ORIGINAL

ILLINOIS POLLUTION CONTROL BOARD

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

REPORT OF THE PROCEEDINGS held in the above entitled cause before Hearing Officer Marie Tipsord, called by the Illinois Pollution Control Board, taken by Steven Brickey, CSR, for the State of Illinois, 100 West Randolph, Chicago, Illinois, on the 6th day of May, 2009, commencing at the hour of 1:30 p.m.

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MR. ANAND RAO, Senior Environmental Scientist
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MS. TIPSORD: Are we ready everyone? All right. Before we continue with Mr. Huff, I understand the Agency has a motion.

MS. WILLIAMS: Yes. I'd like to make a motion to extend the pre-filed testimony deadline for the Corn Products witnesses, which is currently May 13th, I believe, until the last week of June.

MS. TIPSORD: For the pre-filed questions?

MS. WILLIAMS: I meant to say the pre-filed questions based on the pre-filed testimony.

MS. TIPSORD: We tentatively have scheduled for the 28th and 29th of July, Corn Products testimony. We're moving it from May 25th. Does Corn Products object to the extension until the end of June?

MS. HODGE: Kathryn Hodge for Corn Products and, no, we have no objection.

MS. TIPSORD: Does anybody else want to be heard? Okay. I'll grant the motion until, how about, June 29th? That will be almost a full month before the hearing. With that, let's begin,

again, with Mr. Huff.

MS. DIERS: You state on page 14 of your pre-filed testimony that no attempt was made to look at the Ship Canal temperatures at the edge of the mixing zones from these industrial discharges. Have you ever seen data on temperature at the edge of the industrial dischargers mixing zone in the Chicago Sanitary and Ship Canal?

MR. HUFF: Yes.

MS. DIERS: Have you seen maps outlining the locations of the mixing zones or are there maps available that show --

MR. HUFF: I have not seen those personally.

MR. FORT: Excuse me. When you say maps are you talking, literally, a map or are you talking about a diagram of a mixing zone?

MS. DIERS: Either one, I guess. I just wanted to see if he knew the boundaries of the mixing zone, if there was anything there. And you said no, correct?

MR. HUFF: Correct.

MR. ETTINGER: Have you ever known

IEPA to ever delineate a mixing zone such as to draw a map of it?

MR. HUFF: Normally, it's the dischargers that conduct the mixing zone study.

MR. ETTINGER: And they delineate a mixing zone?

MR. HUFF: Yes.

MR. ETTINGER: So could we obtain such a delineation from Citgo?

MR. HUFF: Sure.

MR. FORT: I think it's already been filed with the Board and a couple other rulemakings. So yes.

MS. DIERS: And you say you've seen data. Would it be possible to obtain that data that I asked you about?

MR. HUFF: Specifically, the data that you want is?

MS. DIERS: I asked if you had seen data on temperatures at the edge of the industrial discharger mixing zone in the Chicago Sanitary and Ship Canal. You said yes.

MR. HUFF: Yes.

MS. DIERS: And I was wondering if

it was possible if we could get that data?

MR. HUFF: Yes.

MS. DIERS: Have you seen effluent temperature data from Citgo?

MR. HUFF: Yes.

MS. DIERS: And would it be possible to provide that data?

MR. HUFF: Yes.

MS. DIERS: On page 14 of your pre-filed testimony, you state "the highest temperature on the Chicago Sanitary and Ship Canal are downstream of the Crawford Power Plant." Do you know the water temperatures in approximately the four mile segment of the Chicago Sanitary and Ship Canal upstream of Cicero Avenue, that would be the section of the Canal between Midwest Generation, Fisk and Crawford plants?

MR. HUFF: No, ma'am.

MS. DIERS: At the top of page 15, you reference exceedances of the proposed CAWS aquatic life UC thermal standards at Cicero Avenue. Can you please state what is the cause of the exceedance at Cicero Avenue?

MR. HUFF: You have two coal fired

power plants that are discharging cooling water upstream of there. That would be the primary cause.

MS. DIERS: You quote Mr. Yoder twice in your testimony as saying that occasion exceedances of well developed thermal criteria are inevitable and may not necessarily result in a biological impaired use. On page 18 and 19, you then go onto conclude that this statement would appear to call into question both the duration thermal limits as well as its application to the real world waterways. Aren't the occasional exceedances Mr. Yoder is referring to already reflected in the Agency's proposed standards which allow temperatures to exceed the maximum limits two percent of the hours in a 12-month period?

MR. HUFF: I guess I was interpreting the statement that there would be exceedances beyond what the proposed limits were.

MS. DIERS: Do you recall -- didn't Mr. Yoder testify on January 30th, 2008, that his opinion was that such exceedances should be handled in a permit rather than in the standard itself as the Agency has proposed?

MR. HUFF: I have no knowledge of that.

MS. DIERS: On page 15, you mentioned the economic burden of maintaining optimal conditions in the Chicago Sanitary and Ship Canal and the Illinois EPA's proposal has imposed significant impacts on the industrial users of Chicago Sanitary and Ship Canal. First, what do you mean when you're saying "optimal"?

MR. HUFF: To maximize the aquatic life.

MS. DIERS: How are you using the term significant in that statement I just read?

MR. HUFF: Significant economic impact?

MS. DIERS: Yes.

MR. HUFF: I think --

MS. DIERS: Significant impact.

MR. HUFF: -- as before, that the impact on the dischargers is going to be -- Well, they're going to have to discontinue operations during periods of elevated temperature above the water quality standards.

MS. DIERS: But you're referring to

an economic impact?

MR. HUFF: Yes.

MS. DIERS: On page 15 of your pre-filed testimony you state "over the years, there appears to be a general increase in the blunt nose minnow population." In your opinion, what has caused this increase?

MR. HUFF: Improving water quality.

MS. DIERS: In your opinion, is 100 degrees Farenheit protective for blunt nose minnow?

MR. HUFF: I think if you look at the real data that was collected, the field data on the Ship Canal, and compare that to the data on the Cal-Sag Channel where you have a very different temperature regime, there's no evidence that the blunt nose minnow at temperatures that get up to 100 degrees Farenheit at Cicero have impacted the blunt nose minnow population.

MS. DIERS: So 100 degrees is protective?

MR. HUFF: I think I answered that question. Would you like me to repeat my answer?

MS. DIERS: I'm sorry. I didn't

understand you. So, yes, please repeat it.

MR. HUFF: If you compare the temperature regimes in the Cal-Sag to the Ship Canal at Cicero where you have temperatures as high as 100 degrees Farenheit, the blunt nose minnow population doesn't appear to have impacted the population in the Ship Canal.

MS. DIERS: So do you believe the current standard will protect the blunt nose minnow?

MR. HUFF: I believe the current standard is resulted in the population that you have there now, yes.

MS. DIERS: What about the proposed standards by Illinois EPA?

MR. HUFF: That would protect it also.

MS. DIERS: You also state there's no indication that the blunt nose minnow is being negatively affected by the current temperature regime in the Ship Canal. What evidence did you find that the temperature regime is not impacting the blunt nose minnow?

MR. HUFF: In the comparison between

the blunt nose minnow population, the frequency in the Cal-Sag Channel to that is the Ship Canal.

MS. DIERS: So you're looking at numbers?

MR. HUFF: Looking at relative abundance.

MS. DIERS: Have you looked at anything that would indicate they're stressed?

MR. HUFF: Could you define "stressed"?

MS. WILLIAMS: Whether the temperatures are impacting their health, their growth reproduction?

MR. HUFF: Again, I go back to the same answer. If you look at the comparisons between the Ship Canal and the Cal-Sag Channel, if you were affecting the reproduction at these temperatures, you would expect a -- the frequency would be significantly lower than what's found there.

MS. DIERS: Page 15, bullet point four, states "if all eight fish species already exist in the waterway and are not shown through field collection studies to be negatively impacted

by the current temperature regime and given the document and habitat limitations on the Ship Canal, what benefits will be derived from a more restrictive temperature limitation on the Ship Canal?

MR. HUFF: I'm sorry. Was that a question or did you read --

MS. DIERS: I'm sorry. No. I got it wrong in my notes. I apologize. How have field collection studies show that the fish species are not negatively impacted by the current temperature regime?

MR. HUFF: Same answer as if you compare the populations on the Cal-Sag to the Ship Canal as the blunt nose minnow is the third most common fish found on the Ship Canal that has a significantly higher temperature regime in the Cal-Sag Channel.

MS. DIERS: Page 15 you state "interestingly, the most thermally sensitive of these species, the blunt nose minnow, is the second most abundant species caught in the Ship Canal." Is this true at all the monitoring stations in the Chicago Sanitary and Ship Canal?

MR. HUFF: That statement was looking at the Ship Canal and aggregates.

MS. DIERS: I'm sorry. What?

MR. HUFF: That statement applied to the entire Ship Canal.

MS. WILLIAMS: Explain what you mean by an aggregate.

MR. HUFF: Summing up all the fish that were collected at all the stations on the Ship Canal.

MS. DIERS: What was the most abundant?

MR. FORT: Is that question in the aggregate?

MS. DIERS: I had asked the second most abundant species based on his statement. So then I was just asking what was the most abundant.

MR. HUFF: The gizzard shad.

MS. DIERS: On page 15, paragraph one, you state "the reported blunt nose minnow short-term survival temperatures determined by Yoder, 90.3 Farenheit, is routinely exceeded on the Ship Canal." Do you know if the Ship Canal is completely mixed from top to bottom?

MR. HUFF: I believe it would be relatively uniform just because of the barge traffic that passes through there. It certainly stratifies between barges that pass by.

MS. DIERS: Do you have any data to support your belief?

MR. HUFF: No, I do not.

MS. DIERS: Do you know if --

MS. TIPSORD: Can we go off the record for just a minute?

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

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

MS. DIERS: Do you know if there are any refuge available for the blunt nose minnow in the Chicago Sanitary and Ship Canal?

MR. HUFF: I'm sorry. Would you define refuge?

MS. DIERS: Places to go to when it's hot.

MR. HUFF: You're asking would they migrate out of hot areas when the temperature gets up near 100 degrees Farenheit? In all likelihood,

yes.

MS. DIERS: On page 15, the last sentence states "there is no indication that the blunt nose minnow, Emerald Shiner or any other of the species is being negatively affected by the current temperature regime in the Ship Canal." What indications were you looking for?

