ORIGINAL

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

October 25th, 2004

IN THE MATTER OF:

INTERIM PHOSPHORUS EFFLUENT
STANDARD, PROPOSED ILL. ADM. CODE 304.123 (G-K) R04-26
(Rulemaking - Water)

Proceedings held on October 25th, 2002, at 10 a.m., at the Illinois Department of Natural Resources, Lakeview A, B, and C, One Natural Resources Way, Springfield, Illinois, before John Knittle, Chief Hearing Officer.

Reported by: Beverly S. Hopkins, CSR, RPR
CSR License No.: 084-004316

KEEFE REPORTING COMPANY
11 North 44th Street
Belleville, IL 62226

A P P E A R A N C E S

ILLINOIS POLLUTION CONTROL BOARD
Illinois Department of Natural Resources,
Lakeview A, B, and C,
One Natural Resources Way, Springfield, Illinois
BY: MR. JOHN KNITTLE, Hearing Officer
MR. ANAND RAO, Board Member
MS. ALISA LIU, P.E, Board Member

-AND-

ILLINOIS POLLUTION CONTROL BOARD
1021 North Grand Avenue East
P.O. Box 19274
Springfield, Illinois 62794
(217) 524-8500
BY: MR. G. TANNER GIRARD, Ph.D., Board Member

-AND-

ILLINOIS POLLUTION CONTROL BOARD
2125 South First Street
Champaign, Illinois 61820
(217) 278-3109
BY: MR. THOMAS E. JOHNSON, Board Member

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794
(217) 782-5544
BY: MR. SANJAY SOFAT
MR. TOBY FREVERT

ENVIRONMENTAL LAW & POLICY CENTER, PRAIRIE RIVERS NETWORK, AND SIERRA CLUB
35 East Wacker Drive, Suite 1300
Chicago, Illinois 60601
(312) 795-3707
BY: MR. ALBERT F. ETTINGER, ESQ.
PRAIRIE RIVERS NETWORK
809 South Fifth Street
Champaign, Illinois 61820
(217) 344-2371
BY: MS. BETH WENTZEL

A P P E A R A N C E S

(Continued)

GARDNER, CARTON & DOUGLAS
191 N. Wacker Drive, Suite 3700
Chicago, Illinois 60606
(312) 569-1441
BY: MR. ROY M. HARSCH, ESQ.

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HEARING OFFICER KNITTLE: My name is John Knittle. I'm the hearing officer to this rulemaking proceeding. I am an attorney assisting Board Member Johnson who is the assigned board member. This is R04-26, In the Matter of Interim Phosphorus Effluent Standard, Proposed 35 Ill. Admin. Code 304.123 (G-K). With me today are Board Member Tom Johnson, who is coordinating this rulemaking, Board Member Tanner Girard to his right, to your left; we have a technical staff, Anand Rao and Alisa Lui. Also in the back row we have Marie Tipsord and Erin Conley also with the Board.

You're all familiar with the background in this proposal. Just in case there isn't anybody that isn't, I'll give a really brief summary. Essentially the Agency is asserting in the process of developing the State's Numeric Nutrient Standard pursuant to its Triennial Water Quality Standards Review, they expect to file a Nutrient Standard Petition with the Board in early 2007. However, they're proposing this effluent standard for phosphorus limit hard concentrations of phosphorus that may result in detrimental levels of plant and algae growth on the interim basis. They want this to apply until the Board adopts a Numeric Quality Standard for Phosphorus.

We held a rulemaking hearing on this matter back on August 30th in Chicago. In addition to building a record in this rulemaking, that hearing was also held to fulfill the

requirements of Section 27(d) of the Act at the Department of Commerce and Economic Opportunity. The requirements conducted an economic impact study. Nobody had any comments or questions regarding the DCO's decision not submit that study and the hearing reflects that. The transcript of that hearing is at the Board's website at www.ipcb.state.il.us.

This hearing today was noticed pursuant to the Act and Board's regulations and was published on September 30th.

One note, we have some of the pre-filed testimony, and actually all of the pre-filed testimony, since the last hearing available over there if somebody needs a copy. We also have a sign-up sheet for the notice and service list. If you want to be on those, you need to sign up. Those on the notice list will only receive Board opinions and orders and hearing officer orders. Those on the service list will receive these documents plus other filings such as public comments. Aside from the witnesses who have filed pre-filed testimony, if anybody wants to testify today, let me know, and time permitting, we will proceed with the testimony of those people. We'll do that after the scheduled people so I don't think it should be a problem. We don't have a shortage of time here today. After the hearing we're going to set a written public comment period. If anybody here doesn't wish to testify today, they can also file a public comment.

Part 102 of the Board's procedural rules govern this hearing. All information that is relevant will be admitted. All witnesses will be sworn and subject to cross-examination. After all the testimony is complete, we will allow parties to provide closing arguments or a closing statement -- more a closing statement in a rulemaking hearing. Anyone can ask a question of any witness. Ask it in an orderly fashion, and that's all I have. I want to introduce Board Member Johnson, ask him if he has any comments he would like to have at this point.

MR. JOHNSON: Thank you all for coming. We have been spending a lot of time together lately. And I want to assure you we will continue to do so and also assure you that this rulemaking will get all due consideration. Thank you.

HEARING OFFICER KNITTLE: We've also talked before the hearing about the order of witnesses here today and we agreed to put Mr. Scheaffer on first. But before we do that, I wanted to allow the parties, and those interested, a chance to introduce themselves starting with the Agency. I'm Tony Frevert, F-R-E-V-E-R-T, I'm the manager of Water Pollution Control Division.

MR. SOFAT: Sanjay Sofat, attorney with the Agency.

MR. HARSCH: Roy Harsch with the law firm of Gardner, Carton and Douglas on behalf of the Illinois Association of Wastewater Agency.

MR. DAUGHERTY: Jim Daugherty on behalf of the Illinois Association of Wastewater Agency.

MR. ETTINGER: Albert Ettinger. My clients today are Sierra Club, Environmental Law & Policy Center and Prairie Rivers Network.

MS. WENTZEL: Beth Wentzel with Prairie Rivers Network.

MR. LEMKE: Mike Lemke with the University of Illinois in Springfield.

HEARING OFFICER KNITTLE: Okay. Mr. Sofat, do you have anything you want to say before we get started?

MR. SOFAT: The Agency will have questions for the testimony that will be read today and also we have Agency comments at the end of the day and also the Agency will file written comments. Other than that, we don't have any witness or any information that we would like file at this point.

HEARING OFFICER KNITTLE: Great. Move up here so the court reporter can hear him, please.

MR. ETTINGER: First of all, I want to make clear, I'm not really presenting Dr. Scheaffer. I did file his testimony as a favor, so to speak, but we have talked early but I don't represent Scheaffer International in any sense. I went on tour of Scheaffer plants and mentioned this proceeding to Scheaffer and urged him to make his views known. If he had any at that time, I submitted them to him, but I have had nothing to do with

his testimony nor am I representing Scheaffer International or Dr. Scheaffer today.

HEARING OFFICER KNITTLE: Thank you for that clarification. Mr. Scheaffer, you want to come on up and have a seat and we'll swear you in. You can pick and choose between the two available seats.

MR. ETTINGER: I want to point out it may be -- it may be reasonable in this case if Dr. Scheaffer were to read his testimony, if that's desired by the Board. As to the other witnesses, I do want to point out I think we would really save a lot of time and paper if we didn't read the testimony complete with footnotes and references, just to give a summary, would that be okay?

HEARING OFFICER KNITTLE: Okay. That's acceptable to me as long as none of the other parties object. We can take that evidence as read into the record. But, Mr. Scheaffer, are you going to read that?

(The witness was sworn.)

MR. SCHEAFFER: It's a pleasure to meet with the Board and -- and my written testimony, I mention something that very few people are aware of, and that is the Illinois General Assembly in the late '60s passed or created what they called the Lake Michigan, an Adjoining Land Study Commission. And the purpose of the commission was to create a Bill of Rights for Lake Michigan.

It was concerned about the quality of Lake Michigan. And they came to me at this staff of the University of Chicago and asked me would I be their executive director. Well, I agreed to do that, so we put an old battery of graduate students working on their Ph.D.s to come up with a Bill of Rights for Lake Michigan. And at that time, as we were finishing, the Secretary of the Army asked me if I would be his science advisor. And so in 1970 I went there and I took my Bill of Rights for Lake Michigan with me, and that, in essence, is the Clean Water Act.

You've read the Clean Water Act. What does it say? The first goal says it's a goal of the nation to eliminate the discharge of pollutants into the navigable waters by 1985, and people say, well, what does that mean. I said, well, it means that we missed it but it's still the goal, to eliminate the discharges. And some people say discharges are anything above the standards. But if you read the congressional record, when the law was passed, Senator Muskie says this law means one simple thing: That rivers and streams are no longer a part of the sewage treatment process. In other words, as simulative capacity was to be reserved for other things rather than treating sewage. So as I reviewed your standards, I felt they were very good standards moving towards the objective of no discharge. Now some people say that's not logical or feasible but people call it Scheaffer's Systems.

But in 1980, that's 24 years ago, the Trammell Crow Company built a Scheaffer System at what was called the Hamilton Lakes Development. There's five million square feet of office/hotel space on 274 acres and all the wastewater is reclaimed and reused on that site. No discharge of anything. The sprinkler system, I think we've got sprinklers in there, is charged with the reclaimed water, multiple use of the water, and it was done because it was cost effective. And so the point is Illinois, where the Clean Water Act really was born, which I've never mentioned to a public body, now you got to take credit for some of it. It was done in Illinois and the first system that showed you could eliminate odors, you could eliminate sludge, and you could eliminate discharges into the waterways. So it's been demonstrated to be cost effective.

And one thing I would like to read is the Illinois Association of Waste -- Wastewater Agencies on page 54. After saying to eliminate or to reduce the discharges to the proposed USEPA standards would cause five billion in capital and approximately one million to operate --

MR. ETTINGER: Excuse me, Dr. Schaeffer, I think you're referring to a report, a dense report, that was alluded to or perhaps in the record that the Agency put in as part of its testimony?

MR. SCHAEFFER: Yeah. What it says, based upon review of

information available for so called natural systems, the IAWA believes that the following natural systems may offer the potential to meet low total nitrogen and total phosphorus levels at aerated and facultative lagoons, constructed wetlands, land application systems and overland flow. And then they say, however, additional studies of these systems is needed to determine if it is possible to rely on the harmony of natural processes in such systems to meet low total nitrogen, total phosphorus effluent standards.

Well, the Hamilton Lake Project started operating in 1980. It's still operating. So there's 24 years of records shows no discharges and a very highly developed site. There are very few places where you would have that much development in the state of Illinois, and it's still in operation. And there are more than 20 other ones operating. And some communities are now saying we want to reclaim and reuse all of our wastewater. So there's an illustration and there are illustrations in Illinois where that's being done.

And then the final thing I think you've got to keep in mind, there's a significant event that occurs every year. We find it every month. Every month we add six million people to the world population. But we've got the same amount of land and water. So the way we manage land and water, this last month isn't good enough for this month, and so since we have no more

land and water, we've got to make multiple use of our land and water. And in my testimony I show that there are only a little over one percent of the farmland in Illinois you could reclaim and reuse all the wastewater.

Now maybe it's not properly located but it's a goal towards which we should move. And if we took flood plain lands, well, it stores the flood waters when it occurs, but that occurs very few days in a year. The rest of the days we could use it to recycle the nutrients in our wastewater, the nitrogen and phosphorus that you're talking about and then you could say, well, that would increase agricultural productivity, and that's right. And if you select the right crops, you can sequester carbon, so you would -- one acre of land you would be mitigating floods, improving water quality and improving air quality and improving farmer income.

And I believe you have heard people testifying that theoretically an acre of land could be managed to sequester 300 tons of carbon a year. And carbon futures are selling at six to $12 a ton, so I think we've got to look in not a simple, single focus that, hey, we treat sewage, we truck the sludge away and we put the effluent and nutrients in the river and that's the way it's intended.

But as you all know, there's 7,800 square miles of dead water in the Gulf of Mexico from these nutrients we're throwing away. So at some point in time we've got to start thinking in a

more synthesized way and realize that waterways are important things, and we've got to manage them and all of us are taught the hydrologic cycle. Unfortunately we're not taught the nutrient cycle. The plants grow. The animals eat the plants. I eat the animals and nutrients are now in me. They leave the body and I want to put them in the Gulf of Mexico. Instead of saying why don't we use them to grow more plants instead of creating anhydrous ammonia out of imported oil and take the flex, let's recycle the nutrients.

So I feel of all places Illinois, where the no discharge of pollutants was born and where the first moderate recycling system was put into place, ought to see to reclaim and reuse our wastewater. And then to give you the practicality of it, a million gallons of wastewater can be reclaimed and reused on less than 300 acres of land. So the land is all here. And I think there's a basis for moving towards clean water. And to do that we've got to reclaim and reuse our nutrients, so that's it.

HEARING OFFICER KNITTLE: Thank you, sir. Could you -- Are you going to offer your testimony, your pre-filed testimony --

MR. SCHAEFFER: Yes.

HEARING OFFICER KNITTLE: -- as it is read? Any objection of putting that into the record?

MR. SOFAT: No.

HEARING OFFICER KNITTLE: We'll admit that as Exhibit 1.

Any questions of Mr. Scheaffer? Mr. Ettinger?

MR. ETTINGER: I have just one. Are there other organizations or companies which make land treatment systems in the United States in addition to Schaeffer International?

MR. SCHAEFFER: Well, there certainly are, and many people can obviously reclaim and reuse the wastewater so it's not a monopoly or anything. And I would like to submit two -- two additional papers that show examples. One is a -- there's a project in Barrington at Jack Nicholas's Golf Course incidentally where there are multi-million dollar houses looking into the Scheaffer Systems and the lawns are irrigated right next door to them and obviously there aren't any odor or problems. But could I submit these? Here's two.

HEARING OFFICER KNITTLE: All right. I got one entitled Wynstone Modular Reclamation and Reuse System, we'll mark that as Exhibit No. 2; and the one entitled North Fork Cleanwater Project in Timberville, Virginia, we'll mark as Exhibit 3. Does anyone want to take a look at those before we accept them into evidence? Any objections? Seeing none, we'll admit those as Exhibit 2 and 3. Thank you, sir.

MS. LIU: I do have one question for Mr. Scheaffer.

HEARING OFFICER KNITTLE: I'm sorry. Would you mind having a seat again. I was premature. Ms. Liu.

MS. LIU: Sir, you speak of a world with the vision for the

future and it almost seems larger in perspective than this rulemaking itself. I was just wondering what other avenues you were exploring, whether you had talked to perhaps the agricultural community into getting them interested in using this as a resource?

MR. SCHAEFFER: Two weeks ago Dr. Harrary (phonetic), who is one of the leading scientists, engineers in Morocco, spent 10 days in Illinois looking at these systems. We've already built one in Agadir, Morocco, at the Premier Agricultural College and we wanted to do it, not only in Morocco, but across the North Africa going into Algeria, Libia, and Egypt. And while we're sitting here, they're building one in Mongolia and the Indian government is talking about doing systems at New Delhi, so people are catching on because it's simple. Because when you look at waste, irrespective, there are a lot of books you can write on it but it comes down to two simple questions: You either reclaim or reuse it or you relocate it. You don't make anything disappear. So I'm saying reclaiming and reusing it is a much more logical decision than assuming that we can relocate it when we see the effects of relocating.

Take all the pharmaceuticals, most of them go right through an aggravated sludge plain, go down the river. I've always said the best way to reduce the cost of prescription drugs, find out who has high blood pressure, move them downstream. Let them get

it, you know, free, right? So there are a lot of things going on. And many of these people here have heard me talking about this for decades and feel it's not practical but more and more people are doing it, especially the big homebuilders. They're saying we don't like liability, etc., we'll just reclaim and reuse all the wastewater on our golf course or on our parks.

