BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO DISSOLVED OXYGEN STANDARD	)	
35 ILL. ADM. CODE 302.206	)	R04-25
	)	(Rulemaking - Water)
	)	

Proceedings held on April 25, 2006, at 10:10 a.m., at the Illinois Pollution Control Board, 1021 North Grand Avenue East, Springfield, Illinois, before Richard R. McGill, Jr., Hearing Officer.

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Board Member Andrea S. Moore
Board Member Thomas E. Johnson

Alisa Liu, Environmental Scientist
Anand Rao, Environmental Scientist

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PROCEEDINGS

(April 25, 2006; 10:10 a.m.)

HEARING OFFICER MCGILL: Good morning. I'd like to welcome everyone to this Illinois Pollution Control Board hearing in Springfield. My name is Richard McGill. I am the assigned hearing officer for this rulemaking proceeding, which is entitled Proposed Amendments to Dissolved Oxygen Standard at 35 Illinois Administrative Code 302.206. The board docket number for this rulemaking is R04-25. The Board received this rulemaking proposal in April 2004 from the Illinois Association of Wastewater Agencies, which seeks to amend the Board's rule on general use water quality standards for dissolved oxygen.

Also present today on behalf of the Board is Board Member Andrea Moore, the lead board member for this rulemaking; Chairman Tanner Girard; Board Member Thomas Johnson; and from the Board's technical unit, Anand Rao and Alisa Liu. Would any of the board members present like to make any remarks at this time?

BOARD MEMBER MOORE: Well, I guess I will just -- since I'm the lead board member, I will address everyone and say how much the Board appreciates the effort on everyone's part to work together to try and

solve what has become a complicated -- more complicated issue than perhaps was thought at the very beginning, and people have been patient and cooperative and I'm confident that we will end up with something that will really work well, but I applaud your efforts for continuing to put forth the effort that it takes to get to an agreement.

HEARING OFFICER MCGILL: Thank you. Today we are holding the fourth hearing in this rulemaking. Presently no additional hearings are scheduled, though there is a high probability that there will be additional hearings. This proceeding is governed by the Board's procedural rules. All information that is relevant and not repetitious or privileged will be admitted into the record. Please note that any questions posed today by the Board are intended solely to develop a clear and complete record for the Board's decision.

The Board received prefiled testimony jointly from the Illinois Environmental Protection Agency and the Illinois Department of Natural Resources. The Board also received prefiled testimony from the Metropolitan Water Reclamation District of Greater Chicago. We will begin today's hearing with remarks from counsel for IAWA before we proceed with the prefiled testimony. After

Mr. Harsch's remarks, we'll proceed with witnesses for the Agency and DNR. They will be presenting their testimony, summarizing their testimony. That will be followed by questions that Mr. Ettinger -- who's here on behalf of the Sierra Club and Chicago Environmental Law & Policy Center. Mr. Ettinger will pose some questions, I'll give IAWA as a rulemaking proponent the opportunity to pose questions, and we'll open it up to anyone who may have any questions for the witnesses of the Agency and DNR. We will then proceed in the same manner with the prefiled testimony of the District, and again, as noted in my hearing officer order, because the witnesses prefiled their testimony, I would ask that they simply give a summary of that testimony here today.

After we finish with questions for those who prefiled, anyone else may testify, time permitting. If you would like to testify today and you did not prefile your testimony, I would ask that you please add your name to a sign-up sheet, which is located to my right by the entrance to the hearing room. As with those witnesses who prefiled, those who sign up to testify today will be sworn in and may be asked questions about their testimony.

For the court reporter transcribing today's

proceeding, please speak up and do not talk over one another so that we can have a nice, clear transcript for the Board to review. I would also ask that each time you speak if you could state your name. Certainly before posing a question, signal me and state your name and your title and any organization you're representing here today. I'd appreciate that.

We plan to take a lunch break. I'm assuming we're going to go into the afternoon today, so we would take a lunch break at around 12:30 for one hour unless a more efficient break time presents itself.

Are there any questions about the procedures that we'll follow today? Seeing none, I would ask counsel for the rulemaking proponent, IAWA, Mr. Harsch, to present his opening remarks.

MR. HARSCH: Thank you, Mr. Hearing Officer. My name is Roy Harsch and I represent the Illinois Association of Wastewater Agencies, the proponent of this rulemaking. IAWA greatly appreciates the amount of work that IDNR and IEPA have put in getting their proposal -- their response to the IAWA original proposal on file and the prefiled testimony. It's a lot of work. We understand that. Unfortunately, we are not at a position today where IAWA can technically ask meaningful questions

of IEPA or DNR. In part, that is due to the fact that we have been asking and seeking certain clarifying information from Illinois EPA, and we appreciate the amount of work that the individuals within IEPA have gone to in attempting to respond to that. It's just that we got that information after close of business on Friday. We obviously have not had an opportunity to evaluate that information, look at and formulate meaningful questions.

In addition, as we will explain later, we have additional information or questions regarding the information that we've received, and we would like to accordingly ask that the Board agree to establish an additional day of hearing where we after we receive our information have an opportunity then to question the Agency and DNR witnesses and a second day of hearing following that day of hearing then to present Dr. Garvey and other witnesses in response to what we've learned on the record.

So we're essentially asking that this hearing either be continued or rescheduled to allow additional questioning of the Agency and then a second day of hearing to have Dr. Garvey and others to respond with additional technical information in response to what the Agency put forth. And I have discussed this with counsel

for IEPA, DNR and Albert Ettinger before the hearing. So we'd be happy to proceed at an appropriate point with clarifying questions today to the extent we can, but we frankly need the information and the opportunity to review that information before we can technically be in a position to meaningfully examine the Agency witnesses and DNR witnesses.

HEARING OFFICER MCGILL: Thank you. So that's a motion, really, for another two days of hearings.

MR. HARSCH: Yes.

HEARING OFFICER MCGILL: Any response from counsel for IEPA or DNR?

MS. WILLIAMS: I'm Deborah Williams, Illinois EPA. I guess I would just request that at this time -- you know, we can all certainly agree to have another hearing or as many hearings as are necessary, but maybe we evaluate after the next hearing whether truly there's a need for another one or whether post-hearing comments can address any issues that are still remaining at the end of -- can we take one hearing at a time I guess is my request.

MR. HARSCH: That'd be fine, but our present time -- present plans would be to -- in all probability

we would be presenting testimony of at least Dr. Garvey, if not others, in response to -- but part of the issue is we don't know how big an issue we have with respect to some of the stuff that's been presented today because we haven't gotten the information in a format that we've been able to, one, evaluate it, or two, understand what we've got. So we may be able to eliminate some of the issues, you're correct.

HEARING OFFICER MCGILL: Any other responses?

MR. YONKAUSKI: Personally, I hate the --

HEARING OFFICER MCGILL: If you could just state your name for the record.

MR. YONKAUSKI: Stanley Yonkauski, Department of Natural Resources. Last name is Y-O-N-K-A-U-S-K-I. Personally, I hate the idea of scheduling more hearings. This has taken up inordinate amounts of resources that our department at least and certainly for the EPA, I'm sure -- I don't want to speak for them -- but we're not normally dedicating to these Pollution Control Board regulatory proceedings, but this is important and it's a significant issue and it's going to I hope set the tone for what is necessary for future similar issues that are coming up in the future. That

said, we can't object if the parties are on -- are not quite ready. We'll accede to the request for another hearing, but I agree with Deborah that let's not schedule two more unless they're absolutely necessary. Another consideration, I'd like to know what Mr. Harsch specifically is requesting for data. If we could get a --

MR. HARSCH: I would propose that at an appropriate point today we would go through and explain what it is and why it is we need it, and we'll do that later after we get through questioning the witnesses.

MR. YONKAUSKI: That would be great. Thank you.

MR. ETTINGER: I have a practical problem, and I'm just trying to --

HEARING OFFICER MCGILL: If you could just state your name for the record.

MR. ETTINGER: Albert Ettinger. I represent Sierra Club, Prairie Rivers Network and the Environmental Law & Policy Center in the midwest. I just wanted to kind of pose a practical problem, and maybe we'll have to ask this question to Mr. Harsch and figure out where other things are going. If we were only going to schedule one hearing today, then there would probably be

a need for prefiled testimony for any witness that Mr. Harsch wanted to offer, and he may not know at this point whether he wants to offer a witness or not, and so I'm thinking off the top of my head that either we have to have two hearings, one to just allow this sort of cross examination, and then Mr. Harsch would then have to decide which witnesses he wants, or else we would have to probe in some detail today what information Mr. Harsch needs so that he'll be able before the next hearing to have his prefiled testimony, and so that's the practical problem I'm looking at. If we were going to do two hearings in that manner, I would hope that -- if there was just going to be a questioning hearing without prefiled testimony, I would hope that could be done fairly quickly, like, less than a month, even, and then because -- and then the next hearing would require prefiled testimony, but some of us would like to finish this proceeding before we retire, so I -- that's what I'm envisioning.

MR. HARSCH: As the counsel for the proponent, we would agree with you. It's been a long time since August of last year, but Mr. Ettinger has pointed out a very practical point. At this point in time we don't know what our prefiled testimony would

consist of. We're more than happy to provide prefiled testimony and would have envisioned that that would have been required for responsiveness essentially here, so --

HEARING OFFICER MCGILL: Any other --

MR. HARSCH: If we have that kind of an agreement, then we know what questions to ask or not today.

MR. ETTINGER: I guess I would say we would object to going forward in the basis in which we didn't know what the witness that they were offering was going to say, so we couldn't just go forward with a hearing next time and let him decide next time whether or not he wants to call the witness, because then we won't have had any chance to see that testimony.

MR. HARSCH: Albert, that's why I asked for two hearings.

HEARING OFFICER MCGILL: Any other responses to IAWA's motion? Seeing none, I think it's premature to rule on the motion right now. I think it makes sense to see how today unfolds and then at that point IAWA will maybe have a better sense of --

MR. HARSCH: Mr. --

HEARING OFFICER MCGILL: I'm sorry. Go ahead.

MR. HARSCH: With all due respect, there -- we can't ask -- we're saying we -- and our witness has -- Dr. Garvey has explained to us we're not in a position to ask meaningful, probing questions of the Agency's witnesses today. We can ask clarifying questions. That's why I'm asking for the motion and ruling upfront so we know what we're --

HEARING OFFICER MCGILL: I guess I -- what I would do is I'm not in a position right now to say -- to grant two more days of hearings. It sounds like we don't know -- You mentioned continuing this hearing. Right now we have no sense of when that next day of hearing might be, so I'm not inclined to continue today's hearing to some date uncertain. I absolutely am willing to schedule more hearings. It just sounds like at this point in time we don't really know whether we need one more day of hearing, two more days of hearings, and I just thought we can revisit your motion when we're finished today.

MR. HARSCH: Then it's my understanding then we can ask -- we will only be asking our clarifying questions today that the Agency requested us to ask. Otherwise, we had no intent of even asking questions today.

HEARING OFFICER MCGILL: You can ask

whatever question you like. It sounds like we would have a better sense of where we're at at the end of today's proceeding than right now, and I think I'd be more informed.

MR. HARSCH: And with an understanding that we will have at least one more day of hearing to ask questions of the Agency witnesses?

MS. WILLIAMS: Can I just say one more thing?

HEARING OFFICER MCGILL: Sure.

MS. WILLIAMS: I mean, I think the only potential prejudice on Mr. Harsch would be if for some reason the Agency would come here today and say, "Never mind, that's it, we're not answering any more questions, if you didn't get it out today, that's your last opportunity," and we've never done that. I mean, we intend that our -- you know, maybe we can't have everyone there that's here today, but we'll make sure that we're as able as possible to answer any questions that are going to come up, whether that be in writing, at another hearing, at five more hearings, so I don't think there's any prejudice.

HEARING OFFICER MCGILL: Okay. Why don't we just go off -- We have microphones that we're going to

set up, so why don't we go off the record for a moment.

(Brief recess taken.)

HEARING OFFICER MCGILL: There's a pending motion from IAWA to have two more days of hearing, either continuing today's hearing and scheduling a second hearing or scheduling two more days of hearing. One day of hearing, IAWA would like to pose substantive questions to the witnesses for IEPA and DNR based on additional data that they are asking for from the Agencies and expect to be receiving. The second day of hearing would be for IAWA testimony, which would have to be prefiled.

What I'm going to do is grant the motion in part. We will have one more day of hearing. That will be a separately scheduled hearing. I'm not going to continue today's hearing because we don't have any sense right now of when that -- when today's hearing would be continued. We don't have a date. I'm not going to at this point rule on a second day of hearing. I think it makes more sense to simply take that up when we get to the conclusion of this day of hearing substantive questions to the IEPA and DNR witnesses. We'll see where we're at at that point and see what makes the most sense at that point in time.

With that, I would like to turn things over to

counsel for the Agency and DNR. I will note that counsel for the two agencies have indicated that their witnesses would prefer to simply read their prefiled testimony into the record rather than summarize it, and that is fine. That does not include some of the lengthy attachments to those prefiled documents. With that, I'll turn it over to the counsel for the Agency and DNR.

MS. DIERS: Thank you. My name is Stefanie Diers and I'm assistant counsel for Illinois EPA, Bureau of Water. Also assigned to work on this rulemaking is Miss Deborah Williams, who is sitting beside me, who is also assistant counsel with the Bureau of Water. On behalf of the Agency we have three witnesses, two of which have filed prefiled testimony for the hearing today. They are Mr. Toby Frevert, manager of the Division of Water Pollution Control, and Mr. Roy Smogor, who is sitting on the other side of Miss Williams, who works for the Surface Water Section of the Bureau of Water.

HEARING OFFICER MCGILL: Let the record reflect that we now have microphones and air conditioning.

MS. DIERS: Thank you. Mr. Frevert can address policy-related questions and Mr. Smogor can

address questions related to a lot of the information found in the technical support document and specifically to questions related to the site extrapolation process found in the technical support document.

Other Agency staff here today that will assist in answering the questions is Matt Short, and Mr. Short is sitting on the other side of Mr. Smogor, and Mr. Short works in the Surface Water Section, and Matt can help address questions related to the macroinvertebrates, which is explained in the technical support document, as well as if there's questions related to Illinois EPA's monitoring program. And before saying any more, I would like to ask Mr. Yonkauski to introduce the staff from the Department of Natural Resources.

MR. YONKAUSKI: My name's Stan Yonkauski, legal counsel for the Department of Natural Resources. Today we have one person who has prefiled testimony, and that's Joel Cross. He's the acting manager of the Watershed Protection Section. He'll be able to talk about some of the technical matters that led to the tiered approach that the two agencies have submitted for Board consideration. Also here today are Scott Stuewe, who is the acting fisheries chief, Ann Holtrop, who is watershed information specialist, and they will be able

to answer questions that Joel can't answer within their technical expertise.

MS. DIERS: As the Hearing Officer stated, our plan was to have Mr. Frevert, Mr. Smogor and Mr. Cross read their prefiled testimony to the record and then open it up for questions with the other staff members who have been introduced to assist in answering the questions, serving as a panel.

I would like to thank the Board and all others participating in this matter for their patience in this process. DNR and IEPA have spent an enormous amount of time since the last hearing in August of 2005 coming up with a joint recommendation. EPA and IDNR are proposing the establishments of two levels of numeric standards for dissolved oxygen. One level is generally protective of a full and diverse aquatic community and the other level sets incrementally higher dissolved oxygen concentrations to protect Illinois' most sensitive types of aquatic life. These concepts are reflected in the proposed regulatory language attached to Mr. Frevert's prefiled testimony as Attachment 1.

In the proposed language, we are proposing a definition in 35 Illinois Administrative Code 302.100 for thermocline. Then in Section 302.206 of the Illinois

Administrative Code we are proposing to strike the current dissolved oxygen language and propose the following: In paragraph A, a narrative standard for waters that naturally cannot achieve consistently higher levels of dissolved oxygen -- for example, wetlands and sloughs -- then in paragraphs B and C we have established the two levels of numeric standards for dissolved oxygen with a longer period for protecting early life stages and the inclusion of a 30-day chronic dissolved oxygen standard. Finally, in Appendix 302.D, there is a list of the stream segments for enhanced dissolved oxygen protection. This list includes the basin, segment name and number along with latitude and longitude and what county the segment is to be found in to assist in identifying the streams and also for location.

And with that being said, I think we're ready to proceed with the prefiled testimony after everyone is sworn in, starting with Mr. Frevert.

HEARING OFFICER MCGILL: If the court reporter would swear in the witnesses collectively, please.

(Witnesses sworn.)

MS. DIERS: Mr. Frevert, I'm handing you a document and I'd like you to take a look at it, please.

MR. FREVERT: Okay.

MS. DIERS: Do you recognize this document?

MR. FREVERT: Yeah.

MS. DIERS: And what is it?

MR. FREVERT: It's a copy of my prefiled testimony. And I believe I will need the microphone.

MS. DIERS: And is this a true and accurate copy of your prefiled testimony?

MR. FREVERT: I certainly hope so. Yes, it is.

MS. DIERS: Would you please read your prefiled testimony into the record?

MR. FREVERT: Will do. I'm Toby Frevert, manager of the Division of Water Pollution Control for the Illinois Environmental Protection Agency. I thank the Board for hearing my testimony today and allowing the Illinois EPA and the Department of Natural Resources additional time to work on a joint recommendation.

Since the last hearing in August 2005, the Illinois EPA and IDNR have continued to work to develop a joint recommendation on modification and updates to Illinois' current dissolved oxygen standard. Illinois EPA and IDNR staff reviewed and analyzed general use water data to determine what waters warrant a dissolved

oxygen standard incrementally higher than a base level deemed generally protective of most general use waters. This process proved to be complex and time-consuming. Today you'll hear Joel Cross and Roy Smogor present additional information and a brief overview of the process used to develop our recommendation. Other Agency and Department personnel are available to respond to questions and provide more specificity as desired.

Our recommendation to the Board establishes a two-leveled dissolved oxygen standard. Level one, which I believe some of the other witnesses might refer to as level two, is a base condition or a base dissolved oxygen standard patterned after the structure recommended in USEPA's national criteria document and generally protective of a full and diverse aquatic community. Level two -- again, other people may refer to that as level one, but the concept is there's a two-tier system. The other level sets incrementally higher dissolved oxygen levels or requirements for those systems supporting species believed to associate with higher ambient dissolved oxygen concentrations. Specific language of our recommended dissolved oxygen standard is contained in Attachment 1 of this testimony for the Board's consideration.

Significant components of that recommendation include, number one, incorporation of a narrative provision supplementing the numeric provisions of the standard to ensure environmentally acceptable conditions are provided throughout the full spectrum of general use waters. Illinois EPA and IDNR are recommending that general use waters at all locations maintain sufficient dissolved oxygen concentrations to prevent offensive conditions as required in Section 302.203 of the Illinois Administrative Code. Quiescent and isolated sectors of general use waters, including wetlands, sloughs, backwaters and lakes and reservoirs below the thermocline, shall be maintained at sufficient dissolved oxygen concentrations to support their natural ecological functions and resident aquatic communities.

Second point, average concentration and daily -- and average daily minimum concentration. The Illinois EPA and IDNR recommend the inclusion of 5 milligrams per liter as a daily minimum and 6 milligrams per liter as a daily mean average over seven days during the months when early life stages are present. For the rest of the year, Illinois EPA and IDNR support a 3 and a half milligram per liter as a daily minimum, 4 milligrams per liter as a daily minimum averaged over seven days and 5 and a half

milligrams per liter as a daily mean average over 30 days for those waters not listed as needing a higher dissolved oxygen concentration. The Agency and Department believe these concepts recognize the importance of maintaining sufficiently high oxygen -- high levels of dissolved oxygen that ensure long-term support of healthy aquatic life communities.