MR. HUFF: Well, they would not be present on the Ship Canal would be one example. Again, trying to compare the most common fish species that are on the Cal-Sag Channel through the Ship Canal.

MS. DIERS: Are you able to look at the number of fish or the number of species that would be inhabiting these waters in the absence of thermal loads?

MR. HUFF: Am I able to? No, ma'am.

MS. DIERS: Can you explain your statement on page 15 of your pre-filed testimony where you state that the optimum barge traffic for fish is undoubtably zero?

MR. HUFF: Could I explain that statement?

MS. DIERS: Yes.

MR. HUFF: Sure. If you have barge traffic to the extent that you have eggs that are on the bottom, they're going to be disturbed when those barges go by, they would be very detrimental to any habitat that would be there for spawning purposes.

MS. DIERS: Please explain what you mean by optimal when you state on page 15 of the pre-filed testimony that the removal of treated effluent would also remove the -- would move the Ship Canal to more optimal conditions for fish.

MR. HUFF: If you look at the studies that have been done nationally, there is a correlation between the percent impervious area which is a measure of the degree of urbanization and the quality of the streams and there's an inverse correlation between those two. The more urbanized an area, the less quality is present in those streams and that's a combination of a number of things, storm water runoff, waste water treatment plant effluents, channelization, lack of canopy cover and that's what I was referring to there.

Waste water treatment plant

effluents, the flow part of that is very beneficial because it results in probably lower peak temperatures from all the water that's coming in, but you clearly have other compounds that are there that you would, in a perfect world, would like to put pristine, distilled water type quality into the stream.

MS. DIERS: Can you provide any -- I know you said you looked at national studies, is that correct?

MR. HUFF: Yes.

MS. DIERS: Can you provide any specific studies?

MR. HUFF: I'd be happy to.

MS. DIERS: Particularly with regard to effluents. That kind of limits the documents that you're looking for if that helps. With respect to the study that we were talking about, will removing the waste water treatment plant effluent reduce the percent of impervious areas?

MR. HUFF: I guess the question is how are you removing the waste water treatment plant effluents? It depends on how you accomplish that. If you bulldoze an entire block and you put

grass in there, it would reduce the impervious area also. If you're going to say we're going to pipe that water down to agricultural lands in Kankakee, the impervious area wouldn't change at all.

MS. WILLIAMS: May I ask a follow-up, Marie?

MS. TIPSORD: Yes.

MS. WILLIAMS: I think some of the studies that you're referring to, Mr. Huff, have been entered into the record at some point already and I think what we're getting at here is that there's no mention in those studies of waste water treatment plant effluent being the relevant connection between water quality and urbanization. They're talking about impervious surface area. So we want to understand how removal of treated effluents would make more optimal for conditions for fish in this system?

MR. FORT: I'm going to object because she's testifying as to what's in this record and this witness has not said that he's relying upon the same studies that have been put into the record.

MS. WILLIAMS: Can he identify the names of the studies he's relying on?

MR. HUFF: No, I can't. Not right now.

MR. FORT: The witness said he'd be glad to provide a study or two or an example.

MS. WILLIAMS: No. No. He didn't say an example, did he? Citations would probably be fine of all the studies he's relying on.

MR. FORT: How about do some studies as opposed to all the studies?

MS. TIPSORD: Well, I don't think it's unreasonable. He's saying he's relying on these studies. I don't think she wants -- I mean --

MR. FORT: We don't want to be in a position where we have to guarantee we've done a literature search of everything that might be on this very refined point on this small question of what he meant by this phrase. That's all.

MS. WILLIAMS: If he's never seen it or read it, we wouldn't want him to do a literature search for it. That's not what we're asking for.

MS. TIPSORD: Right. Just what he has relied on.

MR. FORT: Thank you.

MS. WILLIAMS: I'll withdraw my question. I was assuming he was relying on similar studies, the ones that we had already seen and discussed in this proceeding. So you can look at what he submits and review that.

MR. FORT: Okay.

MS. DIERS: Page 15 of your testimony, you mention "Lower Lockport Pool, the 34 miles of the Ship Canal," and then proceed to address fish data from Lower Lockport Pool as selected from the March 2008 report prepared for Midwest Generation by EA Engineering. Would it be fair to say that this report contains fish data for only a small downstream portion of the Chicago Sanitary and Ship Canal, roughly about five miles?

MR. HUFF: You know, I don't know the answer to that.

MS. DIERS: Can you explain how you're using the EA data for your analysis?

MR. HUFF: The analysis that we did, we presented their data just out of a matter of

completion, but we relied strictly on the MWRDGC for the comparison so that we would have common collection methods between the Cal-Sag Channel and the Sanitary and Ship Canal.

MS. DIERS: Page 16, paragraph three, states "if thermal is what is limiting the fish quality population, then one would see a dramatic drop in fish diversity, IBI, and fish population at the downstream stations. At Cicero Avenue, immediately below two of the coal fired power plants, the MWRDGC found the greatest fish diversity, 19 species." Do you know when this sample was collected?

MR. HUFF: Oh, you're in the first paragraph. I'm sorry.

MS. TIPSORD: Yes. It's the first paragraph.

MS. DIERS: Sorry. Some of it has changed. I apologize.

MR. HUFF: I believe that's over this ten-year period that was cited in that paragraph.

MS. DIERS: What month or season was the sampling done, do you know?

MR. HUFF: Most of the MWRDGC sampling was done during the summer months. There were some months, like, April, but predominately they were summer months collected.

MS. DIERS: So is that like June, July, August?

MR. HUFF: Yes.

MS. DIERS: On page 17, paragraph three, it states "although not utilized by Yoder in deriving temperature limits, the Emerald Shiner is also reported to be thermally sensitive with a UILT of 89.5 Farenheit." If we were to include the Emerald Shiner to the Agency's proposal, what would happen to the proposed water quality standards?

MR. HUFF: They would likely become more restricted.

MS. DIERS: Page 17 states "in 2005, the Calumet-Sag Channel experienced a two order of magnitude increase in the Emerald Shiners collected." Were there any other fish species that experienced a significant increase in the number of fish collected?

MR. HUFF: That was predominantly

the most significant increase -- was the Emerald Shiner that year. And that's from page 3-3 and on attachment six.

MS. DIERS: Can you help her? 3-3 of attachment six?

MR. HUFF: Yes.

MS. DIERS: Can you help us find that?

MR. HUFF: Page 17 of attachment six.

MS. DIERS: You mean it's table 3-3? Table or figure?

MR. HUFF: Page --

MS. TIPSORD: Table 3-3.

MR. HUFF: Correct. Table 3-3 on page 17.

MS. DIERS: On page 17, paragraph four, states "the Ship Canal on the Calumet-Sag Channel has similar fishery quality." Do you know if the DO standards for the two sides are the same?

MR. HUFF: I don't know that specifically, no.

MS. DIERS: Do you know what they

are in either in -- the DO standard for the Ship Canal and the DO standard in --

MR. HUFF: I can go by recall, if you like. I believe that there's a three milligram per liter minimum and a four milligram per liter that may be 16 hours a day and I believe they are the same.

MS. DIERS: Would it surprise you if I said Cal-Sag had a lower DO standard?

MR. HUFF: Would it surprise me?

MS. DIERS: Mm-hmm.

MR. HUFF: Yes.

MS. DIERS: On page 19, the conclusion states "in AS96-10, the Board's opinion noted that the Agency's opinion was that the cost of installing additional cooling may not be economically reasonable when compared to the likelihood of no improvement in the aquatic community of the UIW. Do you know the cost involved with installing cooling towers at the facilities associated with A696-10?

MR. HUFF: Not specifically, no.

MS. DIERS: Do you know, if any, of the cooling towers were installed at the

facilities associated with AS96-10?

MR. HUFF: I believe they were, yes.

MS. DIERS: Now, I'm going to ask questions specifically about the attachments to your pre-filed testimony and I'm strictly going to attachment six, the report. My first question is based on a statement in your executive summary using July and August temperatures. And my question is, why were only July and August used in this evaluation?

MR. HUFF: You're trying to contrast the differences or the similarities in fish species from a thermal regime. So I thought it would be more appropriate to focus in on the longer period where you'd have the maximum temperatures. So I picked July and August as opposed to the single hottest day or the annual average. That was an intent to really contrast the long-term warmest periods in time.

MS. DIERS: Okay. Again, I'm in this executive summary. I think it's in paragraph two you state "the Chicago Area Waterways provides a unique opportunity to compare the fish quality on two manmade waterways with and without thermal

stresses. Specifically, both the Ship Canal and the Calumet-Sag Channel are manmade waterways with differing thermal characteristics. Therefore, a comparison of the fisheries quality between these two waterbodies would be expected to identify fishery limitations caused by thermal stressors -- stress." I'm sorry. Are there any other stressors with these two waterways?

MR. HUFF: Well, there's a lot. Sure.

MS. DIERS: And what are those?

MR. HUFF: Well, you've got the waste water treatment plant discharges. You have dissolved oxygen limitations. You have wet weather events that occur. You have the change in the elevations, rapid change prior to rain events, and then after a rain event. So there's a number of stressors. Absolutely.

MS. DIERS: You mentioned DO. Is it equally as stressful, the two waterways, when you're comparing them as the same, different?

MR. HUFF: I'm sorry. Could you repeat that?

MS. DIERS: You've mentioned

dissolved oxygen.

MR. HUFF: Yes.

MS. DIERS: I want to know is it more of a stress in the waterway, the two waterways we're talking about? Like is it more stressful in the Cal-Sag compared to the Chicago Sanitary and Ship Canal, equal?

MR. HUFF: Well, with the SEPA stations that have been installed on the Cal-Sag, I would anticipate you have higher dissolved oxygen, especially minimum dissolved oxygen's today, on the Cal-Sag. But, specifically, I did not look at the minimum DO data.

MS. DIERS: So you're saying it's less stressful in the Cal-Sag?

MR. HUFF: I'm saying I would anticipate with those side stream elevation, pool aeration systems, that the minimum DO's in the Cal-Sag have improved since those came online. So I would anticipate it probably has higher minimum DO's today than on the Ship Canal, but I have not reviewed any data to that effect.

MR. ETTINGER: Excuse me. Do you know when those SEPA stations were installed?

MR. HUFF: I want to say about ten years ago approximately.

MS. DIERS: Do the SEPA stations run all the time, do you know?

