

ILLINOIS POLLUTION CONTROL BOARD

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

R08-09
 (Rulemaking-
 Water

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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 15th day of August, 2011,
 commencing at the hour of 1:00 a.m.

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MS. KIMBERLY RICE
MS. JESSICA DEXTER

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I N D E X

THE WITNESS: KIMBERLY RICE

No questions asked of Kimberly Rice.

THE WITNESS: ROY SMOGOR

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

10 With me today to my immediate
11 right is acting Chairman G. Tanner Girard. To his
12 right, Board Member Carrie Zalewski. To her
13 right, Board Member Andrea Moore and to Member
14 Moore's right, Board Member Gary Blankenship. To
15 my far left is Board Member Thomas Johnson and to
16 my immediate left is Alisa Liu from our technical
17 unit. Also here today is Ethan Pressly who is an
18 extern with the Board from Vermont Law School and
19 is here with us at the back of the room.

20 Today's hearing is the ninth day
21 of hearings in Subdocket C, but it is the 52nd
22 overall in this proceeding. Today, we'll hear the
23 testimony of Kimberly Rice with Friends of the
24 Chicago River and if Mr. Botts gets here in time

1 we'll go with Paul Botts with Wetlands Initiative.
2 We have no pre-filed questions for these witnesses
3 so we will take their testimony and allow for any
4 questions that might have come up.

5 Then, I will go onto Roy Smogor
6 with the IEPA and questions from Mr. Smogor by the
7 Metropolitan Water Reclamation District. We will
8 conclude the set of hearings with the testimony of
9 Dave Thomas on behalf of the Environmental Groups
10 and questions filed by the District. The
11 testimony will be marked as an exhibit and entered
12 as if read. Anyone may ask questions. I do ask
13 that you raise your hand, wait for me to
14 acknowledge you. After I have acknowledged you,
15 please state your name and whom you represent
16 before you begin your questions. Please speak one
17 at a time. If you're speaking over each other,
18 the court reporter will not be able to get your
19 questions on the record. Please note that any
20 questions asked by a Board Member or staff are
21 intended to help build a complete record for the
22 Board's decision and not to express any
23 preconceived notion or bias. Dr. Girard?

24 MR. GIRARD: Good afternoon.

1 Welcome to another hearing in this rulemaking No.
2 52. The Board is extremely grateful for the time
3 and effort that everyone has put into this
4 proceeding. It will help us build a good record
5 for making a decision in this rulemaking proposal.
6 So thank you very much and let's get to work.

7 MS. TIPSORD: And we'll start with
8 Kimberly Rice on behalf of the -- I'm sorry. I
9 just lost it.

10 MS. DEXTER: Friends of the Chicago
11 River.

12 MS. TIPSORD: I am so sorry.

13 MS. DEXTER: That's okay.

14 MS. TIPSORD: Can we have the
15 witness sworn in, please?

16 WHEREUPON:

17 KIMBERLY RICE

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

20 MS. TIPSORD: If there's no
21 objection, we will mark the pre-filed testimony of
22 Kimberly Rice as Exhibit 465. Seeing none, it's
23 Exhibit 465.

24

1 (Document marked as IEPA Exhibit
2 No. 465 for identification.)

3 MS. TIPSORD: Are there any
4 questions for Ms. Rice? Thank you very much.

5 THE WITNESS: Thank you.

6 MS. TIPSORD: Has Mr. Botts joined
7 us? I don't believe so. Let's go ahead and start
8 then with the IEPA and Roy Smogor and the
9 Metropolitan Water Reclamation District's
10 pre-filed questions. Could we have Mr. Smogor
11 sworn in then?

12 WHEREUPON:

13 ROY SMOGER
14 called as a witness herein, having been first duly
15 sworn, deposeth and saith as follows:

16 MS. TIPSORD: And then,
17 Ms. Williams, you indicated you wanted to do his
18 testimony and then a couple of the exhibits with a
19 couple of his attachments as separate exhibit
20 numbers?

21 MS. WILLIAMS: Yes. Do you want me
22 to enter the testimony?

23 MS. TIPSORD: Yes, let's do his
24 testimony first. The pre-filed testimony of Roy

1 Smogor filed 6/28/2011 will be admitted as Exhibit
2 466 if there's no objection. Seeing none, it's
3 Exhibit 466.

4 (Document marked as IEPA Exhibit
5 No. 466 for identification.)

6 MS. WILLIAMS: Mr. Smogor, I'm
7 showing you a document entitled CAWS Habitat Index
8 Potential Score After Habitat Improvement. Can
9 you identify that document?

10 THE WITNESS: Yes, this was
11 Attachment A to my pre-filed testimony.

12 MS. WILLIAMS: I'd like to move to
13 have that entered.

14 MS. TIPSORD: I need a copy of his
15 testimony. I just need one for me to mark. And
16 then you were getting ready to have this moved.

17 MS. WILLIAMS: Yes, I'd like to move
18 to have Attachment A entered as --

19 MS. TIPSORD: 467.

20 MS. WILLIAMS: -- Exhibit 467.

21 MS. TIPSORD: Is there any
22 objection? Seeing none, it's Exhibit 467.

23

24

1 (Document marked as IEPA Exhibit
2 No. 467 for identification.)

3 MS. WILLIAMS: Mr. Smogor, I'll show
4 you a second document entitled CAWS Habitat Index
5 Current Conditions. Can you identify that for us?

6 THE WITNESS: Yes, this was
7 Attachment B to my pre-filed testimony.

8 MS. WILLIAMS: At this time, I'd
9 like to move to have this exhibit entered as 468.

10 MS. TIPSORD: If there's no
11 objection, we will admit Exhibit -- Attachment B
12 as Exhibit 468. Seeing none, it's Exhibit 468.

13 (Document marked as IEPA Exhibit
14 No. 468 for identification.)

15 MS. WILLIAMS: That's all I have.

16 MS. TIPSORD: With that, I think
17 we're ready to begin with you, Mr. Andes.

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

19 BY MR. ANDES:

20 Q. Good afternoon. We'll start at the
21 very beginning. On page three of your testimony,
22 Mr. Smogor, you state that the habitat reports
23 contained no analysis to show how each variable in
24 the habitat index and the fish metric related to a

1 relative degree of naturalness. Do all biotic and
2 habitat indices have to show how each variable in
3 the index is related to a gradient of human
4 impact?

5 A. No.

6 Q. In the development of the QHEI, was
7 it shown that each variable in the index was
8 related to a gradient of human impact?

9 MS. WILLIAMS: Is this 1C?

10 MR. ANDES: Yes.

11 BY THE WITNESS:

12 A. Yes, I would say indirectly it was
13 because the QHEI -- the Ohio Qualitative Habitat
14 Evaluation Index, the QHEI, that was developed by
15 relating some of its components to the Ohio fish
16 IBI and the Ohio fish IBI was in itself a measure
17 of human impact. So, indirectly, the QHEI was
18 related to a gradient of human impact.

19 BY MR. ANDES:

20 Q. So was each variable in the QHEI
21 related to a gradient of human impact?

22 A. In developing the QHEI, it's my
23 understanding that, yes, the individual variables
24 of the QHEI were related to the fish IBI.

1 Q. Each individual variable was related
2 back to the fish IBI?

3 A. Yes.

4 Q. Was the fish IBI -- was each
5 variable in the fish IBI related to the gradient
6 of human impact?

7 A. I believe it was although I have to
8 say the documentation doesn't show that
9 explicitly, but I believe it was. I believe it
10 was developed with -- by choosing metrics that
11 would work. In other words, they'd be useful
12 signals of a human impact.

13 Q. You don't have any documentation to
14 show that?

15 A. I've looked back into the Ohio
16 documentation and for some of the metrics, some of
17 the individual measures they do mention their
18 basis for choosing those, but I'd have to say
19 there's no formal, like, statistical analysis of
20 that being done back in that original
21 documentation. I might add, though, over the last
22 20 years or so since that Ohio IBI has been
23 developed, I have come across numerous published
24 documents in the literature that have used the

1 Ohio IBI and its component metrics and show how
2 those metrics reflect various aspects of human
3 impact.

4 So, basically, I'm saying I
5 think it has stood the test of time in being a
6 legitimate measure of human impact.

7 Q. And the CAWS index could certainly
8 stand the test of time as well, correct?

9 A. In the future, if we're speculating,
10 that's a possibility. I would say it hasn't stood
11 the test of time yet, though.

12 Q. But the critique you had was the
13 habitat reports had no analysis to show how each
14 variable in the habitat incident and the fish
15 metric related to a relative degree of
16 naturalness, what you're saying is you don't have
17 that same analysis for each variable in the Ohio
18 fish index metric and habitat index, correct?

19 A. I think I said it's my understanding
20 that there is a measure and analysis in the
21 development of the Ohio habitat index that relates
22 each of the measures to the Ohio IBI.

23 So I would say that the Ohio
24 habitat index does meet that criterion. The Ohio

1 fish index there is not an explicit statistical
2 relationship developed for each metric in the Ohio
3 fish index.

4 Q. Thank you.

5 A. Mm-hmm.

6 Q. Given that the CAWS is entirely
7 manmade or altered effluent dominated and flow
8 controlled by the District, what degree of
9 naturalness would you expect?

10 A. If I'm interpreting this question
11 directly, I agree. The CAWS is a highly impacted
12 stream system. It's not natural and I'd say based
13 on the available information we believe that its
14 biological potential falls short of the Clean
15 Water Act aquatic life goal. I don't know what
16 else you're asking here. Maybe I didn't
17 understand the question.

18 Q. I think this goes towards question
19 1G. If the waterways are all not natural, manmade
20 or altered effluent dominated flow control by the
21 District, wasn't this, in fact, the reason
22 Limnotech felt it was necessary to create a CAWS
23 specific habitat index since the QHEI based on
24 natural systems would not show enough of a

1 gradient between various reaches?

2 A. I guess I take issue with the
3 premise of the QHEI not showing enough of a
4 gradient because the information that we had --
5 that had on the record for Rankin 2004 report,
6 which I believe was Attachment R to our original
7 statement of reasons, that showed a range of QHEI
8 scores from about 22 to 54 and we believe that
9 that was sufficient range to use the QHEI scores.
10 That doesn't seem to me like a very narrow range
11 of QHEI scores.

12 Q. Aren't there key elements of the
13 CAWS features such as lack of sinuosity, ripples,
14 et cetera that have been highlighted in the
15 Limnotech report that showed no gradients across
16 the system, correct?

17 A. I agree there are individual
18 measures in the QHEI that show relatively little
19 variability across the CAWS, but, to me, that's a
20 signal that these particular measures are all
21 scoring kind of uniformly low on the index and I
22 don't think that necessarily makes the index not
23 useable because the purpose of the index, at least
24 the way we were using it, is a measure of human

1 impact and so an index can read uniformly low at a
2 lot of sites, but it's still serving its purpose.
3 It's telling you that this is uniformly impacted.

4 That being said, I would still
5 have to come back to there were some metrics
6 within the QHEI that did score uniformly low and
7 there wasn't much variability, but the final QHEI
8 score differed from 22 to 54 at the CAWS sites
9 where we had it measured and, to me, on an index
10 that scores from 0 to 60 that's sufficient
11 variability to say that that index is telling you
12 something about the system.

13 Q. And we'll talk a little bit further
14 later about the QHEI. Let me move onto question
15 two. On page four, you state that the habitat
16 reports did not analyze relations between water
17 quality and physical habitat throughout the CAWS.
18 Do you mean the study should have examined the
19 cause-effect relationship between habitat
20 variables and water quality variables?

21 A. No, not necessarily cause-effect. I
22 was referring to statistical relation and
23 variables can be related to each other without
24 being related in a cause-effect way.

1 Q. But then if you find them
2 statistically related, but there's no cause-effect
3 you can't use them to really form the basis for a
4 regulation, can you, if ones not causing the
5 other?

6 A. I guess I'm not sure what you're
7 asking. In the context that I was talking about,
8 examining how habitat relates to water chemistry
9 and water quality I think was the term I used, I
10 think it's important in a statistical sense that
11 if you saw physical habitat being related to a
12 measure of fish throughout the CAWS, if you didn't
13 consider how at the same time that pattern of
14 physical habitat being related to fish could
15 possibly be explained by factors that weren't due
16 to physical habitat, but just happened to be
17 something like water chemistry that varied or was
18 statistically correlated or covaried with the
19 physical habitat, you can't necessarily tease
20 apart then the effect of water chemistry from the
21 potential effect of physical habitat and that's
22 what I was referring to.

23 Q. If the water quality factors just
24 happened to covary with the habitat factor, then

1 by looking at the habitat factor you're
2 understanding what is going on. If the water
3 quality factors is not a causal factor and you
4 said you are not identifying cause-effect
5 relationships, why would you need to worry about
6 it if changing the water quality is not going to
7 cause any change in habitat then -- and if, in
8 fact, it simply covaries with habitat as an
9 explainer of fish quality, why not just go with
10 the habitat?

11 A. I guess I'm not following your
12 question why not just go with the habitat. I'm
13 not sure what you're asking me.

14 Q. We're trying to understand your
15 critique and this goes towards the last question
16 as well. Your critique of the habitat reports was
17 that they didn't analyze this relationship between
18 water quality and physical habitat. We're trying
19 to understand why it would even be important to
20 examine that relationship if there's no -- are you
21 looking at whether it's cause-effect because if
22 it's simply a covariance, that wouldn't be that
23 important to examine. Why is it a problem that
24 they didn't analyze this relationship in the

1 habitat reports?

2 A. I think it is important because a
3 major conclusion -- at least my interpretation
4 that a major conclusion of that report was we
5 found a relationship between physical habitat and
6 fish and if -- that relationship was so strong
7 that we believe physical habitat is the limiting
8 stressor in the system. More so than water
9 quality. But what I'm saying is you have to look
10 at that interpretation as being potentially
11 confounded by the differences how water quality
12 covaries with physical habitat. Here's a simple
13 example. I think I may have used this.

14 I think the Limnotech study
15 found that maximum channel depth was strongly --
16 relatively strongly related to fish throughout the
17 CAWS. My question is, what if it just so happens
18 that where the CAWS has the most or the deepest
19 maximum channel depth that there was poorer water
20 quality at those locations? That poorer water
21 quality covarying could be just as reasonable an
22 explanation for the lower fish score as the depth
23 was.

24 Q. But if they looked at water quality

1 and looked at a variety of parameters of the water
2 quality and found that that -- looking at that and
3 how changes in water quality correlated with
4 changes in fish quality did not explain very much
5 then, in fact, it's not likely that the water
6 quality would have been covarying accidentally
7 with habitat and explaining anything, right?

8 A. Are you saying that that's what you
9 believe Limnotech looked at in the report?

10 Q. Don't you believe they looked at a
11 variety of water quality parameters and how they
12 correlated with fish quality?

13 A. I believe they looked at some and I
14 believe it was -- I believe they insufficiently
15 looked at the possibility that quality could be
16 confounding the interpretations of what they
17 attributed to habitat effects on fish. That's
18 what I believe because if you didn't look at how
19 quality varied with those physical habitat
20 measures, you have that potential for that
21 confoundment and I believe that that possibility
22 that water quality could be explaining some of the
23 pattern that they attributed to physical habitat,
24 I believe that that wasn't looked at sufficiently

1 in those reports.

2 Q. Do you have any reason for believing
3 that some particular water quality variable would
4 covary accidentally with a habitat variable?

5 A. I'm not going to speculate about
6 that. It's possible. I haven't looked at that.
7 My main point is when you're doing this kind of
8 regression analysis and you're making
9 interpretations from pretty simple relationships,
10 a simple correlation of multiple linear
11 regression, I would say it's worthwhile. It's
12 beneficial to consider, okay, I'm seeing this
13 pattern on paper between physical habitat and a
14 fish measure, but I have to consider what else
15 could be a potential explanation for that pattern.
16 What factors other than physical habitat that
17 weren't addressed as much as physical habitat
18 could possibly be causing or could possibly be
19 contributing to this pattern that I'm seeing on
20 paper and that's my concern.

21 Q. Would you have to do that type of
22 analysis for every combination of habitat and
23 water quality variable?

24 A. I think it would help. I think a

1 good starting point -- I think one of the
2 questions you have and maybe you're getting to it
3 if I recall is how would I take a look at it. I
4 think I would start by looking at the simple
5 correlation between each water quality parameter
6 that I had available and each of the habitat
7 measures that I thought was important and I would
8 see if there were these correlations I would take
9 a look. Did the deeper areas also happen to have
10 certain water quality parameters that were
11 different and deeper than in shallower areas.
12 That's a potential explanation for the pattern
13 that I'm seeing in the fish.

14 Q. Are you familiar with the
15 Classification And Regression Tree, or CART,
16 analysis that Limnotech performed?

17 A. Yes, I am.

18 Q. Do you agree that a CART analysis is
19 a valid method for evaluating environmental data
20 to identify limiting factors to biota?

21 A. I'm going to be picky here and say,
22 no, not limiting factors because to me a limiting
23 factor has a pretty specific definition and the
24 limiting factor is the one factor that if you

1 change it your response variable changes
2 correspondingly.

3 So if I've identified the one
4 factor that's keeping my corn from growing and
5 it's not getting enough nitrogen, that's the
6 limiting factor. I can vary all the other factors
7 in my field, but my corn is going to pretty much
8 be -- the growth of my corn is going to be
9 dependant on the amount of nitrogen and if I raise
10 nitrogen, the corn is going to grow more. If I
11 lower nitrogen, the corn is going to grow less.
12 Regardless of all the other factors, that is my
13 limiting factor.

14 So I don't believe a regression
15 correlational analysis without some kind of
16 experimental manipulation or controlled
17 experiment, or a controlled manipulation as
18 they're sometimes called in the field, I don't
19 think without doing something to that extent
20 you're going to be able to identify a limiting
21 factor.

22 MS. FRANZETTI: I'm sorry, Fred.
23 Can I ask a follow up? Mr. Smogor, just to make
24 sure I understand your testimony. Am I correct

1 that you don't think that the CART analysis is
2 capable of identifying true limiting factors?

3 THE WITNESS: Correct.

4 MS. TIPSORD: Excuse me,
5 Ms. Franzetti. You need to identify yourself.

6 MS. FRANZETTI: Sorry. Susan
7 Franzetti. Counsel for Midwest Generation. Thank
8 you.

9 BY MR. ANDES:

10 Q. In the real world, Mr. Smogor, there
11 are a variety of factors that affect any
12 particular fish condition, correct? It would be
13 pretty rare that you have one factor that was
14 relevant and no other factors mattered at all?

15 A. Yeah, I believe that.

16 Q. Are you saying that for a situation
17 where some factors are much more important than
18 others, isn't CART a valid technique for assessing
19 the degree to which particular factors are
20 limiting?

21 A. No. Because it's correlational. I
22 still think you need some type of experimental
23 manipulation to show that one factor is truly
24 limiting another. I do agree -- I should finish

1 that. I agree the CART analysis is useful for
2 identifying factors that are potentially more
3 important than other factors and I'll put that
4 qualifier in there. I do believe it's a useful
5 analysis for exploring that issue.

