

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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JAN 05 2011

STATE OF ILLINOIS  
Pollution Control Board

PC#568

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 )

R08-09 (Sub-docket B)  
(Rulemaking – Water)

NOTICE OF FILING

ORIGINAL

To: John Therriault, Clerk  
Marie Tipsord, Hearing Officer  
James R. Thompson Center  
Illinois Pollution Control Board  
100 West Randolph Street, Suite 11-500  
Chicago, Illinois 60601

**SEE ATTACHED SERVICE LIST**

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board POST HEARING COMMENTS OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, a copy of which is herewith served upon you.

ILLINOIS ENVIRONMENTAL  
PROTECTION AGENCY

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**THIS FILING IS SUBMITTED ON RECYCLED PAPER**

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ORIGINAL

**POST-HEARING COMMENTS OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

The Illinois Environmental Protection Agency ("Illinois EPA" or "Agency"), by and through its attorneys, hereby submits its Post-Hearing Comments pursuant to the Illinois Pollution Control Board's ("Board") August 5, 2010 Opinion and Order in the above-captioned rulemaking proceeding.

**I. Procedural Background**

On October 26, 2007, the Agency filed a rulemaking proposal to update the designated uses and accompanying water quality standards for the waters currently designated for Secondary Contact and Indigenous Aquatic Life Use which includes most waters in the Chicago Area Waterway System ("CAWS") and Lower Des Plaines River. In addition to proposed changes to the Board regulations, the rulemaking submittal included a lengthy Statement of Reasons and Attachments A through WW. On November 1, 2007, the Board accepted the Agency's proposal for hearing and granted the Agency's motion to hold hearings in Chicago and Joliet on the proposal.

On December 21, 2007, the Agency submitted the pre-filed testimony of four witnesses in support of its proposal. Ten days of hearings were held to question the

Agency witnesses on the proposal. This was followed by numerous days of additional hearings on various aspects of the Agency's proposal including its technology-based effluent disinfection requirement. On March 18, 2010, the Board issued an order dividing R08-09 into four separate subdockets.

Pursuant to the Board's March 18, 2010 Opinion and Order, subdocket B "will address issues relating to disinfection and whether or not disinfection may or may not be necessary to meet the designations proposed." R08-09 (March 18, 2010) Slip Op. at 18. The Board determined that "the issue of recreational use designations in subdocket A is ripe for decision." *Id.* at 19. In addition, the Board ordered the "Hearing Officer to schedule a hearing in June [2010] on the epidemiological study technical reports being prepared by the District." *Id.* at 1, 20.

On April 1, 2010, the Hearing Officer issued an Order setting hearings for June 29 and June 30, 2010 on the "epidemiological study technical reports" filed by the Metropolitan Water Reclamation District of Greater Chicago ("MWRDGC" or "the District") and setting filing dates for pre-filed testimony and pre-filed questions related to those reports. On June 14, 2010, MWRDGC filed a motion with the Board for leave to file the final report of The Chicago Health, Environmental Exposure, and Recreation Study ("CHEERS Report") with conclusions by August 31, 2010 and to schedule a date for a hearing on that report with additional testimony and pre-filed questions.

MWRDGC's motion was granted by the Board on August 5, 2010 and the Board also ordered the Hearing Officer to set a final comment date no later than December 31, 2010. See, R08-09(B)(August 5, 2010), Slip. Op. at 3. The final CHEERS report was

filed on August 31, 2010 and additional hearings were held on October 19 and 20, 2010. MWRDGC filed a supplement to the final CHEERS report on December 6, 2010.

A total of 43 days of hearing were scheduled and 41 days of hearing were conducted prior to the completion of hearings in subdocket B on October 20, 2010.

## **II. Summary of Illinois EPA's Post-Hearing Comments on Subdocket B**

The purpose of these comments is to summarize the relevant portions of the Record for the Board's consideration in developing a First Notice proposal on the issue of whether or not to require disinfection of certain effluents to the CAWS and Lower Des Plaines River. Illinois EPA will identify why the extensive review in this matter has only served to confirm and solidify the Agency's initial conclusions and that a technology-based effluent bacteria standard is economically reasonable and technically feasible. These comments will first provide a background of the legal framework for the Board's decision. The Agency will also review and explain the specific regulatory provisions from its initial proposal that should be adopted in subdocket B. The Agency will attempt to summarize the testimony, exhibits and public comments that the Board should rely on in developing an opinion and order. Finally, the Agency will provide information requested by the Board concerning an update on U.S. EPA's progress in working towards setting new national bacteria criteria for primary contact recreational activities.

## **III. Framework for the Board's Determination in Subdocket B**

From its initial filings in this proceeding, the Agency has consistently taken the position that the current available scientific information is insufficient to determine which indicator organism should be used in setting water quality standards and, as a logical

result, what the appropriate allowable levels of bacteria contamination should be to protect the proposed designated uses. In the absence of a proposed water quality standard to protect recreational uses, the Agency proposed a technology-based effluent limit in 35 Ill. Adm. Code Part 304. The explanation of the proposed standard was the following:

“This language establishes an effluent bacteria standard for certain dischargers impacted by this proposal of 400 fecal coliforms per 100 milliliters. This standard mirrors the existing standard for dischargers to General Use waters that have not been granted a disinfection exemption found in 35 Ill. Adm. Code 304.121(a). The numerical limitation in this proposal and the existing requirement is a technology-based value designed to assure that disinfection technologies are functioning properly.”

Statement of Reasons at 92-93.

The Agency is confident that disinfection of the effluent from three of the four MWRDGC plants in the CAWS and effluents from the Joliet wastewater treatment plants on the Lower Des Plaines River will aid in protecting recreational users from harmful pathogens of human origin. However, the essence of the Board's decision in this matter is not whether it will do so sufficiently. Illinois EPA did not propose a disinfection requirement to protect the proposed recreational use designations for the CAWS and Lower Des Plaines River. Only ambient water quality standards can be adopted to protect designated uses. If the Board accepts the conclusion that inadequate science exists to establish ambient water quality standards at this time, the only remaining question for the Board to answer in subdocket B is whether the Agency's proposal of a technology-based disinfection requirement is technically feasible and economically reasonable.

Illinois EPA has been consistent and clear about the weakness of its proposal to the Board – the fact that needed scientific information is lacking to develop protective numeric water quality standards for these waters. While it may be possible to propose a narrative water quality standard, all the experts agree that currently we do not have sufficient information on which to base a numeric water quality standard. Therefore, it is not accurate at this stage in the proceeding to suggest the Board is faced with the decision of what requirements are necessary to meet the recreational use designations the Board has proposed for these waters. The decision on whether to require disinfection in some of the affected waters cannot and should not be equated with a decision on what level of ambient bacterial contamination is safe.

Under Section 13(a) of the Act, the Board has authority to

"adopt regulations to promote the purposes and provisions of this Title. Without limiting the generality of this authority, such regulations may among other things prescribe: ... (2) Effluent standards specifying the maximum amounts or concentrations, and the physical, chemical, thermal, biological and radioactive nature of contaminants that may be discharged into the waters of the State, as defined herein, including, but not limited to, waters to any sewage works, or into any well, or from any source within the State..."

415 ILCS 5/13(a). In adopting effluent standards under this authority, the Board must also consider the technical feasibility and economic reasonableness of such limitations. There has been a technology-based disinfection requirement in the Board's rules since 1972 for dischargers to General Use waters. Applying a similar requirement to two of the three proposed recreational use designations for the CAWS and Lower Des Plaines River is the focus of the Board's inquiry in subdocket B.

