11 A. I don't see where you're drawing  
12 that conclusion.

13 Q. I'm applying 50 percent to 365. My  
14 math is not up to that, but I'm told half of  
15 365 --

16 MS. MOORE: 182.

17 BY MR. ETTINGER:

18 Q. 182. I rely on a very reliable  
19 source. 182. If 50 percent of the days are  
20 subject to the standard, then 182 days you could  
21 have had no dissolved oxygen in the system and it  
22 would have been legal under the proposed rule?

23 A. How could you have that? Tell me  
24 what the District would do in terms of changing

1 what they do already that that situation would  
2 happen.

3 Q. I'm not asking whether it would  
4 happen. I'm asking for the meaning of the  
5 proposal, not what they're going to do. We all  
6 know the District is going to be just as virtuous  
7 as it can conceivably be, but that's not my  
8 question. My question is what they have to do as  
9 opposed to what they will do?

10 A. They have to comply with the  
11 operational requirement for the combined sewer  
12 overflow system that is in their permit. The  
13 MS4's have to comply with the operational  
14 requirements in their permits.

15 Q. Okay. We've been over that. Are  
16 you agreeing with me that under your rule 50  
17 percent of the days in the year would be outside  
18 of the dissolved oxygen standard?

19 A. No.

20 Q. Okay. Why not?

21 A. Because the reporting mechanism that  
22 is required requires that the District go through  
23 a step-by-step process of looking at each hourly  
24 measurement and reporting which measurements

1     comply, which measurements don't comply and which  
2     measurements they theoretically could have had the  
3     criteria not comply, but let everyone know whether  
4     the actual criteria that would apply during dry  
5     weather were met during the wet weather period.  
6     So I do not agree that -- it would wantonly allow  
7     50 percent of the time for there to be zero DO in  
8     the CAWS at every individual location where this  
9     wet weather limited use would apply.

10           Q.       I'm not following you.  Again, we're  
11     not asking what they would do.  I'm just asking  
12     what the operation of your rule is.  If the rule  
13     says I get off six days after one inch, are you  
14     saying under some conditions I don't get the full  
15     six days?

16           A.       The rule does not say you get off  
17     for six days.  The rule says you have to -- you  
18     have to operate your system the way they are  
19     operating it now.

20           Q.       Okay.  All I'm asking about -- I  
21     think I --

22                   MR. ANDES:  Can she answer the  
23     question?

24

1 BY MR. ETTINGER:

2 Q. I'm just asking about the dissolved  
3 oxygen standard. I'm asking Ms. Williams'  
4 question two. She said what happens if it  
5 recovered and then went back?

6 MR. ANDES: She has already answered  
7 the question six or seven times.

8 MS. TIPSORD: I have to tell you,  
9 Fred. I'm sorry. I'm confused myself. So let's  
10 let Albert try it one more time. I'm confused by  
11 this answer.

12 BY MR. ETTINGER:

13 Q. I'm just asking for the operation of  
14 the rule. Please forget about all the good things  
15 that we know the water reclamation would like to  
16 do, forget about all the other rules out there  
17 that might regulate it, I'm just asking about the  
18 operation of this rule on the dissolved oxygen  
19 standard.

20 By the operation of this rule,  
21 by a dissolved oxygen standard, you get six days  
22 off from the dissolved oxygen standard for one  
23 inch of rain, is that correct?

24 A. You potentially could apply if let's



1 say for that event the DO went to zero for six  
2 days then that would be legal.

3 Q. I think I'll leave it there.

4 MR. ANDES: That's a yes.

5 BY MR. ETTINGER:

6 Q. I think we're there. I think I  
7 understand. Eleven, do you disagree with  
8 Mr. Zenz's testimony regarding the possibility of  
9 meeting DO standards through use of aeration  
10 equipment?