MS. LIU: Thank you very much.

HEARING OFFICER KNITTLE: Thank you, Dr. Schaeffer. Mr. Ettinger, I notice that Mr. Lemke is here now.

MR. ETTINGER: Yes, I guess we could go now if you like.

HEARING OFFICER KNITTLE: Mr. Harsch --

MR. ETTINGER: Okay. I put together this package and there's an introduction which sort of says we're going. And then there is a pre-filed testimony of Albert Ettinger. That's actually the nature of a legal brief and I am pleased at some point to answer questions about that if anybody has any, but I don't propose to read the testimony here. And actually if you do have questions to me, I would rather hold those to the end too because Professor Lemke is here. I would rather get Beth Wentzel and Professor Lemke done instead of questioning of me since I'm going to be here all the time any way. The same goes with part four of the testimony which is the suggested part four, the package, which is the suggested reworking of the Agency language to address some of the drafting problems that were raised at the

last hearing. That also I'm probably the best person to answer questions about that proposed alternative language but I suggest we hold that until later too.

Having said that then, I think Dr. Lemke would probably be the logical person to go next. I think it would be -- with your permission, I think it would be satisfactory for him to read the introduction to his testimony and then take questions.

HEARING OFFICER KNITTLE: That's fine with me. Why don't you have a seat up there. What date was his pre-filed testimony from?

MR. ETTINGER: October 15th. It's in the package. It's part of the -- unfortunately, I should have made more clear when I filed this, in retrospect it's one big package that consisted of the pre-filed testimony of exhibits and then the pre-filed testimony of Dr. Lemke and then there's the pre-filed testimony of Beth Wentzel which has excerpts, and then a part four which is the alternative or proposed alternative language and just two sheets explaining what was attempted to do with the draft language.

HEARING OFFICER KNITTLE: Okay. You want to offer his part of the package as read as a separate exhibit or what?

MR. ETTINGER: Yes, we can offer, I guess, the pre-filed testimony. I'm not sure what we called it.

HEARING OFFICER KNITTLE: Exhibit 4. Any objections to

entering the pre-filed testimony of Professor Lemke as is read as Exhibit 4? Seeing none, we'll admit that. Mr. Ettinger, do you want to have him --

MR. ETTINGER: Yes. Dr. Lemke, would you please read just the part of your testimony from -- going from introduction down to qualifications and I think that will --

MR. LEMKE: Including qualifications?

MR. ETTINGER: No, skip qualifications. We'll let people read that. And I think just the introduction is sufficient for the people who didn't bother to read their package in advance.

MR. LEMKE: Ready?

HEARING OFFICER KNITTLE: Yes, sir. Please swear him in.

(The witness was sworn.)

MR. LEMKE: Introduction: Eutrophication is the most wide-spread water quality problem in the U.S., and say Carpenter, et al., 1998, and accounts for over one half of impaired river reaches in the United States, cited USEPA report in 1996.

On the basis of my experience as a biologist who has worked in Illinois aquatic systems, I think it is important that Illinois strictly limit increase discharges of phosphorus going into Illinois rivers and streams. I would like to stress three major points in this introduction which I describe in greater detail in the body of this testimony.

First, it is important that rivers and streams be protected

from a natural level of phosphorus just as it is important that lakes be protected from such pollutions. While early research described the relationship between excessive phosphorus and harmful environmental effects of lakes, it is now well known that excess phosphorus harms riverine systems. Both extensive research documented in the scientific literature and my own experience working in Illinois rivers and stream support this observation.

Second, the addition of naturally high amounts of phosphorus to a river or lake almost always has some environmental effect. In Illinois phosphorus most often ends up in the algal and bacterial growth and where phosphorus is limiting, further addition of phosphorus will lead to a natural growth of algae and bacteria. Phosphorus enriched systems often support algal and bacterial growth at levels that are considered offensive and harmful to the environment. Further, even when a natural phosphorus loadings do not immediately affect the stream segment they initially entered, they may affect the downstream waters.

Finally, while excessive levels of phosphorus in any form can be a problem, inorganic, soluble phosphorus is immediately biologically available as a nutrient for algae and bacteria growth. Other factors such as suspended particles and amounts of sunlight and flow rate are all factors affecting the particulars

of the outcome of the phosphorus enrichment. Even phosphorus that is in particulate form seemingly unavailable can be subsequently released in the benthos and affect the water in which it was stored or contribute to problems downstream. These factors must be considered in the development of the management plan.

HEARING OFFICER KNITTLE: Thank you, sir. We've admitted his pre-filed testimony as it is read. At this time it's appropriate to see if anyone has any questions. Dr. Scheaffer, does anyone have any questions?

MR. SCHAEFFER: No.

HEARING OFFICER KNITTLE: Mr. Harsch?

MR. HARSCH: Dr. Lemke, you're still researching, studying the issue of the impacts of phosphorus on river systems are you not?

MR. LEMKE: I didn't hear the last part.

MR. HARSCH: On river systems?

MR. LEMKE: Yes.

MR. HARSCH: You don't mean to leave the impression that everything is known about that problem?

MR. LEMKE: I do not want to leave that impression.

MR. HARSCH: Do you have an opinion if you eliminated all of the publically owned treatment works effluent discharging up stream how long it would take for the drain pool of the Illinois

river to recover?

MR. LEMKE: I have an opinion that it would be a considerable amount of time. And due to that, I mentioned like flow rate, the way water is pumping through the systems and just the amount of reservoir of phosphorus that has accumulated in some of these systems, it's a very diverse reach of river.

MR. HARSCH: In page -- in figure five of your pre-filed testimony is photographs of fish kill that occurred --

MR. LEMKE: Uh-huh.

MR. HARSCH: -- in South Pigley in July of 2003?

MR. LEMKE: True.

MR. HARSCH: The Pollution Control Board currently has the phosphorus limitations that would apply to discharge upstream of Pigley; isn't that correct?

MR. LEMKE: I'm not aware of that.

MR. HARSCH: Give an opinion as to the relative magnitudes of the phosphorus loading that is attributable to public treatment works versus that is attributable to agricultural practices in the state of Illinois?

MR. LEMKE: Do I have an opinion?

MR. HARSCH: On the relative magnitude on those?

MR. LEMKE: Not a quantitative sense, only a concentration sense.

MR. HARSCH: Are you aware that the State of Illinois

Environmental Protection Agency is currently evaluating the whole issue of nutrient loadings in the development of proposed final nutrient regulations?

MR. LEMKE: I'm aware of the issue but not the particulars.

MR. HARSCH: Are you participating in -- So you're not participating in the Illinois EPA Stakeholder Group?

MR. LEMKE: I was approached by somebody at a recent conference but, no, I've not attended any of the hearings or of briefings of the Illinois EPA.

MR. HARSCH: Like your research, you're aware that's an ongoing effort?

MR. LEMKE: I'm aware of that.

MR. HARSCH: Are you aware that the Illinois Pollution Control Board used to have a phosphorus limitation that would be applicable to discharges in the Fox River and repealed or removed that limitation because phosphorus was in essence not the limiting nutrient?

MR. ETTINGER: I object to the characterization of the question but Mr. Lemke can answer it to the extent that he knows what the Pollution Control Board rules are.

MR. LEMKE: I wasn't aware of the overturning of that. I'm kind of interested in finding out how they did that.

MR. HARSCH: I don't have anything further.

MR. ETTINGER: I have one. Is Big Lake typologically

connected to any river or stream?

MR. LEMKE: Yes, South Big Lake and occasionally North Big Lake is seasonally connected, especially during flooding times, but South Big Lake even during the traditional spring flood.

MR. ETTINGER: Connected to what?

MR. LEMKE: The Illinois river.

MR. ETTINGER: Thank you. I think that's all my questions.

MR. RAO: Dr. Lemke, the part of your research on Illinois rivers, you know, do you have any idea about what the point source loading is and non-point source loading? Have you made any estimate of what kind of loads you're getting from the non-point source?

MR. LEMKE: It's a big system. I haven't gone into the -- into looking at all the sources, point versus non-point. What we're trying to do is characterize some of these flood plain systems even in, you know, in a scientific manner, get baseline information at this point.

MR. RAO: And in response to Mr. Harsch's question about if phosphorus loading from point source were eliminated or controlled, you said it would take a while for it to recover. Does that response also presume that non-point phosphorus loading will also be controlled or --

MR. LEMKE: Non-point should be controlled you said?

MR. RAO: No. Does your response assume that non-point

loading are controlled or it's just based on control of point of loading?

MR. LEMKE: You're asking me if non-point -- Sir, I'm not sure I'm understanding.

MR. RAO: Is the point source loading was controlled or eliminate, you said if you take a while for it to recover. I'm asking you whether that answer assumes the point -- non-point source of loading will continue?

MR. LEMKE: Well, I mean, if you keep loading it no matter what the source, that will prolong any kind of recovery, whether it's a source not even phosphorus. So am I answering -- am I still missing it?

MR. RAO: So I just wanted to know whether both point and non-point source control needs to be in put into place for the river to recover?

MR. LEMKE: In my opinion, yes. I mean, if you are interested in recovery of the Illinois river and it's -- I guess it's still alleged contribution to the developed hypoxia, yeah, you're going to have to consider all sources, sure.

MR. RAO: Okay.

HEARING OFFICER KNITTLE: Anything further down there? Anybody else?

MR. HARSCH: One follow-up clarification question. In your introduction in your pre-filed testimony you have a reference to

Carpenter, et al., 1998?

MR. LEMKE: Yes.

MR. HARSCH: I don't find that in your reference list. Is that an oversight?

MR. LEMKE: That is definitely an oversight. That is Steven Carpenter's work.

MR. HARSCH: Can you provide me that?

MR. LEMKE: Yes, I would be happy to. I apologize.

BOARD MEMBER JOHNSON: Just briefly I'm curious, maybe you're not the right guy to ask, maybe you are. You know the Board's currently -- that's why we've been together lately considering the proposed amendment to the dissolved oxygen standards and Roy alluded to the stakeholder group discussing nutrients as a whole. Do you have an opinion as to the value, or the lack thereof, addressing each of these issues in the piecemeal basis as opposed to a larger and broader -- broader rulemaking that would address each of -- each of them together?

MR. LEMKE: If I'm understanding, is it better to look at each individual parameter and put regulations on it rather than as a whole --

BOARD MEMBER JOHNSON: Right.

MR. LEMKE: -- study? Measurements like dissolved oxygen like many measures, there's many reasons why you get different levels of dissolved oxygen. And I think you need to put them in

perspective with other measurements like chlorophyl A and your nutrients. Once -- Depending upon the time of day when you take dissolved oxygen readings, you could have vast different measurements even if the system is highly productive or not very productive. So I think any tip of comprehensive plan you want to put in, you want to have some definite indicators. You can't measure everything but you want to be pretty careful and select your indicators and get someone who knows how to interpret those also.

MR. JOHNSON: Thank you.

HEARING OFFICER KNITTLE: Anybody else have any further questions of this witness?

BOARD MEMBER GIRARD: I have a question. On that section of Illinois River I have some historical data going back quite a ways with the historical survey. Is there any phosphorus data going back, you know, several decades or even 100 years comparable to the kind of data you're collecting now to say whether or not things are changing on that stretch of the river in terms of phosphorus levels?

MR. LEMKE: There is. The Illinois National History Survey in conjunction with the Long-term River Monitoring Program keeps a lot of data. And to answer one part of your question, some of the data goes back about 100 years ago to the time of Forbes and Richardson especially with, you know, readings of some of the

different algal and fish life. But we are in the process of looking at the last -- or I shouldn't say not the last, nine years of long-term data to see the trends that have occurred not only due to air culture but due to, you know, due to the change in hygrograph when the locks and dams and changed the hygrograph amazingly and also the amount of trench districts creating very severe pulses and divorcing the levies that divorce the historic flip from the channel, so, yes, there are data.

BOARD MEMBER GIRARD: Have you -- have you been able to make any, you know, any sort of reasonable conclusions about changes in phosphorus levels over the past several decades not going back nine or 10 years but --

MR. LEMKE: No, the current data that we've been analyzing is nine years. I haven't simply just gone back to comparing that to like pre-levy time or something like that. I -- Some day I hope to.

MR. GIRARD: Thank you.

HEARING OFFICER KNITTLE: Anything further? Thank you, sir. You can step down. Can we go off the record for a second.

(A discussion was held off the record.)

MR. ETTINGER: I just want to again -- we would prefer not to read the Wentzel testimony instead as opposed to the introduction. We'd like Beth to read her conclusion which summarizes to some extent and then we will have questions to go

from there if that's okay with you.

HEARING OFFICER KNITTLE: That's perfectly okay with me. You want to offer her testimony, her pre-filed testimony, as Exhibit No. 5?

MR. ETTINGER: Actually I can do the lawyer thing and ask her questions here after you have sworn her in.

HEARING OFFICER KNITTLE: Swear her in.

(The witness was sworn.)

HEARING OFFICER KNITTLE: Mr. Ettinger.

MR. ETTINGER: Okay. Ms. Wentzel, did you draft the testimony that is the pre-filed testimony of Beth Wentzel that was filed in this matter?

MS. WENTZEL: Yes.

MR. ETTINGER: I would therefore like to offer as Exhibit 5 the pre-filed testimony.

HEARING OFFICER KNITTLE: Any objections?

MR. HARSCH: With its two attachments?

MR. ETTINGER: Yes, with its two exhibits. The two exhibits are Highest Levels of Phosphorus in Low Trench for Municipal Wastewater Treatment Plants and the second exhibit here, the Ultimate Challenge For Technology .02 milligrams per liter effluent total phosphorus.

HEARING OFFICER KNITTLE: Okay. With both exhibits are there any objections to admitting that pre-filed testimony?

MR. SOFAT: No.

HEARING OFFICER KNITTLE: It will be admitted as Exhibit No. 5. Ms. Wentzel.

MS. WENTZEL: In conclusion, the literature on nutrient removal technology suggested that one milligram per liter is reliability met, well-established and reasonable technology. Several states have applied the similar limit broadly and have applied considerably more stringent limits for many permits. Several facilities in Illinois have demonstrated the ability to comply with this limit. Based on these reasons, I belive that the effluent limit of 1.0 milligrams per liter as a monthly average for total phosphorus that the Illinois EPA has proposed is technically and economically reasonable.

HEARING OFFICER KNITTLE: Thank you. I'm assuming -- Do you have any questions for Ms. Wentzel before we open her up for questions for anybody else?

MR. ETTINGER: I would just like to get one more thing in the record. What exhibit are we up to?

HEARING OFFICER KNITTLE: 6.

MR. ETTINGER: Ms. Wentzel, on page -- the attachment, in your testimony you make reference to a Northeast Illinois Planning Commission Water Review of the City of Elgin, and I just wanted to ask you whether this document on the City of -- prepared by Robinson Engineering Limited is the document that's

being referred to there?

MS. WENTZEL: This is the document that is referred to in the Northeastern Illinois Planning Commission Water Quality Review, so the report that I dated -- or I referenced is a report that includes excerpts from this report and that is dated May 27th, 2004. But this is the original document that includes that information.

MR. ETTINGER: Okay. I would like to offer it as Exhibit 6, the City of Elgin Responses, Revisions and Supplemental Material for NIPC reviewed by Robinson Engineering Limited.

MR. HARSCH: Do you have a copy of that document?

HEARING OFFICER KNITTLE: Here, you can have this.

MR. ETTINGER: Beth, did you bring any?

MS. WENTZEL: I have my copy. It's not complete.

MR. ETTINGER: He can have that one.

MR. HARSCH: Thanks.