#### **IV. Summary of Illinois EPA's Proposed regulatory language**

The specific language from the Illinois EPA's initial rulemaking proposal that is ripe for consideration in this subdocket B is found in proposed Section 304.224 and is included below for reference. All other language in the Illinois EPA's original proposal is more appropriate for one of the other subdockets. The Board has not received proposed regulatory language from any other parties to this proceeding. While relatively simple, this proposal has several elements that the Agency will review and summarize below.

##### **304.224 Effluent Bacteria Standards for Discharges to the Chicago Area Waterway System and Lower Des Plaines River**

Effluents discharged to the Incidental Contact Recreation waters listed in 35 Ill. Adm. Code 303.220 and the Non-Contact Recreation waters listed in 35 Ill. Adm. Code 303.225 shall not exceed 400 fecal coliforms per 100 ml during the recreational season lasting from March 1 through November 30. All effluents in existence on or before the effective date of this Section shall meet these standards by March 1, 2011. All new discharges shall meet these standards upon the initiation of discharge.

The proposed Section 304.224 contains four key elements: a numeric effluent limitation, applicability to two of the three recreational use categories, a seasonal exemption and an effective date for existing and new discharges. The parallel language to the Agency's proposal that is applicable in other waters of the State in Section 304.121(a) states as follows: "Effluents discharged to all general use waters shall not exceed 400 fecal coliforms per 100 ml unless the Illinois Environmental Protection Agency determines that an alternative effluent standard is applicable pursuant to subsection (b)." Subsection (b) establishes the relevant criteria for dischargers to obtain a seasonal or year-round disinfection exemption.

The proposal establishes a technology-based numeric effluent limitation of 400 fecal coliforms per 100 ml. This requirement is identical to the limitation in 304.121(a) that applies in General use waters. The technology this requirement is based on is effluent disinfection. As explained by MWRDGC Superintendent, Dick Lanyon, at the September 8, 2008 hearings in this matter, wastewater treatment plants that use chlorination as a disinfection technology typically have fecal coliform effluent levels much lower than 400 cfu/100ml and closer to zero. See, Hearing Transcript, September 8, 2008 (a.m.) at 65. Mr. Lanyon attempted to explain this in response to questioning:

MS. WILLIAMS: The question I'm getting at, so there's no point of going around this, is it's correct, isn't it, that your permit limit is higher than the near zero you testified is the number coming out of the plant, correct?

MR. LANYON: Yes.

MS. WILLIAMS: Can you explain why the actual bacteria level in your discharge is lower than the limit in the permit?

MR. LANYON: Well, controlling fecal coliform in the effluent is very difficult. Fecal coliform has wide variations. When you're going to kill, you kill them all, fecal coliform.

September 8, 2008 a.m. at 70. Although the proposed technology-based effluent disinfection requirement limits the fecal coliform level in a source's effluent to 400 cfu/100 ml, implementation of disinfection by MWRDGC will likely result in even lower effluent bacteria levels than those required by the proposal.

Unlike most effluent limitations, which apply to all sources or to certain industrial source categories, the requirement in 304.121(a) applies to all sources discharging to General Use Waters. Similarly, the language proposed for addition in 304.224 is drafted to apply to dischargers to Incidental Contact and Non-Contact Recreational Use

waters. This wording results in a year-round disinfection exemption for dischargers to Non-Recreational Use waters, which includes the smallest of the four MWRDGC facilities on the CAWS which is located in Lemont, Illinois.

In addition to this exemption for the Non-Recreational Use waters, the proposed language includes a built-in seasonal disinfection exemption. While dischargers to General Use waters must apply to the Illinois EPA for disinfection exemptions based on the factors contained in 304.121(b), Illinois EPA feels the Use Attainability Analysis ("UAA") process and the recreational surveys conducted as part of that process have included an analysis of the factors that would be addressed in such an exemption application and has proposed to include a codified seasonal disinfection exemption for the months of December, January and February. Due to the evidence of recreational activity by sculling teams in March and November, the Agency established a longer recreational season than the May through October season that is more typically used when a seasonal exemption is granted.

Finally, the proposal includes an effective date for installation of disinfection technology for existing sources of March 1, 2011. This date was originally intended to coincide with the recreation season beginning three years after the Agency's proposal was filed. For new facilities, disinfection would be required after the effective date of the regulation. Based on the time delay of over three years since the Agency filed its original proposal with the Board, the Agency recommends that the Board consider amending this effective date to reflect a date three years from the effective date of the Board's opinion in subdocket B.

## V. Evidence in the Record

Illinois EPA has compiled a comprehensive list of the documents it believes are relevant to the Board's consideration of requiring an effluent bacteria limitation. (See Exhibit A). The following is a summary of the key documents that the Board should consider before ruling on the Agency's technology-based effluent disinfection proposal.

The Board will find that the Agency's list excludes many documents that have been submitted under the auspices of being relevant to this subdocket B. However, in disputing the relevance of some of the testimony and Exhibits of some of the parties, the Agency is not trying to suggest that all evidence in conflict with the Agency's proposal should not be considered. For example, although the Agency disagrees with the conclusions in some of the testimony or exhibits, the Agency's list includes evidence presented by MWRDGC and other stakeholders that attempts to demonstrate that the technology-based effluent limit proposed by the Agency is too expensive or not achievable.

At one time, it could have also been relevant to this docket for stakeholders to present evidence that a scientifically defensible water quality standard **can** be determined for these waters and to propose one to the Board for its consideration. However, no such evidence has been presented. What MWRDGC attempted to do with CHEERS was something very different. MWRDGC has attempted to use a valid and laudable study -- one that it was hoped would ultimately further the scientific knowledge on what bacteriological water quality standards for secondary contact recreational activities should be -- not to support an actual water quality standard to protect recreational uses, but to oppose a technology-based effluent requirement.

To date, the only use MWRDGC has made of this study has been to justify their pre-ordained conclusion that disinfection of their effluents is unnecessary, and to use epidemiological evidence to argue against a technology-based effluent proposal. It does not denigrate the CHEERS report for the Agency to conclude that it does not shed light on and is therefore not relevant to the only proposal that is currently pending before the Board in subdocket B – a technology-based effluent disinfection proposal. No matter what conclusions the Board draws from the outcome of CHEERS on the relative risk of recreating in these waters, to be relevant it would have to conclude that the appropriate water quality standard for the CAWS is a specific numeric value for a given indicator organism or organisms. It does not do that. The number could have been very high, but it could not be infinite, and a conclusion that no relationship could be found does not assist the Board in determining what water quality standard is necessary to protect recreational users. In order for MWRDGC to argue that the results of CHEERS indicate that disinfection is not necessary, they must first identify what the water quality standard should be in order for the Board or the permitting authority to determine that the established water quality standard can be met without imposing a disinfection requirement on the discharger.

For these reasons, the Agency has not included in its list of relevant documents, testimony and Exhibits related to the CHEERS report. The Agency also did not include many of the Exhibits related to the Dry and Wet Weather Risk Assessments conducted by MWRDGC. Some Dry and Wet Weather Risk Assessment Exhibits have been listed if they include data on the levels of indicator organisms found in the CAWS at various locations and under various conditions. Illinois EPA urges the Board to set aside the

additional information that has been gathered for a future rulemaking on bacteriological water quality standards for the CAWS and Lower Des Plaines River and possibly the entire State.

**A. Statement of Reasons and Attachments**

The Agency's Statement of Reasons in this proceeding is 115 pages and provides a detailed explanation of the Agency's proposal and includes the documents relied on in developing the proposal. The UAA reports are included as Attachments A and B to the Statement of Reasons. In addition to these reports, the other Attachments to the Statement of Reasons that are relevant to the Board's consideration of the technology-based effluent disinfection requirement include Attachments H, NN and TT.