MR. HUFF: They run during periods when the dissolved oxygen has a potential to fall below the water quality standards.

MS. TIPSORD: Go ahead.

MR. FORT: Can I ask a quick follow-up on that? Mr. Huff, do you have any notion of when these critical time periods from a dissolved oxygen standpoint might be during particular times of the year?

MR. HUFF: Sure. During the summer months, when the warmer temperatures -- you have lower dissolved oxygen data.

MR. ETTINGER: Why is that?

MR. HUFF: Why do you have lower dissolved oxygen at warmer temperatures?

MR. ETTINGER: Yes.

MR. HUFF: A couple of reasons. One, the sediment oxygen demand is the function of the water temperature. So as the water temperature goes up, the sediment oxygen demand

increases. Probably, more important on the deep draft waterway. The saturation level, dissolved oxygen, is lower at higher temperatures and so the reaeration, the driving force of oxygen from the atmosphere into the water is less because there's less driving force, if you will. And then to the extent that you have microbial organisms that continue to grade the biological oxygen demand and oxidize the ammonia, their rate goes up as the temperature goes up. So you have a higher exertion of oxygen demand in the warmer months than you do in the winter months.

MR. ETTINGER: Thank you.

MS. WILLIAMS: I'd like to clear up a point. I think it's confusing. I think it might help if I show the witness something. Mr. Huff, have you reviewed the Agency's proposed rule language? Have you looked over that at all?

MR. HUFF: I have.

MS. WILLIAMS: And you testified that the SEPA stations on the Cal-Sag Channel are operated in times that there's danger of violating the dissolved oxygen standard, correct?

MR. HUFF: Yes.

MS. WILLIAMS: I'm going to show you the Agency's regular proposal. I don't know that it's an exhibit.

MS. TIPSORD: I think it's just part of the attachment.

MS. WILLIAMS: And I like you to look -- it may be a little bit confusing, but I'd like you to look at the section marked dissolved oxygen and see if you can read the portions that are being struck out, which would be the current --

MS. TIPSORD: Ms. William's, could you give us the proposed rule section?

MS. WILLIAMS: Absolutely. I'm actually asking him to read what's currently in 302405 in the regulations part, title 35.

MS. TIPSORD: The existing rule or the proposed rules?

MS. WILLIAMS: He's reading from the proposed rules, but I'm asking him to read the part that's in there now.

MR. FORT: You're asking him to read what's been struck through on the proposal?

MS. WILLIAMS: He can't see it, but

I think --

MR. FORT: I'm going to --

MS. DIERS: I'm asking him to refresh his recollection on what the current dissolved oxygen rates are in the waterbodies to help clear up --

MR. FORT: I'm going to object. He's talked about the conditions, not what the standards are.

MS. TIPSORD: If you can read, it's let's go ahead. Because I'm not sure she's asked the question yet. She's asked --

MR. HUFF: Yes. I assume these are secondary contact in standards. It's a dissolved oxygen, four milligrams per liter at any time except the Cal-Sag Channel, which shall be three milligrams per liter at any time. I was close.

MS. WILLIAMS: You were close. But it's possible based on that the dissolved oxygen in the Cal-Sag Channel is actually more of a limiting factor than the Sanitary and Ship Canal, isn't that true, Mr. Huff?

MR. HUFF: I'm not sure because it's not a function of the regulation. It's a function

of what the actual dissolved oxygen levels are that are obtained.

MS. DIERS: I'm just asking if it's possible.

MR. HUFF: Is it possible that we have lower DO's on the Cal-Sag than on the Ship Canal?

MS. WILLIAMS: Yes, that's the question.

MR. HUFF: Well, my recollection is that after combined sewer overflows you get dissolved oxygen levels that are significantly below that standard.

MS. WILLIAMS: Where?

MR. HUFF: On the Ship Canal.

MR. ETTINGER: Do you happen to recall when that standard was established for the DO in the Cal-Sag and the Sanitary and Ship Canal?

MR. HUFF: I don't.

MR. FORT: Madam Hearing Officer, can I ask another clarification?

MS. TIPSORD: Absolutely.

MR. FORT: Mr. Huff, your understanding of the environmental conditions with

respect to dissolved oxygen, comparing the Ship Canal versus the Cal-Sag is that the dissolved oxygen might be lower in the Ship Canal than in the Cal-Sag?

MR. HUFF: Yes, especially during wet weather events.

MR. FORT: And that also then applies to summer months after a wet weather event?

MR. HUFF: Absolutely.

MS. DIERS: Why is that?

MR. HUFF: I think you get the higher flow. You get the combined sewer overflows and you get resuspension of the sediments that you have a sudden increase in oxygen demand that depletes the available oxygen.

MS. DIERS: Have you looked at data for this?

MR. HUFF: I recall that that data was -- I thought part of the record in these proceedings.

MS. DIERS: Okay. You mentioned CSO's and I believe other factors. I didn't hear everything. Did those apply in the Cal-Sag

Channel?

MR. HUFF: I'm sorry. Could you rephrase or repeat that?

MS. DIERS: Yeah. I'll think of a better way to explain it. I think you said you were referring to DO limitation, wet weather, rapid changes, and my question is does that apply to the Cal-Sag Channel?

MR. HUFF: It probably applies there to the extent that there are CSO's there.

MS. DIERS: Do you know would CSO's have more of an impact than summer DO saturations?

MR. HUFF: Summer DO saturations?

MS. DIERS: When it's sagging in the summer is what I'm referring to.

MR. HUFF: I'm sorry. Could you repeat that? I don't understand that question.

MS. DIERS: Would CSO's have more of an impact in dropping DO?

MR. HUFF: Than --

MS. DIERS: Than summertime high temperatures.

MR. HUFF: I don't know that I can answer that.

MS. DIERS: Why compare temperatures in the Chicago Sanitary and Ship Canal at Cicero Avenue with temperatures along the entire Cal-Sag Channel?

MR. HUFF: Trying to contrast and compare the similarity or differences in the fish populations.

MS. DIERS: Why are you looking at multiple stations on the Cal-Sag Channel and only looking at the station along the Chicago Sanitary and Ship Canal?

MR. HUFF: I don't believe that's an accurate statement. We looked at all the stations on the Ship Canal as well. We focused on Cicero Avenue because that was where we had the highest temperature regime.

MS. DIERS: In the executive summary you state "the blunt nose minnow is among the most common fish collected on the Ship Canal despite temperatures that consistently exceed 90.3 degrees Farenheit." Do you know how often the temperatures exceed it and at what locations?

MR. HUFF: If you refer to Figure 3-3 in the report, attachment six, that presents

the temperature profile of the Ship Canal at Lockport Lock and Dam and you can see temperatures above 90 degrees in 1999, 2000 and 2001 and also in 2002. So that will tell you, that graph, that you had temperatures above those and this is the maximum period temperature during each of those periods that were specified. You have similar profiles on page eight at Route 83. Here, your temperatures in 2001 look like they approached 90 degrees and were less than that the other years. Figure 3-5 is Cicero Avenue and here you can see maximum period temperatures above 90 degrees in each of the years for a longer period of time than the others.

MS. DIERS: Let's go to figure 3-1. The heading indicates the years 1998 through 2006. My question is, are you aware that the cites at Romeoville Road and River Mile 6 have data only from August 1998 through 2004?

MR. HUFF: Yeah, I don't recall specifically. It's certainly possible.

MS. DIERS: My next question has to do with figure 3-2. The heading indicates again 1998 through 2008. Again, are you aware that the

Route 83 is the only site with temperature data over that entire period?

MR. HUFF: That could be correct. We were just trying to be all inclusive in all the available data that we had.

MS. DIERS: And are you aware that Halsted Avenue is located on the Little Calumet River?

MR. HUFF: I knew that was down somewhere by the head water to the Cal-Sag. I didn't know that specifically.

MS. DIERS: And attachment six you talk about habitat quality and I think it's on 3.3 in that section because I don't have all the page numbers. I don't know if there are page numbers on this whole report, but my question is do you know if MWRDGC followed Ohio QHEI procedures when they're collecting their QHEI information?

MR. HUFF: I don't know specifically. I would assume that they were following the same one that the Illinois EPA follows.

MS. DIERS: In section four of attachment six is your discussion section. You

state "for those stations in the MWRDGC study, the average number of species caught on the Ship Canal was 8.5 per sampling event while the average number of species caught on the Cal-Sag Channel was 11.2 per sampling event." What is the reason for the lower number of species --

MR. FORT: I'm sorry. Where are you reading?

MS. DIERS: I'm in section four, paragraph two. Let me double check to see if I can find it for you.

MS. WILLIAMS: I think the confusion is when I look at mine, it says page 22, but the one she printed from the website doesn't have a page number on it.

MS. FRANZETTI: I think that's really just the difference. The electronic one didn't print the page numbers.

MS. DIERS: I'll see if I can find the exact -- while everybody is trying to catch up.

MS. FRANZETTI: I'm there.

MS. DIERS: Are you ready?

MR. HUFF: I'm ready. It would be

speculation. I guess I'd have two comments. One is we used a more recent MWRDGC station. So we have the SEPA stations on the Cal-Sag Channel at this point. So you undoubtly have higher dissolved oxygen than what you had there before and that could be the reason. If you go back and look at table 3-1 and you look at the historical collections on there that you basically had 79 species on the Ship Canal versus 36 on the Cal-Sag Channel. So this is a more recent phenomena. Whether it's a long term trend or not is difficult to say, but a possible reason could be is those SEPA stations.

MS. DIERS: I'm checking the page numbers. This is with respect to page three of attachment six. I'm in the temperature section. As you noted on page three in the second paragraph, the highest mean July/August temperature on the Ship Canal occurs at Cicero Avenue, river mile 27.3, which averaged 85.9 degrees Fahrenheit over these two months." 85.9 degrees Fahrenheit is less than the proposed 86.7 Fahrenheit that is proposed for the CAWS UC waters, correct?

MR. HUFF: Can you clarify that proposed standard as how long is that -- is that a two-month standard you're referring to?

MS. DIERS: It's the average of all of July and August.

MR. HUFF: That's the proposed standard? There's a July and August one?

MS. DIERS: Yes.

MR. HUFF: Yes.

MS. DIERS: In your opinion, do you think biological conditions would improve in the Chicago Sanitary and Ship Canal if additional SEPA stations were created?

