

ILLINOIS POLLUTION CONTROL BOARD
January 22, 1987

IN THE MATTER OF:)
)
SITE-SPECIFIC RULEMAKING) R85-15
FOR THE SANITARY DISTRICT)
OF DECATUR, ILLINOIS)

ADOPTED RULE. FINAL ORDER.

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

PROCEDURAL HISTORY

On May 31, 1985, the Sanitary District of Decatur ("District") filed a petition for site-specific rulemaking with the Board. Specifically, the District requests that it be granted exception from 35 Ill. Adm. Code 304.120(c), which presently limits discharges from the District's sewage treatment works to 10 mg/l of five-day biochemical oxygen demand (BOD₅) (STORET number 00310) and 12 mg/l of suspended solids (STORET number 00530). In place of these limits, the District proposes that its discharge be subject to BOD₅ not to exceed 20 mg/l and suspended solids not to exceed 25 mg/l.

Hearing was held in this matter September 9, 1985, at the Decatur Public Library. At hearing the Illinois Environmental Protection Agency ("Agency") indicated its support for the District's request, and presented testimony to that effect. A statement favoring the District's request was also made by Richard J. Lutovsky, President of the Metro Decatur Chamber of Commerce. No objections to the District's request have been received by the Board, either at hearing or through filings.

The Illinois Department of Energy and Natural Resources made a "Negative Declaration" of economic impact in this matter on December 5, 1985, noting the declaration is appropriate based on the statutory criteria in Ill. Rev. Stat., Ch. 92 1/2, par. 7404(d)(2). The Economic Technical Advisory Committee concurred in this determination on December 6, 1985.

The Board adopted a first notice proposed Opinion and Order on January 23, 1986, notice of which was published in 10 Illinois Register 3746, February 21, 1986. The rules as proposed by the Board would have granted the requested relief, but would also have imposed restrictions on ammonia-nitrogen concentrations, and would have provided for termination or "sunset" of the rule in the year 2000.

On March 17, 1986, the Board received written comments from the Illinois Environmental Protection Agency (Agency), which also contain submissions from the District. On March 25, 1986, the District submitted an independent filing in which it adopts and supports the Agency's comments; no other comment was received.

The Agency comments specifically addressed these and other issues, as requested in the First Notice Opinion. Based on review of these comments, as well as the prior record in its second notice Opinion and Order of April 10, 1986 the Board deleted both of these limitations.

As its January 13, 1987 meeting, the Joint Committee on Administrative Rules issued a certificate of no objection to the proposed rules. The Board accordingly adopts as final rules the BOD₅ and TSS limits as originally requested by Decatur, as set forth in the Order below.

BACKGROUND

The Sanitary District of Decatur is located in Decatur in Macon County, Illinois, at the address of 501 Dipper Lane, Decatur, Illinois 62522. The wastewater treatment facility is located at mile point 126.4 on the Sangamon River on the southwest side of the City of Decatur, Illinois. The District provides sewage treatment service to approximately 136,700 residents in the City of Decatur and adjoining areas, and to industrial customers which contribute 49.5% of the total flow and 59.3% of the total organic loading. The City of Decatur is served primarily by a combined sewer system; however, more recent additions and expansions are serviced by separate sanitary and storm sewer systems.

The District is presently engaged in a large-scale facilities improvement program. Approximately \$25 million of construction was in progress at the time of filing of the petition. The entire program, absent the requested relief, is estimated to cost approximately \$147 million and is scheduled for completion by December 1990. Planned facilities include: bar screens, grit chambers, circular primary clarifiers, secondary fine-bubble aeration basins, circular secondary clarifiers, nitrification fine-bubble aeration basins, circular nitrification clarifiers, effluent pumps, chlorination facilities, sludge return facilities, digested sludge storage, sludge land-application equipment, and tertiary filters. The District also plans to provide treatment of the first flush pollutants at five combined sewer overflow locations (Petition, p. 10).