Attachment H contains a map of the Recreational Use Designations in the Agency's proposal. Attachment NN is Technical Memorandum 1WQ: Disinfection Evaluation prepared by Consoer Townsend Environdyne Engineers, Inc., for MWRDGC (August 26, 2005). The Technical Memorandum includes an evaluation of disinfection technologies and cost estimates for the evaluated alternatives. Attachment TT is the list of potentially affected facilities.

**B. Agency Testimony**

Illinois EPA submitted pre-filed testimony from four witnesses, but it was the written testimony of Rob Sulski that contains the discussion of the effluent disinfection requirement. In addition, Scott Twait submitted testimony discussing the status of the current federal bacteria criteria development and the Agency's decision not to propose ambient criteria for protection of recreational uses at this time. Both Scott Twait and Rob Sulski addressed issues related to this requirement in response to cross-examination by

the parties at the January 28 and 29, March 10 and March 12 and April 23, 2008 hearings on the Agency's proposal. See Transcripts from January 28 and 29; March 10 (a.m.); March 12 and April 23, 2008.

The following pre-filed testimony was submitted by Scott Twait regarding the Agency's decision to defer proposal of ambient water quality criteria:

In the case of bacteria, the Agency concluded there were no reliable criteria available on which to base water quality standards to protect the types of recreational uses designated in the CAWS and Lower Des Plaines River. Older federal criteria documents are viewed with skepticism among the scientific community. U.S. EPA has undertaken a multi-year initiative centered on an epidemiological survey to develop new criteria. They have publicly stated their desire to have new criteria available for states to use within five years. The federal effort is focused exclusively on primary contact recreation areas such as public beaches. MWRDGC has commissioned the University of Illinois School of Public Health to perform an epidemiologic study in the Chicago area to look at a spectrum of recreational activity generally characterized as secondary contact. The Agency agrees with MWRDGC that such an approach is more closely representative of actual exposure conditions likely associated with recreational activity within the various segments of the CAWS. While the Agency is proposing that the Board adopt specific recreational use designations applicable within the CAWS and Lower Des Plaines River; we are recommending deferral of adopting any numeric bacterial water quality standard until sound information is available to support such a standard. As a precautionary measure to protect our recreating public, however, we are proposing to require wastewater treatment facilities discharging into any segments listed as Incidental Contact Recreation and Non-Contact Recreation to employ disinfection practices after a reasonable compliance period.

Pre-filed Testimony of Scott Twait at 15-16.

With regard to the technical feasibility of the effluent disinfection requirement,

Rob Sulski testified that:

Technology-based effluent disinfection has been a long-standing requirement for and has been successfully used by domestic wastewater treatment facilities throughout the State, dating back to the original 1970s Board regulations. The most common and widely used technologies are chlorination, ozonation, and ultra violet (UV) radiation. The feasibility of effluent disinfection is

the subject of several studies performed by MWRDGC. MWRDGC has indicated that if they were to undertake disinfection at their facilities they would likely use UV treatment, but would be free to select between any available technologies that would meet the 400 fecal coliforms per 100 ml requirement of 35 Illinois Administrative Code Section 304.224.

Pre-filed testimony of Rob Sulski at 19.

### **C. Public testimony and comments**

The Board has received numerous public comments in this proceeding from members of the public in support of the Agency's proposal. The most commonly mentioned element of the entire proposal in R08-09 that is raised in such comments is the importance of the imposition of an effluent disinfection requirement.

The Board held a public hearing on June 16, 2008 for the specific purpose of taking oral testimony from members of the public who use the CAWS and Lower Des Plaines River for recreational and other purposes. Sworn testimony was taken from 44 witnesses. Forty-three of the witnesses appeared to express support for an effluent disinfection requirement. One witness, Mr. Wally Van Buren, testified on behalf of the Illinois Association of Wastewater Agencies in support of delaying the rulemaking proceeding altogether.

Prior to the Board's March 18, 2010 opinion and order, a total of 285 written public comments had been received in this proceeding. These included approximately 250 written public comments from members of the general public that advocated for the Board to require effluent disinfection for the MWRDGC discharges to the CAWS. Following the Board's March 18, 2010 Opinion and Order creating a separate subdocket B, the Board has docketed approximately 205 public comments in subdocket B. Of these, 197 are from members of the general public and two are from elected officials in

support of the Agency's effluent disinfection proposal. A comprehensive list of the public comments submitted in support of the Agency's technology-based effluent disinfection proposal by members of the general public is included in Exhibit A, # 97.

In addition to support from individual members of the public, written comments in support of technology-based effluent disinfection have been submitted by government agencies, elected officials, not-for-profit agencies and trade associations. A list of these public comments is located at Exhibit A, # 98.

#### **D. Witness testimony and Exhibits**

The Agency has identified the following non-Illinois EPA Technical Witnesses who presented information relevant to subdocket B in either their pre-filed or oral testimony. These witnesses include MWRDGC witnesses Richard Lanyon, Ernest R. Blatchley III, Geeta Rijal, David R. Zenz, Charles Haas, Thomas E. Kunetz and John Mastracchio. Also relevant to subdocket B was the economic benefit testimony presented by Dr. Kevin J. Boyle as a witness for the Attorney General's Office. Testimony from industrial discharger Stepan regarding the question of whether effluent disinfection would be required at their facility and the cost of such technology was presented by Dr. Carl E. Adams Jr. and Robin Garibay.

Exhibit A to these comments includes a list of over 84 Exhibits that are relevant in some way to the Board's decision in subdocket B. Of these, Exhibit 412 (also Attachment NN to the Statement of Reasons) consists of MWRDGC's analysis of the cost of installing disinfection technology at the Northside, Calumet and Stickney wastewater treatment plants. Exhibits 12 and 148 include U.S. EPA's analysis and

critique of MWRDGC's cost information. Exhibit A #12 through 96 contains the Agency's list of relevant Exhibits for subdocket B.

## **VI. Technical Feasibility and Economic Reasonableness.**

Pursuant to Section 27(a) of the Environmental Protection Act, the Board is required to consider the technical feasibility and economic reasonableness of this rulemaking. In reaching a decision in subdocket B, the Illinois EPA believes the Board can find useful guidance in a review of how it recently dealt with a very similar issue. In R04-26, In the Matter of: Interim Phosphorus Effluent Standard, Proposed 35 Ill. Adm. Code 304.123(g-k), the Illinois Association of Wastewater Agencies opposed adoption of the Illinois EPA's proposal, in part on the grounds that the Board should wait for the results of ongoing nutrient studies to determine what levels of phosphorus should be allowed in Illinois streams. In response to IAWA and the objection of the Joint Committee on Administrative Rules, the Board explained that

"while the findings of the nutrient control work group referenced by JCAR will help the Agency in developing scientifically justifiable nutrient water quality standards, effluent standards are somewhat different. An effluent standard is mainly intended to limit significant loading of a pollutant to a receiving stream giving consideration to availability of appropriate treatment technology and associated costs. While there is currently a water quality standard for phosphorus that applies to some waters of the State, the impact of the new effluent standard for phosphorus is designed to limit the phosphorus loading on the State waters."

R04-26, Slip Op. at 3-4 (See *also*, First Notice Opinion and Order at 17 and Second Notice Opinion and Order at 6). Similarly in this proceeding, the Agency is asking the Board to limit a pollutant to the waters of the State by adopting a requirement that affected facilities utilize technologies that are technically feasible and economically reasonable.

The following testimony was entered regarding the legal basis for the Agency proposing this technology-based effluent disinfection requirement at the March 1, 2008 hearing in R08-09:

MR. ANDES: Okay. And the legal basis for requiring the disinfection is the same for both types of waters.