11 A. Dr. Zenz relied on model simulations  
12 to develop his cost estimate about technologies  
13 needed to comply with proposed dissolved oxygen  
14 standards. I would say the model simulation were  
15 based on two periods that were selected to be  
16 representative and because of the nature of wet  
17 weather events there will be years with different  
18 conditions. I would not take definitive  
19 conclusions that if the technologies that were  
20 simulated were implemented that you could achieve  
21 full compliance with water quality standards in  
22 all hydrologic periods.

23 Q. Could you come closer?

24 A. Possibly.

1 Q. Could it be that there are some  
2 segments of the CAWS in which we could meet water  
3 quality standards using some of the equipment that  
4 was analyzed by Dr. Zenz?

5 MR. ANDES: Are you talking about a  
6 hundred percent of the time?

7 MR. ETTINGER: I'll leave my  
8 question as it is. If you want to ask the hundred  
9 percent question later, you can.

10 BY THE WITNESS:

11 A. There may be some locations where  
12 you could meet the DO criteria during the  
13 simulated periods, but as I said, the wet  
14 conditions in the CAWS are complex and vary year  
15 to year and, but there are also some locations  
16 where when you apply more technology you can't get  
17 the dissolved oxygen to improve during wet  
18 weather.

19 BY MR. ETTINGER:

20 Q. Have you analyzed where those  
21 locations might be?

22 A. I had evaluated those as part of the  
23 team when we were looking at how you do this. The  
24 last simulations were conducted by Dr. Melching

1 and I did review that report.

2 Q. Are you saying that if the Zenz  
3 methods are not capable of getting a hundred  
4 percent compliance all of the time that we should  
5 decide it will be infeasible for them to be used  
6 any place part of the time?

7 A. I don't believe that the District is  
8 proposing that that those technologies not be used  
9 at all. In fact, in his cost estimates in  
10 materials of complying with the District's  
11 proposal, there would be a substantial investment  
12 in additional technologies.

13 Q. Would it be unfeasible to make a  
14 bigger investment and better comply with the  
15 dissolved oxygen standard in some of these  
16 segments?

17 A. What do you mean by better comply?

18 Q. Come closer to meeting the standards  
19 that were proposed by IEPA than is proposed here?

20 A. And you would do that even though  
21 you don't expect that to have any beneficial use?

22 Q. No, I do expect it to have  
23 beneficial use, but my question to you is on the  
24 engineering, not on the biology. I'm asking you

1 do you think that we can't do any of the things  
2 increased -- in terms of increasing the dissolved  
3 oxygen levels that Dr. Zenz said were possible if  
4 the District wanted to make the investment?

5 A. In Dr. Zenz's testimony, he used the  
6 results of two simulations and the one result was  
7 what would it take technology wise to meet the  
8 Agency's proposed DO criteria a hundred percent of  
9 the time. There were still some locations where  
10 they couldn't exactly get to a hundred percent of  
11 the time and the cost was significantly higher  
12 than the cost of meeting the District's proposal  
13 which would include a wet weather limited use.

14 Q. So doing something always cost more  
15 than nothing, but the question is --

16 A. The \$65 million versus \$670 million  
17 and the benefit that you would get from that  
18 additional expenditure where the habitat  
19 evaluation and improvement study showed that  
20 unless you could fix the habitat, there would be  
21 an imperceptible change in fish population.

22 Q. We've heard Mr. Bell's testimony.  
23 My question is, do you on the engineering, are you  
24 saying that we could not build some of the things

1 that Dr. Zenz did? It would be infeasible to do  
2 so?

3 A. I wasn't asked to provide an opinion  
4 on that.

5 Q. Twelve, why is it appropriate to  
6 establish a wet weather designation based on the  
7 existing system if the TARP is going to lessen or  
8 eliminate any of the CSO's?

9 A. This is because CSO's are not the  
10 only source of negative impact from wet weather.  
11 Other sources such as urban storm water runoff,  
12 highway runoff and overland runoff to the  
13 tributaries are not going away even after TARP is  
14 completed.

