STATE OF ILLINOIS)
)
COUNTY OF C O O K)
IN THE CIRCUIT COURT OF COOK COUNTY, ILLINOIS
COUNTY DEPARTMENT - LAW DIVISION

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

TRANSCRIPT OF PROCEEDINGS had in the above-entitled cause before Hearing Officer Marie Tipsord, called by the Illinois Pollution Control Board, pursuant to notice, taken before Sharon Berkery, CSR, within and for the County of Cook and State of Illinois, at the James R. Thompson Center, 100 West Randolph Street, Room 9-040, Chicago, Illinois, on the 1st day of February, A.D., 2008, commencing at 9:00 a.m.

APPEARANCES:

ILLINOIS POLLUTION CONTROL BOARD:
Ms. Marie Tipsord, Hearing Officer
Ms. Alisa Liu, P.E., Environmental Scientist
Mr. Anand Rao, Senior Environmental Scientist
Mr. Tanner Girard, Acting Chairman
Mr. Nicholas Melas, Board Member
Mr. Thomas E. Johnson, Board Member;

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY:
Ms. Stefanie Diers
Ms. Deborah Williams
Mr. Robert Sulski
Mr. Scott Twait
Mr. Roy Smogor
Mr. Howard Esaig;

THE NATURAL RESOURCE DEFENSE COUNSEL:
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MS. JESSICA DEXTER;
appeared on behalf of ELPC, Prairie Rivers Network, and Sierra Club;

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REPORTED BY: SHARON BERKERY, C.S.R.
CERTIFICATE NO. 84-4327.

HEARING OFFICER: All right. Let's go ahead and start. Good morning, my name is Marie Tipsord. And I've been appointed by the Board to serve as the hearing officer in this proceeding, entitled Water Quality Standards and Effluent Limitations For the Chicago Area Waterway Systems and Lower Des Plaines River. Proposed amendment to 35 Ill Admin Code 301, 302, 303 and 304. Docket No. R08-9.

To my right is Dr. Tanner Girard, acting chair and the lead board member assigned to this matter. Also present to my far left is board member Thomas Johnson and to his immediate right is Alisa Liu from our technical staff.

And I would note that Anand Rao and Nicholas Melas are both caught in weather, as we can relate.

MS. WILLIAMS: So are two of our witnesses, Robert Sulski and Howard Esaig. We expect them, hopefully, within the half hour.

HEARING OFFICER: Same trains, huh?

MS. WILLIAMS: No, different train but same storm.

HEARING OFFICER: All right. With that, I believe -- there's Mr. Melas right now. We are ready to start again with questions of Mr. Yoder on Attachment S. I remind all witnesses that they are still sworn.

CHRIS YODER,

called as a witness herein, having been previously duly sworn and having testified, was examined and testified further as follows:

EXAMINATION (Resumed)

BY MS. FRANZETTI:

Q. Good morning, Mr. Yoder.

We are going to continue talking about the QAPP that was used in connection with the field study performed that resulted in the data contained in Attachment S. And bear with me for a moment because I have lost track of what exhibit number the QAPP is.

HEARING OFFICER: Five? No.

MS. FRANZETTI: Eight. Okay.

BY MS. FRANZETTI:

Q. So turning to -- if you would turn to Page 5 of Exhibit 8, and at the top of the page the last sentence in that carryover paragraph it states, "The principal focus of this study is on the fish assemblage and an accompanying qualitative habitat assessment."

Does that accurately describe the two main purposes of this project?

A. Yes.

Q. With respect to fish assemblage, is a way to generally explain what that includes is looking at both the types of species of fish and the prevalence or quantity of fish that are in the study area?

A. Yes. It's to assess the relative abundance by species and also to note their relative size of condition.

Q. And with respect to the second purpose, the qualitative habitat assessment -- and is another way to state that the project was studying and evaluating the quality of the habitat in the study area?

A. Yes.

HEARING OFFICER: Excuse me, Mr. Yoder, is that microphone on?

THE WITNESS: No, it's not.

HEARING OFFICER: I didn't think I was hearing you.

BY MS. FRANZETTI:

Q. Would you like to sing a few bars for us?

A. I don't think you would all appreciate that.

HEARING OFFICER: This is the only volume control.

BY MS. FRANZETTI:

Q. Mr. Yoder, moving just below that sentence to the next caption Biological Assessment of Nonwadable Rivers. The first sentence says, "Lower Des Plaines River qualifies as a nonwadable river in terms of which biological sampling methods are the most appropriate."

Can you explain briefly why the fact that it qualifies as a nonwadable river then makes certain biological sampling methods appropriate?

A. By defining it into these categories,

nonwadable, obviously, is elongated continuum from wadable to nonwadable as flowing waters become larger. So that dictates the type of sample equipment that you use and also protocols and methods that you would follow to secure a standardized sample.

Q. So the methods change, the bigger the water body gets as we go from a small wadable stream to --

A. Yeah, the sort of the simple dichotomy is if you can sample a water body effectively by actually wading in the water body versus not being able to do that, and, therefore, needing a boat platform to work from.

Q. And now later on in that same paragraph it says, "What can be agreed upon by most is that the development of biological assessment tools, particularly those focused on assessments of condition and status, has lagged behind the development of wadable stream methods."

So in the area of nonwadable rivers, is this a developing area of technique in terms of evaluating the quality of habitat? Can you put this in some perspective for us?

A. Well, the perspective would be, to give you sort of a time frame of reference, would be help most states and U.S.EPA have addressed biological assessment over the past 35 to 40 years. And when bio assessment programs were in their initial development, and again with reference to state programs, the emphasis was on smaller streams primarily because they're easier to get to and so on.

But I think in the -- so that's sort of within the frame of reference from sort of EPA driven water quality programs, it doesn't necessarily mean that we don't know anything about it. And nothing has been done over that time period.

Q. Well, moving on to the next paragraph, does this start to put it in, perhaps, better perspective? It talks about, I think, just what you're mentioning, that biological assessments have been done on large nonwadable rivers in the U.S. since the late 1940s. So that's what you're referring to we've been doing this for a long time; correct?

A. Yes. In the general category of

biological assessment.

Q. And then, the tail end of that sentence notes the caveat that the inclusion of the fish assemblage, being a rare and relatively recent addition. So is that the part that is more recent and more in a developing stage is the -- is trying to use these methods in nonwadable rivers to assess the fish assemblage?

A. Well, with respect of what was going on in the 1940s, a lot of this fish assessment work early -- the pioneering work was done on the Wabash River by Jim Gammon. And the references are there and that work initiated in late 1970s -- I'm sorry, the late 1960s, and proceeded through the 1970s and '80s. And so, that work has been there for almost 30 years now -- more than 30 years.

So the statements are in reference to the -- sort of the history.

Q. Okay.

A. Bio monitoring in rivers.

Q. Now, actually, Mr. Gammon's work is referred to in the very next sentence. And there's a term there that -- could you explain to us what are single gear assessments?

It says, "Single gear assessments are even more recent?"

A. Well, that's where -- it's possible to use multiple sampling gear to collect fish. And I think there was the school of thought early on that in order to effectively sample these water bodies you had to use multiple gear types, which was more time consuming, more costly and certainly didn't fit the sort of the universe of needs for doing a lot of bio assessments.

So I think Gammon's work kind of showed that electro fishing produced the majority of the species and it produced a consistent sample enough that you could assess rivers with one sampling gear type, and therefore, you could get to more places and so on.

Q. Then, a little further on, it says, "A common frustration with these studies was the lack of a standardized approach to data collection and the absence of a conceptual framework for analyzing the data and producing meaningful and consistent assessments."

Is that just basically getting at the point that different people doing these studies

might use different approaches and different forms of analysis of the data?

A. That's also a reference to the sentence before, which referred to the numerous Section 3316(a) of the Clean Water Act, demonstrations that were being done during that time period. And there, frankly, was a gross lack of standardization in the studies. And so, that's mainly what that is commenting about.

Q. And now, moving forward, I think both in time and lower in the paragraph, it says, "Ohio EPA" -- and it cites 1987, '89, "developed fully standardized methods and an IBI for nonwadable rivers and used it to support the long-term assessment of rivers."

Is this Ohio EPA standardized methods approach, what was used to perform this study that resulted in the attachment S information or data?

A. Yes. That's the baseline from which the methods we applied emanate from, basically, yes.

Q. Did you make any modifications to the Ohio EPA standardized method in doing this work?

A. In terms of the fish sampling, the

only modifications would have been made are just sort of the logical updates that occur with the science, like the nomenclature of species and that type of thing. As far as a the QHEI, we have made a couple of modifications to the QHEI to better adapt it to the assessment of large nonwadable rivers.

Q. Would you go ahead and identify or explain the modifications you made to the QHEI?

A. Right. The Ohio EPA's used the QHEI for many years to assess habitat in nonwadable rivers.

But the genesis of all this work really emanates from smaller wadable streams. So we just felt -- and this is based on another project that we did in New England, where we encountered numerous impoundments in rivers, flowing rivers.

And we just did not feel the QHEI was adequately addressing some of those modifications. So we modified, I believe, two metrics to include an impoundment affect. And we adjusted the scoring.

What was -- especially in one, what was happening, it was getting the full score because it wasn't channelized. And yet, it was a

modification that, in many ways, can be analogous to many of the affects of channelization.

So we implemented that on a pilot basis in Maine and then we are in the process of adapting it to the work we are doing in the Midwest.

MS. FRANZETTI: I think maybe it might help to illustrate these modifications to the QHEI that you're talking about. Could I ask you, Ms. Williams, or Diers to put in front of Mr. Yoder Exhibit 7, which are the Qualitative Habitat Evaluation Index Field Sheets?

MS. DIERS: He's got it.

MS. FRANZETTI: Okay.

BY MS. FRANZETTI:

Q. Mr. Yoder, can you --

MS. FRANZETTI: Well, first, I'm not sure we've established on the record by Mr. Yoder what these are.

BY MS. FRANZETTI:

Q. Would you please identify what Exhibit 7, Mr. Yoder?

A. Yes, these are copies of the original field sheets or data sheets for the QHEI that were

completed by our MBI crews on the Des Plaines in 2006.

Q. Okay. And can I -- I'm going to ask you just a few more basic questions on these before I go back to the QHEI modifications topic. And these are sheets that are actually filled out in the field; correct?

A. Yes, they are.

Q. All right. And is one of these sheets -- which looks like it entails both the front and back of the page; correct?

A. That's correct.

Q. One of these is done for each of the sampling locations in the field?

A. Yes.

Q. All right. And who fills these out? What do we call that person?

A. The field crew leader.

Q. Okay. And in terms of knowing where this sampling location was, we've referred to the information at the top, like river code is RM, River Mile?

A. Yes, that's River Mile.

Q. And then Stream is the name of the

stream? And in this case, on the first sheet it's Des Plaines Grant Creek?

A. Yes.

Q. What's the station ID? And on this one it's DP-10.

A. It's another way of referencing the station.

Q. But is that just an internal numbering system that your crew comes up with?

A. Yeah, I believe it is.

Q. All right. Like a sample ID?

A. Like a sample number, right.

Q. Okay. Then, of course, the date this was done. In this case July 23rd, 2006 score, is that the actual field person who is doing the sheet?

A. Yes. They use their initials.

Q. And then we have the latitude and longitude data for where the location is?

A. It's at the center point of the site.

Q. All right. Now, there's a number of sections on this form.

On the first page, there's sections numbered 1-5. I don't want you to go through and explain every entry on this -- on this

form, but could you highlight where on this form the QHEI modifications you were explaining to us are incorporated?

A. I think to do that it might be good for me to do a summary. Is that okay?

Q. Oh, absolutely. That's fine.

I just wanted to make sure you understood I was not asking -- my question did not involve requiring you to explain every box and every term on this form.

A. Okay. The index is made up of observed measurements of different attributes of habitat. And these attributes of habitat are known to be important to the variety of species that exist or could exist. So it consists of the bottom substrate, the composition, the types of substrate and the quantity of that substrate and the condition of that substrate.

The second category is in stream cover, which is the amount of cover that's available. And again, this is done with respect of what do the biological organisms require for living space.

The third is channel morphology,

which gets at the meandering of the river as it's following a natural fluvial pattern, what's its development with respect to, in the Midwest, the baseline is a pool run, ripple-type of sequence. The influence of modifications, such as channelization -- and this happens to be the metric that we inserted and impounded -- category of the site is affected by the ponding of the river by an artificially constructed dam, then it is checked as being impounded.

Q. Now, Mr. Yoder, just to make sure everybody sees what you're talking about, because there are a lot of boxes on this form, you're in Section 3, about almost midway down, Channel Morphology. And underneath that, going over three columns to channelization. And at the very bottom of that I see a box Impounded Minus 1.

Is that the addition -- the inclusion of that reference to impounded?

A. Yes.

Q. And the minus one being in terms of the scoring that is done, you subtract the score of one?

A. Yes.

Q. So if we were at ten, we'd be at nine if we checked that box?

A. That's right.

Q. Okay. I just wanted to make sure people understand how it works.

A. Yeah, I forgot to mention the scoring works. Each individual attribute has a number behind it in brackets, and that contributes to the total score.

The cumulative result of everything that's checked ends up as a total index score.

Q. And that's supposed to go -- that's what those boxes down at the right-hand side of the form are? You're supposed to total across, like under three, total across all those columns and put it in that final box that says "channel"?

A. Yes. And those would be the individual metric scores, and then the index score would be the sum of the metric scores.

Q. Okay.

A. Did you want me to continue on?

Q. Yes. Why don't you.

A. Okay. The fourth one is the Riparian

Zone, which is the immediate land water interface that can also influence the habitat.

The 5th one is called pool glide and run, ripple quality. The -- and the last one is a gradient, which is the amount of slope that the surface of the stream has over distance. And that is a calculated -- that's calculated off of a map.

The other metric that was effected by the recent modifications is under the -- under No. 5, under Morphology. And an impounded category was added to that.

So those are the modifications that have been -- that we have implemented --

Q. And --

A. -- in our project.

Q. And again, that's to the QHEI, as set up by Ohio EPA. That's what you're modifying?

A. Yes.

Q. A question on this impounded scoring. It just -- it strikes me as a little low to just take off one point because something is impounded.

Can you explain to me why, just deducting one point from the QHEI score is appropriate for addressing an impounded water body?

A. Well, to answer that question, I've got to explain how the scoring works when you do have a modification versus a more natural system. So if we could look at the channelization subcategory under Metric 3, Channel morphology.

That is the lowest score a site can get if it's impounded. The alternative without that would have been to check none, which was why we saw the disconnect in this.

So we -- you have to understand that the paradigm came from wadable streams, and channelization is the -- typically, especially in the agriculture areas, where the wholesale of dipping the stream, straightening bank to bank, that's our definition of channelization. I know we've talked about that in this hearing.

Q. Uh-huh.

A. But when you get in large rivers, it's kind of difficult to find large rivers that have been dipped out bank to bank in a same -- with the same sort of macro impact that a small stream would undergo. And in our observations of doing this work in many places across the Midwest and in New England, it became pretty clear the analog to that

type of modification is an impoundment.

So that's why we made that change. And I think there were some notion that, among Ohio EPA, who we stay in touch with and still do combined training with, that, yeah, the scores for impounded areas were probably not -- maybe a little overrated, that type of thing.

So it isn't something we just stumbled on last year, we've kind of known about this for a long time. And I think it became more apparent to MBI because our work is in more places and also it's more research oriented.

Q. A question on -- stay in that Section 3, Channel Morphology. All -- over to the right under the heading Modification/Other. And I -- you know, I see entries in there that include dredging, impound, bank shaping, one-side channel modifications, but I don't see any scores next to them. What's the purpose of that section?

A. It's ancillary, it doesn't contribute to the scoring. And it's there, if the crew leader wants to make those observations, that's fine.

But what really matters is are they checking the ones that score. So under

channelization you've got an impoundment check, okay, they didn't check impoundment under the other one, that's kind of obvious.

Q. And at the end of this, when this form is filled out, and totaled, we get the QHEI scores that we have heard testimony about in this hearing that are used to help make the determination as to whether or not a given water body meets the aquatic life goals of the Clean Water Act; correct, that's one used for these scores?

A. Yes, to determine potential.

Q. And these are the scores that we've heard testimony about that, up to a score of 45, most people would agree it doesn't attain Clean Water Act goals from 45 to 60. I think it was termed gray area, there can be disagreement and then typically a score of over 60 would be deemed a location that does meet Clean Water Act goals.

Is that an accurate summary generally of these?

A. I think it is, yes.

Q. Okay. Is a part of why -- now that we've all had the benefit of seeing the form, is a part of why that 45 to 60 range is termed "gray

area," is because there are judgments that are made in filling out this form, and hence affect the scoring to some degree?

Because I see, for example, under Channel Morphology, you know, poor versus fair. I might think it's poor, the next crew leader might think it's fair, and changes like that similarly under Substrate, you know, silt moderate, silt normal, potentially reasonable minds can differ.

So is that a part of why that 45 to 60 range is termed gray area?

A. No.

Q. No. Why doesn't this -- well, let me ask you.

Do you disagree with me that there is no room for some subjective judgments in filling out these QHEI forms?

A. Well, I don't necessarily disagree with that, no.

MS. WILLIAMS: At this point, I think it might be useful for the record to explain how someone gets trained to use this methodology?

MS. FRANZETTI: If counsel wants

him --

MS. WILLIAMS: I mean, I'd like to have redirect at this point to explain first how you get trained to using this methodology.

THE WITNESS: Well, the Ohio EPA requires user to be trained to undergo their training. There's two levels of training, and it's now done under the auspices of the Ohio credible data log.

And so, to use this in an official capacity in Ohio, you have to be what's called a Level III Qualified Data Collector. You'd have to undergo the training.

And there's also a Level II training, which -- it's not any less rigorous from the QHEI, it doesn't require the level of biological efforts the Level III does. But regardless, our stronger recommendation is that any users of the QHEI undergo that training.

And the goal of the training is to eliminate, as much as possible, the subjectivity that was referred to. Because

it is true that untrained users could disagree about an adjacent category, especially when they're qualitative.

But those are explained, and people are trained in visual recognition. And the goal is to have users recognizing what they see in the field the same way.

And this is been tested by -- Mr. Rankin, he has a published paper on it, where the training increased the reproducibility of the scoring. So the training is crucial, that users undergo this training.

BY MS. FRANZETTI:

Q. Mr. Yoder, can we just finish up on the back of the form? What's the nature and purpose of the information that is to be completed on the back of the QHEI field data sheet?