MS. WILLIAMS: Why don't -- I would like to answer this, because I think it may get us back to a question that I told you I would answer later, and we'll avoid me having to put it in writing.

Last time you had asked about the legal basis for this effluent disinfection requirement, and I just want to be clear today that our -- as we understand it, our authority for that piece of the proposal is the Board's rulemaking authority under Section 13(a)(2) of the Environmental Protection Act. I can quote briefly that it allowed the Board to "adopt regulations which prescribe effluent standards, specifying the maximum amounts or concentrations and the physical, chemical, thermal, biological as appropriate here; and radioactive nature of the contaminants that may be discharged into the waters of the state as defined herein." So that authority is very broad and also very specific to this proposal, this piece of our proposal.

Now, I'm not sure if that answers the question that you just asked, but it answered the one that I was supposed to answer last time.

MR. ANDES: Well, let me follow up on that. So is the Agency saying that it can prescribe an effluent standard without any demonstration of need?

MS. WILLIAMS: What do you mean by need?

MR. ANDES: To protect water quality. What's the target? What's the goal?

MS. WILLIAMS: Technical feasibility and economic reasonableness would apply as well.

MR. ANDES: And those are the only limitations? There's no need to refer to protection of a numeric water quality standard or any other target?

MS. WILLIAMS: Correct. No, absolutely not.

March 1, 2008 (a.m.) Hearing Transcript at 50-51. There can be no dispute that the Board has adequate authority under state law to adopt the Agency's effluent disinfection proposal.

**A. Technical Feasibility**

The Agency has testified that it believes its proposal is technically feasible. See, e.g., January 28, 2008 Hearing Transcript at 67, March 12, 2008 Hearing Transcript at 159. Illinois EPA believes strongly that effluent disinfection is technically feasible and that the long history of use of disinfection technologies supports such a conclusion. The most common and widely accepted disinfection technologies are chlorination, ozonation, and ultra violet (UV) radiation. Prior to the development and implementation of de-chlorination, there was a legitimate argument to be made that in the absence of recreational users, the toxicity of chlorine to aquatic life made chlorination a poor technology in certain circumstances. This led to the discontinuation of chlorination at MWRDGC's Calumet, North Side and Stickney wastewater treatment facilities in the mid-1980's.

However, with the advent of de-chlorination and the use of ozonation and UV as alternative disinfection technologies, such an argument could no longer be made; and during the recreation season, disinfection technology is now ubiquitous at publically owned treatment works throughout the United States, including the rest of Northern Illinois. MWRDGC has indicated if they were to undertake disinfection at some of their facilities on the CAWS they would likely use UV treatment, but would be free to select between any available technologies that would meet the 400 fecal coliforms per 100 ml requirement of 304.224. See, Statement of Reasons at 98.

It should be noted that MWRDGC has chosen to reject the most common and inexpensive method of disinfection in its analysis. This decision received some support from U.S. EPA when their contractor concluded that: "SAIC would agree with, and support, the Disinfection Report's decision to exclude disinfection processes utilizing gas chlorine or gas dechlorination from the candidate list. Because of security concerns, such processes may no longer be considered appropriate or practical for large wastewater treatment facilities." Exhibit 148 at 1. However, on page 4 of the same document, the consultant said, "It is SAIC's opinion that at least some form of chlorine based disinfection should have been taken to the costing stage." The Agency has no reason to dispute these conclusions; but it is not clear from the Record that MWRDGC needed to choose the same technology for all three plants. The existence of chlorine contact tanks from the period when disinfection was occurring at the Calumet plant could make the choice of that technology the most feasible and inexpensive for that particular facility.

The fact that MWRDGC previously disinfected the effluents of the three treatment plants at issue in this proceeding, as well as the fact that MWRDGC is currently using chlorination and de-chlorination at its facilities discharging to General Use waters, should be sufficient evidence for the Board to conclude that the Agency's proposal is technically feasible.

MWRDGC was able to demonstrate that a scientist can be found to dispute even the most universally accepted concepts of technological feasibility. Dr. Ernest Blatchley presented testimony that the 400 fecal coliforms per 100 ml effluent disinfection requirement could have a negative impact on water quality, based on laboratory

experiments on bacterial repair, recovery and regrowth. See, Exhibit 93 and September 23, 2008 (a.m.) Hearing Transcript (*see, e.g.* pages 49-50, 55-56). However, in the same hearing, Dr. Blatchley also testified that the Agency's effluent disinfection proposal was not sufficiently stringent to assure that harmful pathogens would be destroyed by the disinfection process. September 23, 2008 (a.m.) Hearing Transcript at pages 33-34 and 46. Unlike CHEERS and the results of the Dry and Wet Weather Risk Assessment study, this testimony (and similar testimony by Dr. Charles Haas) is relevant to the Board's decision in this matter, but should be given little weight due to the fact MWRDGC has failed to demonstrate that effluent disinfection is not a safe and effective technology for reducing levels of pathogens and indicator bacteria in wastewater treatment plant effluent.

MWRDGC also attempted to dispute the technical feasibility of the Agency's proposal by presenting testimony on the greenhouse gas emissions from increased electricity consumption that could result from use of UV for effluent disinfection if MWRDGC's assumptions are accepted and correct. While the Board is expected to consider potential negative environmental impacts from the Agency's proposal, it would be a slippery slope for the Board to entertain the argument that a potential increase in electricity usage could be relied on to stand in the way of improvements in water quality. The Board and the Agency must address greenhouse gas emissions its administration of the Clean Air Act, not the Clean Water Act. The mechanism to address greenhouse gas emissions from electricity consumption must be improvements in renewable energy and energy efficient technologies, not the elimination of environmental controls that

require electricity to operate. These issues cannot be used as a red herring to stand in the way of making improvements to water quality and public health.

**B. Economic Reasonableness**

The proposed effluent disinfection requirement in Section 304.224 would require MWRDGC to disinfect their effluent at three facilities: North Side, Stickney, and Calumet. In the August 26, 2005 report "Technical Memorandum 1WQ: Disinfection Evaluation," MWRDGC provided a total present worth cost estimate ranging from \$963 million and \$2,702 million for capital costs plus operation and maintenance costs to disinfect the effluents at the North Side, Stickney and Calumet treatment plants. See, Statement of Reasons at 100 and Attachment NN. The Agency has testified that it believes its proposal is economically reasonable. See, January 28, 2008 Hearing Transcript at 54 and March 12, 2008 Hearing Transcript at 159. Additional information on the Level 3 and Level 4 cost estimates that were conducted for these facilities was provided by MWRDGC witness David R. Zenz. See, Exhibit 146 and Hearing Transcript from October 27, 2008 at pages 138, 141-142.

U.S. EPA contracted with Science Applications International Corporation (SAIC) to review Technical Memorandum 1WQ. SAIC's preliminary report is Exhibit 12 and its final report is Exhibit 148. Generally, SAIC found MWRDGC's cost estimates to be reasonable. However, SAIC felt it added unnecessary costs for MWRDGC to include filtration in any of the cost estimates or pilot plant studies because filtration is not expected to be necessary. Exhibit 148 at 4. SAIC concluded that low-lift pump stations were unnecessary for the North Side and Calumet facilities and added unnecessary costs to MWRDGC's estimates. SAIC also noted that power use was higher than

necessary and lamp replacement frequency was more frequent than necessary at the Stickney facility. MWRDGC has agreed with that part of the SAIC analysis.

In response to MWRDGC's decision to rule out the use of chlorination, the contractual reviewers concluded "that at least some form of chlorine based disinfection should have been taken to the costing stage. As the most common disinfection technology in the industry, the resulting cost estimates would have established a baseline for comparison of alternative technologies." Exhibit 148 at 1. SAIC proceeded to include the estimated cost of chlorination/de-chlorination. They noted that the cost of chlorination/de-chlorination at the Calumet facility was significantly less than UV because the chlorine contact chambers are still intact at that facility and it was assumed that they were also still operational.