6 Q. Thank you. And in the Limnotech
7 analysis, am I correct that when this method was
8 applied to 40 habitat variables and six metrics of
9 dissolved oxygen and temperature, that the
10 analysis showed that habitat variables were more
11 limiting to fish in the CAWS than dissolved oxygen
12 and temperature?

13 MS. WILLIAMS: Are you on 2L, Fred?

14 MR. ANDES: Yes. I modified it a
15 little bit.

16 BY THE WITNESS:

17 A. Yes, you've thrown me off.

18 BY MR. ANDES:

19 Q. Sorry.

20 A. 2L. Yeah, I wasn't sure about this
21 question because it's my understanding that I
22 think the way the question was formed said
23 dissolved oxygen temperature were originally put
24 into the model. I thought from the record it was

1 only dissolved oxygen to begin with and dissolved
2 oxygen is the only variable covered in Mr. Bell's
3 attachment memo to his pre-filed testimony and
4 then when I think he testified it's my
5 understanding that he mentioned that in between
6 the pre-filed question and our questions he then
7 ran the model with temperature and some other
8 water quality parameters and those parameters were
9 ammonia and chloride and, I think, PH, but I don't
10 recall him also mentioning specific conductivity
11 was part of that.

12 So there's some details here
13 that I don't necessarily agree with the premise
14 of, but if you want to ask that again without
15 attention to the details, that would be helpful.

16 Q. I think I can ask the question
17 generally. It is correct that the CART analysis
18 found after reviewing 40 habitat variables at
19 numerous metrics of water quality, including
20 dissolved oxygen and others, that, in fact,
21 habitat variables are more limiting than the water
22 quality variables?

23 A. I think I'm not going to agree -- I
24 can't agree that he found some variables were more

1 limiting than others. What I do agree is that the
2 CART analysis found that the habitat variables
3 maximum depth and percent overhanging cover were
4 the two variables that split the data more than
5 any of the other variables that were involved. So
6 they were more correlated -- based on the CART,
7 they were more correlated to the fish than the
8 other variables.

9 Q. Okay. Let's go back for a moment to
10 2F. In developing a habitat index, is it always
11 necessary to determine whether each habitat
12 variable covaries with each water quality
13 parameter?

14 A. No.

15 Q. Was that done with the QHEI?

16 A. No, not that I'm aware of.

17 Q. Do you know of any other habitat
18 indices where this was done where each -- they
19 checked whether each habitat variable covaried
20 with each water quality parameter?

21 A. No, I don't know of any.

22 Q. Let me skip down to 2P. Did IEPA do
23 this kind of analysis in its UAA work?

24 MS. WILLIAMS: Where did you skip

1 down to?

2 MR. ANDES: I'm sorry. 2P and I'm
3 just rephrasing.

4 BY MR. ANDES:

5 Q. Did IEPA do a similar analysis when
6 it was performing the UAA or did a contractor do
7 that analysis?

8 A. Did we analyze the relationship
9 between water quality and physical habitat?

10 Q. Yes.

11 MS. WILLIAMS: This jumping around I
12 think is getting -- because the context of 2P is
13 not quite the same as when you went back up to 2F
14 so I just want to make sure he understands what
15 you're asking about. Go ahead.

16 BY THE WITNESS:

17 A. My answer is no. I would like to
18 add about the QHEI even though it didn't do an
19 analysis of individual physical measurements --
20 the QHEI measures physical habitat against water
21 quality. One of the main objectives of the QHEI
22 wasn't the same as the objective of the Limnotech
23 analysis. The QHEI didn't set out to answer the
24 question what is more important, physical habitat

1 or water chemistry to Ohio fish. That's a much
2 different objective. The QHEI actually did
3 control for potential confoundment of water
4 chemistry effect because they used physical
5 habitat sites. They used the physical habitat
6 from sites that were free from point source
7 influences. They realized that water quality can
8 potentially cloud relationships that you're seeing
9 between physical habitat and fish and they tried
10 to control for that by using sites in the
11 development of QHEI and in the correlation versus
12 the IBI they used only sites that were free from
13 point source influences.

14 BY MR. ANDES:

15 Q. So the Ohio system is based on
16 looking at data from sites that are free from any
17 pollutants from point sources?

18 A. That was their attempt to control
19 for that influence of water chemistry.

20 Q. Okay. Let's move onto question
21 number three. On pages four and five, you raise
22 questions regarding direct cause-effect
23 relationships between specific habitat variables
24 and fish. Can you give an example of a habitat

1 index that was developed by identifying direct
2 cause-effect relationships between specific
3 habitat variables and fish, rather than using
4 statistical analysis on a group of data?

5 A. Again, I'm going to be picky, but I
6 don't believe I used those terms cause-effect
7 relationships in my testimony, but I do know -- I
8 don't know of any example that established
9 cause-effect relationships like you're asking, but
10 I'd have to say that wasn't the point I was trying
11 to make in my testimony.

12 Q. Question number four. You stated on
13 pages four and five the habitat evaluation
14 interpreted that the statistical correlation
15 between the combined fish metric and the CAWS
16 habitat index was attributable entirely to
17 differences in physical habitat, but that the
18 evaluation did not account for how correlation
19 between water quality or other non-habitat factors
20 and the selected physical habitat measures could
21 confound such interpretation. Did the developers
22 of the QHEI account for how correlation between
23 water quality or other non-habitat factors and
24 selected physical habitat measures could confound

1 interpretation of the relationship of habitat and
2 fish?

3 A. Yes, and that's what I just tried to
4 say a couple minutes ago.

5 Q. So they did that by simply using
6 data from reaches that were not affected by human
7 activity?

8 A. Not affected by point source impact.

9 Q. And, in fact, that wouldn't be
10 possible to do with the CAWS, correct?

11 A. Not that I'm aware of.

12 Q. Okay. Can you identify any other
13 habitat index that accounted for this confounding
14 factor?

15 A. Other than the Ohio QHEI, no, and I
16 don't really recall the details of a lot of other
17 habitat indexes, how they were developed. Again,
18 like I said earlier, I think when you're doing
19 these kinds of studies to say how does physical
20 habitat relate to fish I think it's kind of
21 recommended or common practice to be aware that if
22 you're trying to isolate the relationship between
23 physical habitat and fish you want to do what you
24 can to control for how water quality impacts may

1 confound that relationship. So you do what you
2 can with the data that you have available.

3 MS. WILLIAMS: Mr. Smogor, can you
4 explain a little bit for the Board -- I think you
5 testified about what Ohio did in comparing a QHEI
6 to its IBI. Can you just explain why they didn't
7 need to look at these confounding factors in the
8 same way you're suggesting Limnotech should have?
9 Do you understand the question?

10 THE WITNESS: Yeah. I think their
11 objective differed. I think -- my impression is
12 that one of the main objectives in the Limnotech
13 study was not to develop a habitat index that
14 measures biological potential in a Clean Water Act
15 context, but it was much more focused on finding
16 how fish -- certain measures of fish relate to
17 habitat relative to how they may relate to water
18 chemistry and, to me, that doesn't really have the
19 focus of addressing biological potential in the
20 Clean Water Act context that we're interested in
21 in this rulemaking. Does that help?

22 MS. WILLIAMS: Yes.

23 MS. FRANZETTI: If I could ask a
24 follow up to the same thing. Mr. Smogor, would

1 you say that you could use the QHEI to make a
2 determination as to which segments achieve the
3 Clean Water Act fishable goals, correct? I'm
4 going to take this in part.

5 THE WITNESS: Not the QHEI for
6 achieving the goal. I wouldn't say that because I
7 think that's where you'd like to depend on the
8 actual biological measures since it is a
9 biological goal.

10 MS. FRANZETTI: So the QHEI scores
11 are not telling you enough about the biological
12 potential of the CAWS segments, is that your
13 testimony?

14 THE WITNESS: Now that you mention
15 potential, yes, I agree. There's biological
16 condition existing or current biological condition
17 and then there's biological potential. I think
18 the QHEI is a good measure of biological
19 potential.

20 MS. FRANZETTI: That's what I meant
21 to ask you. I forgot that we have to use
22 potential. So can you use the QHEI to determine
23 the biological potential of a segment so kind of a
24 thumbs up, thumbs down on whether it has the

1 potential to attain the Clean Water Act fishable
2 goals?

3 THE WITNESS: Yes, I think it can be
4 used as part of that process to do that.

5 MS. FRANZETTI: Can then the
6 District's habitat index for the CAWS be used to
7 further distinguish between the appropriate
8 aquatic use designations for those various CAWS
9 segments?

10 THE WITNESS: I don't believe it's
11 been well enough focused and well enough supported
12 to use it for that because as I've tried to say in
13 my testimony I don't believe that the CAWS habitat
14 index has been shown to be a valid measure of
15 biological condition which also is the same as
16 human impact, relative human impact in a Clean
17 Water Act context.

18 BY MR. ANDES:

19 Q. Mr. Smogor, the Agency has
20 determined, has it not, that none of the waters
21 in -- I'm talking about in the CAWS. I'm not
22 talking about Dresden Island or the lower portion,
23 but in terms of the CAWS, the portion that's
24 covered by the District's habitat studies, the

1 Agency has already determined that none of those
2 can meet the Clean Water Act goals, correct?

3 A. That was our -- yeah, that was our
4 determination.

5 Q. So now let's look at the purposes
6 cited in the habitat reports and I think you cited
7 what had you thought the purposes were and you
8 indicated that -- I won't try to recharacterize
9 your statement. Let me read to you from the
10 executive summary of -- this is Public Comment 284
11 page ES-1 study objectives addressed in this
12 report are as follows.

13 The first one is determine
14 physical habitat characteristics for all reaches
15 of the CAWS using applicable physical habitat
16 metrics and data collected from the CAWS. Second,
17 use a multimetric habitat index to evaluate
18 physical habitat conditions in the CAWS. Third,
19 use physical habitat data and the above
20 multimetric index to assess the relative
21 importance of physical habitat to fish in the CAWS
22 and the final one is determine to the extent
23 possible with the data and analysis developed in
24 this study a system of classifying or

1 characterizing reaches within the CAWS according
2 to the physical habitat. So the point you made
3 about the purpose being to determine the
4 importance of habitat and fish in the CAWS is one
5 of the four purposes of the CAWS, am I right?

6 A. Yes.

7 Q. And is it your understanding that
8 the District was trying to determine whether any
9 of these waters will meet the Clean Water Act
10 goals?

11 A. No, I didn't see that in the
12 studies.

13 Q. That hasn't really been contested in
14 this proceeding that none of these waters can meet
15 the Clean Water Act goals, correct?

16 A. Correct.

17 Q. So the fourth purpose here was to
18 try to develop a system for characterizing the
19 reaches according to their physical habitat,
20 correct?

21 A. Correct.

22 Q. And is it your understanding that
23 that information was then used by the District in
24 developing its proposal for uses and criteria?

1 A. Yes, my understanding is the
2 information in the habitat evaluation and
3 improvement reports were considered and used.

4 Q. Okay. Let's go back to the
5 questions and I guess I'm sort of at 4E. You
6 talked about non-habitat factors, other
7 non-habitat factors besides water quality. What
8 would be other non-habitat factors besides water
9 quality that could be affecting fish?

10 A. Again, as I said earlier, I wasn't
11 trying -- I'm kind of hesitant to speculate. My
12 main point was that possibility wasn't
13 sufficiently addressed.

14 Q. Like what? If it's not habitat
15 factors and it's not water quality, what else is
16 there?

17 A. I think to other factors like flow
18 regime or biological interactions.

19 Q. Flow regime, in fact, is one of the
20 issues addressed in the Limnotech report, correct?

21 A. I think it was addressed somewhat.
22 I wouldn't agree it was comprehensively addressed.
23 I know there were some flow variables that were
24 looked at.

1 MR. ETTINGER: Excuse me. When you
2 say you looked at water quality factors, we're
3 just talking about DO and sometimes temperature,
4 that's what you mean by water quality factors? So
5 when you're asking him what other possibilities,
6 do you mean to exclude other possible water
7 quality factors or not?

8 MR. ANDES: I was citing his
9 statement which talked about correlation between
10 water quality or other non-habitat factors. So
11 I'm asking the other non-habitat factors term
12 seems to relate to non-water quality, non-habitat
13 factors and I'm trying to find out what those
14 might be. Flow, I believe -- am I correct the
15 Limnotech report identified the flow basically
16 doesn't vary very much, it doesn't have a strong
17 gradient across the system? In general, they did
18 discuss that issue, though?

19 MS. FRANZETTI: I'm sorry. Can I
20 jump in?

21 MS. TIPSORD: Before we do that,
22 Albert, you didn't identify yourself for the
23 record.

24 MR. ETTINGER: Albert Ettinger. I

1 represent various environmental organizations.

2 MS. TIPSORD: Ms. Franzetti?

3 MS. FRANZETTI: Susan Franzetti.

4 Can you just clarify how you're using water
5 quality because I was not understanding it the
6 same way that Mr. Ettinger was to be limited to
7 only DO and testimony?

8 MR. ANDES: I'm quoting from
9 Mr. Smogor's testimony where he said -- I quote
10 "The evaluation did not account for how
11 correlation between water quality or other
12 non-habitat factors and the selected physical
13 habitat measures could confound such an
14 interpretation, period, end quote. I'm
15 assuming -- I don't know what water quality means
16 there, but I'm assuming other non-habitat factors
17 means non-water quality because other generally
18 means not that which preceded it.

19 MS. FRANZETTI: Mr. Smogor, can you
20 tell me what the meaning of water quality was as
21 used in that part of your testimony?

22 THE WITNESS: Yes, I tried
23 unsuccessfully it appears earlier in my testimony
24 and I'm sorry to define that. I used the term

1 water quality as a general catchall for water
2 conditions.

3 So the properties of the water
4 that a lot of us -- typically are loosely called
5 water chemistry. I'm using water quality in that
6 general meaning.

7 MR. ANDES: That's what I thought.

8 THE WITNESS: So we're all on the
9 same page.

10 MS. FRANZETTI: That's what I
11 thought, too.

12 MR. ETTINGER: We'll go back on
13 that.

14 MR. ANDES: I'll ask another
15 question.

16 BY MR. ANDES:

17 Q. So to come back to the question on
18 hand, I was trying to understand what other
19 non-habitat factors might mean?

20 A. Again, I said this is just -- I'm
21 hesitant to speculate. That wasn't my point to
22 try to name other factors that might be
23 influencing fish. My main point was that if
24 you're going to say there's this relationship

1 between physical habitat and fish, it's helpful to
2 say, well, what other factors other than the
3 physical habitat that you looked at -- what other
4 factors could possibly be confounding or
5 contributing to that type of relationship that
6 you're seeing.

7 And, again, this would just be
8 speculation. Flow regime, aspects of flow,
9 biological interactions, the way critters eat each
10 other, compete for resources with each other.
11 That impacts them one way or the other. I'm going
12 actually to the literature James Carr who
13 developed the IBI. This is commonly called Carr's
14 five factors, the five factors that impact
15 biological condition out in the stream. There's
16 obviously water chemistry. What we call water
17 quality. There's obviously what we've been
18 talking about here physical habitat.

19 There's biological interactions
20 is the third. Flow regime is the fourth and the
21 fifth one is called sometimes energy flow. It's
22 like where is the main energy from -- coming into
23 the stream and how the organisms are using that
24 energy. So I'm trying to point out flow regime,

1 biological interactions are a couple of those
2 factors other than water chemistry and physical
3 habitat that could affect.

4 There's also the issue of -- I'm
5 talking about measurements that we take on the
6 fish. What can affect our measurements on the
7 fish and one thing that can obviously affect our
8 measurements on the fish is how we tried to catch
9 them. Sampling efficiency issues, sampling
10 variability issues. Those aren't necessarily
11 related to physical habitat or water chemistry,
12 but that's another component of this measurement
13 of the fish that we're talking.

14 Q. And we'll get to those issues later.

15 A. Okay.

16 Q. When I asked earlier if there were
17 other indices that actually looked at these
18 factors other than Ohio, you said no?

19 A. All these other potential factors?

20 Q. Yes.

21 A. I think it depends on what habitat
22 index you're talking about. I think my
23 recollection from the US geological survey, their
24 habitat index did address measures of flow. It's

1 very atypical. I would agree that for a measure
2 of physical habitat to include measures of
3 chemistry or water chemistry that is very
4 atypical.

5 Q. Here, it was concluded, was it not,
6 in the Limnotech report that flow, in fact,
7 because of the highly managed nature of the flow
8 here and the fact that it doesn't vary a
9 tremendous amount across the system except perhaps
10 during wet weather events that, in fact, that
11 wasn't a useful metric to use to assess
12 variability between reaches?

13 A. I can't speak to Limnotech's
14 interpretation on that. I know they mentioned in
15 their report that with the flow measures that they
16 included as part of their analysis they didn't see
17 much of a relationship between the combined fish
18 metric and those measures of flow except they did
19 find an opposite or an unexpected relationship
20 between their fish measure and a measure of
21 flashiness, I think, which is a characteristic of
22 flow.

23 Q. Okay.

24 MS. WILLIAMS: What do you mean by

1 unexpected?

2 THE WITNESS: I think they found
3 their combined fish metric varied with flashiness.
4 It increased as flashiness increased and it
5 decreased as flashiness decreased. So it's
6 opposite to expectations.

7 MS. WILLIAMS: Thank you.

8 BY MR. ANDES:

9 Q. So they felt as a result of the
10 flashiness, a metric simply wasn't going to be
11 useful?

12 A. They called it an artifact of the
13 data and then I didn't see much further discussion
14 on that. So I can't really say what's going on.

15 Q. And you've certainly seen other
16 artifacts of data before?

17 A. Yeah. I don't really know what that
18 means, but I'll give them the benefit of the doubt
19 on that issue.

20 Q. You sometimes find unexpected
21 correlations?

22 A. You find unexpected correlations and
23 if you have the time and information and the
24 inclination to look further, you look further.

1 Sometimes you essentially blow it off and move on
2 so --

3 Q. And you've done that?

4 A. Sure, I've done that.

5 MS. WILLIAMS: No, you'd never do
6 that.

7 MR. ETTINGER: Too late.

8 BY THE WITNESS:

9 A. I haven't done that in this report.

10 BY MR. ANDES:

11 Q. Let's move onto the next question.

12 A. Fair enough.

13 Q. On pages six and seven, you stated
14 that fish samples collected in deeper reaches may
15 have lower scores simply because deeper sampling
16 is not as accurate. Have you reviewed the
17 literature references given by Mr. Bell in his
18 testimony that state the effective depth to be
19 approximately four meters?

20 MS. WILLIAMS: I'm going to object
21 at this point and ask you to explain where in the
22 testimony this references that you're referring to
23 here? We looked -- and just so the Hearing
24 Officer is aware, we looked for references in the

1 testimony. We couldn't find it. We did call
2 Mr. Andes and asked him to explain where in the
3 testimony he wanted us to look and we didn't get a
4 response to that.

5 MR. ETTINGER: On a second note, we
6 couldn't find them either so if he could get them
7 to both of us it might be helpful.