A. Again, none of this weighs into the scoring. But these are -- it's the field crew leader's opportunity to make whatever notes about the site that they wish to make.

We do require them to do these maps, a very general map of the site. These are not

to scale, they're hand drawn in the field. And it's just to get some indications of the major features of the habitat.

There's also sort of a subjective rating. Everybody has an impression when they see a place, what's -- and that is not factored into the score and it's nothing that we use.

But it's something we record and -- what we tend to do is to -- we tend to record as much information out there that we think might be informative at some later time, so we could go back and analyze it. That type of thing, so...

Q. So the subjective rating is the field person's subjective opinion of on a scale of 1 to 10, "I think this is a 5"?

A. That's right.

Q. Okay. And the esthetic is similarly based on --

A. Well, esthetics is more like, you know, is this a nice place to be.

Q. Yeah, is it pretty?

A. But from a -- you know, a natural resource kind of recreational setting. And, like I say, we don't use it, we collect it and maybe some

day somebody will compile it all and get something out of it.

The major suspected sources of impacts, those are just based on what the person sees or knows about the location. And again, it's -- it doesn't have a -- you know, we can always go to other sources to verify and make that more precise.

So that's really what the back of the form is for.

Q. Okay. Mr. Yoder --

HEARING OFFICER: Ms. Franzetti?

Do you have some redirect?

DR. GIRARD: I just have some follow-up before we get off of these data sheets.

MS. FRANZETTI: Go right ahead, that's fine.

BY DR. GIRARD:

Q. Mr. Yoder, I have a question about this. So when this data sheet was filled out by AA, was he in a boat in the middle of the river and made all these observations and filled out the sheet while he was out in the middle of the river?

A. No. This is completed by the crew leader after they complete a 500 meter electro fishing zone, which is conducted along the shore line. So after -- and that gives him and the crew an opportunity to see all of the habitat features that they encountered in that might affect the biological samples that they collected.

So that's the other part of this, is that we -- we really prefer this be done in support of a fish collection or a fish sample, that it's there to support the interpretation of biological data. It can be used as a stand-alone tool, but we really prefer that it be done in support of a bio assessment.

Because that's really where its linked in terms of the thresholds of quality that were talked about. Those thresholds really relate to the certainty we have that if everything else in terms of quality is okay, that this places a potential to support a type of biological assemblage that equates to a specific designated use. So it becomes very important.

And in Ohio, it's part and parcel of routine use attainability analysis. Because you

have to answer the question if the biology is impaired, the next question becomes does this have the habitat to potentially support a biological assemblage that can attain that designated use for a hearing.

Q. When the crew chief gets back to the lab, do they double check any of their estimates and look at aerial photographs or any other information to sort of double check some of their decisions?

A. Yeah, that can be done. And we, in specific places, have to do that.

It's generally being in the field. And in this particular survey, they were out there twice.

They were out there on two different occasions, I believe, at -- if not all the sites, at most of the sites. And so, they have two opportunities to see that and to make notations on the return visit as well.

Q. So just for example, if we go to No. 4 on the front page of the sheet here. You know, I'm looking on the Des Plaines Grant Creek at the top of sheet on Exhibit 7.

No. 4, the Riparian Zone and bank

erosion, if we're looking at the first column on the the left Riparian width, and they're estimating the width of the Riparian zone on either the left or right bank, when they're in the boat on there in the river and they decide there's more than a hundred meters of Riparian Zone on the left bank, when they get back to the lab, they might pull out an aerial photo and double check whether their estimate has some other basis.

A. Yeah, that would be a place where it would -- that kind of follow-up would be useful.

DR. GIRARD: Thank you.

BY MR. MELAS:

Q. Mr. Yoder, this is just a curiosity question. When you talked about impoundment, you used the adjective "manmade dams."

I'm sure in the pristine state of these rivers in the Midwest, there were many dams built by the beavers and there were natural impoundments. In your experience now, have you ever noticed here in the Midwest any remnants of these beaver colonies, or have the European ladies in their desire for beaver hats completely eliminated them?

A. No. That occurs more in smaller streams, wadable streams.

Q. Yeah, it would have to.

A. Yeah. And what -- there are beavers on large rivers, but they tend to be what we call bank beavers, they build their dens in the bank, they don't require a dam.

The reason a beaver builds a dam, so it can have a lodge and have a secure place. But on a large river, they can secure that by building -- they can dig a den in the bank or pile wood up along the bank and have --

Q. On the smaller rivers they can actually impound the streams, smaller streams?

A. Small streams. I don't think they can impound a river, like --

Q. No, not on rivers, streams, smaller streams?

A. Yeah. On small streams, on the small end of wadable.

I think it's just not a -- it's not feasible for them to impound a nonwadable river that much. And they adapt to it by denning in the bank.

MR. MELAS: Thank you.

HEARING OFFICER: Can we have somebody close the door, if you don't mind?

Thank you.

DR. GIRARD: Let me just -- if you don't mind, ask another --

MS. FRANZETTI: Oh, no. Absolutely. I've gotten plenty of my time.

BY DR. GIRARD:

Q. Mr. Yoder, going, once again, to this top page of Exhibit 7, look at No. 1 Substrate Type. Now, when they're out there in the boat and they're doing electro fishing and they're observing substrate type, do they -- is it just the identification of a particular type in that area, whether it's present or absent, or is it -- they're making some decision about relative amounts of different types of substrate? What's the -- what kind of decision do they make on where to check?

A. Well, the checkmarks under -- in this case it was all pool, there was no ripple. Those check marks are just presence of that type of substrate.

Q. So do they do any kind of sampling

with any kind of equipment as they go across the stream?

A. No, but they are -- when they're dipping fish, they have long dip nets. And they can -- they can probe the bottom, or they can actually scoop out parts of the bottom and get a feeling for what kind of substrate is present.

And there's quite a few habitats that do rely on using a rod to probe the bottom, and you develop a feel for what kind of substrate you're hitting, without having to bring it up and do vertical -- and then the two most predominant substrates are checked, and that's what contributes to the part of the score. The other score contributes to how many substrate types there are.

If there are fewer than a certain threshold, then a certain score is given, there's more numbers to look at. So that's how it's done.

Q. Okay. So it's -- you're saying they don't use a pole, it's generally what they stir up with their nets?

A. Well, it's sort of the equivalent of using a pole. These nets are, you know, eight feet in length.

Q. Okay. And I do have a specific question here on this first page on Exhibit 7. Under No. 1 Substrate Type.

I see you have a check in the left hand column for cobble. Now, are you saying that if there's a check on the left-hand side in those boxes, you're only going to check the two most common types, or -- I'm trying to understand where the different checks are.

Obviously, if you have a check for cobble on the left-hand side of the left-hand box and then a check over on the right-hand side of it in the pool area, that means the cobble was in the pools. But I'm trying to understand why there are two square boxes on the left of the cobble.

A. Because there's two things that contribute to the score. One is just the number of different substrate types that were checked, and then the two most predominant substrate types are also checked. So that also contributes to part of the score as well.

Q. So that would be the left-hand checks in the boxes are the two most predominant?

A. Yes.

Q. So it would be -- you had cobble in some pools and then looking over to the next column, you have silt also if some pools. So those were the two most predominant types?

A. And that's worth ten points when you add those together.

Q. That's worth ten. Okay.

DR. GIRARD: Thank you.

MS. FRANZETTI: Dr. Girard, can I ask a quick question?

DR. GIRARD: Yes. Go ahead.

BY MS. FRANZETTI:

Q. Does there need to be a certain minimum percentage of any of these things present at the location to get a check?

A. It -- roughly, the rule of thumb is roughly about 5 percent. But it's also in the judgment of the biologist what's important to -- what's biologically important.

Q. What's biologically important for that location?

A. Yeah. For any location. What's biologically important to the organisms.

And the two most predominant

substrate types together, it's roughly making up what's 80 percent of the substrate, I believe is what the guidelines -- this is all specified in the methods, so it's transparent.

Q. And staying again in that general area, the form and the substrate area, below the -- I guess it's the second column of type, underneath -- down the column from Gravel. The gravel is at the top of -- we get down to the number of substrate types.

So that's where -- I don't know. I'm sorry, would you explain to me how you determine whether three or less is checked or four or more?

A. It would be the number of check marks under the Pool and Ripple column of each substrate type.

Q. That's what I was thinking, except --

A. You got me.

Q. -- aren't there five checks up above?

A. Yeah, well, silt doesn't count. But there are four or more, so that should have been a -- that's just a accounting issue --

Q. Okay.

A. -- after the sheet is filled out.

Q. Okay. Although counting does seem to be important for purposes of the QHEI?

A. It does. We can fix that.

BY DR. GIRARD:

Q. Why doesn't silt count?

A. It's -- silt is not biologically a good substrate, in fact it can be detrimental.

HEARING OFFICER: Mr. Diamond, do you have a follow-up?

BY MR. DIMOND:

Q. Well, if silt is detrimental, why does if have a count of two on it?

A. It's a natural substrate, but we just -- we do not -- we chose not to count it as part of the total substrate type. And that's the way it's set up.

BY DR. GIRARD:

Q. Just for the record, can you explain to me the difference between muck and silt?

A. Muck is more of an organic derived substrate, dead plant matter. Or soil that has a high cubic content to it.

Silt is pretty much mineralized, I mean, it's made up a lot of clay material. And

that's what causes it to be detrimental, because it sticks to everything.

So in excessive amounts, it can be detrimental. A lot of nonpoint source problems when you hear nonpoint due to sedimentation affects, due to excessive siltation.

DR. GIRARD: Thank you.

THE WITNESS: I want to correct myself. I have to look at the manual to verify what we do with silt. I just recall that's what we did. But I would need to read our manual to verify that for you.

MR. DIMOND: This is Tom Dimond. I didn't identify myself earlier.

BY MR. DIMOND:

Q. What manual would you read?

A. There's a method manual that goes with this. There's an instruction, you know, like performing the method.

And I would need to consult that to tell you for sure what we do with silt.

Q. And the method manual is something different than the QAPP that's identified as Exhibit 8?

A. The -- I believe it's appended to the QAPP. So I can -- I can look in the back of the QAPP.

Q. Okay.

A. I believe it's Appendix A of the QAPP. Oh, it's Appendix 1.

HEARING OFFICER: Appendix 1 to Exhibit 8.

MR. DIMOND: Okay.

HEARING OFFICER: Ms. Franzetti, you can go ahead.

MS. FRANZETTI: Okay.

BY MS. FRANZETTI:

Q. Mr. Yoder, do you also have in front of you, what were termed the fish data sheets the other day that were produced at the end of yesterday by the Illinois EPA counsel?

HEARING OFFICER: Which have not been marked as an exhibit.

MS. FRANZETTI: Right. That's what I wanted to do. We have copies now? Great.

BY MS. FRANZETTI:

Q. Mr. Yoder, what are these fish data sheets that you have in front of you?

A. These are copies of the data collected from the electro fishing sampling that was done in 2006.

Q. And so, these are the field sheets filled out for the part of the study that was to assess the fish assemblage in the lower Des Plaines?

A. Yes.

MS. FRANZETTI: With that, I would move to have the fish data sheets introduced as Exhibit 20.

HEARING OFFICER: Is there any objection?

Seeing none, we'll mark it as Exhibit 20.

(WHEREUPON, a certain document was marked as Exhibit No. 20 for identification, as of 2/1/08.)

HEARING OFFICER: Dr. Girard has another question on the QHEI.

DR. GIRARD: Sorry. Before we get too far away --

MS. FRANZETTI: Go right ahead.

DR. GIRARD: -- I just have one final

question.

BY DR. GIRARD:

Q. Mr. Yoder, after you get done marking your exhibit there, real quickly, I didn't realize we were going to move off the QHEI sheets, but if you could go back to Exhibit 7, you've got your copy there, just one quick question here.

If I look at the second page in my compilation, hopefully it's the same as yours, but for the stream it just says at the top "Des Plaines Location, DST Lemont Road." Do you see that one?

A. Yes.

Q. Well, at the top, there was a little note that says "Edited January 11th, '08," with some initials. And if I look at the third page, it's barely legible, but it says, "Not edited," also with the date. And I think it's probably January 11th, '08 at the top. And that one was a stream Des Plaines, but the location has been erased.

What does it mean that these sheets were edited on January 11th or not edited?

A. That's when we went back and added the impoundment to these.

Q. Okay.

A. Because we're in the process of updating all the of our data, and we haven't gotten to these yet by that time. So any time a change is made to a data sheet and then eventually to the database, the change is noted on the original data sheet and initialed by the person who do that on our staff.

Q. So the only changes at that time were in adding the impoundment?

A. Right. And this particular site, it was our understanding, was impounded, and the next site was not impounded.

So it was not changed, it was not edited, but the notation was made, nonetheless, for that.

Q. Okay. So you weren't double checking items like Riparian width or any other --

A. No. That stays with what the field observation was. The only changes were made was to adjust for the fact that the site was impounded.

Q. Thank you.

BY MS. LIU:

Q. Mr. Yoder, I do have one more question the QHEI field data sheets. On the first one I

notice in Category 6 under Gradient, there are no scoring numbers there.

But I notice in your manual, and in Appendix 1, the QHEI field sheet does show a scoring system for gradient. And I was just looking at it and I notice there are categories for very low, 2 to 4; moderate, 6 to 10; and then high to very high of 10 to 6.

And I was wondering, very high, how do you go from 10 to 6? Is that the same as 6 to 10?

A. Could you point that to me?

Q. It's Page 55 in your Quality Assurance Project Plan.

HEARING OFFICER: Which is Exhibit 8.

THE WITNESS: What's the question?

BY MS. LIU:

Q. Under the gradient category --

A. Okay.

Q. -- there's a scoring system. The very low is 2 to 4, moderate 6 to 10, high to very high of 10 to 6.

A. That's got to be a typo on that. The -- this is done by the -- the scoring is done by

electronic data entry, it's not done by hand.

So once somebody enters a gradient, it's calculated. And you see the gradient score in Exhibit 5, these are the actual scores that get calculated.

It doesn't show up on these sheets, but that's got to be some kind of a typo there.

Q. Do you know what the actual range would be for high to very high gradient?

A. Oh, I've got to look under the description of that metric. The maximum score, I believe, is ten.

Oh, if you go to Page 51, there's a table. Because the score that's ordered for gradient also varies by river size.

Because in small streams you can have a high gradient. And you have to attenuate the scoring.

Because you could never have that high a gradient on one of the larger rivers. It works, but biologically, you know, the lower gradient in a big river would have the equivalent biological affect that a gradient ten times as high

would have on a small river, for instance.

But that gives the scores. So the max is a 10, but it tells you how it's attenuated by stream width -- a combination of the stream width and drainage area.

And so, for instance here, we're dealing with here, I believe, all these sights are greater than the highest drainage area, which is 622.9 square miles.

HEARING OFFICER: I'm sorry could you repeat that? I didn't hear all of it.

BY THE WITNESS:

A. It's -- I'm just reading from Table 2, under Drainage Area. The largest category is anything that drains greater than 622.9 square miles.

And so you can see how the scores are awarded from a low of 6 to a high of 10.

BY MS. LIU:

Q. Since the drainage area isn't actually filled in on the field sheet, is that something that gets calculated somehow in -- you put it in the other data?

A. Yea, it's in the database, and...

So this -- the relationships in this table are embedded in the program that produces Exhibit 5 and Exhibit 6.

MS. LIU: Thank you for that explanation.

BY MS. FRANZETTI:

Q. Mr. Yoder, staying with the sheets, I thought it -- well, you just explained in response to Dr. Gerard's questions that if the impounded characteristic needed to be checked for a given location, then that was done in this editing process. And the notation was made at the top of the page, you know, edited with the date and initials; correct?

A. Yes.

Q. All right. So if a sheet is marked as -- if a sheet is marked edited, then it should have the impounded boxes checked; correct?

A. That would be the -- what we intended to happen.

Q. All right. Well, just look at Page 2 of the QHEI at the top, edited 1/11/08. And under Channelization, impounded is not marked. And under Morphology, impounded is not marked.

So how do we -- how do we know whether that location should have been scored for impounded. And if I'm right, that's -- I mean, that's a significant swing.

Because none is checked under Channelization, you get six points for that. If impounded were check there, immediately there's a swing of seven points deducted by that change.

It's not quite as big under morphology, but a difference of two points to a minus two. So all total, that swing is nine points, just based on those two entries. And that's why I'm asking.

A. Yeah, it's a good point. I don't know the answer to that. I'll have to check that out.

Q. Okay.

A. If that's the case, then that score will change. And I'm looking at Exhibit 5 at that site.

And it appears that -- the only thing I can figure out either it wasn't impounded or it got overlooked. So we'll have to check that.

HEARING OFFICER: Mr. Safley, do you have a follow-up?

MR. SAFLEY: This is Tom Safley on behalf of the Illinois Environmental Regulatory Group.

BY MR. Safley:

Q. Mr. Yoder, I'd like to clarify just a little bit more about this impoundment being added later issue. Do you mean that impounded as a characteristic was on the sheet, but at the time that the people were in the field they did not look at it? Or do you mean it was not on the sheet in the field and a new sheet was put together later?

A. It was not on the sheet at the time that the survey was conducted. This was a more recent development.

Q. Okay. So these -- the sheets that we see here, are not the sheets that they had in the field, because these sheets have impoundment, and by definition, they could not be the sheets that were in the field?

A. That's interesting.

Q. And that's what I was trying to figure out what you meant.

A. You're right. It make sense.

Q. Because earlier you said that it was

your understanding these were the sheets in the field?

A. I'll have to check that out. I'm not sure. It would make sense. I'll have to find that out.

Because I know we were initiating -- we had initiated the change with our project in Maine as -- we were hand entering it in the first part of that project, which started in 2002 and just wrapped up last year. So I'll have to find out when we changed the sheet.

Q. Okay. So --

A. And it could be that it was on the sheet, and they just were not checking it that way at the time in the field.

Q. Okay.

A. That could be a possibility.

Q. So if that was the case, and then in January of '08 it was edited to address that issue, did someone go back out to the field in January of '08 in order to assess impoundment, or if not, what other information do they draw on to assess impoundment?

A. Well, the -- what we were drawing on

was the -- what we understood to be the effect of the impoundment here, going upstream to near the tail water of each dam. So, in effect, almost every site, except the tail waters, would be impounded. That's our understanding of the area.

So that's how we did it, from that knowledge.

MR. SAFLEY: Those are all my questions right now. Thank you.

