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STATE OF ILLINOIS  
Pollution Control Board

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF :

WATER QUALITY AMENDMENTS TO )  
35 Ill. Adm. Code 302.208(e)-(g), 302.504(a) ) R02-11  
302.575(d), 303.444, 309.141(h); and ) Rulemaking-Water  
PROPOSED 35 Ill. Adm. Code 301.267 )  
301.313, 301.413, 304.120, and 309.157. )

P.C. # 26

NOTICE OF FILING

TO:

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See Attached Service List

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the **WRITTEN COMMENT OF THE ILLINOIS ASSOCIATION OF WASTEWATER AGENCIES**, a copy of which is served upon you.

ILLINOIS ASSOCIATION OF WASTEWATER  
AGENCIES,

By: Sheila H. Deely  
One of Its Attorneys

Dated: September 6, 2002  
Sheila H. Deely  
Roy M. Harsch  
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THIS FILING PRINTED ON RECYCLED PAPER

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Pollution Control Board  
R02-11  
Rulemaking-Water

P.C.#  
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WRITTEN COMMENT OF THE  
ILLINOIS ASSOCIATION OF WASTEWATER AGENCIES

The Illinois Association of Wastewater Agencies (IAWA) hereby wishes to provide written comment on the testimony offered during Third Hearing in the matter of Illinois Pollution Control Board (Board) Docket R02-11, the Triennial Review of Illinois Water Quality Standards. Since the beginning of the proceedings in R02-11 the IAWA has been primarily concerned with the aspect of the docket which involves the more precise definition of biochemical oxygen demand (BOD) as a regulatory parameter for evaluation of the efficiency of secondary wastewater treatment processes. The comments made herein continue with this initial concern of IAWA in the proceeding.

The enhanced specificity in the definition of BOD advocated by the Illinois Environmental Protection Agency (Agency) recognizes the current United States Protection Agency (USEPA) position that carbonaceous biochemical oxygen demand (CBOD) is a more accurate parameter for determination of the efficiencies of secondary wastewater treatment processes than is total BOD. As discussed at length during previous hearings and written comments in this proceeding, the nitrogenous oxygen demand measured during the total BOD testing procedure can be quite variable in different facilities. Subsequently, the use of the total BOD test cannot provide a universal criteria by which to measure the effectiveness of specific

secondary treatment processes. The IAWA provided testimony and exhibits which clearly substantiated this position. The Board concurred with the IAWA position and proposed the change in BOD terminology as advocated by the Agency in the First Notice given for R02-11.

In testimony by Dr. Cynthia Skrukrud during the Third Hearing, several contentions and implications were raised regarding the more accurate definition of BOD proposed by the Board. The IAWA felt compelled to cross-examine Dr. Skrukrud on these issues and this comment is offered as a summary of the discussions during that cross examination.

Dr. Skrukrud has advocated that total BOD should be retained as the regulatory parameter for determination of secondary process efficiency in an attempt to minimize the release of nitrogenous oxygen demanding materials into the waters of the State. Further, if the BOD term was more accurately defined as proposed by the Board in its First Notice, she advocated reducing the allowable value of the BOD standard. Such a minimization of the release of nitrogenous materials would presumably assist in reducing dissolved oxygen standard violations in the State. During Third Hearing testimony she continued to advocate this position and presented a graph depicting several days of dissolved oxygen concentrations measured in the DuPage River as an example of the nature of the dissolved oxygen standard violations that could presumably be partially addressed by either not more accurately defining the BOD term or by lowering the allowable numeric value if the correct CBOD term were adopted in the regulation.

The IAWA analyzed the diurnal dissolved oxygen graph presented by Dr. Skrukrud and provided an annotated interpretation of the graph to the Board. A review of the dissolved oxygen concentration maxima and minima as well as the timing of these points within the days represented by the graph presented the very real likelihood that the diurnal dissolved oxygen curve presented by Dr. Skrukrud was primarily driven by cultural enrichment (eutrophication) of

the DuPage River. Cultural enrichment is driven by nutrient release, specifically nitrogen and phosphorous, into the receiving water in concentrations that effectively result in an “over fertilization” of the water body. This “over fertilization” stimulates algal growth which, during the day, can provide supersaturated dissolved oxygen concentrations in response to photosynthesis. Such supersaturated dissolved oxygen concentrations were indicated on Dr. Skrukrud’s graph. The timing of the appearance of these supersaturated conditions, late afternoon after the daily period of maximum solar irradiation, is a further indication of nutrient enrichment.