HEARING OFFICER KNITTLE: Any objection to that being admitted as Exhibit 6? Seeing none, we will admit that as Exhibit 6.

MR. ETTINGER: I have no further questions of this witness.

HEARING OFFICER KNITTLE: Anybody else have any questions?

MR. HARSCH: I have a few. Ms. Wentzel, have you ever designed a wastewater treatment plant?

MS. WENTZEL: My course work in graduate school involved

several design courses in which we did do a lot of design work.

MR. HARSCH: Since graduating, have you ever designed a wastewater treatment plant?

MS. WENTZEL: No.

MR. HARSH: Have you ever operated a wastewater treatment plant?

MS. WENTZEL: No.

MR. HARSCH: You don't hold yourself out to be an expert in this area, do you?

MS. WENTZEL: I'm not sure how you define expert. In your response to your earlier questions, no, I do not design nor operate a facility. I do regularly review some of the designs for several wastewater facilities. I've also been involved in discussions with designing engineers about those designs.

MR. HARSCH: Can you please explain your understanding of what constitutes a process of biological nutrient removal?

MS. WENTZEL: Yes, the most straight forward design for biologically removing phosphorus is the -- you know, essentially including an anaerobic stage in your activated sludge system prior to the wastewater moving to an aerobic stage. Essentially what happens is in the anaerobic tank, there are microorganisms that are commonly referred to as phosphate accumulating organisms that are able to use energy that they've used to store as phosphate to take up organic material, and then when we move into

the aerobic phase, they then accumulate more of that phosphate than most typical microorganisms. So it's the procedure that allows for the selection of these organisms that we accumulate more phosphate.

MR. HARSCH: So you would need both the tank for anaerobic and almost a tank for aerobic?

MS. WENTZEL: Or one tank with a baffle.

MR. HARSCH: Your pre-filed testimony on page two, you reference an expansion project of Minooka, how large a treatment plant was it before the expansion project?

MS. WENTZEL: Let me see. I don't remember off the top of my head but I can certainly find that.

HEARING OFFICER KNITTLE: Offer the record.

(A discussion was held off the record.)

MS. WENTZEL: The existing facility is a 1.092 MGD plant. The expanded facility will be -- have a design average flow of 2.2 MGDs.

MR. HARSCH: Who is the design engineer that you had your discussions with?

MS. WENTZEL: That was the Hamilton Engineers.

MR. HARSCH: Page two of your pre-filed testimony you reference the Village of Roxana with the high levels of iron hydroxide, how common is that in Illinois?

MS. WENTZEL: I do not know how comon that is.

MR. HARSCH: Do you know the source of iron hydroxide that have discharged to the Roxana plant?

MS. WENTZEL: On this particular facility, based on my understanding of this engineering plant, the high iron hydroxide was coming from the drinking water treatment plant which was removing iron from groundwater which was high in iron.

MR. HARSCH: Does the City of Elgin treat wastewater?

MS. WENTZEL: I believe that the Fox River Water Reclamation District treats the waste for the City of Elgin.

MR. HARSCH: Was Robinson Engineering representing the City of Elgin or the Fox River Water Reclamation District?

MS. WENTZEL: I believe they were representing the City of Elgin per the report.

MR. HARSCH: Do you know if the Fox River Reclamation District agrees with these figures?

MS. WENTZEL: I do not know if they agree or disagree. I know that there were not objections to the statements made by NIPC about this report.

MR. HARSCH: On page, they're not numbered, one, two, three, I guess four of your pre-filed testimony where you list a number of facilities that are achieving phosphorus reduction in that table --

MS. WENTZEL: Yes.

MR. HARSCH: -- how many of those POTWs discharge either to

a lake or upstream of a lake?

MS. WENTZEL: I did not identify all of the locations of these facilities precisely. I believe that at least most of them are discharging upstream or to a lake.

MR. HARSCH: So they would then be subject to the existing Pollution Control Board rule?

MS. WENTZEL: Right. And just to clarify, you're talking about those that are identified in this table, correct?

MR. HARSCH: The table on page, one, two, three, four of your pre-filed testimony.

MS. WENTZEL: Yeah, I apologize for -- I apologize for failing to number the pages. That's the table, I believe, is on the fifth page.

MR. ETTINGER: It's on the fourth page for us I think, Beth.

MS. HARSCH: When you reference, again, be the second full paragraph up there, the end right before your paragraph and your conclusion, can you draw your attention to that paragraph, starts out in addition?

MS. WENTZEL: Yes.

MR. HARSCH: What are the benefits you're referring to? Benefits simply outweigh the costs?

MS. WENTZEL: It's difficult for me to enumerate all of the benefits that go into this decision. Obviously in this paragraph

we're referring to a number of communities and facilities that have agreed to some type of phosphorus removal process in their permits, you know, and there are some deliberations that went into that decision. I was involved in some of the discussions but I certainly was not in on all of the discussions between the consultants and the clients.

MR. HARSCH: Can you provide any examples of benefits to these communities?

MS. WENTZEL: You know, certainly better treated effluent. Some of the communities that we have worked with have acknowledged that there is a value to the community of having the highest quality that is achievable in their effluent.

MR. HARSCH: And when you're referring to the costs, you're referring to the capital of costs that you're talking about in the pre-filed testimony?

MS. WENTZEL: Again, in that paragraph, you know, when the consultants in their communities, their clients are discussing the costs and benefits, you know, there -- many of them are looking at long-term costs in addition to capital costs.

MR. HARSCH: If I go through the list of communities that you've provided in that paragraph, Plano, Manhattan, Minooka, DuQuoin, Richmond, and Wauconda, those are rapidly growing areas in the state of Illinois; is that correct?

MS. WENTZEL: I believe so.

MR. HARSCH: In fact, all of these permittees were in the process of expanding a wastewater treatment plant, were they not?

MS. WENTZEL: Correct.

MR. HARSCH: And in all incidences during your negotiations that you referred, agreed where you negotiated permit conditions, one of the principal benefits would be the agreement by your organization, Sierra Club and others, not to object to those permits, to request public hearings and delay the issues of those permits so that the necessary planning could proceed. Wasn't that the principal benefit to those communities?

MS. WENTZEL: I -- I can't say.

MR. HARSCH: My characterization of the negotiations process that led up to those agreements is accurate, is it not?

MS. WENTZEL: Can you restate?

MR. HARSCH: That your organization and Sierra Club and others during those negotiations said basically if you agree to treat nutrients, we won't object to your permit, request a public hearing and delay the issuance of that permit, request the delay of that?

MR. ETTINGER: That is not a correct statement.

MS. WENTZEL: I mean, certainly we discussed permit terms and conditions that we all could agree would comply with existing state law.

MR. HARSCH: And as long as the fast growing, smaller

communities agreed to the nutrient treatments, you didn't object to the permits?

MR. ETTINGER: With the exception of Wauconda.

MR. HARSCH: With the exception of Wauconda, sorry. There is -- Everybody will -- I'll take that one back.

MS. WENTZEL: I think we certainly have not appealed any of the other permits in that list.

MR. HARSCH: In fact, you're in similar discussions with the villages that you've listed at the end of that paragraph; is that correct?

MS. WENTZEL: Yes, we are -- we are having some discussions with all of those communities.

MR. HARSCH: And those are the same type of communities that are rapidly growing communities and need to expand their sewage treatment plant, need a permit for that?

MS. WENTZEL: I wouldn't describe all of them as rapidly growing. Certainly the City of Salem is not a rapidly growing community.

MR. HARSCH: I'm sorry. Itasca, Hampshire and --

MS. WENTZEL: They are each communities that have expressed an interest in expanding their sewage treatment plant.

MR. HARSCH: Do you know if these communities have been advised by individuals within Illinois EPA to negotiate environmental groups to hopefully resolve any difference prior to

the Agency going to final notice on drafting impedious permits as to avoid the possibility of public hearings on those permits?

MS. WENTZEL: I don't know about those discussions.

MR. HARSCH: In addition to the capital costs that you've referenced in your testimony, is there any impact on ongoing operating costs for POTWs that installs phosphorus treatment?

MS. WENTZEL: It depends largely on what type of process is chosen. And as I discussed in my testimony, and as was mentioned or discussed at the previous hearing, there are a couple of principal mechanisms or processes to choose from. There are a group of biological processes and there are also the chemical processes. When somebody chooses a chemical process where they are adding some type of chemical to essentially precipitate the phosphate out, there typically isn't an increase in the amount of sludge produced.

MR. HARSCH: That would increase the sludge disposal cost, sludge handling cost?

MS. WENTZEL: Sure.

MR. HARSCH: In addition to the chemical cost itself?

MS. WENTZEL: Yes. Now for the biological processes, on the other hand, you know, there are several references in the literature to adding a biological nutrient removal process and actually having the effect of improved settleability of the sludge. There also have been some savings in the amount of

aeration that's necessary in developing some other pollutant perimeters such as BOD, we're certainly to impact the biological processes.

MR. HARSCH: When you referred, I think, in your testimony to the environmental benefits from this rule, aren't you really assuming that all of the wastewater treatment plants will be required to achieve at least one milligram per liter of phosphorus ultimately from the adoption of -- of nutrient standards in Illinois?

MS. WENTZEL: I don't think I would assume that in my testimony.

MR. HARSCH: Mr. Daugherty has specific questions he would like to ask.

MR. DAUGHERTY: Probably several questions but this relates to costs. The record so far there's been some site specific cost numbers have been put in. And of course the report by Mr. Lemke has been introduced which is a statewide cost figure. On your Exhibit B, the last table there, has cost figures. Do you have that?

MS. WENTZEL: Yes.

MR. DAUGHERTY: In these papers we were looking at two sets of effluent standards of one of .2 and one of .02. They list a cost of five million gallons per day of a smaller plant going to .2 of $500,000 per MGD of operating cost of $90 per liter gallons

treated. Those costs seem in the ballpark as far as your experience or your --

MS. WENTZEL: I have no reason to believe that they are inaccurate for this study. If you'd like me to comment further, I think it's important to note that we're not talking about achieving the .2 milligram per liter standard and we're also not talking about achieving .5 milligram per liter total phosphorus and the 3 milligram per liter total nitrogen which is what is in the NPDES report document.

I think it's also worth noting that we're only looking at new and expanding facilities and there are going to be some deficiencies gained when in the process of building a new plant or expanding an existing plant incorporating these technologies at that time which is perhaps why several communities are agreeing to do currently.

MR. DAUGHERTY: The difference between the one milligram per liter decimal and the subject of this hearing and .5 that you communicated in this testimony, which you said is basically the same technology, would you expect those costs to be similar?

MS. WENTZEL: They can be. The thing about using a biological process is that in order to -- to achieve the best -- the lowest phosphorus limits possible using a biological process, you know, if you wanted to achieve a very low level, you can do so according to much of the literature by working with some of

the, you know, perimeters within the sewage treatment plant such as, you know, your waste activated sludge rate versus your return activated sludge rate and, you know, there's a lot of information out there that says operating those biological processes and the smartest way possible you can achieve down to .5 and lower. But short of that, there may be times when you're going to need to use the chemical precipitation and you'll want to have that as a back-up process. And the differences between achieving a one milligram liter there and .5 milligram liter, you may very well be in the increase amount of sludge that you may have from these chemical additions.

MR. DAUGHERTY: Thank you.

MR. HARSCH: A couple of additional -- page three of your testimony, Milwaukee discharges to Lake Michigan, does it not?

MS. WENTZEL: It does.

MR. HARSCH: And Syracuse, does it discharge to a lake?

MS. WENTZEL: It does discharge to a lake in the state of New York.

MR. HARSCH: No further questions.

MS. LIU: Good morning, Ms. Wentzel. It's been alluded to here today that phosphorus in the environment is kind of a multi-faceted problem and today we're focusing on POTWs. I was wondering if Prairie Rivers Network had any active work with other sources of phosphorus in the environment whether you were

pursuing the sale and use of phosphorus in common household products or phosphorus on agricultural front as non-point source?

MS. WENTZEL: I personally have not been involved in those issues. We certainly are very interested in phosphorus reduction initiatives. And we have some other people on our staff that are somewhat involved in some of agricultural policies and issues as well.

MS. LIU: Thank you.

MR. HARSCH: I have just one.

MR. ETTINGER: Maybe I better be sworn. I would just like to correct a question or impression. Beth is only testifying on behalf of Prairie Rivers, I think.

HEARING OFFICER KNITTLE: You want to be sworn in on all issues?

MR. ETTINGER: I think I'd better.

HEARING OFFICER KNITTLE: Would you swear him in, Bev.

(The witness was sworn.)

MR. ETTINGER: I just wanted to say because she's here for Prairie Rivers and those that know about what Prairie Rivers did, the Sierra Club have worked in the past on issues relating to phosphorus on agricultural settings. God knows I've spent many a hour in Springfield working on CAFO legislation in the '90s and some other things that are directly related to plant application of phosphorus. So Beth with Prairie Rivers doesn't go back far

enough to remember. Prairie Rivers was also involved in a lot of issues regarding CAFOs and other problems that are specifically related to agriculturally based phosphorus. Also of course the Sierra Club is trying to work on federal farm bill programs and other programs that will reduce farm erosion and stream erosion. I'm very involved in that for about 20 years that I've been working with the Sierra Club so, yes, we do realize there are other sources of phosphorus and we're doing what we can. We don't have the same set of handles on that that we have on this. We've got to look at other tools.

MR. HARSCH: Just a clarifying question or whatever. You also -- All of those organizations are also involved in the ongoing efforts by Illinois EPA to develop a long-term nutrient rule?

MR. ETTINGER: Yes.

MS. WENTZEL: Yes.

MR. ETTINGER: Beth, are you on the nutrient group?

MS. WENTZEL: Yes.

MR. ETTINGER: We also only got a few troops on many battles. Cindy is the one, I believe, is the one that is going to the nutrient group at the state level. I go to the ARTAG (phonetic) meetings at the regional USEPA level looking at the nutrients.

MS. WENTZEL: I've been attending those groups.

HEARING OFFICER KNITTLE: Mr. Rao, do you have a question?

MR. RAO: Yes, one question for Ms. Wentzel. You know based on your review of economic information on upgrading some of these treatment plants to control phosphorus, right now the appropriate level is one milligram per liter and we have heard that there is a company working on a nutrient plant in hopefully by 2008 that we have a final number. If that ultimate number is much lower than one milligram per liter, what you're -- and you have any idea as to what it may do to some of the plants that have to come in compliance with the one milligram per liter cost to meet a much lower standard?

MS. WENTZEL: Based on my review of some of the literature, and some of that is summarized in the Exhibit A, the conclusions, talks about some of the technologies that may be effective in achieving different ranges of total phosphorus in the effluent. But I also see in the literature that the key to getting much, much lower levels of phosphorus is really good solids removal, particularly through some type of filtration process. So essentially combining, you know, either a biological process with filtration or biological -- or a chemical process with filtration or biological and chemical processes plus filtration. And you can see in the Exhibit B they are testing -- they have been testing some of those different filtrations systems to see if they can get down to very, very low levels.

MR. RAO: So in your opinion they have not expanded significant amounts of costs to come to a lower level, you know, put in different units to come in compliance with one milligram per liter?

MS. WENTZEL: I think it will depend on, you know, the particular situation but, you know, based on the literature it doesn't look like -- it certainly doesn't look like people would be having to rip out anything that they put in place right now. I think at the last hearing the Illinois EPA witness testified that they believe that many folks would use chemical precipitation which is a pretty minimal capital investment and most of the processes for achieving much, much lower levels of phosphorus include the same equipment for -- at least for back-up purposes.

MR. RAO: Thank you.

HEARING OFFICER KNITTLE: Anything further for Ms. Wentzel? All right. Ms. Wentzel, thank you very much for your testimony. Let's take a recess.