The third point, we've identified an enhanced category within the general use classification for enhanced waters. The Agency and Department have identified several segments -- and it's approximately 8 percent. My prefiled testimony indicated 6 percent. That was a typographical error. Approximately 8 percent of the stream segments in the state have been identified for this enhanced classification. These higher dissolved oxygen standards include a daily minimum of 4 milligrams per liter, which is a half a milligram per liter higher than our base recommendation, a daily mean value averaged over a seven-day period of 6.25 milligrams per liter, which is 0.25 milligrams per liter higher than the base recommendation, and a daily mean averaged over 30 days of 6 milligrams per liter, which is a half an increment higher than the base recommendation.

Our recommendation also includes provisions

regarding applicability and implementation considerations. Much of the testimony and discussion during this proceeding relate to the dynamic and variable nature of oxygen concentrations in both the spatial and temporal realm of any specific resource. To address this natural variation in dissolved oxygen concentrations, subparagraph D of our proposed regulatory language includes provisions on measurement and calculation of values to assess attainment of the standard. Language has been included within the numeric limits of subparagraphs B and C specifying that those numeric values apply in the main body of a stream. In other words, we're not restricting applicability to those -- of those values to either pool or riffle stretches; rather, it applies throughout. The obvious departure from this uniform application applies to isolated areas such as backwater sloughs and portions of lakes and reservoirs below the thermocline where lower oxygen concentrations can be expected to occur naturally.

Finally, I would like again to thank the Board for the opportunity to submit prefiled testimony. I'd be happy to answer any of the Board's questions at the conclusion of the presentation of testimony from the Agency and Department. One other thing. The attachment

which is the language to the proposed recommendation we probably should offer as an exhibit at this time.

HEARING OFFICER MCGILL: So you're moving to have Attachment 1 to the prefiled testimony, which is the proposed rule language, entered as a hearing exhibit?

MS. DIERS: Yes, that is correct.

HEARING OFFICER MCGILL: Is there any objection to that motion? Seeing none, I will mark this as Exhibit 20 and enter it into the record. Thank you.

MR. FREVERT: One other point I'd like to make before I pass the microphone on to the next witness is we received a letter from Illinois Association of Wastewater Agencies last week identifying five or six specific issues they would like us to address, and we've prepared a response to that. I'm thinking this would be the natural time to enter that response as an exhibit as well.

MS. DIERS: What we were going to do is offer additional exhibits, and I think logically what would come next was we wanted to offer as an exhibit the Appendix D that was attached to Toby's prefiled testimony, the stream segments. I thought it would be easier in the record if we had this as an exhibit to refer to, so we'd offer that at this time.

HEARING OFFICER MCGILL: Okay. So there's a motion to enter as a hearing exhibit the attachment to Mr. Frevert's prefiled testimony, Section 302.Appendix D, stream segments for enhanced dissolved oxygen protection. Is there any objection to that motion? Seeing none, I'll mark that as Exhibit 21 and enter it into the record.

MS. DIERS: Then our next exhibit was what Mr. Frevert was referencing to was -- I believe it's public comment number 82. It was on the Board's Web site. It was an April 17, 2006, letter from Dennis Streicher. Illinois EPA provided a response to IAWA with a letter. There was attachments. This was done by e-mail on Friday, but now we have hard copies. I wanted to offer that into the record, and then I have some additional copies because other people might be interested in seeing what that response was, and the attachment's attached.

HEARING OFFICER MCGILL: So we have a motion to enter as a hearing exhibit the response of -- is this the response of IEPA and DNR or is it simply an IEPA response?

MS. DIERS: This is Illinois EPA's response.

HEARING OFFICER MCGILL: IEPA's response to an April 17 IAWA letter. That IAWA letter is public

comment 82 in our record. Is there any objection to entering as a hearing exhibit the Agency's response? It's got a cover letter dated April 24, 2006. Seeing none, I'll enter this response as Hearing Exhibit 22 and enter it into the record. Why don't we go off the record just for a moment.

(Off the record.)

HEARING OFFICER MCGILL: Why don't we go back on the record, please. Just wanted to clarify for the record Mr. Harsch, counsel for IAWA, had mentioned receiving information from the Agency this past Friday. Is that information the same as this -- what is now Hearing Exhibit 22?

MS. DIERS: Yes. It was sent by e-mail. The only thing that they didn't get which was included in this packet is the CD that we did yesterday, which I gave him this morning.

HEARING OFFICER MCGILL: Okay. Thank you.

MS. DIERS: Uh-huh.

HEARING OFFICER MCGILL: You may proceed.

MS. WILLIAMS: Okay. Mr. Smogor, I'm handing you a document. Can you identify it, please?

MR. SMOGOR: Yes. That's my prefiled testimony.

MS. WILLIAMS: And it's a true and correct copy of what was filed with the Board?

MR. SMOGOR: Yes, it is.

MS. WILLIAMS: Okay. Would you read it into the record, please?

MR. SMOGOR: Good morning. My name is Roy Smogor. I've been employed by the Illinois Environmental Protection Agency -- parentheses, Illinois EPA, closed parentheses -- for about six years. I'm a stream biologist with a master of science degree in fisheries and wildlife sciences from Virginia Polytechnic Institute and State University. I also have a bachelor of science degree in biology from University of Illinois at Champaign-Urbana, which actually should read Urbana-Champaign. I have several years of experience in the states of Virginia and Illinois in developing ways to use information about fish and other aquatic life to determine the overall condition or health of streams.

Currently I am a public service administrator in the Surface Water Section of the Bureau of Water. The Surface Water Section is responsible for monitoring the resource quality of Illinois streams and lakes. Specifically, we collect biological, chemical and physical information from waters throughout the state and

then interpret and report on this information. Our activities help guide the protection, the management and regulation of Illinois' aquatic natural resources. My prefiled testimony in this matter provides an overview of the technical support document that explains the joint recommendations of Illinois EPA and the Illinois Department of Natural Resources -- parentheses, Illinois DNR, closed parentheses -- for the general use water quality standard for dissolved oxygen.

Since the August 2005 board hearing in this matter, Illinois EPA has participated in developing a final joint recommendation in response to proposed changes in the dissolved oxygen water quality standard made by the Illinois Association of Wastewater Agencies; parentheses, IAWA, closed parentheses. Illinois EPA believes the current dissolved oxygen standard for Illinois general use waters is too simplistic. The current standard inadequately accounts for the varied dissolved oxygen requirements of aquatic life in these waters. Moreover, the current standard does not account for how dissolved oxygen concentrations vary across a broad range of natural aquatic conditions in Illinois.

The revisions to the current dissolved oxygen general use water quality standard being recommended

today by Illinois EPA and Illinois DNR are based primarily on the U.S. Environmental Protection Agency's -- parentheses, USEPA, closed parentheses -- 1986 natural criteria document for dissolved oxygen. Illinois EPA and Illinois DNR used this 1986 document as a foundation from which to interpret and incorporate more recent information specifically applicable to the dissolved oxygen needs of aquatic life in Illinois waters. Although revisions to the current dissolved oxygen standard proposed by IAWA in April 2004 are also based on USEPA's national criteria document, Illinois EPA's recommendations differ from those of IAWA in the four following ways.

Number one, Illinois EPA recommends two levels of numeric standards with an enhanced level of protection for waters inhabited by organisms especially sensitive to low dissolved oxygen levels. For a small subset of general use waters -- about 8 percent of the total general use stream miles -- Illinois EPA recommends a higher level of dissolved oxygen protection than proposed by IAWA. This higher level is intermediate between the cold water criteria and warm water criteria recommended in USEPA's national criteria document. Some Illinois waters require dissolved oxygen levels higher than

USEPA's warm water criteria because of the presence of a meaningful amount of fish or macroinvertebrates that are more sensitive to low dissolved oxygen than the relatively few organisms on which USEPA's warm water criteria are primarily based.

Number two, Illinois EPA recommends a narrative dissolved oxygen standard for waters that naturally cannot achieve consistently higher levels of dissolved oxygen, such as wetlands, sloughs, river backwaters and portions of lakes and reservoirs below the thermocline.

Number three, Illinois EPA recommends an annual period one month longer than that proposed by IAWA for the protection of sensitive life stages of fish; namely, March through July rather than March through June.

Number four, consistent with the USEPA national criteria document, Illinois EPA recommends a 30-day chronic dissolved oxygen standard in the form of a daily mean averaged over 30 days. This 30-day mean is not included in the IAWA proposal. These recommendations are reflected in the language filed with the Board as Attachment 1 to the prefiled testimony of Toby Frevert.

I participated in several aspects of the development of the technical support document and joint Illinois EPA and Illinois DNR recommendations in this

proceeding. Also I am Illinois EPA's primary author for the joint technical support document that was prefiled with the Board with this testimony. In January of 2006 I talked with Edward T. Rankin about his research on relations between stream fishes and dissolved oxygen in Ohio. We discussed how Illinois EPA and Illinois DNR were using his results to help identify Illinois fish species that are especially sensitive to low dissolved oxygen and thus potentially deserving of higher dissolved oxygen standards. I worked with Illinois EPA and Illinois DNR biologists and natural resource managers to determine how to identify which streams in Illinois need higher minimum dissolved oxygen concentrations than those represented by the USEPA warm water criteria.

After the two agencies co-developed an approach, Illinois DNR took the lead in identifying the Illinois stream fish and mussel species that are most sensitive to low dissolved oxygen. Illinois EPA led the effort to determine an analogous list of most sensitive stream macroinvertebrates, excluding mussels. After the two agencies analyzed biological information to determine which stream sites had meaningful amounts of sensitive organisms, I extrapolated this site-specific information to identify the stream segments that require the higher

recommended level of dissolved oxygen standards. I am available to answer questions about or to provide examples of this extrapolation process.

Illinois EPA and Illinois DNR collaborated extensively to develop the technical scientific basis and to perform the analyses that culminated in the joint recommended revisions to the dissolved oxygen standard. The experience and expertise of several Illinois natural resource managers and biologists were invaluable to this process. In addition to Illinois DNR colleagues, the following Illinois EPA staff provided valuable technical input: Matt Short, Mark Joseph, Howard Essig, Gregg Good, Bob Mosher and Toby Frevert. Matt Short is also available to answer questions about how the Illinois EPA macroinvertebrate information was used or about Illinois EPA's stream monitoring program in general. In addition to relying on Illinois-based expertise, the technical support document cites several published scientific books and papers. Copies of the relevant portions of these works can be provided as necessary.

Illinois EPA believes that these recommendations to the Board are scientifically sound and defensible in light of the currently available information on the dissolved oxygen needs of aquatic life in Illinois.

Inevitably, in the future, additional information will become available that will allow Illinois EPA to evaluate and possibly improve these current recommendations to the Board.

Finally, I would like to thank the Board for the opportunity to provide this prefiled testimony and the accompanying technical support document. Illinois EPA hopes this document sheds some light on the varied dissolved oxygen needs of Illinois aquatic life and helps the Board in its determination in this difficult proceeding. I will be happy to answer questions from the Board at the conclusion of the presentation of testimony from the Agency and the Department. Thank you.

MS. WILLIAMS: Roy, I'm showing you a document that I've marked as Exhibit 23 for identification. Can you identify that for me?

MR. SMOGOR: Yes. This is the technical document that I referred to in my prefiled testimony.

MS. WILLIAMS: At this time I'd like to move that the document titled "Recommended Revisions to the Illinois General Use Water Quality Standard for Dissolved Oxygen," March 31, 2006, be entered into the record.

HEARING OFFICER MCGILL: Is there any objection to entering the technical support document as a

hearing exhibit? Seeing none, that will be Exhibit 23, and that's entered into the record. Thank you. Please proceed.

MR. YONKAUSKI: Mr. Cross, did you cause to be prepared and prefiled some testimony in this proceeding?

MR. CROSS: Yes, I did.

MR. YONKAUSKI: Are there any additions, corrections, deletions that you would expect to be made or want to be made to this testimony?

MR. CROSS: No, not at this time.

MR. YONKAUSKI: Do you really want to read it into the record at this time?

MR. CROSS: Yes, I do.

MR. YONKAUSKI: Please do so.

MR. CROSS: My name Joel Cross, and I have been employed by the Illinois Department of Natural Resources for seven and one half years. I am currently the acting manager of the Watershed Protection Section within the Office of Resource Conservation. The Watershed Protection Section has the responsibility of coordinating the implementation of the Illinois Wildlife Action Plan, state-wide watershed-based scientific investigations and Geographical Information Systems for

the Office of Resource Conservation. I was formerly employed by the Illinois Environmental Protection Agency for nineteen years. During my last nine years at the Illinois EPA I was the manager of the Surface Water Section and the Planning Section in the Division of Water Pollution Control. My duties included daily administration of several water resource programs, including surface water monitoring and assessment, watershed management initiatives, federal non-point source programs, federal and state clean lakes programs, total maximum daily load -- or TMDL -- development, Geographical Information Systems and the State's water quality standards programs. I hold a bachelor's degree in zoology from Southern Illinois University at Carbondale, Illinois.

My testimony in this matter will include a general overview of the Illinois DNR's role, contribution and background history in developing the Illinois DNR and Illinois EPA joint recommendations for dissolved oxygen water quality standards. A jointly written technical support document supplements the testimony provided by both Illinois DNR and Illinois EPA and provides detailed information regarding the two agencies' recommendations. I will refer to the technical support document throughout

my testimony.

Since the August 25, 2005, hearing, the Illinois DNR and Illinois EPA jointly developed a coordinated position that defines two levels of numeric standards for dissolved oxygen. A fundamental aspect of this position is that dissolved oxygen profiles naturally vary within general use waters throughout Illinois; therefore, a uniform standard is not appropriate given the available science today. Illinois DNR and Illinois EPA propose the establishment of two levels of numeric standards for dissolved oxygen for the Illinois Pollution Control Board's consideration. One level is generally protective of a full and diverse aquatic community, identified as level two in the technical support document, and the other level sets incrementally higher dissolved oxygen concentrations to protect Illinois' most sensitive types of aquatic life, identified as level one in the technical support document. The Illinois DNR became involved in this proceeding because state law provides that Illinois owns all aquatic life within our state boundaries and the Illinois DNR is specifically responsible for regulating and managing these natural resources.

Illinois DNR and Illinois EPA established a process for identifying a subset of waters that warrant

an incrementally higher dissolved oxygen standard. A general description of that process follows. Our initial effort identified fish, macroinvertebrates and mussels that are sensitive to dissolved oxygen. Next, Illinois DNR and Illinois EPA investigated fish and macroinvertebrate communities to determine four biological measures: Number of sensitive fish species, proportion of individual fish that are sensitive, number of sensitive macroinvertebrate taxa and the proportion of individual macroinvertebrates that are sensitive. Because the available mussel data did not comprise community assessments, number of sensitive species and proportion of sensitive individuals could not be calculated. The use of mussel data will be described later in my testimony.

The third step in our process was to identify a threshold value for each of the four biological measures listed previously. Illinois DNR and Illinois EPA selected a threshold value that represents a typical amount known from healthy streams. Threshold values for each of the biological measures were determined by calculating the median value from sampling sites that were identified as attaining Clean Water Act goals for aquatic life, referred to as full support. The

calculation of the median was limited to full support waters in an attempt to limit the influence of environmental stresses, including habitat and chemicals.

The fourth step of the joint process was to identify sites that had a meaningful amount of dissolved oxygen sensitive organisms. For each site, values for each of the four biological measures were compared to establish threshold values. Sites were selected as having a meaningful amount of sensitive organisms if at least two of the four biological measures considered equaled or exceeded the established threshold value.

We had sampling results from 1,110 locations available for our analysis and found that 374 of the total sampling sites were identified as candidates for enhanced dissolved oxygen protection. Detailed information regarding the methods, procedures, rationale and supporting scientific literature used in the four-step process is provided in the technical support document on pages 33 through 37. Having identified these 374 sampling sites in need of enhanced dissolved oxygen protection, extrapolation of these sites to stream segments was conducted. Detailed information regarding the methods, procedures and rationale for the extrapolation to stream segments is provided in the

technical support document on pages 38 through 44.

As mentioned previously, the number of sensitive species and proportion of sensitive individuals cannot be calculated for mussels because of limitations in sampling methods. However, the locations of two sensitive mussel species were overlain on the stream segments that were identified as needing an incrementally higher dissolved oxygen standard based on fish and macroinvertebrate analysis. In essence, the mussel data verified the effort to identify stream segments needing protection based on the fish and macroinvertebrate data. Additional stream segments were selected for enhanced protection for dissolved oxygen based on the presence of these two dissolved oxygen sensitive mussels. The list of stream segments and the applicable dissolved oxygen standards recommended is described in the draft regulations provided by Toby Frevert, Illinois EPA, prefiled testimony, Attachment 1. To facilitate the Illinois Pollution Control Board and interested members of the public's review of identified stream segments in need of incrementally higher dissolved oxygen standards, the Illinois DNR provided geographically referenced data layers and associated software in compact disk format, or CDs.

In addition to recommending two levels of numeric standards for dissolved oxygen, the Illinois DNR and Illinois EPA are also recommending an additional 30-day period as a state-wide date, July 31, for protecting early life stages of fish. This is in contrast to the Illinois Association of Wastewater Agencies' recommended date of June 30. The Illinois DNR believes that based on the scientific literature presented in the technical support document, an additional 30-day period is necessary to protect early life stages of fish.

While the IAWA's proposed date of June 30 protects the majority of spring season spawns, it neglects to include the spawning period of the summer season spawns and neglects to include a 30-day period for protection of post-hatch embryonic and yolk-sac fry development. In general, by July 31, all late spawning fish species will have a substantial majority of their spawning and fry development into dates when higher dissolved oxygen standards will be in effect. Even though some larvae will be present into August, Illinois DNR fisheries managers believe the July 31 date should not be detrimental to the overall recruitment of a year class for fish species. A full discussion of the data supporting the selection of the July 31 date for

protection of early life stages is provided in the technical support document on pages 23 through 31.

The Illinois DNR and Illinois EPA developed these joint recommendations with input from stakeholder groups. Scheduled stakeholder meetings were held on October 19, 2005, in Chicago and November 15, 2005, in Springfield. These meetings were attended by the Illinois DNR, Illinois EPA, IAWA, Illinois Environmental Regulatory Group, Sierra Club, Prairie Rivers Network, USEPA and the Friends of the Chicago River. The Illinois DNR and Illinois EPA hosted additional meetings with IAWA on February 24, 2006, and with the Sierra Club and Prairie Rivers Network on March 1, 2006. The stakeholder process provided valuable input to the Illinois DNR and Illinois EPA in developing these recommendations for dissolved oxygen standards.

The Illinois DNR believes these joint recommendations provided through testimony and the technical support document significantly enhance protection for aquatic life in comparison to the dissolved oxygen standard currently in place. Specifically, these joint recommendations improve the current standard by identifying a season that protects for early life stages of fishes, providing dissolved

oxygen standards more consistent with USEPA's national criteria document for dissolved oxygen of 1986, and attempting to account for the seasonal and natural variability of dissolved oxygen.

The Illinois DNR believes the two agencies' recommendations build upon and enhances the proposed amendments to the current dissolved oxygen standards presented by IAWA by including two levels of numeric standards for protection of identified dissolved oxygen sensitive organisms in Illinois; a narrative standard for waters that naturally cannot achieve consistently higher levels of dissolved oxygen such as wetlands, sloughs, river backwaters and lakes and reservoirs below the thermocline; the addition of a 30-day chronic standard consistent with the USEPA national criteria document applicable to both levels of numeric standards for dissolved oxygen; and an additional 30-day period necessary to protect early life stages of fish.

