**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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

**NOTICE OF FILING**

To: ALL COUNSEL OF RECORD
(Service List Attached)

**PLEASE TAKE NOTICE** that on the 23rd day of February, 2011, I, on behalf of the Metropolitan Water Reclamation District of Greater Chicago (the "District"), electronically filed with the Office of the Clerk of the Illinois Pollution Control Board, **the District's Testimony Questions for Dr. David L. Thomas.**

Dated: February 23, 2011

**METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO**

By: */s/ Fredric P. Andes*
One of Its Attorneys

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**PROOF OF SERVICE**

The undersigned attorney certifies, under penalties of perjury pursuant to 735 ILCS 5/1-109, that I caused a copy of the foregoing, **Notice of Filing** and **Metropolitan Water Reclamation District of Greater Chicago's Testimony Questions for Dr. David L. Thomas**, to be served via First Class Mail, postage prepaid, from One North Wacker Drive, Chicago, Illinois, on the 23rd day of February, 2011, upon the attorneys of record on the attached Service List.

*/s/ David T. Ballard*
David T. Ballard

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**METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S TESTIMONY QUESTIONS FOR DR. DAVID L. THOMAS**

1. Page 1. Please provide details associated with your boat tour in July 2009.

   a. How many miles?

   b. What reaches were covered, and which portions of those reaches?

   c. What were your methods for recording observations?

2. Page 1. You express surprise that LimnoTech didn't look at percentage of cross sectional area of the reach that was under 4 ft. in depth.

   a. LimnoTech's initial list of morphological features included 36 channel shapes, most of which included some direct measure of depth characteristics. Also included were numerous indirect depth characteristics such as shallow substrates, bank angles, and macrophyte cover. Why would these metrics (of shallow areas) be less representative than an arbitrary 4-foot depth?

   b. Most fisheries biologists are aware of the limitations of electrofishing, yet it is still a widely accepted method for abundance and diversity determinations. However, 4 ft. seems like an underestimate for MWRD's electrofishing equipment and the conductivity in the CAWS.

      i. How did you arrive at 4 ft? Can you provide citation(s)?

      ii. Why would you expect 4 feet to be meaningful for this system?

      iii. Did you consider the conductivity, clarity, or limited shallow habitats in the CAWS when you arrived at 4 ft?

      iv. Have you ever utilized electrofishing in the CAWS?

v. How do you know that the electrofishing in the CAWS is only effective to about a depth of 4 feet?

c. Are you aware that two of the four metrics that were found to be the most important physical habitat variables that were negatively correlated with fish (maximum depth of the channel and the amount of vertical walled banks) are basically the inverse of the parameter you are suggesting?

3. Page 2. You state that "On the boat tour that I took on July 31, 2009 I saw both floating aquatic vegetation in the Cal-Sag channel as well as some emergent vegetation growing in the water near the shoreline."

a. How familiar are you with the CAWS?

b. Where did you begin your boat ride? On which waterway?

c. Did someone make you aware of when you entered the Cal-Sag Channel?

d. Is it possible you were on the Little Calumet River when you saw the vegetation?

e. What kind of floating aquatic vegetation did you observe?

f. Where did you see this vegetation in the Cal-Sag (landmark or bridge)?

g. What kind of emergent aquatic vegetation did you see?

h. Did you happen to take any photos of the vegetation in the Cal-Sag? If so, please produce them.

i. In your opinion, what percentage of the Cal-Sag had the conditions that you described? What data are you basing your opinion on?

j. Were these locations representative of the dominant conditions present in the Cal-Sag reach?

k. Are you aware that LimnoTech's stations were selected to be representative of the dominant conditions?

l. How extensive was the floating aquatic vegetation (% of shoreline) and how extensive was the emergent vegetation (% of shoreline)?

m. Where were these aquatic macrophyte beds observed?

n. What type of substrates were associated with these aquatic macrophytes?

o. How does the frequency and abundance of floating and emergent aquatic macrophytes in the Cal Sag Channel compare with the upper North Branch of the Chicago River and the North Shore Channel?

p. How do the dominant bank edge substrates in the Cal Sag Channel compare with the bank edge substrates in the upper North Branch of the Chicago River and the North Shore Channel?