(A short break was taken.)

HEARING OFFICER KNITTLE: We are back on the record. Mr. Ettinger, let me remind you you still are under oath and we're going to ask some questions for you. Do you have a clarification you would like to make.

MR. ETTINGER: Yes, I have a couple clarifications I want

to make. First of all, I referred to a Cindy in my earlier presentation, that is Dr. Cynthia Scrucrude (phonetic) who is participating in the Nutrient Work Group at the state level. Also I believe there was mention to various Illinois plants that have a one milligram per liter phosphorus level. That among those mentioned were Wauconda, also I don't know whether it was mentioned or not, McHenry South and Richmond and the -- there was some confusion on the record, Wauconda does have a one milligram liter phosphorus limit in the permit that was issued but that was after a hearing, and there were appeals of that permit despite the one milligram per liter phosphorus limit due to other issues. In addition, there is reference to Richmond. The one milligram -- I think they do have a one milligram per liter phosphorus limit in Richmond but it has been discussed, but their anti-degradation on Richmond, the village of Richmond, discharges to a high quality stream and that's raised a number of issues on a number of perimeters that they are concerned about.

McHenry South also was mentioned. I believe, I don't know if the final permit has come out, but there was an agreement I believe to have a one milligram per liter phosphorus limit for McHenry South which discharges to the Fox River but that was after a hearing that that was -- was discussed.

With that, I just want to, I guess, move the admission of my own pre-filed testimony, and I don't want to read any of this.

It is in the nature of a legal brief, but I did want to give people an opportunity to ask questions about it. I never really did know how to handle presentation of law to the Board. Tell me and I'll do it some other way next time. I thought this would, at least, give people an opportunity to ask questions about it if they wanted to.

The other thing that I'm prepared to answer questions about is this part four which is the proposed ELPC PRN Sierra revisions to the proposal. And if people have any questions about how I envision this language will work out as opposed to the Agency language, this is the time to ask questions.

HEARING OFFICER KNITTLE: First off, are there any objections to admitting Mr. Ettinger's pre-filed testimony as Exhibit No. 7?

MR. SOFAT: No.

MR. ETTINGER: Maybe we can make the proposed revision and discussion of proposed revisions as Exhibit 8.

HEARING OFFICER KNITTLE: Certainly. Any objections to Exhibit 8 being the proposed revision?

MR. SOFAT: No.

HEARING OFFICER KNITTLE: And discussion therein? Both of those are admitted. Any questions of Mr. Ettinger? Mr. Harsch?

MR. HARSCH: Albert, I have to ask this question. You do not have a scientific background, do you?

MR. ETTINGER: No.

MR. HARSCH: So to the extent that you're -- introduced a number of exhibits along with your testimony, you're not testifying as a scientist in any way, shape or form?

MR. ETTINGER: I attached the exhibits. You can read them. I can read them. I presented part of the exhibits that I like. If you like other parts, you can argue from it for -- and no weight based on me presenting them should be added on the basis of my juris doctorate degree.

MR. HARSCH: Let's look at Exhibit B to your testimony. Water Column, I'm not --

MR. ETTINGER: I'm sorry?

MR. HARSCH: Exhibit B.

MR. ETTINGER: Fox River Fish Capacity Studies?

MR. HARSCH: I think something called Water Column, then you have the Department of Environmental Management --

MR. ETTINGER: No, that's a different document. That's the exhibit -- For some reason in my set it's the Fox River Fish Passage which is D.

MR. HARSCH: My set it was Exhibit B.

MR. ETTINGER: Well, that was --

MR. HARSCH: Whatever, it's the --

MR. ETTINGER: It's the water -- the pictures from Indiana, right, Exhibit A is?

MR. SOFAT: D.

MR. HARSCH: I'm saying Exhibit B, as in boy.

MR. ETTINGER: In my B is the Invasive Blue/green Algae --

MR. HARSCH: Yes, that's what I'm talking about. It's from a document entitled some publication Water Column?

MR. ETTINGER: Right.

MR. HARSCH: What is -- I'm not familiar with this. What is the Water Column?

MR. ETTINGER: Something I got off the state of Indiana website.

MR. HARSCH: Well, if I look --

MR. ETTINGER: I believe I got it from the Illinois Department of Environmental Management website.

MR. HARSCH: I note on page two of that document right above the -- that there have been no human deaths from blue/green algae, is that correct, according to the United States?

MR. ETTINGER: That's what it says. That's all I know about it.

MR. HARSCH: And the -- in the next column we observed effect has been observed in finished drinking water in Australia?

MR. ETTINGER: That's what it says. I principally put this in because it gave a good description of what blue/green algae was in layman's terms.

MR. HARSCH: Do you -- Be then on the third page of the

document right at the end, like any other plant, the growth of blue/green algae requires light, nutrient and heat to survive -- thrive. This is a problem that, I guess, was written about in 2001, do you know what's occurred since 2001, if this process has existed?

MR. ETTINGER: In Indiana? I would be surprised if the nutrient problem was taken care of in Indiana since 2001, but I don't know that.

MR. HARSCH: You probably can't answer then why there's been such rare documentation of human exposure to these types of toxins then, can you?

MR. ETTINGER: I don't know. All I know is there's been --

MR. HARSCH: The document says it's very rare.

MR. ETTINGER: All I know there's been hundreds of cases since 2001, but this document is as of 2001, it was very real.

MR. HARSCH: If I draw your attention to what you submitted as Exhibit D, that would be the relevant pages from the Illinois Water Report of 2004, correct?

MR. ETTINGER: Correct.

MR. HARSCH: What's your understanding of the basis that the Illinois EPA lifts a segment as impaired for phosphorus?

MR. ETTINGER: Well, there are rules for doing that. It seems to change every two years but my current -- my understanding is that as the large streams, which I think the

ones that they have got here in Mississippi and Wood River and other non-beatable waters that they look at on a percentage basis, and essentially they try and identify a problem that could be related to nutrients. And if they then in turn find that the water body has a higher than normal for Illinois level of nutrients, that they'll list that as a potential cause of the problem.

MR. HARSCH: That's the statistical guideline approach where they use 85th percentile?

MR. ETTINGER: I believe that's correct. So essentially if they look at a water and say, for example, we had a problem before they used to -- they would say it was impaired by copper or something and then they would use the statistical approach and leave -- list as a potential cause for the copper impairment that there was high phosphorus, which didn't make any sense at all. I believe for this report they corrected this and that they -- there's probably a DO violation, in fact, I think in all of these cases there is a low DO number, and so that could be related to a nutrient problem. They then go look at the percentage basis and with that as a potential cause.

MR. HARSCH: For code 0910 total phosphorus, isn't that the footnote three, 85th percentile for the state AWQM data for the years 1978?

MR. ETTINGER: I think that's correct.

MR. HARSCH: That's the statistical -- that's achieved -- that's exceeding 85th percentile of those statistical guidelines on the standard?

MR. ETTINGER: Correct. We don't have a water quality standard in Illinois with regard to overflowing water.

MR. HARSCH: In fact, we don't know if the waters are listed actually have any visible impairment, we just know they exceed 85th percentile?

MR. ETTINGER: Well, that's not quite true. First of all, there's lakes, so lakes that are listed, they've got chlorophyl A data.

MR. HARSCH: I think I was referring to streams.

MR. ETTINGER: Right. As to the streams that were listed, as I tried to explain earlier, I believe they found some sort of impairment such as dissolved oxygen and then we went -- I think they looked at potential causes then and they identify a cause would be total phosphorus but they found some other kind of -- they generally found some other kind of impairment such as generally a low dissolved oxygen. So we know that the stream has some sort of issue with it, other than that it just has high phosphorus levels, but the cause and effect relationship between that issue, that's why they call it a potential cause rather than a proven cause.

MR. HARSCH: And there is currently, and you're well aware,

proceedings brought by IAWA to amend the dissolved oxygen standard in Illinois?

MR. ETTINGER: Correct.

MR. HARSCH: Now go to Exhibit D, at least my Exhibit D, the Fox River Fish Passage Feasibility Study?

MR. ETTINGER: Yes, it's my exhibit too.

MR. HARSCH: Do you know how Mr. Santuski took his dissolved oxygen measurement readings?

MR. ETTINGER: No.

MR. HARSCH: You don't know if he measured dissolved oxygen at the interface between sediment and the water column?

MR. ETTINGER: I don't know where it came from.

MR. HARSCH: Do you know the temperature either the day that you were out at Fox River?

MR. ETTINGER: Well, some of this could be found in the data that he lists. He does give temperatures and other things like that in some of the data. But sitting here today, and not even having the study in front of me, I -- I wouldn't be able to help you with that. But if the questions are important, we could of course give the full report to the Board. It is all available on the internet.

MR. HARSCH: I draw your attention to that table that you included as page 45 of the report.

MR. ETTINGER: Yes.

MR. HARSCH: If I understand the table correctly, there would be an effect showing that that if the P value was less than or greater than 0.05 -- less than, excuse me, less than -- less than or equal to 0.05, do you know if there is any statistical effect given in that table for nutrients?

MR. ETTINGER: P is -- I think the safest thing for me to do now is say I don't know.

MR. HARSCH: Okay. We don't have any further questions. Thank you.

HEARING OFFICER KNITTLE: Sir, could you state your name for the record.

MR. HILL: Ron Hill, I represent the Metropolitan Reclamation District of Greater Chicago. Mr. Ettinger, with respect to your proposal vision to the IEPA proposal, you state that you believe that the only plants now discharging through waters that are not sediment which are Stickney plants or the MWRDGC, did you know that Bobonson (phonetic) also discharges to water as general use?

MR. ETTINGER: I guess I didn't.

MR. HILL: Do you know whether or not the District intends to expand it's Clinton and Southern Ridge -- Southern Ridge Contract?

MR. ETTINGER: I was going to ask him.

HEARING OFFICER KNITTLE: Anything further, Mr. Hill?

MR. HILL: No.

HEARING OFFICER KNITTLE: All right. Thank you, Mr. Ettinger, you may step down.

MR. SOFAT: I'm going to ask two questions.

HEARING OFFICER KNITTLE: I thought you indicated no.

MR. SOFAT: Actually I was going to go and Ron wanted to go.

HEARING OFFICER KNITTLE: My misunderstanding. Please proceed.

MR. SOFAT: Mr. Ettinger, I'm looking at proposed revisions that you have filed and I'm looking at subsection G. It seems that the language of subsection G triggers the Agency's obligation to incorporate a total phosphorus permit level of one milligram per liter any time there is a proposed increase in pollutants. And because of that the Agency has to either issue a new permit or renew a permit or modify a permit. This language also suggests that pollutant doesn't have to be phosphorus. It could be, for example, copper. Also the language seems to convey that the discharge pollutants could be in general use water or public and food processing water or secondary contact. Is that the intent of the proposed language?

MR. ETTINGER: You asked me two questions. Let me address both of them. General use waters, I think I discussed in the -- in the discussion of proposed revisions, yes, it was intended

into the secondary contact waters. At the time I wrote that I thought I was only addressing the Stickney, Alma and North Side plants. Sitting here today, and learning for the first time that it also applies to Lemont, sitting here today learning that Lemont also discharges through secondary contact waters, that I would not change my answer. I believe that all new or increased discharges should be subject to the one milligram per liter phosphorus limit. So I believe that answers the general use question.

As to the other question, I would note, first of all, that my change really didn't -- my change of your language didn't really alter the situation as to that. What I read the subject to language to mean was that you would still be following your normal practice of the Agency of not placing limits on -- for pollutants that -- for people who are unlikely to ever reach that limit. So if there was no discharge, if the person's new or increased discharge was not going to involve phosphorus, you would not put a phosphorus limit on it. So what -- the way I read your language, subject to math, subject to if it was necessary to limit phosphorus, if you want to put that in and add the wording in to say any proposed increase in pollutant loading or you could say any proposing increase in phosphorus pollutant loading, we -- I'd be pleased to make that clarification if we think there is, although we can talk about it. I sort of read

that into yours and into mine.

MR. SOFAT: Second question I have is the language that is proposed in subsection I --

MR. ETTINGER: Yes.

MR. SOFAT: -- that's a -- would you tell with that example as possible under what circumstances an additional phosphorus limit would be required under that subsection?

MR. ETTINGER: Well, the -- it is basically tempting with this language to treat phosphorus the way the other effluent limits in part 304 are generally treated by the Agency with regard to BOD and other components. That normally the Agency, in my experience of reviewing Agency permits, uses the 304 rule as a rule of thumb, which they almost always apply in setting effluent limits. However, I believe, the Agency has testified in regarding other proceedings, regarding 304 rules, if it is shown for some reason that something beyond that is necessary to meet a water quality standard, some other rule, then they'll do it. The most obvious case for that, and I believe this was essentially presented by Mr. Frevert at the last rule on BODC CBOD, is a case in which there was a TEML done. So, for example, if TEML had been done that showed a phosphorus limit was necessary for the water, then that would be a situation in which a phosphorus limit would be needed. Also I believe Robert Mosher and others talked about other situations in which, if for some reason, we knew in

this case of this particular stream that a phosphorus limit was necessary either to avoid an effect of existing use or comply with the anti-degradation, otherwise then you would put that limit in. That's not going to be the normal situation. However, given the way that we have to handle permits pretty quickly here, and we generally are not in position to do that kind of scientific studies or permit before decisions are made. I think I answered your question?

MR. SOFAT: Yes.

MR. ETTINGER: Yes.

HEARING OFFICER KNITTLE: Anything further? Mr. Ettinger, thank you. I believe we also have scheduled to testify Richard Lanyon and James Daugherty. I don't know which order we want to go in.

MR. HARSCH: District.

THE COURT: Mr. Lanyon, would you like to come on up, please.

(The witness was sworn.)

HEARING OFFICER KNITTLE: Mr. Lanyon, would you please provide your testimony.

MR. LANYON: Okay. My name is Richard Lanyon. I am currently employed by the Metropolitan Water Reclamation District of Greater Chicago as its Director of Research & Development. The District is a unit of local government created by the state

legislature for the purpose of collecting and disposing of sewerage, reducing pollution of the waterways and preventing flooding. 70 ILCS 2605/1. The District's service area is most of Cook County. In its capacity as a water reclamation district, the District operates seven treatment facilities in its service area, serves five million residents and treat an average of 1.4 billion gallons of sewage daily.

I have been the District's Director of R&D since 1999. As Director of Research & Development, I supervise the District's Research & Development Department, which has a staff of 340. Prior to becoming Director of Research & Development, I was the Assistant Director of Research & Development. I held this position from 1975 until 1999. I have been employed with the District since 1963.

I received both Bachelors and Masters in Civil Engineering degrees from the University of Illinois at Urbana-Champaign. I received the American Society of Civil Engineer's National Government Civil Engineer of the Year Award in 1999 and Distinguished Alumnus of the Department of Civil and Environmental Engineering at the UIUC in 2003. I am also a past President of the Illinois Section of the American Society of Civil Engineers and have been involved in a variety of technical activities for ASCE, the Water Environment Federation and the Association of Metropolitan Sewerage Agencies.

My responsibilities as the District's Director of Research & Development include, but are not limited to, to the following:

* Control of commercial and industrial waste discharges to the District's sewers and the waterways via the Sewage and Waste Control Ordinance;
* Recovery of certain District operating, maintenance and replacement costs via administration of the User Charge Ordinance;
* Providing analytical laboratory support for the control of commercial and industrial wastes and for control of treatment and other operations;
* Monitoring the environmental quality of Lake Michigan and area waterways; and
* Conducting basic and applied research on new wastewater and sludge treatment processes.

