ILLINOIS POLLUTION CONTROL BOARD
October 18, 1989

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENT TO	)	R87-6
PHOSPHORUS EFFLUENT STANDARD,	)	
35 ILL. ADM. CODE 304.123	)	

PROPOSED RULE. REVISED SECOND NOTICE.

SUPPLEMENTAL OPINION AND ORDER OF THE BOARD (by J. Anderson):

On September 13, 1989, the Board adopted a revised proposed rule for Second Notice in this docket. The Board directed that filing of the proposal with the Joint Committee on Administrative Rules be deferred until at least September 29, 1989, to allow participants to comment on the several proposed changes made in the proposal during First Notice. Comments were to be received by the Board by September 25, 1989.

On September 26, 1989, the Board received the Agency's Second Notice Comments. This was the only comment filed. Although received tardily and unaccompanied by a motion to file instanter, the Agency's comments are accepted in view of the minimal nature of the tardiness and the apparent lack of prejudice to any participants.

The Agency has raised three points of contention in support of its original proposal and in opposition to the Board's proposed Second Notice. First, the Agency states that the Board has mis-characterized its testimony in stating that the Agency's data suggests "that internal regeneration of phosphorus is generally not a critical factor in cultural eutrophication" or that, in any case, "the record has certainly not shown that internal regeneration of phosphorus is not a critical factor for two of the lakes of concern identified in the EcIS, Lakes Shelbyville and Carlyle" (Agency Second Notice Comments at page 1, quoting the Board's Opinion and Order of September 13, 1989, p. 5). The Agency notes that it has on several occasions underscored the fact that internal regeneration also plays an important role. However, the Agency asserts, "there is no evidence that suggests that a point source's loading rate has any effect on a downstream lake's internal regeneration of phosphorus" (Ibid. at page 2, referring to testimony of Toby Frevert at the June 23, 1989 hearing, R. at 80-103). The Agency concludes that whether internal regeneration of phosphorus is a critical factor for Lakes Shelbyville and Carlyle "should have absolutely no bearing on the question of whether distant dischargers should be subject to the 1.0 mg/l standard, if there

is no evidence that suggests a relationship between upstream point source loadings and downstream internal regeneration" (Id.).

The Board disagrees with the Agency's reasoning. If it is true, as the Agency contends, that there is no evidence suggesting that a point source's loading has any effect on a downstream lake's internal regeneration of phosphorus, it is at least equally true that there is also no evidence suggesting that a point source's loading does not have an effect on a downstream lake's internal regeneration of phosphorus. It stands to reason that incremental contributions of phosphorus to lake sediments from any source correspondingly increase the amount of phosphorus potentially available for conversion to orthophosphorus during internal regeneration. It is thus anomalous for the Agency to suggest on the one hand that internal regeneration of phosphorus plays an "important role" in eutrophication and on the other hand to discount the potential role of one type of phosphorus source, particularly in close cases. It may will be true that the predominant sources of sedimentary phosphorus in most Illinois lakes are non-point discharges and native soils, but the Board cannot base a rule which would apply to virtually all Illinois lakes upon such assumptions. Rather than "obscuring the realities of lake dynamics" as the Agency asserts (Id.), the Board is, by its proposal, recognizing those realities, not subsuming potentially vital distinctions within generalities.

As its second argument, the Agency disagrees with the Board's characterization of its (the Agency's) support for an Agency study entitled "Analysis of Sediment Phosphorus Levels in Illinois Lakes" (Exhibit 57). The Agency contends that the Board has "twisted" the Agency's remarks about that study into a ""concession" that the study was essentially flawed" (Ibid., p. 3). Consider the following statements made by the Agency's two witnesses regarding this study:

> "That exhibit is clearly not being offered as the ultimate in desirable scientific analysis... If someone decided to be critical and find reasons why it wouldn't meet a scientific methodology or protocol, that would be an easy thing to do." (Testimony of Toby Frevert, R. 6/23/89, p. 98).
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> "[Y]ou could probably from a statistical standpoint rip it apart, if I can quote [Mr. Frevert's] words or if that is what he said." (Testimony of Gregg Good, R. 6/23/89, p. 120).