MR. HUFF: I would think based on the change in the fish in the Cal-Sag, the answer to that would likely be yes.

MS. DIERS: I'm going to table 4-1. I'll give you time to catch up. If there's page numbers, it might be 26. Are you there, Mr. Huff?

MR. HUFF: Yes, ma'am.

MS. DIERS: What are the specific sources of the fish IBI and QHEI data used to derive information in table 4-1 of attachment six?

MR. HUFF: The MWRDGC data that's

footnoted down there.

MS. DIERS: The June 28th report?

MR. HUFF: January '08, June '08, reports and then the percentages here are the weighted average from all of the stations.

MS. DIERS: And the January 2008 and June 2008 portions of that report are attached to your testimony, is that correct?

MR. HUFF: I believe the entire reports were on the CD.

MS. DIERS: Okay. Thank you. Why were comparisons in this table limited to only two sampling sites in the Calumet-Sag Channel and only three sampling sites in the Chicago Sanitary and Ship Canal given that it appears, like, table 3-4 and 3-5, I believe, 18 and 19 in this report, indicate fish data from at least six sites in the Cal-Sag Channel and from at least seven sites in the Chicago Sanitary and Ship Canal?

MR. HUFF: I believe it was that we wanted to have it where we had data for most of the years on a sampling station as opposed to sampling sites where maybe we only had one year.

MS. DIERS: Why does the heading on

table 4-1 indicate 2001 through 2005? It appears looking at the average IBI values are based on data from 2001 to 2004.

MR. HUFF: I believe -- well, the 2005, in that table 3-2 and 3-3, we have 2005 data on some of the stations there and I think that's why. We have some 2005 data in that summary.

MS. DIERS: Is it true that only one IBI value for the Calumet-Sag Channel at Route 83 station and one IBI value for the Chicago Sanitary and Ship Canal were -- at Route 83 were used?

MR. FORT: Did you hear that?

MS. DIERS: I can repeat it. I'm sorry.

MR. HUFF: That appears to be the case. That's what the data that's in tables 3-2 and 3-3 would indicate.

MS. DIERS: For the averages? For this one -- excuse me. My minds moving too fast. I'm sorry. Was 2005 data included in the averages on this table, 4-1?

MR. HUFF: I'd have to verify that, but I believe they were to the extent that we had that data.

MS. DIERS: And you also have on table 4-1 -- there's two ATI categories and IBI categories. Where did these categories come from? Were those from Ohio, if you know?

MR. HUFF: I believe those came from the Camp Dresser McKee report.

MS. DIERS: What did you say Camp --

MR. HUFF: The UAA report on the Chicago Area Waterway System.

MS. DIERS: Is where the IBI and the QHEI --

MR. HUFF: Yes.

MS. DIERS: Was the Ohio EPA fish IBI used to calculate the fish IBI's shown in table 4-1?

MR. HUFF: I can't answer that.

MS. WILLIAMS: Can I ask a quick clarification? When you were talking about the CD, do you remember what I'm talking about, the information that was provided on the CD?

MR. HUFF: Yes.

MS. WILLIAMS: Was that information filed with the Citgo testimony or the Corn Products testimony? I'm getting a little bit

confused in my own mind.

MR. TESHER: That was filed with the Citgo testimony.

MS. WILLIAMS: The updated Citgo testimony in May?

MR. TESHER: Yes.

MS. DIERS: Okay. I'm going to go to figure 3-1. I don't have page numbers again.

MS. TIPSORD: Did you say figure 3-1?

MS. DIERS: Yes. I'm sorry. I gave you the wrong one. Table -- page 15. My fault to confuse everyone. Table 15.

MR. FORT: Table or page?

MS. DIERS: Table, yes. Sorry. I think we're at table 3-1 and for those who have page numbers, it's page 15. What are the specific sources of information used to create table 3-1 on page 15 of your thermal evaluation?

MR. HUFF: As referenced in the first paragraph on page 14, it's the historical fisheries collection from the Illinois Natural History survey and the Illinois Department of Natural Resources.

MS. DIERS: What are the specific sources of information that indicate that 79 species of fish have inhabited the Chicago Sanitary and Ship Canal? For example, can you please explain the specific sources of information that verify the following species of having inhabited the Chicago Sanitary and Ship Canal? For example, the Pallid Shiner? I'm sorry. It's compound.

MR. FORT: I'm sorry. I don't know what else you want him to do. I mean it sounds like you're asking him to go through each column here in this table from a state publication.

MS. WILLIAMS: Is it in the record? Is that publication in the record?

MR. FORT: The references are here.

MS. DIERS: Can I just ask for the Pallid Shiner, for instance? Can you tell me?

MR. HUFF: Again, it would be in the historical databases of either the Natural History or the Department of Natural Resources.

MS. DIERS: Do you have a cite -- I'm sorry. I'm not seeing a citation. I see where you have on 3.2 of your Illinois Natural

History survey. So is there just a book there I find? Is there more of a citation there you can give me?

MS. FRANZETTI: I don't mean to interrupt. He does say at the end of the first paragraph there on page 14 "data used in this analysis is included in appendix A," but are you saying you couldn't find it?

MS. DIERS: Yes.

MS. FRANZETTI: Okay. Now, I'm with you.

MS. DIERS: Okay.

MR. ETTINGER: Appendix A to attachment six.

MR. RAO: There are two documents from the Illinois Natural History survey that references it. I don't know if those are the documents or --

MR. HUFF: The second one is. The database 2009 and then there's a website where that's available.

MR. ETTINGER: I'm sorry?

MS. DIERS: Can you help us find that?

MR. TESHER: If you look at the references at the end of the report where he lists the sources.

MR. ETTINGER: At the end of which report?

MS. TIPSORD: One at a time.

MR. FORT: Look at Mr. Huff's report, the attachment, page 27, the list of references, the website for the Illinois Natural History survey.

MR. ETTINGER: I see.

MS. WILLIAMS: Is that information from that website included in the attachments to your report?

MR. HUFF: I don't believe so.

MR. FORT: So, Mr. Huff, you did not download the entire website and attach it to your report?

MR. HUFF: It might be there. I'm not sure.

MR. FORT: Where?

MR. HUFF: On that CD.

MS. WILLIAMS: There's a document that is attached and I'm sorry, Marie, but --

MS. TIPSORD: That's okay.

MS. WILLIAMS: And it's called Illinois Natural History -- INS Fish Collection Database Search Results, page 1 of 3. And then there's, like, 1 of 2 and they say 1/28/09 at the bottom. Is that what we're referring to?

MS. TIPSORD: You know what? Why don't we take a ten-minute break and let Mr. Huff take a look at his stuff.

MR. ETTINGER: While you're working on that, can you find out what historical means?

MS. WILLIAMS: Right. How old?

MR. ETTINGER: Like prehistoric? I mean it's historical. Presumably, after the Chicago Sanitary and Ship Canal was dug, but within that range, 1920 to the present, it would be good if we knew what we were talking about.

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

MS. TIPSORD: Let's go ahead.

MR. FORT: Madame Hearing Officer, I think I have a question that may help clarify the basis of the species listed in table 3-1 and maybe

we can just let Mr. Huff explain how table 3-1 was prepared and what else is in the report that relates to that. I think that might be the most expeditious way.

MR. HUFF: Included in the report, which was attachment six, appendix A, we tried to put in all the data that we utilized in putting that table together. And then in response to Mr. Ettinger's question, the historical data seems to go back to 1967. There's a couple of 1967 entries.

MS. DIERS: Would you expect to find the Pallid Shiner in the Chicago Sanitary and Ship Canal?

MR. HUFF: I would not and I'd suspect that's probably an error on our part. In looking through appendix A, the Pallid Shiner, there's been three that have been found downstream of the I-55 bridge.

MS. DIERS: Would you expect to find the Slenderhead Darter in the Chicago Sanitary and Ship Canal?

MR. HUFF: I don't know. That's beyond my expertise.

MS. DIERS: Would that be the same answer if I asked you about the Black Redhorse, the Mimic Shiner and the Ghost Shiner?

MR. FORT: I'm going to object to the particular questions here because the Agency said there are eight representative species and that was Mr. Yoder's stuff. So I thought we were focusing on the representative species for this part of the Ship Canal at least.

MS. WILLIAMS: I'm not sure what the objection is to, but I just want to say at this point that we identified species that have nowhere else in the record shown up as being species anyone would expect to see in these waters. We're not protecting for them and we want to understand what the basis of this 79 species that's identified in Mr. Huff's testimony is.

MR. FORT: I think he's already testified that table 3-1 is the listing and the supporting documentation for that is included in the latter part of the report.

MS. WILLIAMS: So would you say now that 78 is a proper number? You found one that is outside the study area?

MR. HUFF: I would offer to go back and relook at that --

MS. WILLIAMS: That would be great.

MR. HUFF: -- and submit a revised table 3-1.

MS. WILLIAMS: Thank you.

MS. DIERS: Why did the temperature data used in your evaluation, the report you prepared for attachment six, begin in 1998?

MR. HUFF: As opposed to?

MS. DIERS: Well, is there data on these waters before 1998?

MR. HUFF: I don't believe so. We got the available data from the Metropolitan Water Reclamation District and that's what we utilized. There would be graph samples, but probably not nearly to the extent that we --

MS. DIERS: With respect to continuous monitoring data, you reference in attachment six with respect to temperature, do you know what the sampling regime for the temperature data was?

MR. HUFF: The sampling regime meaning how often temperatures --

MS. DIERS: How often depth -- do you have any information about that?

MR. HUFF: I'm sorry. How often --

MS. DIERS: How often are the depths -- is it continuous monitoring in the water? Do you have any of that information, how they do that?

MR. HUFF: How frequently do they record temperatures? I believe it's hourly.

MS. DIERS: Hourly. Okay. Do you know the depth of the continuous monitoring station in the water, how far down in the water?

MR. HUFF: I would speculate they would be at mid depth.

MS. DIERS: I'm going to go back to figure 3-1. I apologize. I think we asked a few questions on that. Can you just explain each of the points on 3-1 and I don't have a page number.

MS. TIPSORD: Five.

MS. DIERS: Page five.

MR. HUFF: And the question is, can I explain how this was derived?

MS. DIERS: Yes.

MR. HUFF: We took all of the data

that came from the Metropolitan Water Reclamation District in an Excel spreadsheet, made a subsequent spreadsheet with only July/August data and then calculated the mean value at each of those stations.