The United States Environmental Protection Agency ("USEPA") has reviewed the construction program and has approved and

committed to participating in funding all major elements of the program except the tertiary filters. The USEPA position is that tertiary filtration is not necessary to achieve Illinois' water quality standards, and hence it has deferred funding on this matter (R. at 135). Accordingly, if the filters were to be emplaced under present circumstances, the cost would have to be borne in full by the State and the District, in approximately equal shares (R. at 136).

Granting of the requested relief would in fact allow the District to exclude the proposed tertiary filters from its construction program, as well as allow alternate design of the overall effluent pumping system. In combination it is asserted that these would entail a construction cost reduction of approximately \$9.2 million (Petition at 4; R. at 93, 100, 122), \$4.7 million of which would be savings directly to the residents of the District and the rest savings to the State (R. at 122). The District would also realize an annual operations savings of approximately \$87,000 (Petition p. at 4; R. at 93). The saving of these sums constitutes Petitioner's principal purpose for requesting the desired relief (R. at 93).

ENVIRONMENTAL IMPACT

Under normal conditions, effluent discharge from the District's treatment facilities constitutes the primary flow in the Sangamon River at and below the District's outfall. This condition exists in part due to the location of the outfall with respect to Lake Decatur, which is located approximately four miles upstream from the outfall. During prolonged dry weather water is retained in the lake to maintain pool elevation, with a corresponding loss to downstream flow. Thus, the 30-day 10-year low-flow downstreams from the Lake Decatur dam is 0 cubic feet per second (cfs) during all months except April, May, and June, when it is 75, 95, and 63 cfs, respectively (Ex. 5, Table 1).

Interest in quality water in the Sangamon River below the District's outfall extends beyond the mandate of protecting the integrity of instream uses. The Sangamon River also offers the potential for withdrawal uses, including use as a raw source for domestic water. At present, the City of Springfield, which is located approximately 48 miles downstream, is considering the use of the Sangamon River as an emergency supplementary source of water (Petition, p. 8), and other similar withdrawal uses are possible.

The District asserts, and the Agency concurs, that granting of the requested relief will not prevent Petitioner from complying with present water quality standards in the Sangamon River.

In 1982 the Agency, along with the Illinois Department of Conservation and the United States Geological Survey, conducted an intensive field study and stream modeling of the Sangamon River in the reach between Decatur and Springfield. Results have been published by the Agency in a three volume report titled Water Quality Assessment of a Major Portion of Sangamon River Basin, dated March 31, 1983, and presented as Joint Agency and Petitioner's Exhibit 1. A part of this study addresses the impact of the District's outfall on instream dissolved oxygen (DO). Specifically considered are six scenarios of varying carbonaceous BOD₅ (CBOD₅) and ammonia nitrogen (NH₃-N) discharge concentrations and their impact on stream DO concentrations under low flow conditions. Three of the scenarios are not germane to the instant matter because they consider NH₃-N concentrations substantially in excess of that anticipated for the new District facility. The remaining scenarios consider three levels of CBOD₅ in accompaniment with an NH₃-N discharge of 1.5 mg/l. The latter is the intended design level of NH₃-N discharge under the proposed facilities improvement program. The three CBOD₅ concentrations are 10, 15, and 20 mg/l.

Modeling of instream DO concentrations at the three specific CBOD₅ concentrations was accomplished using Qual II, a computer-based model developed by Water Resources Engineers and available on the USEPA TYMNET system. Model calibration was accomplished using two sets of field data collected during intensive diel sampling periods in mid-August and mid-September of 1982. In addition, various other field studies conducted between June and November 1982 were relied upon to estimate time-of-travel and reaeration values. Sensitivity analysis, combined with model calibration, verification, and recalibration, suggested to the Agency that the model "could be used with a very high degree of confidence to predict DO profiles within the study area, downstream from the DSD discharge, for a wide range of flow conditions (40 to 400 cfs)" (Joint Exhibit 1, Vol. I, p. 3).