15 The standards under discussion  
16 are for current and future conditions. It does  
17 not make sense to set a standard based on  
18 something that you know won't be attained in the  
19 near future and probably won't be attained even  
20 after TARP is fully implemented because there will  
21 still be some CSO dischargers and other wet other  
22 sources.

23 Q. Do you believe that there is nothing  
24 that can be done about urban storm water runoff?

1           A.        I didn't say that.

2           Q.        Is it infeasible to do something  
3    about urban storm water runoff?

4           A.        I didn't say that.

5           Q.        I gather then you think it is  
6    feasible to do something about urban storm water  
7    runoff?

8           A.        Doing something about urban storm  
9    water and meeting proposed dissolved oxygen  
10   criteria in the CAWS at every single location a  
11   hundred percent of the time is a different  
12   question.

13          Q.        Is it your proposal that we should  
14   always write standards so they can always be met a  
15   hundred percent of the time at every location?

16          A.        It's my opinion that if you are  
17   going to go through the -- if you're going to  
18   spend the time and the resources on a use  
19   attainability analyses, that you should use all of  
20   the information to establish the highest  
21   attainable use and it's my opinion that based on  
22   all of the data we have that there are still going  
23   to be periods throughout the CAWS where the  
24   dissolved oxygen is going to go below 4.0 or 5.0

1 mg/L during wet weather and that a wet weather  
2 limited use is, therefore, an appropriate way to  
3 establish the highest attainable use.

4 MR. ANDES: Is it your testimony  
5 that for the next 18 years until TARP is done,  
6 there will still be a significant need to use that  
7 wet weather limited use?

8 THE WITNESS: Yes.

9 MR. ANDES: And after that time  
10 period, would you assume that this provision would  
11 continue to be reevaluated to determine whether it  
12 is less necessary to use as we go forward into 20,  
13 25 and 30 years from now?

14 THE WITNESS: Yes.

15 BY MR. ETTINGER:

16 Q. Is it your understanding that the  
17 TARP affects all of the CSO's in the Chicago area  
18 equally?

19 A. I don't know.

20 Q. Are there some segments that will be  
21 benefitted more from TARP than others?

22 A. I don't know.

23 Q. Have you studied how many CSO's  
24 there are operated by the Water Reclamation

1 District?

2 A. I have reviewed reports that  
3 document the number of CSO's that discharge to  
4 each segment. I haven't spent the time to try to  
5 determine the difference between those operated by  
6 the City of Chicago and the District.

7 Q. Have you studied as to any of them  
8 on an individual basis whether they could be  
9 lessened or eliminated through either green  
10 infrastructure or some other type technology?

11 A. No.

12 Q. Questions one and two here are a  
13 little messy. I think I have to ask them both,  
14 but my question is really to one just for the  
15 benefit of two. One, has any state approved  
16 criteria that allowed DO levels to fall below 1.25  
17 mg/L?

18 MS. TIPSORD: This is question one  
19 under --

20 MR. ETTINGER: This is question one  
21 under Subdocket D.

22 BY THE WITNESS:

23 A. The Chesapeake Bay criteria includes  
24 a 1.0 mg/L minimum criterion for certain waters.



1 These criterion were developed by the Chesapeake  
2 Bay program and have been or are in the process of  
3 being adopted by State of Maryland, the District  
4 of Columbia and the Commonwealth of Virginia. I  
5 don't know of any specific instances where states  
6 have evaluated the periodic need for lower  
7 dissolved oxygen specifically for wet weather  
8 events. The Chicago Area Waterway System is the  
9 first system I know where this has been evaluated.

10 BY MR. ETTINGER:

11 Q. Do you know of any limitations on  
12 the wet weather provisions in the State of  
13 Maryland, regulations that you refer to here?

14 A. Can you repeat that question,  
15 please?

16 Q. Are you aware of limitations on how  
17 much they can use that standard in Maryland?

18 A. Which standard?

19 Q. The dissolved oxygen standard you  
20 refer to here?

21 A. Of 1.0 mg/L?

22 Q. A standard that would allow them to  
23 go below the ordinary standards.

24 A. By ordinary standard, do you mean

1 the 1.0 mg/L?