MS. DIERS: I'm going to go to figure 3-8. I believe it's page 12. What years of data are represented on 3-8?

MR. HUFF: It would be the same that was in the Cicero graph for the Ship Canal, which would be figure 3-5, I believe, '98 to '02.

MS. DIERS: What does the highest year period average mean and specifically how is it determined?

MR. HUFF: The Agency's proposal has temperature limits by specific periods. For example, July 1st to July 31st. So what that highest year period average is if 2002 had the highest period average from July 1st to July 31st, that would be reflected on this table. If it was 2003, than that year would be reflected.

MS. DIERS: Can you explain the dates on this figure, like, we have November 1st, December 21st, February 9th, et cetera? Can you

please explain what those refer to?

MR. HUFF: Those would be the calendar period, November 1st. And then you have period averages that are typically two weeks or four weeks for each of those time periods.

MS. DIERS: In table 3-1, I believe it's on page 15 of attachment six, you indicate the White Sucker is a historical species in the Chicago Sanitary and Ship Canal. Do you believe the White Sucker is found in the Chicago Sanitary and Ship Canal today?

MR. HUFF: If you look at the data on table 3-2, which is the more recent data from 2001, I don't believe that the White Sucker has been reported in at any of the MWRDGC sampling stations.

MS. DIERS: I'm sorry. What table did you say?

MR. HUFF: Table 3-2.

MS. DIERS: Thank you.

MR. HUFF: That would be the more recent data that you're asking about.

MS. DIERS: Would you agree that the White Sucker is found in the Cal-Sag?

MR. HUFF: It has been found -- five have been collected over the sampling periods from 2001 to 2005.

MS. DIERS: Do you have an opinion as to why we're seeing the White Sucker in the Cal-Sag Channel now, but not the Chicago Sanitary and Ship Canal?

MR. HUFF: No.

MR. FORT: Excuse me. Can I ask a follow up on that?

MS. DIERS: Sure.

MR. FORT: Mr. Huff, given that there are a grand total of five White Suckers found in the Cal-Sag representing 0.2 percent -- or 0.1 percent -- 0.2 percent of the relative abundance, is that a statistically significant quantity of White Suckers to say there's a difference?

MR. HUFF: There probably isn't statistically one. I mean it's certainly not a dominant species. There haven't been a large number collected. So you can say it there in some level and you probably can't say that they aren't also present in the Ship Canal just because so few

have been collected over a five-year period.

MS. WILLIAMS: Mr. Huff, are you saying that they might be present in the Ship Canal, we just haven't found them?

MR. HUFF: Sure.

MS. WILLIAMS: Okay. Thank you.

MS. DIERS: That's all I have right now.

MS. TIPSORD: Then let's move onto the Environmental Law and Policy Center.

MR. ETTINGER: I don't want to move everybody here, but I'm not sure the court reporter wants me talking to the back of his head.

THE COURT REPORTER: You're okay.

MR. ETTINGER: Let's go back here on the testimony. On page five of your testimony -- four and five of your testimony, I think those are the same page numbers on your testimony. I'll just read them. The identifying causes of impairment, and this is for the Ship Canal, for polychlorinated biphenyls, iron, oil, grease, dissolved oxygen, total nitrogen and total phosphorous. Do you believe that all of these pollutants affect the Sanitary and Ship Canal?

MR. HUFF: Could you define affect?

MR. ETTINGER: Do you think they affect the aquatic life in the Sanitary and Ship Canal?

MR. HUFF: That's a tough question. Iron would be a classic example. I'd be hard pressed to believe iron is having any influence on the aquatic life in that Canal. PCB's, to the extent they would make the fish potentially unsuitable for eating, but maybe not from a survival reproduction perspective.

MR. ETTINGER: Looking -- I'm sorry. We're you finished with your answer?

MR. HUFF: I don't know what the dissolved oxygen levels are. It's listed as impaired, which means it's not meeting the water quality. Depending on how long they would stay down, it potentially could be an effect. It depends on what's controlling the aquatic community that you have there.

MR. ETTINGER: Do you know if the nitrogen and phosphorous is having an affect?

MR. HUFF: I'd actually be surprised. Ammonia levels are so low you don't

have any toxicity issues with respect to ionized ammonia. Phosphorus is generally not considered a toxic pollution. What you're concerned about with phosphorus would be its potential that it could stimulate some type of fixed plant growth. You wouldn't have any of those issues on the deep draft channel. So I don't believe phosphorus would be affecting the aquatic life that's on the Ship Canal.

MR. ETTINGER: Okay. Turning now to the next paragraph. Let's go back a second. Looking at all of these pollutants then that you identify, there's no pollutants that you know of in the Sanitary and Ship Canal that would cause it from meeting aquatic life uses?

MR. HUFF: I don't think that's what I said. Causes -- could you rephrase that question? I don't quite follow.

MR. ETTINGER: Are you aware of any pollutants in the Sanitary and Ship Canal that would cause it to not meet aquatic life uses?

MR. FORT: Your question is as to a pollutant as opposed to some other thing or condition?

MR. ETTINGER: Actually, Mr. Huff, in his testimony, identified a number of pollutants as part of the reason that there are problems or potential problems in the Sanitary and Ship Canal and my question is, is he aware of any of the ones he's identified as actually having an affect?

MR. HUFF: I think the jury is still out. When you say it's affecting the aquatic habitat, there is a thriving fish community that's there now. So I'm not quite sure. Are we talking about the existing population or could we improve on that population and from a quality perspective?

MR. ETTINGER: Well, I don't want to argue with you. I'm just saying you saw fit in your testimony to point out that these pollutants were in the water and this was a reason why we shouldn't -- why the water is of lower quality than it would be otherwise and presumably we thought it was relevant to this proceeding in some sense. So I am just asking, do you believe that any of the pollutants that you've named here are affecting aquatic life in the Sanitary and Ship Canal?

MR. HUFF: I think the answer is potentially there could be some effect. It depends on what's controlling that aquatic life that you're trying to establish, whether it's habitat or some other pollutant.

MR. ETTINGER: Okay. The next paragraph on page five you mention these three coal fired power plants that provide low cost electricity to the city of Chicago, that's Fisk, Crawford and Will County?

MR. HUFF: Yes.

MR. ETTINGER: Okay. I think we heard earlier that you had not considered the effect of the mercury air rule on the continued liability of those plants as providing low cost electricity?

MR. HUFF: Yes, sir.

MR. ETTINGER: Have you considered any health effect that it's currently caused from operating those plants on the populations around those facilities?

MR. HUFF: No, sir.

MR. ETTINGER: Later on in that paragraph, you say "the coal fired power plants

introduce a thermal loading to the shipping canal. However, other industries also discharge waste water with a thermal component." Of the total thermal loading to that water, what percentage of that would be from the power plants as opposed to other facilities?

MR. HUFF: I haven't done a calculation, but I would estimate greater than 90 percent would be the three power plants.

MR. ETTINGER: Right. And if some or all of those power plants were to close, would you imagine there would be any problem with the remaining dischargers meeting water quality standards in --

MR. HUFF: I do, indeed.

MR. ETTINGER: I'm sorry. I know I'm slow and you think faster than I do, but you have to let me finish my question. If we were to close those power plants, do you have an opinion as to whether or not there would be any problem for those remaining heat dischargers in meeting standards in the Sanitary and Ship Canal?

MS. FRANZETTI: If I could just insert an objection there that it is a proper

purpose of regulations to close those plants, but go ahead, Mr. Ettinger.

MR. FORT: Can I clarify?

MR. ETTINGER: I didn't really -- why don't we read the question back and let him answer it although if Mr. Ford has an objection --

MS. TIPSORD: Actually, he would like to clarify the question.

MR. FORT: I would like to clarify the question when you're talking about the standards, you're talking about the standards being proposed in this rulemaking?

MR. ETTINGER: That's a good point. And this may vary within the Sanitary and Ship Canal. Were some or all of those plants to close for whatever reason, would that affect the likelihood of the remaining thermal dischargers causing a violation of the standards that were proposed in this proceeding?

MR. HUFF: The answer is yes.

MR. ETTINGER: And how would that happen?

MR. HUFF: Well, if you set the shoulder month at what the MWRDGC effluents

currently are, there's literally no thermal capacity remaining in those shoulder months and you have industrial dischargers so once through cooling water, are pulling out BTU's and that water is warmer than what the MWRDGC effluent is.

MR. ETTINGER: And that would be applicable during the shoulder months?

MR. HUFF: Yes.

MR. ETTINGER: Which are the shoulder months?

MR. HUFF: Non-summer.

MR. ETTINGER: Would that be true outside of any mixing zone?

MR. HUFF: Yes. Because if the stream is already at the thermal limit, you can't add any more to it with or without a mixing.

MR. ETTINGER: Have you studied whether there's any cooling that occurs between the Stickney Plant and your Lemont facility in the winter?

MR. HUFF: There is cooling, yes.

MR. ETTINGER: So have you studied whether the water cools enough in the winter between Stickney and Lemont such that you could

discharge heat at Lemont and stay below the temperature that has been proposed by the Illinois Environmental Protection Agency?

MR. FORT: Clarification. You're talking about winter being December through February or are you talking about shoulder months?

MR. ETTINGER: I think that's a useful clarification. Why don't we say the whole shoulder months now, remembering, of course, my question was have you studied and then if it turns out that he studies for some portion of that period, but not all of it, then we'll ask that.

MS. WILLIAMS: Can I object to -- I think he called the shoulder months anything that wasn't summer. I think we've commonly understood that to be a period between summer and winter. So can we agree on what shoulder months are?

MR. ETTINGER: May I substitute my question, non-summer months for shoulder months if that's agreeable to Mr. Fort.

MR. FORT: Very agreeable.

MR. ETTINGER: Okay. I'm not sure what the question is anymore. Perhaps --

MS. TIPSORD: Have you studied, is

the question.

MR. ETTINGER: Yes.

MR. HUFF: You're talking with respect to Citgo and their refinery?

MR. ETTINGER: Correct.

MR. HUFF: I have looked at that briefly and under the scenario that you outlined, I believe they would be okay.

MR. FORT: Excuse me. Meaning the scenario that the power plants are no longer operating?

MR. HUFF: Right.