IEPA Proposal

The IEPA has proposed that IPCB adopt an interim phosphorus standard for General Use Waters and requirements for compliance with the interim standard. I submit this statement on behalf of the District in opposition to the IEPA's May 14, 2004, Notice of Filing and Statement of Reasons. Our opposition is based on the following comments:

On the bottom of Page 7 of the Statement and continuing on Page 8, the IEPA discusses the "shortage of sound scientific

information available to examine relationships between nutrient concentrations, biological parameters, and dissolved oxygen in the receiving waters." IEPA also discusses the document (labeled as Exhibit A) that presents IEPA's approach for developing numeric nutrient standards. On Page 4 of Exhibit A at the top of the page, IEPA states that "The Illinois Plan for Adoption of Nutrient Water Quality Standards was submitted to USEPA on August 14, 2003, and was one of the first plans in the nation to have received "mutually agreed upon" status from USEPA." This plan, which USEPA agreed to, does not call for the promulgation of any interim effluent phosphorus standards in Illinois. It clearly states that more scientific study is needed before numeric standards can be recommended. Therefore there is no pressing need for the IEPA to rush into promulgating interim effluent phosphorus standards, and to do so actually contradicts the IEPA submittal to USEPA.

On page 9 of the Statement, the paragraph beginning at the bottom and continuing through page 10 cites a wide variety of phosphorus inputs to the environment, demonstrating how complex the control of this nutrient can be. IEPA's proposal ultimately places the responsibility for control solely on certain point source dischargers of phosphorus, thereby discriminating against these dischargers by ignoring the significant phosphorus contributions on non-point dischargers.

In the paragraph that begins on the bottom of page 10, IEPA discusses eutrophication and the adverse environmental impact of these phenomena. The paragraph closes on page 11, with the following statement: "Some research has indicated that phosphorus concentrations above 0.1 milligram per liter can result in excessive algal growth affecting municipal, industrial recreational uses in North American fresh water environments." IEPA bases this claim upon a 25-year-old Canadian sourcebook and guide for water quality in North America waters. This is not research, but simply guidance that is over 25 years old, and IEPA has waited until now to act on it. Further, the IEPA fails to cite any specific algal growth problems in Illinois lakes or rivers that affects uses and that can be attributed to excess phosphorus.

In the second sentence of the second paragraph on page 11, IEPA indicates that a certain level of phosphorus in lakes and streams is "...necessary to ensure desirable biological activity..." but higher levels are detrimental. IEPA goes on to define the classic approach of phosphorus management as one that determines the upper limit of beneficial nutrient concentration. However, IEPA fails to determine the phosphorus concentration at which the change occurs from desirable to detrimental.

The last paragraph beginning on page 11 and continuing on page 12 discusses current phosphorus numeric and narrative

standards and cites the current General Use dissolved oxygen standard. IEPA fails to cite any evidence that deficiencies in dissolved oxygen concentrations in Illinois lakes or rivers are the result of excessive phosphorus concentrations.

On page 12, second paragraph, second sentence, IEPA states "The scientific relationships between algal concentrations, phosphorus concentrations, and other variables that influence and control plant growth rates, species composition, and chemical dynamics in an aquatic environment are complex and currently insufficiently understood." IEPA continues to explain their current effort to conduct a comprehensive multi-year nutrient standards development program. This program is fully explained in Exhibit A attached to the IEPA Statement of Reasons. Thus, IEPA not only admits to a lack of adequate science upon which to base the proposed interim standard, but also is unwilling to even wait for the results of the scientific studies which they are sponsoring. There is no scientific basis for the proposed phosphorus standard of 1.0 milligram per liter. IEPA's proposal is arbitrary and capricious.

IEPA states in the second paragraph on page 12 that the current narrative standard provides no practical guidance in establishing preventative or protective limits. IEPA claims that the interim standard will provide needed guidance while it awaits the completion of the multi-year program. With the potential

scientific basis for a justifiable and defensible phosphorus standard but a few years away, there is no justification for an interim limit that IEPA cannot demonstrate is needed and has no scientific basis.

On page 13, IEPA reveals its actual motive in seeking adoption of an interim limit now rather than waiting until data exists to adopt a scientific based limit. IEPA claims that interim limit is needed to forestall further delay and litigation over pending permits that may be, in part, related to the need for a phosphorus limit. IEPA is asking the IPCB to adopt unscientific and unsound standards in an effort to rectify the IEPA's permit backlog. A permit backlog can be remedied by other means, but not by implementation of a standard that has no basis in science.

In Section IV on page 13, IEPA cites the increasing usage of phosphorus compounds for corrosion control in potable water supply systems. Thus at the same time that the IEPA is seeking to place a burden upon POTWs for removal of phosphorus, it is also requiring the use of a corrosion inhibitor by potable water suppliers with high metal concentrations in their distribution network. A phosphorus compound is the most popular corrosion inhibitor. Phosphorus used for corrosion control eventually flows into the POTW. IEPA does not indicate any relief for this burden that ultimately falls upon the ratepayer and/or taxpayer,

that is, to pay for both the addition of and removal of phosphorus. A more practical and direct solution would be for the IEPA to initiate a program to replace the offending metal plumbing systems that are susceptible to corrosion, thereby eventually removing this double burden from the ratepayer and/or taxpayer.

IEPA explains the available technology for removal of phosphorus at POTWs beginning at the top of page 14 and ending on the top of page 15. IEPA does not explain the economic impact on Illinois POTWs to which this proposed rule would apply, or explain what environmental benefits will result from the proposed interim phosphorus controls. The reference cited by IEPA, Exhibit G, estimates a significant capital and operating cost for the removal of nitrogen and phosphorus by Illinois POTWs, but does not identify the cost of phosphorus removal alone. In this day and age of scarce public money to meet a standard that has no scientific basis, and has no proven benefit to the environment.

Phosphorus Contributions to POTWs

As explained by IEPA, there are a number of sources of phosphorus, in addition to human waste, which are discharged into the influent sewage to POTWs. Among these sources are residential and commercial automatic dishwasher detergents, which still contain appreciable amounts of phosphorus. The Minnesota Pollution Control Agency commissioned a detailed study of the

sources of phosphorus of Minnesota POTWs and watersheds. The results of the Minnesota study have been useful for the estimation of phosphorus sources, especially ADWDs, to the District's water reclamation plants.

The Minnesota Pollution Control Agency had a legislative mandate requiring a comprehensive study of phosphorus contributions to POTWs and Minnesota surface waters. A report entitled, "Detailed Assessment of Phosphorus Sources to Minnesota Watersheds," prepared by Barr Engineering Company, was completed in February 2004. (See Ex. 1) Volume 2 of the report, entitled Point Sources Technical Memorandum, February 16, 2004, includes an estimate of various phosphorus sources discharged to POTWs in Minnesota. The sources included residential ADWDs, commercial/institutional ADWDs, water treatment chemicals, food soils/garbage disposal waste, dentifrices, as well as commercial/industrial process wastewater.

The estimated contributions to the Minnesota POTWs from the various sources in terms of percent total phosphorus load to the POTWs statewide are as follows:

Residential ADWD	7.3%
Commercial/Institutional ADWD	3.4%
Dentifrices	1.0%
Foods Soils/ Garbage Disposals	16.2%

Commercial/Industrial	26.5%
Process Wastewater	
Water Treatment Chemicals	3.1%
Inflow and Infiltration	0.1%

These sources accounted for 57.6% of the total phosphorus load to the Minnesota POTWs. The remaining 42.4% of the phosphorus load was attributed to human waste.

The contribution of ADWDs was based upon the 2000 reported amount of phosphorus used for ADWD formulation in the United States, from the Stanford Research Institute publication Chemical Economics Handbook - Industrial Phosphates, and the estimated U. S. population for the year 2000 (approximately 281,422,000). This data was used to calculate a per capita per year ADWD phosphorus usage in Minnesota. Then the per capita values were applied to the population served by the POTWs. The following are the per capita phosphorus values estimated in the Minnesota study, for ADWDs:

Residential ADWDs	0.085 Kg/person/year
Commercial/Industrial ADWDs	0.04 Kg/person/year

Using the per capita values from the Minnesota report, and overall estimate of the phosphorus load from ADWDs in Cook County has been made. The 2002 population for Cook County was reported by the Census Bureau as 5,283,888. This value does not include persons living in institutions such as hospitals or college

dormitories. The following estimates were made:

Residential ADWD is 449,131 Kg phosphorus/yr (494 tons/yr)

Commercial/Institutional ADWD is 211,355 Kg phosphorus/yr (232 tons/yr)

The combined total phosphorus load to the District's WRPs, based upon 2003 average influent phosphorus concentrations and average daily flows is 63,748 lbs/day, or 11,634 tons/yr shown in the following table. Thus, the phosphorus contribution to the District WRPs influent phosphorus load is 4.24% for residential ADWD and 2.0% for commercial/institutional ADWD. These are broad-based estimates since we do not have data as to ADWD usage specifically for Cook County. However, it is clear from the above information that a ban on phosphorus in ADWDs in Illinois could be a more effective approach to achieving immediate phosphorus reductions in POTW effluents than enacting the limited scope of POTW effluent limits proposed by the IEPA.

You can see the Average Daily Phosphorus Loadings to District WRPs in 2003 in the chart.

Agricultural Sources of Phosphorus are Significant

While focusing on POTWs as significant sources of phosphorus, IEPA ignores the fact that agricultural drainage and runoff are also a significant source. The lack of control of this source will result in continued water quality problems. This source is not due to entirely natural causes, but results

from the excess use of fertilizer containing phosphorus and other nutrients. In the year 2000, a study reported in the Journal of Soil and Water Conservation found that farmers in Wisconsin over-apply nutrients. (See Exhibit 2) As reported, on average, farmers applied an excess of 83 Kg/ha (74 lb/ac) of phosphorus beyond University of Wisconsin recommendations for growing corn. In addition, it was found that the simple promotion of best management practices will not guarantee water quality protection and/or improvement. This study is reported in the Journal of Soil and Water Conservation, First Quarter 2000, pages 63 through 68, Nitrogen and phosphorus management on Wisconsin farms: Lessons learned for agricultural water quality programs, by R. Shepard. Undoubtedly, farming practices in Illinois are similar to those in Wisconsin. Even modest reductions in overuse of agricultural fertilizers would have a far larger effect on reducing the phosphorus levels in Illinois streams, than adoption of the current IEPA proposal.

Large concentrated animal feeding operations have been long identified as major sources of excess agricultural phosphorus that is discharged into surface waters in the United States. The contribution of CAFOs to excess agricultural phosphorus in the environment is discussed on pages 36 and 37 in a bulletin titled Plant Nutrient Use in North America Agriculture, published in 2002 by the Potash and Phosphate Institute. (See Exhibit 3) In

Appendix 6.3 of this bulletin, on pages 112 and 113, it is reported that in the state of Illinois, CAFOs generate about 27 million pounds of excess phosphorus pentoxide annually, which is equivalent to 12 million pounds of phosphorus. This excess phosphorus is prone to over application on the farms where it is generated and potentially lost through runoff and drainage. Appendix 6.3 of the report also shows that besides the excess phosphorus generated by CAFOs, unconfined animals on Illinois farms excrete about 67 million pounds of phosphorus pentoxide annually, which is equivalent to 29 million pounds of phosphorus. This is calculated by the difference between the total amount of manure phosphorus excreted by all farm animals (162 million pounds of phosphorus pentoxide) and the total excreted by CAFOs (95 million pounds of phosphorus pentoxide). This excess phosphorus can contribute to agricultural phosphorus runoff if it is not accounted for in farm nutrient management plans.

The IEPA has apparently embraced these findings, but does not inform the IPCB of this matter in their proposal. On July 14, 2004, IEPA issued a news release titled "ILLINOIS EPA WILL IMPLEMENT ADVISORY GROUP RECOMMENDATIONS Pilot Projects in Rock River Basin will demonstrate comprehensive watershed planning." (See Exhibit 4) The press releases states "'Governor Rod Blagojevich asked the Illinois EPA to work with a broad range of interests and to rethink how we can protect our vital water

resources, which are essential to both our quality of life and economic well-being, and I want to thank the B-MAG members for their vital work,' said Illinois EPA Director Renee Cipriano." The B-MAG is a stakeholder group from a broad range of interests that assisted the IEPA in reaching consensus on the Facility Planning Issue.

One of the B-MAG recommendations (VII.C.1) reads as follows: "IEPA should embark on a process that utilizes existing resources to develop a statewide watershed management approach to protecting and preserving water quality in the seven major basins across Illinois." (See Exhibit 5) The news release indicated that pilot projects would occur for the Green and Kishwaukee River watersheds in the Rock River Basin. Agricultural non-point sources of nutrients are dominant in these two watersheds. The IEPA should inform the IPCB and others how this new initiative will solve water quality problems caused by phosphorus and other nutrients and use this initiative as the basis for a statewide plan for the control of nutrient discharges.

Phosphorus Not the Only Nutrient of Concern

IEPA correctly points out in their Statement of Reasons that nitrogen is also a nutrient of concern and that federal water quality criteria has also been published for nitrogen. Dodds, Smith and Lohman (Canadian Journal of Fisheries and Aquatic Sciences, Vol. 59, pp. 865-874, 2002) note that "Although

the occurrences of Nitrogen limitation in streams is inconsistent with the early view that Phosphorus is generally the primary limiting factor in inland freshwaters, experimental nutrient enrichment bioassays have confirmed Nitrogen limitation in a variety of different stream ecosystems. The data reveal a significant Nitrogen Phosphorus interaction in streams and suggest that it is necessary to consider both Nitrogen and Phosphorus as potentially limiting nutrients for periphyton biomass accrual in lotic systems." Statistical techniques established significant breakpoints of about 30 ug total Phosphorus per liter and 40 ug total Nitrogen per liter, above which mean benthic chlorophyll values were substantially higher. Thus it is questionable whether an interim effluent phosphorus limit of 1.0 milligram per liter, by itself, would have any noticeable impact on Illinois streams.

However, IEPA does not explain that there has also been a significant amount of federal study of the problem of hypoxia in the Gulf of Mexico. In January 2001, the report of Mississippi River/Gulf of Mexico Watershed Nutrient Task Force identified nitrogen as the cause of hypoxia in the Gulf. (See Exhibit 6) This report also stated the need to reduce the contribution of Nitrogen to the Gulf because of the point and non-point sources of nitrogen in the state.

In another news release dated June 30, 2004, Governor

Blagojevich identified farm nutrient runoff as a cause of hypoxia in the Gulf. (See Exhibit 7) This release, titled Gov. Blagojevich joins Mississippi River Water Quality Initiative, expressed the Governor's disappointment at not being able to join the Governors of Minnesota and Wisconsin on June 30 in LaCrosse, Wisconsin, to pledge continuing commitment to protect and improve the Mississippi River.

In the news release, Governor Blagojevich states: "While I will not be able to be there in person, in spirit I join my fellow Upper Mississippi Valley Governors in our commitment to continuing to protect and improve the great river that first brought settlers and commerce to our region. Recently, at my request, the Illinois Environmental Protection Agency proposed new limits on phosphorus discharges for most new and expanding wastewater treatment plants and last fall I nominated the Mississippi River segment that borders Illinois and Missouri for the federal Watershed Initiative Program to help reduce farm chemical runoff into the Mississippi River."

The news release continues "Governor Blagojevich said he has requested nearly $1.3 million in federal funding for innovative programs to help address 'Gulf Hypoxia' - a condition caused by farm [fertilizer] runoff that has been blamed for killing off aquatic life in a large and growing area in the Gulf of Mexico.