The Illinois DNR does not view these joint recommendations as a lowering of dissolved oxygen standards within some waters during certain times of the year, but rather as focusing needed protection for most sensitive types and life stages of aquatic life where required. At the same time, the Illinois DNR and

Illinois EPA recommendations are not unnecessarily overprotective elsewhere. Therefore, the Illinois DNR further believes these joint recommendations will allow targeting of limited state resources to the most critical waters impacted by low dissolved oxygen concentrations.

Staff from the Illinois DNR has testified at both the August 12, 2004, and the August 25, 2005, hearings. Testimony for the August 25, 2005, hearing was prefiled by Dr. David L. Thomas, chief of the Illinois Natural History Survey, on behalf of the Illinois DNR. During that hearing, Mr. Stanley Yonkauski, Illinois DNR attorney, moved to withdraw the Illinois DNR prefiled testimony in order to allow the development of a joint position between Illinois DNR and Illinois EPA regarding dissolved oxygen standards. In addition, testimony was also provided by Dr. Thomas during the August 12, 2004, hearing. The Illinois DNR testimony currently on the record was provided in response to a June 24, 2004, letter from the Lieutenant Governor's Office regarding questions related to the dissolved oxygen issue. Dr. Thomas' testimony was provided in the form of a response letter to the Lieutenant Governor's Office.

The Illinois DNR testimony of August 12, 2004, identified two issues regarding dissolved oxygen that

need to be referenced in context of the recommendations provided by the Illinois DNR and Illinois EPA today. Dr. Thomas stated that, quote, "the one-day minimum concentration of 3.5 milligrams per liter and the seven-day mean minimum of 4.0 milligrams per liter as not being conservative enough and potentially endangering some aquatic life in the state," unquote. The 3.5 and 4.0 milligrams per liter dissolved oxygen standards proposed by IAWA are also in part contained in these joint recommendations provided by Illinois DNR and Illinois EPA. The Illinois DNR believes these joint recommendations address Dr. Thomas' concerns expressed in the previous Illinois DNR testimony by addition of two levels of numeric standards described in the technical support document on pages 1 through 4.

In these joint recommendations, the one-day minimum concentration of 3.5 milligrams per liter and the seven-day mean minimum of 4.0 milligrams per liter are applicable only to juvenile and adult life stages within level two waters. Applicable dissolved oxygen standards for juvenile and adult life stages in level one waters and for early life stages within both level one and two waters are incrementally higher.

The second issue stated in previous Illinois DNR

testimony identifies the need to maintain a 5.0 milligram per liter minimum at all times, which is consistent with the existing dissolved oxygen standards. Dr. Thomas further stated, quote, "that there are species that probably would not be protected at lower levels," unquote. In developing these joint recommendations, Illinois DNR and Illinois EPA investigated extensively dissolved oxygen sensitivity to fish, macroinvertebrates and mussels during life stages described in the technical support document on pages 10 through 22. Based on this further scientific analysis, a 5.0 milligram per liter acute dissolved oxygen standard is only necessary for protection of early life stages within level one and level two waters. For juvenile and adult life stages, protective acute dissolved oxygen standards include 4.0 milligrams per liter for level one waters and 3.5 milligrams per liter for level two waters.

At this point I would like to thank the Illinois Pollution Control Board for providing the Illinois DNR and Illinois EPA additional time to develop a joint position in this matter as well as all those people who fully participated in the stakeholder process. Illinois DNR staff making significant contributions to this process include Scott Stuewe, Ann Holtrop, Dr. Dave L.

Thomas, Dr. Kevin Cummings, Jim Mick, Mike Conlin and Illinois DNR deputy director Leslie Sgro. Staff from the Illinois EPA spent countless hours working directly with the Illinois DNR, including Toby Frevert, Roy Smogor, Matt Short, Mark Joseph, Gregg Good, Bob Mosher, Stefanie Diers, Deborah Williams and Marcia Willhite. From the Sierra Club and Prairie Rivers Network, I'd like to thank Albert Ettinger, Cynthia Skrukrud and Glynnis Collins. Finally, I'd like to thank IAWA, including Dennis Streicher, Roy Harsch and Dr. James Garvey from Southern Illinois University.

In addition to myself, other DNR staff here today and can be called upon to address specific questions related to the technical support document as needed. Scott Stuewe, acting chief of the Division of Fisheries, can address questions related to biological data and information. Ann Holtrop, Watershed Protection Section, can address questions related to the overall process used to determine waters that warrant a higher dissolved oxygen standard. That concludes my prefiled testimony.

HEARING OFFICER MCGILL: Thank you.

MR. YONKAUSKI: I'm not sure what to do with the CD, Mr. Hearing Officer, that was filed as an attachment, if you will, with all -- the joint -- the two

agencies' prefiled testimony, and to be honest, we haven't talked about it amongst ourselves, whether to make it an exhibit or just leave it as a document that is a useful tool but not necessarily part of the hearing record.

HEARING OFFICER MCGILL: We can make it a hearing exhibit. It is in the rulemaking record as part of the prefiled testimony, but if you have a copy there, we can certainly consider taking that as a hearing exhibit as well. So there's a motion to include as a hearing exhibit the IDNR/IEPA proposed streams for enhanced dissolved oxygen protection CD, compact disk. This was attached to Mr. Cross' prefiled testimony. Any objection to entering this CD as a hearing exhibit? Seeing none, I will mark it as Exhibit 24 and enter it into the record as a hearing exhibit.

MR. YONKAUSKI: Thank you.

HEARING OFFICER MCGILL: Thank you. Does that conclude the testimony at this point?

MR. YONKAUSKI: Yes, it does.

HEARING OFFICER MCGILL: Why don't we take a break for a second. Let's go off the record.

(Brief recess taken.)

HEARING OFFICER MCGILL: At this point we're

going to open it up to questions for the witnesses of the Agency and DNR. As I mentioned earlier, Mr. Ettinger, counsel for Sierra Club and Environmental Law & Policy Center and Prairie Rivers, is going to initiate questioning. After that, we'll have an opportunity for counsel for IAWA to pose questions and then we'll open it up to other members of the audience. Mr. Ettinger?

MR. ETTINGER: Yes. I'm not sure how to handle this. I'm Albert Ettinger. I'm identified on the record as representing the Sierra Club, Prairie Rivers and Environmental Law & Policy Center. My questions are all basically going to be addressed to the Attachment 1, which is the proposal itself, and I'm not sure how we'll handle this because I don't really care which of the panel answer the question, but I do -- will be seeking clarifications of various terms in this Attachment 1.

HEARING OFFICER MCGILL: And if I could just interrupt for a moment, Attachment 1 is now Exhibit 20, and that's the proposed rule language.

MR. ETTINGER: Yes.

HEARING OFFICER MCGILL: If you want to pose your questions to the panel, if it's okay with counsel for the Agencies, then you can figure out who should best respond.

MR. ETTINGER: Yeah, but don't all talk at once. My first question is addressed to what's been numbered here as 302.100, definitions, and we'll ask you, what is a thermally stratified body of water?

MS. WILLIAMS: Roy Smogor will be able to answer that for you.

MR. SMOGOR: A thermally stratified body of water is a body of water that because of differences in temperature from the surface to the bottom, the water takes on a different density with temperature, and in the summer that happens and sometimes also happens in the winter. So water has certain properties whereas it lowers in temperature towards about 4 degrees celsius, it increases in density, and as it goes from 4 degrees celsius down to 0 degrees celsius, actually, its density decreases. That's why ice floats. So as water gets colder, it sinks to the bottom until it gets even colder, and then it goes back to the top, and that's why water freezes from the top down. In the summer and in the winter, because of these density differences, there's a stratification. There's strata of different densities of water with the heaviest water on the bottom, the most dense water on the bottom and the least dense water on the top.

MR. ETTINGER: We're talking about generalities here, but how deep would you expect the water body to be for it to be thermally stratified?

MR. SMOGOR: A lot of factors are involved. Shallow -- Very shallow waters perhaps don't set up a constant stratification because wind has enough force on it to mix those waters and prevent those density layers from -- the more dense ones from sinking. It varies with a lot of factors, exposure of the water body surface to prevailing winds, depth and wind interact. I can't give you a specific depth.

MR. ETTINGER: Would this mainly apply to lakes and reservoirs or would it also apply to rivers?

MR. SMOGOR: Excuse me. Okay. Primarily this applies to lakes and reservoirs.

MR. ETTINGER: And how big a difference between the top and the bottom in terms of temperature would you generally be looking at? One degree? Ten degrees? What kind of numbers would we be looking at?

MR. SMOGOR: I don't know offhand. It's been a while since I sampled a lake. Matt, by any chance?

MR. SHORT: It's -- It varies, of course, with each lake, but probably anywhere from 15 degrees.

In terms of Fahrenheit you might get water 55 degrees at the bottom of a lake in the summertime and then the upper water temperatures, you know, be in the 70s or even higher at the very surface. You get sort of a gradient that occurs in temperature, and when you hit the thermocline, there's often -- there's a pretty dramatic change in dissolved oxygen in the water and pH and temperature is a little more gradual in its change, but it's -- it also changes pretty significantly.

MR. ETTINGER: My question now is then how would you determine whether a water is stratified?

MR. SHORT: We would have to sample it, because the lakes aren't stratified all year round. Within a lake, the entire lake may not be stratified. Only the portion down by the dam, for instance, where it's deeper, may be stratified. The upper portions of our lakes and reservoirs particularly which are dammed-up rivers, the upper portion of that may not be stratified and so you would get fairly equal temperature and dissolved oxygen profile from top to bottom, but once you entered some of those deeper areas, you would enter those areas where the stratification was occurring at.

MR. ETTINGER: So is there some definition of stratified or is it judgment call as to whether it's a

stratified body of water or not, or how would you determine that?

MR. SMOGOR: This is -- There's a definition to the thermocline. It's somewhat mathematical. You -- If you measure temperature starting from the surface, say, at every foot, you measure the temperature as you go down to the bottom from surface to the bottom, that temperature's going to get lower and lower as you go from top to bottom. In that one-foot or two-foot or three-foot interval where you get the greatest change in temperature, the greatest decrease, that defines the thermocline, so it's kind of a theoretical point at which the temperature changes the most within the shortest change in depth, and you can set that up in a graphical approach. If you measure and plot it in a graph, you can see that in a graph and draw a line across that defines the thermocline.

MR. ETTINGER: By definition, the most could be smaller in some bodies of water than others.

MR. SMOGOR: Correct. It's all relative. It's relative within that water body.

MR. ETTINGER: Does IEPA or IDNR have a list of stratified bodies of water?

MR. SMOGOR: Not that I'm aware of.

MR. ETTINGER: Now, we've been talking about lakes and reservoirs. In Illinois, most of our lakes are dammed rivers or creeks, aren't they?

MR. SMOGOR: Yes.

MR. ETTINGER: Are those intended to be included by this as a reservoir?

MR. SMOGOR: Yes.

MR. ETTINGER: Okay. So are we talking about the Fox River behind the dam?

MR. SMOGOR: I don't know. That's called a run-of-river reservoir, and those are somewhat different than reservoirs that aren't run-of-river reservoirs.

MR. ETTINGER: How about the Illinois River behind the LaGrange Dam? Would that be a reservoir for this purpose?

MR. SMOGOR: Excuse me. I think those types of run-of-river reservoirs do fit our intent in that they are likely -- they can set up a thermal stratification, and because of that thermal stratification, the deeper layers will be -- will have less oxygen. I don't have any data on that on hand, but they do set up analogous to other reservoirs.

MR. ETTINGER: I'm just trying to understand this, because down the road of course we're going to be

faced with DO readings at various parts of a water body and we're going to want to know whether or not this is a violation or not based on the DO ratings -- readings, so I'm trying to avoid infinite numbers of arguments and TMDL lists for the next 20 years. So am I to understand, then, that for example you would expect the Fox River to be stratified in this manner and that we wouldn't be looking at bottom readings for DO directly behind the dam in the Fox River?

MR. FREVERT: I just want to clarify our intent here. Our intent is to make it clear to everybody that the DO standards apply in those upper stratas. While we cannot expect to meet DO in the lower isolated water bodies simply because the aerating dynamics don't exist, it's clear above that thermocline, and those DO standards do apply. If you're out there monitoring, you'd better measure enough information with the temperature, density or whatever else to go along with that DO to see that that DO reading you've measured is in the strata where the standard applies. And I don't believe we can numerically define where that stratification takes place everywhere, but the concept holds true anywhere you do it. A body that's deep enough and the energy or the dynamics are not conditions to have

thorough mixing, you're going to have a zone in a lower area which cannot maintain oxygen. We're trying to acknowledge that.

MR. ETTINGER: I'm not trying to argue. I'm just trying to make sure that in the future, when we have a body of DO data, we know what we've got here and how the rule applies to it. If we've got DO ratings -- readings, then, in a body of water that's potentially stratified, will they be meaningful if we don't have temperature data at the same time?

MR. SMOGOR: I think in order to establish that a thermocline exists, by definition you need to have the temperature data to show that, and so once you show that the thermocline exists and you define where that is, then you're dealing with the area above the thermocline for application of the standard.

MR. FREVERT: Let me follow up on that. It's not overly burdensome and it is routine to measure temperature, so we don't feel like that's a big limitation.

MR. ETTINGER: Just -- So if I were to -- Let's say I had a DO reading from the Fox River. In order to know whether this violated the -- this DO reading violated the standard or not, I would need a

series of temperature readings in the Fox River to see at what point was the maximum rate of decrease of temperature in that water, and then I would be able to identify whether that DO reading was above or below that maximum temperature change. Do I have that correct?

MR. FREVERT: Yes.

MR. SMOGOR: Yes.

MR. ETTINGER: Are there any presumptions that go into this in terms of whether a water is potentially thermally stratified or not, or is it the Agency's intention to take a temperature reading on every water body and try and determine the thermocline?

MR. FREVERT: It's the Agency's intention in our monitoring program that there's potential for stratification, and we're measuring the various depths, the temperature. And the other thing I want to point out is there are times of the year when stratification does not exist. Seasonally the lake can be fully mixed and you don't have a stratified condition, so you also need to show -- if you're applying the standard above stratification, above the thermocline, there needs to be a thermocline for that concept to hold, and sometimes there isn't.

MR. ETTINGER: Are there creeks that are

shallow enough so that you would just never expect to see a thermocline there?

MR. FREVERT: Yeah, I'll turn it on. That helps. Yeah, a lot of water bodies, there's enough turbulence and agitation and movement that it's thoroughly mixed at all times of the year and there is no thermal stratification, and likewise there shouldn't be a major hampering of reaeration or oxygen input into those lower portions of the water system.

MR. ETTINGER: Okay. I'm looking now at what's been numbered 302.206, dissolved oxygen, and then A. As I gather, A is a narrative standard; is that correct?

MR. FREVERT: I believe so, yes.

MR. ETTINGER: How does the Agency apply narrative standards?

MR. FREVERT: Many ways, I guess. It depends on the specific narrative standard. In this case it's a recognition of why we cannot attain and we don't believe it's reasonable to expect to attain the standards we set for the bulk of the general use waters in Illinois. There are isolated areas where the physical and chemical and biological circumstances are such that you cannot maintain that standard. Nevertheless, you

must maintain sufficient oxygen that you don't have other problems develop, like odors and things of that nature.

MR. ETTINGER: Okay. Looking at the first sentence of this, just to be clear, although I think it's reasonably clear, it says, "General use waters at all locations shall maintain sufficient dissolved oxygen concentrations to prevent offensive conditions as required in Section 302.203 of this part." Offensive conditions in this sentence has no meaning independent of 302.203.

MR. FREVERT: That's correct. Our attempt was to have this as a backstop to show that we're not abandoning the existing standard for offensive conditions.

MR. ETTINGER: I should have brought my dictionary with me. What does quiescence mean?

MR. FREVERT: In my mind, that's a term that means there's such little movement that you don't have a lot of natural energy to help oxygen transfer in and out of the system, particularly the air-water interface. You don't get as much oxygen reabsorption and transmittal down below the surface.

MR. ETTINGER: Okay. I have a better intuition as to what isolated means, but what does it

mean in this context?

MR. FREVERT: To a great extent, the isolated concept is a backwater area or some relatively readily identifiable component of an overall stream system or a lake system where it is part of that system but it's physically isolated such that the water movement in and of that area is not a part of the main body of water and as such you don't have the physical conditions, the velocities, the turbulence, the mixing, the air occurrence, whatever else, to facilitate that natural reaeration process, and there are physical limitations against reaeration to maintain that oxygen supply.

MR. ETTINGER: You don't mean isolated in the sense that there's no water between it and the stream, would you?

MR. FREVERT: Well, in terms of large river backwaters, some of these shallow backwater -- people call them lakes, some of them are lakes, some of them are sloughs or whatever, major backwaters of the Mississippi and Illinois River where there may be a levee or some other high spot in between, and they truly are separated and isolated from the natural velocity, the other natural dynamics that help maintain oxygen concentrations. That's the kind of water body that nevertheless is still

a general use water body and it's subject to protection for all of its capabilities and all of its beneficial uses, including aquatic life. We know oxygen there at times is going to be significantly lower than it is the main river. I don't believe anybody's done enough research to specify and put numbers on that, but you know it exists. We're trying to acknowledge that and say we don't want an administrative violation when those natural things take place, but we also want to make sure everybody understands that oxygen can't be further deteriorated from its naturally occurring conditions.

MR. ETTINGER: Okay. Isolated wetland, in the sense of isolated wetland that they've been talking about, the wetland's not physically connected to another body of water. Is that what you mean here, that this isolated section is not -- you know, a minnow couldn't get from that isolated section into the main body of water, or do you mean that it's isolated some terms -- I'm sorry -- isolated in terms of flow of the water such as that it's a sort of slow area behind a rock in the stream, if you see what I mean?

MR. FREVERT: Well, I don't know that that example would qualify for isolated in my mind, but certainly a wetland that is physically removed from any

other water body. It's going to behave like a wetland, and I don't expect wetlands to maintain the level of oxygen I expect to maintain in a stream. So that's a classic example where I think the standard overreaches. The current general use standard applies to all general use waters and all wetlands are general use waters, and we don't expect wetlands to maintain that high a DO, so definitely that qualifies.

MR. ETTINGER: You kind of alluded to this. When is a backwater a lake, that we treat it as a lake and look at it in those terms?

MR. FREVERT: I guess my simplistic answer is it depends on the individual you're talking to. A lot of our citizens will have -- what's a lake to somebody is a backwater to another.

MR. ETTINGER: Do you know where Swan Lake is? Swan Lake's off the Illinois by Pere Marquette State Park.

MR. FREVERT: I'm not as familiar with Swan Lake as I am some of the other Illinois backwaters.

MR. ETTINGER: Well, how about Rice Lake? We've all heard of Rice Lake.

MR. FREVERT: Yeah.

MR. ETTINGER: Is that a lake or a

backwater?

MR. FREVERT: I know people who would call it each, and I know people that in their easy chairs would debate about that.

MR. ETTINGER: Yeah. The -- I guess the question I have, though, is if we treat it as a lake, under this rule, it would seem that the lake rules would apply, whereas if you treat it as a backwater, it would seem that only the narrative applies. Is that correct, or how do you decide that?

MR. FREVERT: You know, if you're going to get in that touchy area, I would -- before I passed judgment and told the world this body of water is good or bad or indifferent, I'd want to do a little more data collection, a little more monitoring and measuring, and I'd want to actually know what the DO is and how deep that lake is and things of that nature. I understand you want a little more clarity in where this language applies and where it does not apply, but things like Rice Lake, I know for a fact that in major parts of Rice Lake you're going to get some stratification, and even without stratification you're going to have some DO that it's noticeably lower than the DO of the Illinois River 50 yards away, and it's due to the nature of and the fact

they accumulate a lot of sediment with high organic matter. It's just naturally not going to have that high DO, and for me to measure a DO that's below the standard doesn't lead me to conclude the ecosystem is disrupted.