2 Q. No. I mean, in this case, 3.0.

3 A. I don't mean to frustrate you, but  
4 in the Chesapeake Bay they have looked at  
5 different portions of the bay in terms of habitat  
6 and they have a spawning habitat that has 6.0 or  
7 7.0 mg/L and then they have a deep water channel  
8 criteria habitat or they have a deep water channel  
9 habitat where the 1.0 minimum applies. So I don't  
10 understand your question.

11 Q. You know what, I'm going to withdraw  
12 that question and just ask you what is your  
13 understanding of the conditions in which they may  
14 go below a level of 3.0 in Chesapeake Bay?

15 A. If they are in, say, this deep water  
16 habitat, they can go below 3.0.

17 Q. For how long?

18 A. There are the biological reference  
19 curves that they have associated with each of the  
20 minimum criteria and not having applied those  
21 reference curves with your specific question I  
22 can't answer.

23 Q. Would it surprise you to find out  
24 that the abilities to go below those levels is

1 limited by a percentage basis?

2 MR. ANDES: Are you going to  
3 introduce evidence of that?

4 MR. ETTINGER: Later.

5 MR. ANDES: So you're going to make  
6 her answer the question without introducing the  
7 evidence?

8 MR. ETTINGER: I'm asking her a  
9 question. If she doesn't know the answer to the  
10 question, she has a pretty simple response.

11 BY THE WITNESS:

12 A. Then, I can't answer your question.

13 BY MR. ETTINGER:

14 Q. Thank you. We go on. Has US EPA  
15 ever approved the state standard that allowed DO  
16 levels to fall below 1.25 mg/L?

17 A. Again, US EPA adopted the Chesapeake  
18 Bay criteria.

19 MR. ANDES: Those were adopted by US  
20 EPA?

21 THE WITNESS: Yes.

22 BY MR. ETTINGER:

23 Q. What document did they adopt it in?

24 A. It's the Chesapeake Bay criteria

1 documents.

2 Q. It says these criteria in your  
3 response to question one above it says "These  
4 criteria were developed by the Chesapeake Bay  
5 program and had been or are in the process of  
6 being adopted by the State of Maryland, the  
7 District of Columbia and the Commonwealth of  
8 Virginia"?

9 A. Yes.

10 Q. And you believe they have now all  
11 been all adopted by those states and those  
12 standards have been approved by US EPA?

13 A. I believe in Virginia they're still  
14 going through the process of getting them adopted,  
15 but US EPA is part of the Chesapeake Bay program  
16 and they have approved, I believe, the State of  
17 Maryland's and the District of Columbia's  
18 standard.

19 Q. So you believe we should be able to  
20 get a letter from US EPA approving these  
21 standards?

22 A. I would hope so.

23 MR. ANDES: Weren't they recommended  
24 by US EPA in the first place?

1 THE WITNESS: Yes.

2 BY MR. ETTINGER:

3 Q. Are you -- have you reviewed any  
4 letters US EPA wrote specifically with regard to  
5 this system?

6 A. Yes, I'm aware.

7 Q. Have you reviewed the letter from  
8 last January regarding dissolved oxygen standards  
9 in the CAWS?

10 A. I may have.

11 Q. Turning now to page seven -- I'm  
12 sorry. Question 7 on page 11. On page 13 of your  
13 proposal, it is stated that under the District's  
14 proposal one location will receive additional  
15 treatment. Why?

16 A. My statement was that this location,  
17 which is Main Street on the North Shore Channel,  
18 would receive additional treatment. This is  
19 because Marquette University's model simulation  
20 showed that flow augmentation would be needed at  
21 this location to achieve the District's proposed  
22 criteria.

