BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S PRE-FILED QUESTIONS TO DAVID THOMAS

1. Have you any experience conducting habitat studies in the CAWS?

2. Could you explain the similarities or common features that the large rivers on which you have worked, including the Kaskaskia River and the lower Delaware River, have with the CAWS?

3. 1st paragraph of Section II states that, "I have evaluated fish habitat using many of the parameters of the Qualitative Habitat Evaluation Index (QHEI) and have reviewed how QHEI is being used in Ohio. I believe it is a sound methodology for assessing physical habitat."

   A. Where have you evaluated fish habitat?

   B. Do any of these rivers or streams have physical characteristics similar to the CAWS?

   C. You state that you have evaluated fish habitat using many of the metrics that are used to calculate the QHEI, but have you used the QHEI to assess fish habitat in these streams or rivers?

   D. Are these natural, modified, or artificial channels?

   E. Are these wadeable or non-wadeable streams?

   F. Can (or should) the QHEI be applied to low-gradient artificial channels?

   G. Can (or should) the QHEI be applied to non-wadeable streams?

   H. Which QHEI metrics do you think would be impacted the most in a low-gradient artificial channel such as found in the CAWS?

   I. Would the thresholds (range of QHEI values) that define an attainable aquatic life use be the same for natural and artificial channels?

J. How about wadeable vs. non-wadeable streams?

K. What is the relationship between the QHEI and water quality?

L. Can you provide examples where the QHEI has been applied to a modified waterway like the CAWS?

M. What are the similarities and differences in physical characteristics between the Upper Dresden Island Pool and the CAWS waterways north of Romeoville?

4. In Section II, paragraph 2 of your testimony, it says that "fish do not need a continuous stretch of good habitat to support life functions. Sunfish and bass, for example, will seek out a firm bottom where they can build nest, spawn, and raise their young." This portion of your testimony is concerning the Upper Dresden Island Pool, however you later assert that you would be surprised if spawning were not also occurring in the CAWS.

A. Did you perform bottom surveys of the CAWS?

B. Are you aware of which portions of the CAWS have adequate firm bottom for spawning?

C. Have you observed spawning nests in the CAWS? On which CAWS waterways have you observed spawning?

D. How does the number and distribution of these isolated firm bottom areas affect a fish species?

5. On page 2 you state that "the habitat in the Upper Dresden Island Pool is sufficient to minimally attain the Clean Water Act." As support, you describe your review of fish habitat information for Dresden Island Pool, and conclude that "the Upper Dresden Island Pool can support a more balanced and diverse fish population." Based on your later testimony (on page 5) you also draw some conclusions about the CAWS.

A. Describe what you mean by "sufficient to minimally attain the Clean Water Act."

B. Did you conduct a similar evaluation for the CAWS?

C. If so, what did you conclude?

D. What do the QHEI scores in the CAWS tell you?

E. Do you believe that habitat in the CAWS is also "sufficient to minimally attain the Clean Water Act"?

F. Describe the differences between Upper Dresden Island Pool and the CAWS in terms of physical habitat.

G. Describe the differences between Upper Dresden Island Pool and the CAWS in terms of species abundance and diversity.

6. In Section II, paragraphs 1 and 3, you agree that a QHEI score of 45-60 may be able to meet Clean Water Act Goals. Is 45-60 the range of QHEI scores chosen by IEPA for Aquatic Life Use A waters?

7. In Section II, paragraph 2, you state that "One must consider the range of scores shown for an area, the predominant habitat characteristics as well as the presence of various micro-habitats, the factors that might be influencing QHEI scores and one's knowledge of the species in the system."

   A. Are you aware of any studies that have been done to identify the predominant habitat characteristics or various micro-habitats in the CAWS?

   B. Does the QHEI adequately assess micro-habitats?

   C. How would you characterize the presence of microhabitats under the limitations of the CAWS—for example, confined channels, managed flows, uniformly shaped channels, etc.?

8. In Section II, paragraph 3, you state, "Temperatures present in the Upper Dresden Island Pool at times during the summer are sufficient to cause avoidance and limit the carrying capacity of the system."