DR. GIRARD: Could I follow-up on that, Mr. Yoder?

THE WITNESS: Yes.

BY DR. GIRARD:

Q. In Exhibit 8 then, Appendix 1 is the manual for filling out these QHEI sheets. Is -- this new impoundment issue, is that spelled out in the manual?

A. No, it's -- the manual has not been undated to include that yet.

Q. Do you have any written documents that detail how you handle the impoundment issue?

A. It might -- it might be in our QAPP for the main project. And that's kind of what we're keying on now.

And, like I say, we piled it in there and then we're in the process -- we also have a project that's Region 5 wide. There's about probably 15 different rivers that we've sampled, and we're in the -- that project is not yet complete.

And this work is being used as part of that project. And so, we're in the process of going back and making that change, and we'll update the QAPP that goes along with it at the same time.

So this has been in progress, I --

MS. WILLIAMS: Mr. Yoder, I know earlier this week you talked about what you mean by the main project, but could you, for the record, explain what you mean when you say the main project?

THE WITNESS: Yeah. We have an EPA funded project to develop a fish assemblage and habitat methodology for nonwadable rivers in Maine as a pilot for doing this throughout New England. And that's funded by U.S.EPA's Region 1 office.

And that has -- that started in 2002, and the Maine part of it wrapped up

last summer. And it's being extended into other parts of New England in the coming years.

BY DR. GIRARD:

Q. So, Mr. Yoder, do you have some draft language on how to handle this issue that you could maybe get to your counsel and have submitted as an exhibit?

A. I'll look at the QAPP we used for the New England work and see what that has in it.

DR. GIRARD: Thank you.

BY MS. FRANZETTI:

Q. Mr. Yoder, just going back, and I don't know if this may be of any help to you in your response to Mr. Safely's question.

I just wanted to call your attention to the fact that the QHEI field sheet forms, Exhibit 7, at the bottom right corner, do have that notation "modified June 1, 2005." And I just call that to your attention to see if, per chance, is that when the form was modified to add these impounded boxes?

A. Yeah. That -- that does make some sense. I -- that would be about the time that we --

Q. And so, the people who did this work, which was done in July of 2006, I think for all of them -- yes -- they would have had the modified form out in the field?

A. Yeah, I think it verifies the question I had previously that it was done that way. They just were not checking it off that way at the time.

Q. Right. And let me suggest another thing for you. If you take a look -- the first sheet, I think you can see it, and I know we are hindered a bit by dealing with copies -- but if you take a look at Channelization in Section 3, and the first box none, it looks to me like there was a mark there. And, similarly, under Section 5 Morphology, the first box pool width -- there looks like there was a mark there.

A. Oh, yeah.

Q. Doesn't it seem that they checked those in the field -- this is in the original field sheet, but then when whoever determined "No, we want to mark impounded," it just got erased and then they checked the impounded box?

A. Right.

Q. It's the same form though.

A. It actually illustrates the issue.
Q. Yeah.
A. They were checking none.
Q. Right.
A. And we felt that that was --
Q. Right.
A. It's not a -- you know, and the more work we did on this, the more we felt that that wasn't -- it was kind of working in the opposite direction and that's the way it should have been.
Q. Right.
A. But that's how -- the existing methodology up until that time, that's how it was done. And then, we started to phase this in.

We use the same data sheet everywhere. So the principal reason the sheet was modified in '05 was to support our New England work.

And it hadn't been totally initiated with our work in the Midwest yet.

Q. I wanted to call that to your attention, so when you go back and check for Mr. Safely's, I don't know that there are two different sets of sheets, is my point.
A. No.

Q. I don't think another sheet was totally filled out after the fact.

A. No, I can assure you, there was only one sheet filled out. And these are it, so...

Q. Okay. Then maybe I misunderstood. I thought that's what was being raised, was maybe there were two sets of sheets.

A. I contributed to that misunderstanding.

Q. I think the only question we're left with though is, given that the sheets got changed a year before, why, when the people went out in the field, they didn't know at that point how they were supposed to fill out the form?

A. Because at that time, they were operating under the preimpoundment QHEI, if we want to call it that. That we had not initiated that with our crews that were working in the Midwest in 2006.

Q. And, Mr. Yoder, I know that it's a little difficult because Exhibit 7 is not in any in-date order. But if we look at the dates on each of the sheets, that basically tells us the days over which this work was performed in July 2006; is that

correct?

A. Yes, in part. That's the first sampling run.

Q. Okay. And the second sampling run is?

A. That would be appearing on the fish sheets.

Q. All right. Well, let me -- take a look at the fish sheets, because as I flip through them, they -- some of them are July, but some of them are dates in September.

So some of the sites were done completely in July, they did both fish and they did the QHEI assessment work; correct? And then, for some, they had to come back and do the fish in September?

A. No, there were two passes. These sheet are not in order. It would have helped if they had been put in order.

THE WITNESS: It's not your fault.

MS. WILLIAMS: We know that.

MS. FRANZETTI: Yeah, I didn't hear her accepting responsibility.

THE WITNESS: I didn't mean to imply any. It's all with me.

BY THE WITNESS:

A. There were two passes done. There was one pass done in July and one pass then in September.

BY MS. FRANZETTI:

Q. For fish?

A. For fish. And the crew leader would have also had the opportunity to update the QHEI sheet as well at that time.

Q. Okay. And if the crew leader did think on the second pass, "You know, on second thought, I don't think it should be that box, I think it should be this box," that would have been reflected on this same field sheet that's for that location, that's marked Exhibit 7?

A. It could have been, yes.

Q. And if, though, that had been done, is it typical to, you know, put initials and a date to indicate "I changed the" -- you know, "I changed the findings"? Because in all -- in all frankness, Mr. Yoder, that seems a little sloppy to allow somebody to just change findings at a different point in time and make no -- no notation to that effect.

And I don't see anything like that on these forms, that's why I'm raising the question.

A. No. But that's how we train people to do that.

Q. Which way?

A. They know that.

Q. To note -- make a notation?

A. If they go on repeated passes, they take the QHEI sheet on the -- if there's a second pass, they take it with them.

Q. Do you also train them that if they change the original past field sheet, they're supposed to make some recording so that it's evident it was changed?

A. I would disagree with you that that would be a good idea.

Q. That's not a good idea, Mr. Yoder. Is that a requirement? Is that QA/QC requirement?

A. I have to believe it is, yes.

Q. So if there's no such notations, initials next to an entry on these forms, then we can conclude that there really weren't any changes made if there was a second pass at the same location; correct?

A. I think that's reasonable to conclude that.

HEARING OFFICER: Excuse me.

Mr. Diamond?

BY MR. DIMOND:

Q. Mr. Yoder, at the risk of getting too mundane: For the first page on Exhibit 7, under the category for Channel Morphology, if you -- should you just add up the numerics on the boxes going across to reach the total score for that category?

A. That's how it -- yes. That's the accumulation of those.

Q. So what should the -- by your calculation, what should be the score for channel morphology on the first page?

A. That should be Exhibit 6.

Q. And you get to 6 because you add two for the checkmark for low, three for the checkmark for fair, deduct one for impounded, gets me to six. And then, you add two for the check or moderate?

A. Yes.

Q. So that's six?

A. Yes.

Q. And then, if I look at Exhibit 5,

under the category for Channel for the QHEI metrics for the Grant Creek location, it says 13. So should that now be changed -- updated to six?

A. Yeah, it seems that that's what it should be. I can't explain why that's --

MR. DIMOND: All right. Thank you.

BY MS. WILLIAMS:

Q. And can I ask, just for clarity for the record, is this particular site within the study area within we're talking about of the Lower Des Plaines River? Is it on the Lower Des Plaines River?

A. Well, in terms of the area that we're dealing with here or?

Q. Can you tell from the sheet? When it says Grant Creek, is it actually on Grant Creek or is it at the junction of Grant Creek?

A. No, it's at the mouth of Grant Creek.

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

BY MR. HARLEY:

Q. I'd like to call your attention to the exhibit that was just entered, and that's a series of fish data sheets.

HEARING OFFICER: Could you speak up, please, and have you identified yourself?

MR. HARLEY: For the record, Keith Harley, Chicago Legal Clinic, on behalf of the Southeast Environmental Task Force.

HEARING OFFICER: Louder, Mr. Harley.

BY MR. HARLEY:

Q. Mr. Yoder, I'd like to call your attention to the fish data sheets that were just entered into evidence. And I would like to call your attention to the six fish data sheets in the packet, I believe it was entered as Exhibit 20.

This is a fish data sheet, which is dated July 22nd, '06. And at the very bottom of this fish data sheet, there is a fish which is referenced called the shorthead redhorse.

A. I'm sorry, you're going to have to help me. Which sheet are you talking about?

Q. The sixth fish data sheet in the packet.

MS. FRANZETTI: Mr. Harley, I don't have the same sheet either. Yours may be in a --

MR. HARLEY: It's not numbered six,

you actually have to go into --

MS. FRANZETTI: No, I know.

MR. HARLEY: Oh.

MS. FRANZETTI: I'm counting six pages, and I'm like the witness, I don't -- I see carp at the bottom of my page.

HEARING OFFICER: I have shorthead redhorse.

MR. SAFLEY: Maybe the copies were done differently.

MS. FRANZETTI: I think Mr. Yoder and I have the copies from yesterday.

HEARING OFFICER: Yeah. It sounds like you have different copies.

THE WITNESS: I have it.

MS. FRANZETTI: And actually, Mr. Harley, would you mind holding that question? Is it truly a follow-up? Because all we've done with the fish data sheet is admit it.

MR. HARLEY: I'm only dealing with one question.

MS. FRANZETTI: Maybe we can get it sorted out.

HEARING OFFICER: We why don't we take a break and see if we can't do that. We've been here for about an hour and a half.

Let's take a short 10-minute break and see if we can figure out the copies.

MR. HARLEY: And this is just a brief question mark question, so it will not interrupt.

MS. FRANZETTI: Okay.

HEARING OFFICER: Thanks, Mr. Harley.

(WHEREUPON, a recess was had.)

HEARING OFFICER: Let's go back on the record.

And Mr. Harley has indicated he's going to withdraw his question.

So Ms. Franzetti?

MS. FRANZETTI: Okay. Thank you, Mr. Harley.

BY MS. FRANZETTI:

Q. Mr. Yoder, you can go back to the QAPP, Page 9.

Oh, do you want to say something, Mr. Yoder?

A. Okay. I'm ready.

Q. Okay. Can you turn to Page 9 of the QAPP, Exhibit 8? The first sentence at the top of Page 9, Mr. Yoder, under Section 8.6 Project Description.

It says, "The study will entail both electro fishing at approximately 20 to 25 locations in the Lower Des Plaines River, between Lockport to downstream from the Kankakee River." And then, it references Figure 3 that depicts the Lower Des Plaines area, from Lockport down to downstream from the Kankakee River.

Do you know -- because it does not seem at least from the QHEI data -- and, granted, we haven't had the fish data as long, but it doesn't seem that 20 to 25 locations in this part of the Lower Des Plaines River were actually part of the study. Do you know or would you have to sort through these fish data sheets -- it just doesn't seem to be 20 to 25.

A. There were 23 sites total in our study.

Q. Twenty-three?

A. Yes.

Q. And those were all in this part of the

Des Plaines River?

A. Well, they were -- okay. I'm sorry, I'm getting confused.

When you say this part of the Des Plaines, do you mean the part subject to the rulemaking or...

Q. No, no. As stated here, between Lockport and to downstream from the Kankakee River.

A. Yes. So it does include portions of the Illinois River, downstream of the Kankakee.

Q. Okay. Maybe this is the way to do it. If you look at Exhibit 5, which is the revised Appendix Table 1, now, these are the QHEI scores for the stations sampled in the Illinois and Des Plaines rivers during 2006. So I'm making a point to point out these are the QHEI sampling locations.

Are those the same as the fish sampling locations?

A. Yes, they are.

Q. All right. So we can use -- we can use this and see that, of the station sampled -- one, two, three, four, five --

MR. SULSKI: Twenty-three.

MS. FRANZETTI: Nope. Not where I was

going.
BY MS. FRANZETTI:
Q. -- nine of the stations with the Illinois River; correct?
A. That's correct.
Q. And then one at the bottom was Grant Creek?
A. That's correct.
Q. So ten. So now we're -- in terms of truly the Des Plaines River, we're down to 13 sampling locations; correct?
A. That's correct.
Q. Okay. Do you know -- it seems, based on the river miles for the Des Plaines River, that the first four sampling locations, River Mile 273.5 through 276.5, are downstream of the I-55 bridge. Are you familiar enough with the waterway to note if that's the case?
MS. WILLIAMS: At this point, Susan, I think it would be most helpful to the Board if we can go in panel format, where the Agency witnesses know, if that's acceptable to the Hearing Officer?
MS. FRANZETTI: If he can't answer the

questions, it's acceptable to me --

MS. WILLIAMS: Right.

MS. FRANZETTI: -- but I want that on the record.

MS. WILLIAMS: That's fine.

MS. FRANZETTI: Okay. So he's not familiar enough to put the location of where these sampling locations are, by river mile.

THE WITNESS: I would have to defer to one of the IEPA staff to verify that.

MS. FRANZETTI: Then that's fine.

MS. WILLIAMS: Right.

MS. FRANZETTI: Because this would be helpful to know where these things are generally.

So whoever wants to answer: Is it correct to say that the first four sampling stations under the Des Plaines River running from River Mile 273.5 through 276.5 would be downstream of the I-55 bridge?

MR. SMOGOR: Yes.

MS. FRANZETTI: And that is outside of the area included in this UAA; isn't it?

MR. SMOGOR: Yes.

MS. FRANZETTI: Okay. So now we knock off those four. And I think we're down to nine locations that are part of this UAA; is that correct?

MR. SMOGOR: Yes.

MS. FRANZETTI: Okay.

MR. ETTINGER: Well, I object --

MR. SMOGOR: No, I'm wrong there. There are nine locations left in this table.

MS. FRANZETTI: Why are the Illinois River locations a part of the Lower Des Plaines UAA area?

MS. WILLIAMS: I don't think --

MR. SMOGOR: I'm sorry, I wasn't clear there. You said we're left to nine locations that are part of the lower Des Plaines UAA and that is not correct.

MS. FRANZETTI: And explain to me your answer.

MR. SMOGOR: Because the last three in the table are actually upstream of the uppermost point that this -- the lower Des Plaines UAA addressed. Sorry about that.

MS. FRANZETTI: No, no, that's fine,

Roy. I should have been corrected there.

So the last three, River Mile 290.1, 297.0 and 298.3, those are outside of what we call the Lower Des Plaines UAA geographic area?

MR. SMOGOR: Yes.

MS. FRANZETTI: All right.

So for the Lower Des Plaines UAA, the six stations that are within the -- the stations that are within the geographic area are the six that run from River Mile 279.5 through 290.0; correct?

MR. SMOGOR: Yes.

MS. FRANZETTI: All right.

Breaking that down one more step, because the proposed use designation -- one of the proposed use designations here is for the Upper Dresden Island Pool; correct?

MR. SMOGOR: Yes.

MS. FRANZETTI: Are three -- are only three of these sampling locations within the Upper Dresden Island Pool.

MR. SMOGOR: Yes. River Miles 279.5, 283.9 and 285.8 are the three that are within

Upper Dresden Island Pool?

MS. FRANZETTI: And then, the remaining three from 287.9 through 290, are those basically in the --

MR. SMOGOR: The Brandon Pool.

MS. FRANZETTI: The Brandon Pool, thank you.

MR. SMOGOR: It's possible 290, 290.1, we're not exactly sure which one is in the upper part of Brandon, which one isn't.

MR. SULSKI: The Lockport lock is at, roughly, 291. So any number lower than 291. So the 290.1 would be in the Brandon Pool.

MR. SMOGOR: Just for clarification, though, I believe that at least in the Lower Des Plaines use attainability analysis, I think they went upstream only to the point where Chicago Sanitary and Ship Canal meets Des Plaines River, and I think the Lockport lock is actually upstream of that point. So Rob's right, the Lockport lock is the uppermost point of, on a map, Brandon Pool. But the portion of Brandon Pool that we're focusing on for these proceedings, actually

the uppermost point of Brandon Pool is at the confluence of Des Plaines River and Chicago Sanitary and Ship Canal.

MS. FRANZETTI: Thank you. I appreciate that.

BY MS. FRANZETTI:

Q. Now, Mr. Yoder, with respect to the three locations in Upper Dresden Island Pool, which are those that run from River Mile 279.5 through 285.8, do you know how those three locations were selected?

A. I believe the point in selecting the sites were to get an equitable distribution of the sites along the longitudinal profile of this entire study area. And I believe that's possible to try to duplicate other sampling that had been done in the past, although, that may not be true of each and every site.

Q. And -- but in your reference to duplicating prior sites, you're referring to QHEI work done prior to this, such as by your colleague Mr. Rankin; correct?

A. Yeah. And I also believe some of the work that was in the UAA study, as well.

Q. Right. Now, who selected these three locations for Upper Dresden Pool?

A. Well, as I recall, we -- that was, in part, done by myself and the crew leader. And then the -- the decision about where a site goes in the field is, ultimately, up to the crew leader once they get into the room.

Q. The -- you may have mentioned this yesterday -- what was the name of the crew leader?

A. Alex Johnson.

Q. Alex Johnson, okay.

With respect to -- strike that.

Would your answer be the same with respect to how the sampling locations were chosen, as to all of the sampling locations listed on Exhibit 5?

A. Yeah.

Q. They're all chosen in the same way and by the same people?

A. That's correct.

Q. Do you know whether those three sampling locations for the Upper Dresden Island Pool are proportionately representative of the types of habitat in the Upper Dresden Pool area?

A. And you're referring to just those three sites?

Q. Right.

A. Now, for clarity, can you point out what those three sites are.

Q. Yeah, that's River Mile 279.5, 283.9, 285.8.

And, Mr. Yoder, actually, it would probably help if we can find them Exhibit 7, the QHEI data sheet. So if -- why don't we try and take a moment?

MS. WILLIAMS: Susan, are you working from your prefiled again?

MS. FRANZETTI: You know what, I'm flipping back and forth. I'll try and remember to say.

Right now that question is, basically, Question 13 of my questions on Attachment S.

MS. WILLIAMS: Thank you.

MS. FRANZETTI: I'm having to be ad lib a bit here, Ms. Williams, so bear with me.

MS. WILLIAMS: That's totally fine.

MS. FRANZETTI: If you hear me saying one and not saying it's a prefiled question, just chime in to give the number.