23 Q. Why was that?

24 A. Because it has low dissolved oxygen

1 during dry weather periods and by introducing  
2 additional flow that includes additional dissolved  
3 oxygen that that would be a good technology to  
4 improve the dissolved oxygen levels in this  
5 segment.

6 Q. So this is necessary to default to  
7 meet the dry weather standard?

8 A. Yes.

9 Q. Finally, are you aware of the source  
10 of cyanide in the Metropolitan Water Reclamation  
11 District discharge?

12 A. No.

13 Q. Have you studied the need for  
14 changes in the cyanide standard in the CAWS?

15 A. No.

16 Q. Have you seen any reports by the  
17 Water Reclamation District as to why they want to  
18 change the cyanide standard?

19 A. No.

20 MR. ETTINGER: I'm done.

21 MR. ANDES: I'd like to follow up  
22 for a moment. If I can take you back to Table 7,  
23 Ms. Nemura, and what I'd like you to do is Table 7  
24 of your testimony which lays out, am I correct, a

1 typical year and how the District's proposal would  
2 apply? And if you can walk us through that  
3 particularly with relation to --

4 MR. ETTINGER: Do we really have to  
5 go over this yet again, Fred?

6 MS. WILLIAMS: I'm going to object  
7 to the typical year.

8 MR. ANDES: A particular year. And  
9 if you can walk us through exactly how the  
10 District would calculate compliance in this  
11 particular year and determine how often it would  
12 use the wet weather limited use?

13 THE WITNESS: Can I have the chart?  
14 It was attached to the testimony. First, the  
15 District would gather all of the CDOM data and all  
16 of the rainfall data and they would put each  
17 hourly measurement of dissolved oxygen in either  
18 the dry weather value or a wet weather value and  
19 the wet weather value would be based on the wet  
20 weather limited use trigger that is proposed.  
21 Then, they would look at -- so that includes in  
22 the count of hours in the table you can see the  
23 total dry values and the total wet hourly values.

24 Then, they would evaluate the

1 dry weather values and determine the number of  
2 values that were above the water quality criterion  
3 and the number of values that were below the water  
4 quality criterion. They would then look at the  
5 number of wet weather values and determine if the  
6 dissolved oxygen preceding an individual wet  
7 weather event was less than the dry weather  
8 criterion they would not be able to potentially  
9 use the wet weather limited use. So that would be  
10 a wet weather limited use excluded value.

11 They would then look at in terms  
12 of those wet weather limited uses excluded values  
13 what were the number of hours where the dissolved  
14 oxygen was less than the dry weather criterion and  
15 that would be considered a wet value that was in  
16 violation of the proposed criteria. They would  
17 also look at the number of values that you  
18 couldn't apply for the wet weather limited use,  
19 but it was greater than the dry weather criterion  
20 as well as if you had the wet weather limited use  
21 and it was greater than the criterion you didn't  
22 need it. So the total of those two would be  
23 essentially the wet hours above the water quality  
24 criterion that is shown in the table.



1 MR. ANDES: Those numbers are  
2 around --

3 THE WITNESS: Around 50 -- 50, 55  
4 percent of the time. And then, finally, you would  
5 look at the periods where you could apply the wet  
6 weather limited use and it was greater -- or it  
7 was less than the water quality criterion and  
8 those would be the hours where you would actually  
9 be applying for the wet weather limited use.

10 MR. ANDES: And the range of  
11 percentages for that particular year would be  
12 what?

13 THE WITNESS: Zero to six percent of  
14 the time.

15 MR. ANDES: In those segments, you  
16 would actually use the wet weather use more than  
17 six percent of the time?

18 THE WITNESS: Correct?

19 MR. ANDES: Thank you.

20 BY MR. ETTINGER:

21 Q. Would the District be agreeable to  
22 limiting its proposal so as to say it would not  
23 use the wet weather limited use more than six  
24 percent of the time?

1 MR. ANDES: I think one would have  
2 to assess whether that year is particular. I can  
3 certainly take that issue that you've raised back  
4 to the District and we can provide our views on  
5 that.