8 MR. ANDES: I provided those on
9 Friday.

10 MS. WILLIAMS: What time on Friday?

11 MR. ANDES: I don't recall.

12 MS. WILLIAMS: You could tell us now
13 where in the testimony --

14 MR. ANDES: We'd be glad to provide
15 that.

16 MS. WILLIAMS: Then, you should be
17 able to tell us where in the testimony you want us
18 to look and we can look there.

19 MR. ANDES: We can come back to that
20 one so we don't waste time looking for it right
21 now. We did provide those earlier. The two
22 references by Mr. Bell. I believe one was a study
23 by Flotemersch, which I think has been used
24 elsewhere in this docket.

1 MS. WILLIAMS: Can I ask Mr. Smogor
2 to testify as to what he did find in the testimony
3 on this, at this point?

4 THE WITNESS: I did find in hearing
5 testimony of May 16th, 2011 on page 76 Mr. Bell
6 testified, quote, I've read that it's effective to
7 depths of three or four meters, end quote. And I
8 believe he was referring to electrofishing when he
9 said "it's."

10 BY MR. ANDES:

11 Q. The two studies, one was by Emory
12 and another one was by Flotemersch we can
13 certainly provide those. I do believe they are
14 somewhere in the record and I did provide them to
15 Agency counsel late last week. Both the
16 references as well as copies of the documents.

17 MR. ETTINGER: We have the same
18 issue. We couldn't find your references either.

19 MR. ANDES: We can provide that.

20 MR. ETTINGER: If you could send us
21 the same thing you sent them.

22 MR. ANDES: We'll do that. I'll
23 look at it tonight.

24

1 BY MR. ANDES:

2 Q. Let's move on and we'll come back to
3 that question later. In 5B, would you say if more
4 fish were caught in shallower waters of the CAWS,
5 there should be a correlation between catch per
6 unit effort and depth?

7 A. I'm not exactly sure what you're
8 asking here because the way I read the question it
9 kind of already answers itself. Yeah, if you go
10 in shallower water and you catch fewer fish or
11 more fish if you go in deeper water and catch
12 fewer fish, then there's going to be a correlation
13 there. In the shallower water, you catch more
14 fish. In the deeper water, you catch fewer fish.
15 So the question seemed to answer itself the way I
16 read it. Maybe I misunderstood you.

17 Q. You were arguing that fish samples
18 collected in deeper reaches may have lower scores
19 simply because they're not catching as many fish.
20 So that would say then if you try to correlate
21 catch per unit effort and depth, that there would
22 be a correlation and you'd find it harder to catch
23 fish in lower depths, correct?

24 A. My testimony didn't say more or

1 fewer fish. I think it -- there's potential if
2 you're fishing in deeper water relative to
3 shallower water, that in the deeper water you're
4 going to get a less accurate picture of the fish
5 community that's living there. That's not
6 necessarily equal to getting more and fewer fish
7 because sometimes you can get a more accurate
8 picture by catching fewer fish. It's not
9 necessarily one and one.

10 Q. When would you get a more accurate
11 picture by catching fewer fish?

12 A. It sometimes happens. One example
13 from fishing out there is if I go to one area and
14 there's a big school of fish and they're all
15 gizzard shad and I'm netting like crazy gizzard
16 shad I may catch a lot of fish in that run, but I
17 may have been focusing on trying to net so many
18 fish that I just didn't get all the types of fish
19 that I could have gotten had I not been focusing
20 on that many fish popping up on me.

21 Q. But your point here was about
22 electrofishing and you were questioning the
23 effective depth of electrofishing and the clear
24 implication there is by using electrofishing we're

1 not going deep enough and, therefore, not catching
2 enough fish at lower depths. So you would then
3 think if that's true, if the electrofishing means
4 we're not catching enough fish at lower depths,
5 then there would be a correlation between catch
6 per unit and depth you could find it harder to
7 catch fish at lower depths, correct?

8 A. I guess what I'm trying to say
9 there's -- and I wasn't clear in my testimony
10 obviously. In deeper water, I was trying to say
11 the fish probably have more escape routes and you
12 may not get a better picture of what is actually
13 living there. You may get a lot of fish, but
14 certain species might be escaping from you. In
15 general -- I mean, maybe this will solve it. In
16 general, I agree if you're catching more fish in a
17 reach chances are you're going to get a better
18 picture of what is going on.

19 Q. And back to my question. As you see
20 in the chart that we provided in the questions --

21 MS. WILLIAMS: I'm going to object
22 to this part, too. I could not find this chart in
23 the report. Where is this chart from?

24 MR. ANDES: We can --

1 MS. WILLIAMS: We couldn't even find
2 catch per unit effort in that document, correct?

3 THE WITNESS: Not this particular
4 graph.

5 MS. WILLIAMS: This information. We
6 couldn't even recreate this chart.

7 MR. ANDES: We'll go back and check
8 in terms of where this information is contained in
9 the report.

10 BY MR. ANDES:

11 Q. Am I correct that this chart seems
12 to indicate no correlation?

13 A. Again, with the caveat that I really
14 don't know the data that went into this chart just
15 taking it kind of hypothetically at face value
16 what it tells me is there is no clear pattern
17 there other than in the middle of the chart it
18 looks like at individual sites there's a lot of
19 variability in the fish that are caught if that's
20 what it is telling me, but there's no easy pattern
21 to discern from this chart.

22 MS. WILLIAMS: Mr. Smogor, did you
23 prepare your own chart to help address this
24 question?

1 THE WITNESS: Yes, I did.

2 MS. TIPSORD: Ms. Williams, before
3 we get there, for the purpose of the record, we're
4 referring to a chart that has pre-filed questions
5 of the District at question 5B. Because there's
6 some question about where this chart came from, I
7 don't want to put it in as an exhibit, but I do
8 want to be clear for the transcript, that that's
9 where this came from when we're referring to the
10 chart.

11 MS. WILLIAMS: Thank you.

12 Mr. Smogor, I've handed you a chart called count
13 of fish individuals caught per sample versus
14 maximum depth at CAWS sites 2001 to 2007. Can you
15 identify that for us, where it came from?

16 THE WITNESS: Yes, I created this
17 chart.

18 MS. WILLIAMS: What did you create
19 it from?

20 THE WITNESS: I created it from the
21 fish data that are available and the maximum depth
22 data that are available from the CAWS Habitat
23 Evaluation Report.

24 MS. WILLIAMS: At this point, I'd

1 like to move to enter this as an exhibit.

2 MS. TIPSORD: If there's no
3 objection, we'll admit this as Exhibit 469.
4 Seeing none, it's Exhibit 469.

5 (Document marked as IEPA Exhibit
6 No. 469 for identification.)

7 MS. WILLIAMS: Can you explain what
8 this chart shows, Mr. Smogor?

9 THE WITNESS: Yes. For each
10 sampling site that I could find a maximum channel
11 depth value available for and that I could find
12 the fish samples available for in the Habitat
13 Evaluation Report, I plotted the maximum channel
14 depth at each sampling site versus a central
15 tendency of the count of fish individuals that are
16 captured per each fish sample which is a 400 meter
17 sample.

18 At each CAWS site, there's more
19 than one fish sample in the data because the fish
20 represent data from 2001 through 2007. These are
21 the data that I used. So some of those sites were
22 collected for two years in 2001 through 2007, so
23 you have two fish samples available per site and
24 some of those sites had as many as seven fish

1 samples per site.

2 There was a fish sample
3 collected every year, 2001 through 2007. What I
4 did was I took the median which is the statistical
5 measure of central tendency, the median count of
6 fish individuals captured per sample at each site
7 and plotted it versus channel depth and this is
8 the pattern that I got from that with an emphasis
9 on if we assume that electrofishing is less
10 effective at about four meters depth, deeper than
11 four meters, I looked at the sites that are four
12 meters and greater in depth and ran a regression
13 for just those sites and I did find there was a
14 decreasing trend. As you get deeper than four
15 meters to up to about 26 feet deep, which is what
16 these points represent, you tend to catch fewer
17 and fewer number of individuals in your samples.

18 MS. TIPSORD: And, again, just so
19 that we're clear, you've gathered this information
20 from the Habitat Evaluation Report which is Public
21 Comment 284, correct?

22 THE WITNESS: Correct.

23 MS. TIPSORD: Which is also the
24 Limnotech report that they put together, correct?

1 THE WITNESS: Correct.

2 BY MR. ANDES:

3 Q. So you looked at only --

4 THE WITNESS: Can I interrupt? I
5 can give you the page numbers and the figure.

6 MS. TIPSORD: That's okay. For
7 purpose of the record, I'm finding as I'm reading
8 old transcripts that I don't remember as well
9 going back two years as I thought I would. So I'm
10 trying to keep the record as clear as possible.

11 THE WITNESS: Okay. Thank you.

12 MS. FRANZETTI: Could I just ask a
13 basis question? Mr. Smogor, why did you use the
14 median and not the actual number of fish caught at
15 each location?

16 THE WITNESS: I wanted to focus on
17 site by site because of the measure on the X
18 axis, the maximum channel depth. There's only one
19 measurement of maximum channel depth per site. So
20 your focus is on what is going on site to site to
21 site in terms of differences in depth. So I took
22 what is the central tendency or what is the
23 typical number of species you get at a site when
24 you go there and sample it and that's what these

1 points represent. That would be my typical
2 expectation for the number of fish individuals
3 that I got that I gathered at each of these sites
4 of differing depths.

5 MS. FRANZETTI: I think I need to
6 ask you what the median is.

7 THE WITNESS: Sorry.

8 MS. FRANZETTI: I'm thinking it's as
9 many above as below value.

10 THE WITNESS: The median is a
11 measure of central tendency like an average is a
12 measure of central tendency. I could have used
13 the average here, but averages are prone to
14 certain statistical artifacts, statistical
15 problems that the median isn't prone to. So the
16 median is like an average for all practical
17 purposes. It's a little less prone to certain
18 mathematical difficulties I'd say than an average
19 is prone to.

20 MR. JOHNSON: What is it?

21 THE WITNESS: The median is the
22 average that half of your observations are above
23 and half of your observations are below. Is
24 that --

1 MR. JOHNSON: Yes.

2 THE WITNESS: I'm sorry I wasn't
3 following that.

4 BY MR. ANDES:

5 Q. You only looked here at sites where
6 the maximum channel depth was more than four
7 meters?

8 A. No. The other sites are plotted
9 from about -- it includes sites that are six feet
10 deep through sites that are about 26 feet deep.

11 MS. WILLIAMS: Just for the record
12 your chart is in feet, correct? We're not in
13 meters, right?

14 THE WITNESS: Right.

15 MS. WILLIAMS: Could you translate
16 for purposes --

17 THE WITNESS: Yes. I'm sorry.
18 Again, it's 13 feet was the cutoff. The testimony
19 said electrofishing is -- the testimony said I
20 believe electrofishing is effective to about three
21 or four meters. So I used that four meter cutoff
22 and four meters is a little more than thirteen
23 feet. I'm sorry I didn't clarify that.

24 MR. ETTINGER: I just want to be a

1 little more clear on what we've got here. When
2 you see electrofishing results in waters that are
3 as deep as 24 feet, the fish weren't shocked at 24
4 feet? They could have been anywhere within the
5 water column in that water that was 26 feet -- or
6 24 feet?

7 THE WITNESS: Are you asking --
8 yeah, if you're asking your electrical current is
9 going 24 feet deep?

10 MR. ETTINGER: Right.

11 THE WITNESS: My understanding is
12 it's probably not going that deep.

13 MR. ETTINGER: So for all we know
14 all the fish that were caught -- it would be
15 unlikely, but for all we know all the fish that
16 were caught at the 26 foot deep channel were at
17 one foot?

18 THE WITNESS: It's possible. It's
19 possible.

20 MR. ETTINGER: Okay. I think I
21 understand this.

22 BY MR. ANDES:

23 Q. Mr. Smogor, the R squared of 0.25 is
24 actually not a very high correlation, am I right?

1 A. Relative term R squared runs from
2 zero to one. That's the possible range of R
3 squared. So a 0.25 is on the low side of that
4 scale.

5 MS. WILLIAMS: Do you recall, Roy,
6 what the R squared of the highest variable that
7 the Limnotech report looked at, the highest R
8 squared they found of an individual?

9 THE WITNESS: Individually?

10 MS. WILLIAMS: Of an individual
11 variable, yes.

12 THE WITNESS: Off the top of my
13 head, I think it was maximum depth. I can look
14 real quickly here if you want. I don't recall off
15 the top of my head, but I think I have it.

16 BY MR. ANDES:

17 Q. Do you recall while you're looking
18 Mr. Bell testifying that it was inappropriate to
19 compare individual habitat variables to the fish
20 metrics?

21 A. I recall his testimony that he
22 thought it was, yes.

23 Q. I'm just asking in general about
24 whether this is a high correlation or low

1 correlation. Not comparing it to other
2 correlations as to other metrics.

3 A. Like I said, 0.25 is low on the
4 scale from zero to one. And to mention Ms.
5 Williams' questions it looks like the highest R
6 squared, adjusted R squared, was 0.24 for maximum
7 depth when it was related to the CAWS combined
8 fish metric.

9 Q. The correlation to the fish metric.
10 Here, we're trying to maximum channel depth and
11 the median count of fish caught?

12 A. Yes.

13 MS. TIPSORD: Mr. Smogor, could you
14 explain the difference of why some of the circles
15 are light versus darker? I mean, this is a black
16 and white chart. So there's some lighter and some
17 darker, is there some significance to that?

18 THE WITNESS: Yes, I should have
19 explained it in the caption, which I didn't. The
20 dark circles are all of the sampling sites that
21 have a depth greater than 13 feet and those are
22 the points through which the regression -- that's
23 the point -- those are the points to which the
24 regression applies.

1 BY MR. ANDES:

2 Q. So, in fact, you have some data
3 points like there's one that -- is it about eight
4 feet and had, in fact, a very low number of fish
5 caught? About 50, correct?

6 A. Correct.

7 Q. Do you have an explanation for that?

8 A. No, I don't.

9 Q. I can see you're shaking your head.

10 A. No, I don't.

11 MR. ETTINGER: I have one more
12 question as it relates to this. Is it your
13 understanding as to where they were
14 electroshocking -- were they trying to shock down
15 the middle of the channel or the sides of the
16 channel?

17 THE WITNESS: It's my understanding
18 they shock more towards the edges.

19 BY MR. ANDES:

20 Q. Isn't that where the water is
21 shallower?

22 A. Yes.

23 Q. Okay.

24 MS. WILLIAMS: So there's only two

1 colors of circles on this chart, a dark and a
2 light?

3 THE WITNESS: Yes.

4 MS. FRANZETTI: I'm sorry.

5 Mr. Smogor, not to beat the dark and light colored
6 circles to death, but I don't understand why to
7 the right of a dark circle that's at the 75 fish
8 count there's a lighter circle.

9 THE WITNESS: Neither do I. I just
10 saw that. You're right. That's a mess up on my
11 part because that looks like it's a site deeper
12 than 14 feet. That's what I attempted to do was
13 make the dark circles the -- darken the sites that
14 were greater than 13 and leave the sites that were
15 shallower than 13 lighter, but evidentially I
16 messed that up.

17 MS. FRANZETTI: Not to belabor you
18 messing up.

19 THE WITNESS: That's okay.

20 MS. FRANZETTI: Do you mean that
21 should be a dark circle?

22 THE WITNESS: I'm guessing it should
23 be, but I don't know for sure.

24 MS. FRANZETTI: Okay.

1 BY MR. ANDES:

2 Q. Let's move onto -- we'll skip
3 question six because I think we've touched on
4 these issues. Question seven. On page seven, you
5 state that extent of overhanging vegetation may
6 not be related to the quality of the fish
7 community. Do you doubt that overhanging
8 vegetation is good for fish?

9 A. Again, I don't think my testimony
10 said the way this question poses, quote, the
11 extent of overhanging vegetation may not be
12 related to the quality of the fish community, end
13 quote. Aside from that, I do acknowledge in
14 general that overhanging vegetation is good for
15 fish and -- but it's likely less influential in
16 larger rivers than it is in smaller streams.

17 Q. What water quality -- okay. So, in
18 general, overhanging vegetation is a good thing
19 for fish?

20 A. In general, especially smaller
21 streams relative to larger streams.

22 Q. In fact, some of the reaches of the
23 CAWS would amount to smaller streams, correct?

24 A. Some are smaller than others, yes.

1 There's a size range of streams in the CAWS.

2 Q. What water quality parameters are
3 you concerned might be related to overhanging
4 vegetation?

5 A. Again, like I mentioned earlier, I'm
6 hesitant to speculate about a particular, but
7 actually any -- the possibility of any water
8 quality parameter being related to physical
9 habitat measurement is what I was trying to
10 stress. That would be important to look at that
11 possibility.

12 Q. Let's move onto number eight. On
13 page nine, you raise questions about the
14 designation of Bubbly Creek in the MWRD proposal.
15 Did the UAA report or IEPA contractor Ed Rankin
16 assess physical habitat at all on the South Branch
17 of the Chicago River or in Bubbly Creek?

18 A. No, not to my knowledge.

19 Q. Does the IEPA feel that no
20 assessment -- the lack of assessment done there is
21 superior to the assessment that was made by the
22 District and Limnotech?

23 A. No, I don't think that's what I was
24 trying to say.

1 Q. How did IEPA's designation for
2 Bubbly Creek address -- and I quote from the UAA
3 report "The South Fork is a stagnant waterbody
4 that receives no flow unless the Racine Avenue
5 Pump Station storm sewers or other CSO's are
6 discharging, period, end quote?

7 A. Illinois EPA interpreted those
8 conditions as not irreversible or I should say we
9 interpreted them as reversible conditions. So our
10 assessment of the potential for Bubbly Creek took
11 into consideration a management -- management that
12 would include flow augmentation and supplemental
13 aeration to meet a potential condition.

14 MS. TIPSORD: For the record, the
15 UAA report is Attachment B to the proposal.

16 MR. ANDES: Thank you.

17 BY MR. ANDES:

18 Q. Well, let's back up a second. The
19 south -- Bubbly Creek is currently a stagnant
20 waterbody that receives no flow except during
21 these wet weather events. Are you foreseeing a
22 significant change in the characteristics of
23 Bubbly Creek and, if so, how would that be
24 accomplished?

1 A. I think with our proposal we
2 proposed a particular biological condition, a use
3 for Bubbly Creek that assumed there could be
4 supplemental aeration and flow augmentation that
5 would change it from these current conditions.
6 That would be an improvement for fish over current
7 conditions.

8 Q. So can you show me where in the IEPA
9 documents that is an assumption of the designation
10 for Bubbly Creek that flow augmentation and
11 aeration will fundamentally change the nature of
12 the waterbody and the fish community that can
13 survive there because you didn't do any habitat
14 assessment there, correct?