We have some difficulty visualizing how these comments were misconstrued. In any event, lest there be any doubt, the Board indeed found the study inadequate as a basis for concluding that

there is no discernible difference between the phosphorus content of lake sediments that receive point sources and those which do not. First, the study in fact does show a slightly (3.3%) higher average sediment total phosphorus level in lakes with tributary point sources of phosphorus (Exh. 57, Table 4) than in lakes without such point sources; whether this difference is "significant" is not addressed. Second, the study by its nature does not purport to examine scientifically the effect of a given point source or sources upon a given receiving lake; the question as to whether removal or addition of a source of phosphorus would have an effect on that lake is neither asked nor answered. Third, the trophic status of the lakes surveyed is not examined, although some morphometric data is provided; the lakes' relative sensitivity to changes in phosphorus levels is not revealed. Fourth, the lakes surveyed are not characterized as to whether they are representative of Illinois lakes as a whole: the study indicates without qualification or explanation that the Agency has sediment total phosphorus data on only 66 of the approximately 412 Illinois lakes and reservoirs which equal or exceed 20 acres of surface area. Fifth, the study does not indicate whether the sampling results reported remain valid: fewer than one-third of the reported sediment samples are less than 10 years old; data on Lakes Shelbyville and Carlyle are 12 years old.

In noting the foregoing deficiencies, the Board is in no manner denigrating the Agency's efforts. However, the study does not support the Agency's thesis; rather, it suggests a general correllation between watershed area to surface area ratio (WA:SA) and average lake sediment levels of phosphorus. It also suggests a general correllation between other factors, including morphometric characteristics, and sediment phosphorus levels. Taken as a whole, it lends strong support to comments made earlier by the Agency and others to the effect that the impact of upstream phosphorus discharges on a lake or reservoir cannot be gauged without a thorough understanding of the particular eutrophication dynamics of that lake or reservoir (see, e.g., Exh. 1, pp. 33, 38, 41 and 53-54; Exh. 40, pp. 12, 18 and 128-130; R. 7/21/87, p. 47; and R. 6/23/89, pp. 144-145).

The Agency takes considerable umbrage at the Board's assertion that other participants in this proceeding were not willing to accept the Agency's premise that distant point source contributions of phosphorus are insignificant or negligible. The Agency asserts that no participants were willing to refute that premise either (Agency Second Notice Comments, p. 4). It further asserts that "a scientific study conducted pursuant to a sound methodology is worth any number of people who "pointedly disagree" (Id.). As noted above, we do not have before us such a scientific study in Exhibit 57; moreover, the individual commenter in question happened to be an officer of the Illinois Lake Management Association as well as the North American Lake

Management Society, and as such was entitled to a measure of deference.

In this connection, the Agency has repeatedly discounted the consequences of its lack of scientific data. It accuses the Board of "attempting to use the inadequacy of our present knowledge of phosphorus behavior as a pretext for disregarding what little knowledge we do possess" (Id.). This charge is, at best, incongruous. In any event, the Agency in a certain sense put its finger on the basic problem with this rulemaking. The Board hardly trivialized the Agency's proposal; it struggled with the "inadequacy" and "little knowledge" problems and concluded that it could not strip away the existing environmental controls based on the inapposite inferences and over-generalized conclusions contained in this record. While some commenters endorsed the Agency's proposal for regulatory relief, their primary focus was on the added expense of the phosphorus controls. This record is essentially devoid of substantive testimony endorsing the Agency's view of the underlying science in support of its proposed relief. And contrary to the Agency's assertion, the Board has in fact provided significant relief, even beyond that proposed by the Agency, as regards the riverine exemption.

Despite its sizeable effort, the Agency has simply been unable to supply sufficient data to demonstrate that harm to Illinois lakes, at least some of them, would not result from the wholesale deregulation of those point sources of phosphorus more than 25 miles upstream. The Board is aware that, as the Agency suggests, some point sources of phosphorus are, and will continue to be, required to construct and operate phosphorus controls which may ultimately prove unnecessary. Faced with this dilemma, the Board must continue to err on the side of the environment. It must trust that aggrieved dischargers will come forward to demonstrate that, in their particular circumstances, such controls are not warranted. The Board believes that use of the adjusted standard approach contained in these rules will serve as a more efficient method for resolution on a lake by lake basis.

In its third argument, the Agency contends that proposed Section 304.123(c) provides imperfect and incomplete guidance for administering the adjusted standards relief mechanism. This may be true; that section was not intended to be prescriptive in detail. However, it must be remembered that pursuant to Section 28.1 of the Act, the adjusted standard relief mechanism is now available even without specifying justification requirements in the general rule. The provisions of Section 304.123(c) provide needed additional requirements (i.e., additional to the requirements set forth in Section 28.1(c) of the Act) for the adjusted standard process in the form of narrative standards and specific types of proofs required. Hence, the Agency is at least placed in a better position than if there were no such standards

provided. For the sake of clarity, the Board will amend proposed rule Section 304.123(c) to state that the new requirements are additional to those set forth in Section 28.1(c) of the Act. Should the Agency wish the Board to promulgate more specific requirements, it may propose additional rules to the Board.