6 MR. ETTINGER: Thank you.

7 THE WITNESS: And if you look on  
8 Table 6.

9 MS. TIPSORD: Go ahead.

10 MR. ETTINGER: I'm sorry. I thought  
11 we were done. I wasn't expecting to get answers  
12 when there wasn't even a question on the table.

13 THE WITNESS: If you look on Table  
14 6, with the exception of the North Shore Channel  
15 which would receive flow augmentations, the  
16 maximum percentage of time from 2001 to 2008 was  
17 11 percent.

18 MR. ETTINGER: Can we break it down  
19 by segment and have a percentage on a segment by  
20 segment basis?

21 MR. ANDES: We'll take that under  
22 advisement also depending on what the particular  
23 DO standards are, of course. So there's  
24 particular assumptions made here as to what the DO

1 standards are, but could we derive a number that  
2 we might be able to agree to? That's certainly  
3 something we would consider and we'll get back to  
4 you on that.

5 MR. ETTINGER: Do you have any  
6 further answer to Fred's comment?

7 MS. TIPSORD: No, but I believe --

8 MS. DEXTER: I have four follow-up  
9 questions before everyone packs up and leaves.  
10 Really fast. Do you know -- Jessica Dexter,  
11 Environment Law and Policy Center. Do you know  
12 how far below the waste water treatment plants the  
13 nearest DO monitoring locations are roughly in  
14 miles?

15 THE WITNESS: Off the top of my  
16 head, depending on which plant you talk about it's  
17 maybe half a mile for the Northside plant, maybe  
18 three miles for the Stickney plant and maybe three  
19 quarters of a mile for the Calumet plant.

20 MS. DEXTER: My next question. In  
21 the proposal that was submitted, it's in Section  
22 303.236(e), it describes -- prohibits toxic  
23 conditions in there. Can you explain what you  
24 mean or what is meant by toxic conditions? Is

1 that lethal conditions or are you talking about a  
2 chemical toxicity?

3 THE WITNESS: It's my understanding  
4 that that would be similar to the narrative for  
5 the category three waters.

6 MS. DEXTER: So, in other words, for  
7 example a fish kill that may have been caused by  
8 dissolved oxygen would be prohibited by that part,  
9 correct?

10 THE WITNESS: Correct.

11 MS. DEXTER: My next question is  
12 also interpreting a hypothetical based on rainfall  
13 data just to understand how you applied the  
14 standards. So let's say we have three consecutive  
15 days of rainfall. On the first day, the rainfall  
16 is 0.87 so it triggers the second category. On  
17 the second day, it rains 1.05 inches. So that  
18 triggers the third trigger, but on the third day  
19 it rains 0.25 which triggers the very first.

20 So which of those days controls  
21 how many days after that last day of rainfall?

22 THE WITNESS: The second day would  
23 extend out for the trigger day plus an additional  
24 six days.

1 MS. DEXTER: So it would be two days  
2 after plus six days after? The problem I'm seeing  
3 is so that last day of rainfall would only give  
4 two days, but the day before that would have given  
5 six days?

6 THE WITNESS: Yes.

7 MS. DEXTER: So did you pick the  
8 biggest one and count below there?

9 THE WITNESS: No. So for the first  
10 rainfall, you would have had the trigger day plus  
11 the two days -- I'm sorry.

12 MS. DEXTER: The first one would  
13 have been four days.

14 THE WITNESS: So for the first one,  
15 you would have had the trigger day plus four days.  
16 The second event you had the largest trigger day.

17 MS. DEXTER: Right.

18 THE WITNESS: So you would extend  
19 that out the additional two days to give you the  
20 trigger days plus the six days. Then, your third  
21 event if it fell within that it would be the  
22 second event that controlled that.

23 MS. DEXTER: I just wanted to make  
24 sure that's how it was interpreted. And my last

1 question is earlier today we had talked about  
2 reviewing the data further down in time to see if  
3 we should change something about the DO standards  
4 or the trigger events or that sort of thing. What  
5 would you see in that data that would trigger a  
6 change in the requirements of this proposal?