Because Governor Blagojevich has joined with the Governors of Minnesota and Wisconsin in this commitment, it is helpful to know what these two Governors have committed to do. A news release issued jointly by both Governors dated June 30, 2004, includes the following:

* Focus on meeting the two states' shared responsibility of nutrient and sediment reduction, including making progress on the multi-state plan to reduce nitrogen discharges into the Gulf of Mexico by 30 percent by 2015;
* Expand the partnership beyond Minnesota and Wisconsin to also include the other three states in the Upper Mississippi River basin: Iowa, Illinois and Missouri;

(See Exhibit 8)

We bring this matter to the attention of the Board because there have been significant discussions with IEPA, USEPA Office of Water, and USEPA Region V Division of Water regarding the use of constructed and restored wetlands in Illinois to reduce the concentrations of nitrogen and phosphorus in the Illinois River Basin. These discussions were initiated by several members of the Illinois Association of Wastewater Agencies, including the District, and The Wetlands Initiative, a not-for-profit corporation in Chicago. The discussions have also included other

not-for-profit environmental advocacy organizations. The TWI and the several members IAWA, including the District, have proposed a by comprehensive research program involving several Midwestern universities, including the University of Illinois, and the Argonne National Laboratory to demonstrate the effectiveness of large-scale constructed or restored wetlands in removing nutrients.

The use of wetland technology to control the contribution of nitrogen and phosphorus was not mentioned by IEPA, but it should be included as a viable control technology. The use of this technology would serve to control the discharge of nitrogen and phosphorus in Illinois waters as well as to reduce the contribution of nitrogen to the Gulf by the State of Illinois. The use of this technology bring other benefits as well, such as, reduced demand on nonrenewable energy, reduced demand on treatment process chemicals, increased wildlife habitat, reduced flood damages and biodiversity. (See Exhibit 9)

The use of wetland technology for point and non-point sources can be integrated with the use of conventional treatment technology by POTWs in a watershed. To create a useful planning tool for the use of these two technologies, the District recently submitted a project proposal to the Water Environment Research Foundation, IAWA and Illinois Water Resource Center. (See Exhibit 10) The project will involve the University of Illinois

to develop the planning tool under contract to the District and under the oversight of a project steering committee including the IAWA, IEPA, Region V, other departments of federal and state government and other interested parties.

Effective control of nutrients in watersheds will also require some form of water quality trading to create incentives for trading between point and non-point sources of these nutrients. Recognizing this need, EPA adopted a Water Quality Trading Policy on January 13, 2003. (See Exhibit 11) Water Quality trading programs have been successfully tested and demonstrated in other states. Already, trading is an effective tool in attaining air emission reductions in Illinois. Water quality trading will be an effective component in the development of nutrient standards in Illinois where it can be shown that trading within upstream watershed areas will not contravene water quality standards and will be effective in controlling nutrients from point and non-point sources impacting downstream areas. This policy has received much support nationwide. Recently, the National Association of Counties adopted a resolution on July 18, 2004, in support of the EPA Water Quality Trading Policy. (See Exhibit 12)

The use of wetland technology for nutrient management on a watershed scale would provide a cost-effective technology to control nutrients from both point and non-point sources in a

watershed. It would not place the entire burden for nutrient control solely on the POTWs. Several IAWA members, including the District, are willing to proceed with this technology only if the IEPA creates a mechanism for it to be recognized with the current body of rules. It is extremely important for the POTWs that the burden for control of nitrogen and phosphorus be equitable, therefore a means must be found to reduce the contribution of these nutrients from non-point, as well as point surfaces.

There are significant efforts underway in neighboring states to address the discharge of nitrogen in the Mississippi River Basin. As mentioned above, the Governors of Minnesota and Wisconsin have agreed on mutual efforts to control the discharge of nitrogen. Iowa has been funding the construction of wetlands in agricultural areas in watersheds tributary to the Mississippi River to reduce the discharge of nitrogen. The states in the Ohio River Basin have begun a voluntary effort to address the discharge of nitrogen. However, only about 15 percent of the area of Illinois is in the Ohio River Basin. It appears that Illinois is behind its neighboring states in controlling the discharge of nitrogen.

Illinois representation in the Ohio River Basin initiative incudes the IEPA and Department of Agriculture. Region V is also represented. With this Illinois participation in the Ohio River Basin, the commitment to join Minnesota and Wisconsin in the

nitrogen reduction initiative and the work underway in Iowa, it is remarkable that the IEPA, faced with the mountain of evidence regarding Gulf hypoxia, has not shown any inclination to address the reduction of nitrogen from point and non-point sources. Instead, IEPA proposes a rulemaking for phosphorus that is lacking scientific foundation and is discriminatory in its application to certain POTWs.

The District recommends that until the IEPA develops (1) a plan for statewide control of nitrogen discharges to meet the desired 30 percent reduction target for nitrogen and (2) a watershed water quality trading program, an allowance be granted for those dischargers who wish to voluntarily participate in nitrogen reduction efforts through participation in the creation or restoration of treatment wetlands in the watershed in which the discharger is located. The District proposes such an allowance.

District's Findings Related to Phosphorus

The District has three plants that discharge to General Use waters. The effluent monthly average total phosphorus concentrations range from 0.17 to 4.45 milligram per liter for the 2000 through 2003 period. Individual plant data is as follows: You can refer to the chart below.

The 2003 annual average and monthly grab sample maximum and minimum TP concentrations in the receiving streams downstream of

the outfalls for these plants are as follows: Refer to the chart below.

As can be seen above, there is considerable variability in effluent and stream TP concentrations. However, at this point neither the District nor the IEPA has been able to correlate the varying stream TP concentrations with differences in attainable uses or the general biological health of these waterways. Therefore, if this proposed interim effluent standard were to be applied to one of these WRPs some day, there is no certainty of any environmental gain being achieved, or of even knowing how to assess if the change in effluent phosphorus levels even significantly effected in-stream phosphorus levels.

MWRDGC attempted to determine if industrial contributors were a significant source of phosphorus. Based on our review of plant influent loadings and regulated industrial contributor loadings for 2002, we determined that the industrial phosphorus loading that could be controlled through local pretreatment limits varied from zero to three percent of the influent loading at six of the District's seven plants. The variation is detailed as follows: You can see in the box below.

There is no significant industrial phosphorus loading at the Lemont WRP.

Most of the phosphorus in raw sewage results from human waste and residential uses of products containing phosphorus. As

explained earlier, although phosphorus is no longer used in residential laundry detergents, it is used in ADWD, dentifrice products and commercial and industrial cleaning products. IEPA should consider controlling phosphorus at its source by banning some of these products that contain phosphorus. Such controls would remove far more pounds of phosphorus from Illinois waters than the current IEPA proposal.

For example, IEPA should consider a ban on the use of phosphorus in fertilizers for residential use. It is noted that Minnesota Governor Tim Pawlenty signed on May 10, 2004, a law (Minnesota House File No. 2005, 83rd Legislative Session) that bans the use of fertilizer containing phosphorus on turf. The ban will become effective on January 1, 2005, and applies to fertilizer to be used on turf that is purchased at retail after August 1, 2004. The ban prohibits the application to turf of phosphorus-containing fertilizer on property unless (i) a soil test indicates that phosphorus is needed, (ii) the application is for the first turf growing season and (iii) the property is a golf course. (See Exhibit 13) It would appear that such a statewide ban would eliminate more phosphorus in Illinois waters than the limited approach taken by the IEPA.

District's Suggestions for Measures to Control Phosphorus

The District has proposed to the IEPA, transmitted by letter dated April 27, 2004, to conduct a demonstration project

at its Egan Water Reclamation Plant in Schaumberg to determine if phosphorus removal would show any impact or improvement in Salt Creek downstream of the plant outfall. (See Exhibit 14) The proposed project includes comprehensive monitoring of Salt Creek upstream and downstream of the Egan WRP outfall. The monitoring program will be coordinated with downstream discharges to Salt Creek in DuPage County and must be approved by the IEPA. The IEPA has indicated an interest in proceeding with this and other similar initiatives at other POTWs to develop a scientific basis to demonstrate whether or not justification for a phosphorus standard exists. The Region V Division of Water has also shown support for the District's proposed demonstration project. The District's monitoring results and conclusions will be prepared in a scientific report available to the public. Should the report demonstrate that phosphorus causes impairment, it will support the need for a water quality based effluent limit.

If the results of this demonstration project show that the removal of phosphorus will have a beneficial effect on Salt Creek, then the IEPA will modify the District's NPDES permit for the Egan WRP by incorporating a water quality based effluent limit for phosphorus.

District's Recommendations on the IEPA Interim Phosphorus Proposal

The District requests that the IPCB deny the entire

proposed interim limit as described in the IEPA petition for Section 304.123 (g) through (j). In the event the IPCB deems it advisable to adopt regulations at this time, it is recommended that the IPCB adopt the following requirements:

1. The IEPA shall, upon a demonstration by a scientifically sound receiving stream monitoring program that existing phosphorus loadings are causing or increased phosphorus loadings will cause impairments, petition the Board for a site-specific phosphorus standard for the waterway segment impacted by a proposed new or increased phosphorus discharger prior to issuing a new permit for said discharger.

2. Any applicant for a permit to discharge additional phosphorus loadings to a receiving stream that is identified as phosphorus impaired, shall include controls to limit phosphorus discharges to a water quality based effluent limit based on an appropriate water quality phosphorus standard.

3. A point source discharger that participates in a dedicated wetland creation or restoration project in the same watershed as the discharger is located, shall receive credit for the nutrients removed by the project as if the nutrients were removed at the outfall of the discharger, provided that the amount of credit

received is proportional to the monetary participation of the discharger in the nutrient removal portion of the total project cost.

Respectfully submitted, Metropolitan Water Reclamation District of Greater Chicago, Richard Lanyon, Director of R&D.

HEARING OFFICER KNITTLE: Thank you, sir. Mr. Hill, do you have any questions that you would like to ask?

MR. HILL: I have a few follow-up questions.

HEARING OFFICER KNITTLE: And before we get to that, were you intending to submit the prepared testimony as an exhibit?

MR. LANYON: Yes, I was. With the exhibits attached.

HEARING OFFICER KNITTLE: With the exhibits. Are there any objections to that?

MR. SOFAT: No.

HEARING OFFICER KNITTLE: Seeing none, that will be admitted as Exhibit No. 9. You may proceed, Mr. Hill.

MR. HILL: Mr. Lanyon, your testimony you identified automatic dishwasher detergent other than human waste and in the effluent sewage to publicly own treatment works. Are non-phosphate automatic dishwasher detergent products variable?

MR. LANYON: Yes, they are. Such products available at local stores and the product has been seen at People's Market. Cole Foods carry four brands of ADWD under the names Bio Kleen, B-I-O-K-L-E-E-N, Citrasuds, C-I-T-R-A-S-U-D-S, 7th Generation and

Wave. People's Market I found some of these brands and one other Ecos E-C-O-S. Most of these were in powder form. Some of these are also in gel form. Those on my list predominantly officially did not carry any of these brands but did carry products Cascade, Electrosol, E-L-E-C-T-R-O-S-O-L, Palmolive, Simply Clean and Sunlight. Again most of these were available in powder and some in gel form. According to the product labels all, except Palmolive, contain phosphate ranging from 6.4 to 4.5 percent as phosphorus. Palmolive contained phosphates at 1.9 percent as phosphorus. I also found that all of the non-phosphorus brands were approximately 50 percent more expensive than the phosphorus brand. This is probably a market monopoly since the large retailers did not carry products that cost more.

In our home we formerly used Cascade but we now use a non-phosphorus ADWD product and we find no difference in the leading effectiveness of the non-phosphate ADWD as compared to Cascade.

MR. HILL: Do you believe that a ban on phosphates containing ADWDs can be effectively implemented?

MR. LANYON: Yes, I do. I recall in the early 1970s the city of Chicago put a ban on the sale of residential laundry products containing phosphorus. Today all such products would be phosphorus free. The same can be done for ADWDs since non-phosphate products are available and are effective. Such a

ban would force the large retailers to carry the non-phosphate brands and the additional sales volume would probably bring down the production cost and the retail price of these products.

MR. HILL: If ADWDs were banned, can you estimate what load of phosphorus would be eliminated from Illinois waters?

MR. LANYON: Yes, I estimate that approximately 1,200 tons per year would be eliminated from Illinois waters. This estimate is based on residential ADWD products only and is calculated using the Minnesota per capita usage in my testimony. And the population of Illinois which is 12,419,000. Adding commercial ADWDs to the ban would increase the eliminated load by about 50 percent. This is pollution prevention at its best and reduces the introduction to phosphorus into the environment.

MR. HILL: Do you have an estimate of the excess class versus crop land to Illinois?

MR. LANYON: Yes, as noted in my testimony on page 9, farmers in Wisconsin applied an excess of 74 pounds of phosphorus per acre. According to information available from Illinois agricultural statistics service for 2003, there were a total of 22,237,000 acres in production in Illinois for corn, grain, sorghum, oats, soybeans and winter wheat. Assuming that Illinois farmers over apply at the same rate as do farmers in Wisconsin, I estimate that there is an approximate excess of 823,000 tons per year of phosphorus applied annually.

MR. HILL: Do you have an estimate of reduction of phosphorus loading on Illinois waters that would result from a proposed rule and how this would compare to other sources in phosphorus rule?

MR. LANYON: The proposed rule would probably remove over 200 or 300 tons of phosphorus per year. I base this estimate on a few of these that now remove phosphorus and the number of water reclamation plants that will be removing phosphorus under the proposed ruling. This quantity of phosphorus reduction is far below the amount of phosphorus from non-point sources and below the amount that would result if a ban of ADWDs was implemented.

MR. HILL: I think the only thing I will offer is a very brief rebuttal testimony to Professor Walter Dodd's testimony.

HEARING OFFICER KNITTLE: Offering that as Exhibit No. 10.

MR. HILL: Yes.

HEARING OFFICER KNITTLE: Any objection to that testimony? Seeing none, we will admit that. Are there any further questions, Mr. Hill?

MR. HILL: Not at this time.

HEARING OFFICER KNITTLE: Any questions of this witness?

MR. ETTINGER: You gave an estimate as to the amount of reduction in phosphorus and the proposed rule would go, I didn't quite catch the end, you said how many, 200 to 300?

MR. LANYON: Tons per year.

MR. ETTINGER: I have some questions. First of all, looking at your -- looking at your Exhibit A or one here, I'm sorry, at Roman Numeral Two, the executive summary, is the first or second paragraph here it talks about phosphorus is the nutrient primarily responsible for the beautification of Minnesota surface water and then it goes on to say phosphorus from point surface may be more by vital available impacting surface water quality one in similar found in non-phosphorus that enters the same surface water. Do you know -- have any research that either proves or disproves that based on your experience?

MR. LANYON: There is current research under way in Illinois as part of the nutrient standard development program that is collecting data on this -- the subject of nutrients in Illinois streams and rivers.

MR. ETTINGER: Are you part of that task force?

MR. LANYON: No. We are cooperating with one of the four investigative teams and supplying samples and data for waterways in the Chicago area.

MR. ETTINGER: Do you know Professor Mark David of the University of Illinois?

MR. LANYON: Yes.

MR. ETTINGER: Is he participating in that task force?

MR. LANYON: Yes.

MR. ETTINGER: Get some data here on estimates of the point

source versus non-point source loading in Minnesota. Are you aware of any data of a similar sort for specific to Illinois?

MR. LANYON: No, I searched for such data but couldn't find no similar data especially for the run-off from non-point sources.

MR. ETTINGER: You're aware that this proposal only applies to newer increase discharges?

MR. LANYON: Yes.

MR. ETTINGER: Does the Water Reclamation District intend to increase the amount of discharge of any of its plants within the next five years?

MR. LANYON: Well, that's a good question. There is variability in the flow of our plant due to the weather of course so --

MR. ETTINGER: Let me -- let me -- I should clarify that. That is -- No, actually it was a bad question. Does the Water Reclamation District intend to request permit changes in the next five years that would allow an increased average discharge over and above the current permitted levels?