THE WITNESS: Okay. I found them.

BY MS. FRANZETTI:

Q. Okay. Would you like to take them in order, based on their QHEI sheets, in terms of answering that question?

A. Actually, it's how I have them --

Q. Okay.

A. -- arranged here.

Q. Why don't we do this: Before -- let me withdraw that question and ask you, can you describe for each of these three locations, where are we in the Upper Dresden Pool? What area are we in?

A. Okay.

Q. Okay?

A. The -- let's go from upstream to downstream. So 285.8 is the Brandon dam Tail Waters.

HEARING OFFICER: Mr. Yoder, could you move the microphone a little closer or move closer to the microphone? Thank you.

BY THE WITNESS:

A. 285.8 is the Brandon dam Tail Waters. 283.9 is downstream of the Olen Company.

And River Mile 279.5 is at the power lines that cross the river at that point, that's just the geographic locations of those sites.

BY MS. FRANZETTI:

Q. And each of those locations would be along the shoreline or not necessarily?

A. Well, they follow the site protocol, which would be to sample along the shoreline with the -- typically, the outside bend or as close to what we call the Thalweg. I need to spell that. T-H-A-L-W-E-G.

Which is the deepest -- kind of the center line of the deepest part of the river channel. And they're 500 meters in length.

Q. Mr. Yoder, I believe in the QAPP there is a reference -- I'll try and find it quickly, but while I'm looking for it -- I believe there is a reference or a requirement that the sampling locations actually be marked in the field. Is that right?

A. Generally, yes, that's kind of an old

requirement before we had reliable GPS units.

Q. Well, let's talk about those GPS units. And again, use any one of the three Upper Dresden Pool locations.

By the GPS units, is that what's giving the latitude and longitude values on these QHEI data sheets?

A. That's where it's from, yes.

Q. Well, Mr. Yoder, do you know whether or not MBI/CABB has a map that actually shows where these sampling locations were located? Because we are having trouble, based on longitude and latitude shown on these sheets in determining where these locations are.

And, in one instance, we are half a mile inland from shore. So is there a way, beyond the latitude and longitude information on here, for -- to show us exactly where these locations were?

MR. ETTINGER: I haven't been objecting to Ms. Franzetti's statements about things, like where these locations are and things like that. And I am just assuming that at some point later in the proceeding

she's going to --

MS. FRANZETTI: Tie it up.

MR. ETTINGER: -- tie it all up. I just want to note that because Ms. Franzetti says something -- makes a factual statement now, that that's not evidence until she proves it later.

HEARING OFFICER: And that's noted. And I would agree that the facts in the question are not facts until they're sworn testimony or backed up.

MR. SAFLEY: You haven't answered the question yet, but I had some follow-up.

BY MS. FRANZETTI:

Q. And, Mr. Yoder, the pending question is, is there a map that would show, with some precision, where these sampling locations are located?

A. I believe there is. I believe there are some river charts that have that noted. I do not have them with me.

MS. WILLIAMS: At this point, based on what you said before, you want his answer, I would think that it's fair to then let the

panel tell you whether they could be able to provide that information.

MS. FRANZETTI: Can I ask one more question though?

MS. WILLIAMS: Sure.

BY MS. FRANZETTI:

Q. Were these sights physically marked in the field?

A. I don't know that for sure.

MS. FRANZETTI: Ms. Williams?

MS. WILLIAMS: So would -- I mean, I think the panel, again, whether they'd be able to show you where they are at.

MS. FRANZETTI: Well, let me ask a question first.

Were any members of the panel out there with this field crew when they were doing the sampling?

MR. SULSKI: Not on this project.

MS. FRANZETTI: Okay.

Have you tried to match up, based on the longitude and latitude information in these QHEI field sheets, where these sampling locations are?

MR. SULSKI: I did it according to river mile, and then on the back of each sheet there's a diagram of the area covered.

MR. SMOGOR: I don't know if this is helpful, but river miles are reported to the tenth of the mile. If my math is correct, that's about 528 feet. And the sampling, typically, is a longer stretch than that.

So if the river miles are accurate, that's a fairly precise way of locating where you are. And Chris can --

THE WITNESS: The river mile would be the center point of the sampling site. So at 500 meters, that is .31 miles.

HEARING OFFICER: Go ahead.

THE WITNESS: So you could locate the center point of the site by the river mile that's indicated --

HEARING OFFICER: Mr. Safley has a follow-up.

THE WITNESS: -- and split the difference either way.

HEARING OFFICER: Mr. Safley has a follow-up, Ms. Franzetti.

MS. FRANZETTI: Oh, yes, fine.

MR. SAFLEY: Yeah, thank you.

Tom Safley again.

BY MR. SAFLEY:

Q. On that last point, quickly though, Mr. Yoder, according to Exhibit 5, there are a couple instances in which river miles are a tenth of a mile apart. For example, 276.4 and 276.5; is that correct?

MS. FRANZETTI: The third and fourth, under Des Plaines River.

BY THE WITNESS:

A. Yes, I see that.

BY MR. SAFLEY:

Q. Would the 500 meter fish sampling distances then overlap for those two river miles, or how does that work?

A. The only thing I could think is they were on opposite sides of the river. And that -- the river is pretty wide at that point.

Q. Okay.

A. Again, I would have to -- I don't know exactly if that was the case. That's what I am surmising, based on something like that.

Q. In that instance, that may represent one fish sampling but two different river mile locations?

A. Oh, it's definitely two different locations.

Q. Right. But as far as -- I thought we had said earlier that each one of these river mile locations corresponding with an electro fishing event?

A. Correct.

Q. Okay. Oh, so --

A. If they're on opposite -- they can overlap in terms of lineal distance, but on two opposite shore lines --

Q. Okay.

A. -- that frequently happens in large rivers. I'm just surmising that's what it is. It sounds illogical to have two adjacent sites that overlap with one another, it doesn't make sense to me either.

Q. Okay.

A. But I would have to verify with my crew that that, indeed, did happen.

Q. So if they were on opposite sides of

the river, the area in which they were doing electro fishing wouldn't overlap because of the width of the river?

A. That's correct.

Q. Okay. Then going back to the longitude and latitude, again, a question just to try to pin this down, Exhibit 7, Ms. Franzetti was going to be asking you about some of these sheets, one is 2790, River Mile 279.5, and I think you had found that one, I think it's third from the back. Can you find that sheet for me?

A. I have it.

Q. Okay. And it has a longitude and latitude listed there. And you may have stated this, but just so I understand: Is it correct that the field personnel have a handheld GPS unit, which they take with them, and they, in the field, get the longitude and latitude and record it on this sheet?

A. Yes.

Q. Okay. If you could flip --

A. Well, they also -- it's also electronically recorded.

Q. Oh, it's electronically? Okay.

If you could flip three pages

before that. This is river mile -- listed as River Mile 276.5. It's location Moose Island, DST Durkin Road, I think. Can you find that?

Again, in my set, it's three pages before that. Were you able to locate that, Mr. Yoder?

A. I see it.

Q. And you may have anticipated where I'm -- what my question is going to be. I read the longitude and latitude on both those sheets as being exactly the same. Am I reading that correctly?

A. That's what it says.

Q. Okay. But according to river mile, one side is three miles up stream or downstream, depending on which one you start with from the other one; is that correct?

A. That's correct.

Q. And that was an issue that we had noted, and again, just trying to figure out where these locations are that we're taking about.

How could that have occurred with the procedure that you talked about, with regard to using the GPS meter in the field?

MR. SMOGOR: If I might butt in?

MR. SAFLEY: Go ahead.

MR. SMOGOR: I think Moose Island, one of these sights, there's a slough that kind of doubles back on the river. And if you look at the map, the actual river mile of a slough is pretty much the same lineal distance along the river. But it's off the river in an actual slough, perhaps.

MS. FRANZETTI: Which is why, though, Mr. Smogor, that just the river mile doesn't tell you all the time where the location is; right?

MR. SMOGOR: In this case, obviously not.

MR. SAFLEY: And I appreciate that. I guess, since Mr. Yoder is the one who was the supervisor on this project, I'd like to get his thoughts on that.

BY MR. SAFLEY:

Q. And granted, I haven't been out to the location, even if that is the explanation, could it sill -- would it still make sense that the latitude and longitude are identical?

A. Yeah, I agree, it's a mystery to me.

I'll need to find out what happened.

MR. SAFLEY: Those are my only follow-up questions right now. Thank you.

HEARING OFFICER: Thank you, Mr. Safley.

BY MS. FRANZETTI:

Q. Mr. Yoder, can you look back on Page 14 of the QAPP, Exhibit 8. And specifically on Page 14 under Section 8.9 Documents and Records.

In the second sentence there, it says, "A detailed plan of study will be developed with the sampling team and used to guide the selection of sampling sites in the field during reconnaissance and the initial sampling for each river survey."

Was that detailed plan of study developed?

A. I believe there was a plan to guide that. I will need to -- I need to find out about that.

Q. All right. Does --

MS. FRANZETTI: For the record, I would request that that plan of study be produced if it still exists.

MS. WILLIAMS: If Mr. Yoder provides it to us, we will certainly provide it to the Board and all of you.

BY MS. FRANZETTI:

Q. In the 349 absence of having that detailed plan of study, Mr. Yoder, I'm going to go back to my prefiled Question 14.

What procedures were followed to ensure that the sampling locations were not biased and were fairly representative of the habitat conditions in the Upper Dresden Island Pool?

A. Well, I think we before referenced the intensive survey sampling design, but we developed for nonwadable rivers. And I believe that contributes it to not having an -- over biased about what the sampling sites represent.

Q. Mr. Yoder, I didn't understand your answer. Could you try and clarify it for me, so that I may understand it?

A. Well, under project -- under A(6), Project Description, the last sentence says, "This will include using an intensive survey sampling design developed for nonwadable" --

HEARING OFFICER: Could you slow down,

Mr. Yoder? I know you're reading, but could you slow down a little bit for the court reporter.

Go ahead. You just need to slow down your reading.

BY THE WITNESS:

A. Under A(6) Project Description, the last sentence of the first paragraph, this is Exhibit 8, it states, "This will include using an intensive survey sampling design developed for nonwadable rivers." It references Yoder et al 2005.

BY MS. FRANZETTI:

Q. And that publication contains an intensive survey sampling design for nonwadable rivers that you believe was used here or relied on here to select the sampling locations?

A. Yes.

Q. And if it was in fact relied on, it's your opinion, then, that the selection of the sampling locations would not be biased?

A. That's correct.

Q. Okay.

HEARING OFFICER: Excuse me. Could we turn up the microphone? We're having a real

hard time hearing Mr. Yoder today. We weren't yesterday, so -- but we are getting more outside noise today too.

Sorry, Ms. Franzetti.

MS. FRANZETTI: No problem. I wanted to make sure you could hear.

BY MS. FRANZETTI:

Q. Mr. Yoder, just to tie this up, on Page 32 to the last page of the QAPP, before you get to Appendix 1, is that the reference that is at the end of the sentence about the intensive sampling design, Yoder CO and nine others 2005, changes in fish assemblage status in Ohio's nonwadable rivers and streams over two decades?

A. That's correct.

Q. Now, is the next line there a different publication or it's the same? The next one, after what I just read, it says, "In RUs and JRINNE." And then it goes on, "Historical changes in fish assemblages of large rivers in the Americas."

So in which publication will we find your intensive survey sampling design?

A. You'll find it up -- it's a book for

symposium proceedings, and you'll find it in that book.

Q. And is that publically available?

A. Yes. It has since been published. It was not published at the time.

Q. Do you know, with respect to -- we've already mentioned that one of the three sampling stations in Upper Dresden Pool was at the Brandon Dam Tail Water, River Mile 285.8. Do you know what percentage of the Upper Dresden Island Pool is represented by that tail water area?

A. I don't have an exact percentage for you, no.

Q. Can you give me an estimate, approximation?

A. It's a small part.

Q. Can you give me a percentage range that you mean when you refer to something as --

A. Can I ask the IEPA staff to help me out?

MS. FRANZETTI: Sure.

MR. SULSKI: It's roughly a mile out of eight.

MS. FRANZETTI: Out of eight miles?

MR. SULSKI: Out of eight.

BY MS. FRANZETTI:

Q. And with respect to River Mile 283.9, which is the -- has been identified as downstream of Olin. Olin, by the way, is reference to an industrial plant; correct?

A. I would presume that to be the case, yes.

Q. All right. Can you, or any other member of the panel, on this question describe -- tell me approximately what percentage of the Upper Dresden Pool habitat area this location is representative of?

MR. SULSKI: Just the sample represents the range of the sample, where the sample is taken. Are you looking for an approximate representative of the whole eight-mile stretch?

MS. FRANZETTI: Right.

MR. SMOGOR: I don't --

MS. FRANZETTI: If you know. If you know.

MR. SULSKI: I could only make an answer to that with the following caveat:

Based on the QHEI scores throughout that system, from I-55 up to the Tail Waters, it would be approximately equal to a mile of the entire reach. In other words, a score like that would only be found in about a mile of the entire reach.

So that would be another, whatever, one eighth.

MS. FRANZETTI: And, Mr. Sulski, and what's that based on? How do you know --

MR. SULSKI: That's based on a distribution of QHEI scores throughout the pool, or throughout the I-55 to the Tail Water reach.

MS. FRANZETTI: Okay.

MR. SULSKI: So if you look at QHEI scores that are in that range, that lower 30 range, it represents about a mile. In other words, the rest of the scores --

MS. FRANZETTI: Yeah, I just don't know what QHEI scores you're relying on to tell me -- that's what I'm confused about.

Are you relying on the Rankin QHEI scores?

MR. SULSKI: Well, we have a number of QHEI scores that were represented in Attachment A. And Rankin's report did two, they did three.

So there's a number of QHEIs spread across the system. So if you look at the QHEI score in general, it's roughly another mile, so...

MS. FRANZETTI: Okay.

HEARING OFFICER: And for the record, Mr. Sulski talked about a lot of attachments in the appendix. Attachment A is the Attachment A to the proposal.

MR. SULSKI: Yes, ma'am.

HEARING OFFICER: Thank you.

MS. FRANZETTI: And finally, same question with respect to River Mile 279.5, which has been identified as the Power Lines -- it's located at the power lines that cross the river. Anyone -- can anyone tell me approximately what percentage of the habitat in Upper Dresden Pool you believe that location represents?

MR. SULSKI: That would be a little

more difficult. It would range from a mile to maybe three or four miles.

MS. FRANZETTI: What is that based on?

MR. SULSKI: That's based on a distribution of QHEI scores. So when you look at them spread out in a visual map, this QHEI score is 49 -- I'm sorry -- I made a mistake, I was looking at the wrong QHEI score.

I would say another mile.

MS. FRANZETTI: But your reason for saying about a mile is, again, based on prior QHEI scores in this general area?

MR. SULSKI: Yes. With regard to this one, my answer to the first one, the Brandon Road Pool. I've been in the Brandon Road Pool, and you can see on a map how long it is, it's a mile long.

MS. FRANZETTI: And, Mr. Sulski, just so we don't get confused or confuse people, you're now saying Brandon Pool --

MR. SULSKI: I'm sorry.

MS. FRANZETTI: -- you're mean Tail Waters; don't you?

MR. SULSKI: The Tail Waters, yeah. Brandon Tail Waters.

MS. FRANZETTI: Thank you.

I'm going to ask Question 17 in my prefiled questions, and I can -- anyone who would like to answer.

How much good habitat -- and we're defining that as habitat with above a QHEI of 60, is -- for purposes of this question -- is there in each of the subject areas involved in this rulemaking, particularly in the Upper Dresden Pool? And, you know what, for the purposes of right now, let me limit it to the Upper Dresden Pool solely, so we don't take up a lot of time when we have very little left with Mr. Yoder.

MR. SULSKI: Well, you're assuming that plus 60 is good habitat. What's that assumption? I don't mean to ask a -- you know, respond with a question.

MS. FRANZETTI: Well, I have to define "good." I mean, if I just say good, I may define it one way, you may define it another way in terms of good habitat. So I'm

defining it as habitat that would score above 60 on the QHEI.

MR. ETTINGER: So why don't we just say that the question is what percentage is above 60. Is that your question?

MS. FRANZETTI: That will be fine, Mr. Ettinger.

MR. SULSKI: I can give you locations where there's above 60, but when you consider habitat of an area, you just don't look at 160 and 150 and 130. And you don't just look at scores or a sum of scores or an average of scores.

You have to look at the system as a whole and look at other features, including, in some cases, the individual metric that made up the score and why a QHEI score would be what it is. You know, what drug it down or raised it up.

MS. FRANZETTI: Okay.

MR. SULSKI: So you would have to take that that into consideration. And you would have to take into consideration the broader knowledge or appearance of the system, what

it is, how much of these 60s does it have -- what other similar areas, sloughs, adjoining sloughs, river mouths, deltas, islands, any areas behind islands.

You would have to take that into consideration and look across the broad upper part of the pool itself. So it's hard to say, okay --

MS. FRANZETTI: Then I'm going to -- I'm going to leave it that for now. We'll come back to this in March; all right?

Because it sounds like you're going to need some time to really fully respond to that question by taking all these things into account. All right.

Instead, let's go to Mr. Yoder. Can you give Mr. Yoder the original Attachment S --

MS. DIERS: Yes.

MS. FRANZETTI: -- as well as, then, the revised Exhibit 5?

BY MS. FRANZETTI:

Q. And, Mr. Yoder, I want to -- again, I want to stay focused on Upper Dresden Island Pool,

those three locations. With respect to River Mile 279.5, do you see in Attachment S that originally that location had a score of 77 on the QHEI?

A. Yes.

Q. If you turn then to Exhibit 5, is it correct in the corrected QHEI score, it has dropped down to 67?

A. That's correct.

Q. Do you know what caused that error of ten points, from 77 to 67?

A. Ma'am, that is not an error. It is a change in the scoring and resulted in a ten point decline.

Q. Okay. Maybe then we need -- let's turn to in Exhibit 7, River Mile 279.5 and explain to me how a change of -- what you mean by your answer that it was a change in the scoring and not a error.

A. I consider an error to be a mistake.

Q. Okay.

A. This is not a mistake, it's a change in the procedure. The original completion of the sheet was done according to a prior procedure, and the revised score you see is due to a revised

procedure.

Q. And we're back to the impounded reason?

A. Yes. Which we went over this morning, earlier.

Q. Oh. That adds up to ten points if both impoundeds are checked?

A. Yes, ma'am.

Q. Okay. All right.

Well, then take a look at the next one, 283 --

MR. RAO: Before you go on to the next one?