15 A. Rankin didn't measure QHEI in those
16 waters. Ed Rankin's report did not address those
17 waters.

18 Q. So if you didn't assess habitat --
19 either the UAA reporter, Ed Rankin, didn't assess
20 habitat at Bubbly Creek -- so I guess I have two
21 questions. One is, what is the basis for your
22 conclusion that simply improving the dissolved
23 oxygen conditions would change the habitat which
24 is also, am I correct, a limiting factor in Bubbly

1 Creek?

2 A. I don't accept the premise that
3 habitat is the limiting factors in Bubbly Creek.
4 All I can say is the Agency was proposing uses
5 that are consistent with biological potential, not
6 necessarily with existing biological conditions.
7 And part of that potential the Agency assumed that
8 if Bubbly Creek were managed with flow
9 augmentation and supplemental aeration that would
10 help its biological potential and that's the
11 extent -- I can't point to a specific place in our
12 proposal where that is mentioned. Sorry. I don't
13 know that off the top of my head.

14 Q. If we continue, it would be helpful
15 to see a citation for where that's documented and
16 part of the question also relates to -- my next
17 question was how does that designation account for
18 sediment toxicity and contamination in Bubbly
19 Creek? Did the Agency consider that factor in
20 determining the proper use for Bubbly Creek, the
21 biological potential for Bubbly Creek?

22 A. Again, my understanding is that the
23 Illinois EPA through work with the contractor came
24 to the decision, came to the judgment that there

1 wasn't sufficient information on actual sediment
2 toxicity effects on aquatic life to invoke
3 sediment toxicity as one of the factors in the UAA
4 process.

5 Q. So specifically as to Bubbly Creek,
6 is the Agency taking the position that there's no
7 significant sediment toxicity in Bubbly Creek?

8 MS. WILLIAMS: Objection. I don't
9 think his answer was specific to Bubbly Creek.

10 MR. ANDES: I'm asking specifically
11 to Bubbly Creek now.

12 BY MR. ANDES:

13 Q. As to this designation for this
14 particular waterbody, is the Agency saying there's
15 no specific sediment contamination in Bubbly
16 Creek?

17 A. No, I think what I was trying to say
18 is in our proposal we talked about there being
19 insufficient information available to assess or to
20 justify why sediment toxicity, the presence of
21 sediment hurting biological quality in Bubbly
22 Creek is a strong enough factor to say you have to
23 lower the use for that water. We pretty much said
24 there wasn't enough information to use sediment

1 toxicities.

2 Q. Did the Agency review the sediment
3 chemistry information that's provided and has been
4 provided on the District's website?

5 A. Personally, I did not.

6 Q. Do you know if anyone at the Agency
7 has reviewed that information?

8 A. I don't know for sure offhand.

9 Q. For the record, we provide later
10 where it's been provided as part of the record
11 here. I know with Ms. Wasik's initial testimony I
12 believe we provided data, but that also has been
13 publically available for years. So the Agency has
14 not, to your knowledge, reviewed the sediment data
15 provided on the District's website, am I correct?

16 A. I don't know if someone from our
17 Agency has reviewed that data.

18 Q. So then the sediment chemistry data
19 that's been provided in Ms. Wasik's testimony and
20 on the District's website played no role in the
21 Agency's proposed designated use of Bubbly Creek,
22 is that correct?

23 MS. WILLIAMS: Are you asking if
24 Ms. Wasik's testimony was taken into account in

1 our proposal that was filed two years before this,
2 is that your question?

3 MR. ANDES: No. Let me rephrase
4 that.

5 BY MR. ANDES:

6 Q. Is the data that were contained in
7 her testimony, but also publically available
8 before then -- I'm trying to find out whether any
9 sediment chemistry data was considered in
10 proposing the designated use for Bubbly Creek by
11 the Agency?

12 A. I think sediment data were
13 considered. I can't say who looked at how much of
14 what in particular. That wasn't really my role so
15 I don't know the details. I think the overall
16 conclusion was with at least the sediment
17 information that they reviewed and I don't know
18 exactly what that was, the people at the Agency
19 who were working on that, to my understanding,
20 they came to the conclusion that there was some
21 data, but it was bulk chemistry data and it wasn't
22 necessarily data on actual toxic effects being
23 measured on organisms. So there was an
24 interpretation issue, a difficulty with saying is

1 this sufficient.

2 Q. That's a more specific statement
3 than you made before. So I'm going to need to see
4 where that came from and who the Agency person
5 would be who was responsible for making that
6 decision.

7 A. I think I'm pretty much echoing
8 earlier testimony if I remember that correctly,
9 but I don't know for sure. I don't know the
10 details of that analysis.

11 MS. TIPSORD: Excuse me. Again, for
12 the record, the previous testimony you're speaking
13 about I assume is Exhibit 187 and not Ms. Wasik's
14 most recent testimony?

15 MR. ANDES: Yes.

16 MS. TIPSORD: That would be Exhibit
17 187 and we do have Exhibit 188, development and
18 evaluation of consensus based sediment quality
19 guidelines for freshwater ecosystems. That's
20 Exhibit 188.

21 MR. ETTINGER: I realize that the
22 evidentiary rules here aren't very tight, but when
23 we start asking him for the details of something
24 which he says he didn't see and doesn't know about

1 it strikes me as we are really going over the
2 limits of what can be expected.

3 If you want to ask the Agency to
4 try to come up with the information, that makes
5 sense, but to ask Mr. Smogor to come up with
6 something that he says he didn't work on strikes
7 me as going over the top.

8 MR. ANDES: Since the Agency think's
9 Mr. Smogor's testimony specifically concerns the
10 alternative proposal from the District as to
11 Bubbly Creek, I think it's fair to ask about the
12 Agency's designation of Bubbly Creek and what the
13 basis was.

14 MR. ETTINGER: I agree with you
15 asking the Agency to do that, but not Mr. Smogor
16 trying to do something he didn't do before today.
17 That's my problem.

18 MR. ANDES: If Mr. Smogor is not the
19 right individual, then I'd ask for a written
20 answer from the right individual.

21 MS. WILLIAMS: What is the pending
22 question? It seemed to me he did his best job to
23 answer his question. What is the pending
24 question?

1 MR. ANDES: I asked about the
2 Agency's evaluation of sediment chemistry data in
3 proposing the designation of Bubbly Creek and I
4 believe Mr. Smogor said he didn't do that.

5 MS. WILLIAMS: And I think we
6 questioned Mr. Sulski extensively about what he
7 looked at when he was here testifying that was his
8 role and if that -- does that address what you're
9 getting at?

10 MR. ANDES: I don't know. I'm
11 asking the Agency to point specifically to where
12 in its documentation this issue was addressed.

13 MS. WILLIAMS: Where what was
14 addressed?

15 MR. ANDES: The analysis of sediment
16 data in designating Bubbly Creek. If you want to
17 point to some page on Mr. Sulski's testimony --

18 MS. WILLIAMS: He said we didn't
19 have enough data. I don't understand. What more
20 do you want?

21 MR. ANDES: He is paraphrasing his
22 understanding of what someone else decided.

23 MR. ETTINGER: Precisely.

24 MS. WILLIAMS: What else can you do?

1 Then he is done. What else do you want him to do?

2 MR. ANDES: As a representative of
3 the Agency, I was asking the question of what the
4 Agency's position was because I understand this
5 wasn't Mr. Smogor's testimony, rather he was
6 speaking for the Agency and I was asking since the
7 Agency was critiquing the District's proposal that
8 the Agency provided some basis for how it
9 evaluated this sediment toxicity data and
10 Mr. Smogor can't do that.

11 MS. TIPSORD: I think we can move
12 on. I think that Mr. Sulski's testimony, if
13 Mr. Sulski is, in fact, a member of the Agency has
14 spoke to the sediment three years ago, 48 hearings
15 ago, speaks for itself and you're free to, of
16 course, question that in final comments.

17 MR. ANDES: Okay.

18 BY MR. ANDES:

19 Q. Let's move onto question number
20 nine. On page nine, you make several arguments
21 based on the scores in the habitat improvement
22 report, which reflect possible habitat
23 improvements. Did the District state that the
24 theoretical scores after extensive improvements

1 were used to classify aquatic life use categories?

2 A. I'd say yes, especially from
3 pre-filed written testimony. That's what I
4 believe.

5 Q. Wasn't it actually the current CAWS
6 habitat index scores in the Habitat Evaluation
7 Report that provided the basis for the
8 classifications?

9 A. Again, from the testimony, I believe
10 it was more than just the current scores.

11 Q. So can you point me to where that's
12 the case that the improved scores in the Habitat
13 Improvement Report were used as the basis for the
14 District's classifications?

15 A. I can point to some examples in the
16 pre-filed testimony if you'd want me to. I'm
17 referring now to page three of the pre-filed
18 testimony.

19 MS. WILLIAMS: Of who?

20 BY THE WITNESS:

21 A. Of Ms. Wasik submitted February
22 2011. Page three states, quote, in determining
23 the uses that should be designated for various
24 segments of the CAWS, the District relied

1 principally on the findings of the habitat
2 evaluation and Habitat Improvement Reports, end
3 quote.

4 BY MR. ANDES:

5 Q. So that statement is fairly general.
6 Can you provide -- what my question was, was can
7 you show me where the habitat improvement scores,
8 the scores in the Habitat Improvement Report were
9 used by the District in putting forward its
10 proposal? Not generally that the Habitat
11 Improvement Report was relevant, but where were
12 the improved habitat scores because I think that
13 was your point in your testimony.

14 A. Yes. I'm sorry to interrupt.
15 Another quote from page four of that same
16 pre-filed testimony --

17 MS. TIPSORD: Mr. Smogor, for the
18 record, that's Exhibit 461?

19 THE WITNESS: Yes.

20 BY THE WITNESS:

21 A. On page four of Exhibit 461, states,
22 quote, the Habitat Improvement Report estimated
23 habitat index scores based on potential habitat
24 improvements in various reaches of the CAWS. The

1 District believes that those index scores should
2 be considered in determining the appropriate
3 designated uses for each segment, end quote.

4 BY MR. ANDES:

5 Q. Now, if we go back a couple of
6 sentences, doesn't that paragraph also refer to
7 the habitat evaluation index? Is it logical to
8 surmise that it refers to both sets of scores?

9 A. It could refer to both sets, but
10 you're asking if there is any evidence -- my
11 understanding is you're asking is there evidence
12 that the District used the scores in the Habitat
13 Improvement Report to help them formulate their
14 proposed uses and my reading of this is, yeah,
15 that's what that is telling me.

16 Q. So that tells you, am I correct,
17 that they were relevant? Can you tell me where
18 the specific habitat improvement index scores were
19 used in determining the classifications for
20 particular waterbodies?

21 A. I can give one example for the
22 Chicago River. Page seven of Exhibit 461 states,
23 quote, potential index scores after physical
24 habitat improvements listed on page 57 of the

1 Habitat Improvement Report indicate that unlike
2 the other waterway reaches the Chicago River
3 demonstrates no potential for habitat improvement.

4 So to me, again, I interpreted
5 that the scores were being used to show how the
6 Chicago River had no -- if its potential score
7 wasn't that different, that's using that potential
8 score in a way to say it can't get any better.
9 That's how I interpreted that.

10 Q. Was the Chicago River considered in
11 the paragraph above that borderline?

12 A. I don't know. I don't know.

13 Q. Please look at the paragraph
14 immediately above it on page seven.

15 MS. WILLIAMS: Can you -- do you
16 have it?

17 THE WITNESS: Yes, I have it.

18 BY MR. ANDES:

19 Q. What is the first sentence of the
20 paragraph above it?

21 A. Yes, you're right. The Chicago
22 River -- it says the Chicago River Main Stem and
23 the Lower North Branch of the Chicago River both
24 of these segments are borderline.

1 Q. Does it then say, however, available
2 information concerning habitat improvement
3 potential, the physical nature of these segments
4 and/or sediment toxicity, indicate that they
5 belong in category two rather than category one?

6 A. Correct, but then that's --

7 Q. So then is this the only waterbody
8 you identified where the habitat improvement
9 potential was specifically laid out as a relevant
10 factor?

11 A. Such specificity. I don't have any
12 other specifics, but it's an interpretation issue
13 here.

14 Q. Okay. Let's go to question 9C. Are
15 you aware that the potential habitat scores from
16 the improvement report assume, for example, that
17 half the vertical walls in the North Branch
18 Chicago River could be removed?

19 A. Yes.

20 Q. To your knowledge, is anyone
21 planning on removing any of the vertical walls in
22 the North Branch let alone half the length in the
23 near future?

24 A. I don't know.

1 Q. Would that in your mind potentially
2 be inconsistent with the current functions of
3 drainage and navigation?

4 A. I do not know.

5 Q. Okay.

6 MS. TIPSORD: Before we go on, if
7 you're done with question nine, let's take a short
8 break. Ten minutes.

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

12 MS. TIPSORD: Let's go back on the
13 record. I think we're ready to start with
14 question number ten unless you need to go back,
15 Mr. Andes.

16 MR. ANDES: Nope.

17 BY MR. ANDES:

18 Q. Question ten. On page ten, you
19 criticize the use of other variables in the CAWS
20 habitat index that were not identified using the
21 multiple linear regression process, including
22 overhanging vegetation, bank pocket areas, large
23 substrate and organic sludge. Do you believe that
24 pockets of bank refuge as quantified by the

1 variable bank pocket areas are important to fish?

2 A. I believe that cover and refugia are
3 important to stream fish.

4 Q. Do you agree they should be included
5 in an index of habitat quality?

6 A. Not necessarily. If your main
7 objective is to create a habitat index from the
8 habitat variables that are most related to your
9 fish measure, then include those habitat variables
10 that are most related to your fish metric if that
11 is your main objective. If there is a habitat
12 variable that doesn't appear as closely related to
13 the fish variable, leave it out.

14 Q. But isn't it possible that you could
15 based on knowledge, experience, professional
16 judgment know qualitatively -- and you answered in
17 my previous question that general refugia are
18 important to fish. So if you knew that factor was
19 generally important, but you didn't have the
20 particular correlation here, why would it be
21 improper to include it knowing that in general
22 this is an important factor?

23 A. It wouldn't necessarily be improper,
24 but if you're setting up -- if you're setting

1 yourself up to say I'm going to analyze these data
2 in kind of a formal statistical analysis and I
3 have all these physical habitat variables to
4 choose from, but I'm going to try to focus in on
5 that subset that are most related to the fish,
6 then that was one of my main criticisms of the
7 index. They seemed to do that and they identified
8 six key habitat variables that were related to the
9 fish and of all the ones they threw out they went
10 back and said I'm going to grab this one, this
11 one, this one, this one and there didn't seem to
12 be sufficient -- a sufficient argument for why
13 grab those five from all the others that were
14 thrown out. Why not grab another five or a
15 different set of five? That's what I didn't see.
16 I didn't see the justification for just grabbing
17 those five off the ones that were already thrown
18 out so to speak.

19 Q. Wasn't -- well, as to those five or
20 at least to the ones we're talking about here
21 which include overhanging vegetation, bank pocket
22 areas, large substrate and organic sludge you
23 agree that each one of those is an important
24 habitat quality for fish in general?

1 A. In general, each of those could be
2 important to some fish in general, right.

3 Q. So, in general, including them in
4 the habitat quality would not be improper?

5 A. In general, if your index of habitat
6 quality didn't necessarily have that objective to
7 identify those aspects of habitat that were most
8 important to fish, then, fine, include them. It's
9 a different objective.

10 Q. Isn't it possible that knowing
11 qualitatively that these factors are important you
12 would say I shouldn't exclude them because logic
13 tells me that they are usually relevant so it
14 should be relevant here and I should consider
15 them?

16 A. I think that's one possible
17 interpretation. It can be reasonable if it also
18 includes -- and I think it's a stronger argument
19 if it includes additional information to say,
20 well, I had all these others that I threw out, but
21 I'm going to choose these five to put back in. I
22 guess what I'm saying is I didn't necessarily see
23 a lot of information on why they picked those
24 particular five to choose to put back in the index

1 from a lot of others that were available to pick
2 from.

3 Q. So you don't recall the explanation
4 from the Bell testimony?

5 A. Not specifics about why they chose
6 those five over all the others that were thrown
7 out, no, I don't recall specifically.

8 Q. Okay. Let's move on to question 11.
9 On page ten, you discuss existence of commercial
10 navigation and sediment toxicity in the Lower
11 North Branch Chicago River and the Little Calumet
12 River. Did Ms. Wasik's testimony indicate that
13 the habitat index scores were only one of the
14 factors used to classify the waterways?

15 A. Yes.

16 Q. Did she state other factors were
17 used if the scores were borderline?

18 A. Yes.

19 Q. According to her testimony, was the
20 Little Cal and was the Little North Branch both
21 borderline?

22 A. You said Little North Branch.

23 Q. I'm sorry.

24 A. Little -- can you ask that again?

1 Q. The Little Calumet River and the
2 Lower North Branch.

3 A. As far as what I could see and get
4 from the testimony, I think she testified that the
5 Little Calumet River was not borderline and from
6 what I could see in the testimony she testified
7 that the Lower North Branch Chicago River was
8 borderline.

9 Q. As to the Lower North Branch she
10 testified, am I correct, that the sediment
11 toxicity data were a factor in putting that into
12 category two instead of category one?

13 A. Yes.

14 Q. As well as the presence of
15 commercial navigation?

16 A. Yes.

17 Q. So as to the Little Calumet, in
18 fact, the District classified that as category
19 one, am I correct?

20 A. Correct. I believe that's correct.

21 Q. Okay. So since the score was high,
22 not borderline, it was put in category one?

23 A. I think that's -- yeah, I think
24 that's how I understood it.

1 Q. So the other factors were considered
2 for the Lower North Branch since it was
3 borderline, but they were not considered for the
4 Little Cal because it was not borderline?

5 A. That's my understanding. I guess my
6 criticism or my issue with it was the Little
7 Calumet River and the Lower North Branch were --
8 had what I would say my interpretation fairly
9 similar habitat scores and the part of the
10 justification for saying, well, even though they
11 have similar habitat scores -- this is my
12 interpretation -- of a 52 versus a 47, I
13 considered similar -- even though they had similar
14 habitat scores, the argument or the -- what
15 Ms. Wasik said I'm going to put the lower -- MWRD
16 is going to put the Lower North Branch Chicago
17 River in a lower use or less natural use because
18 it has sediment toxicity evidence and because it
19 has evidence of navigation, my argument was those
20 two things also occur in the Little Calumet River.
21 So they didn't really seem, to me, to be a good
22 logical argument on why to split the two because
23 both of those things also occurred in Little
24 Calumet River.

1 Q. The Little Calumet River had the
2 higher score?

3 A. It did have a higher score of a 52
4 versus a 47. So I guess that's where our
5 interpretations differed on that issue.

6 Q. Okay. On page 11, the next question
7 you claim that Bubbly Creek was not properly
8 classified given its habitat score. Is it your
9 feeling that physical habitat alone should be used
10 to classify Bubbly Creek despite the other
11 information that has been provided by the IEPA
12 contractors and the District including stagnancy,
13 sediment contamination, et cetera?