After adjusting the cost figures from MWRDGC's report with the changes it felt were needed (as explained above), SAIC attempted to provide analysis and context for these cost estimates.

The cost of UV disinfection will be several hundred million dollars. While clearly a significant amount of money, it represents a cost of 8 to 12 cents per 1,000 gallons treated. SAIC would note that any treatment process applied to almost 2 billion gallons of wastewater a day will be expensive in absolute dollars. To get a better perspective on the cost, SAIC attempted to determine the cost impact on users of the system. As shown earlier in this report, providing UV disinfection should increase the monthly cost for a typical household by \$2 to \$3. This monthly cost estimate per household is conservative in that commercial users were not included in the approximate calculation for cost division. Thus it appears that both the proposed UV disinfection and the chlorination and dechlorination method processes would be affordable to the system users.

*Id.* at 16-17.

As MWRDGC witnesses have explained, the fee structure for its customers is different than for other utilities in Illinois and around the country. See Mastracchio,

October 28, 2008 (a.m.) Hearing Transcript at pages 8, 43-44 and 50-51. The cost per household calculated by SAIC is useful as a guide, but it is not reflective of the actual cost consumers would pay, since MWRDGC customers are charged based on the assessed property value of their home. By its nature, MWRDGC's fee structure helps to insulate consumers from many of the concerns faced by other communities implementing new technologies or infrastructure improvements that are forced to pass on increasing costs at the same rate to both low income and affluent users.

According to MWRDGCs calculations, for a house with a market value of \$100,000 (EAV \$42,732.80), the 2010 tax for MWRDGC services would be \$114.35. Owners of lower priced homes would pay less and higher priced homes would pay more. By using SAIC's disinfection cost estimates and MWRDGC's explanation of fees paid by homeowners, implementation of disinfection at all three facilities would result in increased costs in taxes for a \$100,000 home of between \$9 per year for chlorination/dechlorination and \$12 per year for UV without filtration. The basis for Illinois EPA's estimated calculation is included as Exhibit B to these comments. When viewed in this context, it seems clear that even the very high total costs of effluent disinfection at all three MWRDGC facilities is economically reasonable for the MWRDGC rate payers.

One industrial discharger (Stepan) came forward during the hearings to testify that they believed they would be required to disinfect their effluent under the Agency's proposal due the presence of a domestic waste stream consisting of the overflows from 15 on-site septic systems. The estimated cost to Stepan of installing chlorination and de-chlorination to its entire effluent has been estimated at \$1,771,000 in capital costs

(equipment, engineering and installation) and \$650,000 per year in operating costs (labor, electrical, chemicals and maintenance). See, Exhibit 318 at 11. In developing its proposal, the Agency believed that for the industrial dischargers to the CAWS and Lower Des Plaines River, the small volume of any domestic waste stream would be heavily diluted by process wastewater and therefore no effluent disinfection would be required. Stepan has not provided the effluent data that would rebut the Agency's assumptions, but has testified that the fecal coliform levels in their effluent exceed 400 cfu/100 ml. Hearing Transcript, August 13, 2009 (a.m.) at 26. The Agency would encourage Stepan to engage in further discussions with Illinois EPA staff regarding the nature of its effluent bacteria levels and also to consider other alternatives to disinfecting its entire waste stream to address this relatively minor source of fecal coliform pollution.

In addition to this economic cost information presented to the Board, at least one witness presented testimony on the potential economic benefits of the Agency's proposal. Dr. Kevin Boyle testified that "Based on this analysis I conclude that the total, present value of these economic benefits is, conservatively, \$1.05 billion, or \$47 per household per year. These benefits reflect the amount that Cook County households are willing to pay to achieve the proposed water quality improvements and associated recreational use designations." See, Pre-filed testimony of Dr. Kevin J. Boyle, Exhibit 286 at 1, lines 10 - 14. Dr. Boyle's analysis and evidence presented in support thereof make the argument that the costs of disinfection presented by the District would be outweighed by the economic benefits obtained from adoption of the recreational use

designations proposed by the Board and the Agency's technology-based effluent disinfection proposal.

It is clear from the data and evidence in the Record of this proceeding that the Agency's technology-based effluent disinfection proposal is technically feasible and economically reasonable. When considering the imposition of new technology-based requirements to minimize pollution to the air, water or land, the Board must conduct a detailed analysis of whether these new technologies are technically feasible (i.e., do they work) or economically reasonable (are they too expensive for the resulting environmental benefit achieved). But in this case, the Board is considering a technology that has been a requirement for dischargers throughout the State of Illinois for decades. The MWRDGC facilities on the CAWS have used this technology in the past and the MWRDGC facilities on General Use waters disinfect today. The District has made no claim that its facilities are any different than the other facilities that disinfect today, except to state that they are large and therefore the disinfection costs are high. As a general matter, large facilities achieve economies of scale with disinfection technology and although the cost to MWRDGC may be high, it is economically reasonable when the number of rate payers served and volume of waste to be treated is taken into account. The Record has established that 70 percent of the annual average volume of the flow of the CAWS is made up of undisinfected effluent from the MWRDGC facilities. During periods of dry weather this figure is much higher and probably quite close to 100 percent. It is logical to conclude that the presence of human pathogens in the CAWS and Lower Des Plaines River is primarily the result of these undisinfected effluents and that imposition of this technically feasible and

economically reasonable effluent disinfection requirement will decrease the risk to recreators from the presence of these pathogens of human origin.

## **VII. Additional Information Requested by the Board**

At the hearing on October 19, 2010, Alisa Liu from the Board's technical staff asked the Agency if they or the District could provide an update on U.S. EPA's progress towards developing any sort of water quality standard for bacteria whether it be for primary or secondary contact. See, October 19, 2010 Hearing Transcript at 242.

Illinois EPA contacted U.S. EPA per this request and the information provided to the Agency can be found in Exhibit C, which is attached to these comments. U.S. EPA expects to release the proposed criteria for public comment early in 2012, at which time there will be a 60 day public comment period before the new criteria is finalized by October 2012.

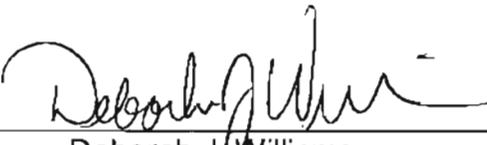
## **VIII. Conclusion**

After 41 days of testimony, none of the nationally recognized experts in epidemiology, microbiology and public health were able to tell the Board what indicator organism would be the most reliable surrogate to determine when a given body of water would be safe for recreational activity. Not only could none of the witnesses tell the Board what level of pathogens or bacteria would be protective, they couldn't even tell the Board which organism to measure for to establish a safe level for recreational activities. In the absence of sufficient science on which to base an ambient water quality standard, the Agency has proposed a technology-based effluent disinfection requirement for the Incidental Contact and Non-Contact Recreational Use waters. The

Record demonstrates that this proposal is technically feasible and economically reasonable and should be adopted by the Board.

Wherefore, for the reasons and based on the evidence outlined in these Post-Hearing Comments, the Illinois EPA asks the Board to proceed to First Notice on R08-09(B) with the effluent limitation contained in the Agency's proposed 35 Ill. Adm. Code Section 304.224.