   A. Please cite references for this assertion.

   B. Are high summer temperatures in the Upper Dresden Island Pool due to thermal loading (e.g. power production) or exposure of the Upper Dresden Island Pool to direct solar radiation?

   C. Do temperatures in other pools/lakes also increase in the summer, and if so, are the temperature increases in the Upper Dresden Island Pool significantly different (higher or lower) than temperature increases in other pools/lakes?

   D. You mention avoidance in your testimony. Don't fish avoid unfavorable conditions in natural systems?

   E. If these unfavorable conditions are ephemeral (short duration), do not the fish return when conditions are more favorable?

   F. When do these fish spawn and when are larval/young of the year fish present?

   G. How does the timing of these life-stage activities compare to the timing of summer thermal and dissolved oxygen events?

   H. In natural systems, does the fish community structure (diversity/species richness) remain constant for the entire year, or are there seasonal changes in fish community structure?

I. How do the seasonal changes in fish community structure in the Upper Dresden Island Pool compare with seasonal changes in other pools/lakes?

9. Section II, paragraph 4 of your testimony says, "I have not seen data that demonstrates that sediment toxicity is a major factor limiting the aquatic life potential of this system."

   A. What sediment toxicity or sediment chemistry data have you reviewed from this system?

   B. This statement is strictly referring to the Upper Dresden Island Pool, correct?

   C. Have you reviewed sediment data for the CAWS, and if so, do you believe this statement is also true for the CAWS?

   D. If so, do you believe the metals concentrations are below the threshold where direct toxicity is a problem? Can you provide supporting evidence for this? Same question related to bioaccumulation. What is your evidence for this?

   E. Have you reviewed PCB and dioxin data and potential impact of bioaccumulation on aquatic health?

10. In the first paragraph beneath the *Existing Uses* subheading, you state "the white sucker, which is a temperature-sensitive species, was collected in the Dresden pool every year since 1994. The logperch, also a temperature-sensitive species, was collected fairly regularly in the pool." If these temperature-sensitive species are already present in the Upper Dresden Island Pool, why are additional thermal regulations necessary?

11. In Section III, the first sentence states, "I believe these waterways [the CAWS] could support tolerant or intermediately tolerant species including the early life stages of those species, based on my review of the habitat data used by IEPA and my personal knowledge of the Chicago Area Waterway System."

   A. Please describe for us what your personal knowledge of the CAWS consists of as related to this statement.

   B. Have you reviewed water quality data for the CAWS, and considered it in formulating this statement?

   C. Have you reviewed data related to sediment character and contamination in the CAWS and considered it in formulating this statement?

   D. Provide examples of intermediately tolerant species.

   E. What proportion of tolerant and intermediately tolerant species indicates support?

   F. Does this statement relate to existing or future conditions with improvements, or both?

G. Explain why you believe that the CAWS can support tolerant or intermediately tolerant species including early life stages.

H. Provide specific examples of physical habitat data used by IEPA that could support early life stages of intermediately tolerant fish species.

I. Describe the physical habitat and identify where in the CAWS the habitat currently exists that will support intermediately tolerant species, including early life stages.

J. Please list the "intermediately tolerant species" whose early life stages you believe to be present in the CAWS.

K. If this is the case, would you agree that water quality is already appropriate to support tolerant or intermediately tolerant species, including the early life stages of those species?

L. If these species are already spawning successfully in the waterway, and if water quality is maintained at current levels, isn't this an indicator that these fish communities are self-sustaining?

M. What evidence do you have to suggest that the CAWS contain early life stages of relatively sensitive species such as smallmouth bass and channel catfish, on which the USEPA dissolved oxygen criteria are based?

N. Have you reviewed the extensive continuous dissolved oxygen data that the District has collected throughout the CAWS over the past 8 years to assess the current dissolved oxygen conditions and to determine whether current conditions are suitable for early life stages of fish species that you expect could thrive in the CAWS?

O. What impact do you believe the dramatic drops in dissolved oxygen during wet weather would have on fish productivity in the CAWS?

P. Do you believe that the incremental increases in dissolved oxygen proposed by IEPA will produce a measurable difference in fish diversity and species richness, or fish spawning activity?