MR. ETTINGER: Well, I guess that's where my question comes in. How do you determine -- If I read this rule -- and correct me if I'm wrong -- if we decide Rice Lake is a backwater, then the narrative condition applies and nothing else. If we decide that it's a lake, then it's either thermally stratified or it's not. If it's not thermally stratified and it's pretty shallow, it may not be, then the numeric DO standards would apply, wouldn't they?

MR. FREVERT: I think that's correct. I think the other thing you need to understand is that Rice Lake regardless of what you call it does indeed support a fishery community and other aquatic life, and when we identify those needs, the fact that the specific numeric standards don't apply doesn't mean that there will not be a numeric standard we can identify based on those populations.

MR. ETTINGER: I'm not trying to argue about anything other than what the rule applies to and how to apply it, and I've just -- that's my issue here.

MR. FREVERT: Well, the direct answer, then, yes, in my mind, the specific numbers of the numeric rule would not apply to the bulk of Rice Lake.

MR. ETTINGER: Okay. So --

MR. FREVERT: But we may indeed find numbers we can apply and they may be very similar, but we would have to define that based on the application of this narrative, based on the uses that are there that we're trying to protect.

MR. ETTINGER: Natural ecological functions, what do we mean by that?

MR. FREVERT: To a great extent, that's going to be the aquatic life population in there. If those natural functions are seasonal, fish harborage or even year-round fish presence, then we have to look at the specific needs of that population of fish, which would probably be more limited and more restricted, but nevertheless, we don't want odors, we don't want fish kills. The functional uses have to be maintained, and those uses we know are somewhat different than that main river that hopefully we know enough about that we can support a specific numeric standard. We don't know enough about these to support a specific numeric standard.

MR. ETTINGER: Now, is that natural as opposed -- as to what could be there or what there is there now? Let's say we have a side channel that is now heavily polluted by, say, runoff coming from a hill above it, as Swan Lake was. Would we want to maintain DO levels in that lake or attempt to maintain DO levels in that lake under the standard such as they could support a natural ecological function if the water weren't polluted or as it is polluted?

MR. FREVERT: Wow, now you're getting theoretical. Well, if the pollution you're referring to translates into an oxygen depression, that's one thing. If it's a different kind of pollution, that's a different thing, but under the circumstances, if we've identified an impaired use, and say that's an impaired aquatic life use, before I can run out and deliver the solution, I'm going to have to make sure I know what the causative agents are, and if we study that situation and conclude that this water body even though it's not expected to meet the numeric standards we recommended does have oxygen needs that are not being met, yes, then we'd deal with whatever sources are bringing that oxygen down.

MR. ETTINGER: I'm not trying to be cute. I'm just -- If I got a Sierra Club volunteer who runs

down to Swan Lake, which is by Principia College, and takes a DO measurement and says it's 2.5 and he wants to know whether or not that violates the water quality standard, how would we reason to determining whether or not it does?

MR. FREVERT: I don't think you can answer that question in that circumstance. If you go to a specific location where we don't expect based on our knowledge and how the systems function to meet the full numeric standard, do we have enough confidence to propose a more mainstream flowing system? You measure a specific number. If you don't know whether or not that constitutes a significant impairment or detriment to the community, I don't feel comfortable for convenience putting the standard on the books to let somebody automatically make a conclusion when he shouldn't make a conclusion just on that one measurement. I think that's part of our problem now. We've got a standard now that's not helping us because we measure violations in places where we believe the uses and particularly the aquatic community is perfectly healthy and what it's expected to be. This isn't a perfect standard, but it's a -- incrementally we're moving towards the recognition that the standard can be overly simplistic and it can't apply

everywhere if it's actually going to help us manage our resources and our functions properly.

MR. ETTINGER: The next term is resident aquatic communities. Is that meant to refer to whatever is there now?

MR. FREVERT: Well, certainly that is true, but I believe in the instance that you actually have documented conditions such that there are organisms you'd expect to be there that would be resident under the normal conditions for that normal type of water body and they're absent, then I would believe they qualify under this definition as well.

MR. ETTINGER: Okay. So if -- IEPA doesn't do this much anymore, but you used to permit people to discharge into backwater sloughs. If we had a discharge into a backwater slough such that it was causing ammonia or DO conditions that were low, that could be a violation even though it wasn't harming what's there now, because what's there now is a result of the pollution that's in the slough.

MR. FREVERT: Maybe one of the other guys -- I'm not sure I understand what you're asking, Albert. Can you rephrase it? Or maybe one of the other guys can take it.

MR. ETTINGER: I guess was it Bobby Kennedy said, "Others look at what there is and ask why; I ask -- I look at what there is now and ask why not"? I guess what I'm asking is when you're looking at these waters, are you making some sort of analysis in terms of resident aquatic communities as to what should be there or what there is there?

MR. FREVERT: Generally it's sort of part and parcel of our process to look at what should be there, and I want to assure you if I'm looking at what's in Rice Lake, I'm also going to be looking at it in the context of what I know to be in Hennepin Lake and some of the others up in -- and Senachwine Lake, the other similar water bodies, and if something is indeed detrimentally affected, it should stand out if it's not got that collection of organisms that are in similar water bodies.

MR. ETTINGER: I've just got a question now about how the second sentence of this A relates to the first -- I'm sorry -- the first sentence of A. Do you intend to prevent offensive conditions in these quiescent and isolated sectors?

MR. FREVERT: Yes. I'm going to elaborate here on the danger of making my attorneys and everybody

else nervous, but as an example, in a thermocline area, there are probably circumstances in the thermoclines in several lakes in the state of Illinois where the DO can go as low as zero, and it's down in that stratified area and isolated such that it's not producing a nuisance condition and it's not interfering with the functional use of that particular portion of the resource, but it's -- a low enough oxygen condition in another part of the system, it would be detrimental or offensive.

MR. ETTINGER: This raises a question with how you deal with this thermocline concept with regard to mussels, which I naively think they're on the bottom. How would they be affected -- I guess I'll ask the biologist here -- by allowing a much lower DO level at the water's bottom?

MR. FREVERT: I'll give you an answer as an engineer and then let the biologist field one. I believe most of the thermoclines are not the kind of habitat where you see a lot of mussels, and probably the shallower portions of those reservoirs and lakes are where the prime mussel habitat is, and those areas we think we're protecting.

MR. CROSS: Yeah, I would agree with Toby's answer to that. Where we see these areas where we have

anoxic conditions and things like that that are protected by this narrative standard, those aren't the typical types of habitats where you'd expect to see mussels and that's not where they're typically going to have evolved and developed and basically take up residence.

MR. ETTINGER: You won't see mussels below a thermocline?

MR. CROSS: Generally, that's correct.

MR. ETTINGER: Okay. Now we're on to 11(d). I'm sorry. I'm sorry. 302.206(b) says the main body of all streams -- except for those waters identified in Appendix D of this part, the main body of all streams. Is that different from the water bodies that aren't quiescent or isolated, or is every part of the stream that isn't quiescent or isolated part of the main body?

MR. FREVERT: The attempt of that language is to avoid a lot of bickering and debate about whether or not your probe was six inches too high or too low or too right or too left or whether it was in a riffle or a pool; basically saying throughout the resource. Other than these places we've identified as sort of naturally isolated, throughout the entire resource the number applies. It doesn't apply just at a certain location.

MR. ETTINGER: That's what I was trying to

make sure. The main body applies to every part of the stream that isn't quiescent or isolated.

MR. FREVERT: Yes.

MR. ETTINGER: Okay. I want to talk now about D. We're at 302.206(d). (D)(3), "The measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the dissolved oxygen standards in this section must assure daily minima and daily means that represent the true daily minima and daily means." Would you explain this?

MR. FREVERT: The intent there is for somebody that carries out a measuring program to characterize attainment or non-attainment of the standard. It is their responsibility to assure that the way they design their monitoring system and the way they collect their data, it is truly representative, not misrepresentative of the normal variation. You can't go out and get three samples at nine at night, ten o'clock at night and eleven o'clock at night and pretend they represent the full 24-hour period. And I'm not trying to specify how many samples is the minimum to do it correctly. I think that would be a difficult or impossible task, but you must -- if you're collecting data and you're using it to draw conclusions or make

assertions about compliance with this standard, it's your responsibility to look at the representativeness of your monitoring scheme and its statistical reliability.

MR. ETTINGER: Okay. Correct me if I'm wrong, but as I understand it, many waters that are affected by algal activity have a diurnal swing in dissolved oxygen levels. Is that correct?

MR. FREVERT: Most streams and lakes have a diurnal swing at least seasonally, and the extent of that swing is in relationship to the level of algal activity, yeah. The more algal activity, the more extreme the swing.

MR. ETTINGER: So would you expect someone who was trying to determine attainment or lack of attainment to attempt to measure the dissolved oxygen levels at a time in which the diurnal swing would lead to the minimum dissolved oxygen level?

MR. FREVERT: I don't know that I have a problem answering it. I'm just not sure I understand what you're asking. Are you -- I mean, we've got a recommendation out here that the combination of an instantaneous value and daily average, so if you're trying to demonstrate whether or not the instantaneous value is exceeded, if you measure a number below it,

you've done that. If you measure above -- a number above it, you haven't done that, because you may have to measure more times to make sure you've gotten the bottom. But if you're looking at the average, you should -- I'm not sure it matters what the absolute minimums are as much as you see the representativeness. Concept here is organisms can tolerate a low dissolved oxygen for short periods, but in order to maintain health, they have to have a reasonably high oxygen over the bulk of the time period, so for the average periods, the more aggressive the swing back and forth, it would be prudent to have a more rigorous monitoring program. And again, I'm trying to avoid specifying an absolute minimum number of samples because that's going to vary.

MR. ETTINGER: Would you expect that if you had a stream that you knew was affected by algal activity that you would want to collect some pre-dawn DO data?

MR. FREVERT: Oh, yeah, very much so, and I would probably set out some kind of data loggers and get periodic sampling every 15 minutes or so all day and all night long.

MR. ETTINGER: Let's say that you have a monitoring program and the data that you come up with are dissolved oxygen numbers that are fairly close to the

standard but they were taken in the afternoon. Would you feel that that had satisfied this requirement?

MR. FREVERT: No. I mean, it's my job to ultimately exercise a judgment on the condition of that water body, and I collect some information that isn't conclusive, I think I have a responsibility to expand the monitoring and go back and do more, not just to make a convenient conclusion because I don't have the time or the desire to go out and collect more data.

MR. ETTINGER: So a 5.1 at three o'clock in the afternoon would probably lead to further investigations.

MR. FREVERT: Right. That would be my assignment to my staff. If you get numbers that are questionably low at a time of the day you don't expect them to be low, let's go out and do our diligent homework and find out what's really going on.

MR. ETTINGER: Okay. Should I go on or -- we're fine now on time?

HEARING OFFICER MCGILL: Yeah. It's 12:05.

MR. ETTINGER: Oh, great. I should be done by lunch. Can someone explain (d)(4) to me, "The dissolved oxygen value used in calculating or determining any daily mean or daily minimum should not exceed the 100

percent air-saturation value"?

MR. FREVERT: I can give you part of it and Roy's going to have to give you the rest of it. Obviously if you exceeded 100 percent of the air-saturation value, it's considered a supersaturated condition where probably photosynthetic activity is producing oxygen faster than it can naturally expel it from the water, so it holds more than it can hold. And, Roy, fill in the rest.

MR. SMOGOR: That's correct. When you're calculating a daily mean or daily average, you measure at various times of the day and you do your mathematical averaging. At times waters can hold more oxygen than the air is capable of holding, and that's called, like Toby said, a supersaturated situation. If you use those high values in your average, it's going to pull your daily average up, and that's kind of a bias that we don't want, so we're only going to measure dissolved oxygen and count the highest amounts of dissolved oxygen as the amount that the water can hold in equivalent pressure with the air above the water. So at times water does hold more than that, but we're not going to let that enter into the calculation of the daily average.

MR. FREVERT: So if the saturation level at

a particular condition is 9 milligrams per liter and you measure 11 milligrams per liter, the number you're going to use to calculate your daily average is the 9, not the 11?

MR. SMOGOR: Yes.

MR. ETTINGER: And as I understand it, the saturation number varies in some regular way with the temperature of the water; is that correct?

MR. SMOGOR: Yes, yes. And warmer water can hold less oxygen, but at times it does get supersaturated.

MR. ETTINGER: So again, for purposes of this calculation, you would need to know the water temperature in connection with your DO measurements so that you can calculate the saturation level.

MR. SMOGOR: Yes.

MR. ETTINGER: How -- Is it anticipated that this new standard will be used in writing permits?

MR. FREVERT: That question was asked by IAWA in their written questions and we have answers on the record in the attachment, but the general answer is not in the typical application. There still are provisions in our regulation for small facilities to issue what's called a lagoon exemption where you can

relax the technology-based limits applicable to that source if it's demonstrated that it will not result in an exceedance of the dissolved oxygen standard, so in that context, if we're applying a lagoon exemption concept in the regulations and these recommendations get adopted, we would modify the end points we're doing that analysis against, but the larger plants in the state and the routine application in Illinois is the technology-based standards established in the board regulations drive the permit until and unless some further analysis like a total maximum daily load is adopted and enacted and that becomes the basis for any additional permit requirements.

MR. ETTINGER: I think I got that, but essentially what you're saying is you're going to go on using your technology-based limits to write most of the permit --

MR. FREVERT: Yes, sir.

MR. ETTINGER: -- permit numbers in the state.

MR. FREVERT: (Nods head up and down.)

MR. ETTINGER: And we're not going to use any dissolved oxygen modeling or other modeling to determine those numbers.

MR. FREVERT: I didn't say we wouldn't, but

in routine program activities we're going to rely on the existing approach. Periodically there is the need to look at something and there may be a local circumstance that both warrants it and has the information to do it in a meaningful fashion, but it will not be routine business.

MR. RAO: Just a follow-up. So, Mr. Frevert, do you believe that TMDL program would be one of the main driving forces for implementing DO standards?

MR. FREVERT: It's possible in the future, but I don't think it will in the next 12 to 24 months, no. That's just the state we are at developing the program and understanding the dynamics and the science such that we can meaningfully and accurately fine tune discharge limitations that closely. There are many, many influences on dissolved oxygen over and above permitted point sources, and to pretend that we can dial the dissolved oxygen right into where we want it by tweaking those permits, in my opinion, the science isn't there yet and we're naive if we think it is.

MR. RAO: And do you think the nutrient criteria which you guys are developing would also play into the limitation of DO standards?

MR. FREVERT: Certainly one of the main benefits everybody expects out of nutrient reduction in the future is less algal activity in those systems that are -- experience significant enough algal activity to have larger than desirable daily swings in dissolved oxygen, so I'm not sure we'll ever be able to show engineering equations and calculations on how nutrients will affect DO. The understanding and the expectation is if we get significant nutrient reductions in our streams, we will see better oxygen profiles and we will see slightly different tints to the green color.

MR. RAO: Thank you.

MR. ETTINGER: I just had one more, although it -- I think it relates to the other. Are we expecting we will use the standard in identifying impaired waters?

MR. FREVERT: Yeah. That's probably its primary function in the foreseeable future, the next few years, is how we determine assessments of attainment or non-attainment, and I think the standard is also going to be a significant impetus and help in our moving in the direction of better technology, more automated monitoring and better monitoring data.

MR. ETTINGER: Okay. And for these waters that we talked about, backwaters, sloughs, some lakes

that are also characterized as backwaters and sloughs, we're going to primarily be using biological criteria or biocriteria to identify impairments.

MR. FREVERT: I think we'll be looking at the full resource, and we will -- in those places when we study them, we will certainly be looking at the biology, but any time we look at the biology, we also monitor the chemistry, and we will be recording temperatures and oxygen concentrations. Beyond that, we've got a specific initiative now where we're specifically looking at wetlands and how to monitor wetlands and how to measure the health and vigor of wetlands, and some of the water chemistry in the wetlands is going to be important too, and as time goes on, we'll need to have water quality standards unique for wetlands. The assumption that the general use standards designed around primarily streams and perhaps lakes is applicable to wetlands we know is not correct, but until we've got something better, that's what the law is.

MR. ETTINGER: Thank you.

HEARING OFFICER MCGILL: Thank you. Why don't we go off the record for a moment.

(Brief recess taken.)

HEARING OFFICER MCGILL: Why don't we go

back on the record. The Board had a couple of questions very closely related to the line of questioning Mr. Ettinger just concluded, so I think at this point it may make sense for the continuity of the transcript to pose those questions and then break for lunch, and when we come back, we would begin with IAWA's questions. It's about 12:15 now, so that would keep us right on schedule, although I note that Mr. Frevert has left.

MR. ETTINGER: Probably the best time to avoid the Board's questions.

HEARING OFFICER MCGILL: I'll go ahead and I had a couple that I'll pose, and if you want to wait for Mr. Frevert's return, we can do that. Under the proposed Section 302.206(a), the narrative standard, in the second sentence, do the words, quote, "below the thermocline," end quote, modify only the words lakes and reservoirs as used in that sentence? Is that the intent?

MR. SMOGOR: Yes.

HEARING OFFICER MCGILL: Thank you.

MR. RAO: As a follow-up, in response to Mr. Ettinger's question about whether this narrative standard applies only in lakes and reservoirs or also in streams, you responded saying that it primarily, you know, applied to lakes and reservoirs, so it -- and it

may apply to streams also, so are you looking at lakes and reservoirs more broadly in terms of how you look at a water body as to whether it's a lake or a stream?

MR. SMOGOR: I guess I'm not quite understanding. I'm sorry.

MR. RAO: I'm trying to clarify what you mean by lakes and reservoirs. Is there, like, a definition or it's fairly broad the way you look at those terms?

MR. FREVERT: I'll -- In my perspective, we're trying to identify those water bodies that are amenable to stratification, so it's a generic term. Lakes and reservoirs are sort of a common terminology, but they're basically impoundments with physical characteristics such that they're amenable to stratification. I don't know whether it warrants a specific definition in the regulations or the common understanding, but, you know, we're open to whatever your specific recommendations or ideas are.

MR. SMOGOR: Can I just make one comment? Sorry to interrupt.

HEARING OFFICER MCGILL: Sure. No, go ahead.

MR. SMOGOR: It is possible in some stream

situations in the deeper, slower sections of streams called pools where at times a stratification could be set up under certain conditions, and so in those conditions, you probably -- you don't necessarily expect below the thermocline to be able to keep the oxygen levels that above the thermocline would be able to attain, so even though this was intended in this particular sentence, backwaters and lakes and reservoirs below the thermocline, that phrase "below the thermocline" was intended primarily for lakes and reservoirs. In reality, there's a possibility of thermal stratification setting up in other types of waters, including pools of certain streams under certain conditions. Where that leaves us, I don't know.

MR. RAO: Yeah. I was not suggesting that you define lakes and reservoirs. I just want to make sure what you propose, you know, it works as you intended the provision to work.

MS. WILLIAMS: I think we need to look at that and we might recommend some tweaking in later comments or something like that. That's something we hadn't thought about in our --

MR. FREVERT: Well, I'll just offer my opinion. It was not my intent that pools in normal river

systems be exempt from the standard. There may be some unique situation where there's some stratification, but it's a very rare thing, and I would not think that would warrant us creating that confusion in the standard.

MR. RAO: And looking at it as an engineer, I don't think it poses any problems, but an attorney may read it differently.