14 A. No, but I guess, again, the point I
15 was trying to make was there seemed, to me, to be
16 a lot of emphasis in these reports and in
17 testimony saying physical habitat is the limiting
18 stressor. So that is -- as your physical habitat
19 goes up, your fish goes up. As your physical
20 habitat goes down, your fish goes down. Given
21 that emphasis on physical habitat being the
22 limiting stressor, it would seem that the uses
23 should have been proposed much more consistently
24 with those measures -- that direct measure of

1 physical habitat. If physical habitat is what is
2 limiting, that's kind of the key part of your
3 process for identifying how to propose the
4 appropriate uses. That's how I looked at it.

5 Q. But -- okay. So let's go to page
6 nine of Ms. Wasik's testimony where she discusses
7 Bubbly Creek and it --

8 MS. WILLIAMS: Why don't you let him
9 get it. Page nine.

10 MR. ANDES: Yes.

11 THE WITNESS: Okay.

12 BY MR. ANDES:

13 Q. I'll just read the first paragraph.
14 The habitat index scores in the South Fork of the
15 South Branch of the Chicago River of Bubbly Creek
16 is in the range of other CAWS category two waters,
17 but other factors indicate that attainable aquatic
18 uses are considerably more limited than other
19 segments in the CAWS. In addition to significant
20 sediment contamination, Bubbly Creek also exhibits
21 a unique flow regime, is stagnant during dry
22 weather and it is dominated by high velocity CSO
23 flows from the Racine Avenue Pump Stations during
24 the wet weather periods. So that would indicate

1 that this recognized the habitat score was
2 similar, but there were other factors that were
3 unique for Bubbly Creek, is that correct?

4 A. I see that interpretation. Yes.

5 Q. Okay. Number 13. On page 12, you
6 expressed a concern that the habitat report did
7 not address how the fish metric scores relate to
8 Clean Water Act goals. Did IEPA relate the range
9 of Ohio IBI scores to aquatic life use potential
10 in the CAWS?

11 A. We did use the existing IBI scores
12 to help justify why all of the CAWS could not
13 attain the Clean Water Act goal for aquatic life
14 use.

15 Q. But they weren't used directly for
16 specific reaches, correct, in terms --

17 A. The current IBI scores, no.

18 Q. Okay. In fact, the ultimate
19 conclusion that the Agency had was that none of
20 these waters could attain the Clean Water Act
21 goals, correct?

22 A. Correct.

23 Q. Question 14. On page 12, you state
24 that the CAWS habitat evaluation lacks an analysis

1 that shows that higher scores of the CAWS combined
2 fish metric represent a less impacted biological
3 condition than do the lower scores and vice versa.
4 If the CAWS combined fish metric is the sum of
5 positive metrics that represent desirable
6 fisheries attributes and negative metrics that
7 represent undesirable fisheries attributes,
8 wouldn't a higher value of that sum represent a
9 more desirable fisheries condition than a lower
10 value?

11 A. I'm struggling a little with the
12 question because I didn't see in the CAWS report
13 where positive and negative were really defined.
14 I mean, what were the criteria for saying of the
15 metrics I had these are positive, these are
16 negative. I didn't really see what explained
17 those differences between positive and a negative
18 metric. I didn't see that explanation in the
19 report.

20 Q. Okay. I believe Mr. Bell did
21 testify about that, but --

22 A. Okay. I'm speaking to the report.

23 Q. Okay. Do you agree that the
24 following fish metrics that are included in the

1 CAWS combined fish metric are positive indicators
2 of fisheries conditions; Illinois ratio of
3 non-tolerant coarse-substrate spawners, number of
4 Illinois native minnow species, number of Illinois
5 native sunfish species, and the Illinois ratio of
6 generalist feeders?

7 A. I recognize these metrics.

8 Q. Are they generally positive
9 indicators of fish condition?

10 A. The last one isn't. The last one
11 works the other way. The generalist feeders as
12 you get -- when I think of a positive metric, my
13 interpretation is as the metric goes up that's
14 indicating better conditions, better water
15 quality, better habitat.

16 The last one, generalist
17 feeders, that works in the opposite way. As you
18 get more generalist feeders, that's an indication
19 of more human impact.

20 Q. But all these four metrics are
21 included in the Illinois fish IBI that you've been
22 working on?

23 A. They're in the Illinois fish IBI and
24 I have to add I don't necessarily -- I don't

1 necessarily agree that they're going to be as
2 useful in the CAWS as they are in the -- tend to
3 be in the smaller streams in which they were
4 developed for the rest of the state.

5 Q. Because?

6 A. The Illinois IBI's don't really
7 apply as well to these larger waters which are
8 what most of the CAWS waters in this rulemaking
9 are wider, larger streams than the dataset of
10 streams that we focus the Illinois IBI's on.

11 Q. And why would you say they wouldn't
12 apply here?

13 A. They may or may not. I just don't
14 think it has been shown.

15 MS. WILLIAMS: Mr. Smogor, does the
16 Agency use the Illinois IBI in any large rivers?

17 THE WITNESS: If by large, if you
18 mean greater than about a hundred feet wide, then
19 no.

20 BY MR. ANDES:

21 Q. Is there a documentation of why that
22 is?

23 A. I think there may be in some of the
24 IBI information that I've written. We were

1 careful to say we used a certain size range of
2 stream in each region and I think I give a
3 cautionary statement in there to the users of the
4 IBI if we're going to use the measures of fish in
5 the streams beyond the range of sizes for which
6 they were developed, do so with caution, do so
7 with knowledge of what is going on in the system.
8 I'm not saying they're automatically bad, but I am
9 saying use them with caution. We have to give
10 that type of statement for their use.

11 MS. WILLIAMS: Is that why the Ohio
12 index was used by the contractors here?

13 THE WITNESS: It's my understanding
14 that the Ohio boatable IBI seemed better tuned to
15 larger waters than the existing Illinois IBI's.

16 BY MR. ANDES:

17 Q. Is that documented in the UAA
18 reports anywhere?

19 A. I couldn't point to a specific place
20 where I know that it is.

21 Q. And Mr. Rankin and Mr. Yoder who
22 worked on the UAA report or reports, in fact, were
23 the ones who created the Ohio IBI, am I right?

24 A. I don't think Mr. Yoder worked on

1 the UAA report for the CAWS. I'm not aware of
2 that. I know that some of Mr. Rankin's report was
3 used in the UAA report for the CAWS. They were
4 both -- yes, they were both involved in developing
5 the fish IBI's in the State of Ohio.

6 MS. WILLIAMS: Were either of them
7 the contractor for the CAWS? When I say
8 contractors for the CAWS, was Yoder or Rankin --
9 can you identify for the record who the
10 contractors were for the two UAA reports,
11 Attachment A and Attachment B?

12 THE WITNESS: For the UAA report for
13 the CAWS, I believe it was CDM, a company called
14 CDM was the contractor and for the UAA report for
15 the Lower Des Plaines River, it was Dr. Novotny.
16 I don't recall the company.

17 Q. Both Mr. Rankin and Mr. Yoder
18 provided an analyses that played a significant
19 role in the Agency's decisions, correct?

20 A. Yes, they provided data and
21 information or they supplied data and information
22 that were used as part of this process.

23 Q. I think we've discussed number 15.
24 Number 16. On page 13, you state that the fish

1 metrics should have been tested for how they
2 respond to gradients of human impact. Is it
3 necessary to show this for each waterbody in which
4 the metric is used?

5 A. Again, I'm unclear what you mean by
6 each waterbody. What scale are you talking about
7 there?

8 Q. I guess each reach.

9 A. No. If you're talking about each
10 individual stream reach, I'd say no.

11 Q. Okay. And so am I correct that also
12 in developing the Ohio IBI, did they show that
13 each fish metric they selected responds in a
14 sensible way of gradients to human impact?

15 MS. WILLIAMS: Fred, I think this is
16 the same as 1D, am I wrong?

17 MR. ANDES: I think it has something
18 in common.

19 MS. WILLIAMS: I think it was
20 actually the exact same question as 1D so I was
21 going to object as asked and answered, but if
22 there's something in here that you don't feel was
23 already asked and answered, I have no problem.

24 MR. ANDES: No, I think it's similar

1 enough that we can move on.

2 BY MR. ANDES:

3 Q. Number 17. On page 14, you raise a
4 concern that the fish metrics are not examined
5 over a large enough range of human influence.
6 What do you mean by large enough?

7 A. I tried to refer to that earlier on
8 page three of my pre-filed testimony. What I
9 meant by large enough is a range that covers
10 biological conditions from something that's
11 balanced that would meet the Clean Water Act down
12 to something less balanced than that.

13 Q. And how do you do that with a system
14 that's been designed, constructed and highly
15 modified for effluent conveyance and navigation?

16 A. It's very difficult.

17 Q. In developing the Illinois IBI, were
18 there waters of lower biological potential that
19 were considered so you could reflect this range of
20 human influence?

21 MS. WILLIAMS: This quote, Fred,
22 when you use lower biological potential in here
23 you have it in quotes. I just want to clarify if
24 you're trying to quote from the testimony.

1 MR. ANDES: I believe I was.

2 MS. FRANZETTI: While Mr. Andes is
3 looking for that --

4 MS. TIPSORD: Sure.

5 MS. FRANZETTI: Susan Franzetti.

6 Mr. Smogor, can you elaborate a little bit on your
7 last answer that it is very difficult to apply
8 this human influence factor in a waterway like the
9 CAWS that is highly modified?

10 THE WITNESS: If I'm understanding
11 your question correctly, I was responding to if
12 you're going to try to develop an index and all
13 you have are impaired waters and you want an index
14 that's going to be useful in a Clean Water Act
15 context, this use attainability analysis, you need
16 a broader frame of reference.

17 If all you have are impaired
18 waters and you're just taking a small bit of real
19 estate on the map, saying I'm going to look in
20 this region and all the streams are impaired in
21 this region you don't really have a frame of
22 reference to what is a balanced community.

23 So, yes, it's difficult if
24 you've started by saying I'm going to devise an

1 index that says it will work here and only here,
2 sure. That doesn't rule out other possibilities.
3 You can take a broader view of things and you can
4 use an index or devise an index that somehow
5 captures a broader frame of reference. My index
6 has to be able to capture what it means to be
7 balanced, meeting the Clean Water Act goal, down
8 to a less balanced condition. Like I said, it
9 provides that frame of reference.

10 So what we did was we realized
11 that much of the CAWS is already impaired, but we
12 went to an index, the Ohio boatable index, which
13 in its development it's already been established
14 we know what a higher score means relative to the
15 Clean Water Act goal even though we're not
16 necessarily going to see a high score in the
17 waters we're looking at.

18 If I just developed an index for
19 impaired waters and I asked what score will my
20 index be that's consistent with the Clean Water
21 Act goal, I have to say I don't know. I don't
22 have that frame of reference. I can't interpret
23 my index in that regard. So does that help?

24 MS. FRANZETTI: Yes, it does help

1 explain what your rationale is. It's just that it
2 seems that both the District and the Agency agree
3 that all of these segments in the CAWS aren't
4 capable of attaining the Clean Water Act fishable
5 loads, right?

6 THE WITNESS: Correct.

7 MS. FRANZETTI: And the Agency when
8 it proposed its use designation, I believe
9 stressed that it did think that these waters were
10 unique within the state, would you agree with
11 that?

12 THE WITNESS: I don't know if we
13 stressed it. I think we agreed they were unique
14 to the extent, yeah, they can't attain the Clean
15 Water Act goal. That's pretty unique to a lot of
16 other waters in the State of Illinois. That was
17 our focus is our first task, at least the way I
18 see it in the use attainability analysis, is
19 justify why you can't attain a balanced biological
20 community.

21 MS. FRANZETTI: I was harping back
22 to in the statement of reasons that part of why
23 the use designation language was derived was that
24 it was intended solely to apply to the CAWS waters

1 not anywhere else in the state because they were
2 considered relatively unique, is that consistent
3 with your recollection of the Agency's finding?

4 THE WITNESS: I guess I don't see
5 where we use the word unique in our definitions.
6 So I guess I don't recall that aspect.

7 MS. FRANZETTI: Do you think that
8 the District's habitat index has some value in
9 differentiating between certain of upper reaches
10 within the CAWS?

11 THE WITNESS: I believe their
12 habitat index does vary from reach to reach in the
13 CAWS. It has some variability. What I'm
14 struggling with is what is varying? Okay. The
15 individual habitat measures are varying.
16 Obviously, they contribute to the index, but is it
17 really biological condition in the Clean Water Act
18 context, that concept we're dealing with, the
19 measure of human impact, is that what it is really
20 measuring is what I'm questioning.

21 MS. TIPSORD: Mr. Andes, whenever
22 you're ready.

23 MS. WILLIAMS: Would you like to
24 rephrase the other question or did you find the

1 quote?

2 MR. ANDES: I could not find the
3 quote, but we can move on.

4 BY MR. ANDES:

5 Q. Let's move to number 18. On page
6 15, you raise the concern that the habitat reports
7 can not adequately assess other IBI's. Are you
8 aware that Limnotech has looked at the
9 relationships of the CAWS habitat index as to some
10 of those other IBI's?

11 A. Not from what was presented in the
12 habitat evaluation or improvement reports.

13 Q. Based on the charts below, do those
14 comparisons show weaker correlations for those
15 IBI's than the CAWS habitat index?

16 MS. WILLIAMS: Fred, can you lay
17 some foundation for where these charts come from?
18 There's no references either.

19 MR. ANDES: They're based on
20 information in the Habitat Evaluation Report,
21 which did assess all those various habitat
22 protocols.

23 MS. TIPSORD: For the record, these
24 are charts that appear in 18B of the District's

1 pre-filed questions.

2 MS. WILLIAMS: So you're saying
3 these are based on what from the Habitat
4 Improvement Report? What part of these charts is
5 taken from the Habitat Evaluation Report?

6 MR. ANDES: I believe, and we can
7 follow up with this, I believe that all the
8 information here was included in the information
9 developed by Limnotech for the purposes of its
10 Habitat Evaluation Report. The tables themselves
11 appear to not be in the report.

12 MS. WILLIAMS: Can you tell what the
13 X axis label should say?

14 MR. ANDES: We can come back to that
15 and clarify that later.

16 MS. WILLIAMS: I'm sorry. Is there
17 a question pending?

18 BY MR. ANDES:

19 Q. Let me address a related issue. If
20 we -- because the question at hand here was the
21 use of the CAWS habitat report relative to other
22 indices and, Mr. Smogor, in the Habitat Evaluation
23 Report Public Comment 284 on page 26 there's a
24 statement that Limnotech says "All of the habitat

1 protocols reviewed for this study were developed
2 for rivers using data from natural rivers.
3 Although the documentation for some of the
4 protocols discusses the fact that some of the
5 systems used were modified by human activity, no
6 reference was found to the inclusion of completely
7 manmade channels such as those that comprise
8 approximately 75 percent of the CAWS. Rankin 1995
9 stated that indices need to be regionally
10 calibrated, suggesting the importance of including
11 local conditions in the selection and development
12 of index protocols." Do you disagree with
13 anything if that statement?

14 A. No, not offhand.

15 Q. Okay.

16 MR. ANDES: Okay. The answer on the
17 X axis is these are the non-normalized values of
18 the habitat index.

19 BY THE WITNESS:

20 A. I'm sorry. The X axis is --

21 BY MR. ANDES:

22 Q. The raw values of the habitat index.

23 A. Of the CAWS habitat index. Okay.

24 Thanks.

1 BY MR. ANDES:

2 Q. Also --

3 MS. WILLIAMS: Can you repeat that
4 one more time?

5 BY MR. ANDES:

6 Q. Why don't we have Ms. Wasik repeat
7 that.

8 MS. WASIK: So these are the raw
9 values of habitat index scores. The scores you
10 see in most of the tables are normalized in the
11 zero to one hundred range and the ones shown in
12 this chart were the raw values.

13 MS. WILLIAMS: Did you prepare it?

14 MS. WASIK: No, it was prepared by
15 Limnotech.

16 MS. WILLIAMS: Okay. Thanks.

17 BY MR. ANDES:

18 Q. The Limnotech report also on page 26
19 states that "Many of the variables used in the
20 existing protocols including some of those listed
21 in Table 2-3 are simply not applicable to a system
22 like the CAWS which was constructed for effluent
23 conveyance and navigation, will continue to be
24 operated for those purposes. So do you disagree

1 with that statement?

2 A. No, some of these variables I agree
3 just aren't necessarily variables in the CAWS. I
4 think we address that earlier, too.

5 Q. And on the next page it states "That
6 all the protocols reviewed including more than one
7 key variable is not useful in measuring habitat
8 variation in the CAWS because of a complete
9 absence of those variables" and you would not
10 disagree with that either, am I correct?

11 A. No, I would like to point out this
12 is a key issue for my criticism I guess is not
13 useful for measuring habitat variation. If your
14 objective is just to see how much variation is out
15 there, to me, that doesn't have the focus on
16 trying to measure what the potential biological
17 condition is. Like I said, you can have little
18 variability in a habitat measure across a lot of
19 different sites, but if that habitat measure is a
20 measure of biological condition, it scores
21 uniformly low, that habitat index is still giving
22 you useful information in the context of Clean
23 Water Act goals. It's basically saying all the
24 habitat pretty much shows uniformly impacted

1 conditions. To me, that's useful information in
2 this hearing.

3 Q. The question at hand here is
4 Limnotech's decision to construct a CAWS specific
5 habitat index that they felt would be more useful
6 for really focusing on -- for one of their four
7 purposes was -- not the only one was to determine
8 to what extent habitat variation affected the
9 condition of fish and putting together an index
10 that focused on those factors would not be
11 improper, correct?

12 A. No, I don't think so. I should also
13 add that in my hypothetical or what I just said
14 earlier, I also have to add that I believe there
15 was sufficient variability in existing QHEI
16 measurements that were available for the CAWS. I
17 think it ranged from about 22 to 54.

18 So even though we're kind of
19 arguing off the point maybe the main issue with us
20 is we believe that there was an existing index for
21 the Ohio QHEI, it had relevance and applicability
22 to this Clean Water Act context of use
23 attainability analysis and there was variability
24 in that index throughout the CAWS. In fact, we

1 used that as some of our basis.

2 Q. In fact, as to at least some
3 waters -- so while the Agency preferred to use
4 QHEI, Limnotech used reasons why they preferred to
5 use the CAWS specific index?

6 A. Mm-hmm.

7 Q. And that index was then used with
8 other information by the District to construct its
9 use classification proposal and am I correct at
10 least to some waters the -- if you consider the
11 top two of the District's classes relative to the
12 two classes proposed by the Agency, some waters
13 were common and had a similar classification,
14 others had a different classification by the
15 District and those were explained by the District
16 in Ms. Wasik's testimony?

17 A. Are you asking if --

18 Q. Is that your understanding?

19 A. Yes, that's my understanding.

20 Q. Okay. Let's go to question 19. On
21 page 15, you state that state specific
22 specifications must be applied to each IBI metric.
23 Weren't the fish characterization assignments such
24 as pollution tolerance ratings to the Illinois IBI

1 derived from a number of sources including those
2 outside of Illinois such as fish -- fishes of
3 Wisconsin, fishes of Virginia and Ohio IEPA?

4 A. Yes, those were starting points that
5 I used for rating Illinois fish for tolerance.

6 Q. How does IEPA treat species and
7 assign characteristics of populations in
8 communities that interact with Lake Michigan?