Q. If so, where are the new species going to come from?

R. What effect will the electric field barrier north of the confluence of the Des Plaines River and the Illinois Waterway have on fish migration?

S. Have you reviewed the extensive sediment chemistry and toxicity, and benthic invertebrate data that the District has collected throughout the CAWS during 2001-2007 to assess how the sediment conditions and limited macroinvertebrate food source might affect fish populations?

T. Please explain what constituted your "review of the habitat data used by IEPA."

U. Did you review any other data besides Attachment R, the CAWS habitat evaluation by Edward Rankin?

V. Were you aware of numerical errors in this report?

W. How many habitat characterization points would you recommend to adequately assess the 78 miles of the CAWS?

X. Do you feel 23 sampling points in 78 miles is sufficient as the basis for a rulemaking of this significance?

Y. Would a more comprehensive assessment of sediment chemistry and toxicity in the CAWS be useful for the UAA?

Z. Would projections of dissolved oxygen under various scenarios be useful?

AA. Would a better, more CAWS- tailored habitat index be more appropriate to develop aquatic life use designations?

BB. Does your "personal knowledge" of the system agree with the spatial assignments of use that IEPA has proposed?

12. In Section III, you state, "In fact, I would be surprised if spawning does not currently take place in those reaches for those species that are common in the waterways."

A. Explain why you believe that spawning does currently occur in the CAWS. What evidence do you have?

B. Can fish "nest, spawn, and raise their young" in a flocculent bottom? Do you believe that a firm bottom exists in the CAWS?

C. Have you reviewed any scientific fish data or physical habitat data showing or demonstrating that spawning does currently occur in the CAWS?

D. Did you review data related to benthic diversity and/or zooplankton in the CAWS? If so, what is the condition and how does it impact the fishery?

E. Do you agree with the statement on Page 1-13 of the CAWS UAA: "Good quality aquatic habitat in CAWS is limited and the waterways would need to undergo major habitat creation and or restoration to improve the fish and macroinvertebrate assemblages?"

F. Do you agree with the statement on page 5-3 of the CAWS UAA: "Improvements to water quality through various technologies, like re-aeration may not improve the fish communities due to the lack of suitable habitat to support the fish

populations. Unless habitat improvements are made in areas like the CSSC, additional aeration may not result in the attainment of a higher aquatic life use?"

13. You state that you "reviewed the Representative Aquatic Species [RAS] 'Secondary Contact' list used by IEPA to represent the CAWS-A waterways," and that all of the species are present.

A. The term "secondary contact" applies to recreational standards. Please explain your use in this context.

B. Can you explain how IEPA used the RAS list?

C. Were these RAS 8 species used to develop the proposed dissolved oxygen criteria?

D. You state the "The temperature sensitive white sucker was found in the CSSC, North Branch, and Cal-Sag Channel." Under current temperature regime, please describe your knowledge of white sucker fish kills over the past 5 years in these waterways. If there has been any, to what were the fish kills attributed?

E. If there haven't been any sucker fish kills, how do you think the temperature-sensitive white suckers were able to survive under the current conditions?

F. How would you interpret the highly inconsistent presence of species like white sucker within segments of the CAWS as described within the UAA? For example, the species was observed only once (1999) within the CSSC and three times (1993, 1994, 1995 and 2001) within the North Branch of the CAWS during the ten year sample period.

G. Do you believe that the tolerance assignments for species like white sucker are appropriate?

H. You mention the temperature sensitivity of the species yet the UAA assigns the species to a tolerant category. What about other species assignments?

I. What approach do you recommend for species assignments to the tolerant or intermediately tolerant categories under the IEPA proposed designations?

J. Do you believe that the distribution assignments for early life stages tolerant and intermediately tolerant species are appropriate for the entire CAWS? That is, based on your personal knowledge of the system, are there areas within the proposed Use A waters where an early life stage assignment is not appropriate?

K. Conversely, are there areas within the proposed Use B waters where an early life stage assignment is not appropriate?

L. What would your approach for determining early life stage presence include?

M. Do you believe that IEPA targeted specific fish species with their proposed standards? If so, list the fish targeted for each standard proposed for each aquatic life use designation.

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Respectfully submitted,

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