MR. ETTINGER: Now, going back into our world in which -- I'm sorry. Let's look at page nine. It says starting the second full paragraph, "the economic impact of the proposed changes in thermal chloride, sulfate and mercury will be significant." Leaving thermal aside, it's my understanding that your concern is that the Citgo refinery will lose its mixing zone for chloride, sulfate and mercury?

MR. HUFF: Yes.

MR. ETTINGER: Okay. Is it your understanding that the IEPA currently rewrites its

permits such that any facility for which -- I'm sorry. For any water which is receiving a discharge, if that water at any time is violating water quality standards, that every discharge or discharging of that water must meet the water quality standard at the end of the pipe?

MR. HUFF: The short answer would be yes. They go through a reasonable potential analysis and if you are contributing that pollutant then you would be imposed with water quality standards on that pollutant.

MR. ETTINGER: So for every water in the state of Illinois that is violating the mercury standard, from time to time we would expect to see that there would be no permits allowed in which they were not meeting the mercury water quality standard at the end of the pipe?

MR. HUFF: I believe that is exactly the direction that the Agency is currently taking, yes.

MS. WILLIAMS: In your view, is that a proper interpretation of the regulation?

MR. FORT: Object. Calls for a legal conclusion.

MR. ETTINGER: Well, he's objected, but the witness' conclusions are based on that legal conclusion so I have to ask.

MR. HUFF: Can you rephrase the question for me or restate it?

MR. ETTINGER: I think I did pretty well. Why don't we ask the court reporter to read it back?

MS. TIPSORD: I'm going to sustain the objection because you can't ask him for his legal opinion. So you need to rephrase.

MR. ETTINGER: Well, were it to be the case that that was an improper interpretation of how to write a permit, would your conclusions as to the effect on the mixing zone at Lemont still be valid?

MR. FORT: I think the witness has objected. The witness has talked about his understanding and his understanding of the Agency's approach. You're asking him a different question now which is what is his legal opinion as to that issue.

MR. ETTINGER: No, I withdrew that.

MS. TIPSORD: I think he's asking

for a hypothetical situation that if the EPA and -- forgive me if I misinterpreted this. If the EPA were to no longer demand compliance at Pike and the water quality standard is changed, would that affect your concern about the mixing zones?

MS. FRANZETTI: And I'm just going to object. I think the answer is vague and confusing.

MS. TIPSORD: Hey, I'm on this side of the chair.

MS. FRANZETTI: You tried to make it clearer, but I don't think it's possible.

MR. HUFF: If we go back and look at 302 102(b)(9), it states "no mixing is allowed where the water quality standard for the constituent in question is already violated in a receiving stream." It's black and white in the Board's regulation. So with that premise, Mr. Ettinger, could you ask me that question with that premise?

MR. ETTINGER: Actually, you've answered my question. I thank you very much. I plan to quote you in my next hearing and PDS

permit.

MS. WILLIAMS: Are you moving away from mercury?

MR. ETTINGER: No, I've just begun mercury. Let's talk about mercury which is on exhibit -- I think -- I believe it's attachment three, mercury limits -- levels Chicago Sanitary and Ship Canal, is that correct?

MR. HUFF: Yes.

MR. ETTINGER: Now, I'm not so good with the metric system, but my understanding is according to this chart you have one violation that was found of the 12 parts per trillion standard for mercury in the Chicago Sanitary and Ship Canal?

MR. HUFF: One out of ten, yes.

MR. ETTINGER: And it's your understanding then based on your rule and this is a basis for your testimony then that should be "were a general use standard applicable here, that we would not allow any mixing for mercury for any discharger to that water"?

MR. HUFF: Correct.

MR. ETTINGER: Looking at these

numbers, do you have any knowledge as to what might have caused that violation of the mercury standards.

MR. HUFF: Well, in part, the flow has to be greater than the harmonic mean. We had another value at 13, but it was below -- the flow was below the harmonic mean. So it's not strictly a wet weather phenomena. We've had two values that were recorded over twelve out of the ten.

MR. ETTINGER: Based on your study of the system, do you know what the likely sources of mercury are in that system?

MR. HUFF: No, I don't.

MR. ETTINGER: What dilutes the water or what level of dilution do you have -- Strike that. What happens to discharges of chloride, mercury and these other pollutants in the Sanitary and Ship Canal?

MR. HUFF: Can we break them down one at a time?

MR. ETTINGER: Yeah.

MR. HUFF: Chlorides are for all practical purposes infinitely soluble. They will move down into the Illinois River into the

Mississippi River then into the Gulf of Mexico. If you look at the mercury that we found in the Ship Canal, it was primarily in the particulate state. It was not dissolved. The dissolved levels are quite low. So one would anticipate that there would be some deposition of those as that water moves downstream and then likely during high flow periods that deposition would get transported further downstream as well.

MR. ETTINGER: What else do we have here? Sulfate.

MR. HUFF: Sulfate is somewhat like chloride, although it will tend to precipitate out of the stream as it travels down depending on the form of it whether it becomes sodium or calcium.

MR. ETTINGER: Do you know whether there are chloride violations in waters downstream from the Sanitary and Ship Canal?

MR. HUFF: As in the beginning of the primary contact waterway at the I-55 bridge on the Des Plaines River?

MR. ETTINGER: Yes.

MR. HUFF: Yes, there are.

MR. ETTINGER: Are discharges made

to the Sanitary and Ship Canal contributing to the level of chloride at the I-55 bridge?

MR. HUFF: I'm sorry. Could you restate that? I didn't hear the beginning.

MR. ETTINGER: Are discharges of chloride made to the Sanitary and Ship Canal contributing to the levels of chloride at the I-55 bridge?

MR. HUFF: Well, it's highway deicing. It's the primary source of those violations.

MR. ETTINGER: I understand what the primary source is. My question is -- let me change the question slightly. Is chloride discharged in the Sanitary and Ship Canal reaching the I-55 bridge?

MR. HUFF: Yes.

MR. ETTINGER: Thank you. Is it your understanding that IEPA would prohibit a mixing zone for chloride if it was causing or contributing to a violation of standards in downstream waters?

MR. HUFF: In downstream waters, no. I think in that case, they would be entitled to a

mixing zone potentially. That's an interesting question. If they're contributing it on, say, the I-55 bridge, then the next step would be a TMDL study to do a load allocation on what individuals can contribute to that and that's likely when the reduction would come about.

MR. ETTINGER: So it's your understanding that if the immediate receiving water is not covered by the standard but a downstream water is, then that makes a legal difference?

MR. HUFF: Yeah. Because the mixing zone is intended to allow you to have a small area in the case of the zone of the initial dissolution that is above an acute toxicity and then the chronic -- the overall mixing zone, you can have levels above the chronic toxicity. So really mixing zone is to look at the stream right exactly where you're discharging.

MR. ETTINGER: Okay. Do you believe that the heat discharged from the power plants is fully mixed by the time it gets to the I-55 bridge?

MS. FRANZETTI: Objection. Lack of

foundation.

MR. HUFF: I would anticipate from the three power plants that we're talking about on the Ship Canal that would be the case.

MR. ETTINGER: How about the Joliet plant?

MR. HUFF: I have no opinion on that.

MR. ETTINGER: Are you aware of holdings by this Board that upstream discharges need to be considered in determining whether there are -- Strike that. I guess have you ever studied what the level of chloride discharge by the Metropolitan Water Reclamation District is?

MR. HUFF: Back in about 1975, '76, when the water quality -- and maybe it was the effluent standards on dissolved solids were adjusted, I coauthored the economic impact and we had some limited data back then. Since then, no.

MR. ETTINGER: There's a sentence on page 11 of your testimony, it says "the Agency in the recent NTDS permit -- I'm sorry. The Agency in a recent NTDS permit determined that the HHS for mercury must be met in the effluent and that

no mixing zone is allowed despite regulations that appear contrary to this position." Could you further explain what you meant there? Specifically, what recent Agency action and what regulations that appear to contradict this position?

MS. TIPSORD: Excuse me. Before you answer that question if that specific issue is on appeal before the Board, then I would prefer that we not discuss it.

MR. FORT: Do you know if it's on appeal?

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

MS. TIPSORD: Okay. Then go ahead.

MR. HUFF: The permit I'm referring to is the Conoco Phillips Wood River Refinery permit and there was a second part to your question.

MR. ETTINGER: I'm just trying to find out about that sentence. What's going on there? I don't understand what you're talking about.

MR. HUFF: If you look at the mercury regulation in the Board's rules, it

specifically allows mixing for mercury and the Agency has determined that no mixing is allowed for mercury.

MR. ETTINGER: And that is because the Mississippi River violates for mercury?

MR. HUFF: No, it does not. I believe it's because of the Indiana permit appeal a couple of years ago with BP.

MR. ETTINGER: You put this sentence in your testimony presumably because you believe this is relevant in some way to this proceeding. I'm having some trouble here determining what the Agency's position was and how anything the Board would do in this proceeding to affect your client's mercury limits under this -- based on this experience. Could you just explain that?

MR. HUFF: In the case if they adopt the same mercury regulations and without clarification that you are allowed mixing zones, then this would, in the case of Citgo, they're going to end with a 12 nanogram per liter mercury limit on an annual basis, which would be difficult. To the extent that I've identified that you already have a waterway that violates

that, the next step would be a TMDL study and we're going to go through a load allocation that will take that mercury level potentially even lower and then you'd have the same thing at the MWRDGC plant, potentially combined sewer overflows and all the other industries.

MR. ETTINGER: I think I understand now. Let me try and get this right. There's a Great Lakes rule that there's no mixing zone for bio cumulative toxins like mercury, is that correct?

MR. HUFF: Yes.

MR. ETTINGER: And in the Conoco permit, you're saying that IEPA applied that rule although the Conoco discharges is not to the Great Lakes.

MR. HUFF: Correct.

MR. ETTINGER: And your position is that that's an incorrect interpretation of Illinois law, but that if we were to change the standard here and IEPA would be allowed to make that interpretation that you believe is incorrect, that that would affect your client?

MR. HUFF: That's part of my

concern, yes. The other part is that we already exceed the 12 nanograms per liter on that waterway which then also says that they'll lose their mixing zone because of that exceedance.

MR. ETTINGER: Okay. I came to understand the first, but not the second. What's the effect of the Stickney discharges on thermal temperatures in the summer?

MR. HUFF: Well, in the summer, it undoubtly cools the temperature that's in that Ship Canal upstream.