HEARING OFFICER MCGILL: When attorneys hear words like "primarily lakes and reservoirs," we go crazy, so that's why with the words "below the thermocline" there in the proposed language coming where it does, I wasn't clear on what you intended to modify, whether it was just lakes and reservoirs or that entire list of water bodies, but Counsel's indicated you're going to take a look at that and perhaps tweak that language. And related question, just so I'm clear, again in 302.206(a), for, quote, "quiescent and isolated sectors," end quote, would no numeric dissolved oxygen standard apply?

MR. FREVERT: That's the intent. We do not know what would be a scientifically justifiable numeric standard, but we could tell by the ecological functions that take place in those areas what the needs are and we could derive numerical values based on that. If there's a certain makeup of fish and we know their oxygen needs,

we could do that, but that's going to vary from system to system and resource to resource. Not all quiescent water bodies behave like other quiescent water bodies.

HEARING OFFICER MCGILL: But if it is a quiescent water body, I take it that it would be subject to the narrative standard but not the numeric standards.

MR. FREVERT: We're trying to have a backstop there, so just the fact that a resource is so atypical of streams and lakes, where the data came from that drove the numeric standards have no meaning. We still know there needs to be oxygen there because there are functions -- both biological functions and physical and aesthetic functions that require some minimum level of oxygen.

HEARING OFFICER MCGILL: Thank you.

MR. RAO: And as a matter of clarification, those two terms, quiescent and isolated sectors, they are not part of the main body of the river; am I right?

MR. FREVERT: That's correct, yeah. That's -- It's an attempt to give some concept and explanation. The two sentences are intended to work together. By the way, I have no pride of authorship. I want to get the concept across to you. If you feel the need to tweak the words, tweak the words.

HEARING OFFICER MCGILL: Okay. At this point, why don't we break for lunch. We'll go off the record. I've got about 12:22. Why don't we -- Since we're wrapping up a little early, let's try to start at 1:30 for the afternoon portion. Thanks.

(Lunch recess taken.)

HEARING OFFICER MCGILL: We were continuing with questions for the witnesses of the Agency and DNR, and I'll turn it over to Mr. Harsch, counsel for the IAWA.

MR. HARSCH: Thank you very much. Roy Harsch on behalf of IAWA. The -- In Mr. Frevert's testimony, in the second paragraph it says IEPA and IDNR staff reviewed and analyzed general use water quality data to determine what waters warrant a dissolved oxygen standard incrementally higher than that of the base level deemed generally protective of most general use waters. Toby, what general use water data were you referring to?

MR. FREVERT: That's a good question. Primary data we relied on was biological data. Beyond that, the staff's knowledge of the water chemistry and DO information was used a great deal in the early aspects of our analysis and formulation of positions, but ultimately, probably after the hearing in August of 2005

we shifted our focus pretty much on the biological data, and then once we used our methodology and came up with a classification system and laid them out in classes, we sent all that information out to our two agency field staffs for a reality check and said, this is the way the biological data suggests these things shake out, is there any obvious thing we've missed or is there any place where you know there's a routine recurring DO condition or some other condition that suggests the classification turned out incorrectly. So in that regard, water chemistry was not nearly as important a factor in the biology, but water chemistry was collectively utilized in all those different processes.

MR. HARSCH: Mr. Cross, if I understand your testimony, I'll paraphrase this and tell me if I'm right. Essentially what you did is look at the Rankin data, determined a sensitivity to dissolved oxygen levels that you used rock bass as the middle point. Anything above rock bass and above then became on the list for species that you evaluated in Illinois for being present in meaningful numbers. You may have included some additional fish based on Illinois stuff that wasn't -- knowledge that wasn't in the Rankin thing, and it was then strictly biology that you looked at whether those

species were present or not and in what numbers that they were present; is that right?

MR. CROSS: Yes, I would say that's a general overview of the process that we went through, correct.

MR. HARSCH: So some of the things that we had talked about, you didn't look at the actual dissolved oxygen values in the stream, correct?

MR. CROSS: Pardon me. Could you state that again? I didn't --

MR. HARSCH: You didn't actually look at dissolved oxygen water quality values in the streams where you worked?

MR. CROSS: Not for purposes of identifying the two tiers.

MR. HARSCH: And you didn't look at temperature data.

MR. CROSS: That's correct.

MR. HARSCH: Nor did you look at any habitat data.

MR. CROSS: That's correct.

MR. HARSCH: Thanks. Albert dwelled on this at some length, but I guess being a lawyer, I can't help but going back to the Attachment 1. Toby, when you were

talking about in response to Albert's questions isolated areas, it could be just -- could an area be just isolated from the flow in the stream if -- for example, an impounded river?

MR. FREVERT: Sure. If you look at microhabitats within a system, it's not unusual to find a little pocket here or there, a shelf under a tree stump or something like that that it's right there at the bank's edge but for some reason the dynamics are such that the water doesn't circulate through there. There's those kind of little microhabitats that exist all over the place, but they don't constitute a significant portion of the main water body. I guess my point is those areas are not the proper place to gauge the overall condition of the resource.

MR. HARSCH: When you're talking about the natural ecological functions, you're not talking about in the absence of mankind's development of roads, farms, houses. We're not going back to the pre-pioneer days, are we?

MR. FREVERT: I guess when I use the term natural, I'm talking about nature as we understand it in the 21st century with our life-styles and our land use patterns and the way man has left its imprint on society.

MR. HARSCH: If a stream has a dam presently, you would be looking at then about what nature would support above that dam in the water.

MR. FREVERT: Well, if society's made the decision they're going to dam a water body to create an impoundment, certain social judgments and values have been made, and if it's a new system, we're going to make sure that we design that new installation with all the features to protect the environment to the maximum extent possible for existing facilities. You impound a free-flowing stream and there are consequences, both positive and negative.

MR. HARSCH: But you would be looking at the existing conditions behind that existing dam and --

MR. FREVERT: If you're talking -- I think what you're getting at is assess the condition of the water body.

MR. HARSCH: Correct.

MR. FREVERT: And if I'm going to assess the condition of the water body and give my opinion of the state of the overall water body, I want it to be representative of the majority of the water body, not a one-cubic-yard little subpart right at the bottom of the dam, because I know it's going to behave differently than

the overall resource.

MR. GARVEY: So my -- I'm a little confused -- My name's Jim Garvey, by the way, with Southern Illinois University. I'm a little confused by the justification and the methodology by which you selected the standards for the minima and the averages for the enhanced waters. Can you explain that a little bit more to me? Whoever wants to take it.

MR. CROSS: Yeah. I'm not sure exactly -- Are you talking about those threshold values for the biological measures?

MR. GARVEY: No, I'm talking about say for example in Attachment 1, the 6.25 milligrams per liter as a daily mean average over seven days.

MR. CROSS: Right.

MR. GARVEY: When you look at the NCD, was it my understanding that that's a hybrid between the pool or the cold water and the warm water standards that were set forth by the NCD?

MR. CROSS: That's correct.

MR. HARSCH: Can I jump in? On page 8 of the technical support document, it's my understanding that you say that you essentially average the national criteria document's cold water numbers and the warm water

numbers?

MR. CROSS: The levels that we picked based on the NCD for level one waters was the median values between the NCD cold water criteria and the NCD warm water criteria.

MR. HARSCH: Okay. Then I have one -- I thought that was what you had said earlier in your testimony. If I look on table 1, page 9 --

HEARING OFFICER MCGILL: Could I just clarify? We've made a couple different references here. Attachment 1 is Exhibit 20. That's the proposed rule language. And the technical support document is Exhibit 23 now. Mr. Harsch, are you referring to --

MR. HARSCH: To Exhibit 23, and it would be table 1 of Exhibit 23, which is on page 9, and my reference to page 8 again was Exhibit 23, page 8. There you've listed the cold water, the warm water, and then you've got the ones that you've come up with, right?

MR. CROSS: That's correct.

MR. HARSCH: I see that the ones you came up with for enhanced waters are all averages except for the daily minimum when early life stages are absent. The USEPA cold water criteria is 4.0 and the warm water criteria is 3.0.

MR. CROSS: Yes, you're exactly right, and I believe that that is a difference because of the macroinvertebrate data, and I would refer that one to IEPA for clarification of why that's 4.0.

MR. HARSCH: That's not an average, then.

MR. CROSS: That's right. It's not the exact midpoint between the cold water and warm water criteria, that's correct.

MR. SMOGOR: That's correct. We picked 4 because the 4 in the national criteria document was based primarily on protecting macroinvertebrates, and we believe that there's a meaningful amount of those same macroinvertebrates that occur in some Illinois streams that were part of this process.

MR. HARSCH: I'm sorry to jump into your clarifying questions. Go ahead.

MR. GARVEY: Oh, okay. So you use cold water as a reason for picking the enhanced streams. Do you know what the temperatures are in those enhanced streams? Do you have temperature data for any of those enhanced streams, and are the temperatures in those streams different inherently than other streams in the state?

MR. CROSS: I wouldn't characterize this

level one or what we call on table 1 of the TSD this intermittent level as cool water. They're basically those waters where we have predominantly warm water species that have a higher need for DO than others.

MR. GARVEY: Okay. That answers that question. Another question we had was associated with the impairment data that you provided, and you've provided us with a list, and I don't know if this is -- made it into the record or not.

MR. HARSCH: It's an attachment to the letter that -- what's the exhibit number, the letter that was sent Friday?

MS. DIERS: Exhibit 22.

HEARING OFFICER MCGILL: 22 is the response to the IAWA letter.

MR. GARVEY: And you have a list in that letter of stream segments and their -- basically whether they attained -- or I guess in all these they did not attain the aquatic life use designation and some of the reasons for that, and there's a few of these enhanced sites that are listed because dissolved oxygen is a problem, but the question is is because it didn't meet the current standard? Did they meet the 5 or the 6? It's difficult to determine that. Are there specific

data for these particular enhanced -- these streams that are placed on the enhanced list? Can we actually look at the data that were used to derive --

MR. SMOGOR: We can -- I can handle that. We can provide you with the information that went into those assessments, and every one of these assessments that's represented is not based on the recommended standard. It's based on the current standard if it were used.

MR. FREVERT: There's one other thing I want to point out in our biannual assessments and our rating of stream conditions. Particularly if we identify a stream and suggest it's impaired and we list causes and sources, that's primary potential causes and sources and it's a bit speculative. We're not concluding that DO is the reason for that impairment. We're just saying that's one of the things that should be looked at if we do a further assessment.

MR. SMOGOR: I'd also like to point out that the length of stream represented by these segments that were determined as impaired and that DO was listed as a cause based on the current standard comprises less than 3 percent of the stream that we've proposed for these enhanced DO criteria.

MR. HARSCH: 3 percent of the 8 percent or 3 --

MR. SMOGOR: 3 percent of all of the streams that were selected for the enhanced protection -- level one protection, less than 3 percent are represented on this list.

MR. STREICHER: So this is 3 percent of the segments that you're proposing to be listed?

HEARING OFFICER MCGILL: Mr. Streicher, I'm sorry to interrupt you. Can you just identify yourself?

MR. STREICHER: I'm sorry. Dennis Streicher with IAWA. So just to follow up on your answer there, this list that we had in that attachment or that Exhibit 22 --

HEARING OFFICER MCGILL: Right, Exhibit 22.

MR. STREICHER: -- Exhibit 22 is only 3 percent of the segments --

MR. SMOGOR: It's less than -- These are segments that overlapped with the segments as represented on the middle map that were selected for the higher level of DO. These are impaired segments that happened to overlap with those, and the length of stream represented by this list of impaired segments is less than 3 percent of the total length of those streams selected for the

enhanced level.

HEARING OFFICER MCGILL: I'm going to need to interrupt you there. You're now referring to the --

MR. SMOGOR: I'm sorry.

HEARING OFFICER MCGILL: -- oversized exhibit which we don't have yet as a hearing exhibit.

MR. YONKAUSKI: It's in the TSD.

MS. WILLIAMS: It's also on -- yeah.

HEARING OFFICER MCGILL: But there are several -- just for those who will eventually read this transcript, there are several oversized exhibits here that are various maps, and I believe, Mr. Yonkauski, you were just saying these maps that are in oversized form now are from the technical support --

MR. YONKAUSKI: Two of the three.

HEARING OFFICER MCGILL: Two of the three are from the technical support document, so, Counsel, I'll leave it up to you if you -- to the extent we're going to be referring to these maps, I'd like to get them in as a hearing exhibit, or if you can't part with them, then --

MR. SMOGOR: I could refer to figure 5.

HEARING OFFICER MCGILL: If you have other ways of identifying or explaining your remarks, that's

fine.

MR. SMOGOR: But the streams that I was referring to on the poster are the same set of streams that are highlighted in figure 5 of the technical document.

HEARING OFFICER MCGILL: Of the technical support document?

MR. SMOGOR: Yes.

HEARING OFFICER MCGILL: And that is Exhibit 23.

MR. SMOGOR: Exhibit 23.

HEARING OFFICER MCGILL: Thank you.

MR. SMOGOR: Sorry.

MR. HARSCH: Mr. Smogor, as a follow-up question to that, then, do you know how many of the segments that you've listed proposed for enhanced dissolved oxygen level protection actually have had dissolved oxygen measurements sampling done?

MR. SMOGOR: No, not offhand.

MR. HARSCH: Would it be a large percentage or small percentage? 3 percent?

MR. SMOGOR: Because -- I can't -- No, I don't know offhand. I don't have the information with me.

MR. GARVEY: That would be useful data to have to assess --

MR. SMOGOR: We can provide that data if we have it.

MR. GARVEY: In your response to Mr. Streicher's request for data, you provided us with some continuous monitoring data from some of the enhanced candidate streams, if I understand correctly. Are there any plans to collect more of those sorts of data in the enhanced candidate streams?

MR. SMOGOR: I don't know. I think that's probably a good idea.

MR. GARVEY: Yeah. A recommendation that I would have is -- and I don't know. Do I need to be sworn in about that?

HEARING OFFICER MCGILL: If you'd like to give testimony, I'll swear you in.

MR. GARVEY: It's not testimony. It's just -- It would be great if you guys could collect at the same sites for this year under the flow conditions that were there last year.

MR. FREVERT: If I could, I believe the monitoring section manager works for me in the Agency, and we're -- typically this time of year we're looking at

our summer workload and where we need to be monitoring, and we'd be happy to receive any recommendations you have.

MR. GARVEY: Off the record, on the record?

MR. FREVERT: You can keep it off the record if you want. If you feel there's some value to people to put it on the record, that's all right. Again --

MR. GARVEY: Well, on the record, I think IAWA -- if they disagree with me, then they can speak up now, but I think that'd be easier.

MR. STREICHER: We agree.

MR. FREVERT: Okay. And again, we'd be happy to do more monitoring if you can find us more resources too.

MR. HARSCH: Your recommendation is that they sample at the same locations this year that they sampled last year during the low-flow and drought conditions?

MR. GARVEY: Exactly, mimicking the very same protocol that they used last year this year.

MR. FREVERT: So you're looking to get a better understanding of annual climatic differences.

MR. GARVEY: I think that would be very important.

MR. FREVERT: We also recognize the desirability in that.

MR. HARSCH: Would this be an appropriate point where we go through the information that we'd like from the Agency while we've got everybody up here?

HEARING OFFICER MCGILL: Absolutely. I just have one question that was related to the -- your line of questioning, if I could just throw that in before you start your list of requested information, and that had to do with arriving at the midpoint for these intermediate waters, the midpoint between cold and warm waters. Are you aware of any other state splitting the difference like that to arrive at an intermediate numeric DO standard?

MR. FREVERT: Off the top of my head, I can't speak to most of the other states' DO standards, but I do want to emphasize the area where we sort of look for middle ground was in an average statistic, not an instantaneous value. The absolute minimums are the 3 and a half and 4. The 6.25 is for a longer term average, and in that regard, we believe there's more statistical significance to a smaller increment if you look at it over an average period of time, and to just arbitrarily pick one or the other we thought was less sound judgment

than finding a middle ground, and an average figure will let you explore the smaller middle ground levels, so that's our logic.

MS. WILLIAMS: Matt Short has done some looking into other states if you'd like him to tell you what he can tell you.

MR. FREVERT: That's fine, but again, we haven't done an exhaustive exploration. There may be six or seven states that tend to be a little different. He can speak to the extent he knows.

MR. SHORT: Matt Short with the Illinois EPA. In terms of warm water, cool water, cold water, most of the other states have specific cold water standards for trout or salmonid species streams. Missouri is the only state that -- surrounding state that I saw that actually mentioned cool water species in their standards, and they lump for dissolved oxygen warm water and cool water as one unit. They have a 5 milligram per liter minimum, which is similar to our current instantaneous minimum, so it's -- they group those together. They look at the cool water streams as a temperature function, and whether or not they have salmonids or not is -- determines whether -- which set of standards get applied to them, so that's how they look at

dissolved oxygen. And if you're interested, I can go over some of the other state adjacent border stream water quality standards for DO.

The state of Iowa, for shared waters on the Mississippi River, Iowa has a 5 milligram per liter 16-hour average and a 5 milligram per liter instantaneous. Missouri has a 5 milligram per liter instantaneous. So essentially, right now the minimum Mississippi River dissolved oxygen standard is the same between the two states. On the Ohio River it's regulated by ORSANCO, the Ohio River Sanitation Commission. They have a 5 milligram per liter average for each day -- they don't really describe how you determine that average -- and they have a 4 milligram per liter instantaneous minimum. On the Wabash River, which we share with Indiana, they also have a 5 milligram per liter daily average -- again, no explanation as to how you calculate that -- and a 4 milligram per liter instantaneous minimum, and that's -- the other probably main state we share waters with, then, is Wisconsin, and they have a 5 milligram per liter minimum for their waters, most of their waters. They do have some variances that they allow for wetlands and different types of waters.

MR. FREVERT: If I could ask, Matt, to

follow that up a little.

MR. SHORT: Sure.

MR. FREVERT: How many of those states do you know of have any kind of a reasonably comprehensive reassessment of those standards within, say, the last five or ten years, or are those standards they've had on the books for some time?

MR. SHORT: For Missouri and Iowa, I know those are standards that they have had on the books for some time. I am on a workgroup with the Upper Mississippi River Basin Association, which is the five upper states on the Mississippi River, and I know that their standards have not changed for a number of years. I'm not sure about Indiana. I don't know if Roy is familiar with ORSANCO's, the length of time their standard has been on the books, but I think it's been a substantial length of time.

HEARING OFFICER MCGILL: What are those five states, just for the record, if you --

MR. SHORT: The five upper Mississippi River states are Missouri, Iowa, Minnesota, Wisconsin and Illinois.

HEARING OFFICER MCGILL: Thank you.

MR. RAO: I had a follow-up to Dr. Garvey's

questions regarding DO data. Did the Agency or DNR evaluate any available DO information for those streams selected for enhanced protection at all?

MR. SMOGOR: Yes. Yes, we did.

MR. RAO: If so, did this evaluation involve any correlation between DO levels and abundance of fish in those streams?

MR. SMOGOR: Nothing formal, no.

MR. RAO: So did you do any kind of analysis to see whether the data confirms, you know, Rankin's finding or such evaluations from that?

MR. SMOGOR: No. I looked at -- What I did do was I looked at the dissolved oxygen data for the most recent ten years from grab samples in sites that occurred close to the enhanced -- water selected for enhanced protection or on those waters, on or near, and for those sites I applied the EPA/DNR-recommended dissolved oxygen daily minimum standards, and I looked at how many of those sites were not meeting the recommended standard -- the DNR/IEPA-recommended standard for the last ten years of data and found that largely, month by month, 90 percent in every month of the sites that occurred on these waters or near these waters were meeting that proposed or recommended standard.

MR. RAO: Okay. So only 3 percent of those enhanced waters didn't meet the standard based on your review?

MR. SMOGOR: Actually, that was a different analysis.

MR. RAO: Okay. How was it different?