4. Page 2. You state that you "observed some logs and tree ranches hanging in the water, a potential macroinvertebrate and fish habitat that was essentially absent from the waterway according to the LimnoTech report."

a. How common was this along the Cal Sag channel shoreline and how deeply submerged were these tree branches?

b. What is the height of the banks above the water surface in the Cal Sag Channel?

c. What are the dominant materials exposed in the banks of the Cal Sag Channel and are the banks gently sloping or vertical?

d. Are there trees growing at the waters edge or at the top of the channel walls?

e. Were there any completely submerged trees or branches observed on the bottom of the Cal Sag channel during Dr. Thomas' boat tour?

f. How does the frequency and abundance of woody debris in the Cal Sag Channel (hanging and/or submerged) compare with the upper North Branch of the Chicago River and the North Shore Channel?

g. What are the dominant bank materials in the upper North Branch of the Chicago River and the North Shore Channel?

h. Are you aware that channel maintenance occurs routinely in the CAWS and fallen trees are often removed?

i. Are you aware that Limnotech did look at instream cover, and that it was one of the final 12 habitat variables but not one of the six variables found to be most correlated with fish data?

j. If the segments where you observed these conditions is small, would you think that these locations would have a significant influence on the average macroinvertebrate and fish conditions present in the Cal-Sag? If yes, please elaborate on why you think a small amount of habitat, that is only periodically present due to channel maintenance, could significantly influence these populations.

5. Page 2. You refer to “bank pocket areas,” and additional habitat that may be created due to deterioration of the bank walls.

   a. While there are some areas where a portion of the limestone walls are crumbling and creating small “coves” of rubble that provide habitat, what percentage of the CAWS is affected by this?

   b. Is it foreseeable that enough of the walls will be allowed to crumble that would create significant amounts of habitat when the system is used for navigation?

   c. What is the cause of the “natural erosion” of channel banks in the CAWS? Is this similar to erosion that occurs in natural rivers and streams?

   d. How extensive is this “natural erosion” and what is the rate at which this additional habitat is being created?

   e. Will this “natural erosion” create habitats that are similar to those found and in natural rivers and streams?

   f. Will this type of habitat be used by only a few species or by many species?

   g. How might these species use this type of habitat?

6. Page 2. Regarding Hester Dendy samplers, you seem to be criticizing that the larval samplers only take a “sample” of the full range of macroinvertebrates that may be in the water. Isn’t that the essence of “sampling,” since it is not possible to collect every invertebrate? As a INHS biologist, didn’t you practice “sampling?”

7. Page 2-3. You state as follows: “My experience on the Kaskaskia River with Ponar samples was that there were relatively few macroinvertebrates in the soft substrates in the river, which is the type of area studied here.”

   a. So you agree that very few macroinvertebrates can live in soft substrates?

   b. What percentage of the Kaskaskia River is embedded in silt?

   c. Are you aware of what percentage of the CAWS are either entirely silt or embedded in silt?

   d. If silt is the substrate that is vastly dominant throughout the system, wouldn’t a ponar be the appropriate way to sample that strata?

   e. Have you ever assessed the sediment characteristics in the CAWS in order to evaluate what the best sampling techniques would be?

f. Are you aware that the likely explanation for EPT not being found in the ponars is noted on page 101 of the Limnotech Habitat Evaluation Report: "The lack of EPT taxa in ponar samples suggests that lack of suitable substrate is a physical habitat limitation for benthic invertebrates."?

8. Page 3. You note that "toxic sediments may have played a role…." Doesn't this fact support the conclusion that there are limits on taxonomic diversity that can occur in the CAWS?

9. Page 3. You state that "[a]n accurate analysis of the relationship between fish and water quality depends on an adequate and representative sampling of the fish population in each of the reaches. As shown in the IDNR comment filed October 2010 (PC #505), rotenone collections taken in the CSSC and Little Calumet River reveal that many species in these systems were under-sampled or not sampled at all by electrofishing."

a. Isn't electrofishing the most comprehensive and cost-effective method for sampling fishes in non-wadeable systems?

b. Are you suggesting that future sampling on aquatic systems be conducted using rotenone collections?

c. Is the application of rotenone to a 5.5 mile reach of river a standardized sampling technique?

d. What was the scientific basis for the rotenone sampling events?

e. How were the fish collected and evaluated?

f. Were established fish sampling and evaluation protocols systematically used and metrics calculated?

g. How many other rivers or waterways have been sampled in this way?

h. Is this technique commonly used to sample natural rivers?

i. What indices have been developed based on this type of sampling protocol?

j. Do you have any experience comparing results from multiple rotenone sampling events within natural rivers? If so, how do the sampling results from natural rivers compare with the rotenone sampling results from the CAWS?

k. Is there a scientific basis for comparing data and indices developed using a standardized sampling protocol (such as electrofishing) with data from an unstandardized sampling protocol (such as rotenone)?

l. Was the development of the IEPA Index of Biotic Integrity (IBI) based on rotenone sampling?

m. What data was used as the basis for the development of the IEPA IBI? How does this relate to the establishment of Aquatic Life Use categories?

n. You state that fish may migrate long distances to find suitable habitat conditions. What effect does the operation of the aquatic nuisance species dispersal barriers have on fish migration within the CSSC?

o. Is the rotenone sampling event in the CSSC representative of the entire CAWS?

p. Are inferences and conclusions based on the rotenone sampling events applicable to the entire CAWS?