MS. FRANZETTI: Absolutely.

MR. RAO: Mr. Yoder, can you walk us through this river mile, how you came up with the score 67?

I just want him to walk us through, because we were not able to get the same number when we followed your procedure.

HEARING OFFICER: Basically, can you do the math?

MR. RAO: Yeah.

THE WITNESS: I can't do it completely

from the data sheet, because these values are entered in a program that does the calculations. And I don't have all of the input values, especially for the gradient score.

I have to refer to Exhibit 5 to get that information. So I'm relying on Exhibit 5 as being the computer-generated scoring that was based on, largely, the input from the data sheet.

MR. RAO: For example, if you could just take a look at the score for the cover you came up with for that river mile, I think you have a score of 17 for cover. Is it possible for you to explain how you came up with that number without the computer program?

Because we tried to do it, and we get a different number. We just want to make sure we are doing it right.

THE WITNESS: Yeah, are you getting 18?

MR. RAO: Twenty.

THE WITNESS: I don't see how you

would have gotten 20 out of that.

MS. LIU: Do you just add up the numbers? One plus two...

THE WITNESS: Yeah, don't read the hand numbers.

MS. LIU: Oh, okay.

THE WITNESS: Those are not the score. That's what you're reviewing.

DR. GIRARD: Mr. Yoder, you only read the number on the right-hand side.

THE WITNESS: The number in the brackets, the score of the attribute.

MR. RAO: So you got 18?

THE WITNESS: I just counted 18, which makes me --

MR. SMOGOR: If you look at expos, there's a zero in front of it. So even though there's a number there, does that help, Chris?

THE WITNESS: Oh, that's it, okay. Yeah, that wasn't checked.

Okay. I counted -- it's correct, there should be 17. Thank you, guys. I appreciate that.

DR. GIRARD: So, Mr. Yoder, the cover type score, which can be zero to three, which is on the left-hand side of the cover type, that doesn't get counted into the final calculation?

THE WITNESS: No, it doesn't. It's -- you've got to understand the nature of our work is developmental at the same time.

So we are collecting data that will, perhaps, refine this in the future. And that's what that is.

Okay? So it doesn't enter into the scoring now.

DR. GIRARD: Well --

THE WITNESS: On this sheet, only work with the numbers that are in brackets after the specific -- that's what contributes to the score.

MR. RAO: Because the next one, Riparian Zone, we got a score of ten adding those numbers. Are we doing it right?

THE WITNESS: Yeah, it's -- it's an average of the left and right banks on that. I -- it's hard to tell on these copies, but I

think I see -- okay, I won't -- (inaudible).

MS. FRANZETTI: Are you --

THE WITNESS: We need some humor, it's like a hanging chad.

I believe urban or industrial got checked on the left-hand side, so I don't know. That can explain -- because I add up -- I add up ten points too from this. But I'm not sure we're reading everything that got checked.

And this data is entered, okay, into a -- the ultimate authority is the computer database.

MR. RAO: So that program is capable of discerning the different --

THE WITNESS: Well, provided you enter the data correctly. But I can't tell here -- I'm seeing like -- there may be other checkmarks or something.

Maybe not. But that would explain -- but I agree with you. I mean, I think you're doing it right.

You take the value in the brackets and you add each one up and it gets -- it can

exceed ten, that's the maximum it can be. And I'm getting ten by hand.

But the program's reporting nine for that site.

MS. LIU: We have the raw field data sheets and we also have the output on the program. Do you happen to have the input to the program?

THE WITNESS: Well, I do, it's in Columbus. So I can make a phone call and verify that very easily.

Someone can go look at it, pull it up on the screen and see what happened.

MR. RAO: That would be helpful, thanks.

BY MS. FRANZETTI:

Q. Mr. Yoder, I recognize that, with respect to the Upper Dresden Pool and some of the other impounded locations, that that explains the ten point drop in the QHEI scores from Attachment S to the revised version of it, Exhibit 5. But would you look at, for example, going down right below the upper Dresden locations to the next one, 287.9?

If you look at Attachment S, the

original score was 26, and now, in Exhibit 5, the score is revised to 21. That's only a drop of five points.

So I can't explain -- I can't use your explanation of changing the method and not a mistake to explain a five point drop. So could you look at that QHEI sheet and explain how it went from 26 to 21?

A. Yes, I can explain that. Because under channelization, the original score assigned was a one instead of a six. And --

Q. Now, why is that?

A. Apparently, based on observation, they felt there was some channelization there at that site. So that's all I can -- again, I'm not as familiar with the river as the IEPA folks are.

But if I could ask them a question about the site?

Yeah, this is the part of the river in Joliet, which I have seen, that is very constrained by sheet pilings. So they considered that to be recent or no recovery.

So -- and I'm not sure there's anything else like that that they would have seen in

the system short of being in the CAWS system.

Q. Okay.

A. So it was already being -- it was already -- in other words, I appreciate your paradigm here, that -- why aren't the scores dropping by ten points. This one only drops by fewer points because it was already scored adding one instead of a six.

Q. I see, okay. All right.

I think that does help explain why the drops are different depending upon -- can you just look at one more to confirm that it's all about this impounded modification, river Mile 290? If you look at Attachment S, it started at 49 and if you look at Exhibit 5, it went to 44.

Mr. Yoder, does it seem to be the same reason for the drop by five points?

A. I believe it is. And although it's hard to tell what the former marking was because the copy, but I believe there's enough of a smudge there to suggest it's exactly the same issue as the previous site.

Q. Okay. Thank you.

HEARING OFFICER: Well, let's go off

the record for just a second.

(WHEREUPON, discussion was had off the record.)

(WHEREUPON, the deposition was recessed until 1:15 p.m., this date.)

STATE OF ILLINOIS)
)
COUNTY OF C O O K)
IN THE CIRCUIT COURT OF COOK COUNTY, ILLINOIS
COUNTY DEPARTMENT - LAW DIVISION

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

DATE: 2/1/08
TIME: 1:32 p.m.

APPEARANCES (p.m.):

ILLINOIS POLLUTION CONTROL BOARD:
Ms. Marie Tipsord, Hearing Officer
Ms. Alisa Liu, P.E., Environmental Scientist
Mr. Anand Rao, Senior Environmental Scientist
Mr. Tanner Girard, Acting Chairman
Mr. Nicholas Melas, Board Member
Mr. Thomas E. Johnson, Board Member;

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY:
Ms. Stefanie Diers
Ms. Deborah Williams
Mr. Robert Sulski
Mr. Scott Twait
Mr. Roy Smogor
Mr. Howard Esaig;

THE NATURAL RESOURCE DEFENSE COUNSEL:
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REPORTED BY: SHARON BERKERY, C.S.R.
CERTIFICATE NO. 84-4327.

HEARING OFFICER: Let's go back on the record.

BY MR. FRANZETTI:

Q. Good afternoon, Mr. Yoder.

Were there any of the either requests or matters that you testified to this morning that you would have to check with your office that you were able to do that, checking over the lunch hour? And if so, do you want to augment in any way your answers to any of those questions this morning?

A. Yeah, I can for some of them at this point.

Q. Why don't you go ahead and do that.

A. Okay. With regard to the questions about the study plan in the locations of the sights and if there's any documentation of that, and now that I recall what happened as well, the -- this was done, again, under the grant with U.S.EPA that we talked about previously. And this particular study was actually planned in connection with Ed Hammer.

And so, what happened was before the study was initiated, the crew leader met with Mr. Hammer and they used the Illinois Waterway

Navigation Charts to actually mark where the sites would be, that's how the study was planned. And again, it was following this intensive survey study design.

And so, I have those maps being copied and the fish data sheets, I believe, should also have -- I believe I asked that the latitude and longitudes be actually added to those so that they can be cross-referenced more easily with the actual data sheet. So it will take some time to get that together, copies made and faxed.

But, hopefully, that will arrive this afternoon.

Q. Okay.

A. And so, that constitutes our study plan, in other words.

Q. Now, Mr. Yoder, this morning in response when we were -- strike that. Let me start again.

This morning, when you and I were talking about how the sampling locations were selected, you made reference to you and the crew leader, you thought, you recalled sitting down and talking about that. Is that still your

recollection?

A. Yeah, that would have happened after the meeting that our crew leader had with Mr. Hammer. And I do recall talking to Mr. Hammer on at least more than one occasion about this effort, so I'm thinking it happened during that occasion.

Q. And if I recall correctly, I think the other day you advised us that for the crew leader, this was his first time on this water body to do this kind of work; correct?

A. That's correct. On this water body.

Q. So did Mr. Hammer, basically, direct the crew leader as to where in the Upper Dresden Pool the sampling locations should be, given his greater familiarity?

A. Yeah, that's fair to say. I think, yes.

Q. With respect to -- turn to Page 14, please of the QAPP, Exhibit 8. I think we've pretty much covered the documents and records, we have the QAPP, Exhibit 8.

You've talked about the detailed plan of study, we have the field data sheets that

are completed, Figures 4 and 5. But if you move down into -- towards the bottom of the paragraph with the heading Field Data Recording, you'll get to a sentence right after the reference -- or a second reference to Figure 4, quote, "The crew leader will also maintain a field activities log, noting all circumstances relating to field sampling, site access, weather and other relevant observations."

Do you know whether such a field activities log was kept for this work?

A. Yes, I believe it was. Whether it included in detail everything noted there, I don't know.

But they do -- they do record their daily activities of where they were, how many hours and so on.

Q. Would it be possible to produce a copy of that log?

A. We could -- I could attempt to find out if that still exists.

Q. All right.

A. But he's no longer employed with us, so we can see if we can get that, too.

Q. Wouldn't that be something he would

likely leave behind as part of the project documentation and not take with him though?

A. Well, that's a good point.

Q. Well, I would appreciate it if you could check. And if that is available, if you would produce it as well.

Moving on, the last item is Voucher Specimens. Do you know whether or not voucher specimens were collected here to validate species identification?

A. Yes.

Q. And are those being kept at the Ohio State University Museum of Bio Diversity?

A. Yes.

Q. And if someone who is involved in this rule making proceeding did want to look at the voucher specimen to see whether or not they agreed with the fish identification made by your team, could they get access to them?

A. Yes, I believe they can.

Q. Now, turning to Page 19 at the very top under the caption reporting it says, "A final report will be produced in accordance with the requirements of the cooperative agreement detailed

work plan and grant reporting requirements."

Has a final report been produced as of today?

A. Yes. In terms of there is a final grant report, that's what that refers to.

Q. Do -- and have you submitted that to U.S.EPA?

A. Yes.

Q. Can I -- does that report -- well, with respect to the information regarding the Des Plaines River, does that final report talk about, evaluate the information collected during this project on the Des Plaines River?

A. No. I don't believe it does.

And that's not what that requirement requires us to do.

Q. What does the final report cover?

A. It just covers the fact that we did the work and that's how the grant votes were extended. And so, it's required anytime a grant closes out.

This grant was closed out at the end of 2006. So if -- what you're interested in is a biological and water quality assessment, we did

not do that.

We were not asked to do that as part of the study.

Q. Is it correct then to state that the information in Exhibit 5, and is it -- excuse me a second -- that in terms of any summary information regarding the work on the Des Plaines River, that that, basically, is contained in Exhibits 5 and 6?

A. Yes, that's the extent of what we produced.

Q. Moving down that page to B(2), Sampling Method --

MS. WILLIAMS: Excuse me, Susan, I want to make sure the record is clear. So Exhibits 5 and 6 are the replacement pages from S of the QHEI, but there's also IBI information in Exhibit S -- I mean Attachment S, to the statement of reasons, that aren't reproduced in Exhibits 5 and 6?

MR. FRANZETTI: Why don't you just ask Mr. Yoder if he would also include that part of Attachment S as part of the summary or evaluative information that came out of the Des Plaines River work.

THE WITNESS: Okay. So in addition to the QHEI tables, which there were two, there is a table of IBI -- fish IBI metric scores for each sample and the final score, also the modified index and well-being.

And then, there is a species -- fish species summary for each location in addition to that.

BY MS. FRANZETTI:

Q. Turning now on Page 19 to the Section B(2) Sampling Methods. And timely given where you just ended with that answer with respect to the fish IBI scores, it says, "Methods for collection of fish will be based on appropriate modifications of those established for boat electro fishing by Ohio EPA."

What modifications of the Ohio EPA boat electro fishing collection methods does that refer to?

A. Well, in this case, it's not substantially different than what Ohio EPA recommends, and that's really what it's based on.

Q. What were the modifications, if any, that were made to the Ohio EPA methods?

A. I don't believe any substantial modifications were made in this case.

Q. Moving on into sample site selection delineation, it says in the second sentence, "Individual sampling sites are located along the shoreline with the most diverse habitat features in accordance with established methods."

Do you know whether or not Mr. Hammer's suggested sites were consistent with that criteria?

A. Yes. He's familiar with that technique or should have --

Q. He may be familiar with it. Do you know for a fact whether or not in proposing the sights that were sampled here, that he selected sites with the most diverse habitat features in accordance with established methods?

A. Yes, I believe that happened.

Q. How do you know it happened?

A. Well, in terms of personal observation, I can't attest to that. But it's a procedural matter that we follow, and people are trained to follow.

Q. With respect to Page 20 -- turning to

Page 20 in the first full paragraph, four lines down, it says, quote, "The boundaries of each boat electro fishing zone or subzone are marked on stationary objects, e.g., trees, bridge piers, et cetera and fixed landmarks or geo reference." And a little later on it says, quote, "This enables accurate relocation of sites in the event repeat visits are made."

We may have touched on this this morning, but now that we're right at the reference, were the boundaries of each boat electro fishing zone or subzone marked on stationary objects during the work on the Des Plaines River?

A. As I indicated before, that is a -- that's a technique that was used when this methodology was initiated. And since that time, GPS units have, in some cases, obviated the need to do that. But I will check and see if it did happen.

We've -- one problem with that is to see the objects, you have to mark them with some kind of bright paint, which can be annoying sometimes to others that use these waterways. So we've tried to discourage that practice, especially with the advent of GPS units.

Q. Moving on to the next paragraph, "Exact sampling locations are determined in the field and include a representative proportion of reaches along the mainstem with respect to pollution sources, habitat modifications, i.e., mostly impounded sections behind dams, reaches effected by water level fluctuations below hydroelectric facilities," close paren, "and relatively unmodified free-flowing reaches."

Do you know whether that criteria was followed here in terms of identifying the sampling locations?

A. Yes. That's just a more detailed explanation of the intensive survey design that's followed.

Q. So again, you're telling me you believe Mr. Hammer followed that criteria in specifying the locations to be sampled?

A. And Mr. Johnson.

Q. With respect to 7, I'm going to turn to my prefiled Question 18.

The QHEI considers substrate in terms of size, composition, e.g., silt versus sand versus cobble, but does not take into account

whether the sediment present may be toxic. Has it been determined whether any of the areas that received QHEI scores of greater than 60 with apparently good habitat are in fact unusable as good aquatic habitat because of legacy pollutants and sediments?

A. I'm going to have to defer the IEPA staff on that one.

Q. You don't know the answer to that?

A. No, I don't know the answer.

MS. FRANZETTI: Is the Agency prepared to answer that question?

MR. SULSKI: I don't think we have information to answer it one way or another.

MS. FRANZETTI: And, by that, you mean it's possible that sites with a QHEI of greater than 60 do in fact have contaminated sediments that make the site unusable as good aquatic habitat?

MR. SULSKI: It's possible it is, it's possible it isn't. I don't have information to make that determination.

MS. FRANZETTI: For people who might be following, we've covered 19, we've covered

20.

Staying with my prefiled questions, Question 21. I apologize, I'm a little out of order here.

With regard to fish results for the Des Plaines River contained in Appendix Table 1, which is part of Attachment S, beginning at Page 28, there are several fish species identified that appear questionable for the Des Plaines River, such as silver shiner, blacknose shiner, highfin carp-sucker, black redhorse and brown bullhead. Can you tell me what process or processes were used to ensure that these species were not misidentified?

HEARING OFFICER: And, Ms. Franzetti, just for the record, I may have missed this. You said Appendix Table 1, is that Attachment S?

MS. FRANZETTI: I might have said exhibit. If I said Exhibit S, I meant Attachment S.

HEARING OFFICER: I didn't hear S at all, so I was just checking.

MR. SULSKI: That's Exhibit 19?
MS. DIERS: No, Attachment S.
THE WITNESS: Yes, I can --
BY MS. FRANZETTI:
Q. Please, go ahead and explain --
A. For each species?
Q. Yes, if you can. I don't know that there's a different process for each of these species that was used to ensure they weren't misidentified. So you have to answer the question based on your knowledge.
A. Okay. The silver shiner, which there was one specimen currently in the database, that was vouchered.
We checked on that at the museum and that is an emerald shiner. So that can be corrected.
Q. So this was a mistake?
A. Yes.
Q. What about blacknose shiner?
A. The blacknose shiner, on further consideration, we agreed that that was more likely a pallet shiner. We did keep a voucher that the -- and it was deposited at the museum.

And we are asking them to locate that specimen, make sure it wouldn't be completely out of the realm of possibility to see a blacknose shiner in that area, because they do exist in Illinois, and I believe there is a population in the Kankakee River. But we -- the museum has been unable to locate that voucher, but we did keep a voucher. We did our part on that one.

So my recommendation would be to go with what is more logical. We know there's been pallet shiners collected in that area.

And that's all we can do with it, that's what we recommend doing. The remaining species, I have full confidence in -- my crew leader is a taxonomist -- to be able to identify those species. They're distinctive.

This person has seen these species in other areas of the Midwest, and they are -- for instance, the highfin carp-sucker is very distinctive from the other carp-suckers, that it might be confused with. It's a large fish. I can find out if we have photographs.

Those are -- large fish are very difficult to voucher in the field, they just take up

so much space. When we say we keep voucher specimens, we keep those specimens that are potentially going to be controversial, like a brand new record, which silver shiner admittedly is.

But it was kept. And we were able to clear that up.

These other species, if there's a question, then a photograph is taken. But these are not uncommon fish to us and to our people and the realm they operate in, so I have full confidence they were able to identify those.

Black redhorse, there is a lateral line scale count that you can do to differentiate if from golden redhorse, which is a species it might be confused with. The crew leader indicates he did that procedure, so I'm willing to accept his identification.

And brown bullhead is a very common fish that we encounter in different areas of the Midwest. And I have confidence that they can identify a brown bullhead and separate it from the species it might be confused with, which is a black bullhead.