For the reasons stated above, the Board concludes that the September 13, 1989 Second Notice proposed amendments to 35 Ill. Adm. Code 304.123 should remain unchanged except for clarification of Section 304.123(c). The proposal will be filed as soon as possible with the Joint Committee on Administrative Rules.

ORDER

The Board hereby proposes the following revised proposed amendment for Second Notice, which is to be filed with the Joint Committee on Administrative Rules.

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 304
EFFLUENT STANDARDS

SUBPART A: GENERAL EFFLUENT STANDARDS

Section	
304.101	Preamble
304.102	Dilution
304.103	Background Concentrations
304.104	Averaging
304.105	Violation of Water Quality Standards
304.106	Offensive Discharges
304.120	Deoxygenating Wastes
304.121	Bacteria
304.122	Nitrogen (STORET number 00610)
304.123	Phosphorus (STORET number 00665)
304.124	Additional Contaminants
304.125	pH
304.126	Mercury
304.140	Delays in Upgrading (Repealed)
304.141	NPDES Effluent Standards
304.142	New Source Performance Standards (Repealed)

SUBPART B: SITE SPECIFIC RULES AND EXCEPTIONS NOT OF GENERAL APPLICABILITY

SUBPART C: TEMPORARY EFFLUENT STANDARDS

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2 pars. 1013 and 1027).

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 30, p. 343, effective July 27, 1978; amended at 2 Ill. Reg. 44, p. 151, effective November 2, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; amended at 4 Ill. Reg. 20, p. 53, effective May 7, 1980; amended at 6 Ill. Reg. 563, effective December 24, 1981; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161, effective September 7, 1982; amended at 6 Ill. Reg. 13750, effective October 26, 1982; amended at 7 Ill. Reg. 3020, effective March 4, 1983; amended at 7 Ill. Reg. 8111, effective June 23, 1983; amended at 7 Ill. Reg. 14515, effective October 14, 1983; amended at 7 Ill. Reg. 14910,

effective November 14, 1983; amended at 8 Ill. Reg. 1600, effective January 18, 1984; amended at 8 Ill. Reg. 3687, effective March 14, 1984; amended at 8 Ill. Reg. 8237, effective June 8, 1984; amended at 9 Ill. Reg. 1379, effective January 21, 1985; amended at 9 Ill. Reg. 4510, effective March 22, 1985; peremptory amendment at 10 Ill. Reg. 456, effective December 23, 1985; amended at 11 Ill. Reg. 3117, effective January 28, 1987; amended in R84-13 at 11 Ill. Reg. 7291, effective April 3, 1987; amended in R86-17(A) at 11 Ill. Reg. 14748, effective August 24, 1987; amended in R84-16 at 12 Ill. Reg. 2445, effective January 15, 1988; amended in R83-23 at 12 Ill. Reg. 8658, effective May 10, 1988; amended in R87-27 at 12 Ill. Reg. 9905, effective May 27, 1988; amended in R82-7 at 12 Ill. Reg. 10712, effective June 9, 1988; amended in R85-29 at 12 Ill. Reg. 12064, effective July 12, 1988; amended in R87-22 at 12 Ill. Reg. 13966, effective August 23, 1988; amended in R86-3 at 12 Ill. Reg. 20126, effective November 16, 1988; amended in R84-20 at 13 Ill. Reg. 851, effective January 9, 1989; amended in R85-11 at 13 Ill. Reg. 2060, effective February 6, 1989, amended in R88-1 at 13 Ill. Reg. 5976, effective April 18, 1989~~.~~; amended in R86-17B at 13 Ill. Reg. 7754, effective May 4, 1989; amended in R87-6 at Ill. Reg. _____, effective _____.

Section 304.123 Phosphorus (STORET number 00665)

a) No effluent discharge within the Lake Michigan Basin shall contain more than 1.0 mg/l of phosphorus as P.