10. Page 3. You point out that IDNR reported that "12 of the native species found in December 2009 sampling in the CSSC were not reported in the UAA for this area (CDM 2007)."

a. Are you aware that the CDM report only included District data from 2001-2006?

b. Are you aware that IDNR did not review or include the District's more recent fish collections?

c. Did you review those more recent fish collections by the District?

d. Are you aware that the District has collected flathead catfish, grass pickerel, skipjack herring, smallmouth buffalo, black buffalo, tadpole madtom, white crappie, and yellow perch in the CAWS, but not necessarily in the CSSC?

e. Are you aware that the District has collected smallmouth buffalo, grass pickerel, northern pike, sauger, smallmouth bass, tadpole madtoms, walleye and yellow perch in the DesPlaines River, which is probably where a lot of the fish that were killed in the rotenone event came from?

f. Are you aware that the IDNR table to which you are referring does not reflect actual fish counts, but rather either "observations" by the IDNR, meaning they may not have even keyed out the fish, but just identified as they threw them in the garbage or saw them float by, or ACE dumpster counts, some of which were collected at Ruby Street, which is not even in the Lockport Pool?

g. Did you consider that combining these samples could lead people to believe that there were species present in the CAWS that in fact are only present in a free-flowing Lockport Pool?

h. Is the fisheries below the Lockport Dam subject to the same constraints of the CSSC?

i. If you based an aquatic life use using fish from below the dam, could you be setting an unattainable goal for the CSSC?

j. Are you aware that there were no smallmouth bass counted in the dumpsters, that they were only "observed" by IDNR/IEPA biologists?

k. Are you aware that no smallmouth bass were counted in the CSSC dumpsters after the December 2009 rotenone event?

11. Page 3. You state that steelcolor shiner is considered by the state (Bertrand, Hite and Day 1996) to be intolerant of degraded water quality."

a. Are you aware that the steelcolor shiner is considered as intermediately tolerant by the USEPA, Indiana, Ohio, and IEPA?

b. Are you aware that no steelcolor shiners (caught by electrofishing in 2008) were collected in either of the rotenone events in the CSSC or Little Calumet?

12. Page 3. You state that increased DO at SEPA stations attracts fish. Is it also possible that the fish are attracted because the SEPA stations provide a unique habitat not naturally found in the CAWS, which includes submerged weirs, boulders and shallows?

13. Page 3. You state that largemouth bass and channel catfish were attracted to the SEPA stations, and you conclude that improved DO levels might be particularly beneficial to "moderately intolerant" species such as these. What is your basis for classifying these species as "moderately intolerant"?

14. Page 4. You note that fish communities improved in the CAWS between 1974 and 1996 as water quality improved, and you conclude that improving water quality more will continue to improve fisheries.

a. What do you mean by "water quality?"

b. Is it possible that removing the chlorine levels from previous disinfection practices was the key reason why those fish communities improved?

c. Are you assuming that improving DO levels will result in more fish in the CAWS? What is your basis for that assumption?

d. What scientific evidence did you use to reach your conclusion?

15. Page 4. You state that you are "convinced that selective habitat improvements could significantly help at least some of the fish species in the CAWS…"

    a. How do you explain the fact that this statement conflicts with research by LimnoTech that indicates otherwise?

    b. Do you have any scientific evidence on which to base this conclusion?

    c. What do you mean by "significantly help"?

    d. Have you estimated the cost of making these improvements and compared them with the District's reports? If so, what were the bases of your cost estimates?

    e. Has there been any evidence that the floating bed of vegetation that was placed in the Chicago River has improved the fish community?

16. Page 4. You agree with IDNR's statement that "the CSSC is capable of supporting a diverse, healthy, and reproducing population of fish comprised of a high percentage of moderately tolerant species in adult and early life stages." IDNR also found that the Little Calumet River supported "a diverse assemblage of species including the intolerant smallmouth bass (N=45)".

    a. If the CSSC is already capable of "supporting a diverse, healthy, and reproducing population of fish" and "a diverse assemblage of species including the intolerant smallmouth bass… ", doesn't this demonstrate that current water quality standards are adequate and that water quality (as shown in the CAWS Habitat Evaluation Report) is <u>not</u> a major limiting factor within the CAWS?

Dated: February 23, 2011

Respectfully submitted,

**METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO**

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