Low dissolved oxygen concentrations can also develop from nutrient enrichment because of the increased cellular respiration resulting from the artificially large algal biomass maintained by the “over fertilization.” During the night, when the algae are not photosynthesizing, the ambient dissolved oxygen replenishment mechanisms of a water body are inadequate to meet the respiration demands of the enhanced algal biomass. Consequently, undesirably low dissolved oxygen concentrations result. The timing of the dissolved oxygen minima indicated on the graph provided by Dr. Skrukrud also corresponds to the diurnal schedule associated with nutrient enrichment. Specifically, the minima were depicted as occurring at approximately 8:00 AM, after the night time absence of sunlight and subsequent lack of photosynthetic activity. These minima were the dissolved oxygen water quality standard violations to which Dr. Skrukrud was alluding as justification for not proceeding with the more precise definition of regulated BOD as the Board proposed in its First Notice.

Under cross-examination, Dr. Skrukrud admitted that the conditions depicted by the graph she supplied were indicative of nutrient enrichment. She further agreed that state-wide violations of the dissolved oxygen water quality standard could be attributed to such nutrient

enrichment as well as stream hydrology, stream channel morphology, adjacent land use, non-point source input and naturally occurring biomass decay processes. Dr. Skrukru acknowledged that she was a member of a science advisory committee assembled approximately one year ago by the Agency to assess the extent to which nutrient regulation needs to be implemented within Illinois. Further, she acknowledged that the appropriateness of the existing Illinois dissolved oxygen standard had been discussed by the advisory committee and that significant interest existed within the committee to re-evaluate the existing dissolved oxygen standard in light of nutrient enrichment in an attempt to correlate regulation of both parameters in a manner that provides adequate dissolved oxygen protection for the flora and fauna of Illinois waters.

Dr. Skrukru additionally indicated in her testimony that if the Board were to choose to redefine the BOD parameter to specifically address CBOD, as is appropriate, the allowable CBOD limit should be reduced to 16 mg/l. Her basis for making such a contention was that Mr. Michael Callahan, representing IAWA, had in earlier testimony indicated that effluent limits of 10 mg/l were readily attainable with existing wastewater treatment infrastructure throughout the State. As illustrated by cross examination of Dr. Skrukru during the Third Hearing, this quote was taken out of context from Mr. Callahan's discussion. Mr. Callahan was referring to effluents discharged to zero low flow streams. The Agency currently requires that such discharges be afforded tertiary treatment. A tertiary wastewater treatment process effluent can in no way be considered comparable to a secondary wastewater treatment process effluent. This lack of proper context with Mr. Callahan's previous discussion was affirmed in a combination of cross examination/testimony by Mr. Alan Kellar of the Agency at Third Hearing. Dr. Skrukru

has also provided no support as to the technical feasibility or economic costs of lowering allowable BOD limits apart from referencing that other states have done so.

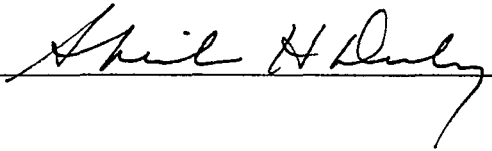
The IAWA has previously stated in these proceedings that violations of the dissolved oxygen water quality standard associated with nutrient enriched waters needs to be addressed. Additionally, the IAWA has advocated that demographic and physical factors also exert a significant effect beyond that of BOD on the dissolved oxygen concentration of many water bodies in Illinois. The IAWA continues to maintain these positions at this time. However, the successful resolution of this issue will not result from an inappropriate short-sighted lowering of the BOD standard currently used to measure secondary wastewater treatment process efficiencies. Instead, the successful resolution of the issue will result from a thorough assessment of the extent of the dissolved oxygen problem, the appropriateness of the existing dissolved oxygen standard and the extent to which the contribution of all nutrients from all sources to the waters of Illinois enhance the problem. The nitrogenous component of the oxygen demand in secondary treatment process effluents at this time is one small component of a much larger issue. The IAWA firmly believes that a very commendable effort on behalf of the Agency has been undertaken at this time to address these problems through establishment of the Nutrient Science Advisory Committee. Indeed, the IAWA has volunteered professional and monetary assistance to the Agency to address the matter through the work of this committee.

The IAWA believes that the recommendation of the Agency, as proposed by the Board in First Notice, to modify the existing BOD language is appropriate. The recommended modification is in keeping with both the USEPA position on such regulation as well as the historical policy of the Agency for approximately the past twenty years. Nothing has been included in the record of these proceedings which would cause the IAWA to reassess its support

of the CBOD issue as originally proposed by the Agency. The IAWA encourages the Board to proceed with final action in this matter by adopting its First Notice position on the CBOD issue as Final Opinion and Order of the Board.

**CERTIFICATE OF SERVICE**

The undersigned certifies that a copy of the foregoing **WRITTEN COMMENT OF THE ILLINOIS ASSOCIATION OF WASTEWATER AGENCIES** was filed by hand delivery with the Clerk of the Illinois Pollution Control Board and served upon the parties to whom said Notice is directed by first class mail, postage prepaid, by depositing in the U.S. Mail at 321 North Clark Street, Chicago, Illinois on Friday, September 6, 2002.

  
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