MR. SMOGOR: They -- IAWA asked for several pieces of information. The one piece that was referred to earlier was they wanted to know currently what segments of streams that Illinois EPA has listed as impaired for aquatic life use. Of those segments that overlap with the segments selected for the enhanced protection, 3 percent of the length of the impaired waters comprise the waters selected for enhanced protection. I'm sorry. This is complicated.

MR. RAO: Yeah, it's --

MR. SMOGOR: The dissolved -- That didn't have anything to do with looking at individual dissolved oxygen measurements.

MR. RAO: Okay.

MR. SMOGOR: And then when I spoke to -- after that to you about dissolved oxygen measurements, those were sites that happened to overlap with these segments. That was something I did later, but I did

provide -- and in our response that was filed as Exhibit 22 today, there are some results of that analysis where I looked in each month over the last ten years of DO data.

MR. RAO: Okay. Thank you.

HEARING OFFICER MCGILL: One other follow-up question on the -- page 8 of the technical support document, or Exhibit 23. There's a reference to the Agency simply selecting dissolved oxygen concentrations halfway between the USEPA cold water and warm water chronic levels as we've been discussing here. Is the -- Is there scientific literature that supports the notion of splitting the difference between those two numbers to arrive at an intermediate? I mean, it's -- I just wondered if -- was that just sort of a common sense approach or did you -- did your research reveal that this has been recommended?

MR. SMOGOR: It was more of a common sense approach, not having definitive places to cut it. We did realize that there are certain species in Illinois that need more protection than the warm water value but they didn't quite need the protection of salmonids, trout and salmon, and so realizing that they were somewhere in the middle, it -- to us it was common sense to pick a middle value.

HEARING OFFICER MCGILL: Thank you. I'll turn it over to Mr. Harsch again.

MR. HARSCH: I guess as a clarifying question, or else I need to ask for it in a different manner, how do you correlate that list of impaired segments that you gave us on Friday, which is Exhibit 22, with the list of proposed enhanced waters? It's not just -- They're not the same segments. How do you correlate them?

MR. SMOGOR: If there was some overlap, then I called them correlated.

MR. FREVERT: If I can help here a little bit, there's two different analyses you're talking about. One is the impairment decision, which is based on biological indices, like IBIs and MBIs. The other is an analysis that identifies communities composed of a significant percentage of oxygen-sensitive species. So there are entirely different fundamental premises going into those analyses. I'm not sure why they should correlate.

MR. HARSCH: Toby, the question is, segment ILBMC2, Sugar Creek, the first page, how does that correlate -- that segment -- which I understand is the segment name or number, right? How does that correlate

with Sugar Creek listed -- The segments of Sugar Creek or that portion of Sugar Creek, how do I compare this list versus the segments that are listed for these waters?

MR. SMOGOR: That -- It -- To see how they compare, you would need the Geographic Information Systems layers and you'd have to put them up on a screen like I did and see that here's the first layer of streams selected for enhanced protection, here's the other layer of streams that are on our impaired waters list, and I have to see where they physically overlap.

MR. HARSCH: So I can't compare this list versus the other list without going through this computer shapefile thing?

MR. SMOGOR: It would be very difficult.

MS. WILLIAMS: And I think it's worth, you know, explaining to the Board, we -- they asked for that information, so we provided it. That wasn't an --

MR. HARSCH: I understand. And we can't -- at least in my brain, I can't figure out how to use this versus your list, and you've just told me I can't do it without a computer file.

MR. FREVERT: But both lists are anchored in a common stream code. Each stream section has a unique code, and so any particular stream segment is going to be

identified by the same code if you're on both lists. It would be pretty meticulous, but that is a way to do it.

HEARING OFFICER MCGILL: I just have -- Just to clarify, Exhibit 21 is the Appendix D, proposed stream segments, and the impaired list I believe that Mr. Harsch is referring to is in Exhibit 22. Does the -- There's just reference to a computer overlay map where you're comparing the impaired versus the proposed enhanced segments. Do you have that in CD form that could be put into the record and available to the public? Right now, as I understand it, the enhanced segments are part of the CD, which is Exhibit 24 today, which was part of the prefiled testimony, but at this point am I correct in concluding we do not have a computer version of the impaired segments that's in Exhibit 22?

MR. SMOGOR: That's correct. It was provided based on request as just a list in a table of impaired segments, and kind of behind the scenes, IAWA asked for can you give us a list of waters that overlap or intersect with the selected set of waters for enhanced protection, and I provided that list over last week, but I did not provide them the Geographic Information System information that was used to generate that list because they have been unable to open that type of file. Is

that --

HEARING OFFICER MCGILL: Is that something that you could provide to the Board? Is it any different than using the CD that you included in your prefiled testimony?

MR. SMOGOR: Yes, because the CD, if I -- Joel, maybe you can speak to this. The CD is -- you can't add things to it; is that correct?

MR. CROSS: Yeah, that's correct. The CD includes the list of waters that are covered by level one, those standards as we have jointly recommended, as well as additional referencing information to help orient oneself to where those segments are, things like major municipalities, all the county roads, bridges, everything like that, so if you wanted to orient yourself, where are those segments, you could find it a little more easily. We also on that CD provided the free software from the computer company that designs this software to be able to read and view those files on the CD, so I think that what we have in terms of the coverage that Roy is talking about in terms of which waters are impaired, we would need to probably take that coverage and incorporate it into our GIS system, and then we could certainly provide that on a CD, but it would have to be a new CD, yeah.

MR. HARSCH: One of the things that Dr. Garvey was just about to ask for.

MR. GARVEY: Yes. May we have that, please?

MR. HARSCH: He can open it. I can't.

MS. WILLIAMS: Oh, you mean just a new one of the one that we --

MR. HARSCH: We just specifically want --

MR. GARVEY: Well, you can send us GIS shapefiles, which you already have, and I can bring it into --

MR. SMOGOR: That would probably be the easiest way to do it.

MR. GARVEY: The easiest way. You don't have to go through all the process of doing that. We could take a look at it that way, so --

MR. RAO: I think the same thing would work for the Board also since we have the software.

MR. SMOGOR: Okay.

MS. WILLIAMS: The Board can read the GIS shapefiles as well?

MR. RAO: I mean, I have the reader, so --

MR. CROSS: Yeah, but to read Roy's files, you may need more than that ArcReader; is that correct, Roy? You would actually need GIS software to run that?

MR. SMOGOR: I'm sorry. I don't know the capabilities of ArcReader.

MR. CROSS: The answer's yes, I think.

MR. SMOGOR: Okay. Sorry.

MR. RAO: If that is the case, then we can just print out the maps in color and file it with the Board.

MR. CROSS: We can accommodate the Board in that manner. That would be fine, but --

HEARING OFFICER MCGILL: If that will meaningfully convey the information, then that's -- hard copy's fine too.

MR. CROSS: Yeah, we can get it to you in whatever format you need, whether it's hard copy or -- it wouldn't be all that complicated to burn another CD for your purposes. That would be fine.

HEARING OFFICER MCGILL: That would be excellent.

MR. CROSS: It's easy, so we can do that.

HEARING OFFICER MCGILL: Thank you.

MR. STREICHER: If I could ask, I think this would be to Roy also, but in that letter IAWA made that request, which is now Exhibit 22, there was a request for POTW dischargers to those listed segments. I think in

your response you had one tab on an Excel file that indicated point dischargers within 500 feet and 1,000 feet. Are -- Does that include point dischargers that are to the segments, specifically into the segment, or just above the segment by 1,000 or 500 feet?

MR. SMOGOR: We don't -- Unfortunately, in the GIS shapefile that has that information, we don't have a column of information that says this discharger discharges to this water body. We didn't have that information at hand, so what was done was -- very quickly, was if a discharge point is within 1,000 feet of a water selected for enhanced DO protection, it was selected for the 1,000 -- within 1,000 feet list. If a discharge point is within 500 feet of a water that was selected for enhanced DO protection, that was selected as part of the within 500 feet list, and that's as good as we could get on the short notice.

MR. STREICHER: So that would also -- that would duplicate, then, so if you're within 1,000 feet, you're also within 500 feet, so actually --

MR. SMOGOR: Right. That should be inclusive.

MR. STREICHER: It would be duplicate. Okay.

MR. HARSCH: If you searched your program for one foot, would that tell you which we're discharging to?

MR. SMOGOR: I don't know. I don't know. Ann, can you speak to that process, or --

MS. HOLTROP: I'm Ann Holtrop with the Illinois Department of Natural Resources. We played around with some different distances from the stream, and it was difficult to do that because there is variability in how GIS data layers fall potentially to where they are on the ground, so things don't line up exactly, and so very few of the points actually fall on a stream line, and so there isn't a one-to-one correlation there, so you need some sort of buffer, and it also depends where you call the point on the ground; is it at the outfall, is it in an office, I mean, do they really document the latitude/longitude where it hits the stream, and so there -- you need some kind of buffer. I think if you had a one foot you wouldn't get any to line up, so you need some kind of reasonable distance from the stream where you think that that point is actually on that stream.

MR. GARVEY: And, yeah, I guess -- do you mind if I interrupt?

MR. HARSCH: No, go ahead. I interrupt you all the time. You might as well interrupt me.

MR. GARVEY: So explain a little bit more what a buffer means for the group around a GIS point.

MS. HOLTROP: So you have your point where you're located in the GIS screen or on the computer, and the buffer essentially means a distance around that point. It's a uniform distance around that point, and if you choose something like 500 feet, 500 feet away from that point in any given direction, did you hit that stream line that was selected for enhanced DO protection in this case, so you could be slightly upstream of that segment, slightly to the right, slightly to the left, slightly downstream. We don't know for sure, but it's kind of the closest segment to that point.

MR. GARVEY: If you had to give us the average buffer it would take to make that point hit the stream, can you -- on the order of magnitude, is it 10 feet, 100 feet, 500 feet? Can you answer that question?

MS. HOLTROP: I can't answer that question. I didn't look that closely at the data and I was very unsure of how those points were generated, and that's why Roy sent with that the metadata for how that point shapefile was generated, because that's really what we

need to know, is how those points were located on the landscape, and until we have a better idea of that, we can't give and you distance, so 500 and 1,000 was -- feet were my best guesses at an appropriate distance given the variability and the spacial data layers.

MR. HARSCH: What we have been trying to find out is the -- which segments that are being designated for enhanced protection have -- primarily IAWA's interest is in municipal point source discharges. I think the regulated community probably would like to know about industrial point source discharges -- in other words, who discharges to each of the segments -- so we can figure out is there really a discharge potential related issue by designating a given specific stream segment as an enhanced water segment or not. That was basically the question and information we've been trying to get for some period of time.

MR. STREICHER: That's where we're trying to go, yeah.

MR. SMOGOR: And --

MR. HARSCH: And then the concept was if you didn't discharge directly to that segment but your discharge was upstream, if you were a municipality and you discharged upstream of that enhanced segment, how

close would you have to discharge, in the Agency's opinion, for your -- you know, if there's a problem in that enhanced segment, is the Agency going to say that upstream municipal discharge is likely to have an impact or not have an impact? That's the type of things we were hoping to get and would like to get. Did I say it right?

MR. STREICHER: Yes.

MR. HARSCH: So that's one type of information that we'd like. What else?

HEARING OFFICER MCGILL: Mr. --

MR. FREVERT: While you're thinking about the next thing, let me just give you a quick response and see if that could help us at least think along the same lines. The DO standard that we've selected for any particular stream, whether it be tier one or tier two, is based on our understanding of the relative sensitivity of the biological community that we believe is there. That in and of itself is not going to have much, if any, impact at all on permit limitations, so we would do a normal permitting. If indeed the stream is impaired, whether it be in a level one or level two classification, and a point source is a significant contributing factor to it, I'm not sure the answer to that is immediately go and try to tweak the permit. It's try to figure out

what's going on and to what extent that treatment facility is really not adequately controlling their waste, and we're not going to know that, and I don't believe whether the stream falls in tier one or tier two is going to make any difference in the way we treat that situation.

MR. HARSCH: I don't want to sound flippant in response. What we were hoping to find out was the magnitude of potential impacts on point sources that would -- are there -- who are the point source dischargers that discharge to these enhanced segments so we know if we really have an issue or not. If we don't have an issue, maybe we'll put that one aside and move on to where we do have significant issues and live to fight that battle another day.

MR. FREVERT: I'll be happy to accommodate you there. I'm just saying my initial --

MR. HARSCH: I was hoping I could get a --

MR. FREVERT: -- reaction is to maybe give you a better comfort level of whether it's level one or level two. Unless we know some specific thing, it should be -- it shouldn't affect the way the point source is treated at all.

MR. HARSCH: What else do you have?

MR. GARVEY: We want to make sure that CD-ROM of the data that you sent in Excel format to Dennis I think Friday is -- was that formally put into the record?

MR. STREICHER: Yes. It's Exhibit 22.

HEARING OFFICER MCGILL: That's Exhibit 22.

MR. GARVEY: Which is the 2005 continuous dissolved oxygen data? Is that quality controlled? Have you done the quality control on that? I mean, I guess the question --

MS. DIERS: I'm sorry. I'm going to interrupt for just a second. Dr. Garvey, I know you're not an attorney, but can you try to just ask one question at a time? It's hard for us to follow in the record --

MR. GARVEY: Yeah. Unfortunately, it's the way I think.

MS. DIERS: I know, and I'm sorry and I apologize, but since you're on the record, we do want one question at a time so everybody can react to that question.

MR. GARVEY: Okay. So anyway, that's on the record, right, that CD?

MR. SHORT: In terms of is the data quality controlled, was it checked?

MR. GARVEY: Yes.

MR. SHORT: I mean, we've -- part of this continuous monitoring effort for the last two years has been to work on techniques and methods for deploying continuous monitoring, and so the data we've been collecting, we do calibration at the beginning and the end of deploying the samplers. We take readings with other meters when they're deployed and -- to compare with. The data last year, we put out multiple devices at a single stretch of river to look at different habitat issues. The data we sent you in terms of that is just that raw data that we collected. It's quality control checked in terms of it's meeting our requirements for when we deployed the meters and that type of thing, so beyond that, that's -- it's just basically the raw data we collected.

MR. GARVEY: Okay. What's on that CD-ROM specifically?

MR. SHORT: In terms of data?

MR. GARVEY: What -- Yeah. What kind of data are on that CD-ROM specifically?

MR. SMOGOR: What --

MR. GARVEY: Where do they derive from?

HEARING OFFICER MCGILL: I got to --

MR. SMOGOR: I'm sorry.

HEARING OFFICER MCGILL: I got to echo Counsel's request. Just one question at a time.

MR. GARVEY: Sure.

HEARING OFFICER MCGILL: Thanks.

MR. GARVEY: So where do they derive? From where do they derive?

MR. SMOGOR: The CD-ROM, Exhibit 22, the CD, Exhibit 22, is the same set of data that was sent by e-mail Friday, last Friday. It includes an Excel file that has ten years' worth of dissolved oxygen grab sample observation. That same file also includes continuous monitoring dissolved oxygen data from the years 2004 and 2005 at selected sites. Those were three-day -- on average three-day employments of continuous monitoring at a site. And then another Excel file on that CD is the list of NPDES -- I'm sorry. That list is not on the CD. That list was sent in the e-mail, but it only occurs as hard copy in Exhibit 22. Thank you. Does that --

MR. GARVEY: Yeah. What do you intend to do with those data?

MR. SMOGOR: They were put together based on your request. I don't have any plans for them right now off the top of my head.

MR. GARVEY: Okay. So you collected the data but you don't plan on analyzing it further in terms of looking at it?

MR. SMOGOR: I don't have any plans right off the top of my head, no. It was part -- In part it was to see if we could employ continuous monitoring throughout the state. Obviously it will contribute to our existing databases and will be used in that capacity as we've always used the dissolved oxygen in our existing databases.

MR. FREVERT: I'll just echo, there are multiple purposes for that, and as Matt said earlier, we recognize the need to get into a more heavy technology-oriented era, so number one objective was to develop methodologies, expertise, capabilities to rely on, and the other is to the extent that we produce data even in the early stages, if it's credible, valuable and useful, we'll use that in our data set with all the other data.

MR. HARSCH: I mean, in that -- the letter that IAWA sent to the Agency, we also asked for any data from IDNR or the C-FAR data, and your response, 22, said you don't have the IDNR data and the C-FAR data is not readily available.

MR. GARVEY: My understanding is -- and correct me if I'm wrong -- did I do it again? Was that a question?

MR. HARSCH: So we would like -- IDNR -- Toby, you said you didn't have it. Does IDNR have DO data?

MR. YONKAUSKI: The Department of Natural Resources scientific survey divisions do have some DO data. My understanding of the C-FAR data specifically is that it is still being collected, hasn't been QAed, hasn't been -- gone through the typical university scientific survey peer review to make sure that it's in a form and format that can be acceptable to be useful. I will of course confirm that with the chiefs of the respective surveys to make sure that I'm accurate and get a written response of some sort back to you.

MR. HARSCH: Go ahead.

MR. GARVEY: Is it my understanding that the C-FAR data are an attempt to -- well, one of the many uses of the data are to try and determine whether there's a relationship between habitat, quality and characteristics of water bodies within the state, particularly streams, and dissolved oxygen concentrations?

MR. YONKAUSKI: You're asking if that's your understanding?

MR. GARVEY: Well, is that true or not? Is that one of the reasons -- Is the understanding correct?

MR. CROSS: The C-FAR data was collected as research efforts to help support the development of nutrient standards in the state, and that's its primary purpose as to why it's been collected and undertaken.

MR. GARVEY: But they will be able to look at dissolved oxygen habitat relationships.

MR. CROSS: I believe that's correct, but as Stan Yonkauski just mentioned, they're still in the process of collecting that data, so its availability is such that it hasn't gone to any of those reviews and would be made available.

MR. SHORT: Just to clarify, only -- not all of the studies will look at habitats. Some of them are looking at habitat and other factors; some of them are looking more specifically just at nutrient cycling and dissolved oxygen relationships. So there's a number of different independent studies that are part of the C-FAR -- which is the Council for Food and Agricultural Research -- studies that are being conducted right now, and they've been going on for approximately two years,

so --

MR. GARVEY: Do we know when a report will be due for that?

MR. YONKAUSKI: Potentially, perhaps as far out as a year from now.

MR. FREVERT: Just a little further clarification. That C-FAR research or nutrient research, some of the wetlands work we're doing, some of our own evolution and our monitoring programs, everybody here at the table recognizes we're going to know more about dissolved oxygen five or ten years from now than we do now, and we fully expect that the dissolved oxygen standard is warranting of additional review as time and knowledge moves forward. Our position is that we know enough now to know we can make a significant incremental improvement over the standard we placed on the books 25 years ago. Not that it's perfect, but that it is a major step forward, and we intend to follow that up and we assume there'll be future steps. I want to caution everybody to wait for the next study because there's always going to be a next study.

HEARING OFFICER MCGILL: We're going to go off the record for a minute and just take a five-minute break.

(Brief recess taken.)

HEARING OFFICER MCGILL: Okay. Let's go back on the record. We are continuing with questions and information requests from the Agency and DNR. Mr. Harsch, you want to -- do you have anything further?

MR. HARSCH: No. We're pretty much -- we have explained what it is that we need to be in a position to analyze where we are, and off the record we had some discussions during the break that Jim and Joel and Ann could get together on some of the computer stuff, and the question then is is that going to be enough or are we -- what are we going to need from IEPA on the NPDES dischargers, so we're trying to get a handle on how long it would take to get it from the Agency.

MR. ETTINGER: Are we off the record or on the record?

HEARING OFFICER MCGILL: We're on the record.

MR. ETTINGER: Could we go off the record?

HEARING OFFICER MCGILL: Sure.

(Discussion held off the record.)

