

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 PLAINES)
RIVER: PROPOSED AMENDMENTS TO)
35 Ill. Adm. Code Parts 301, 302, 303 and)
304)

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO'S PRE-FILED QUESTIONS TO WILLIAM VAN BONN

1. Are you familiar with the Chicago Area Waterway System (CAWS)? Please describe your experience on the CAWS.
2. On page 1 of your testimony, you state that the “massive influx of effluent from wastewater treatment plants” is one of the notable human impacts on the CAWS. Yet you also mention reversing the flow of the Chicago River. Did you consider the relative wildlife impacts of the dramatic physical alterations to the CAWS, which also include channelization and making reaches straighter, wider and/or deeper to accommodate shipping and other commercial purposes?
3. **On page 2, paragraph 2**, you state, “The proposed rules mandate that Metropolitan Water Reclamation District of Greater Chicago (MWRD) dramatically reduce pathogens that it discharges into our waters by disinfecting approximately 1.17 billion gallons of effluent daily at its Calumet, Stickney and North Side wastewater treatment plants.” Are you aware that the proposed rule by IEPA mandates that MWRD disinfect to reduce the number of fecal coliforms, which are fecal indicators and not pathogens?
4. Are you aware of any pathogens that have been found in the final effluent from the Calumet, Stickney, and North Side water reclamation plants (WRPs) that discharge to the CAWS?
 - A. If so, do you know the present level of pathogens in the final effluents from the MWRD WRPs?
 - B. If so, how do you know?
5. **On page 3, last sentence** you make the statement that “Natural systems are complex and subject to multiple factors.”
 - A. Would you explain what these factors are?
 - B. How do these factors for a natural system compare to the factors for the man-made canals of the CAWS?

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6. **On Page 4, paragraph 2, sentence 3,** you state, “From this perspective, it is not hard to appreciate how disinfecting wastewater will lead to a more natural, balanced, healthy ecosystem.”
 - A. Explain how disinfecting treated wastewater at the North Side, Stickney, and Calumet WRPs will lead to a more natural, balanced aquatic ecosystem in the CAWS.
 - B. How would the discharge of residuals from disinfectants and disinfectant by-products impact the ability to achieve a more natural, balanced healthy ecosystem?
 - C. Are you aware that response of the bacterial community to the post-disinfection environment will be influenced by bacterial repair, recovery, and regrowth, and that collectively, these processes may yield diminished water quality relative to a situation in which disinfection is not practiced?
 - D. How would the generation of energy required to support disinfection contribute to further global climate change and impact local wildlife of the CAWS?
7. Page 4, paragraph 3 of your testimony references the Exxon Valdez event and its impact on sea otters. How were the sea otters negatively impacted: was it by bacterial pathogens or by the oil?
8. Page 3, paragraph 4.
 - A. What are the studies that you reference regarding parasites from wastewater treatment plant effluents as being the most common cause of disease and death in sea otters off the California coasts?
 - B. Were there any other causes?
 - C. What level of treatment did the wastewater receive prior to being discharged to the sea?
 - D. Were these effects due to wastewater effluent discharge or to the now- banned practice of ocean disposal of raw sludges?
 - E. Do you have data showing which parasites were found in treated secondary effluents as opposed to raw or partially treated sewage?
9. **Page 4, paragraph 5.** Describe your experience on the CAWS and LDPR generally and specifically as to river otters.
 - A. You state that river otters were indigenous to the CAWS. Much of the CAWS are man-made and had no previous indigenous aquatic life. Please provide scientific evidence showing that rivers otters were indigenous to the CAWS.

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- B. What do river otters eat?
 - C. Does the CAWS have adequate food sources for otters?
 - D. On what data do you base this?
 - E. What kind of hunting habitat do river otters require?
 - F. What physical habitat is required for a successful population of river otters?
 - G. Your testimony references a single sighting of a river otter in the CAWS. Was the person reporting this sighting a trained biologist who could correctly distinguish a river otter from other mammals?
 - H. Is there any confirmed population of river otters in the CAWS?
10. **Page 4, paragraph 5.** You state “If we want otters and other native species to successfully return to the area and once again be a part of our life experience, it is important to understand what organisms threaten their health, and how we can avoid needlessly tipping the balance in favor of those threats.”
- A. Is it possible that something other than bacteria may be keeping river otters from colonizing the CAWS?
 - B. Have you seen a river otter in the CAWS?
 - C. How many river otter sightings are you aware of in the last year?
 - D. Are you aware of any river otter census performed in the CAWS ever?
 - E. Are you suggesting that river otters be introduced into the CAWS urban riparian areas?
 - F. If so, please explain why you think this is a reasonable, sustainable action.
 - G. Wouldn't introduction of river otters to the CAWS lead to incompatible interactions with humans in an urban setting?
 - H. There is presently a problem with overpopulation of white tailed deer in Cook County Forest Preserves. Are you not running the same risk by introducing river otters?
 - I. What does the first word, Kimber, refer to in the second to last sentence? It is not listed in the indicated reference.
11. **Page 5, paragraph 4.** Your testimony discusses toxoplasmosis, which is caused by a parasite in cat feces. You state that “cat feces in discarded litter has been found to contaminate wastewater.”