And -- so that's my --

MS. FRANZETTI: Now --

MS. WILLIAMS: Susan, the Agency would like, for our ability to respond if we have anything to say about this, for you to help point out where these species -- not all of them. So the blacknose shiner, highfin carp-sucker and black redhorse are -- no?

MS. FRANZETTI: Counsel, are you asking me --

MS. WILLIAMS: Where in the data set they're found in the Des Plaines River?

MS. FRANZETTI: Okay. Why don't we do that later; okay? I don't want to take -- we have limited time with Mr. Yoder.

MS. WILLIAMS: Well, I understand, but I guess we're not agreeing at that point that those species were found in the Des Plaines per se, or upper Dresden.

MS. FRANZETTI: Can we defer this to later?

MS. WILLIAMS: We're only finding two, and we just want to make sure the record reflects we're only finding two of those in the Des Plaines River sites.

HEARING OFFICER: But they're -- for point of clarification, because the Agency is beginning to distinguish between Des Plaines River and the Illinois River, which is fine, except that they are in S -- Attachment S.

MS. WILLIAMS: Oh, yes.

HEARING OFFICER: We agree? Okay.

BY MS. FRANZETTI:

Q. Mr. Yoder, if I understand, then, you're telling me that with respect to silver shiner and blacknose shiner, those, you would agree, were misidentified. But with respect to highfin carp-sucker, black redhorse and brown bullhead, you do not agree there is any misidentification of those species?

A. I do not agree that there was a misidentification of those species.

Q. Those last --

A. Is that the question?

Q. Yeah, those last three?

A. I don't agree that those are mis -- I have confidence that those three were identified. I would also clarify blacknose shiner, we are still checking into.

Q. And --
A. I agree about silver shiner.
Q. All right. And if you can't find a museum voucher, that right now you can't find, for blacknose shiner, will you still not agree that that's a misidentification?
A. If we can't find the specimen, my recommendation would be to go with pallet shiner.
Q. Now, I know you mentioned for highfin carp-sucker there's no voucher; is that correct?
A. No.
Q. That's not correct?
A. What I heard was "there's no voucher."
Q. Okay. There's no voucher for that one?
A. That I know of. I will check to see if there are photographs.
Q. And if there's a photograph, will you supply it?
A. Yes, I will.
Q. Thank you.
For black redhorse and brown bullhead, are there voucher specimens?
A. We're checking into that.

Q. You don't know as you sit here today?
A. No. And there may be -- there may also be photographs that I need to --
Q. All right.
A. We are checking into that -- someone is checking into that.
Q. And once the checking into it is done --
A. We'll report that.
Q. -- will you advise us through counsel for IEPA what is found?
A. Yes.
Q. Thank you.
I'm going to move on to my next prefiled question, 22.
For approximately 50 percent of the fish samples, on which the IBI scores and Attachment S are based, it appears the emerald shiner is included as a "simple lithophile," when the Ohio EPA no longer considers it to be a simple lithophile. Depending on the sample station, is there a result in IBI scores either two or four points higher than they should be?
Does -- it says the Illinois

EPA -- I would include the Illinois EPA and/or Mr. Yoder -- agree that the treatment of the emerald shiner as a simple lithophile results in overstating the IBI scores for many of the samples and stations included in Attachment S.

MS. WILLIAMS: Do any of the witnesses know how many samples or stations?

BY MS. FRANZETTI:

Q. Well, let's put aside how many stations and let's just focus on whether or not -- is there an agreement that the Ohio EPA no longer considers emerald shiner to be a simple lithophile?

A. No. It's lithophile.

Q. Thank you. I'm doing great on pronunciations.

A. But, yeah, we looked into that. And what had happened was that's a somewhat --

Q. Mr. Yoder, can you first just answer the question? Does the Ohio EPA no longer consider it to be a simple lithophile?

A. No, they do not.

Q. Okay. So we're in agreement on that?

A. Yes, we are in agreement on that.

Q. All right. And does Attachment S

characterize it as a simple lithophile?

A. I believe in the revised version of Attachment S, we made that change.

Q. Oh, all right. So this -- this mistake's been corrected on Exhibit 5 -- Exhibit 6.

Let me correct that. It's not Exhibit 6, we don't have a -- I didn't think we have a corrected version of these IBI scores.

Again, in the interest of time, can I maybe keep going here? And, Mr. Yoder, are there corrected values to the IBI scores that are in Attachment S that we don't have? "We," being me and the rest of the people sitting on that side (indicating) of the wall?

A. That needs to be clarified here.

Q. Okay. Can you clarify it first for me?

A. I can't, no.

MS. WILLIAMS: He's not aware of it. I would say I do not believe there are any corrections to Attachment S related to the IBI summaries in the record; right?

MS. FRANZETTI: Right.

MS. WILLIAMS: Right, there are none.

So he's not -- he wasn't aware of them.

So there's nothing in the record to correct in any IBI scores.

Are there corrections to IBI scores that need to be put in the record?

THE WITNESS: We made that correction in our database.

MS. WILLIAMS: And do you have them with you here today?

THE WITNESS: I believe they're right here.

MS. FRANZETTI: Okay.

MS. WILLIAMS: We would like to have copies made, though I'm not sure our copier has any toner left in it.

HEARING OFFICER: Take it to the Board office.

MS. FRANZETTI: Okay. But Illinois EPA is going to produce a copy of the corrected IBI scores for the fish study?

MS. WILLIAMS: Correct.

MS. FRANZETTI: All right.

HEARING OFFICER: Excuse me. Just tell John that you need to make copies. Tell

him I sent you up.

MS. FRANZETTI: And off the record.

(WHEREUPON, discussion was had off the record.)

BY THE WITNESS:

A. Can I clarify my answer on that last one?

BY MS. FRANZETTI:

Q. Sure.

A. Because your question states the IBI scores could be either two or four points higher than they should be. While, conceptually, that makes sense, I have not gone through and done a comparison of the changes to verify that they indeed did change by that.

But, categorically, yes, it makes sense that they would.

Q. Would there be some change, whether it's two points or four points? I don't want to get into details exactly how we score as we did with the QHEI, But will this affect the score?

A. It can. But it also, because it depends on how many emerald shiners were in the sample, and how it then affected the calculation of

the proportion of the lithophiles in that sample.

If it did not change it enough to change the IBI metric score, then it wouldn't change the IBI. So it would be prudent to actually go score by score and see what the actual change was by comparing this table to the current table in Attachment S.

Q. Well, we're getting a lot of practice at doing that, so I'm sure that can be accomplished. Moving to Question 23.

It also appears that for the fish results included in Attachment S, round goby oriental weatherfish are included in the species count metric when they clearly should be excluded as exotics. Do you agree?

A. Yes, I agree.

Q. Has that correction been made in the corrected version of the IBI fish scores in Attachment S?

A. Yes, I believe it is.

MS. FRANZETTI: That is -- that completes my prefiled Attachment S questions. If I can just have a moment with respect to the additional materials we've been given to

see if I have...

HEARING OFFICER: Dr. Girard has a couple questions.

MS. FRANZETTI: That would be perfect.

DR. GIRARD: I have a question on the fish data sheet, Exhibit 20, if you could get a copy there in front of you.

Looking at those fish data sheets, the -- at the top of the sheet, there are spaces for collecting additional information. And on some of the sheets they collected some other chemical and physical parameters, conductivity dissolved oxygen temperature.

Was any of this information used in this study?

BY THE WITNESS:

A. No.

DR. GIRARD: Thank you. No further questions.

BY MS. FRANZETTI:

Q. Mr. Yoder, on Page 24 of the QAPP, in the -- what I'm going to call the second full paragraph, the one that begins "Qualitative habitat assessment." If you go towards the bottom of that

paragraph, five lines up from the bottom over to the right the sentence is:

"Well, we followed the guidance and scoring procedures outlined in Ohio EPA 1989 and Rankin 1989 with some minor modifications made during 2002 and 2003."

My question is, just basically, have we covered now whatever were the modifications that were made to the Ohio EPA and Rankin 1989 approaches?

A. I believe we've captured all of that.

Q. Okay. And another question: I think you're familiar with the document that is Attachment R, Mr. Rankin's QHEI report from -- it's either 2003 or 2004, I'm forgetting as I am sitting here.

My question is, if you are familiar with that document, can you tell me whether you basically utilize, other than the impoundment scoring issue, the same procedure as Mr. Rankin did?

A. Yes. Essentially the same, yes.

MS. WILLIAMS: Do you know, Mr. Yoder, if you and Mr. Rankin were -- studied the river at the same time of year?

THE WITNESS: No.

MS. WILLIAMS: No, you don't know, or no?

THE WITNESS: Oh, I know that it was not the same time of year.

MS. WILLIAMS: Can you explain that, please?

THE WITNESS: The 2006 sampling was conducted during the standard mid-June to mid-October seasonal index period, and Ed's study was conducted in, I believe, March of '03 or '04, one of those two.

MR. SULSKI: I have to look to see if it's '03 or '04.

THE WITNESS: Anyway, Ed was there in March, which is outside of the index period.

BY MS. FRANZETTI:

Q. What's the significance of the different times of year in which each of these two studies were performed, if there is any significance?

A. Well, it's -- Ed's study is a little different because he was tasked with just coming up and doing a -- sort of screening. It's primarily

the CAWS system.

And there was a time to wait for that until the summer. And it was not conducted in concert with the electro fishing sample.

Q. Are you telling me that the best time to do this QHEI data gathering work is in the summer and not March?

A. Yes.

Q. Why is that?

A. The reason is because of -- one, that's where it's primarily calibrated from and developed from. Some important differences can occur.

One, is river flows tend to be a little bit higher in the spring than during the summer. The sampling is supposed to be conducted during normal summer flow conditions, so there are habitat features that are more apparent during that time, perhaps, than might be in March.

Vegetation it growing during the summer, it's not growing in March. And that can contribute to the observations as well.

Q. Did you do any comparison between what he found and what you found to see whether or not it

made any difference that he was doing it in March and you were doing it in the summer?

A. Just in looking at the results that had been presented, I know there's the difference in the -- I believe it's the Brandon Tail Water site.

Q. What's the difference?

A. I believe Ed's score was -- is it 69.5?

MR. SMOGOR: In the Brandon Tail Water?

THE WITNESS: Yes.

MR. SMOGOR: QHEI?

THE WITNESS: Yes.

BY THE WITNESS:

A. And I think the summer index period score was, I believe --

MR. SULSKI: 81.5.

BY THE WITNESS:

A. -- 81.5.

BY MS. FRANZETTI:

Q. And, by that, you're telling me that you think that difference between 69.5 and 81.5 is due to the time of year?

A. It could be.

Q. Okay. You don't know that it is?

MR. SULSKI: They're also in slightly different locations in the pool. There's approximately three -- two-tenths of a mile difference.

MS. FRANZETTI: Okay. Rob, I understand. I'm just trying to determine do we know whether, for the locations that Mr. Rankin has in common with what we'll call the Mr. Yoder QHEI study of 2006, if there is any difference in scoring due simply to the time of the year? If it's a different location, then that may explain the difference in the score.

I'm just trying to -- counsel's made a point about the different times of year that were both done, I'm trying to find out if we know for a fact that that made any difference in how same -- similar sites were scored. That's all.

Or is it that it just might have?

BY THE WITNESS:

A. You know, I would -- to definitively determine that, I would have to sit down and talk in

detail to Mr. Rankin about that.

BY MS. FRANZETTI:

Q. Okay.

A. Once I did that, we could determine that.

Q. And you haven't done that at this point?

A. I have not done that at this point in time.

Q. Okay. Then moving on to Page 26 of the QAPP, there's a paragraph called Non-direct Measurements.

And if you would please read that paragraph, it's a short one, to yourself, it's Section B.9, Non-direct Measurements. If you could just read that to yourself, my question is simply, can you explain what is meant by these nondirect measurements described in that text?

A. Do you want me to read it first or just --

Q. Yeah, you should read it to yourself so that you can then explain it to me.

A. You want me to read it into the record?

Q. You know, I don't want to make you read it out loud. If you went to, be my guest.

A. What this has to do with is an EPA is interested in these QAPPS to know, generally, what other kinds of concepts we might apply. And again, these are -- these QAPPS, it's -- the individual -- each individual grant requires a QAPP.

But there's a larger context going on here where we've bundled different grants together to support sort of the same objective, and that is to develop a better understanding, for large rivers in the Midwest, what the inherent properties are that would lead us to better define potential assemblages so that we might base, for example, tier designated uses, we might extract that out of this as the baseline work.

So to do that, you inherently -- the biological condition gradient, its concept is anchored in natural undisturbed conditions. We know we don't have that presently in very many places, if any, in the Midwest, but we still have to know what it is.

So the only information you have is historical information, which tends to be

inherently qualitative in its nature. It's not something we can take and calculate and index a bio integrity problem.

But we can understand the qualitative attributes of that and sort of understand it would be obvious to see that there are certain species that no longer occur or in very reduced abundance. And if they were here, what would they do to something like the IBI?

So that's what we're trying to develop is more global understanding of what our rivers look like so that we can appropriately say when we meet something like a minimum clean water use where does that fall on the biological condition gradient. What tier on the biological condition gradient does that fit.

So -- and it helps us sort of anchor our expectations so that when we see a river and we see it in a particular state, we know how far away that is from this more ideal state and the biological integrity objective of the Clean Water Act.

Q. Thank you.

Mr. Yoder, staying on that page

down under Group C, Assessment and Oversight, C(1) Assessments and Response Actions. It's stated in the third line, "However, the stakeholder organizations will be afforded an opportunity to, make inspections and audits of the field sampling, the equipment and the result."

I think you would agree, based on the other day, Dave's testimony, that in this instance the UAA stakeholder group was not afforded an opportunity to make inspections and audits of the field sampling, the equipment and the results?

A. That's correct, as we pointed out yesterday.

Q. Turning the page to Page 28, under Group D, Data Validation and Use Ability, there's a reference made to the fact that data may be disqualified, although attempts will be made to reconcile any inconsistencies or issues prior to disqualification.

Are you aware of whether any data collected with respect to the sampling work done within the geographic area of this Lower Des Plaines UAA was disqualified?

A. None of the biological or habitat data

was. The only thing I can say that we're having an issue with right now is some of the field meter data that we collected. We know that we had problems with the meter, that's why that data wasn't used.

Q. I'm sorry, field metering data, is that what you're saying?

A. Yeah, the data you collect with a water quality meter, particularly the pH probe was faulty. So in terms of data that might be on these sheets, that's the only data I could honestly say that we have discounted or disqualified.

Q. Right.

DR. GIRARD: May I ask a follow-up then?

Looking back to Exhibit 20, your first fish data sheet there, you have a dissolved oxygen reading of, I assume, 22.3 milligrams per liter. That's Exhibit 20, the first sheet.

Is it possible you also had a problem with your oxygen probe?

THE WITNESS: That's a possibility, and we're looking into that before we put it to any use.

DR. GIRARD: So when you answered the question about whether you used this data, you didn't use it in this study, but you still enter it in a database?

THE WITNESS: No. It's just -- it's recorded on this sheet and we haven't resolved the entry into the electronic database yet.

DR. GIRARD: Thank you.

THE WITNESS: Again, this is part of this bigger study that we're still in the process of amassing the information for.

HEARING OFFICER: Mr. Safley?

MR. SAFLEY: Yes. Thank you. If I could ask a follow-up question on that same point.

BY MR. SAFLEY:

Q. For example, with the dissolved oxygen score here, would that have been one measurement at one location within the 500 yards, or is there some kind of collection along the 500 yards and its average, or how does that number --

A. That's a grab sample beginning at the site.

Q. Okay. Is the same true for temperature and conductivity?

A. Yes.

Q. So it's one sample by this meter and the same meter does all those things?

A. Yes.

Q. And so, it's a grab sample from the top? There's no temperature taken at the bottom of the river?

A. No. There's not integrated depth profiling done. They're just surface grab data.

Q. Okay. And do you know whether there were any concerns with whether the temperature function was properly done?

A. Yeah, these -- it was determined that the temperature and the conductivity functions were reliable, it's the DO and the pH part of this probe we had an issue with the supplier.

MR. SAFLEY: Okay. Thank you.

MS. FRANZETTI: I don't have any further questions.

HEARING OFFICER: Wonderful.

MS. WILLIAMS: May I ask just a couple similar points to what Susan -- are we taking

a break?

HEARING OFFICER: Let's go ahead and take -- we'll get your questions and we'll take a break to switch tables.

BY MS. WILLIAMS:

Q. I think earlier this morning, Mr. Yoder, we had talked about, I don't know if it was the Board that had asked you or Ms. Franzetti about the numbers in the Grant Creek site on Exhibit 5. Do you have that in front of you?

Have you learned any more about why the numbers in Grant Creek don't match the numbers on the sheets?

A. Yeah, I checked on that, and that's because that data sheet was not entered in our electronic database. And so, when we reproduced this report, those are the pre-revision values still, and --

Q. Do you know why?

A. Because the data entry person was told to re-enter the Des Plaines River data and that's at Grand Creek, and it didn't get done.

Q. Makes sense to me.

Also, I think I was a little

confused, and if you think you've explained it thoroughly, that's fine. But on the first -- on Exhibit 7, we have your QHEI field sheets.

And the first section on those field sheets, Substrate, I think I'm still a little bit confused about how you go about adding up those columns and translating them into a total. Do you think you could explain that again?

A. Yes. And I think the answer I gave this morning was incorrect, and I apologize for that.

But if you look just to the left of the box number of substrate types underneath, it says, "High quality only, score of five or greater." So only the substrate types that would yield the score of five or greater are included in that.

And that's why only three or less was checked, even though there's five checkmarks. Two of those were less than five. So I apologize for that oversight.

MS. WILLIAMS: That helps me. I think that's all I have for now.

HEARING OFFICER: Let me double check on that last answer with substrates.

MS. WILLIAMS: Sure.

HEARING OFFICER: When you say a score of five or more, you're talking about the number in the brackets has to be above five for it to be counted.

THE WITNESS: That's correct.

HEARING OFFICER: Okay.

MS. WILLIAMS: And can you -- is there a reason for that? Do you want to explain why you do it that way or what the significance of it is?

THE WITNESS: I think that what's going on there is that that's a -- the idea is there that the high quality types of substrates are the ones that are trying to be, quote, unquote, "reordered" at a site and not the lower quality substrate type, even though they do get some value, they're getting less value and we're not amplifying that any more than we need to in the scoring. So it's a weighting type of issue.