HEARING OFFICER MCGILL: So, Mr. Harsch, does that conclude your questioning?

MR. HARSCH: Yes, it does.

HEARING OFFICER MCGILL: We had just a couple follow-up questions. Okay. I think we just have one follow-up question for the witnesses of the Agency and the DNR.

MR. RAO: This is just a clarification. On page 12 of the technical support document you talk about how you came up with the list of sensitive fish, but we are just looking at the numbers just to match. You said there were, like, thirty-five Illinois candidate species identified in the Rankin study and eleven were not selected. That made twenty-four, and then you -- I think you added six more, you know, from Illinois fish species, so there were thirty selected but the list that you provided in table 2 has thirty-one, so I was just wondering where the other one --

MR. CROSS: Yeah, and I think DNR will attempt to answer that question for you. We basically -- To kind of generalize what we did is we started with the Rankin report using rock bass as a benchmark species, and then from there Illinois species were added and subtracted to that Ohio list, and I think at this point I'm going to call on Scott Stuewe to provide more details and clarification for your question.

MR. SMOGOR: Can I interrupt? Are you just

asking for the math to work out? That's what I thought. I think that first sentence, of 35 Illinois candidate species indicated in Rankin as equally or more sensitive than rock bass, that didn't include the rock bass, so rock bass is your 31st species. Is that what you were asking?

MR. RAO: Yeah.

MR. SMOGOR: Okay. Sorry, Joel.

MR. RAO: You didn't get a chance to say your piece.

BOARD MEMBER MOORE: There'll be another opportunity.

HEARING OFFICER MCGILL: Great. I think that concludes the Board's questions. I will open it up to anyone else who has any questions for the witnesses of the Agency or DNR. If you could just identify yourself for the record, please.

PROFESSOR MURPHY: Thomas Murphy, emeritus professor, DePaul University. Questions for --

HEARING OFFICER MCGILL: Professor Murphy, if I could just interrupt you, sir. Do you have several questions or -- I would just invite you to come up here. The court reporter might have an easier time transcribing your questions. Thanks. There's a -- Yeah, the

microphone might help too. Thanks.

PROFESSOR MURPHY: Questions perhaps of Roy Smogor or Joel Cross, either or both. Basis for the question is the organisms use oxygen, they become depleted in oxygen, they have to get oxygen from their environment to replace that, and so there needs to be sufficient oxygen available to them to make up for the oxygen they're consuming. The question is, what's the driving force for transporting the oxygen from the environment into the aquatic organism, into a fish?

MR. SMOGOR: I'm not a fish physiologist. I know that in part, as you have stated, it's -- in part it's related to the partial pressure of oxygen in the water versus the partial pressure of oxygen across the gill surface of the fish where they take it in. That's as much as I know about the physiology of it.

PROFESSOR MURPHY: Okay. But, I mean, I think partial pressure is the important thing. I think from --

HEARING OFFICER MCGILL: Professor Murphy, sorry to interrupt, but if there's -- if you'd like to make some comments that we would consider substantive testimony, why don't we go ahead and swear you in, because it sounds like you've got questions but you want

to give us some background first. Could we go ahead and swear in Professor Murphy, please?

(Witness sworn.)

HEARING OFFICER MCGILL: Thank you. Please proceed.

PROFESSOR MURPHY: I mean, the science of it is, as you say, partial pressure, and the question then is maybe why is the State basing its standards on the concentration of oxygen in milligrams per liter and not on partial pressures?

MR. SMOGOR: It's largely based on the decision made in the USEPA's national criteria document. They address the issue saying that there were two schools of thought on this issue. I'm not familiar with all of the background information on those two schools of scientific thought, but the national criteria document does cite references that are relevant to those two schools of thought, and the experts on the panel, I assume, or the writer of the national criteria document, they chose one school of thought, and that is to couch standards in terms of milligrams per liter versus standards in terms of partial pressure or percent saturation.

PROFESSOR MURPHY: I think what the criteria

document says, it says expressing the criteria in terms of the actual amount of dissolved oxygen available to organisms in milligrams per liter is considered more direct and easier to administer compared to expressing the criteria in terms of percent saturation, and they go on saying that DO criteria expresses percent saturation, such as discussed by Davis, 1975, are more complex and could often result in unnecessarily stringent criteria in the cold months and potentially unprotective criteria during times of ambient -- high ambient temperatures. Point of this is ease of administer is the principal criteria for it. Davis -- The Davis paper cited here and several places in your support document, Exhibit 23, does present recommended standards for dissolved oxygen for fish, and they present those standards in terms of percent saturation. The scientific basis is I think the percent saturation, and it seems to me that if you're going to use a different unit for this that you should in some way document that or justify that, give some references for it, and there are none in your support document that I can see, and the EPA criteria document just makes a statement, and the references they give in fact use percent saturation for their standards.

MR. SMOGOR: I could respond to that.

Again, we used the national criteria document's decision to go with milligrams per liter, and if you look on page 2, the second paragraph of the national criteria document, they do go on and provide more of the reasoning why they chose that one school of thought over the other, and they do reference -- I think it's a paper by Magnussen, et al., 1979, and there's more basis for their choosing this one school of thought in that Magnussen, et al., 1979.

PROFESSOR MURPHY: This school of thought, I'm not sure what that is.

MR. SMOGOR: Well, that's using the term from the national criteria document.

PROFESSOR MURPHY: In that, you know, I referred to a respiration physiology book and that a number of chapters dealt with aquatic organisms and various -- transported various gases into these aquatic organisms, and in those chapters I -- there were -- I saw 88 equations that dealt with the transfer of oxygen, and they all use percent saturation, and in the book I didn't find anything that related to milligrams per liter, so this school of thought, I'm not sure -- I mean, the first justification the criteria document gives is ease of -- it's easier to administer, and I'm not sure that that

should be the reason for choosing it.

The point -- I don't mean to make an academic argument out of this. The point is that they predict different things, that 4 milligrams per liter is much more available to an organism if the temperature is warm than 4 milligrams per liter if the temperature is cold, and you provide -- I don't think you provided any temperatures in your documents, and the studies reported in -- discussed in the criteria document sometimes report temperatures and most of the time they do not. Where they report temperatures, usually they're 20 degrees, and so by implication and -- it's not stated, but the implication is that those standards are based on the oxygen available at 20 degrees, and the oxygen -- the availability of that amount of oxygen in milligrams per liter at 0 degrees is much less. It is 40 percent less or 60 percent less or something like that.

So the reason for bringing this up is are your proposed amendments sufficiently protective of organisms at 0 degrees in cold waters? And also, if you're going to be using milligrams per liter, it seems to me that there should be some justification in your document for doing that because it doesn't agree with the scientific understanding of oxygen transport.

MR. SMOGOR: I understand your concerns. I guess all I can say to that effect is we're deferring to the expertise of the national criteria document in this issue, and the national criteria document provides an explanation. I'm not saying that everyone has to accept that, but it does provide an explanation of this issue and we're deferring to that.

PROFESSOR MURPHY: But --

HEARING OFFICER MCGILL: Just to clarify for the record, the USEPA national criteria document is Exhibit 2 in this rulemaking record.

MR. SMOGOR: Thanks.

PROFESSOR MURPHY: You -- In your support documents, Exhibit 23, in your and Joel Cross' support for that, you find a lot of deficiencies with the criteria document, you say because the criteria -- the EPA '86 warm water criteria are based on information for only a few tested warm water fish species. Well, so of all of their studies, only a few of them relate to Illinois. You also find that particularly for nontoxic substances like dissolved oxygen, sole reliance on laboratory-based acute thresholds is not recommended. No, wait. Well, I -- anyway, you also state on page 15 that very few studies of stream macroinvertebrates are

discussed in USEPA 1986, so you find a number of deficiencies with the criteria document relating to macroinvertebrates, relating to freshwater fishes, relating to the basis -- basing the criteria document particularly on laboratory studies, so it's not clear to me that that document should serve as a foundation for this report.

You spend a lot of time in your Exhibit 23 pointing out deficiencies of the criteria document. It is 25 years old. No, it's -- what is it -- 20 years old. We've learned a lot in 20 years. The Davis paper, which used the percent saturation, is -- predates the criteria document. Okay. So it seems to me if you're going to use milligrams per liter and you indicate that -- you say the Illinois EPA believes that these recommendations to the Board are scientifically sound and defensible in light of the currently available information, but you don't defend those at all, and I don't think they're scientifically sound.

HEARING OFFICER MCGILL: Professor Murphy, I'm going to just ask that we focus on questions at this point. We still have a prefiler who's yet to testify -- that's the District -- but if you had any further questions, this would be the time to do that. Thanks.

And time permitting, I think you --

PROFESSOR MURPHY: I'm fine.

HEARING OFFICER MCGILL: -- you can testify yet more today.

PROFESSOR MURPHY: Which is a lot of my testimony.

HEARING OFFICER MCGILL: Did you have any further questions, then, at this point?

PROFESSOR MURPHY: No.

HEARING OFFICER MCGILL: Okay. Fair enough. Thank you. Any other questions for the witnesses of the Agency or DNR? Seeing none, I'd like to thank all of you for all your hard work and for your participation today. At this point I would like to ask Richard Lanyon from the Metropolitan Water Reclamation District and counsel for the District to come up front. So it'd probably be a lot less disruptive if you just sat there where the questioners have been sitting. That way the Agency and DNR can sit tight, or if the DNR and Agency folks would like to excuse themself, they can certainly do so.

Welcome. If you could go ahead and just identify yourself for the record and if you have any opening remarks.

MS. CONWAY: Good afternoon. My name is

Margaret Conway. I'm one of the attorneys for the Metropolitan Water Reclamation District, and with me today is Richard Lanyon, director of the Research and Development Department for the Metropolitan Water Reclamation District of Greater Chicago. Just by way of background, I just want to give a preliminary short statement. On April 4, 2006, the Metropolitan Water Reclamation District timely filed and served a document entitled "Prefiled Testimony of Richard Lanyon" on behalf of the Metropolitan Water Reclamation District of Greater Chicago in support of the proposed amendments to dissolved oxygen standard. On April 18, 2006, the Metropolitan Water Reclamation District of Greater Chicago timely filed and served its motion to modify and supplement its prefiled testimony and exhibits. I would ask if Mr. Lanyon now would be able to identify that document for the record.

MR. LANYON: This is the document I prepared.

MS. CONWAY: What is that document entitled?

MR. LANYON: It's titled "Amended prefiled testimony of Richard Lanyon on behalf of the Metropolitan Water Reclamation District of Greater Chicago in support of proposed amendments to dissolved oxygen standard."

MS. CONWAY: And is that a true and accurate copy of the amended prefiled testimony?

MR. LANYON: Yes, it is.

HEARING OFFICER MCGILL: I'm going to go ahead and -- if you want to get started, why don't we swear him in, if we could. Would you go ahead swear in the witness, please?

(Witness sworn.)

HEARING OFFICER MCGILL: If you could just restate the question for the witness.

MS. CONWAY: I would ask that you identify that document that you have before you today.

MR. LANYON: It's entitled "Amended prefiled testimony of Richard Lanyon on behalf of the Metropolitan Water Reclamation District of Greater Chicago in support of the proposed amendments to the dissolved oxygen standard."

MS. CONWAY: And is that a true and accurate copy of the amended prefiled testimony?

MR. LANYON: Yes, it is.

MS. CONWAY: We would ask that the amended prefiled testimony be marked as an exhibit for identification.

HEARING OFFICER MCGILL: Okay. So there --

just so we're clear, there's a pending April 18 motion to modify and supplement the April 4 prefiled testimony. Is there any objection to granting that motion? Seeing none, I'll grant the District's motion. Now there's a motion to enter as if read that amended prefiled testimony. Is there any objection to that motion? Seeing none, we'll enter that amended prefiled testimony as if read and enter it as Hearing Exhibit 25.

MS. CONWAY: Thank you. Mr. Lanyon will just summarize his testimony, then.

HEARING OFFICER MCGILL: That would be terrific. Thank you.

MR. LANYON: Thank you. I've been the director of the Department of Research and Development since 1999 and have had a long career with the Metropolitan Water Reclamation District and have been involved with water quality issues for most of my career. I will proceed to summarize my testimony.

I brought -- The testimony is broken down into several issues, the first of which is the designated use class system in Illinois. I also serve as a chairman of a committee of the Illinois Association of Wastewater Agencies. We are developing a proposal for a revised use class system for the state. This will probably be based

on the so-called tiered approach to aquatic life uses similar to what is used in Ohio. We are working closely with the Agency and with a group of stakeholders representing a broad range of interests.

And normally, in developing this use class system, you would look at habitat and biological considerations to identify and to find your tiers. At the start of this immediate proceedings, we were proposing one change in the DO standard. Now that has morphed into a two-tiered system, which is in some way approaching what we're doing in terms of a use classification system, so at some point in the future when there is a proposal before the Board for revising the use class system, the two tiers for the DO standard will -- may or may not be in contention with what is being proposed for aquatic life use classes for the state. I just wanted to bring that to your attention at this time.

I also discuss how difficult the standard is with determining compliance -- the Agency has also referenced that -- and also describe the use attainability analysis study being conducted for the waterways in the Chicago area. The study is being conducted by the Agency. There are actually two studies underway, and these waterways

are different than other waterways in the state in that they're mostly manmade or are irreversibly modified rivers that are used primarily for commercial navigation and urban drainage and recreational navigation. The -- As a part of that study, we're coming up with defined use classes for these waterways both based on aquatic life uses and based on recreational uses, and at some point in the future you'll be hearing the results of these studies with proposed use classes for these waterways, and this again may work into a general scheme of revising the state-wide use classes.

In our waterways, we find that there's very little variability in daily fluctuation of dissolved oxygen. This is primarily due to the nature of the waterways being deep, being effluent dominated and being well mixed. Because of a high turbidity, there is a lack of light penetration and, as a result, a lack of photosynthetic activity. There are some reaches that are relatively stagnant and they do experience wide fluctuations in dissolved oxygen. However, in order to meet the DO standards in these waterways, we have to supplement natural reaeration with supplement aeration, and by doing so, we are reducing the natural variability you see in the DO.

We've deployed automatic dissolved oxygen monitors in our waterways starting in 1998 and two years ago we began to deploy these in wadeable streams in Cook County, and this would -- we see a pattern of dissolved oxygen variability in these wadeable streams, and these -- the current rulemaking would be applicable to these waterways more than the deep-draft waterways. However, we see variations from zero dissolved oxygen to conditions that are supersaturation, around 13 milligrams per liter, and I think in considering the -- either the current proposal on the table or the modified proposal by the Agency and the DNR, there has to be a reasonable expectation of compliance, so for these urban impacted and sometimes combined sewer overflow impacted streams, the current rulemaking should take these conditions into consideration.

I have commented on the testimony of others in previous hearings, and I'll skip over that because I think mostly it's for clarification purposes and really doesn't address the current proposal. However, I would like to comment on the proposal being advanced by the Illinois DNR and the Illinois EPA. One thing I've noticed is that fish were ranked by sensitivity to dissolved oxygen by correlating the relative abundance to

the observed DO concentrations. Now, the two agencies -- that is, the DNR and the EPA -- admit that this is flawed and does not prove that low dissolved oxygen causes low abundance; however, have they gone ahead and used this correlation in developing their approach. On the other hand, they've also used macroinvertebrate tolerance of low dissolved oxygen and based this on an index that measures sensitivity to organic pollution, not sensitivity to dissolved oxygen. I think there has to be more explanation of how these two approaches are supported scientifically.

The use of the seven- and thirty-day averages in the joint proposal needs to be more clear because they were breaking the year up into two periods, a seven-month period and a five-month period. It's not clear if the seven-day averages are for consecutive day periods or for any seven or thirty days out of the five or seven months period.

Also there -- well, we have one of our -- in our -- in my prepared testimony I present information on dissolved oxygen monitoring for the Little Calumet River at the Illinois-Indiana state line. This is one of the stations which exhibits periods of zero DO and would not meet the proposed standard, although it is currently

designated as general use. This is primarily due to conditions that are caused by activities in the state of Indiana, so here is an interstate water that will not meet the proposed standard and some consideration should be given to these -- this situation and to other similar situations in the state.

Normal monitoring for water quality, so-called ambient water quality monitoring, is based on monthly grab sampling or in some cases grab sampling every six weeks, and there's an insufficient amount of data produced by this type of monitoring to support the current joint proposal. With a seven-day and thirty-day average, you just do not collect enough data points within the five- or seven-month period, so I would suggest that there be some consideration for a monitoring protocol to be prepared by the Agency to guide people in the state as to how to apply these standards. It certainly -- Although there seems to be a trend to using continuous monitoring, it certainly would be a disincentive to use continuous monitoring if that would produce the data which would put you into jeopardy with compliance, so I think this has to be addressed so that people can move forward and use the modern tools at hand. But the language in Section 1(c), which addresses the

maxima and minima, could be simplified. It refers now to data which must represent the true maxima and the true minima. What is true, I'm not certain about, but we know what we measure, and I think the language could just simply say it has to be representative of conditions in the stream.

HEARING OFFICER MCGILL: Sir, are you referring to -- you said Section 1(c)?

MR. LANYON: 1(c) in the proposal, yes.

HEARING OFFICER MCGILL: Exhibit 20, the Agency --

MR. LANYON: That's Section D, 1 -- I'm sorry. The nomenclature's a little different. This is Section 302.206, Subsection D, item 3 --

HEARING OFFICER MCGILL: Thank you.

MR. LANYON: -- which refers to the -- that's part of Exhibit 20. Of course -- I would also suggest that some consideration be given to wet weather conditions. We see depressions of dissolved oxygen following wet weather events when there's increased flows and loadings imposed on the stream, and there should be a recognition that these standards may not necessarily apply during those -- that interval of time.

And the last thing I wanted to mention is that

the -- I already suggested the development of a monitoring protocol to help guide compliance with the rule. This protocol should address both time and space issues, time in terms of how often one samples, what interval of data is used, whether it's monthly, daily, hourly, 15 minutes, or in terms of space as to what segment -- or what point in the reach one should monitor, should it be the upstream end of the reach, the downstream end of the reach. Since the State has gone to the extent of dividing up our waterways into water body segments or assessment units, as they were referred to today, we should have some clarity as to where in these segments or units we should be performing the monitoring.

That concludes my testimony. I'll be happy to answer any questions.

HEARING OFFICER MCGILL: Thank you. Are there any questions for Mr. Lanyon?

MS. WILLIAMS: I have some clarifying questions, if you want us to go first.

HEARING OFFICER MCGILL: Why don't you go ahead.

MS. WILLIAMS: Mr. Lanyon, working off your amended testimony, on page 3 you make a statement that using continuous monitoring is problematical because no

USEPA-approved method is available, correct?

MR. LANYON: Yes, I did make that statement.

MS. WILLIAMS: Are you familiar with method 360.1? I'm going to show you what I've marked as Exhibit 25 for identification purposes.

HEARING OFFICER MCGILL: 26.

MR. LANYON: 26.

MS. WILLIAMS: Sorry. 26. Have you ever seen this document before?

MR. LANYON: I can't say that this has come to my attention.

MS. WILLIAMS: Okay.

MR. LANYON: I see it's issued in 1971.

MS. WILLIAMS: Right. That's -- Would you describe it -- I mean, having never seen it before, I'm going to ask you if you can describe it as a USEPA method for monitoring dissolved oxygen or not. Can you answer that?

MR. LANYON: I haven't seen it. However, I did see in the last week a notice that the EPA was considering a -- an approved method on some of the new developments in probes, and so I should have made comment on that, but my testimony was prepared prior to my seeing that recent notice.

HEARING OFFICER MCGILL: If I could just ask counsel for the Agency to identify the document. Is this a USEPA document?