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- A. What is the basis for this statement, and what scientific support can you offer to show that the parasite is present in treated effluent from a municipal wastewater treatment plant?
 - B. What is basis for the statement that discarded cat litter has been found to contaminate wastewater?
 - C. Do you know that according to CDC,¹ Toxoplasmosis is a disease that can come from cats, but people are more likely to get it from eating raw meat or from gardening?
 - D. Do you have any data which associates any Toxoplasmosis outbreak with treated wastewater effluent?
12. **Page 6, paragraphs 3 and 4.** Your testimony about giardia and cryptosporidium references studies on marine ecosystems.
- A. Are you aware of any studies on river otters in fresh water ecosystems?
 - B. What does it mean that giardia and cryptosporidium have been found in otter feces?
 - C. Can human sources of giardia and cryptosporidium be distinguished from other sources, or could the source be from other wildlife?
13. **Pages 7 and 8, Bacteria: Salmonella, Streptococcus, and Mycobacteria-Tuberculosis.**
- A. Several cases of otters in captivity or zoos having bacteria-associated problems are cited. Is it correct that the sources of the bacteria were not wastewater treatment effluents?
 - B. Do you know that similar concentrations of Salmonella spp., protozoan parasites, and enteric viruses measured in the CAWS downstream of MWRD WRP outfalls were also detected upstream of the same MWRD WRP locations during dry weather conditions? [The evidence is in the final risk assessment report² Tables 3-5a, 3-5b, 3-5c, 3-6 and 3-7.]
14. **On page 8, paragraph 3,** you state that disease outbreaks are often associated with contaminated water.
- A. Do you have data indicating any disease outbreaks associated with the discharge of treated secondary effluent in fresh water systems?

¹ <http://www.cdc.gov/toxoplasmosis/>

² <http://www.mwrddgc.dst.il.us/RD/UAA/GEOSYNTEC.RISKASSESS.%20Final.pdf>

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15. How could you prove that low concentrations of pathogens detected in the CAWS locations both upstream and downstream of the District WRPs are viable and/or infective pathogens likely to cause detectable health effects?
16. How can you prove that the effluent disinfection will lead to effective control of pathogens (viruses and protozoa)?
17. You cite an on-line³ reference that is in context to microbial source tracking.
 - A. The article actually appears to indicate that the measurement of fecal indicator bacteria neither defines what pathogens are present, nor defines the sources of these bacteria. Is that correct?
 - B. If so, aren't you misinterpreting the article in your testimony?
18. **Page 9 Conclusions.**
 - A. Considering the other sources of pathogen loading to the CAWS, such as stormwater runoff and combined sewer overflows, do you think that disinfection at the treatment plants would make a meaningful difference in wildlife exposure to pathogens?
 - B. Did you consider whether disinfection would result in reduced total pathogens in the CAWS, rather than only the indicator parameter fecal coliform?
19. **Page 5, paragraph 5.** You refer to a book by Dr Mark Jerome Walters on human influence on the natural world and resulting diseases.
 - A. What are the six modern plagues?
 - B. Would you associate these plagues with the water quality in the CAWS or some other factors?
 - C. While the risks associated with untreated sewage are well known, do you have data or know of any reports of plagues being associated with treated secondary effluent in the CAWS or anywhere else?
 - D. Do you agree that manmade intervention such as "disinfection" will change the natural CAWS environment and will breed tougher unnatural bugs—"microscopic predators"?

³Yan, T. and M. J. Sadowsky. (2007) Determining sources of microorganisms in waterways. *Environmental Monitoring and Assessment*. Online first (DOI:10.1007/s10661-006-9426-z).

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20. **On page 9, last paragraph**, you state that, "If effluent from wastewater treatment plants is not disinfected, it will contain pathogens that potentially cause disease in both wildlife and humans."
- A. What sorts of wildlife impacts would be caused by disinfection byproducts?
 - B. Do you have any qualifications to speak to the effects of District effluent on humans?
 - C. How do you know that wastewater effluent that is not disinfected will cause disease in wildlife and/or humans?
 - D. Do you know of any scientific evidence that any current wildlife populations within the CAWS are suffering from diseases caused by District effluent?
 - E. Are you aware of any toxicological (wildlife and/or humans) field studies conducted in the CAWS that show that effluent from District WRPs that is not disinfected will cause disease in wildlife and/or humans?
 - F. Are you aware that a recent study (i.e. Blatchley et al. 2007)⁴ suggests that the long-term effects of disinfection may actually be detrimental to water quality, in terms of bacterial composition?
 - G. Published research strongly suggests that conventional disinfection processes are not effective for control of the risks of disease transmission, particularly those associated with viral pathogens. A paper published in Australia (Razzell, WE. *The Realities of Disinfection in Water and Wastewater Treatment*, 1990)⁵ also concluded that treatment of discharges of effluent from sewage treatment plants having secondary treatment is a waste of resources and a threat to the environment apart from being ineffective as practiced conventionally. Are you aware that inactivation of indicator bacteria does not guarantee an acceptable degree of inactivation among waterborne pathogens?
 - H. What evidence do you have that disinfection as currently practiced will dramatically reduce levels of pathogens in the CAWS?
 - I. You state that, "*Wastewater that is collected, concentrated and discharged by the billions of gallons into the CAWS artificially tips the balance in their favor.*"
 - (1) Do you believe that wastewater is concentrated before being discharged into the CAWS?

⁴Blatchley, et al. (2007). *Effects of Wastewater Disinfection on Waterborne Bacteria and Viruses*. Water Environment Research, Volume 79, Number 1, pp 89-91.

⁵ Razzell, WE, *The Realities of Disinfection in Water and Wastewater Treatment*. Institute of Engineers, Australia, 1989. National conference publication.

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- (2) Are you aware that wastewater treatment processes do not concentrate but remove up to 99% of contaminants from raw wastewater?

Dated: August 25, 2008

Respectfully submitted,

**METROPOLITAN WATER RECLAMATION
DISTRICT OF GREATER CHICAGO**

By: _____

Fredric P. Andes

Fredric P. Andes
David T. Ballard
BARNES & THORNBURG LLP
Suite 4400
One North Wacker Drive
Chicago, Illinois 60606
(312) 357-1313
482449v1