Field conditions at the time of the two calibration studies were significantly different. Several days prior to and during the August calibration period there was a sustained release of water of approximately 100 to 110 cfs over the Lake Decatur dam. Several days prior to and during the September sampling there was no release other than leakage at approximately 2.2 cfs. Thus, the September sampling approximates the worst case condition regarding the ability of the District's discharge to be assimilated by flows in the Sangamon River (R. at 22).

Model results indicate only small differences in instream DO concentrations at the three differing levels of CBOD₅. In particular, using the August 1982 calibration the maximum difference in DO concentrations between a 10 mg/l CBOD₅ discharge and a 20 mg/l CBOD₅ discharge is 0.2 mg/l, with most differences being 0.1 mg/l or less (Joint Exhibit 1, Vol. III, Figure 32);

all absolute values are greater than or equal to 7.2 mg/l DO. Using the September 1982 calibration the maximum difference was 0.7 mg/l with no absolute values below the District's outfall less than 6.3 mg/l DO (Joint Exhibit 1, Vol. III, Figure 33). On this basis the District, with the concurrence of the Agency, has asserted that no violations of DO water quality standards* would be occasioned by limiting the District's effluent to 20 mg/l BOD₅ (R. at 40).

The USEPA has contracted an outside review of the Agency's modeling effort (Ex. 5, Attachment 1), which review is generally critical of the modeling. Notwithstanding this fact, the USEPA has drawn conclusions which support those of the Agency and the District. Specifically, the USEPA concludes that during the summer** an effluent discharge of 20.0 mg/l CBOD₅ and 1.5 mg/l NH₃-N is adequate to maintain instream DO criteria (Ex. 5, p. 10). They further conclude that tertiary filtration, given the presence of nitrification, is not necessary to achieve a CBOD₅ of 20 mg/l (Ex. 5, p. 10), and that therefore the "proposed tertiary filtration following nitrification is not supported by the DO water quality analyses as necessary to meet the DO and ammonia criteria and to result in significant DO improvement" (Ex. 5, p. 11).

It is noteworthy that the assertion of no violation of instream standards is based upon NH₃-N effluent concentrations not exceeding 1.5 mg/l; at higher NH₃-N discharges modeling indicates below-standard DO concentrations at both calibrations for CBOD₅ concentrations above 10 mg/l (Joint Exhibit 1, Vol. III, Figures 32 and 33). This is consistent with ammonia concentrations exerting a major control on instream DO. The Board also notes that USEPA's conclusion that tertiary filtration is not necessary for the District to meet water quality standards is predicated on the assumption that the District will achieve a design effluent limitation of 1.5 mg/l of NH₃-N (Ex. 5, p. 7). For its part, the District asserts, and the Agency concurs, that it will meet the 1.5 mg/l NH₃-N discharge condition upon completion of its plant improvements (R. at 39; 54).

Of further note is that the District does not propose to operate at a full 20 mg/l BOD₅ discharge all of the time.

*Dissolved Oxygen (STORET number 00300) shall not be less than 6.0 mg/l during at least 16 hours of any 24 hour period, nor less than 5.0 mg/l at any time (35 Ill. Adm. Code 302.206).

**The USEPA is silent on the matter of recommending an exact CBOD₅ effluent limitation for the winter, noting only that "this value should be based on the expected CBOD₅ removal capability of facilities designed to achieve 20 mg/l CBOD₅ during warm weather" (Ex. 5, p. 10).

Rather, under normal operating conditions the BOD₅ would be at some lesser value (R. at 109). This position is supported by the conclusion of the USEPA that nitrification plants (as the District's is proposed to be) in Illinois and other States consistently produce effluents with a CBOD₅ less than 10 mg/l, and typically within the range of 4-6 mg/l (Ex. 5, p. 10).

IMPACT OF SUSPENDED SOLIDS

The Board noted in the First Notice Opinion that the record as then developed contained minimal information concerning the impact of the proposed increase in effluent TSS. While recognizing that the proposed increase in the BOD₅ limitation required an attendant increase in the TSS limitation due to interrelationships between these two parameters, the Board believed that further exposition of the environmental impact of TSS should be presented before this matter proceeded further.