9 A. I'm not quite understanding the
10 question here. Sorry. Can you maybe rephrase it?

11 Q. It's a little indirect. We can move
12 on.

13 A. Okay.

14 Q. On question 20, you raise a concern
15 about scoring adjustments for samples of certain
16 sizes. Isn't it true that IEPA or its contractor
17 also failed to use the adjusted value for a number
18 of individuals collected when they calculated Ohio
19 IBI?

20 A. Yes.

21 Q. Isn't it also true that IEPA has
22 never calculated or provided to the Board the
23 corrected IBI values?

24 A. We did not receive recalculated IBI

1 scores from the contractor.

2 Q. Okay. In paragraph 21 -- question
3 21. On page 18, you express a concern that only
4 two water quality variables, DO and temperature,
5 were examined for statistical relations with fish.
6 Are you aware of the screening process that the
7 UAA contractor -- the IEPA's UAA contractor used
8 to assess overall water quality in the CAWS?

9 A. I'm aware that a screening process
10 was used. I don't know the details of that
11 process.

12 Q. Would it surprise you to learn that
13 according to the UAA report, DO and temperature
14 were the only constituents that most waterways in
15 the CAWS were found not to meet general use
16 criteria more than ten percent of the time?

17 A. No.

18 Q. It would not surprise you?

19 A. Correct.

20 Q. And general use criteria generally
21 for waters which meet the Clean Water Act goals,
22 correct?

23 A. Here, I'll be a little picky. I
24 would say general use criteria are waters that can

1 attain the Clean Water Act goals.

2 Q. It is safe to say that other
3 constituents besides DO and temperature in the
4 CAWS are not likely to impact fish communities
5 since they are generally meeting the general use
6 standards?

7 A. I guess I can't necessarily agree
8 with that with the words generally meeting in the
9 question.

10 Q. Let's say they are meeting general
11 use standards more than 90 percent of the time?

12 A. I don't know. I don't know what the
13 cutoff is. All I have to say is I know that the
14 UAA report did find that there were things like
15 some heavy metals ammonia and PH that were in
16 violation. I didn't look at the details. I know
17 they did find some violations of those water
18 quality parameters as well. So I can't say it was
19 only DO and temperature were the only two that
20 were in violation in the CAWS.

21 Q. You don't recall how many times --

22 A. I don't know the specifics to that.

23 MR. ETTINGER: May I ask? Have you
24 reviewed the Illinois water quality standards to

1 determine whether each of the existing water
2 quality standards is protected aquatic life?

3 THE WITNESS: Personally, no.

4 MR. ETTINGER: Do you believe they
5 are?

6 THE WITNESS: Are the chemical water
7 quality standards perfect? No.

8 MR. ETTINGER: Okay. Do you believe
9 there might be water quality standards designed
10 for some of the chemicals that are in the CAWS,
11 but do not currently exist?

12 MS. TIPSORD: I'm sorry. I didn't
13 hear all that.

14 THE WITNESS: In other words, there
15 are some chemicals in the CAWS for which there is
16 no existing water quality standard?

17 MR. ETTINGER: Correct.

18 THE WITNESS: Yes, I believe that.

19 MR. ETTINGER: Do you believe those
20 chemicals in the CAWS for which there is not an
21 existing water quality standard might be toxic?

22 THE WITNESS: It's possible.

23 MR. ETTINGER: Thank you.

24

1 BY MR. ANDES:

2 Q. Question 22. On page 19, you state
3 no analysis was done as to how fish varied with
4 other water quality variables such as specific
5 conductivity, PH and ammonia. Did the screening
6 process -- and you may not know this. Did the
7 screening process used by your UAA contractor
8 indicate the conductivity and PH were meeting
9 general use standards in the CAWS?

10 A. I'd have to say no because I don't
11 think we have a standard for conductivity. You
12 mentioned conductivity there. At least to my
13 knowledge, I don't know, but I don't know the
14 details. I'm not aware of a standard for
15 conductivity.

16 Q. We can provide a reference to the
17 UAA report later. The next question. To your
18 recollection, did Scott Bell describe in his
19 testimony why Limnotech focused on DO and
20 temperature?

21 A. I recall it was addressed. Again, I
22 don't recall the details.

23 Q. Are DO and temperature measured
24 hourly in the District's continuous monitoring

1 program?

2 A. This one I looked up. I don't know
3 for sure. I'm aware that Appendix C in the CAWS
4 habitat evaluation mentions hourly measurements
5 for dissolved oxygen and I don't know the
6 frequency that temperature and PH are measured as
7 part of that program.

8 MR. ETTINGER: May I ask another
9 question? Have you personally ever seen hourly
10 measurements for dissolved oxygen produced by the
11 Water Reclamation District?

12 THE WITNESS: No.

13 BY MR. ANDES:

14 Q. Have you ever reviewed the
15 District's reports on continuous monitoring for
16 dissolved oxygen?

17 A. I've never looked at specific
18 dissolved oxygen data from MWRD reports.

19 Q. Okay. Let's go to question number
20 23. On page 20, you make statements regarding how
21 lower DO might correlate with better fish
22 communities even if a strong linear relation is
23 not readily apparent. Do you disagree with the
24 UAA which states on page 5-3 improvements in water

1 quality -- improvements to water quality through
2 various technologies like reiteration may not
3 improve the fish communities through the lack of
4 suitable habitat to support the fish population.
5 Unless habitat improvements are made in areas like
6 the Chicago Sanitary and Ship Canal, additional
7 aeration may not result in the attainment of
8 higher aquatic life use?

9 A. I went to the UAA report and looked
10 at this and, to me, I don't disagree with these
11 statements in the context that -- I interpreted
12 they were being posed -- they were being made in
13 the context of the inability of the CAWS to attain
14 the Clean Water Act aquatic life goal.

15 Q. But it says improvements to water
16 quality may not improve the fish communities?

17 A. My interpretation was they were
18 talking about may not improve the fish communities
19 to the aquatic life goal of the Clean Water Act
20 because it was presented in that context. That's
21 how I interpreted it.

22 Q. Okay. But there's no reference in
23 this statement to the aquatic life goals or the
24 act?

1 A. Not in this particular statement,
2 but I believe in the context there was. I'd also
3 point out may not improve and may not result,
4 those actually -- words taken literally are not
5 very definitive either. So my impression here was
6 they were speaking about not being able to attain
7 that Clean Water Act goal.

8 Q. May or may not result in improving
9 the fish communities, but it will result in
10 substantial costs. I guess the question is how
11 confident the Agency is of its conclusion that
12 tightening the DO standards -- there are other
13 places and I'm sure we can cite to where it's
14 stated --

15 MS. WILLIAMS: Tightening what DO
16 standards?

17 MR. ANDES: Making the DO standards
18 for the CAWS more stringent. My understanding is
19 it's being done here to improve the aquatic life
20 use and yet you have this statement in the UAA
21 that says that may not happen, may not improve the
22 fish communities due to lack of suitable habitat
23 which seems to correlate pretty well with what
24 Mr. Bell said so I'm trying to understand the

1 Agency's position in light of that statement.

2 MS. WILLIAMS: In the Use B
3 waters -- I'm objecting to the premise of your
4 question. We're talking about Use B water here,
5 right? I guess I'm going to ask a clarification.
6 Is the Agency proposing more stringent dissolved
7 oxygen criteria for the Use B waters than
8 currently exists with the exception of the
9 Cal-Sag?

10 THE WITNESS: For Use B, I don't
11 think -- no, I don't think they're necessarily
12 more stringent.

13 BY MR. ANDES:

14 Q. I'm talking generally about this
15 statement relative to the Agency's proposal which
16 in general makes the DO standard more stringent.
17 I'm not trying to subdivide A versus B. I'm
18 trying to understand how this is consistent with
19 the Agency's position that attaining the -- that
20 new DO standards are needed and will result in
21 improvements in the fish community?

22 MS. WILLIAMS: You are talking about
23 the Sanitary and Ship Canal in your question,
24 right, or no?

1 MR. ANDES: It says areas like the
2 Sanitary and Ship Canal. The statement is pretty
3 general.

4 THE WITNESS: I guess that's how I
5 interpreted it in the context in this report there
6 were several paragraphs. This was part of one
7 paragraph that says why can't the CAWS attain the
8 Clean Water Act goal. So I was interpreting these
9 comments as being applicable to the Clean Water
10 Act goals.

11 BY MR. ANDES:

12 Q. But it doesn't actually say that?

13 A. Exactly -- in this quoted passage,
14 it does not say Clean Water Act goal. You're
15 right.

16 Q. Let's move on to the next question.

17 24. On Page 21, you explain why you believe that
18 Ohio IBI and QHEI are the proper tools to use to
19 evaluate the CAWS waterways. Is it true that the
20 QHEI scores for the CAWS are measured one time in
21 March 2004 by a consultant not including certain
22 segments like Bubbly Creek and the South Branch
23 and were those scores the entire basis for the
24 proposal?

1 A. Yes, to the first question. It's
2 true that QHEI scores were measured one time and
3 was that the entire basis for our proposal, these
4 QHEI scores? No.

5 Q. But the QHEI scores were the primary
6 basis for the use classifications, correct?

7 A. They were used. Primary I don't
8 really know because we also use knowledge and
9 experience of -- not my knowledge and experience
10 in the CAWS, but knowledge and experience in the
11 CAWS. There was -- I wasn't part of the
12 stakeholder input process. It's my understanding
13 from the record that stakeholder input was also
14 used. So I don't know if it was primary, but it
15 was one of the factors -- one of the sets of
16 criteria that was used.

17 Q. There was no other index used to
18 develop the use classifications, correct?

19 A. Another quantitative habitat index
20 or something like that, not that I'm aware of.

21 Q. And the QHEI specifically was
22 developed for wadable streams, correct?

23 A. No, I don't think it was. I think
24 it applies -- I think it was developed for

1 boatable streams as well.

2 Q. Were modifications made to it to
3 include an impoundment adjustment?

4 A. Yes, I believe so.

5 Q. But those were not reflected in the
6 scores reported by the Agency, correct?

7 MS. WILLIAMS: Be careful. He
8 reworded this a little bit. A yes and a no would
9 be a different answer based on --

10 BY MR. ANDES:

11 Q. Were those adjustments reflected in
12 the scores you reported?

13 A. If you're asking if the QHEI scores
14 reported in Rankin 2004, which is Attachment R to
15 our statement of reasons, it's my understanding
16 that those scores don't reflect this impoundment
17 adjustment.

18 Q. During IEPA testimony -- and if you
19 can't address this because someone else knows the
20 answer just tell me that although I think the
21 three of you all answered questions together last
22 time. During IEPA's testimony, Mr. Sulski stated
23 Sheridan Road and the North Shore Channel was used
24 as a reference site for the CAWS and Mr. Essig's

1 testimony later stated that the QHEI scores for
2 Sheridan Road were transposed with the QHEI scores
3 from Route 83 on the Cal-Sag Channel. The
4 District asked for corrected scores or field data
5 for which to calculate the scores which we never
6 received. Can you explain how these errors impact
7 the comparisons that were made for the aquatic
8 life use classification?

9 A. I don't think these mistakes
10 significantly impact our big picture comparisons.
11 Overall, I think we came to two main conclusions.
12 The first conclusion was that these waters in the
13 CAWS cannot attain the Clean Water Act aquatic
14 life goal and then the second conclusion we came
15 to is that based on the information we have
16 available about biological potential, we think
17 there's two classes of waters in the CAWS in terms
18 of their differences in biological potential. So
19 we proposed Use A and Use B to match those
20 impressions.

21 Q. North Shore Channel in general had
22 the best biological condition in the system, am I
23 right, or at least best habitat condition?

24 A. I don't think it had the best

1 habitat condition.

2 MS. WILLIAMS: Why don't we enter a
3 couple exhibits here that may help the Board
4 follow on these questions if that's okay.

5 MR. ANDES: I believe we actually
6 discussed this issue before, but it was quite a
7 while ago.

8 MS. WILLIAMS: Right. I brought in
9 two exhibits to help with this question. One is
10 just a page from the CDM report and it's
11 entitled -- it's Figure 5-2.

12 MS. TIPSORD: And the CDM report is
13 Attachment B to the proposal to the UAA report.
14 If there's no objection, we'll mark this as
15 Exhibit 470. Seeing none, it's Exhibit 470.

16 (Document marked as IEPA Exhibit
17 No. 470 for identification.)

18 MS. WILLIAMS: The second is
19 entitled rescaled version update Figure 5-2.

20 MS. TIPSORD: If there's no
21 objection, we'll mark the rescaled version of
22 Figure 5-2 from the CDM's UAA report 2007 as
23 Exhibit 471. Seeing none, it's Exhibit 471.

24

1 (Document marked as IEPA Exhibit
2 No. 471 for identification.)

3 MS. WILLIAMS: Mr. Smogor, would you
4 mind explaining for the record these two charts
5 what they show? In particular, the second chart,
6 but why did you develop the second chart?

7 THE WITNESS: There seemed to be
8 some conclusion, myself included, with figure --
9 original Figure 5-2 from the CDM UAA report and
10 that is now -- that Figure 5-2 is now shown here
11 again as Exhibit 470. Relative to how the fish
12 IBI scores in that graph related to the QHEI, the
13 habitat scores in that graph, and it appeared, to
14 me, that if I could rescale the X and the Y axis
15 on Figure 5-2 to match them up to some kind of
16 logical relationship between that IBI and QHEI
17 this picture might make a little more sense or
18 gain a little more clarity.

19 MS. WILLIAMS: What do you mean
20 logical relationship?

21 THE WITNESS: A logical relationship
22 in aligning the scores on one axis with the scores
23 on the other Y axis.

24 MR. ANDES: Before you go on, can I

1 ask we did ask for corrected scores and field data
2 and those still have not been provided, correct?
3 That was a couple years ago.

4 THE WITNESS: It was my impression
5 that table -- it was established from the record
6 that Table 3 in the Rankin report, the original
7 Rankin report, did have the correct scores that
8 the flip-flop in scores for the few sites was
9 reflected in Table 2 so I went to Table 3 of the
10 original Rankin 2004 report and used those scores
11 from Table 3.

12 BY MR. ANDES:

13 Q. But we don't know from the field
14 data. We don't know which one is right without
15 the field data which we never got.

16 A. I don't think you ever got the
17 actual field data from the Rankin QHEI.

18 Q. This seems a little odd and I'm just
19 looking at this rescaled version, that Sheridan
20 Road was the reference site, but you have the
21 Cal-Sag Channel or Route 83 being higher than the
22 reference site?

23 A. I guess by reference site I'm
24 struggling with what you mean. My impression is

1 that the North Shore Channel and if we refer to
2 the rescaled version I think this shows it maybe
3 even more clearly compared to the rest of the site
4 so I'm looking at the rescaled version of this
5 graph, which is now Exhibit 471, I believe.

6 Q. Explain again how is this rescaled.

7 A. Yes. The rescaling is I went to the
8 Rankin QHEI report which is Exhibit 175 in the
9 record and in that there is a regression equation
10 that links QHEI with fish IBI scores. So if you
11 have a certain score on your QHEI, what your best
12 expectation of what your IBI score should be --
13 and that's what this regression equation provides.

14 So if we looked at this graph
15 and I looked at a score of 40 on the left Y axis
16 which is now the QHEI axis on the left, if I score
17 a QHEI habitat score of 40, I would expect to get
18 a fish IBI score of halfway between 25 and 30. So
19 let's say 27.5 roughly. That's what the
20 regression provides. It provides you with that
21 link between interpreting your QHEI scores in
22 terms of was your best estimate of what the fish
23 score would be and we're keeping in mind that
24 Rankin developed these outside of the influence as

1 much as they could control for outside of the
2 influence and confoundment of water quality issues
3 because they used their data from non-point source
4 impacted streams throughout the State of Ohio.

5 So in looking at this plot, the
6 North Shore Channel sites seem to be the few sites
7 throughout the CAWS where your current habitat
8 score, which is the dark circle, seemed to
9 coincide with what you would expect the fish to be
10 in the absence of water quality impact because
11 your fish scores are represented by your long
12 rectangles in this plot. That's the 25th to the
13 75th percentile of the fish IBI scores.

14 So relative to the rest of the
15 sites in the CAWS, it's my understanding that the
16 biologists who were part of the UAA stakeholder
17 process said we're looking at the North Shore
18 Channel, we're looking at current habitat and
19 we're looking at current fish and yet it looks
20 like the current fish are kind of living up to
21 their expectation here given what we see in terms
22 of habitat when at the same time they look up
23 through the rest of the CAWS and said we're seeing
24 some habitat differences, but it's our general

1 impression that the fish aren't so to speak living
2 up to it at those other sites.

3 We'd expect better from the fish
4 here given the habitat that we're seeing. So
5 that's my interpretation of what went on in
6 creating this figure and using it in the use
7 attainability analysis.

8 MS. WILLIAMS: Is there one
9 exception to that general premise you were saying
10 about the fish? Would there be one example where
11 the fish were exceeding their habitat expectation?

12 THE WITNESS: Yes, there's one very
13 obvious example in that it's about the eighth site
14 or -- the seventh site from the left which is the
15 Chicago River inner harbor. You'll see where that
16 box or rectangle that's representing fish IBI
17 scores up around 30 is much higher than the dark
18 circle which is the QHEI habitat score which is
19 down around 22 to 25.

20 BY MR. ANDES:

21 Q. Let me go back to the question.
22 Sheridan Road was used as a reference site.
23 Mr. Sulski testified to that. Mr. Essig later
24 said were later transposed with scores for Route

1 83 and Sheridan Road. I'm asking is there any
2 place where the Agency has done an analysis to
3 document that, in fact, that error did not affect
4 the comparisons or if correcting the error how
5 would that affect the comparisons here?

6 I'm asking is there any document
7 that other than what we just got here today that
8 shows -- and I'm not sure it does that it shows
9 that, that correcting that error using the right
10 data for the reference site instead of the wrong
11 data for the reference site doesn't affect the
12 analysis in any way?

13 A. I understand that error was made and
14 I think it was mentioned as being corrected on the
15 record. You say reference site. I'm not sure
16 Mr. Sulski was using that terminology especially
17 in the way it's used for IBI's. The way I see
18 that is more generically he said it was a point of
19 reference or reference point was the North Shore
20 Channel and that point of reference was that the
21 fish in the habitat seemed to be linked together
22 in a logical way. The fish are living up to what
23 the habitat are and what the habitat is providing.

24 Q. We can go back to points a long time

1 ago, but the issue I'm still trying to get is a
2 yes or no, is there a document that explains why
3 correcting that error doesn't change anything
4 about the Agency's proposed use classification?

5 A. I don't know of any specific
6 document that does that, but that's what we were
7 trying to clarify with this figure.

8 Q. Can we get -- I'll ask once more the
9 field data for both sites so we can confirm what
10 exactly was done and run the numbers ourselves?

11 MS. WILLIAMS: The Agency does not
12 have that information.

13 MR. ANDES: Can it be gotten from
14 the contractor? I hope the answer is yes because
15 otherwise it can't be relied on. We can't see it.