7 THE WITNESS: Let's say in a  
8 particular segment there had been a concerted  
9 effort to maximize the use of green infrastructure  
10 to clean up urban storm water, to see what the  
11 highway department could do to address that  
12 runoff, and you had these wet weather triggers and  
13 yet you didn't need the wet weather limited use at  
14 all. You might then want to do additional  
15 evaluation of how those controls were able to  
16 reduce the volume and frequency of those wet  
17 weather discharges and if you thought that that  
18 was significant you might then want to apply the  
19 District's water quality model to see if in model  
20 land, which can be helpful, that it seemed like,  
21 yes, this suite of controls seems to have  
22 addressed the problem.

23 You could then in the triennial  
24 review for the water quality standards say we

1 believe that the wet weather limited use for this  
2 segment is no longer needed.

3 MR. ANDES: You could also have a  
4 situation where, for example, you were using it  
5 ten times a year and now you would look at it and  
6 say I still need it, but now I only need it one  
7 time a year?

8 THE WITNESS: Yes.

9 MS. DEXTER: And what would change  
10 in the proposal, in the rule language to  
11 incorporate that?

12 MR. ANDES: That wouldn't change the  
13 regulation, would it? It would just change the  
14 number of times they used it, am I right?

15 THE WITNESS: Right. You would  
16 still have the 50 percent of the time you might  
17 legally be allowed to exercise the wet weather  
18 limited use, but the data would be out there that  
19 showed that you've been making progress at  
20 improving water quality. Whether or not that  
21 would warrant saying that, you know, there's an  
22 overall improvement in the resident aquatic fish  
23 population, you might want to have fish data to  
24 see if you know there was any change, but all the

1 data that we have suggested that the resident fish  
2 population would stay the same.

3 So you might keep the regulation  
4 in place the way it's written and just rely on the  
5 reporting to indicate that you're making progress  
6 and improving DO for improving DO's sake. If that  
7 makes any sense.

8 MS. DEXTER: It kind of does, but I  
9 don't see the point of doing a triennial review if  
10 the -- out of basis, you would say, no, we always  
11 need to have this ability to take it down to zero  
12 for half of the time even if we only use it one  
13 day a year, we shouldn't change the standard to do  
14 that?

15 THE WITNESS: Right. That's why I'm  
16 saying you should want these other studies to  
17 provide the cause which would be the successful  
18 reduction in the wet weather discharges so you  
19 would anticipate they would not -- they would  
20 prevent the wet weather sources from impacting the  
21 dissolved oxygen in the system.

22 MS. DEXTER: All right. That's all  
23 I have.

24 MS. TIPSORD: Ms. Alexander?



1 MS. ALEXANDER: Are you familiar  
2 with what measures are being used in the  
3 Washington DC area to control CSO discharges?

4 THE WITNESS: Yes.

5 MS. ALEXANDER: Can you explain a  
6 little about what those are?

7 THE WITNESS: They have a series of  
8 tunnels that are under construction and they also  
9 have some ways to sort of help the capture of CSO  
10 within the combined system so they can send more  
11 flow to the plants, including a series of  
12 inflatable dams and realtime controls that they  
13 operate to maximize the flow in the collection  
14 system.

15 They are also evaluating the  
16 potential for low impact development to address  
17 storm water problems on site through their river  
18 smart grant program that Limnotech is involved in  
19 and they are also -- if they can obtain some  
20 flexibility with the regulatory agencies, you  
21 know, looking at more widespread implementation at  
22 green infrastructure throughout the combined and  
23 separate sewer systems. And they are also in  
24 active negotiations with the federal agencies

1 located within the District of Columbia largely as  
2 a result of the Chesapeake Bay TMDL.