The Agency comments provide excerpts from the United States Environmental Protection Agency's "Quality Criteria for Water" and the American Fisheries Society's "A Review of the EPA Red Book: Quality Criteria for Water" (Comments, Exh. 1 and 2). These excerpts present, inter alia, the effects of TSS on aquatic communities, and conclude that TSS concentrations under 25 mg/l provide a "high level of protection" and that concentrations under 80 mg/l provide a "moderate level of protection". The Agency further notes that TSS concentrations above 80 mg/l do occur at water quality stations located downstream from Decatur, associated principally with high flow events. The Agency thereby concludes that "the District's discharge, at 25 mg/l TSS, will not cause or contribute to excessive suspended solids levels in the river". The Agency also concludes that the District's discharge should not result in any identifiable bottom deposits.

With the addition of these observations, the Board determines that the matter of environmental impact of the proposed TSS effluent limitation is now adequately addressed in the record and that the requested TSS limit is warranted.

INSTREAM MONITORING

The second issue raised by the Board in the First Notice Opinion and addressed in the Agency's comments relates to the appropriateness of requiring the District, as a provision of the proposed rule, to conduct instream monitoring of dissolved oxygen (DO) concentrations. The concern of the Board on this issue stemmed from the District's contention, based on computer modeling, that the proposed relief would not occasion violations of the instream DO water quality standard. The Board asked whether addition monitoring would be necessary to enable verification of this contention.

Both the Agency and the District (Comments, Exh 4) believe that monitoring requirements specified as part of the rule would not provide any meaningful benefit over existing program authority. They point out that it is the Agency's prerogative through the NPDES permitting process to impose any necessary requirement as to monitoring, pursuant to 35 Ill. Adm. Code 309.146 and Section 301(b)(1)(C) of the Clean Water Act; that the District already conducts monitoring of instream DO; and that the Agency already monitors DO at three downstream ambient water quality stations. Thus, the Agency and District contend that adequate monitoring safeguards already exist, and further that adding a specific monitoring provision in the rule would restrict any flexibility in future monitoring.

Based on these observations, the Board affirms its determination in the First Notice Opinion that it would be unwarranted to specify instream monitoring provisions in the adopted rule.

AMMONIA NITROGEN LIMITATION

In the First Notice Opinion the Board proposed that the District's relief be limited to such times as when the NH₃-N effluent discharge is less than or equal to 1.5 mg/l. This proposal was based on demonstration by the District that at an NH₃-N discharge of 1.5 mg/l no violations of instream DO are projected by the modeling studies, but an absence of demonstration of the same condition at higher NH₃-N discharges. The Board specifically asked that comments address whether the 1.5 mg/l restriction is necessary, and, if necessary, whether it should apply under both warm and cold weather conditions.

In response the Agency and the District suggest that the ammonia provisions of 35 Ill. Adm. Code 302.212, which place limitations on instream ammonia levels, are sufficient safeguard to assure that the District's facilities perform in accordance with the modeling results. The District has further affirmed its previous contention, and the Agency agrees (Comments, p.4), that the design of the plant will allow treatment adequate to meet the water quality limitations of Section 302.212. On this basis, it is asserted that an additional limitation on NH₃-N in the site-specific rule is unnecessary.

The Board notes that it is explicit in 35 Ill. Adm. Code 304.105 that an exception to an effluent regulation, as is the issue here, does not remove the burden of meeting water quality standards. The Board, in fact, so emphasized in the First Notice Opinion. Accordingly, the existence of a water quality rule on the same parameter, which in this case is Section 302.212, could be viewed as an effective limitation on effluent discharges. While the Board does not find this position broadly compelling, in that its logical extension is that the existence of water

quality standards negates the need for any parallel effluent standards, the Board nonetheless does determine that there is merit in allowing the water quality standards to control in this case.