MS. WILLIAMS: That's all I have.

HEARING OFFICER: Let's take a ten-minute break and we'll switch

questioners.

(WHEREUPON, a recess was had.)

HEARING OFFICER: Before we start with Mr. Ettinger, Mr. Yoder, I believe we have something else we're going to enter as an exhibit. And we are still waiting for stuff to be faxed in.

And this is the revised Attachment S data; correct? It's entitled Table 1 Boat IBI scores and metrics at boat sites in the Des Plaines River sampled by MBI during 2006. If there's no objection, we'll will mark this as Exhibit 21.

Seeing that, it's Exhibit 21.

(WHEREUPON, a certain document was marked Exhibit No. 21 for identification, as of 2/1/08.)

BY MR. ETTINGER:

Q. Mr. Yoder, I'd just like to call your attention to Page 11 of Exhibit 15, your report. You mention the long-term survival temperature is calculated from the short-term survival temperature, i.e., the UILT, as UILT minus two degrees.

And we discussed that yesterday as

to how that two degrees was derived?

MS. WILLIAMS: Can you point him to a paragraph?

HEARING OFFICER: It's the second full paragraph.

MR. ETTINGER: It's the bottom of the second full paragraph on Page 11.

HEARING OFFICER: I know, it's been a long week.

BY MR. ETTINGER:

Q. Do you know if there are any protocols that suggest using that minus two degrees centigrade figure?

A. Right off the top of my head, what I recall is, it's been kind of a longstanding rule of thumb, that it's in use.

Q. I gather you've read a lot of studies of the affect of temperature on fish; is that true?

A. Yes. We've reviewed a number.

Q. About how many?

A. Well, there's more than, I think, 500 references in the ORSANCO document, so...

Q. Okay.

HEARING OFFICER: Albert, remember to

keep your voice up.

MR. ETTINGER: Yes.

BY MR. ETTINGER:

Q. When you -- if you have a study in which they have studied a number of different fish, would you expect all of the -- of a given species -- would you expect all of the fish to die in unison at a particular temperature?

A. No.

Q. Okay. So let's say I'm studying 20 fish, and the first one dies at 85 and the last one dies at 95, how would you go about figuring out what temperature to report as your conclusion?

A. Well, one of the techniques that is used that can serve as an example of that would be the lethal temperature that killed 50 percent of the test fish.

Q. And so, is that the number you would use, generally, the number that killed 50 percent?

A. That's one of the common endpoints that was used and that could be expressed as an incipient lethal temperature or a critical thermal mass.

Q. Are there other tests used? Are there

other ways to derive your number that are used, I mean, for some of the studies? If, for example, we had a range of fish dying from 85 to 95, would you use either the 85 or the 95 figure?

A. No, what most of these tests would use is the temperature at which half the fish died, test fish.

Q. Looking now at Page 12, stated, "Averages should be consistent with" -- and then it says No. 2, "Growth of commercially or recreationally important fish species."

Did you make a determination to what the commercially or recreationally important fish species would be?

A. Yes.

Q. And how did you do that?

A. Well, that's -- any fish that we consider to be something that people would actively try to go out and catch recreationally, or a species that we knew was commercially being harvested in a particular water body.

Q. Do you know if people actively go out and recreationally attempt to catch walleye?

A. Yes.

Q. On No. 3, it talks about growth of at least 50 percent of the nongame species. What is meant exactly by "growth" here?

A. Well, that's the -- it means that mean weekly average temperature for growth threshold.

Q. And that's a calculated number based on these other studies?

A. Yes. That's the first cut.

But there would be the option to look in the literature compilation and use another earth value.

Q. Proceeding down the page, you have a sentence here, and I'll just read it, "It also includes the knowledge that fish can avoid or withstand occasional exceedances of short-term survival thresholds, provided that local refuges are available and/or the duration of the exceedances are sufficiently brief. See Figure 1."

Did you make any study as to the local refuges that were available in the Upper Des Plaines Pool?

A. No.

Q. Do you know if there are local refuges available in the Upper Des Plaines Pool?

A. Again, that's something I haven't been asked to look at in detail.

MS. WILLIAMS: Can we clarify, Albert, when you say Upper Des Plaines, do you mean Upper Dresden Island?

MR. ETTINGER: I'm sorry. Upper Dresden Island, yes, exactly. Thank you very much.

BY MR. ETTINGER:

Q. Have you -- are you aware of fish swimming up into the discharge channel of power plants during the winter?

A. I have had occasion to observe that, yes.

Q. To finish that sentence you say, "And provided local refuges are available and the duration of the exceedances are sufficiently brief."

Can you give us any sort of quantification of what "sufficiently brief" means here?

A. Well, the general notion there would be sufficiently brief so as not to cause detectable issues with the assemblage through a bio assessment, perhaps.

Q. Okay. Well, based on your study of the literature and your study of fish in the Midwest, what sort of period would we be talking about is sufficiently brief, ten minutes, ten days? Can you give us some sort of range as to what sufficiently brief might mean?

A. I think we're probably talking no more than a few days and preferably a few hours.

Q. And the next sentence says, "Meeting the long-term period average requires attenuating cool-down periods where temperatures are well below the survival thresholds and closer to physiological thresholds for growth and maintenance."

How soon do the cool-down periods have to occur for this to help the fish?

A. Well, based on some of the literature we've reviewed and some of the newer studies, which are, I think, finally taking that aspect into account -- and that was the reference to Figure 1, in the document in Exhibit 15. That is by a study by Billheimer and Bennett, a paper that was published.

And it's a graphical illustration of just that concept. That there's -- as you

approach this maximum temperature for survival, you're in the realm of what's creating thermal stress for the organism.

And that -- I think I stated yesterday -- we don't think that we can keep those organisms there for a long period of time. And I think that's supported by this -- the conclusions of these authors as well.

So what they're saying is you can have these stress periods, provided they're of a fairly short duration, provided there are also concurrent recovery periods that are well below the threshold and -- of stress. And so, that's the concept.

And I think we're -- I also described some management applications of that at electric generating facilities, where that was actually written into the one permit that I talked about in Ohio on the Muskingum River.

Q. So I guess my question is how fast does the temperature -- how soon does the temperature have to get down to relieve the stress in order to have this effect of, shall we say, renewing the fish?

A. I would say -- and again looking at this graph, it does have a timeline on it. And it's within a matter of days that it needs to occur over.

And I recall when the -- I think I recall from the permit that there were -- there were actually some times specified as to what the cool-down periods needed to be.

Q. I'm sorry, if I'm repeating something that was said earlier: Did we identify a particular permit for a particular plant in the record yet?

A. I think it was the Muskingum River Plan that discharges to the Lower Muskingum River.

Q. Is this American Electric Power?

A. Yes, it is.

HEARING OFFICER: Remember to speak up, Albert --

MR. ETTINGER: I'm sorry. It's late in the afternoon and my energy is way down.

MS. WILLIAMS: You're welcome to have my mic.

MR. ETTINGER: Maybe I need a cool-down period, I should take a walk outside.

HEARING OFFICER: It's balmy out

there, 25 degrees.

MR. ETTINGER: Yeah.

HEARING OFFICER: It's springtime.

MR. ETTINGER: But you've got to watch out for the cabs. They really seem to be taking a relish in seeing how fast they can run through those puddles.

BY MR. ETTINGER:

Q. I'd like to read the -- going on to Page 14. It states in the last two lines of Page 14, "The growth criteria of sauger and walleye are exceeded by the period average of 27 degrees centigrade by .1 degree centigrade and .8 degree centigrade respectively. That is using the proposal that included the stonecat madtom data; is that correct?

HEARING OFFICER: The RAS 3?

MR. ETTINGER: Yes. I'm sorry, RAS 2.

BY MR. ETTINGER:

Q. Is that preparing the growth temperature of sauger and walleye with the RAS 2 numbers?

A. Yes, that would have included stonecat.

Q. Above that, we state, "We also tested effluence of species' additions by adding yellow perch, sauger and walleye, while these species were not included in the review of historical data and occurred in very low numbers in the 1994 to 2002 databases. Each occurs in the Kankakee River or the CAWS, and they could probably occur in the Lower Des Plaines River, as water quality conditions improve in the future."

What was the basis of your conclusion that those species could possibly occur in the Lower Des Plaines River as water quality conditions improve in the future?

A. I think the first part of this is it's not unreasonable to conclude they would inhabit a river of this size at some point. And, perhaps, their absence or reduced abundance is due to the currently marginal water quality conditions that exist.

And I recall part of the basis is my recollection from participating in biological subcommittee that I was able to hear about some of the pollution controls that had not yet come fully and on line that might, when they do come on line,

help improve water quality and, in my experience, we have actually observed rivers to fully recover to meet clean water eco uses with treatment improvements, maybe not identical to what's going on here, but categorically, somewhat similar to what's happening in this area. So in a general sense -- and again, that all has to happen and it has to be successful.

But if it does happen, then it's not unreasonable to conclude that the species could inhabit a river, like the Lower Des Plaines.

Q. Let's talk about your experience. Where are some of these success stories? Could you tell us about any of them?

A. Well, I mean, the documentation for most of these is from Ohio, where we have a sufficiently lengthy standardized database to be able to demonstrate those. There are several papers that we've written that report on this. And there's the Ohio EPA's documentation.

Q. What rivers have recovered like this?

A. Well, the one we have highlighted and probably have the longest range studies on, one is the side of the river downstream of Columbus Ohio,

which is -- I believe I described some of this yesterday -- it's impacted by the combined 200 million gallons a day of sewage, and it's also comprised of sewage flow during most summers for a proportion of its flow is effluent of the sewage plants. And the biota in those rivers has improved to meet the Ohio warm water habitat bioferteria, which are the same thresholds that the UAA study looked at and have surpassed those in some cases.

Q. Have any of these comeback stories involved improving controls on thermal discharges?

A. I believe I mentioned one of these yesterday, the Muskingum River, that -- certainly the only difference there is that's not a river that's heavily impacted at that point by municipal or other point source pollution sources. Those are somewhat distant in that water shed.

But we did note an impairment and a recovery due to thermal impact.

Q. And that was from the American Electric Power Muskingum Plant?

A. That's correct.

Q. I'd like to direct your attention now to Page 11 of your prefiled testimony. I believe

this has to do with the secondary contact RAS list.
And I just wanted to make sure I understood one sentence here, "The long-term survival values of only 50 percent of the representative aquatic species on my secondary contact RAS list would be protected by a standard of 93 degrees Farenheit, while 100 degrees Farenheit exceeds the short-term and long-term survival value for more than 50 percent of the species on the RAS list developed for the Lower Des Plaines River."
Are you saying -- I'm sorry.
MS. FRANZETTI: Off the record.
(WHEREUPON, discussion was had off the record.)
BY MR. ETTINGER:
Q. I was actually asking about Exhibit 13, I believe.
MS. FRANZETTI: Off the record.
(WHEREUPON, discussion was had off the record.)
BY MR. ETTINGER:
Q. Okay. My question is -- has to do with the -- exceeds the short-term and long-term survival values of more than 50 percent of the

species on all the RAS lists developed for the Lower Des Plaines River.

What species were you referring there to with regard to the 100 degrees Farenheit?

A. The -- it would be the eight species that were included in the secondary contact option. So those eight species.

Q. So you're saying that this exceeds the short-term and long-term survival values of the these eight, not so self-respecting fish and that list?

MS. WILLIAMS: Can you repeat the question, Albert?

THE WITNESS: I'm sorry.

BY MR. ETTINGER:

Q. I'm just saying it exceeds the short-term and long-term survival values of more than 50 percent of those eight species.

A. Just so I understand, are you asking about the 100 degree standard?

Q. Yes. Actually, I'm just asking about this last sentence in the -- well, it's the first paragraph, not the first full paragraph. But on Page 11 of your prefiled testimony.

A. Okay. You're asking if --

HEARING OFFICER: Let's try this: What does that statement mean?

BY MR. ETTINGER:

Q. I'm just confused by that last sentence in that paragraph, starting, "The long-term survival values of only 50 percent of the representative aquatic species on my secondary contact RAS list would be protected by a standard of 93 degree Farenheit, while 100 degrees Farenheit exceeds the short-term and long-term survival values of more than 50 percent of the species on all the RAS lists developed for the Lower Des Plaines River."

A. Yes, so the 93 degrees would exceed the long-term survival values for half of the RAS, while the 100-degree standard would exceed both the short and long-term values for more than 50 percent of the species on all the RAS lists developed for the Lower Des Plaines River.

Q. Well, is the 100 degrees protective of the list of eight that you used for the secondary contact waters?

A. For the -- I think for the short-term

it's not. Let me back up here.

I think the way we tried to frame that was by looking at Table 3 and looking at the 50 -- 15 percentile.

HEARING OFFICER: Table 3 in Exhibit 15?

THE WITNESS: Yes.

MS. WILLIAMS: It's HH.

THE WITNESS: Well, it's HH because of the revision.

BY THE WITNESS:

A. And so, you would need to meet an average temperature of 91.2 and a maximum temperature of 94.8 to protect 50 percent of the species. So you conclude if the temperature is higher than those values, then you're protecting less than 50 percent of those species.

If you wanted to find out if you're protecting of the species, you could go back to Appendix Table 3(g) and just look and see where the most -- where 100 degrees compared to the -- where it fell. And it appears that that would be above all eight species' upper incipient lethal temperature, which is the basis for the short-term

survival value.

Q. Okay. This morning and afternoon, Ms. Franzetti asked you about various studies of habitat and IBIs for locations. And I believe we determined that some of the locations were outside of the area between the I-55 bridge and Brandon Road Lock and Dam that was primarily the focus of the studies here.

What relevance do you see to the habitat and IBI scores that were taken that were outside of that particular range between I-55 and Brandon Road?

A. I think, if I understand your question, the -- well, it might help by saying what was the -- why did we sample outside of that area?

Q. That's a better question, why don't I ask that instead.

A. Okay. Part of our objective in doing this sample was to gather information across a pollution gradient that would lend itself to our regional studies. And the other issue is we wanted to conduct as best we could an assessment of what we understand to be the full pollution impact through this area.

And so -- and this is, again, embedded in -- our intensive survey design is that you need to have the areas of immediate impact, you need to have the areas of recovery and then you need to have, as best you can, areas that have fully recovered. And if you follow the pollution concept of a pollution continuum, and knowing this area and its pollution history, that would occur very far downstream of this area.

So we had to include, as much as we could, areas well downstream of this. I think we came into this knowing the upstream was fairly challenged.

And we did locate, at least an upstream site above the Brandon area of influence to kind of anchor that aspect of this design. But I think that to get a fair understanding of where anyplace along one of these rivers fits, you need to have the prospective of this whole pollution gradient through -- and this just isn't common to the Lower Des Plaines, it would be a fact in any river that you look at.

And it -- oftentimes ends up that you almost have to end up looking at tens of miles

of river, even though your concern might be only in a two or three-mile stretch or a five-mile stretch.

If that's all you look at, you can really be challenged to know where am I on this pollution gradient, bio condition gradient continuum.

Q. Were you able to draw any conclusions based on this data that you took from outside the immediate area of the UAA?

A. No. As I said before in my testimony, I haven't been asked to do an analysis in that regard. We will be doing that as part of our regional work.

Q. Are you aware of any effects on the Lower Des Plaines below the I-55 bridge or at the Upper Illinois River of the Exelon Dresden nuclear plant?

A. No.

Q. I'd like to direct your attention now to Page 17 of the MBI report, Exhibit 15. And looking at the first full paragraph, the middle of the -- sort of the middle of the first full paragraph it says, "None of the values in Table 5 exceeded the spawning criteria for any of the RAS

options MBI 2005 and all except one value in July were below the summer average and maximum tolerance values for RAS options used in Table 4."

Did you ever check to see whether the numbers that the Agency has proposed exceeded the spawning criteria that were contained in Table 5?

A. No, I haven't looked at the values the Agency proposed.

Q. Can we look at Table 5?

MS. DEXTER: It's Exhibit 16, Appendix Table Z(3).

HEARING OFFICER: Exhibit 16?

MS. DEXTER: Appendix Table Z(3).

BY MR. ETTINGER:

Q. Do you have Table 3 in front of you? I was just asking or trying to understand this chart here.

Let's just take a species, greater redhorse. We have a number here for -- do you see where I am?

You have 14.5/17.5. And it's under June for greater redhorse. Do you see that?

A. Right. I see it.

Q. Yeah. What is the meaning of those numbers?

A. Well, that's what the study referenced on the right observed -- they observed spawning. At least that publication recorded that they saw -- that they observed spawning taking place at those temperatures in that month.

Q. And the 17.5, what does that represent?

A. I know the study, I'm trying to recall what it said. That's a -- that's like a low -- an upper range that they had measured, while the spawning was taking place.

Q. Does that mean that the fish might have trouble spawning at a temperature above that?

A. No, it doesn't mean that.

Q. What does it mean?

A. It's just what they observed in that particular situation.

MR. ETTINGER: I'm done.

HEARING OFFICER: Does anyone else have anything for Mr. Yoder?

Yes, Mr. Andes.

Would you identify yourself for

the court reporter, please?

MR. ANDES: I'm Fred Andes, from Barnes & Thornburg, counsel for the Metropolitan Water Reclamation District of Greater Chicago.

BY MR. ANDES:

Q. Mr. Yoder, we have a few questions.

First, as to the QHEI procedure, on Page 17 of the QAPP. Several of the metrics evaluated in the QHEI, when applied to the cause, don't vary and are fairly unique.

For example, velocities artificially controlled gradient is low throughout due to alterations and channelizations. There's no natural sinuosity, no pool, run, ripple development.

How do you think these factors, and really the lack of variability, affect how the QHEI applies in the cause?

A. Well, those factors will certainly affect the resulting QHEI that we obtained from that area. So those will influence the type of score that is derived.

Q. Okay. I guess what I'm getting to is do they -- if these were factors, and in most

situations vary somewhat, and here they are sort of low throughout the water body, how does that -- is there a way in which that's recognized -- the sort of uniqueness of how those exist here, is that recognized in the QHEI approach?

A. Yes, it will be detected by the QHEI.

Q. Okay. Are there other physical habitat metrics that could be relevant to this type or urban channel that aren't included in the QHEI since it was developed for sort of a different kind of situation?

MS. WILLIAMS: Objection. I don't think he testified that it was developed for --

HEARING OFFICER: I can't hear.

MS. WILLIAMS: Can you read --

MR. ANDES: Fine. Strike the last part of that question.