3 MS. ALEXANDER: Are you also  
4 familiar with the recent consent decree  
5 settlements in Cleveland and St. Louis and  
6 specifically the green infrastructure requirements  
7 contained within?

8 THE WITNESS: Yes. Limnotech is  
9 helping with a feasibility study for widespread  
10 implementation of green infrastructure in  
11 Cleveland. And in St. Louis we helped the Sewer  
12 District evaluate whether wide spread application  
13 of green infrastructure in half of its service  
14 area could be successful in improving the percent  
15 capture of combined sewage for that portion of the  
16 collection system and the results were encouraging  
17 that we recommended that they proceed with a green  
18 infrastructure program for their whole service  
19 area as a way to help reduce combined sewer  
20 overflows.

21 MS. ALEXANDER: Now, hopefully the  
22 last question. Do I recall correctly that you  
23 testified earlier today that the Chicago area in  
24 some manner is uniquely different in terms of its

1 ability to reduce CSO's?

2 THE WITNESS: In both Cleveland and  
3 St. Louis, they have essentially land  
4 redevelopment banks and they also have large  
5 portions of their highly urbanized pockets within  
6 both of those service areas that essentially are  
7 slated for some sort of redevelopment and in both  
8 cases the green infrastructure is being used as a  
9 way to enhance -- I shouldn't say in both cases.

10 In Cleveland, it's being used as  
11 a way to enhance the agreed level of control. In  
12 St. Louis, it's an integral component of the  
13 agreed level of control.

14 MR. ETTINGER: Could I just ask the  
15 thing you did for St. Louis, is it in some form of  
16 a report or something?

17 THE WITNESS: It is included in, I  
18 believe, Chapter 11 of their long-term control  
19 plan. It may not be available on the website  
20 because they did update their long-term control  
21 plan from 2009 if it's their February 2011  
22 version.

23 MR. ANDES: Has there been any  
24 assessment of the extent to which contemplated

1 green infrastructure measures in Cleveland or  
2 St. Louis will result in reduction in DO issues?

3 THE WITNESS: No.

4 MR. ANDES: Was that any part of the  
5 long-term control plans for those communities?

6 THE WITNESS: No. In Cleveland, the  
7 concern was not over meeting dissolved oxygen  
8 criteria, it was over meeting bacteria criteria  
9 and even though the District showed through the  
10 water quality modeling results that Limnotech did  
11 for them that they could meet water quality  
12 standards for bacteria at four overflows per year  
13 US EPA took the position that because Cleveland  
14 could afford to do more in their opinion that they  
15 should go to a two overflow per year solution and  
16 during those negotiations the District agreed that  
17 they would evaluate whether they could go from  
18 four overflows per year to two overflows per year  
19 by implementing green infrastructure.

20 MR. ANDES: So that's not going to  
21 zero overflows?

22 THE WITNESS: Correct.

23 MR. ANDES: And that's two overflows  
24 a year per discharge point, right? That's not two

1 overflows throughout the whole system, that's two  
2 overflows times however many discharge points they  
3 have?

4 THE WITNESS: And that's a typical  
5 year which was defined as a certain condition.

6 MS. TIPSORD: Anything else? Thank  
7 you very much, Ms. Nemura, for coming back. We  
8 have some deadlines coming up in this rulemaking.  
9 For motions, June 29th responses. July 8th  
10 replies and, with that, we're adjourned. Thank  
11 you, everyone.

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1 STATE OF ILLINOIS )  
2 ) SS.  
3 COUNTY OF COOK )  
4

5 I, Steven Brickey, Certified Shorthand  
6 Reporter, do hereby certify that I reported in  
7 shorthand the proceedings had at the trial  
8 aforesaid, and that the foregoing is a true,  
9 complete and correct transcript of the proceedings  
10 of said trial as appears from my stenographic  
11 notes so taken and transcribed under my personal  
12 direction.

13 Witness my official signature in and for  
14 Cook County, Illinois, on this 8<sup>th</sup> day of  
15 July, A.D., 2010.

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