MR. LANYON: Currently we are preparing a plan or expansion of our Lemont Water Reclamation Plant that probably will put in such a permitting request. We're completing master plan studies for our three large plants and will anticipate that will result in increase dry weather flow capacity.

MR. ETTINGER: I'm sorry. You're very soft spoken, and with the truck behind you, the three big plants you're not anticipating requesting an expansion of?

MR. LANYON: Right.

MR. ETTINGER: Lemont you may request an expansion?

MR. LANYON: Correct.

MR. ETTINGER: What would the expansion be at Lemont?

MR. LANYON: Well, it would be an increase in plant capacity for Lemont. Lemont is one of those rapidly growing communities.

MR. ETTINGER: And when would you anticipate making this request?

MR. LANYON: Probably within the next three years.

MR. ETTINGER: I was confused also by your testimony about with regard to Governor Blagojevich's press release in joining the Mississippi Water Quality Initiative, do you like Governor Blagojevich's proposal here or do you not like it?

MR. LANYON: Yes, I find them acceptable.

MR. ETTINGER: Well, part of this says recently at my request the Environmental Protection Agency proposed two limits on phosphorus discharges for most new and expanding wastewater treatment plants, isn't this the proposal we're talking about here?

MR. LANYON: Well, I didn't see that the Governor requested

the limit of .1.

MR. ETTINGER: You don't think this is what he's referring to -- well, the press author of the press release was referring to this?

MR. LANYON: I don't know what the Governor had in his mind specifically.

MR. ETTINGER: Okay. Well, do you think the fact that the Governor proposes something makes it more or less likely to like it?

MR. LANYON: Well, he may like it but I don't know that he did the science for making such a proposal.

MR. ETTINGER: This is just perhaps a hyper technical point except of you refer to various places in your testimony about Minnesota and Wisconsin agreeing on mutual efforts to control the discharge of nitrogen, do you know that discharge is a magic water under the Clean Water Act? Do you mean that to say that the efforts of Wisconsin and Minnesota were limited to point sources, i.e., discharges opposed to loadings of phosphorus generally -- I'm sorry, nitrogen generally?

MR. LANYON: Well, reading the press releases that you're reading, that had nothing to get into sources specifically knowing that in those states that they have large areas of agricultural such as in Illinois, presumably they address non-point sources also.

MR. ETTINGER: Okay. But I guess I was just clarifying that. I didn't mean to limit this to discharges meaning point sources. You also meant that you believe their efforts also refer to non-point as well sources?

MR. LANYON: I do believe that.

MR. ETTINGER: If -- You make very good recommendations as to automatic dishwasher detergents. If there was ordinances or laws passed that would reduce the amount of automatic dishwasher detergent phosphorus coming into your plant, would that reduce the cost of treating for phosphorus if it becomes later necessary for the sewage treatment plant to treat with phosphorus?

MR. LANYON: Well, given that the portion of phosphorus from ADWDs that contributory to a treatment plant is less than 10 percent, I don't see that there would be a measurable cost difference. They may not even be a measurable difference in effluent cost simply by that reduction.

MR. ETTINGER: I'm sorry. Perhaps I didn't understand your testimony, your answer. I believe you testimony was that if there were these reductions in or shifting in uses of phosphorus land detergents, that you would have 1,200 tons less phosphorus discharge a year; is that correct?

MR. LANYON: That's correct.

MR. ETTINGER: So you don't mean to say that take the phosphorus out of the discharge or out of the detergent would

have no effect on effluent quality, do you?

MR. LANYON: Well, it may be difficult to determine the effect on effluent quality. When you operate a treatment plant, this plant varies by day, by hour in loadings. And the extent to which you're reducing a portion, which I've identified it about four or five percent from ADWDs, you may have very little impact on the variations that you see in the daily operation of the water reclamation plants.

MR. ETTINGER: I don't have any further questions at this time.

HEARING OFFICER KNITTLE: Mr. Harsch?

MR. HARSCH: A clarifying question if I might. In your recommendation as to an alternate rule the Board might want to consider adopting, if they don't follow the District's recommendation to deny it in its entirety, you refer to a stream that is identified as phosphorus impaired, you're not talking about a stream that exceeds the 85th percentile value, you're talking -- you mean a stream that's actually showing by cause and effect to have a phosphorus impairment issue; is that correct?

MR. LANYON: Correct.

MR. ETTINGER: Let me follow-up on that. Is it your knowledge now that IEPA identifies any streams as impaired by phosphorus in a cause and effect manner?

MR. LANYON: Well, they identify streams as impaired

according to certain criteria. At the present time that's used in their annual bi-annual water quality report. But this is based on the criteria that was discussed earlier.

MR. ETTINGER: Correct. But to your knowledge IEPA now just uses the percentage method that Mr. Harsch has identified for identifying potential causes but in your view that would not be sufficient to lead to any phosphorus controls?

MR. LANYON: No.

MR. ETTINGER: Are you aware of any research being done now by IEPA that would lead to that sort of cause and effect phosphorus sciences as you're working from?

MR. LANYON: Well, IEPA does include as part of their monitoring strategy so called intensive base in surveys and facility surveys where they look at the receiving stream. And it would be possible from those surveys to determine impairments by virtue of algae or excessive growth in streams downstream of a source.

MR. ETTINGER: Okay. Now I guess we got something going here differently then. You're saying if we identify by looking at algal or chlorophyll levels, high levels, then that would justify phosphorus controls?

MR. LANYON: Well, you would have to conduct a study and make a determination that the stream had already demonstrated that these conditions existed, then aggravating those conditions

wouldn't be a good move.

MR. ETTINGER: Thank you.

MR. RAO: Just for a follow-up, so in your proposal, that the scientific studies with the impairment, would that be the trigger for aquatic phosphorus control? Right now the Agency's proposals are based on new and expanded loading. But the way in your proposal is set up it can be existing loading and if the Agency determines an impairment, then they can require controls on possibility to be the cause?

MR. LANYON: Yes.

MS. LIU: In your alternative recommendations you mentioned uses water quality trading as part of that. You also mentioned that the Agency came out with a water quality trading process in 2003 and I was wondering if the Metropolitan Water Reclamation District has seen any progress in that since then?

MR. LANYON: To my knowledge there has been no progress in use of trading in Illinois.

MS. LIU: In your testimony you also say there's a potential scientific basis for a justifiable, sensible phosphorus a few years away and there is no justification for an interim limit?

MR. LANYON: Correct.

MS. LIU: Would you be more receptive to a phosphorus limit if it were to come in the form of a package along with other

nutrient standards when the Agency has completed its nutrient standard multi-year program?

MR. LANYON: Yes.

MS. LIU: Thank you.

HEARING OFFICER KNITTLE: Any further questions for Mr. Lanyon? Seeing none, thank you, sir, for your testimony and you may step down.

MR. ETTINGER: I'm going just to offer as an exhibit a study so I don't have to carry them home. I would otherwise have them -- otherwise submitted afterwards. This is Anthropogenic Inputs of Nitrogen and Phosphorus and Riverine Export for Illinois USA by Mark B. Davis.

MR. HARSCH: You're not finding any testimony supportive of that study or --

MR. ETTINGER: I'm submitting it as it's a published.

MR. HARSCH: Other than the fact it's a published study, you believe no support presented for it, with that I have no objection.

MR. ETTINGER: Fine.

HEARING OFFICER KNITTLE: Any other qualification or objections? This will be admitted. Mr. Harsch, we have the testimony of James Daugherty. Let me just check real quick. Is there anybody else here today planning on testifying today at this hearing today? Go off the record for a second.

(A discussion was held off the record.)

HEARING OFFICER KNITTLE: Mr. Harsch is offering testimony of James Daugherty. Sir, do you mind having a seat and we'll swear you in.

(The witness was sworn.)

MR. HARSCH: Mr. Daugherty, have you prepared the pre-filed testimony that was previously submitted to the Pollution Control Board on October 20th?

MR. DAUGHERTY: Yes.

MR. HARSCH: At this point would you please read your pre-filed testimony.

MR. DAUGHERTY: My name is James Daugherty. I am currently employed by the Thorn Creek Basin Sanitary District as its general manager. The sanitary district operates a wastewater treatment facility in southern Cook and northern Will counties, Illinois, with a design flow of 16 million gallons per day. The facility currently serves a population of 100,000. I have been employed by Thorn Creek Basin Sanitary District since 1973. I have held the position of District Manager since November of 1976.

I have received both a bachelors and masters degree in civil engineering from the University of Illinois at Urbana/Champaign. I hold an Illinois Environmental Protection Agency Class 1 and Class K operator's license for wastewater

treatment and an Illinois Environmental Protection Agency Class A license for potable water. I have been active in many technical organizations, including the Water Environment Federation and the Association of Metropolitan Sewage Agencies.

My testimony is provided on behalf of the Illinois Association of Wastewater Agencies. I am a past president of the IAWA and currently serve as chairman of the Technical Committee on the Proposed Interim Phosphorus limit. IAWA is a professional association representing the major wastewater treatment plants in the State of Illinois. We have about 100 members and affiliate members, which includes approximately 55 districts and municipalities throughout the state. These agencies operate approximately 75 publically-owned treatment works, including almost all of the sate's major facilities. In addition to these sanitary districts, water reclamation district and municipalities, the largest Illinois private wastewater utility that operates 12 plants is also a member. Representatives of these organizations are public officials and include both elected and appointed trustees of districts and appointed officials at municipalities throughout the state. Our constituents are the citizens and taxpayers of Illinois, who are the same constituents as any other state or public agency.

IAWA Goals

Our members are responsible both for the operation of

existing wastewater treatment facilities and the construction of new facilities. New facilities are constructed either to meet additional environmental protection needs or to provide more capacity for expanding service areas. IAWA members are committed to both ensuring that the aquatic environment is maintained in a healthy state and to providing wastewater treatment services at a reasonable cost to our constituents. IAWA is proud of its long commitment to the application of sound science to the development of water quality and effluent standards. When standards are developed from sound science, IAWA members have a high level of confidence that those standards will be in place for many years. This allows us to do our job, which is to provide needed wastewater treatment at a minimum long-term cost to our constituents. In contrast, when standards are developed without the use of sound science, IAWA members are forced to use interim solutions to treatment needs to avoid building facilities that might not be needed once more appropriate limits are developed.

I would like to thank the Board for this opportunity to participate in an important rulemaking.

Nutrient Limits

IAWA supports the Agency's work plan, as approved by USEPA, to develop nutrient water quality standards for Illinois. That plan calls for the application of sound science to develop nutrient limits by the year 2008. The development of such limits

is consistent with IAWA's long standing support of science-based water quality standards. IAWA has and will continue to participate in the Agency's Illinois Nutrient Work Group.

Proposed Interim Phosphorus Limit

IAWA is opposed to the proposed interim effluent phosphorus limits. We urge the Board to reject the Agency's proposal in its entirety. As proponent of the proposal, the Agency is required to provide an environmental, technical, and economic justification for the proposed rule. See 35 Il. Adm. Code 102.202. The Agency has not provided an adequate environmental, technical or economic justification for a new statewide effluent limitation. With respect to the environmental justification for the proposed rule, the Agency has repeatedly stated that it cannot determine what, if any, would be the environmental benefit of the proposed effluent limitation, or whether there will be any benefit on a state-wide basis to receiving streams where dischargers will be subject to the proposed limitations.

The Agency has stated that the proposed interim phosphorus limits are based on the application of certain technology in the wastewater treatment process for the reduction in phosphorus. For streams where phosphorus can be shown to be impairing a recognized stream use, there are already regulations which would allow the Agency to give those dischargers effluent limitations that will address such impairments. For receiving streams where

it cannot be determined that there will be a benefit from reductions in phosphorus levels, the proposed interim limit would result in the installation and operation of treatment technology with no known benefit.

With respect to the technical justification and economic cost of the proposed rule, the Agency has stated that it expects facilities to use chemical phosphorus removal processes to meet an interim limit. The Agency readily acknowledges that the application of this technology will increase the cost of wastewater treatment, but it has failed to provide a sound and accurate estimate of the cost and omits important components of the cost. The most significant omission from the Agency's cost figures is the cost of handling and disposal of additional sludge. The Agency has estimated sludge volumes would increase by 15 to 30%. For a proposed limitation where the Agency is on record as admitting that it does not know what, if any, benefit to the receiving streams will be realized if the standard is adopted, the prospective costs are unsupportable.

IAWA believes there is no need for the proposed interim phosphorus limitation. Given that nutrient limits based on sound science are "on the way" and that the Agency currently has means to deal with streams that have known nutrient problems, adoption of an interim technology-based phosphorus limit is not wise public policy. The Agency has at times represented this interim

limit as the first step in a nutrient control program. The Agency has also admitted that at this point in time it does not understand the role of elevated levels of nutrients in the wide range of stream conditions found in Illinois. The Agency is saying it does not know what the nutrient control problem in Illinois will look like when it has completed the scientific studies. We question how anyone can know that the proposed interim limit is the first step in that process when the scientific studies have not been completed on the appropriate nutrient limitations for this state.

The Agency has also argued that there would be savings to the public when POTWs install phosphorus removal technology as they undergo expansion or new construction. The Agency has stated its expectation that treatment facilities will install chemical phosphorus removal in lieu of biological phosphorus removal given the fact that this is an interim limit, as biological phosphorus removal has a much higher capital cost. POTW managers are unlikely to spend significant capital dollars on a process their facilities may not need when real phosphorus water quality standards are adopted. POTW managers are more likely to install chemical phosphorus removal which has a lower capital cost, but higher operating costs. The facilities needed for chemical phosphorus removal are not in-line facilities. They are not facilities where an additional unit needs to be inserted

within the treatment train of unit processes. Chemical removal facilities are sideline facilities. They include chemical storage and pumping facilities that inject chemicals into existing treatment units. For this reason, they are fairly easy to add to the treatment facility at any time, not just during construction or expansion. IAWA does not believe there will be long-term cost savings by requiring facilities to add chemical phosphorus removal as they currently undergo expansion or construction, except possibly for the increase in the solids production due to chemical removal. Again, we would point out that the increase in solids production (between 15 and 40% as mentioned by the Agency) would have significant capital and operating cost implications to any facility. These costs have not been documented by the Agency.

Specific Technical Issues

Written testimony has been provided by the Metropolitan Water Reclamation District of Greater Chicago on September 28, 2004. IAWA has reviewed that testimony. It raised many important specific technical issues. IAWA urges the Board to give them careful consideration to the issues they raise.

Conclusion

IAWA requests the Board to reject the Agency's proposed interim phosphorus effluent limits. The Agency has failed to demonstrate that the proposed limits are justified from an

environmental, technical or economic basis. For streams where phosphorus can be shown to be impairing a recognized stream use, there are already regulations which would allow the Agency to give those dischargers effluent limitations that will address such impairments.

Thank you for your consideration to our comments.

HEARING OFFICER KNITTLE: Thank you, sir. Mr. Harsch, do you have any questions that you would like to ask?

MR. HARSCH: A couple of clarifying questions. On page one of your pre-filed testimony I think you referenced 55 districts and municipalities and you may have read that number as 75. The correct number is 55; is that correct?

MR. DAUGHERTY: That's correct.

MR. HARSCH: You're aware that IAWA has filed and is currently under consideration before the Board revisions to the State's General Use Water Quality For Dissolved Oxygen?

MR. DAUGHERTY: Yes.

MR. HARSCH: Was that proposal in part intended to develop a dissolved oxygen standard based on sound sciences which could then be utilized in the long-term development of nutrient limitations by Illinois?

MR. DAUGHERTY: Yes, IAWA looked at the basis for current limits and felt that they were inadequate based on currently available information.

MR. HARSCH: No further questions.