16 MR. ETTINGER: All the other back up
17 data has been put in for the record. By the way,
18 I'm requesting that the Water Reclamation
19 District --

20 THE COURT REPORTER: I'm sorry. I
21 can't hear you.

22 MR. ETTINGER: I was just saying
23 we're not asking that the Agency in this
24 proceeding put in all of the dissolved oxygen data

1 that Scott Bell relied on and at the same time I
2 didn't expect today in this type of preceding was
3 going to put forth every --

4 MR. ANDES: We're not asking for
5 everything. We're only asking for where an
6 admitted error was made that we received field
7 data so we can assess the impact of that error.

8 MR. ETTINGER: Okay.

9 MR. ANDES: All the District's
10 dissolved oxygen data is publically available on
11 the District's website.

12 MR. ETTINGER: I don't believe
13 that's true, but we'll talk about that in this
14 proceeding or another one.

15 MS. TIPSORD: Did you have --

16 THE WITNESS: Yeah. To my
17 understanding, we have. We asked Mr. Rankin for
18 copies of the actual field sheets. We did not get
19 them. We did get computer output of the field
20 sheets. So it's a field sheet not with the
21 handwritten data in it, but it was generated by
22 their computer database. It has typed values on
23 the field sheet and he said these are the field
24 sheets. So I can't vouch that they were the

1 actual sheets that someone wrote something down
2 on, but they are the field sheets that have the
3 data for these sites. Overall, the scores that
4 are reflected on this graph are correct. As far
5 as I know, they are from the original Table 3 in
6 Rankin's report which I don't think are in error
7 at this point. We can provide you with those
8 computer QHEI sheets.

9 MR. ANDES: We'd like to see those
10 sheets and I'd like that Mr. Rankin be requested
11 to provide the other information that was used by
12 the Agency to develop the basis for the
13 rulemaking.

14 MS. WILLIAMS: Mr. Rankin didn't
15 work for the Agency. I mean, whether it was
16 available data that we used, we can ask, but
17 that's all we can do. He is not an employee of
18 the Agency.

19 MR. ANDES: I have a hard time --

20 MS. WILLIAMS: He is not even a
21 contractor. We didn't contract with him. He did
22 work for US EPA so we'll do the best that we can.

23 MR. ANDES: If the Agency is using
24 this data, it ought to be able to document the

1 data.

2 MS. TIPSORD: I believe what we've
3 been told is they can give you what they have in
4 documentation and you can certainly argue whatever
5 you want to argue about the quality of the data,
6 but I would also note that the record is full of
7 lots of information including some stuff from
8 Mr. Yoder and so I think we need to move on from
9 this point.

10 MR. ETTINGER: I just want to
11 clarify what's being requested and what is not
12 being requested. I mean, Mr. Bell didn't give us
13 each data point for each individual fish reading
14 that they found over these ten years and -- each
15 daily and hourly DO data point and I'm not certain
16 in this type of proceeding that anybody wants that
17 and I'm just asking if that's what you're asking
18 of the Agency then that's a new request and it's a
19 little more than we asked for.

20 MR. ANDES: We asked for this
21 information.

22 MS. WILLIAMS: I interpreted the
23 request that I provided to Fred not necessarily if
24 you want, Marie, that we enter it in the record,

1 that's okay. But my interpretation is that he
2 wanted to see a copy and that's how I was going to
3 go about doing this, but I'd be happy if we had a
4 different plan.

5 MR. ETTINGER: Do you just want it
6 as to the place where there was this confusion as
7 to these two points or are you now asking them for
8 all of their original data sheets and all of their
9 original points?

10 MR. ANDES: I never suggested that.
11 I asked for the data as to those two particular
12 sites which we asked for two and a half years ago.
13 I'm renewing the request.

14 THE WITNESS: So that would be just
15 for clarification the four sites, the two that got
16 mix matched?

17 MR. ANDES: Yes. Thank you. I'll
18 correct the statement about the DO data. There's
19 a lot of DO information on the District's website.
20 Maybe not the hourly numbers. If there are any
21 particular issue as to any particular day, we can
22 certainly provide that here. We have an error
23 that is being investigated and that's all we're
24 asking about.

1 MR. ETTINGER: That was my
2 confusion. It sounded like you were asking for a
3 vast volume of backup data to be put up into this
4 proceeding and I wanted to see whether we really
5 wanted to go there.

6 MR. ANDES: I would never do that.

7 MR. ETTINGER: Thank you.

8 BY MR. ANDES:

9 Q. Let's go to 24F.

10 MS. FRANZETTI: I'm sorry, Fred.
11 Can I ask a couple of questions on Exhibit 470 and
12 471?

13 MR. ANDES: Sure.

14 MS. FRANZETTI: I am not grasping,
15 Mr. Smogor, what the difference is between 470 and
16 471 in that very basic -- from a very basic
17 perspective, Exhibit 470 more of the dots seem to
18 be within the fish IBI score boxes, is that right?

19 THE WITNESS: Yes, in general. In
20 470, the dots are closer to the rectangles than
21 they are in 471.

22 MS. FRANZETTI: Okay. Why are they
23 further away from the rectangles in Exhibit 471
24 than they are in 470?

1 THE WITNESS: In 470, the original
2 figure I'm not aware of the basis for how the
3 numbers that are on the left vertical axis were
4 aligned with the numbers that are on the right
5 vertical axis. So if you're just creating two
6 vertical measurement scales and putting them
7 together, it's not clear what the relationship is.
8 For instance, if we look on Exhibit 470, the score
9 of 24 on the fish IBI and we follow that across
10 someone might get the impression that that's
11 telling me something that the QHEI should be 43 or
12 vice versa. If I have a QHEI of 43, it's telling
13 me that that lines up with a score of 24 on the
14 fish IBI. That's potentially misleading.

15 MS. FRANZETTI: Why is it
16 misleading?

17 THE WITNESS: At least to my
18 understanding, there is no basis for saying that a
19 43 on the QHEI somehow equals or is equivalent to
20 the 24 on the fish IBI. So what we did is we said
21 is there anything that tells us that this score of
22 the QHEI should be this score on the fish IBI and
23 we said, yes, there is. There's actually a
24 regression in the Rankin QHEI document that allows

1 you to align those two scales in a more logical or
2 at least a clearer way.

3 BY MR. ANDES:

4 Q. You're saying your original table
5 was misleading? 5-2 was the Agency's -- was
6 provided by the Agency as part of their basis for
7 the rule?

8 A. I don't think it's necessarily
9 misleading. I would say it lacks clarity in this
10 regard. I think the Agency said for the most part
11 it's our final conclusion that a lot of these
12 sites in the CAWS the fish are not quite meeting
13 their potential in terms of what the habitat is
14 telling us.

15 Q. I was just using your word. You
16 said it was misleading. I was trying to
17 understand that.

18 A. I'm sorry. That's a poor choice of
19 words. I would say it lacks clarity. That's what
20 I meant by that. I think I said potentially
21 misleading. Maybe not. I'm sorry.

22 Q. So this is clearer?

23 A. That was my point or at least my
24 attempted point with Exhibit 471 was to help

1 clarify.

2 MS. FRANZETTI: Exhibit 470 was
3 the IEPA contractors CDM effort to show -- they
4 show the use designation category using Ohio's use
5 designation classification of limited, modified
6 and general warm water, correct?

7 THE WITNESS: Yes, I think that's
8 correct. That's what they are trying to do, yes.

9 MS. FRANZETTI: That's what is meant
10 by the use of the line -- label limited for the
11 line below the line across from the IBI value of
12 24 that you were just using as an example, right?

13 THE WITNESS: I'm not sure of that.
14 I'm not sure that everything below the line at 24
15 was at least I didn't -- was supposed to be called
16 limited. I guess I'm not seeing that. I see what
17 you're saying by the way it's labeled in 470 that
18 the word limited is down there in the lower
19 corner. I'd have to reread the --

20 MS. FRANZETTI: Okay. Let's go back
21 to what you did in 471. You took the same data
22 that is shown in Exhibit 470 and you applied what
23 is referred to as the Rankin regression equation
24 to it?

1 THE WITNESS: I took the -- sorry.
2 This gets complicated.

3 MS. FRANZETTI: You're making me
4 feel better by saying that.

5 THE WITNESS: I took not the
6 numbers -- the dots and the rectangles. Those are
7 the same quantitative value other than the errors
8 that we talked about for those four sites. Those
9 are flip-flopped. Those are the same exact
10 quantitative values as they are -- they're the
11 same across both plots. What I did was when
12 you're plotting a dot versus plotting a rectangle,
13 effectively I change the scaling of the IBI in
14 Exhibit 470 to a new scale, to a different scale,
15 and it's the right-hand side of 471.

16 So how the dot graphs relative
17 to the box or the long rectangle has changed, but
18 the value of the dot and the values represented by
19 the rectangles have not changed.

20 MS. FRANZETTI: Does this in any
21 way -- excuse me. Does the results in Exhibit 471
22 do they in any way raise a possible doubt as to
23 the suitability of the QHEI index to the CAWS
24 given these differences now between where the

1 circles are and the fish data boxes are?

2 THE WITNESS: It didn't strike me
3 after rescaling this and taking a look at it I
4 guess I didn't get that impression that something
5 was standing out as telling me the QHEI is like a
6 red flag went up with the QHEI as far as its
7 applicability.

8 MS. FRANZETTI: And the reason I'm
9 asking is am I wrong that one would normally
10 expect even after what you did in Exhibit 471 for
11 the circles to mostly be at least in or closer to
12 the fish data boxes?

13 THE WITNESS: I guess I didn't have
14 that expectation. Again, I'm just going from a
15 preestablished relationship between these two
16 indicators, the habitat indicator and the fish
17 indicator. And I'm just letting the data tell me
18 what it will. I didn't have any preconceived -- I
19 guess no strong preconceived ideas of how far
20 apart they may be or not.

21 MS. FRANZETTI: I did not mean to
22 imply that you would have.

23 THE WITNESS: Okay.

24 MS. FRANZETTI: It's more I'm

1 asking -- let me see if I can rephrase it. I
2 thought that generally QHEI values and IBI values
3 would be more consistent with each other for a
4 given waterway segment than these appear to be, is
5 that right?

6 THE WITNESS: Yes, there's a third
7 prong here. Do you have a question to finish that
8 or do you want me to --

9 MS. FRANZETTI: That's where I was
10 coming from is that given these are not very
11 consistent with each other, is it reasonable to
12 raise the question as to how suitable the QHEI
13 index for waters of this type that the CAWS are
14 heavily modified manmade -- basically what the
15 District's concern was that made it go to trying
16 to develop a more suitable index?

17 THE WITNESS: And that's where I'm
18 seeing things differently with that. What I'm
19 seeing here is if there were no water quality
20 impacts or relative lack of water quality impacts,
21 I'd expect those boxes to be up in the circles and
22 this was part of our proposal. I think this was
23 realized, but maybe not as clearly as this figure
24 now shows. I think it was realized that these

1 fish just don't seem to be doing as well as what
2 the habitat shows they can do and, to me, the
3 circles represent the potential for what the fish
4 can be and a likely reason -- I'm not saying this
5 is definitive. The likely reason in that regard
6 is those -- the fish aren't up to their habitat
7 because of other things keeping them down.

8 BY MR. ANDES:

9 Q. Let me follow up on that, though.
10 If that were true -- let's look at the North Shore
11 Channel. Some of the lower DO levels we see in
12 the system are upstream of Sheridan Road and I
13 don't know if you're aware of all the data and yet
14 even with very low DO values upstream of Sheridan
15 Road -- if DO were a limiting factor, then you'd
16 say we're going to show low IBI scores, but high
17 habitat potential and, in fact, that's not what
18 you see here?

19 Here, they are very closely
20 correlated which tends to say maybe DO isn't a
21 significant factor there because if it were, the
22 circle would be way above the box so how do we
23 explain that?

24 A. I don't know. I'd have to say I'm

1 not familiar with the DO data.

2 Q. But you just made conclusions? You
3 said this table led you to some conclusion about
4 using the QHEI --

5 MS. WILLIAMS: That's not what he
6 said. He said one possibility.

7 BY MR. ANDES:

8 Q. The statements just made as I
9 understand them reflect that your sense seeing the
10 circles, the attainable numbers, well above the
11 fish numbers tended to confirm for you that the
12 Agency's conclusion is that these waters can be
13 more than they are and the Agency's determination
14 was that DO standards would help get there.

15 I'm asking how that squares with
16 the numbers with the data and the demonstration
17 here for the North Shore Channel where we have low
18 DO data upstream, which would seem to indicate if
19 DO were the limiting factor then your attainable
20 would be way higher than your actual and it's not?

21 A. All I can say -- yes, our
22 interpretation is -- and I think it's a reasonable
23 interpretation is if your fish are much lower --
24 that rectangle is much lower than the dot which is

1 your habitat potential something is going on there
2 or at least it's a potential indication of that.
3 I can't say anything definitively from this, but
4 it is an indication, possible indication, put the
5 qualifier on it, that there is something going on
6 keeping the fish down to where they could be.

7 Q. Here, in the North Shore Channel
8 where you're not seeing that something going on
9 you would not be able to make that conclusion,
10 correct?

11 A. Correct. That is a difference here
12 in the North Shore Channel relative to these
13 others and I was just saying that based on my
14 understanding from what was decided in the UAA
15 process that was also consistent with some of the
16 biologist's perceptions. Now, as far as how DO
17 matters in this general pictures, I don't know
18 because I haven't looked specifically at the
19 dissolved oxygen data.

20 Q. Okay.

21 MR. ETTINGER: And the two sites
22 here, the North Shore Channel below the Touhy
23 Avenue and the North Shore Channel below Peterson
24 Avenue, those are the two sites directly below the

1 North Side Sewerage Treatment Plant?

2 THE WITNESS: Yeah, I don't know the
3 exact location of the site.

4 MR. ETTINGER: I do.

5 BY MR. ANDES:

6 Q. Let's move on. 24F. Can you state
7 in prior testimony -- well, I'm quoting your prior
8 testimony. That QHEI alone was not being used to
9 make the final decision about attainable
10 biological conditions. There was no single QHEI
11 cutoff to define that in and of itself. If so,
12 what other factors were used to make those
13 decisions?

14 A. In the context here from what I
15 recall is questions about the Cal-Sag Channel
16 which is a big difference between the two
17 proposals or at least an obvious difference
18 between the two proposals MWRD suggested a less
19 natural use for Cal-Sag Channel than the Agency
20 proposed and in that context of the differences
21 for Cal-Sag Channel with the other factors that
22 were used besides the QHEI scores were direct
23 observations of the waterways and I think the
24 presence of certain what we'll call positive

1 habitat attributes, components of the QHEI in the
2 Cal-Sag Channel. I think one of them being
3 coarser substrates.

4 Q. Okay. So the Agency was not -- is
5 it the only instance you can think of or are there
6 others where the Agency wasn't totally driven by
7 the QHEI numbers, but instead used other factors?

8 A. I think in the record and what I
9 tried to probably not clearly say earlier is there
10 were other things used besides QHEI scores.

11 Q. So it was okay with the Agency to
12 use some qualitative assessments to make some
13 borderline decisions?

14 A. Yes, the Agency used direct
15 observations based on people who had a lot of
16 experience working in those waters.

17 Q. But the QHEI scores themselves are
18 based on just one set of data from one day,
19 correct?

20 A. The Rankin scores were -- QHEI
21 scores were a one-time measurement at the site.

22 Q. I think that the next statement is
23 about the same issue. So I think the other things
24 in the next statement are the same ones we just

1 talked about. So I'll skip that.

2 A. The sky battling on about levels
3 one, level two, what was that -- never mind.

4 Q. We'll go on. Question 25, our last
5 question. On pages 21 and 22, you state the Ohio
6 metric should be used as a model to classify CAWS
7 waters. Are you familiar with the Cuyahoga River
8 Ship Canal in Ohio?

9 A. I'm not familiar with the Cuyahoga.
10 And, again, to be picky I don't think my testimony
11 intended to say we're using, quote, the Ohio
12 metrics should be used as a model to classify CAWS
13 waters, unquote.

14 To clarify, I was trying to say
15 we should use the Ohio QHEI and the Ohio fish IBI
16 to help inform the uses for the CAWS waters. I
17 didn't necessarily intend to say we use the Ohio
18 classification system.

19 Q. Are you aware of any extent to which
20 the Agency has considered a comparison between the
21 Cuyahoga River Ship Canal and the CAWS?

22 A. I'm not aware that was used in any
23 explicit way. There is -- I will -- I do have to
24 qualify that in the original Figure 5-2 Exhibit

1 470 versus 471 there are four waters that are not
2 part of the CAWS that are depicted in 470 and not
3 in 471 and one of those is the Cuyahoga Ship
4 Canal.

5 Q. Are you aware of why that was?

6 A. My understanding is they were kind
7 of just using that for some perspective on
8 plotting the data like this. Let's see how these
9 data plots for water outside the CAWS. That's my
10 understanding for some perspective.

11 Q. Okay. So my question to you and you
12 may not know the answer is, given the similarity
13 between the Cuyahoga River Ship Canal and reaches
14 of the CAWS, which I think were described in
15 Ms. Nemura's testimony, do you have any knowledge
16 of the Agency's analysis in terms of why it didn't
17 put segments of the CAWS in a similar category as
18 the Cuyahoga River Ship Canal?

19 A. I'm not aware of any specific
20 comparisons and I'm not necessarily aware that the
21 Agency's proposed Use B how that differs or is
22 similar to the Cuyahoga's current use designation
23 is. I'm not sure.

24 Q. We've had other testimony on it, but

1 you're not aware of it?

2 A. I'm not aware of any direct
3 comparison that the Agency used to generate its
4 initial proposal in that regard.

5 Q. Okay.

6 MR. ANDES: Those are all my
7 questions.

8 MS. TIPSORD: Anything else for
9 Mr. Smogor?

10 MS. FRANZETTI: I had a couple.
11 Mr. Smogor, I understand you feel that the Agency
12 should have considered other assist -- I'm sorry.
13 Let me start again. I understand that you believe
14 that the District's contractor, Limnotech, should
15 have considered other factors beyond what they did
16 in their creation of the habitat index, is that a
17 fair, general statement about one of your
18 opinions?

19 THE WITNESS: In general, yes.

20 MS. FRANZETTI: With respect,
21 though, to the factor that they did consider and
22 how -- and their conclusions as to the relative
23 contributions to biological conditions of those
24 factors, did you feel that for the most part the

1 way they ranked the contributing factors within
2 the factors they considered was relatively
3 reliable?

4 THE WITNESS: I'd have to say I
5 don't agree with the definitiveness of their
6 interpretations of the patterns that they saw.
7 They seem to be -- or -- there seem to be some
8 fairly definitive statements saying that physical
9 habitat is more important to fish in these waters
10 than is water quality. I can't agree with that.
11 I don't think the data necessarily supports that
12 definitive conclusion because aspects of water
13 quality that potentially could have correlated
14 with their measurements of physical habitat that
15 appeared most related to the fish, that kind of
16 potential confoundment wasn't sufficiently covered
17 is my interpretation.