MR. ETTINGER: Okay. We went over this some before, but I just want to be clear on this point. This has to do with non-summer temperatures again. The Agency, to your understanding as described on page 14, varied from the Yoder analysis as to what to do on non-summer temperatures, is that correct?

MR. HUFF: Yes.

MR. ETTINGER: What temperatures does Citgo discharge in the winter in relationship to the temperatures with the Water Reclamation District?

MR. HUFF: I can't answer that right

now, but I have that data. I didn't put it in this report, but there is a thermal component in the Citgo discharge.

MR. ETTINGER: Much higher than 55 degrees?

MR. HUFF: In the winter months, it potentially could be. If you got ambient temperatures in the 30 to 40 degrees Farenheit, yes.

MR. FORT: May I ask a follow up to explain that?

MR. ETTINGER: Yes, please.

MR. FORT: Mr. Huff, do you know some of the processes that Citgo uses, for example, in the waste water treatment plant that causes them to elevate the temperature in their waste water?

MR. HUFF: Well, yes, I do.

MR. FORT: And what is that?

MR. HUFF: It's kind of a multi answer. In biological treatment systems, they inject steam into the waste water to maintain temperature for ammonia removal, the nitrification, and then they have other streams.

Ones for cooling water. And they're all mixed together in what's called a treated water basin and from there it's discharged.

MR. ETTINGER: What's the nature or how constant is your thermal load in the Sanitary and Ship Canal? Is it something that's done all the time or is it something that's maybe one day on, one day off?

MR. HUFF: Because they have the large treated water basin, if you were to go through a below zero period for a week, that thermal component would drop down to your 50 degrees in all likelihood, but if the ambient temperatures are up in the 30 to 40 degrees, then you would see temperatures above that 50 degrees. So the thermal load is relatively constant. I would say what varies is the ambient temperature that affects the effluent temperature.

MR. ETTINGER: Did they ever shut that process down?

MR. HUFF: No. Only on scheduled turnarounds by the refinery and even then the waste water system would still be operational.

MR. ETTINGER: On page 17 of your

testimony, you say "more current fish collection -- data collected by the MWRD after completion of the site from elevated pool aeration systems on the Calumet-Sag Channel has yielded an average of 8.5 species per site, sampling event on the Ship Canal versus 11.2 species on the Calumet-Sag Canal." Should we take from that that the side stream elevated pool aeration worked?

MR. HUFF: Well, I can't answer that specifically. That's one possible explanation which I offered up previously. The Cal-Sag Channel has better habitat quality then does the Ship Canal. So is that part of it or is that the major factor, I can't say.

MR. ETTINGER: Are there tributaries in the Cal-Sag Channel?

MR. HUFF: There are indeed and there really are not on the Sanitary and Ship Canal.

MR. ETTINGER: What are the tributaries in the Cal-Sag?

MR. HUFF: In looking at IEPA, attachment M, tributaries include Crooked Creek, East Stony Creek, the Illinois/Michigan Canal, and

that one surprises me on that list, Midlothian Creek, Mill Creek, Navaho Creek, Saganashkee Creek, Slew, Tinley Creek and West Stony Creek.

MR. ETTINGER: So all of those tributaries would be places for potential habitat for fish in the Cal-Sag --

MR. HUFF: Things like juvenile and spawning periods --

MR. ETTINGER: Right.

MR. HUFF: And then remember that on the Cal-Sag, you don't have quite the vertical sides. You've got some gravel -- that are also submerged as part of the construction. So you have better habitat for those same activities on the Cal-Sag.

MR. ETTINGER: Have you heard of the term cold shock?

MR. HUFF: Cold shock, I presume if you're referring to if a treatment plant were to suddenly stop discharging so that the temperature would drop very rapidly in the receiving stream?

MR. ETTINGER: So you have heard of the term.

MR. HUFF: Yes.

MR. ETTINGER: Is it your understanding that cold shock figures in the Agency's proposal relating to non-summer temperatures?

MR. HUFF: I missed that. If that's indeed the case, I wasn't aware of that.

MR. ETTINGER: Let's look at attachment six and this will present all sorts of challenges in terms of getting --

MR. ANDES: Can I follow up while you're looking for that?

MR. ETTINGER: That would be a great idea.

MR. ANDES: As to the Cal-Sag Channel, Mr. Huff -- first of all, let me ask you. Have you reviewed the forwarded testimony by John Mackey cornering habitat restrictions on the CAWS?

MR. HUFF: I have not.

MR. ANDES: Including his conclusions as to habitat restrictions in the Cal-Sag?

MR. HUFF: I have not.

MR. ANDES: Okay. And is it your impression that if DO were improved on the

Cal-Sag, it would make any significant difference in the biological community?

MR. HUFF: I don't have an opinion on that. The question in my mind is what is limiting the habitat quality on the Cal-Sag, the same on the Ship Canal? Is it habitat? Is it dissolved oxygen? So I cannot answer. I have not looked at that. I mean it could be habitat. I have not looked at that.

MR. ANDES: So you don't have any reason to disagree with Dr. Mackey's conclusion that the two were comparable in terms of habitat?

MR. HUFF: No.

MR. ANDES: Thank you.

MS. WILLIAMS: I don't understand. I though you just said the Cal-Sag had better habitat than the Sanitary and Ship Canal?

MR. HUFF: In general, it does. It has slightly higher QHEI scores and it's got the tributaries coming in and it's got the softer shallow areas. Those are three differences.

MR. ANDES: You're aware that all of those issues were discussed in Dr. Mackey's testimony?

MR. HUFF: No, I have not read his testimony. I'm sorry.

MR. ANDES: Thank you.

MR. ETTINGER: I left your testimony too soon. On the Emerald Shiner, on page 17, you discuss Emerald Shiners also reported to be thermally sensitive. Do I understand you to be saying that the Emerald Shiner fills a similar ecological niche as the blunt edge minnow?

MS. FRANZETTI: I'm just objecting. I think that's vague. I'm not sure what you mean by ecological niche.

MR. ETTINGER: She's objected. If you understand the question, please answer it.

MR. HUFF: My understanding is they do -- they're similar. In essence, they can compete for space in the stream.

MR. ETTINGER: So in a sense, you could add the populations of blunt nose minnows and Emerald Shiners and you'd get an idea as to the sensitivity or rather the total number of heat sensitive fish in an area?

MR. HUFF: I guess the question is why would you stop with just those two? Do you

add up all the other eight RAS species? But you could do that, I suppose.

MR. ETTINGER: But all things created -- being equal, you wouldn't expect to find a whole lot of blunt nose and a whole lot of Emerald Shiners in the same place?

MR. HUFF: Yes, and I think that's true in some situations.

MR. ETTINGER: Okay. I want to go through what has been marked as attachment six and look now at figure 3-1, which is your map. Ms. Diers has gone through some of this. I just want to make sure the sites where they are relative to various important things on the Sanitary and Ship Canal -- on figure 3-1, which I think is page 71 of the whole exhibit, and I don't know what it is in your attachment.

MR. HUFF: Page five.

MR. ETTINGER: What?

MR. HUFF: Page five.

MS. DIERS: Cicero Avenue, that's the hottest part in the Sanitary and Ship Canal because it's right below Fisk and Crawford, right?

MR. HUFF: Yes.

MR. ETTINGER: Does B & O Railroad -- that's below Stickney?

MR. HUFF: I think so.

MR. ETTINGER: Okay. And then does anything important thermally happen between the B & O Railroad and the Illinois Route 83, to your knowledge?

MR. HUFF: Not that I have knowledge.

MR. ETTINGER: So there's no discharge of either cooler or warmer water between those two spots? So we have cites here for Romeo Road and RM6. Was the data collected at RM6 or at Romeo Road?

MR. HUFF: I think they switched sampling locations and that's why you have two different data sets for those two years.

MR. ETTINGER: Where does the Cal-Sag Channel come in here?

MR. HUFF: Upstream of that location.

MR. ETTINGER: Does it come in between Illinois Route 83 and this Romeo Road?

MR. HUFF: Yes.

MR. ETTINGER: Okay. Then looking at this Lockport Lock and Dam site, is that below the Will County Power Plant?

MR. HUFF: Yes.

MR. ETTINGER: Now, the average temperature at Cicero -- I read that as 86 degrees, is that correct?

MR. HUFF: Yes.

MR. ETTINGER: During the summer, is that below the -- what did we call it, the upper incipient lethal temperature for both the blunt nose minnow and the Emerald Shiner?

MR. HUFF: I believe it is, yes.

MR. ETTINGER: Looking now at table 3.2, which has -- it's entitled MWRDGC ambient water quality monitoring program/fish collections. I believe Ms. Diers asked you questions -- or Ms. Diers or Ms. Williams asked you questions about when those fish collections were made and, I believe, you said generally in the summer, is that correct?

MR. HUFF: Yes.

MR. ETTINGER: Do you know whether there is any specific data as to the temperatures

at which those fish were collected?

MR. HUFF: I'd have to go back and look at the raw data and see, but it's possible and likely that there is temperature data.

MR. ETTINGER: Is there any reason to believe that it differs significantly from the average temperatures that you recorded here?

MR. HUFF: Well, sure. If the samples were collected during a prolonged heat spell, then you would have higher temperatures in those waterways.

MR. ETTINGER: But we don't know whether they were collected in May during a cooler than average temperature or during a prolonged heat spell?

MR. HUFF: Right. We didn't look at that.

MR. ETTINGER: Okay. In looking at the Chicago Sanitary and Ship Canal, we see data collected on fish and we have miles at the top here. 27.3 -- going from the right, 27.3. That's Cicero Avenue, right?

MR. FORT: Which table are you looking at?

MR. ETTINGER: I'm looking at table 3.2. And that's at Cicero, right?

MR. HUFF: Yes.

MR. ETTINGER: And 24 river miles, that is -- that's closer to B & O, isn't it?

MR. HUFF: Yes.

MR. ETTINGER: Okay. When we look at the relative abundance of fish at the -- no. Let's forget about relative abundance at the time. If we just look at the 2005 number for gizzard shad, comparing B & O, the cool spot, versus Cicero Road, we see a significant difference?

MR. HUFF: In absolute number of fish.

MR. ETTINGER: And if we look at relative abundance of the Sanitary and Ship Canal for Emerald Shiner and blunt nose minnow, what percentage do we get?

MR. HUFF: The percentage Emerald Shiner plus blunt nose minnow?