Respectfully submitted,

By:   
\_\_\_\_\_  
Deborah J. Williams  
Assistant Counsel  
Division of Legal Counsel

Date: January 3, 2011

Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, Illinois 62794-9276

# EXHIBIT A

## Documents Relevant to R08-09 Subdocket B (Effluent Disinfection)

1. Statement of Reasons (Initial Filing).
2. Lower Des Plaines River UAA Report (Attachment A to Statement of Reasons).
3. CAWS UAA Report (Attachment B to Statement of Reasons).
4. Map of Recreational Use Designations (Attachment H to Statement of Reasons)(Exhibit 27).
5. Map of Lower Des Plaines River and Chicago Area Waterway System (Attachment I to Statement of Reasons) (Exhibit 25).
6. Ambient Water Quality Criteria for Bacteria – 1986. U.S. EPA Office of Water (EPA440/5-84-002) (January 1986)(Exhibit Q to Statement of Reasons)(Exhibit 86).
7. Master Plan North Side Water Reclamation Plant and Surrounding Chicago Waterways, Technical Memorandum 1WQ: Disinfection Evaluation. Consoer Townsend Environdyne Engineers, Inc., prepared for MWRDGC (August 26, 2005)(Attachment NN to Statement of Reasons)(Exhibit 412).
8. List of Potentially Affected Facilities (Attachment TT to Statement of Reasons).
9. Hearing Transcripts of Agency Testimony from 2008. See Transcripts from January 28 and 29; March 10 (a.m.); March 12 and April 23.
10. June 16, 2008 Transcript of Public Testimony at MWRDGC Board Room.
11. Transcripts of Non-Illinois EPA Technical Witnesses Richard Lanyon (September 8, 2008 a.m.), Ernest R. Blatchley III (September 23, 2008), Geeta Rijal (September 24, 2008), David R. Zenz (October 27, 2008), Charles Haas (October 27, 2008), Thomas E. Kunetz (October 27, 2008), John Mastracchio (March 3, 2009) Dr. Kevin J. Boyle (May 20, 2009), Dr. Carl E. Adams Jr. and Robin Garibay (August 13, 2009 a.m.).
12. Pre-filed Testimony of Rob Sulski (Exhibit 1).
13. Pre-filed Testimony of Scott Twait (Exhibit 2).
14. U.S. EPA letter from Linda Holst to Toby Frevert of the Illinois EPA, dated May 3, 2007 (Exhibit 4).
15. Review of "Technical Memorandum 1WQ-Disinfection Evaluation Prepared on Behalf of the MWRDGC" Prepared for United States Environmental Protection Agency by Science Applications International Corporation, April 26, 2006 (Exhibit 12).
16. "Meeting Minutes from the Lower Des Plaines River Workgroup and the CAWS Stakeholders Group" (Exhibit 36).
17. MWRDGC, Research and Development Department Report No. 03-20 "Comparison of Fecal Coliform concentrations and Trends in Two Urban Rivers: The Chicago Sanitary and Ship Canal and The Des Plaines River" October 2003 (Exhibit 38).

18. MWRDGC, Research and Development Department Report No. 04-10 "Estimation of the Escherichia Coli to Fecal Coliform Ration in Wastewater Effluents and Ambient Water of the MWRDGC" July 2004 (Exhibit 39).
19. Alliance for the Great Lakes "Protecting Public Health, Caring for Chicago's Waters" (Exhibit 55).
20. Settlement Agreement between Natural Resources Defense Council and U.S. EPA and the National Association of Clean Water Agencies (Exhibit 58).
21. Email from Fredric Andes to Marie Tipsord and Susan Hedman listing links to MWRDGC's 2007 and 2008 budget books (Exhibit 67).
22. Report prepared for MWRDGC by Geosyntec entitled "Dry and Wet Weather Risk Assessment of Human Health Impacts of Disinfection vs. No Disinfection of the Chicago Area Waterways System" April 2008 (Exhibit 71).
23. "Dry Weather Risk Assessment of Human Health Impacts of Disinfection vs. No Disinfection of the Chicago Area Waterways System" Review conducted for U.S. EPA Region 5, Office of Water (Exhibit 72).
24. Correspondence between U.S. EPA and MWRDGC on Geosyntec study (Exhibit 73).
25. Compact Disc of Attachments to U.S. EPA Correspondence (Exhibit 73a).
26. Report prepared for MWRDGC by Geosyntec entitled "Interim Phase I Dry Weather Risk Assessment Human Health Impacts of Disinfection vs. No Disinfection of the Chicago Area Waterways System" November 2006 (Exhibit 76).
27. Compact Disc entitled "Appendices" "Dry and Wet Weather Risk Assessment of Human Health Impacts of Disinfection vs. No Disinfection of the Chicago Area Waterways System" April 2008 (Exhibit 77).
28. Table entitled "Summary of Recreational Season (Chlorinate/Dechlorinated) Effluent Fecal Coliform May 1 through October 31" (Exhibit 84).
29. Compact Disc entitled "Raw Data" (Exhibit 85).
30. September 12, 2008 letter from Chriso Petropoulou of Geosyntec to Thomas Granato of MWRDGC (Exhibit 88).
31. September 22, 2008 letter from Chriso Petropoulou of Geosyntec to Thomas Granato of MWRDGC (Exhibit 89).
32. Pre-filed Testimony of Ernest R. Blatchley III (Exhibit 93).
33. Color Chart entitled "Facility D - -St. Petersburg 2° without Nitrification; Filtration" (Exhibit 95).
34. Article entitled "Wedeco Wins Order In Munich" (Exhibit 96).
35. Article entitled "Rinsend (SBR) Wastewater Treatment Plant Overview" (Exhibit 97).
36. Article entitled "Effects of Disinfectants on Wastewater Effluent Toxicity" by Ernest R. Blatchley III et al. Pergamon 1997 (Exhibit 98).
37. Article entitled "Effect of Wastewater Disinfection on Human Health" by Ernest R. Blatchley III (Exhibit 99).
38. MWRDGC Pre-filed Testimony of Geeta Rijal with Attachments (Exhibit 113).

39. Charts entitled "Figure 18: Geometric means of Fecal Coliform Bacteria at North Area Stations Each Day After Heavy and Light Rainfalls for Three-Day Periods Compared with Dry Weather Densities" (Exhibit 114).
40. Two charts on one page entitled "Figure 1: Estimated FC densities downs stream of the North Side and Calumet WRPs during dry weather and wet weather with or without disinfection conditions" (Exhibit 115).
41. Compact Disc titled "Blatchley Report" (Exhibit 126).
42. Compact Disc entitled "MWRD Precipitation Data" (Exhibit 139).
43. Two tables, first entitled "Mean Escherichia Coli Concentrations (MPN/100ML) in the Water from the North Shore Channel Segment Above and Below the North Side WRP" (Exhibit 141).
44. Three tables, first entitled "Coliform Bacteria Levels (MPN/100mL) in the Storm Sewer Samples Collected During Rain Storm Event on 09/04/08" (Exhibit 142).
45. Pre-filed testimony of Charles Haas (Exhibit 144).
46. OEM online "Distribution and determinants of trihalomethane concentrations in indoor swimming pools" H. Chu and M J Niuwenhuijsen (Exhibit 145).
47. Pre-filed testimony of David R. Zenz (Exhibit 146).
48. Letter to Toby Frevert of Illinois EPA dated June 22, 2006 from Richard Lanyon (Exhibit 147).
49. Review of "Technical Memorandum 1WQ - Disinfection Evaluation Prepared on Behalf of the MWRDGC" Final Report, October 2006, Prepared by Science Applications International Corporation (Exhibit 148).
50. UV Disinfection Cost Study: Cost Study Report for MWRDGC Volume 1 of 2 North Side Water Reclamation Plant, January 31, 2008, Prepared by CTE AECOM (Exhibit 149).
51. UV Disinfection Cost Study: Cost Study Report for MWRDGC Volume 1 of 2 Stickney Water Reclamation Plant, September 9, 2008, Prepared by CTE AECOM (Exhibit 150).
52. One page document entitled "Prefiled Questions of the People of the State of Illinois to David R. Zenz" question number 2 (Exhibit 151).
53. Table entitled "UV Disinfection 6- Capital Cost Estimates" (Exhibit 152).
54. Pre-filed Testimony of Thomas E. Kunetz (Exhibit 153).
55. Compact Disc entitled MWRDGC North Side Master Plan September 9, 2008 (Exhibit 154).
56. MWRDGC - Stickney WRP Infrastructure & Process Needs Feasibility Study "Executive Summary" (Exhibit 155).
57. Selected pages from 2007 MWRDGC 2007 Budget (Exhibit 156).
58. Selected pages from 2008 MWRDGC Budget (Exhibit 157).
59. "Selected Plan Technical Memorandum 12 Master Plan MWRDGC North Side Water Reclamation Plant and Surrounding Chicago Area Waterways" June 2007 submitted by CTE AECOM (Exhibit 158).
60. Pre-filed testimony of John Mastracchio (Exhibit 159).
61. MWRDGC 2007 Budget book in its entirety (Exhibit 160).