MS. WILLIAMS: Yes. I was hoping I could authenticate it with the witness, but, yes, this is a document obtained from the USEPA Web site, I guess.

MR. SMOGOR: It's NEMI Web site. The National Environmental Methods Index, I think, is the Web site that it came from.

HEARING OFFICER MCGILL: Thank you. That's entitled method number 360.1, approved for NPDES, issued 1971, entitled "Oxygen, Dissolved." Any objection to entering this as Hearing Exhibit 26? Seeing none, we'll grant that motion.

MS. WILLIAMS: You mentioned that you had read something since preparing your testimony, so on that line I just wanted to clarify for the record. In a couple places in your amended testimony -- for example, on page 11 -- you state that the only information you had available on the IEPA/IDNR proposal was a February 16 draft, correct? I just want to clear up for the record, you didn't -- when you amended your proposal, you didn't take into account the Agency's prefiled testimony at that point either, did you?

MR. LANYON: No, I didn't. That was in the works at the time. The material crossed in the mail.

MS. WILLIAMS: And I just want to clear some of those questions up, because I believe there's some cross-references in your testimony that reference an earlier version than the one that we --

MR. LANYON: Right. You're correct. I was referencing the earlier version.

MS. WILLIAMS: So when you reference Subsection D of the Agency's proposed language, would it be correct to state that that is referring to what is now Exhibit 21, our Appendix D, the list of streams on -- why don't I refer you to your testimony on page 12, and you state that -- in the middle of the page it says in Subsection D, no streams were defined.

MR. LANYON: That's correct. I would now be referring to what is now 302.206, Subparagraph C. Now, Appendix -- I didn't have Appendix D at the time I prepared my initial testimony, and that may very well be the list that you referred to. However, I did --

MS. WILLIAMS: It was a place holder, though, at that time for it, right? Does that sound correct?

MR. LANYON: Right. All I saw at the time

was the map, eight-and-a-half-by-eleven map.

MS. WILLIAMS: And on page 13 you began to refer about Subsection E or their definitions, and I just would like to clear for the record that now that is --

MR. LANYON: Subsection D as in David.

MS. WILLIAMS: Thank you. In your testimony on page 12, I believe it is, you request that when the streams become available -- at that point in time the list was not available -- so you state that you want them to be listed on a table and have a standard form of identification. At this time now, having seen Appendix D, would you say that this list satisfies that suggestion in your prefiled testimony with providing the latitude and longitude?

MR. LANYON: Well, to those of us in the profession it may be acceptable. However, I think when you -- in terms of the public, the definition of water body segments or assessment units, as they're called, it needs to be made clearer using commonly available cultural features. The public I think is more aware of river miles, and they are certainly aware of road crossings and those types of cultural features, and I know that in our dealings in our area with the public, the eyes begin to glaze over when you have latitude and

longitude and those sorts of abstractions.

MS. WILLIAMS: Do bridges help?

MR. LANYON: Yes, they do.

MS. WILLIAMS: On page 13 -- I hope I'm understanding this right -- you make some comment about the definition of daily minimum, and I don't know if you can answer this today, but I believe that you're commenting on a draft version of that definition rather than the one that was filed with the Board. I'm not sure if you can tell for sure if that's the case.

MR. LANYON: Without referring to my notes, I believe this reads the same as I saw in the earlier draft. This is Subsection D, paragraph 3, the measurements of dissolved oxygen used to determine attainment or lack of attainment.

MS. WILLIAMS: But you suggest the words "calculation of" should be stricken, and I don't believe --

MR. LANYON: Or I could -- I would suggest --

MS. WILLIAMS: Oh. Go ahead. Go ahead.

MR. LANYON: I'll suggest that it just say the measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the

dissolved oxygen standards in this section must represent actual stream conditions.

HEARING OFFICER MCGILL: Could I just ask -- if you're reading from a document, you tend to go a lot faster than when you're just talking and responding to -- the court reporter may have a hard time keeping up. Could you just repeat the last thing? You're -- I'm sorry. You're reading from a -- the proposed --

MR. LANYON: Reading from Exhibit 20.

HEARING OFFICER MCGILL: You're reading from the rule language that's Exhibit 20.

MR. LANYON: Right.

HEARING OFFICER MCGILL: And you're in Subsection D(3)?

MR. LANYON: Would you like me to reread that?

HEARING OFFICER MCGILL: Yeah, if you could.

MR. LANYON: Okay. Slower.

HEARING OFFICER MCGILL: Thanks.

MR. LANYON: The measurements of dissolved oxygen used to determine attainment or lack of attainment with any of the dissolved oxygen standards in this section must be representative of actual stream conditions, period.

HEARING OFFICER MCGILL: Is that what you're proposing? That's what you're proposing it read, how it should read?

MR. LANYON: Yes.

HEARING OFFICER MCGILL: Thank you.

MS. WILLIAMS: I think I was wanting to get at your comment on the section just prior to that, the daily minimum. It's the last sentence on page 13 of your testimony. Daily minimum --

MR. LANYON: Yes. That language has changed from the earlier draft.

MS. WILLIAMS: Thank you. That's all I wanted to get at.

MR. LANYON: And this makes much more sense.

MS. WILLIAMS: Okay.

MR. LANYON: Thank you.

MS. WILLIAMS: We think so too. And also, just to clarify, I think it's clear in your testimony, but when we talk about the area of the Chicago waterway that is the subject of the use attainability study, the majority of that is currently secondary contact and indigenous aquatic life; is that correct?

MR. LANYON: That's correct.

MS. WILLIAMS: And that this dissolved

oxygen standard for that use category is not being proposed to be changed either by IAWA or by the Agency and the Department, correct?

MR. LANYON: Not in this rulemaking, that's correct. However, there are segments of the waterways that are general use that may be impacted by this rulemaking.

MS. WILLIAMS: And I believe you identify them as 4 miles of the North Shore Channel and 1.6 miles of the Chicago River?

MR. LANYON: Yes.

MS. WILLIAMS: On page 10 of the testimony, you made a statement in the center of the page that the Board has already received testimony from Mr. Terrio, Paul Terrio you identified earlier. I would just like to clarify the record. You're not aware of any formal testimony that Paul Terrio made in this proceeding, are you?

MR. LANYON: Yes.

MS. WILLIAMS: I mean, I know Mr. Terrio presented testimony at various --

MR. LANYON: Did I mix it up with the phosphorus proceeding? I beg your pardon. One rulemaking to the other.

MS. WILLIAMS: You would agree that there's no -- You would agree with my statement that there's no formal testimony from Paul Terrio in this --

MR. LANYON: Then I would -- I stand corrected, and I beg your pardon.

HEARING OFFICER MCGILL: If I could just interrupt you for a --

MS. WILLIAMS: Sure.

HEARING OFFICER MCGILL: -- minute, Ms. Williams. We've gone -- We're -- We've now gone another hour. It's been two hours since we started up again after lunch, and, Albert, do you -- I'm sorry. Mr. Ettinger, do you have some questions?

MR. ETTINGER: I actually just have one.

HEARING OFFICER MCGILL: One? Okay. Ms. Williams, are --

MS. WILLIAMS: I believe I'm actually done, but I would like to look over my notes for a second.

HEARING OFFICER MCGILL: Sure. Why don't you go ahead and do that and then we'll take a short break, and when we get back from that break, we'll continue with witnesses who did not prefile but would like to testify today. We're still on the record, so --

MR. ETTINGER: Do you want me to ask my

question?

MS. WILLIAMS: If you don't mind, yeah.

MR. ETTINGER: I was just going to ask as to Exhibit 5. You give a value for percent, percent of DO values above standard. I was wondering whether that's above the secondary contact standard or above the general use standard, or does it vary depending on where they're --

MR. LANYON: It's above the applicable standard which is shown in the exhibit.

MR. ETTINGER: Oh, I see.

HEARING OFFICER MCGILL: Thank you, Mr. Ettinger. Any further questions from the Agency?

MS. WILLIAMS: Just really briefly. In your final recommendations on the last page of your testimony, you talk about recommending that the Board provide a waiver based on affordability and feasibility of technology. I just want to be clear. None of the proposals before the Board today would impose a stricter DO standard than we have on the books today, would they?

MR. LANYON: No.

MS. WILLIAMS: And you also suggest that the Board consider a separate wet weather standard for dissolved oxygen. Are you aware at this time of any

other states that have done that for dissolved oxygen?

MR. LANYON: I believe there was a move afoot in Massachusetts. I'm not sure if they've enacted a rulemaking or not, but --

MS. WILLIAMS: So you wouldn't know at this time whether USEPA would entertain a standard like that?

MR. LANYON: Don't know whether they would or not.

MS. WILLIAMS: I think that's all I have. Thank you.

HEARING OFFICER MCGILL: Okay. Before we break, any further questions for the District's witness? Seeing none, I thank both of you for participating today, and we're going to take a break.

MR. LANYON: Thank you. It's been our pleasure.

HEARING OFFICER MCGILL: Why don't we go off the record.

(Brief recess taken.)

HEARING OFFICER MCGILL: Let's go back on the record. We have another witness who would like to testify today, Thomas Muth, district manager of Fox Metro Water Reclamation District. I'll turn it over to Mr. Harsch.

MR. HARSCH: Thank you. Mr. Muth, can you please state for the record your name and what your current position is?

HEARING OFFICER MCGILL: Can we -- I'm sorry. Can we go ahead and swear in the witness, please?

(Witness sworn.)

MR. HARSCH: Mr. Muth, can you please state for the record your full name and what your current position is?

MR. MUTH: My name is Thomas Muth, district manager --

HEARING OFFICER MCGILL: Can you turn on the microphone?

MR. MUTH: My name is Thomas Muth, district manager, Fox Metro Water Reclamation District.

MR. HARSCH: And you've had an active role historically in the Illinois Association of Wastewater Agencies?

MR. MUTH: Yes. I'm a past president of the IAWA, Illinois Association of Wastewater Agencies.

MR. HARSCH: And can you please explain for the record what the Fox Metro Water Reclamation District is?

MR. MUTH: We're a publicly-owned wastewater

facility in Oswego, Illinois, treating wastewater for a population of 250,000 residents for five communities and portions of two other communities.

MR. HARSCH: And what are those communities?

MR. MUTH: Communities of North Aurora, Sugar Grove, Montgomery, Oswego, Aurora, portions of Yorkville, Batavia, and unincorporated Boulder Hill.

MR. HARSCH: Thank you. And you have some testimony you'd like to present today?

MR. MUTH: Yes, I do.

MR. HARSCH: Please proceed.

MR. MUTH: It is the position of the Fox Metro Water Reclamation District that the inclusion of Fox River stream segment number 270 upon the list of stream segments needing enhanced dissolved oxygen protection is not warranted. This segment should be treated as general use waters. Any change should be considered only after the characterization of DO and other parameters in the segment have been assessed by the Fox River Study Group.

Fox Metro has collected a limited amount of data which segments that Fox River stream segment number 270 does not currently meet the existing general use dissolved oxygen standards during the summer months.

During 2005, Fox Metro hired Walter E. Deuchler Associates, a consulting engineering firm, to conduct a continuous DO monitoring at three stations on the Fox River. Two of the stations were located upstream and one of the stations was located downstream from the Fox Metro publicly-owned treatment works outfall. One of the monitoring stations was located about 1.1 miles upstream from the start of the Fox River segment number 270. The remaining two stations were located within the stream segment.

Fox Metro conducted the DO monitoring on its own during May, June and July of 2005. DO measurements were conducted every 15 to 30 minutes on the days when monitoring was performed. A preliminary analysis of the data indicates that in May, the current minimum DO standard of 5.0 milligrams per liter was met nearly 100 percent of the time at all three monitoring locations. During June, as water temperatures increased, approximately 25 percent of the data points at all three stations fell below 5.0 milligrams per liter. During July, about 40 percent of the data points at all three stations fell below 5.0 milligrams per liter. Therefore, it is Fox Metro's position that Fox River segment number 270 cannot meet the current or the proposed DO standards.

It is to be noted that concerns about water quality in the watershed led to the formation of the Fox River Study Group during 2001. Fox Metro is a stakeholder in the study group. With encouragement from the IEPA, the Fox River Study Group developed a multiphase study plan with objectives including long-term coordinated river monitoring and the development of computer models for the watershed. The first phase of the study was released by the Illinois State Water Survey during March 2004. The Illinois State Water Survey observed that during summer low-flow conditions, the existing DO standards were not being met in the Fox River from Johnsburg to Oswego. The report also concluded that insufficient data is available for the Fox River and that more intensive data collection is needed.

Presently, the Fox River Study Group is in the process of developing a three-year water quality monitoring plan that includes continuous DO monitoring at sixteen stations. The DO monitoring will be conducted for at least thirty days during two or three summer low-flow periods. In conclusion, Fox Metro respectfully requests that the Illinois Pollution Control Board not approve this segment as an enhanced segment with more restrictive dissolved oxygen standards until such time as

the Fox River Study Group has completed its full water quality assessment of the Fox River. Thank you.

HEARING OFFICER MCGILL: Thank you very much. Are there any questions for the witness? Mr. Ettinger?

MR. ETTINGER: Yeah. I guess -- Is -- That study that you discussed that took the data that you referred to in your testimony, has that been written up anywhere?

MR. MUTH: We can put the information together. I have to work through our consulting engineer to retrieve the information in a readable format.

MR. HARSCH: Albert, were you referring to the study done by the -- the survey?

MR. ETTINGER: No, the Deuchler study that he was referring to. Specifically, I guess what I was hoping to find -- and this is a request -- is whether it was done in terms of -- where it was done in the water and the temperature it was done in the water in terms of the sorts of things we were talking about this morning and whether it would be possible to discern that from the study.

MR. MUTH: We could provide that information to you.

MR. ETTINGER: Thank you.

MR. RAO: I had a couple of questions, Mr. Muth. Is your wastewater treatment plant the only discharger in this segment that you're talking about?

MR. MUTH: No, it is not.

MR. RAO: Are there other municipal wastewater treatment plant discharges or are they industrial discharges?

MR. MUTH: Are you referring to stream segment 270?

MR. RAO: Uh-huh.

MR. MUTH: I'm not 100 percent sure, but I believe there is one for sure, Yorkville Bristol Sanitary District.

MR. RAO: And do you --

MR. HARSCH: That would be downstream some --

MR. MUTH: Eight miles.

MR. RAO: Do you aerate your effluent?

MR. MUTH: Our effluent drops approximately five feet before it enters the Fox River, if that could be referred to as aeration.

MR. RAO: All right. Thank you.

HEARING OFFICER MCGILL: Thank you. Any

further questions for the witness? Seeing none, thank you very much for participating here today.

MR. MUTH: Thank you very much.

HEARING OFFICER MCGILL: Why don't we go off the record for a moment.

(Off the record.)

HEARING OFFICER MCGILL: At this point we only have one other witness who signed up to testify today. That's Professor Murphy from DePaul University. After the Professor's testimony and questions for Professor Murphy, I'll ask if anyone else is interested in testifying today. If not, we'll conclude today's hearing with a few procedural items such as scheduling our status conference call. With that, I would just remind Professor Murphy that you've already been sworn in, and please proceed with your testimony.

PROFESSOR MURPHY: I had submitted public comments. Could I have them just incorporated as if I had read them?

HEARING OFFICER MCGILL: Well --

PROFESSOR MURPHY: What's your suggestion on that? I can --

HEARING OFFICER MCGILL: Is it your -- You had filed what has been marked as public -- what has been

designated public comment 83.

PROFESSOR MURPHY: Okay.

HEARING OFFICER MCGILL: It's considered a public comment because it did not come in in time for the prefiled filing deadline, but you certainly can move to have it entered as if read, and anyone at this point can object to that if they have any objection.

PROFESSOR MURPHY: Just -- Then perhaps I can just make a few brief comments, a summary of that or --

HEARING OFFICER MCGILL: Would you like to read your -- It's about -- It looks like it's about five pages long. Would you like to read it or would you rather me see if anyone objects to your motion to have it entered as if it was read?

PROFESSOR MURPHY: Yeah, if you would see if anybody objects to that.

HEARING OFFICER MCGILL: Does anyone object to that motion?

PROFESSOR MURPHY: I mean, it has been submitted to the list.

BOARD MEMBER MOORE: The service list?

PROFESSOR MURPHY: The service list.

HEARING OFFICER MCGILL: Okay. So the

motion is to have public comment 83 filed by Professor Murphy April 20 entered as testimony as if read. Is there any objection to that?

MS. WILLIAMS: No objection.

HEARING OFFICER MCGILL: Seeing none, I'll grant that motion, and if you'd like, you can summarize, or if you had --

PROFESSOR MURPHY: Yes, just a brief --

HEARING OFFICER MCGILL: -- actual testimony. Please proceed.

PROFESSOR MURPHY: Okay. So again, I'm Thomas Murphy, and what I've tried to say in the comments, that I don't think the proposed standards are based on the current science of oxygen transport in systems and that the Agency's support documents don't demonstrate that their proposed amendments will be protective of aquatic organisms at low temperatures, and so that -- I mean, I recommend that -- the current regulations have been enforced for 34 years. It's tough to change these regulations; that the proposed regulations are only incremental changes in these regulations, in the current regulations, and my suggestion is that the Agency go back and base new regulations on the current science rather than these

incremental changes, so I -- we need a revolutionary change in the regulations and not just incremental changes, and that not being the case, that their proposed regulations add then additional standards that address the issues that may occur at low temperatures. Thank you very much.

HEARING OFFICER MCGILL: Thank you. Are there any questions for Professor Murphy? Seeing none, I thank you very much --

PROFESSOR MURPHY: Thank you.

HEARING OFFICER MCGILL: -- for participating today. Professor Murphy's public comment 83 is now Hearing Exhibit 27, and that has been entered into the record as if read. Thank you.

Is there anyone else who wishes to testify today? Seeing no response, let's go off the record for a moment.

(Discussion held off the record.)

HEARING OFFICER MCGILL: Just a few procedural items before we adjourn, and I will issue a hearing officer order to this effect, but we have set up a status conference call for May 15 -- that's a Monday -- at 10 a.m. Earlier a motion was granted for an additional hearing. I'll mention that anyone may file written public comments with the clerk of the board.

Electronic filing is available. You can pose any questions you have about filing on clerk's office on line to our clerk's office.

Filings with the Board, whether paper or electronic, must also be served on the hearing officer and on those persons on the service list. I will just remind you to please check with Sandy Wiley of our office to make sure you have the most recent version of the service list.

Copies of today's transcript should be available by May 4 or 5, and we'll post them on our Web site shortly after receiving them. If anyone has any procedural questions, feel free to contact me. Are there any -- Why don't we go off the record for a moment.

(Discussion held off the record.)

HEARING OFFICER MCGILL: The status conference call that we're having on May 15, we're hoping to get an update on where IEPA -- I'm sorry -- IAWA stands in terms of receiving information from DNR and IEPA and IAWA's assessment on how long its evaluation of that information will take. We will also discuss potential hearing dates.

With that, are there any other matters that need to be addressed at this time? Seeing none, I would like

to thank everyone for all their hard work and for participating here today, and this hearing's adjourned. Thank you.

(Hearing adjourned.)

STATE OF ILLINOIS)
) SS
COUNTY OF ST. CLAIR)

I, KAREN WAUGH, a Notary Public and Certified Shorthand Reporter in and for the County of St. Clair, State of Illinois, DO HEREBY CERTIFY that I was present at Illinois Pollution Control Board, Springfield, Illinois, on April 25, 2006, and did record the aforesaid Hearing; that same was taken down in shorthand by me and afterwards transcribed, and that the above and foregoing is a true and correct transcript of said Hearing.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my Notarial Seal this 4th day of May, 2006.

_____

Notary Public--CSR

#084-003688