The Board does not at present have a generally applicable effluent standard for ammonia. Moreover, in promulgating Section 302.212, the Board noted, inter alia, that it was so doing "in order to relieve municipalities from the burden of ammonia control where such control does not appear necessary to protect the environment" (In the matter of: Amendments to Title 35: Environmental Protection; Subtitle C: Water Pollution; Chapter I: Pollution Control Board (Ammonia Nitrogen), R81-23, 49 PCB 297). Implicit in this determination is that, for the case of ammonia, performance to water quality standards is an acceptable determinant of the appropriate level of ammonia effluent discharge. The Board sees no reason why this strategy is any less appropriately applied to the District's discharge than it is to other discharges across the State.

Based on the above, the Board determines that the inclusion of an NH₃-N limitation in the Decatur site-specific proposed rule is unnecessary. Accordingly, the Board has deleted the NH₃-N limitation provisions as proposed under First Notice. This determination makes irrelevant the matter of whether such a limitation should differ depending upon the temperature of the receiving water.

BIOCHEMICAL OXYGEN DEMAND

The fourth issue requested to be addressed is the matter of the relationship between carbonaceous five-day biochemical oxygen demand (CBOD₅) and five-day biochemical oxygen demand (BOD₅). This request was occasioned by the Board's note that the District's modeling was based upon various scenarios of CBOD₅ discharge, but that the proposed rule is presented as a limit on BOD₅. The Agency responded in its comments that, as the Board had noted in the First Notice Opinion, presenting the proposed rule in terms of BOD₅ introduces a safety factor into the modeling results. This condition stems from the fact that CBOD₅ is a component of the more general BOD₅*. Thus, since the modeling results indicate that 20 mg/l of CBOD₅ produces minimal environmental impact, setting of the proposed rule with a 20 mg/l BOD₅ limitation restricts the District to a lower CBOD₅ output than demonstrably produces minimal environmental impact.

*In the District's current effluent CBOD₅ comprises approximately 61% of the BOD₅ (Comments, p.5).

Based on this additional perspective, the Board will make no modification in the BOD₅ provision of the proposed rule.

LIMITED DURATION ("SUNSET") PROVISION

The final issue addressed by the Agency is the matter of the Board's proposal to limit the requested relief to 10 years beginning from completion of the District's improvements. This is the "sunset" proposal. The Board asked that two aspects of this proposal be addressed: the impact such proposals might have on procurement of funding, and the general appropriateness of such proposals in certain site-specific rulemakings.

It is the Agency's belief that a sunset provision should have no effect on federal funding, since the purpose of the federal program is to enable a facility to meet final effluent limits at the time of completion (Comments, p.12). The matter of whether the procurement of other capital funding would be affected is less certain. Since this funding is typically achieved through the issuance of twenty-year bonds, the Agency speculates that a ten-year limit "could conflict" with this issuance (Comments, p.12). No more substantial perspective is offered.

At the outset, the Board notes that it is persuaded by the Agency arguments, at least in part, against including a "sunset" provision in this particular site-specific. The following concerns, taken together, weigh against the inclusion.

The implications of, and rationale for, a 10 year sunset provision as it would relate to Decatur's circumstances would better have been raised earlier and aired at hearing. However, this statement is not intended to imply that in other circumstances airing at hearing is a necessary prerequisite to establishing sunset provisions. Additionally, the Board's rationale supporting "sunset" in large measure focused on concerns applicable generally to site-specific regulations (and arguably to general regulations), rather than concerns special to the Decatur situation.* Next, the effect of specific sunset language on local bond issues is a matter that needs further consideration. Finally, the Board, on balance, does not feel that a sunset provision is so essential in Decatur's case, given other review benchmarks, as to warrant delaying the decision in order to hold further hearings.

*The Board recognized this in asking for general comments on the concept. These general comments on the policy aspects will be further considered in R82-36, the generally applicable regulatory proceeding.

In so holding, however, the Board wishes to emphasize its areas of disagreement with the Agency's comments, as follows.