HEARING OFFICER KNITTLE: Mr. Ettinger, do you have any questions?

MR. ETTINGER: Yeah, I have a few questions. This is sort of on IAWA's general policies. Does IWA -- IAWA support the current phosphorus rule?

MR. HARSCH: Which rule? As it relates to discharge of --

MR. ETTINGER: One, two, three, A limits shall contain no more than one milligram per liter of phosphorus to be discharged into Lake Michigan, does the IAWA support that rule?

MR. DAUGHERTY: We haven't done a detailed review for the basis of that rule. Are you asking if we think it's based on sound science?

MR. ETTINGER: Actually I asked the question, I asked do you support it or not? You can tell me why you don't support it depending on what you think.

MR. DAUGHERTY: We're not objecting to it. But we haven't done a review to conclude it is based on sound sciences.

MR. ETTINGER: Okay. What about one milligram per liter limit on phosphorus where it's discharged above a lake of 8.1 hectares or more, does IAWA support that rule?

MR. DAUGHERTY: Again, I would say we have not chosen to object to it but we have not done it, review a scientific basis for that.

MR. ETTINGER: And going back to the EFD the effluent limits for oxygenating waste, does IAWA support that effluent rule?

MR. HARSCH: It's not an issue in this proceeding. I fail to understand the relevancy of that question. We can go through all the board rules today and find out if IAWA objects to if that's your intent.

MR. ETTINGER: Well, I guess that's true. I guess the question is -- well, if you don't want to answer the question, fine, don't answer the question, Mr. Harsch has pointed out limitations to.

MR. DAUGHERTY: There's a whole series of POTW limits.

MR. ETTINGER: Do you believe those limits never require any sewage treatment discharge or to put on more treatment than a strict study of stream conditions would require?

MR. DAUGHERTY: I believe the different levels of effluent permits are based on making available, to a degree, and over a period of many years they have been found to be fairly reasonable limits the vast majority of times.

MR. ETTINGER: Okay. We'll stop there.

HEARING OFFICER KNITTLE: Any questions from the Agency? Mr. Hill? Ms. Liu?

MS. LIU: Mr. Daugherty, if a treatment found it necessary to add-on in order to meet the 1.0 proposed phosphorus limit, and

later on the final numbers were changed to a lower number where other nutrient standards came into play, how effective would that treatment process be that they had to spend money on? How easy would it to be to dial it up and treat more?

MR. DAUGHERTY: In most cases it would require some modifications. It's hard to answer that question without knowing what level you're going to. And whether you can work it into that final design with certain modifications and whether it would be the same facilities that you would put in if you had a clean piece of paper to work from. It's probably not the case.

MS. LIU: Would you be more acceptable to a nutrient standard proposal that was more comprehensive than just one element at time that would allow you to design something that would be productive for all perimeters?

MR. DAUGHERTY: Yes, I think it would be more an efficient approach.

MR. ETTINGER: One more question, Mr. Daugherty. Have you ever designed a biological phosphorus removal system?

MR. DAUGHERTY: No.

MR. ETTINGER: Have you studied any biological phosphorus removal?

MR. DAUGHERTY: Yes.

MR. ETTINGER: Where have you studied them?

MR. DAUGHERTY: Water Environment Federation Technical

Presentations.

MR. ETTINGER: Are there any to your knowledge being operated in Illinois?

MR. DAUGHERTY: No.

MR. ETTINGER: Thank you.

HEARING OFFICER KNITTLE: Anything further? Thank you, sir. You can step down. Mr. Sofat, did you want to have testimony provided?

MR. SOFAT: Toby is going to meet some Agency comments and be open for any questions that the Board or other people may have.

HEARING OFFICER KNITTLE: Do you mind having a seat up here so the court reporter can hear you better.

(The witness was sworn.)

HEARING OFFICER KNITTLE: You can begin your testimony, sir.

MR. FREVERT: Yeah, I don't want to duplicate the testimony I gave at the first hearing but I did want to give a little bit of reaction to today's testimony. I think you've heard from the various witness. Number one, I don't think there is anybody in the room that's against sound science. We all want sound science. Based on the testimony nobody has that sound science and knows exactly what to do with nutrients. There's good, strong cause against many of Illinois waterways so that's a thing

that we're going to have to deal with the reality of that.

The next point I want to bring out is in an ideal world if we could wait for the perfect conclusion, we probably would, but reality is putting it on day after day a program to operate. Our existing regulation that require the agency to have documentation and determine what controls the limitations are necessary upon a discharge before they can authorize the discharge. At the present time we don't know, I think everybody in the room has agreed, we don't know exactly what rule specific phosphorus plays in the overall environment. We know that phosphorus is problematic in streams in Illinois. We know that phosphorus is not problematic in some streams and we want to keep it that way.

The first point I want to make our proposal is not intended solely to be remedial or respond to adherent laws. There's no distinction in our proposal between discharges to impaired water and discharges to high quality waters. We're basically saying it's prudent. A point source discharge is required under both state and federal law to get prior authorization to the extent that there is a parameter of question out there, we don't know exactly how to deal with the traditional or perhaps the only legal response so a higher authority can make a policy decision on that. We have what we believe is a measured and balance policy for application that deal with that.

Lacking this specific sciences and the data to demonstrate

a particular level of phosphorus in a discharge that's acceptable today, I don't know how I can authorize an NPDES on these changes, and quite frankly that's not just limited to expanding facilities, that's all facilities. So that's the other thing I want to bring out in this proposal. We've been talking greatly about the impact and the economic upon impact of sources which we estimate to be 20 sources per year or less. In the state of Illinois there are only 2,000 permitted sources. Over 500 of those facilities have domestic sewage limits. This proposal specifically says until during this interim period, unless those facilities are expanding or relocating to a new stream, have some new discharge to that effect, they do not have an obligation in the immediate time to invest the money and resources to that spot. They're allowed to continuing operating. I know I made that point in my earlier testimony. But that gets direct with the economics in mind. It's not a consequence for a new cost. We recognize and admit it that there is some incremental cost. And we recognize up front that the exact impact of that incremental cost and incremental treatment beyond our ability to measure and predict with axes at this point in time. Nevertheless, for those new sources what we know there's going to be an increased load, we're recommending this technology. It's not excessively expensive. We do have some general cost data on the record. To the extent the Board needs more, we'll be happy

to work with them.

I do have some requests that some sources in Illinois that currently are removing phosphorus have been removing them for over a decade. I can assure you there are a capital -- operating expenses are being met. And so it is affordable. In that regard we don't believe we're creating unnecessary burden, but the bigger benefit is for the other 500 plus facilities, this proposal would say that you do not have to move forward with phosphorus removal and the Agency does indeed have a policy directive and an interpretation of how the water quality standards and committee regulations and the like. Again, we need to permit and allow you to continue operating as is without incurring that expense. I think those are the primary things I wanted to mention.

A little bit of response to Dick's statement. In our proposal we're establishing a discharge limitation on the concentration that can be discharged to the stream. We're not mandating and requiring any particular technology. To the extent that Dick and his operation and his facility can achieve, if they are subject to this standard, they can achieve this standard through source control that is perfectly acceptable for them to pursue that route. That's a good decision as to whether or not it adequately effects any level of cost disruption. I guess I'll finish that point. We're specifying a discharge level that's

consistent with prudent technology. We're not mandating that exact technology.

The other thing I'd point out when we have the records, things are complete. We will, of course, file our final closing comment and we will specifically look at the alternative language produced by Albert Ettinger here and the question raised at the prior hearing and we will do that.

HEARING OFFICER KNITTLE: Thank you, sir. Do we have any questions of Mr. Frevert?

BOARD MEMBER GIRARD: Toby, early we heard testimony from Dick Lanyon that several IAWA members would consider the using of wetland technology or nutrient management if the Illinois EPA created rules to cover that situation. Has the Illinois EPA considered creating a set of rules to cover that.

MR. FREVERT: We were involved with discussions last year with Dick Lanyon and some of his affiliates at the wetland institute and the USEPA staff and the wire regarding that same issue and the possibility of developing a trading type approach and wetland type approach. That's how we deal with nutrients in a broader range. That particular initiative is kind of wound down to a back burner. There's not a lot of activity today but we're still amenable about discussing about wetland technology, still amenable to concepts on training and things of that nature. At the present time I would say that most promise I'm aware of

discussions costs to develop those technology, particularly the technology and the specific legal administrative measures relative to trade, are taking place within the Ohio River Valley Group on hypoxia issues. There is such a thing as Orsanco, O-R-S-A-N-C-O, which Illinois is a member of, and they receive funding from headquarters to fund that effort. A major part of that effort includes bringing point sources down and non-point sources and how to proceed.

On a similar side the state of Illinois works with the upper Mississippi river and other effluents through the state to formulate similar groups to address new issues on the effluent river basin, and we will participate in that. I believe that effort is initially being funded by, not headquarters, but Region 5 and Region 7 of the USEPA. Those are the two areas where the talks and the opportunity to have advanced these concepts are probably the most promising. Either way I think there is a fair amount of leg work to get to the point where anybody would want to set a regulatory policy that a statutory approach we need to put it in place.

BOARD MEMBER GIRARD: Okay.

MR. ETTINGER: I just wanted to add that we have worked with permit applicants, and actually much more unreasonable than Mr. Harsch suggested, not solely phosphorus that we look at in these permit questions and sometimes we have been very happy and

work with permit applicants. One was the Village of Manhattan which put in a wetland polishing on Manhattan Creek. The Village of Manhattan has had some work done in Illinois. Also with Village of Huntley, a lot of their wastewater is going on the golf course and there are other places like that where we are specifically looking at ways of dealing with the wetlands, or rather, with the wastewater that will involve some sort of biological polishing or wetland treatment in addition to a sewage treatment plant.

MR. FREVERT: I'll follow-up on that. The Agency routinely creates validly to look at those technologies as part of their early facility plan.

BOARD MEMBER GIRARD: So just to clarify, are those wetland technology projects that are being used in Illinois are developed in the context of the NPDES permit under current rules?

MR. FREVERT: I don't know the specifics of Manhattan. I know in the case of land application through irrigation where you're actually applying the water to the land and you don't have a surface discharge, we're increasing wetland polishing. Ultimately there is still is a point where that water, that surface water, leaves the treatment process and enters the water of the nation and waters of the state. And at that point that is a discharge subject to Clean Water Act and the Environmental Protection Agency has to make, and we got to work with people to

identify what specific limitations are to be put in that whether or not phosphorus applies to that point. To the extent the wetland removes the phosphorus and it no longer makes it, then the wetland requires the treatment process, not an independent resource in and of itself.

BOARD MEMBER GIRARD: Would there be any problems with the discharge or utilizing saying an adjusted standard process or site specific rulemaking process to incorporate those current technologies or evening a training stream?

MR. FREVERT: I would specifically assume regulatory authority of the Board can help address some complexities we have. If we still involve the discharge. That discharge would have to be subject to whatever requirements came on that site with specific rule adjustment to the extent they investigated water quality, it would be subject to USEPA review and approval. But to the extent there is a good technology, there is the existing regulatory structure prevents it, yeah, I think state and federal people are looking more ways to address that.

BOARD MEMBER GIRARD: Thank you.

MR. FREVERT: I think part of our issue here is the science and technology testimony is regulatory structure. We got to find the right way to deal with that.

HEARING OFFICER KNITTLE: Anything further?

MS. LIU: Mr. Frevert, could you give us an idea of what

the final nutrient standard looks like? I know it's a ways off but I've only seen a small glimpse of it and I was wondering what might be coming down the pipeline.

MR. FREVERT: I guess I'm not going to speculate on behalf of the Agency. At this point we believe the primary parameters are focused on an increase in the phosphorus. We ideally would like to have and find a numeric concentration of phosphorus with whatever temporal applications are appropriate and whatever perhaps spacial areas are necessary. Such that number is a protective number protecting against the detrimental of the excess plan and probably going to vary from location to location around the state. I don't believe there's one size fits all. This is complicated science.

When I was a sophomore in college, my basic water quality course I had an introduction to nutrient cycle concepts and really should quantify and say stream A versus stream B becomes problematic if that concentration stays below that concentration. We don't have the answer. The rest of the participates in the room don't have the answer. My counterparts in the state don't have the answer. That's the goal. Get there where we can say with some rationality this stream or these 10 streams we've got to manage phosphorus. This concentration for this time of the year is a set of circumstances and we met other goals for protecting the environment. It may be a different number in a

different stream. It will probably be a different number in a different stream. I guess that's the longwinded way of saying I can't give you a great deal of vision other than we think primarily phosphorus is going to be the most difficult parameter to create.

MS. LIU: Given your uncertainly and the fact that, I think the year 2008 I think was mentioned, that is when you might be able to propose something more solid. Could you maybe speak to the environmental disbenefits of waiting that four years before going ahead with proposing this phosphorus limit?

MR. FREVERT: I think what our proposal is suggesting is we think there are a lot of places where there's excessive nutrients, at least certain times of the year now, well, we don't know exactly what to do with that. We don't want to make the situation worse, therefore, the new significant loading subject to this permitting program under permitting regulations needs to be dealt with. We spent a lot of money. We go to a lot of meetings. We do a lot of work on the non-point source side. We're also addressing nutrient and primarily phosphorus in non-point sources. Hopefully we're getting some reduction there but those programs are a little more flexible and fluid to a great extent they move with the flow of money. They don't move fast.

One example, I guess I could point out now, CAFO

regulations, that particular permitting program now will require a nutrient management plan, management of manure for those operations and I believe technical practicing standards both managing that manure primarily on phosphorus loading and phosphorus agronomic applications to the land whereas more focus on nitrogen. So even in the non-point source program or the agricultural program you see a fair amount of emphasis on managing phosphorus.

MS. LIU: Thank you.

HEARING OFFICER KNITTLE: Anything further? You remain there but technically steps down if you prefer. Let's go off the record for just a second.

(A discussion was held off the record.)

HEARING OFFICER KNITTLE: We're back on the record. If anyone has any questions about the procedural aspects about this rulemaking, I can be reached by telephone at (217) 278-3109. You can also reach me by E-mail. I think everyone has my E-mail. As we talked off the record, we're going to set a written public comment deadline of December 10th. Also just a housekeeping matter, I never got a copy of the reference that -- that one that goes to the City of Elgin. You took it and gave it to Roy. I may need that. That was Exhibit No. 6. And, Mr. Harsch, you never, I don't think offered, correct me if I'm wrong, Daugherty's testimony as an exhibit. I'm assuming you want to do

that?

MR. HARSCH: Sure.

HEARING OFFICER KNITTLE: That would be Exhibit 12. Do you have any objections to that? Admitted as Exhibit 12. That's all I have. Thank you all very much. The transcript, as we said, will be on available on November 4th. We will post it on the Board's website thereafter. And please give me a call if you have any other issues. Thank you.

STATE OF ILLINOIS

COUNTY OF FAYETTE

C E R T I F I C A T E

I, BEVERLY S. HOPKINS, a Notary Public in and for the County of Fayette, State of Illinois, DO HEREBY CERTIFY that the foregoing 118 pages comprise a true, complete and correct transcript of the proceedings held on the 25th day of October, 2004, at the Illinois Department of Natural Resources, Lakeview A, B, and C, One Natural Resources Way, Springfield, Illinois, in the case of In the Matter of: Interim Phosphorus Effluent Standard, Proposed 35 Ill. Adm. 304.123 (G-K), in proceedings held before Hearing Officer John Knittle, and recorded in machine shorthand by me.

IN WITNESS WHEREOF I have hereunto set my hand and affixed by Notarial Seal this 3rd day of October, 2002.

Beverly S. Hopkins

Beverly S. Hopkins
Notary Public and
Certified Shorthand Reporter and
Registered Professional Reporter

CSR License No. 084-004316

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