BY MR. ANDES:

Q. The question is, are there other metrics that might be useful in developing this type or urban channel?

A. I won't rule out the possibility that there might not be some. But in knowing the purpose

and use of the QHEI to evaluate the suitability of habitat to meet a -- you know, conditions along the entire biological condition gradient, I -- I'm not sure there's really anything else I would pull off the top of my head immediately.

And, I mean, we are aware of other habitat tools and techniques. And they -- from what I've seen, they all tend to have the same general things in common.

So it's -- if you're implying that the CAWS is heavily modified and highly altered, yes, that will be picked up in this.

Q. Okay. Another question as to the field data sheet, Page 17.

Under Substrate Type, embeddedness is evaluated as extensive, moderate, normal, none and substrate qualities based on extent of silt -- score based on extent of silt. Are these evaluated relative to -- particularly when we talk about normal, I guess my question is what's normal?

Is normal a natural rivering system, is normal relative to other waterways in this system?

A. Yes. It's always in regard to a

natural rivering system that is representative of that particular regional area.

Q. Okay. So what would that be here?

A. Well, that would be other similarly-sized rivers and streams in the -- I'd start with the Illinois drainage basin and go from there. But, I mean, if we were to set up a more formal set of criteria and try to calibrate it for this region, then we would endeavor to go find a gradient of what we call least impacted rivers through a gradient of varying impacts all the way up to places like the CAWS.

Q. You would, but that hasn't been done here, is that what you're saying?

A. Well, it hasn't been done here, but we're in -- our regional studies are dealing with that right now.

Q. Okay. On the issue of sediment, and we will provide data on this issue eventually for the record.

Sediment samples from the CAWS exhibit old sheens, odors, hydrogen sulphate odors, other evidence of poor quality. How, if at all, can those be an accounted for in the QHEI?

A. Well, they're not. And I'm not -- it's not appropriate.

That would be accounted for through some type of chemical analysis.

Q. But they are -- those -- the poor sediment quality would be relevant for organisms; correct?

A. Yes.

Q. In terms of habitat, it would affect the habitat quality?

A. Well, it would affect the macro suitability. But, I mean, the intent of the QHEI is to evaluate physical habitat not chemical habitat.

And it's intended that if we were to do a complete evaluation of the system, like the CAWS, we would absolutely have to have chemical data to go along with that.

Q. Would that include not only as to a particular chemical constituent but also sediment toxicity?

A. It could, yes.

Q. As to sludge deposits, which can be observed in the sediment samples, how would those be classified within the QHEI protocol? I know you

have classifications of muck, silt, artificial -- we weren't sure where sludge would fit in that.

A. That's something we do consider. Sludge that emanates from, say, a point source or obvious sewage sludge, it's not included as one of these substrate types, we regard that as a pollutant source. And that's part of the issue here, is we're trying to separate out the physical factors from the chemical and other pollutional-type influences.

Q. So if deposits were observed, would there be a decision made as to whether those deposits were, say, sludge versus some other type of deposit? And then, if they were sludge, they would simply not be factored in?

A. Right. To the QHEI score itself.

Q. Right.

A. That's correct.

Q. Okay. Metric No. 5 indicates that if the maximum depth of a pool is greater than one meter, the highest score is recorded for a sampling station, six points. Would all the stations in the CAWS be given that score as long as the channel depth was greater than one meter?

A. At this point, yes, it would.

Q. How do you define pools? I'm trying to get a sense whether all areas of the CAWS would be defined as pools.

So is there a way that that term is being defined here for purposes of that assessment?

A. Let me refer to the --

Q. I know that on Page 35 there was a definition of pool, we just weren't sure how that would be applied here.

Page 35 of the QAPP.

A. Yeah, it's the area of the stream with slow current velocity and the depth greater than ripple and run areas. And we know that there are no longer ripple and run areas, so it's --

Q. So that would have the entire CAWS would be a pool --

A. Yeah.

Q. -- or a collection of pools?

A. It could also be considered a glide habitat as well. Which is also -- "Which is an area common to most modified stream channels that do not have distinguishable pool, run and ripple habitat. Current and flow similar to that of a canal, the

water surface gradient is nearly zero."

So we could, in that case, also classify it as a glide habitat.

Q. But it -- but the points being awarded are based on?

A. The points are currently the same, yes.

Q. Okay. Another question concerning the QHEI approach is, does the percent of imperviousness in the water shed factor in at all?

A. Not directly as a measurement of the QHEI.

Q. Now, there are some water shed related factors, such as --

MS. WILLIAMS: Could you let him finish the answer?

MR. ANDES: I'm sorry?

MS. WILLIAMS: Could you let him finish the answer?

MR. ANDES: Oh, sure. I didn't realize he wasn't done.

BY THE WITNESS:

A. Yeah, it's not an obvious metric of the QHEI. It could influence the Riparian score

somewhat.

But it certainly could influence the additive effect of other things through that score. I mean, I could see a number of places where, if you have a high density and impervious surface it would contribute to the substrate character, flow, channel morphology and so forth, a number of things that this could pick up.

Q. So you're saying it would be considered only indirectly, through other metrics?

A. Well, it could be another factor that we correspond to, the resultant QHEI and it's attributes. And if it added up as an impervious surface, it may well be one of the driving forces behind that.

Q. Okay. On channelization, in testimony of that metric in the field sheet, the categories include nonrecovered, recovering, recent or no recover or impounded. Can you define recovered and recovering, or is that already -- and how do you determine -- on Page 45 of the QAPP, these terms are discussed? I guess I'm wondering how the distinction is made between recovered and recovering.

A. I think that's the part of the recognition and experience with those types of modifications that we expect users to have or develop with this. And we do cover, in the training, to actually show examples of these types of things so the right assignment can be made.

And it's -- "recovered" means that it's a stream that might have been subject to channelization in the past, but it hasn't been maintained or hasn't been repeated and the natural fluvial processes have resulted in a more natural appearing stream course. And again, that would pertain to what's natural for that region or what's least impacted.

Recovering means it still has some of the lingering effects of the original modification, but yet it's in a process of attempting to recover those. So in an agricultural stream, that would be maybe the, sort of, the high flow channels still resembles a ditch but we're starting to see it meandering low to low channels at the bottom of the ditch.

That would be something that is in the process of recovering. If that had regrown its

woody vegetation and kind of eradicated all the vestiges of the channelization, then that would be considered recovering -- recovered.

Q. And then, since there was a separate category for impoundment, would all of the CAWS receive the minus one score as impounded?

A. Not unless it was due directly to the effects of the dam. I would think that most of the CAWS would receive a resent or no recovery score.

Q. Based on --

A. If there's not a dam causing that, it's the constrainment of the channel. And I think we had --

Q. And I'm sorry, your classification of it is recent or no recovery because it shows no significant recovery of habitat under this definition?

A. Yes.

HEARING OFFICER: Excuse me, if I may ask, and this may be because it's late on Friday afternoon, but Mr. Yoder, you haven't personally done QHEI for the CAWS; is that correct?

THE WITNESS: Personally me, no.

HEARING OFFICER: Did you supervise Mr. Rankin?

THE WITNESS: Yes.

HEARING OFFICER: Because I thought that was established, but that was a couple of days ago.

THE WITNESS: And I have been on the boat in the CAWS. I've seen it.

HEARING OFFICER: I apologize, Mr. Andes. I wanted to be sure the record was bringing us back to the relationship.

MR. ANDES: I believe that's all I have at this time.

HEARING OFFICER: Mr. Safley?

MR. SAFLEY: Yes, Ms. Tipsord, if I could ask a couple follow-up questions.

BY MR. SAFLEY:

Q. Mr. Yoder, to follow-up on one of Mr. Andes' questions with regard to the QHEI field sheets. He asked you with regard to Category 5 pool glide and ripple, run quality max depth, if a depth of more than one meter would constitute a score of six.

And I heard your response as,

"Currently yes," quote, unquote. Does the fact that you said currently yes mean that that's something that you're thinking about changing or was different in the past and different now, or am I reading too much into your two words there?

A. Well, I mean, I think being a research organization we have to keep an open mind and follow the progress on these things.

Q. Is that something that's currently being considered for change or you anticipate being, or would you just put it out there as a hedge, that you might decide in five years you want to reconsider?

A. It depends on where our project work takes us. If we encounter these and do more work, it's something we will consider looking at as we encounter these.

Q. Is there anything in particular about that max depth column under five that is something you're considering looking at more than anything else on here, or is that just -- is the comment you just made with regard to everything on the sheet?

A. Oh, I think anything is open to further work and consideration. But the max depth

issue in relation to the CAWS, it -- I can understand where it seems like a disconnect to give it the maximum score on anything.

You know, why would we do that? But I think we have to be very objective when we use these and not color our judgment with what we think this water body is colloquially. And there's plenty other places in this QHEI that will certainly make up and exhibit the efficiencies, if you will, that a highly modified water body like the CAWS has.

Q. And I wanted to ask about that kind of issue, because when I read -- when I look at this and in a greater depth getting a higher score, my thought was does that mean if you go in and dredge it out, you're actually increasing the QHEI score?

A. No, that would be -- the impact on many other variables here would certainly eclipse that.

Q. Okay.

A. But I will say the deeper water and warmer water is, in its own right, generally a positive thing.

Q. Okay. But if that was created artificially by dredging, there would be other

adverse effects?

A. It would certainly eclipse all those -- well, a good majority of the other metrics would be impacted negatively by that.

Q. I'd also like to ask you just a little bit more about impoundment. And I realize we've talked about this a lot.

But as I've looked through these sheets, on the lower right-hand side there are four boxes, percent pool, percent ripple, percent glide and percent run. And what I noted was if I looked at them correctly, the only locations which were marked as impounded are also listed as 100 percent pooled.

Any of the locations that has anything less than 100 percent pooled is not marked as impounded. Is that -- and I apologize if we covered that, I just don't remember talking about these boxes on the lower right-hand corner before -- is that something that's necessarily related, or is that how the decision on impoundment was made or -- and I realize you were going to follow up --

A. Well, yeah, impoundment and definitely 100 percent pool habitat when you

impound, that's sort of the physical manifestation of the impoundment.

Q. Okay.

A. And with respect to -- and, generally, what it does is it inundates the run and ripple habitats.

Q. Okay.

HEARING OFFICER: And that's with Exhibit 7 again; correct? We're back to the sheets on Exhibit 7?

MR. SAFLEY: Right.

MS. WILLIAMS: Can I ask a follow-up at this point, too?

MR. SAFLEY: Yeah.

BY MR. WILLIAMS:

Q. I believe this morning, Mr. Yoder, there was some question over one of the sites and whether or not it was impounded. Was that one of the issues you looked at over lunch, or no?

A. Yes, I think it was the -- yeah, it was the Des Plaines downstream of Lemont Road.

Q. Are you referring to the second data sheet in Exhibit 7?

A. Yes. And I believe it's River Mile

298. -- I'm not even -- here it is.

It's 298.3, which is the upstream most site that we had in that survey.

Q. And I think you were asked this morning if you knew whether or not it was impounded?

A. Yeah. And I think the reason was because it had a note up here that it was edited, and I think I made the comment that it should have said not edited, but hold that right there.

The important thing is it's not impounded. It's a rivering -- free flowing rivering site.

Q. So the values would not have been changed as a result of --

A. Yeah, it wouldn't have qualified for any impoundment checkmark. It might be modified but not modified by --

HEARING OFFICER: Mr. Andes?

MR. ANDES: I have a follow-up question, actually, on that issue.

BY MR. ANDES:

Q. We talked a little before about how you wouldn't classify the CAWS as impounded, but it really is completely controlled by the three sets of

locks and dams. So is there a question of -- there's too much distance between the three sets of locks and dams to be called impounded, or...

A. Well, if we can ascertain that those dams being there raise the grade level throughout that whole system, I might consider qualifying this as impounded. But it doesn't fit, to me, the classic run of a river low head dam kind of thing that we see throughout the Midwest.

Q. Without these dams, there would be no gradient, so...

HEARING OFFICER: Would there?

BY THE WITNESS:

A. Well, that's not the issue. I don't think that's the issue.

The issue is what does it do to the resulting habitat. And it just doesn't fit the classic impoundment habitat that we see in other rivers that are affected by these series of low head dams.

I understand it's -- it has a lock system and that kind of thing, and maybe in the immediate area behind those dams we would call it impounded, but that's something we would have to

ascertain.

Q. And that's based on your evaluation of the habitat -- I'm trying to understand the difference that you're seeing in those areas approximate to the dams that would make the difference.

A. Yes, it's how -- what does -- how much does the dam raise the surface water level to the point where it inundates that site. And if the dam wasn't there, what would it expose in terms of habitat?

I mean, that's really the concept operating behind this. The other issue is, it's a difference between recent and no recovery or impoundment. We're not talking like no channelization versus impoundment.

HEARING OFFICER: Mr. Ettinger?

BY MR. ETTINGER:

Q. Without belaboring this point, but I think we are still -- it's kind of a common meaning of impoundment, in which you could say the Mississippi is impounded everywhere and low lock and dam 26 because there's a dam there. But I gather you want to consider the entire Mississippi

impounded because of that dam.

So how did you go about deciding where impoundment ended?

A. Well, generally, we can find out what's called the impoundment pool. We can determine where to head into that.

And that whole -- it will vary, depending on the state of the river. I mean, in actuality, that's what we're interested in, what's the effect.

But as far as the river is going to determine if the pool becomes the dam, and by doing that, it inundates the natural rivering habitat that would otherwise be there without the dam. That's what we're getting at.

So even in the Mississippi, which I'm not as familiar with, I'm very familiar with the Ohio River. The Ohio River has locks and dams, but I would not consider every inch of that being impounded, because it's not.

This dam affects only goes so far upgrade, and then the rest of it is what we might consider to be more free flowing, even though it's flow is modified and controlled and all that. We

know that.

Again, it's an effort we just focused in on one attribute here, hammering to death without recognizing it's the synthesis of all these things is what we're really after.

Q. I'm going to put in one more now. The -- so biologically, the fact that the Dresden Island lock and dam is there, doesn't cause the whole Upper Dresden Pool to be impounded in the relevant sense of what we're talking about?

A. Well, in that case, it was my understanding that that impoundment effect occurred up to virtually the next dam. And what it left was only about maybe a mile of free flowing habitat in the tail waters of the next dam.

So in that case, that's the extent of it. It is the majority of the pool.

Q. Did you look at the DuPage Delta?

HEARING OFFICER: I'm sorry, Albert, I didn't hear all that.

BY MR. ETTINGER:

Q. Did you look at the DuPage Delta?

A. I didn't, no.

HEARING OFFICER: Anything else?

Mr. Yoder, we thank you for you patience, we thank you for your testimony.

We appreciate your being here. Thank you very much.

THE WITNESS: Thank you. I appreciate it.

HEARING OFFICER: I do have one thing. Could you run upstairs and check with John and see if the fax came in?

And then, I'm going to enter into the record as an exhibit some questions that the Board has for the IEPA. And the reason being is that, thanks to our crack technical unit, we have a nifty little map that you hold up to the light and look at.

Specifically what our questions are are concerning what was or what is your map of the Chicago area waterway systems, and that was exhibit -- Attachment H, Attachments H and I. And we've overlaid it with a U.S. GS topographic map.

And we've seen some discrepancies, so there are some questions here about them. I'm not going to read them, we have copies

for everybody.

But I'm going -- and all the other exhibits, you can take with you. And, like I said, I'm doing it because it is a map and it's -- so I'm going to enter this as Exhibit 22, if there's no objection.

All right. Seeing none, we have copies for you.

(WHEREUPON, a certain document was marked Exhibit No. 22 for identification, as of 2/1/08.)

HEARING OFFICER: And then, we are going to go off the record for just a second. We are checking to see about some of the material that Mr. Yoder was trying to have faxed in.

MS. FRANZETTI: Could I also ask -- just for the record, I don't think we ever -- did we ever get or resolve the request for a map showing the 303(d) list impairments?

HEARING OFFICER: Mr. Esaig, I think, told us on Tuesday he would have to wait until after he went back to work on -- before the --

MS. FRANZETTI: All right. And then, was there TMDL related --

HEARING OFFICER: TMDL, also from Marsha Willheit.

MS. FRANZETTI: And that, we're going to get in the future?

HEARING OFFICER: She wasn't available when we asked about it on Tuesday, she came in later.

She's getting it. She has it. Wonderful.

MS. FRANZETTI: All right. So we can knock that one off.

MR. RAO: We are hoping that the Agency, when they prepare the maps will put in --

HEARING OFFICER: Yes.

And, Susan, you're supposed to be getting us another report? You gave us a copy of one, but the other one was too marked up?

MS. FRANZETTI: Yes. That was one of the literature reports that Mr. Yoder talked about?

HEARING OFFICER: Yes.
MS. FRANZETTI: Yes.
(WHEREUPON, a recess was had.)
HEARING OFFICER: Back on the record.
Ms. Willheit, you were asked about the status of TMDLs on the CAWS and Upper Des Plaines, I believe, it was the UAA rules. Could you tell us where those might be?
MS. WILLHITE: Marsha Willhite, W-I-L-L-H-I-T-E.
Although the Agency is beginning TMDLs for portions of the north branch Chicago River and the Lower Des Plaines, it does not include any segments that are part of the UAA.
MS. WILLIAMS: Can you explain, are they upstream --
MS. WILLHEIT: They are portions in the general use, they are not part of the secondary contact indigenous aquatic life.
HEARING OFFICER: Was there anything additional for Ms. Willheit?
All right. Thank you.
And then, off the record for just

a second.

(WHEREUPON, discussion was had off the record.)

HEARING OFFICER: Back on the record. I want to thank everyone for your attention and your good questions and good answers. And I know it's been a long week, and I appreciate everything you've done, and I look forward to seeing all of you in March in Joliet. Thank you.

We're adjourned.

(WHICH WERE ALL THE MATTERS HEARD IN THE ABOVE-ENTITLED CAUSE THIS DATE.)

STATE OF ILLINOIS)
) SS:
COUNTY OF COOK)

I, SHARON BERKERY, a Certified Shorthand Reporter of the State of Illinois, do hereby certify that I reported in shorthand the proceedings had at the hearing aforesaid, and that the foregoing is a true, complete and correct transcript of the proceedings of said hearing as appears from my stenographic notes so taken and transcribed under my personal direction.

IN WITNESS WHEREOF, I do hereunto set my hand at Chicago, Illinois, this 11th day of February, 2008.

Certified Shorthand Reporter

C.S.R. Certificate No. 84-4327.