62. MWRDGC 2008 Budget Book in its entirety (Exhibit 161).
63. "Water and Wastewater Pricing An information overview" U.S. EPA Office of Wastewater Management, EPA 832-F-03-027 (Exhibit 162).
64. Response to Question #1 from Environmental Law and Policy Center and the Sierra Club (UV Disinfection costs broken down by treatment plant) (Exhibit 163).
65. Compact Disc entitled "Mississippi River, Whole Body Contact Recreation Use Attainability Analysis, July 2005" (Exhibit 167).
66. Page of Charts entitled "Attachment 5" (Exhibit 225).
67. Public Health Risks Associated with Wastewater Blending, Rachael Katonak and Joan B. Rose, Final Report, November 17, 2003 (Exhibit 235).
68. Wastewater Blending, House of Representatives Committee on Transportation and Infrastructure, Subcommittee on Water Resources and Environment, Washington, D.C. Wednesday April 13, 2005 (Exhibit 236).
69. Analysis of U.S. EPA's Non Compliance with the Beaches Environmental Assessment and Coastal Health Act, Marylynn V. Yates and Rachel T. Noble (Exhibit 256).
70. Chicago River Agenda City of Chicago Richard M. Daley, Mayor (Exhibit 276).
71. Pre-filed testimony of Dr. Kevin J. Boyle (Exhibit 286).
72. Estimating the value of Improved Water Quality in an Urban River, Kevin Croke, Robert Fabian, and Gary Brenniman. J. Environmental Systems, System, Vol. 16(1), 1986-87 (Exhibit 287).
73. Waterways for Our Future, Friends of the Chicago River, Openlands Project, The Civic Federation, May 2000 (Exhibit 288).
74. "Comprehensive Annual Financial Report of the Metropolitan Water Reclamation District of Greater Chicago" For the year ended December 31, 2007 (Exhibit 289).
75. "Valuing water quality improvement in the United States using meta-analysis: Is the glass half-full or half-empty for national policy analysis?" by George Ban Houtven, John Powers, Subhrendu K. Pattanayak, Science Direct available on line 20 February 2007 (Exhibit 290).
76. "Water Quality Index Application in the Kansas River Basin" U.S. EPA, Kansas City, Missouri, February 1974 (Exhibit 291).
77. Guidelines for Preparing Economic Analyses, U.S. EPA (2000) (Exhibit 292).
78. "Circular A-4" September 17, 2003 (OMB Guidelines) (Exhibit 293).
79. "The Value of Clean Water: the Public's Willingness to Pay for Boatable, Fishable, and Swimmable Quality Water" Richard T. Carson and Robert Cameron Mitchell, Water Resources Research, Vol. 29 July 1993 (Exhibit 294).
80. Proposed Rules of Department of Commerce, National Resource Damage Assessments Under the Oil Pollution Act of 1990, 15 CFR Chapter IX, January 15, 1993 Westlaw version (Exhibit 295).
81. Office of Management and Budget Standards and Guidelines for Statistical Surveys September 2006 (Exhibit 296).

82. Chart entitled Estimated Benefit of Various Changes in CAWS Water Quality (in \$/household yr, in 2000\$)(Exhibit 297).
83. "Estimating the Instream Value of Lake Water Quality in Southeast Michigan" by Edith Nevins Brashares a dissertation presented in 1985 (Exhibit 298).
84. "Donation Payment Mechanisms and Contingent Valuation: an Empirical Study of Hypothetical Bias" by Patricia Champ and Richard Bishop, Environmental and Resource Economics, 2001 (Exhibit 299).
85. Evidence of the Effects of Water Quality on Residential Land Prices by Christopher G. Leggett and Nancy E. Bosckstael, Journal of Environmental Economics and Management (2000) (Exhibit 300).
86. Work Papers Prepared in Connection with the Prefiled Testimony of Kevin J. Boyle, Ph.D (Exhibit 306).
87. Prefiled testimony of Carl E. Adams Jr. and Robin Garibay (Exhibit 318).
88. Table entitled "Fecal Coliform cfu/100mL" (Exhibit 336).
89. Table entitled "E Coli cfu/100mL" (Exhibit 337).
90. Openlands Answer by Jerry Adelman, Openlands to MWRD Prefiled Question #1 in R08-09 (Exhibit 354).
91. NPDES Permit No. 1L002806 1 for MWRDGC Calumet Water Reclamation Plant issued January 22, 2002 (Exhibit 409).
92. NPDES Permit No. 1L0028061 for MWRDGC Calumet Water Reclamation Plant Draft Reissued for public Notice beginning November 9, 2009 (Exhibit 410).
93. Article from Chicago Tribune archives entitled "Cleaner, but not clean" May 15, 2006 by Michael Hawthorne (Exhibit 413).
94. The Disinfection Debate, Understanding the science and facts about effluent disinfection and the Chicago Area Waterway System, MWRDGC (Exhibit 414).
95. Slide show entitled "Discussion of Topic 1: Basing Criteria to be Protective of Children" Denise Kehner, Director Standards and Health Protection U.S. EPA (Exhibit 417).
96. Slide show entitled "Current Thinking On Development of New Criteria" by Elizabeth Doyle OST, OW, U.S. EPA, October 6, 2009 (Exhibit 418).
97. General public comments in support of the Agency's effluent disinfection proposal: PC#s 2-3, 7, 9, 11-22, 24-36, 39-42, 44-46, 47 (Illinois Paddling Council), 48-50, 52, 54-57, 59-60, 62-65, 69-70, 73-74, 76-80, 83-150, 152-164, 166-173, 178 -181, 185, 188-239, 241-245, 246 (Alliance for the Great Lakes), 248, 250 (Sharon Boyd-Peshkin), 251, 252-283, 287-288, 301, 306-477, 479-480, 482-483, 485-490, 492-494, 501-504, 506-510.
98. Specific public comments in support of Agency's effluent disinfection proposal from Agencies, Groups or Elected Officials:

PC#8 Illinois Paddling Council, PC #23 Statement of Support and Objections of the Chicago Area Sea Kayaking Association (CASKA), Illinois Paddling Council, Lincoln Park Boat

Club, Prairie Coast Paddlers, Chicago River Canoe and Kayak, Southwest Brigade, the Des Plaines River Association, Kayak Chicago, Chicago Whitewater Association, Geneva Kayak Center, Wisconsin Canoe Racing Association, and the Prairie Coast Canoeists submitted by Thomas J. Bamonte, CASKA President, PC#37 Congressman Jesse L. Jackson, Jr., PC#38 State Representative Elizabeth Coulson, PC#43 Alderman Scott Waguespack, PC#53 National Marine Manufacturers Association, PC#58 State Representative Elizabeth Hernandez, PC#61 State Representative Kevin Joyce, PC#68 County Commissioner Mike Quigley, PC#75 Congressman Mark Kirk, PC#81 Friends of the Forest Preserves, PC#151 Comments of Robert Kelliher, President, Calumet Ecological Park Association, PC# 184 Pre-filed Testimony of Alan Manmoser, PC #297 Comments of Elizabeth Tisdahl, Mayor, City of Evanston, PC #299 Comments of Esther Golar, State Representative, 6th District, PC #289 Comments of Honorable John Fritchey of the 11th District.