~~b) No effluent from any source which discharges within the Fox River Basin above and including Pistakee Lake and whose untreated waste load is 1500 or more population equivalents shall contain more than 1.0 mg/l of phosphorus as P.~~

~~c) No effluent from any source which discharges to a lake or reservoir with a surface area of 8.1 hectares (20 acres) or more or to any tributary to such a lake or reservoir and whose untreated waste load is 5000 or more population equivalents shall contain more than 1.0 mg/l of phosphorus as P.~~

~~d) No effluent from any source which discharge to a lake or reservoir with a surface area of 8.1 hectares (20 acres) or more which does not comply with Section 302.205 or to any tributary to such a lake or reservoir and whose untreated waste load is 1500 or more population equivalents and which is not governed by Sections 304.120(a) or 304.120(c) shall contain more than 1.0 mg/l of phosphorus as P.~~

b) No effluent from any source which discharges to a lake or reservoir with a surface area of 8.1 hectares (20 acres) or more, or to any tributary of such a lake or reservoir whose untreated waste load is 2500 or more population equivalents, and which does not utilize a third-stage lagoon treatment system as specified in Sections 304.120(a) and (c), shall exceed 1.0 mg/l of phosphorus as P; however, this subsection (b) shall not apply where the lake or reservoir, including any side channel reservoir or other portion thereof, on an annual basis exhibits a mean hydraulic retention time of 0.05 years (18 days) or less.

(c) Pursuant to Section 28.1 of the Act, the owner or operator of any source subject to paragraph (b) may apply for an adjusted standard. In addition to the proofs specified in subsection (c) of Section 28.1 of the Act, such application shall, at a minimum, contain adequate proof that the effluent resulting from grant of the adjusted standard will not contribute to cultural eutrophication, unnatural plant or algal growth or dissolved oxygen deficiencies in the receiving lake or reservoir. For purposes of this subsection, such effluent shall be deemed to contribute to such conditions if phosphorus is the limiting nutrient for biological growth in the lake or reservoir, taking into account the lake or reservoir limnology, morphological, physical and chemical characteristics, and sediment transport. However, if the effluent discharge enters a tributary at least 40.25 kilometers (25 miles) upstream of the point at which the tributary enters the lake or reservoir at normal pool level, such effluent shall not be deemed to contribute to such conditions if the receiving lake or reservoir is eutrophic and phosphorus from internal regeneration is not a limiting nutrient.

e)d) For the purpose of this Section the term "lake or reservoir" shall not include low level pools constructed in free flowing streams or any body of water which is an integral part of an operation which includes the application of sludge on land.

f) Compliance with the limitations of paragraph (c) shall be achieved by the following dates:

1) New sources shall comply on the effective date of this regulation; and

2) Existing sources shall comply by December 31, 1980, or such other date as required by NPDES permit, or as ordered by the Board under Title VIII or Title IX of the Act.

~~g) Compliance with the limitations of paragraph (d) shall be achieved by December 31, 1985, or such other date as required by NPDES permit, or as ordered by the Board under Title VIII or Title IX of the Act.~~

de) Compliance with the limitations of paragraph (b) shall be achieved by the following dates:

1) Sources with the present capability to comply shall do so on the effective date of this regulation;

2) All other sources shall comply as required by NPDES permit.

f) For purposes of this Section, the following terms shall have the meanings specified:

1) "Dissolved oxygen deficiencies" means the occurrence of a violation of the dissolved oxygen standard applicable to a lake or reservoir.

(BOARD NOTE: Dissolved Oxygen standards for general use waters are set forth at 35 Ill. Adm. Code 302.206; Dissolved Oxygen standards for secondary contact or indigenous aquatic life waters are set forth at 35 Ill. Adm. Code 302.405.)

2) "Euphotic zone" means that region of a lake or reservoir extending from the water surface to a depth at which 99% of the surface light has disappeared or such lesser depth below which photosynthesis does not occur.

3) "Eutrophic" means a condition of a lake or reservoir in which there is an abundant supply of nutrients, including phosphorus, accounting for a high concentration of Biomass.

4) "Eutrophication" means the process of increasing or accumulating plant nutrients in the water of a lake or reservoir. Cultural eutrophication is eutrophication attributable to human activities.

5) "Internal regeneration" means the process of conversion of phosphorus or other nutrients in sediments of a lake or reservoir from the particulate to the dissolved form and the subsequent return of such dissolved forms to the euphotic zone.

6) "Limiting nutrient" means a substance which is limiting to biological growth in a lake or

reservoir due to its short supply or unavailability with respect to other substances necessary for the growth of organisms.

7) "Unnatural plant or algal growth" means the occurrence of a violation of the unnatural sludge standard applicable to a lake or reservoir with respect to such growth.

(BOARD NOTE: Unnatural sludge standards for general use waters are set forth at 35 Ill. Adm. Code 302.203; unnatural sludge standards for secondary and indigenous aquatic life waters are set forth at 35 Ill. Adm. Code 302.403.)

IT IS SO ORDERED.

B. Forcade dissented.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Supplemental Opinion and Order was adopted on the 18th day of October, 1989, by a vote of 6-1.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board