MR. ETTINGER: Right.

MR. HUFF: At those stations?

MR. ETTINGER: Right.

MR. HUFF: For 2005?

MR. ETTINGER: Well, no. You give a relative abundance here. I think it collects them for the whole period in your table where it says relative abundance.

MR. HUFF: Okay. That's in the entire Ship Canal.

MR. ETTINGER: That's in the entire Ship Canal relative. Relative abundance of these two cooler more heat sensitive species?

MR. HUFF: Yes.

MR. ETTINGER: The relative abundance is -- math wasn't my best subject, but I think 5.6.7.9 is 13.5?

MR. HUFF: So you're adding which ones up?

MR. ETTINGER: I'm adding Emerald Shiner and blunt nose minnow.

MR. HUFF: Yes.

MR. ETTINGER: And the relative abundance of carp in the Sanitary and Ship Canal is 17.4 percent, that's your understanding of what the Water Reclamation District found?

MR. HUFF: Yes.

MR. ETTINGER: And then we can

compare those numbers with the relative abundance in the Cal-Sag Canal of the more heat sensitive and the less heat sensitive species, couldn't we? You have to make a verbal answer.

MR. HUFF: Okay. Sure, you can do that.

MR. ETTINGER: Okay. We won't bother with that now. Looking at table 3.4, we have relative abundance at river mile 27.3 and 24, am I correct in reading that -- and this is on the Sanitary and Ship Canal, that carp are almost 35 percent at Cicero Road, but are 9 percent at B & O?

MR. HUFF: Yes.

MS. WILLIAMS: Just give me a second. I think I'm done. Can we take, like, a five or ten minute break here?

MS. TIPSORD: Okay. Let's take five minutes.

MR. ETTINGER: Just a few minutes to go over my questions.

MS. WILLIAMS: Is Mr. Andes going to ask any questions?

MS. TIPSORD: He has pre-filed

questions. Let's take ten minutes.

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

MS. TIPSORD: Are we ready to go back on the record?

MR. ETTINGER: Just two things. One that was earlier pre-filed before we re-changed it and I just want to pursue a little light of our mixing zone testimony and then something else that was helpfully pointed out to me that was a mess. So it's your understanding now that the Sanitary and Ship Canal -- I'm sorry. Is it your understanding that the Sanitary and Ship Canal from time to time violates the dissolved oxygen standards that are currently applicable to it?

MR. HUFF: Yes.

MR. ETTINGER: Has that affected the ability of Citgo or other dischargers, to your knowledge, to obtain permission to discharge BOD into the Sanitary and Ship Canal?

MR. HUFF: In the case of Citgo, they have not asked for any increase. So it has not affected it.

MR. ETTINGER: An increase.

MR. HUFF: In loadings.

MR. ETTINGER: Well, does it affect their ability to keep their current loading of BOD?

MR. HUFF: Until such time as a TMDL study is done, it is my understanding that number will remain as is.

MR. ETTINGER: Okay. Let's say, for example, then that worse case scenario from your point of view that we adopted the chloride standard that the Agency is proposing to make applicable to the Sanitary and Ship Canal, would that affect Citgo's ability to discharge chloride before a TMDL study was done?

MR. HUFF: Yes.

MR. ETTINGER: And why is that?

MR. HUFF: Because in an ex-permit cycle, they would determine that you have a waterway that exceeds the water quality standard for chlorides and, therefore, they would set an effluent limit at the water quality standard.

MR. FORT: I think as a clarification here --

MR. ETTINGER: That's fine. Let's have some clarification here. You understand where I'm coming from. It seems like DO is being treated differently from chloride.

MR. FORT: Mr. Huff, when you answered Mr. Ettinger's question about are there dissolved oxygen violations -- I think that was his question -- in the Ship Canal, are you aware of whether or not those are in the vicinity of the Citgo outfall?

MR. HUFF: I have no specific knowledge of that. Maybe if I could expand, too. DO and BOD is treated differently because you can't say that if there are DO violations it's due to the discharge of BOD. There's a lot of factors that go into determining what is causing DO violations as opposed to if you have a chloride violation, it's because there's more chloride in the stimulative capacity. So it is different.

MR. ETTINGER: Getting back to this other issue about standards of standard applicable to the I-55 bridge, I think we agreed that there are chloride violations below the I-55 bridge now, is that correct?

MR. FORT: Can we clarify those violations of the current standards or violations historically?

MR. ETTINGER: Well --

MR. HUFF: I believe the question is of the general use chloride standard?

MR. ETTINGER: Yes.

MR. HUFF: The 500 milligram per liter, that's correct.

MR. ETTINGER: And that's applicable at the I-55 bridge and it has been and it hasn't been changed, is that correct?

MR. HUFF: Yes, sir.

MR. ETTINGER: Okay. And there have been violations of the chloride standard below the I-55 bridge?

MR. HUFF: Yes.

MR. ETTINGER: Has that affected your permits -- I'm sorry. You don't have permits. Has that affected Citgo's permits?

MR. HUFF: No.

MR. ETTINGER: And why is that?

MR. HUFF: Well, because they have not asked for an increase in chloride being

discharged.

MR. ETTINGER: If they were to ask for an increase in chloride, that would preclude them from getting an increase to your understanding?

MR. HUFF: Potentially, yes.

MR. ETTINGER: And if a TMDL were done for chloride, would that potentially affect your discharge?

MR. HUFF: If the TMDL determined that they were -- they should have a reduction in chloride in order to meet the overall water quality on the stream, yes.

MR. ETTINGER: Thank you. That's all?

MS. TIPSORD: Mr. Andes, did the District have any additional questions?

MR. ANDES: No.

MS. TIPSORD: Anyone else have any questions for Mr. Huff?

MS. WILLIAMS: I just have a couple.

MS. TIPSORD: Go ahead, Dr. Lin.

MR. LIN: LPC has some questions about the electrical barrier. I have some

questions too. Has this been effective to control who designed it and how long ago?

MR. HUFF: From what I read, this has been undertaken by the Army Corp. of Engineers. They've had the first barrier up for several years and they just started up a second barrier last month.

MR. LIN: Do you have any idea about the barrier and the fish species?

MR. HUFF: The barrier is intended to stop the transmission of invasive species basically both ways. The one that gets the most publicity is the Asian or big head tarp that is migrating down the Illinois River into the Des Plaines River and the fear of that getting into the Great Lakes.

MR. LIN: My question is do you have any idea if those are undesirable --

MS. TIPSORD: Go ahead.

MR. HUFF: They got the electrical barrier up before the Asian tarp reached that location so to my knowledge they have not found any of the Asian tarp in the Chicagoland waterway yet. So what they have been monitoring is the

migration of this invasive species and it continues to migrate closer and closer to that electric barrier.

MR. LIN: Okay.

MS. TIPSORD: Any other questions?

MS. WILLIAMS: I just had a housekeeping, sort of a housekeeping -- I made some notes on items that Citgo was going to provide and I just wanted to be sure I'm clear. One of the items had to do with temperature data and is it correct that you're going to provide data from the edge of the mixing zones and from the effluents?

MR. FORT: Yes.

MR. HUFF: We can calculate at the edge of the mixing zone what the temperature would be. We have effluent temperatures and we have the mixing zone studies that's been completed. So if you know the upstream temperature at the time you're discharging, you can calculate what the temperature is at the edge of the mixing zone.

MS. WILLIAMS: So when we asked you about whether data had been collected at the edge of the mixing zone, would you like to change that

answer?

MR. HUFF: Well, I'll answer it again. I think that the question was, do we know what the temperature is at the edge of the mixing zone and the answer to that was yes.

MS. WILLIAMS: And we know because it's been modeled?

MR. HUFF: Calculated. Modeled.

MS. WILLIAMS: And where is the effluent when you provide that? Because I just want to be clear because we probably won't be able to cross examine you again on Citgo's responses. When you submit this temperature effluent data, where are those samples going to be coming from?

MR. HUFF: They will be the discharge samples and I believe we have influent temperature data that I will use from the upstream. From those two, I can calculate what will be at the edge of the mixing zone.

MS. WILLIAMS: Is it at the point of discharge or is it an internal outfall where --

MR. HUFF: It's the point of the discharge.

MS. WILLIAMS: Okay. Thank you.

That's all I have.

MS. TIPSORD: Anything further?

MR. FORT: I have one question that I would like to put to the witness that was not asked by the question although it's in the pre-filed questions and this goes to the differences amongst the Ship Canal and other waterbodies in that large area that is so easy to say as being the CAWS as if it were a small group. Mr. Huff, you were asked earlier about the differences amongst those waterbodies in the CAWS and with respect to barges. Have you looked into any differences amongst the Chicago Sanitary and Ship Canal, the Cal-Sag Channel and any other bodies in terms of the frequency of barges?

MR. HUFF: Yes, I have.

MR. FORT: And what are those relative values?

MR. HUFF: At the Lockport Lock and Dam, they have between 9,000 and 12,000 barges annually. The O'Brien Lock and Dam on the Cal Sag is between 4,000 and 8,000 and then at the Chicago Lock into Lake Michigan, there are about one hundred barges per year. So the ship canal

handles approximately double the number of barges that are on the Cal Sag.

MR. FORT: And in your testimony, you were asked some questions about the uniqueness of the Ship Canal as opposed to other bodies of water. And I think your testimony has, like, 19 different factors. Then you go to the thermal loading issue from the power plants and the chloride runoff. So is your testimony on the uniqueness of the Ship Canal all in totality there?

MR. HUFF: It is indeed.

MR. FORT: Thank you.

MR. ETTINGER: Just to follow up one question. Do you know what percentage of the barge traffic in the Sanitary and Ship Canal is moving coal to the Midwest power plants?

MR. HUFF: I do not.

MR. ETTINGER: Thank you.

MS. TIPSORD: Anything else for Mr. Huff? Okay. Thank you, everyone. I will see you all May 20th. We're adjourned.

STATE OF ILLINOIS.)
) SS.
COUNTY OF COOK)

I, Steven Brickey, Certified Shorthand Reporter, do hereby certify that I reported in shorthand the proceedings had at the trial aforesaid, and that the foregoing is a true, complete and correct transcript of the proceedings of said trial as appears from my stenographic notes so taken and transcribed under my personal direction.

Witness my official signature in and for Cook County, Illinois, on this 18th day of May, A.D., 2009.

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