18 MR. ANDES: When --

19 MS. FRANZETTI: Fred, if I can ask
20 one more.

21 MR. ANDES: Go ahead.

22 MS. FRANZETTI: So you don't agree
23 with their general ranking that habitat was a more
24 important factor, significantly more important

1 factor than dissolved oxygen?

2 THE WITNESS: Dissolved oxygen --
3 no, I don't think the overall analysis looked at
4 enough things to make that definitive argument. I
5 think there are some possible confounding factors
6 that would kind of -- that would call into
7 question being that definitive about what the
8 analysis showed.

9 MS. FRANZETTI: And as you've
10 testified, though, today other than I think you
11 mentioned the five factors by Carr, one of which I
12 think they didn't consider, you can't identify the
13 other factors?

14 THE WITNESS: No, I didn't go and do
15 further analysis. No, I didn't other than some of
16 the pictures that we've presented here. I didn't
17 do much.

18 MS. FRANZETTI: I'll just ask you
19 one more thing. You keep using the term that you
20 don't think they can be as definitive as they are
21 and, by that, do you mean they can't based on
22 their work determine that even in a relative way
23 that habitat at these various sites was the most
24 limiting factor?

1 THE WITNESS: I don't think so and I
2 also have to focus on limiting what. What I tried
3 to present in my testimony is a criticism.
4 Another one of my criticisms is they did measure
5 aspects of fish and from those aspects of fish
6 they developed a habitat index. In fact, directly
7 from those measures of fish, but what I tried to
8 point out is those aspects of fish that they
9 looked at aren't necessarily in my opinion a
10 strong defensible measure of biological condition
11 as we're talking about in this specific context of
12 the Clean Water Act goal and use attainability
13 analysis.

14 So they did show some
15 relationships between some fish variables and some
16 habitat variables, but, to me, the fish variables
17 may not be -- their fish index may not be a very
18 good measure of biological condition and that's
19 what we're talking about here, what we have to do
20 first is justify why the biological condition, the
21 attainable or potential condition of these waters
22 can't be as high as a balanced Clean Water Act
23 goal.

24 MR. ANDES: But that's not --

1 THE WITNESS: That's how I'm looking
2 at this.

3 BY MR. ANDES:

4 Q. But that issue hasn't really been
5 contested? Even the Agency said none of these
6 waters can meet the Clean Water Act goals,
7 correct? So if we're trying and if the Limnotech
8 report was trying to -- again, we have four
9 different purposes in the report, but if one of
10 them was to say we're trying to look at fish
11 metrics and as you said many of these were ones
12 that you used yourself and determine where
13 differences in habitat or other factors made a
14 difference in the fish and, therefore, they were
15 more or less limiting factors and then you have
16 conclusions indicating that 48 percent of the
17 variability in the fish data collected in the
18 seven year period can be explained by the key
19 habitat variables, only two to twenty-seven
20 percent for the DO variables and mostly down to
21 around eight percent doesn't that give you a sense
22 that -- at least a qualitative sense that habitat
23 is a more limiting factor than DO is?

24 THE WITNESS: A couple corrections

1 there in the premise. You mentioned I used a lot
2 of fish metrics in my own index. There were maybe
3 four of the twelve that you mentioned that I agree
4 were used in the Illinois IBI, but aside from
5 that --

6 Q. You agree others were relative fish
7 metrics, though?

8 A. They are other fish metrics that
9 have been used other places. To get to your
10 point, I'm sorry, I don't believe that those
11 numbers of comparison are the full story that two
12 percent or eight percent that you quoted for the
13 dissolved oxygen.

14 There's something called shared
15 variance. If I go out there and I measure
16 physical habitat and I find out that my physical
17 habitat relates to my fish at some measure 48, 48
18 percent, I also have to ask what about those sites
19 where I collected that physical habitat could be
20 related to the fish. Maybe dissolved oxygen or
21 other water chemistry differences that covary went
22 right along with that variability, with the
23 physical habitat are just as reasonable
24 explanations for that 48 percent relationship to

1 the fish.

2 Q. If they covary and I know we covered
3 this issue before, but you can't find a
4 cause-effect relationship, why does it even
5 matter? Two questions. First of all, why does it
6 even matter if it's purely incidental? The other
7 aspect is you're aware in the report they looked
8 at habitat and then said let's put DO on top of
9 this and only explained another few percent in
10 terms of fish data?

11 A. I don't see it that way. When they
12 took out the 48 percent and said this is all due
13 to habitat that could have been due to water
14 quality. It just wasn't looked at.

15 Q. But when they looked at water
16 quality by itself, it was mostly down to two to
17 eight percent?

18 A. They looked at water quality by
19 itself after they removed the 48 percent and part
20 of that 48 percent could have been due to water
21 quality.

22 Q. Let me clarify two separate issues.
23 One was -- looking at a quote. DO alone can only
24 explain basically between two to eight, up to 27

1 percent of the variability. That's not taking out
2 all the variability from --

3 A. Up to 27 percent.

4 Q. -- 27 with one measure. The other
5 four DO measures tested, page ES 2, one measure
6 had R squared of 0.27. The other four measures
7 tested R squared value ranged from 0.02 to 0.08
8 whereas we're talking 48 percent on the habitat.
9 So, again, while one could quarrel with specifics
10 making a quantitative judgment we're talking about
11 a pretty significant difference between something
12 mainly down to two to eight percent, one at four
13 to eight percent looked at in comparable ways.

14 A. I guess I'm not seeing it that way.
15 I keep coming back to kind of a bigger picture
16 argument and I know there was testimony about,
17 well, you have to look at all the habitat
18 together. If you're going to look at water
19 quality separate, you can look at physical habitat
20 as separate components --

21 Q. Are you aware of studies --

22 MS. WILLIAMS: Let him finish, Fred.

23 BY THE WITNESS:

24 A. And I keep coming back to saying

1 what do my measures of habitat represent? What do
2 my measures of fish represent? To me, that's the
3 bottom. That's the bigger picture here. I keep
4 coming back to at least my impressions of the
5 CDM -- sorry. I'm sorry. The Limnotech reports.
6 They certainly had some measures of habitat and
7 some measures of fish, but, to me, they just
8 weren't focused on you need a measure of fish that
9 is a measure of biological condition that can tell
10 you something from balance to imbalance in terms
11 of the Clean Water Act context and you also need a
12 measure of habitat that is right in there in that
13 same context and what I was trying to argue is
14 those two tools that we chose I think are much
15 more relevant than creating these two tools for
16 the CAWS.

17 BY MR. ANDES:

18 Q. But if you were trying to determine
19 and as you say in looking at the Ohio system
20 really wasn't designed to be able to -- although
21 some IBI's have been used this way, you didn't
22 look at it to determine which were the more
23 limiting factors? If the analysis is relevant as
24 to what is the more limiting factor because part

1 of the discussion in this rulemaking is will DO --
2 will tighter standards for DO, temperature or
3 anything else make a difference to the fish --
4 will it make a difference to the use? Therefore,
5 it would seem it's an interesting and relevant
6 point to say what is the more limiting factor? Is
7 habitat such a limiting factor that changing the
8 DO won't make much difference and if you're doing
9 a study with that purpose and other purposes, but
10 including that purpose, you would agree that
11 certainly the habitat -- the analysis that
12 Limnotech did is relevant to that purpose?

13 A. I would say it's relevant, but I
14 don't think it's sufficiently relevant. I think
15 you have to look at some other things going on.
16 You have to look at more information. It is
17 relevant to look at relationships among these
18 variables, but it's also relevant and I think, if
19 not necessary, to look deeper than just a few --
20 some simple multiple linear regressions especially
21 when certain factors can covary and kind of
22 confuse the issue. There's the potential of that
23 and that's all I'm trying to say.

24 MS. WILLIAMS: Did you have any

1 conclusions yourself, Mr. Smogor, when you looked
2 at the habitat variables that Limnotech found to
3 have the greatest impact on their fish metric?

4 THE WITNESS: Yes, I looked at those
5 closer a little bit and maximum depth came out as
6 the most important of the habitat variables. At
7 least it came out as being most correlated to the
8 measure of fish that they used and when I dug a
9 little bit more into that regression tree analysis
10 if I looked at a memo that Mr. Bell attached to
11 some of his testimony and I looked at that a
12 little closer and saw, well, okay, it's the first
13 split that this analysis chose, but I looked and
14 it only took ten fish samples from one hundred
15 samples it only split off ten fish samples and
16 said these ten samples are different from the 90
17 other samples and, to me, that's all it was doing
18 and I looked at those ten samples and it looks
19 like they're all from only a couple sites in the
20 North Shore Channel.

21 So, effectively, what the first
22 rung of the CART analysis told me was, well,
23 there's a couple of sites up in the North Shore
24 Channel which are the shallowest, narrowest sites

1 in this rulemaking, they happen to have a higher
2 fish score than the rest of the sites in the CAWS.
3 That's where maximum depth came in.

4 Q. In fact, they don't?

5 A. But that's what the CART analysis
6 told me. I could point to Mr. Bell's memo. So --
7 okay. Maximum depth came out on top of this
8 regression tree analysis, but what it is actually
9 doing in terms of practical meaning to
10 interpreting what is going on at the sites, what
11 is going on among the sites, and with the fish
12 data it was a small component of what might be
13 going on throughout the rest of the CAWS, that
14 difference.

15 Q. The CART analysis -- and I thought
16 you said earlier you weren't familiar with it.

17 A. I said I was familiar with him
18 presenting that and talking about it.

19 Q. Is it your understanding that was
20 not part of the original analysis done in the
21 Habitat Evaluation Report, it was something done
22 later recommended by the peer reviewers to do a
23 double check on what factors came out in the
24 report as the key factors and simply confirmed the

1 initial conclusions in the report that maximum
2 channel depth and overhanging vegetation and other
3 factors were more significant than anything else,
4 right? That was not part of the initial Habitat
5 Evaluation Report?

6 A. Correct. I agree that was not part
7 of the initial Habitat Evaluation Report.

8 Q. It was simply a double check
9 requested by the peer reviewers which, in fact,
10 confirmed the initial conclusions?

11 A. I don't necessarily agree it
12 confirmed all the initial conclusions, but it was
13 done after the focus of the first analysis. Yes,
14 I do agree to that.

15 MS. TIPSORD: Anything further?

16 MS. WILLIAMS: I'd like to ask one
17 of Fred's questions that he skipped if that's
18 okay. I'd like to ask question 25E. Do you
19 recall testimony from Limnotech as well as
20 statements in the Habitat Evaluation Report
21 stating that the QHEI did not relate well to the
22 biological conditions in the CAWS? Do you have
23 evidence or analyses to contradict those findings?

24 THE WITNESS: I did find what I

1 believe is some evidence that contradicts that.

2 MS. WILLIAMS: I'm showing you a
3 table entitled number of fish species as simple
4 measure of biological conditions at CAWS sampling
5 sites. Can you identify this document for the
6 record?

7 THE WITNESS: Yes, I created this
8 document.

9 MS. WILLIAMS: If there's no
10 objection, I'd like to enter into the record this
11 exhibit and have Mr. Smogor explain how it was
12 created.

13 MS. TIPSORD: If there is no
14 objection, we'll mark the several pages beginning
15 with number of fish species as simple measure of
16 biological conditions at CAWS sampling sites as
17 Exhibit No. 472. Seeing none, it's Exhibit 472.

18 (Document marked as IEPA Exhibit
19 No. 472 for identification.)

20 MS. WILLIAMS: Can you just explain
21 how it was created and what you think it shows?

22 THE WITNESS: Yes. The criticisms
23 was that the QHEI does not relate well to
24 biological condition in the CAWS and so I just

1 took a simple step back and said, well, we've had
2 our arguments about what is a good measure of
3 biological condition and what isn't and I said a
4 real simple way of looking at biological condition
5 is just what -- how many fish species are at each
6 site because it is common for warm water fish
7 indices of biological condition to be -- one of
8 those common measures in fish IBI's is just how
9 many species do you have living at the site where
10 more species is usually a measure of a better
11 condition or a less impacted condition than fewer
12 species.

13 So these comparisons -- there's
14 four sets of comparisons, one per page, looked at
15 that top Y axis. The maximum number -- if I'm on
16 the first page, the maximum number of fish species
17 caught in the sample at a site for the 2001
18 through 2007 fish samples that are available on
19 the record. And on the X axis is the CAWS
20 combined fish metric versus the Rankin QHEI value
21 that are available on the record and when I looked
22 at what is a better measure of fish condition if
23 I'm going to look at fish condition or biological
24 condition at the site in terms of just number of

1 species it appears that the QHEI is actually doing
2 a better job here than the combined fish metric.

3 BY MR. ANDES:

4 Q. Let me ask you this. If you assume
5 for a moment that we have two situations, one of
6 them you have two or three fish species and, in
7 fact, we've seen testimony here that the CAWS is
8 dominated by a few species so you might have 500
9 fish of each of three different species. Okay?

10 A. Okay.

11 Q. Very tolerant ones that are present
12 throughout. That's one situation and then you
13 have another where you have two of this, two of
14 that, two of this, two of that, two of this, ten
15 different species and you have two fish at each
16 ones that's going to come up to a ten because you
17 have ten different species with two fish, the
18 other one with the 1,500 fish is going to come up
19 with a three. So it's going to look like the one
20 with the 20 fish is much healthier than the one
21 with 1,500 fish under this measure, correct?

22 A. Correct.

23 Q. Okay. Did you look at the number of
24 sheer fish as a metric to determine how that

1 correlated to either situation?

2 A. No. The number of individuals?

3 Q. Yes.

4 A. No, and I'd have to qualify that by
5 saying that in typical measures of biological
6 condition, fish IBI's, it's very common to have a
7 metric or even more than one metric or component
8 that makes up the final index that says how many
9 fish species live here. So I didn't think it's
10 too unusual to look at number of fish species.
11 Your example of having 10 species in two each is
12 very hypothetical.

13 Q. In fact, in this set of waterbodies,
14 we've had testimony before that a overwhelming
15 number of fish come from a few species, right? So
16 the number of species here and, again, we've had
17 testimony where we've seen a lot of fish from
18 three or four different species and tiny little
19 numbers coming from a bunch of other species. In
20 fact, isn't the number of fish in those main
21 dominant species the best indicator for this
22 unique system of how healthy a particular reach is
23 in terms of -- whether it has one or two of some
24 unique species would seem less relevant whether it

1 has 150 gizzard shad or some other very tolerant,
2 very dominant number of fish?

3 A. From my experience, I'm not seeing
4 it that way at all because when the tolerant fish
5 get in very high numbers, they're effectively
6 swamping the system. To me, that's a more human
7 impact. So the actual number of fish is not
8 necessarily a good measure of human impact.

9 Q. So if we have two different areas,
10 one of them has two, two, two at 50, 50, 50 and
11 the other one has two, two, two, ten, ten, ten,
12 aren't we -- isn't one healthier than the other,
13 it has a better fish population than the other
14 one? Are you saying it's better if we have fewer
15 fish? Isn't it better if we have more fish?

16 A. This is very hypothetical.

17 Q. I'm trying to figure out what these
18 numbers mean and just counting the number of
19 species seems to be not telling the whole picture.

20 A. Counting the number of species at a
21 site is often a strong primary component of these
22 measures of biological condition. People hear the
23 concept of species diversity or species richness,
24 effectively that's related to how much different

1 types of organisms can this habitat support and
2 the more types that a habitat can support, in
3 general, that means the habitat is in a less
4 impacted condition.

5 Q. But you're not looking at any
6 detailed way at which fish are there, whether
7 they're tolerant or intolerant, you're simply
8 counting the number of species?

9 A. Counting the number of species,
10 which is a common metric in a fish IBI. That's
11 all I'm saying. I'll admit it is a simple measure
12 and that's why I put it at the top. It's a very
13 simple measure.

14 Q. The other question I had one of
15 these scales you're comparing the number of fish
16 species to the QHEI score, which is a habitat
17 score. The other one you're comparing the number
18 of fish species to a fish metric. So how are
19 those not apples and oranges?

20 A. The combined fish metric is a
21 measure of biological condition, is it not, or at
22 least that's what has been proposed?

23 Q. One is a fish and one is a habitat.

24 A. Right. But the original question I

1 think said do you have evidence that the QHEI does
2 not relate well to biological conditions in the
3 CAWS and I'm saying I have evidence that it's a
4 better reflection of biological conditions than
5 the measure that was being used as the measure of
6 biological condition in the MWRD proposal.

7 Q. You used QHEI to relate them to the
8 IBI. All I'm saying is we don't know what the
9 standard correlation is in one situation versus
10 the other? You're not really comparing fish to
11 fish? You're comparing a fish measure to a
12 habitat measure. So it's hard for us to assess
13 whether you might expect a different correlation
14 in one versus the other. We just don't know that.
15 If you were comparing IBI's to fish metrics, then
16 it would be more relevant because fish metrics are
17 an actual thing, QHEI are a potential thing,
18 they're two different kinds of measurements?

19 A. I'm saying we use QHEI as a measure
20 of biological potential because of its established
21 relationship with the fish IBI and I'll just let
22 the pictures speak for themselves. For instance,
23 as you get higher QHEI scores -- I'm referring to
24 the first graph at the bottom of the first page.

1 As you get higher QHEI scores, you tend to get
2 more types of fish caught in your sample and that
3 trend is seen in all four pages here as you get
4 higher QHEI scores you tend to get more types of
5 fish in your samples.

6 Q. But you haven't looked at that
7 relative to number of fish?

8 A. The counts of fish, no.

9 Q. I guess the other issue would be --
10 MR. ETTINGER: Can I just say one
11 thing on the record?

12 MS. TIPSORD: Actually, I think Fred
13 has another question.

14 BY MR. ANDES:

15 Q. It's not unusual to compare one fish
16 metric to a combined fish metric, am I right? You
17 just take one piece of the fish metric on the left
18 in comparing it to the combined fish metric. So
19 I'm not sure what necessarily the relationship is
20 going to be between those two.

21 A. It's common to do that if you want
22 to see how each of your metrics is behaving, so to
23 speak, in your index. This was not a part. This
24 one measure of the simple measure of biological

1 condition that I chose for these graphs are not
2 one of the metrics in the CAWS combined fish
3 metric.

4 Q. And it's not one of the ones that
5 Limnotech selected as most relevant and
6 appropriate?

7 A. It's not one that Limnotech selected
8 to include in the CAWS combined fish metric.

9 MR. ANDES: Thank you. I'm done.

10 MS. TIPSORD: Mr. Ettinger, you had
11 something?

12 MR. ETTINGER: I do. Mr. Andes said
13 it is not contended that any portion of this
14 system should be classified as general use. I am
15 correct he is -- he is correct that that is not
16 the Agency's proposal nor the Water Reclamation
17 District proposal. I just want to let you know it
18 might be someone else's proposal.

19 MS. TIPSORD: Is there anything else
20 today? All right. Let's adjourn for the day.
21 We'll see you all tomorrow.

22

23

24

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 _____ day of
15 _____, A.D., 2010.
16
17
18
19
20

21 _____
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24

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