99. Technical filings by the parties entered as Public Comments that are relevant to subdocket B:

Technical Documents Filed on Behalf of MWRDGC (cover documents and document #1) (PC #165a ); MWRDGC: UV Disinfection Cost Study, SWRP, Volume 2, (PC #165b); MWRDGC: UV Disinfection Cost Study NSWRP, Volume 1 and 2, (PC #165c); MWRDGC: Hydraulic Technical Memorandum - Appendix A and B for NSWR Plan UV Disinfection Cost Study, (PC #165d); MWRDGC: Hydraulic Technical Memorandum - Appendix C for NSWR Plan UV Disinfection Cost Study, (PC #165e)

MWRDGC's Responses to EPA's technical Review Comments Regarding the Report Entitled: "Dry and Wet Weather Risk Assessment of Human Health Impacts of Disinfection vs. No Disinfection of the Chicago Area Waterways Systems," dated April, 2008 (PC # 186)

Comments of Carl E. Adams, Jr., PhD., PE, of Environ International Corp. in Answer to Board's Question on Chlorine (PC # 247)

Comments of Tinka G. Hyde, Director, Water Division, U.S. EPA Region 5 on Geosyntec study (PC # 304)

## **EXHIBIT B**

SAIC Estimate for Chlorination/Dechlorination			
Cost of Project	\$193,000,000		Annual Payment
	Including Project	Excluding Project	\$35,000,000
Projected Debt Outstanding	\$1,848,593,753	\$1,655,593,753	
Levy	\$492,958,531	\$457,958,531	
Percent of Debt:	26.667	27.661	
Equalized Assess Valuation:	\$170,097,381,685	\$170,097,381,685	
Tax Rate ( \$ levied/\$100 EAV)	\$0.2898	\$0.2692	
\$100,000 home (EAV \$42,732.80)	Taxes with including project	Taxes excluding Project	
	\$123.84	\$115.05 Difference	-\$8.79
SAIC Adjusted MWRD estimate for UV without Filtration			
Cost of Project	\$380,000,000		Annual Payment
	Including Project	Excluding Project	\$46,000,000
Projected Debt Outstanding	\$2,035,593,753	\$1,655,593,753	
Levy	\$503,958,531	\$457,958,531	
Percent of Debt:	24.757	27.661	
Equalized Assess Valuation:	\$170,097,381,685	\$170,097,381,685	
Tax Rate ( \$ levied/\$100 EAV)	\$0.2963	\$0.2692	
\$100,000 home (EAV \$42,732.80)	Taxes with including project	Taxes excluding Project	
	\$126.61	\$115.05 Difference	-\$11.56

# EXHIBIT C



**U.S. Environmental Protection Agency  
Office of Water**

**Office of Science & Technology**  
*... applying science & technology to protect water quality*



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## **EPA Research to Support Development of New or Revised Recreational Water Quality Criteria**

### **Background**

EPA is conducting critical science and research in order to publish new or revised recreational water quality criteria by October 2012 in accordance with a Consent Decree and Settlement Agreement between EPA, NRDC, NACWA and LA County. These criteria will replace the current criteria recommendations issued in 1986 and will be used by states, tribes and territories in their adoption of new water quality standards (WQS) to protect people from illness associated with fecal contamination in water. The critical science and research projects are scheduled to be completed by December 2010.

ORD and OW are currently conducting research and criteria support activities to inform criteria development. Data collection for two epidemiologic studies was completed in 2009: (1) an epidemiologic study in marine waters impacted by urban runoff in a temperate region, and (2) an epidemiologic study in a tropical region. Many additional projects are underway, including research to support methods improvements and to validate models. The following is a list of key accomplishments and ongoing research for 2010. Only the major research activities are listed below.

### **2008 & 2009 Key Accomplishments**

- Research to advance the development and evaluation of molecular assays.
- Testing of Virtual Beach model builder for the development of models for beach notification, advisories and closures.
- Technical and financial support to a marine epidemiology study at a beach impacted by untreated sewage in Avalon, California.
- Conduct of a single laboratory validation study for *Enterococcus* qPCR and *Bacteroidales* qPCR.

- Expert input obtained during the Experts Scientific Workshop on Inland Waters on research and analyses that can be initiated and completed by December 2010 to support the applicability of EPA's new recreational criteria to inland flowing waters.

### **Ongoing & Projected Major Research Activities**

- Water quality data and survey response data analyses is being performed for epidemiologic studies for marine tropical waters at Boquerón Beach in Puerto Rico and for urban runoff impacted marine waters at Surfside Beach in South Carolina.
- Data collection and conduct of Quantitative Microbial Risk Assessment (QMRA) to estimate illness for beaches impacted by agricultural animal sources of fecal contamination.
  - QMRA data collection will proceed for multiple locations representing sources from various agricultural animal types.
- Archived microbiological samples from previous epidemiologic studies will be reanalyzed for molecular targets using updated procedures and for new indicators and methods (these studies can reaffirm previous findings, and possibly identify new indicators to be used in criteria development).
- Microbial source tracking markers will be evaluated during the re-analysis of archived samples.
- Modeling research will continue to assist beach management decision-making.
- Multi laboratory validation of method(s) will proceed.
- Projects identified at the Experts Scientific Workshop on Inland Waters are now underway to gain a better understanding of the health risks from recreating in inland waters as compared to marine coastal or Great Lakes waters.

### **Other Activities**

- Held Research Forum was to allow continuing dialogue between EPA and the national and international research community conducting research that may inform criteria development (April 2009 – concurrent with Beach Conference).
- Held webinar event of select presentations from the October 2009 stakeholder meeting was held (March 2010).
- Next stakeholders meeting on the progress EPA has made in completing studies and the recreation criteria development process is planned for September 2010.
- EPA expects to release the proposed criteria for public comment early in 2012, at which time there will be a 60 day public comment period.

### **For More Information**

Lisa Christ at 202-566-8354 or [christ.lisa@epa.gov](mailto:christ.lisa@epa.gov)

STATE OF ILLINOIS )  
 )  
COUNTY OF SANGAMON )  
 )

SS



**PROOF OF SERVICE**

I, the undersigned, on oath state that I have served the attached POST HEARING  
COMMENTS OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY upon the  
person to whom it is directed by placing it an envelope addressed to:

John Therriault, Clerk  
Marie Tipsord, Hearing Officer  
Illinois Pollution Control Board  
James R. Thompson Center  
100 West Randolph Street, Suite 11-500  
Chicago, Illinois 60601



**SEE ATTACHED SERVICE LIST**

and mailing it First Class Mail from Springfield, Illinois on January 3, 2011, with sufficient  
postage affixed.

Meredith Kelly

SUBSCRIBED AND SWORN TO BEFORE ME

This 3<sup>rd</sup> day of Jan., 2011

Dawn A. Hollis  
Notary Public



**THIS FILING IS SUBMITTED ON RECYCLED PAPER**

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