In addressing the general merits of sunseting certain site-specific rules, the Agency first questions whether the Board presently possesses authority to do so. The Agency points out that both the Illinois Environmental Protection Act (Act) and the Board's procedural rules are silent on the matter of limiting the duration of rules. The Agency concedes that the Act does provide the Board authority to adopt procedural rules which could include provisions for sunseting site-specific rules (Comments, p.7-8). However, the Agency believes that the Board may not impose sunset provisions without first promulgating an enabling procedural rule; to do otherwise, the Agency argues, would cause the Board to exceed its authority.

The Agency additionally notes that a higher court may invalidate a Board regulation if it is clearly arbitrary, unreasonable, or capricious, and believes that it may "be" argued that in the absence of a procedural rule setting forth criteria for the imposition of a limited duration provision in a site-specific rule the Board's action in doing so would be arbitrary and capricious" (Comments, p. 10).

The Board does not find compelling the argument that there must be underlying procedural rules before sunseting on a site-specific basis, although this route might be more desirable. Section 27(a) of the Act delegates a broad rulemaking authority to the Board and authorizes, inter alia, that "any such regulations may make different provisions as required by circumstances for different contaminant sources and for different geographical areas". The same section concludes with the statement that "the generality of this grant of authority shall only be limited by the specifications of particular classes of regulations elsewhere in this Act". No restriction on sunseting exist elsewhere in the Act. Moreover, sunseting may prudently be viewed as within the scope of Board authority to make different provisions as required by circumstances for different contaminant sources and for different geographical areas. Therefore, the Board determines that it presently does have authority to promulgate sunset provisions in rulemakings, as circumstances may warrant. While the Board allows that a procedural rule specifying procedures for sunseting may have merit*, it does not believe its existence is a necessary condition to a determination that sunseting is appropriate in any specific case.

*However, the Board notes that the instant matter is not the proper forum within which such merits might be debated.

The Agency also argues that a sunset provision is unnecessary because;

there is no substantial benefit in requiring the Board to re-evaluate the proposed relief after ten years. Since no water quality standards would be relaxed, the Agency has the capability to modify permit requirements at any time to eliminate violations. In addition, permits may be issued for a maximum of five years. The renewal process will allow the assessment of water quality in the Sangamon River and any conflict between the operations of the District and downstream dischargers. Agency review will be more timely and efficient in this matter. (Comments, p.12)

In a larger sense, the Agency's argument fails to recognize the sharp distinction in responsibilities delegated to the Board and the Agency by the Act. Section 5(b) of the Act plainly states:

The Board shall determine, define and implement the environmental control standards applicable in the State of Illinois and may adopt rules and regulations in accordance with Title VII of this Act.

Though the functions performed by the Agency are crucial to the State and multivariate in nature, they are primarily administrative in character. The Board is the entity in Illinois created to "determine, define and implement" environmental control regulations. Exercise of this authority necessarily involves a certain amount of judgment and discretion and the Board must assume responsibility, both concurrently and in the future, for the decisions it reaches.

Based on the foregoing, the Board deleted the provision in its First Notice proposal that the rule be of a defined duration.

ORDER

The Board hereby directs the Clerk to cause the filing of the following final, adopted rules within the Secretary of State.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 304

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

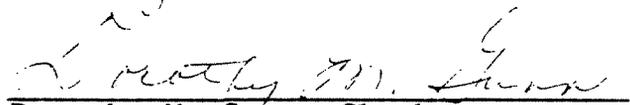
Section 304.212 Sanitary District of Decatur Discharges

- a) This Section applies only to effluent discharges from the Sanitary District of Decatur's Sewage Treatment Plant into the Sangamon River, Macon County, Illinois.
- b) The provisions of Section 304.120(c) shall not apply to said discharges, provided that said discharges shall not exceed 20 mg/l of five day biochemical oxygen demand (BOD₅) (STORET number 00310) and 25 mg/l of total suspended solids (STORET number 00530).

IT IS SO ORDERED.

J. D. Dumelle concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Final Opinion and Order was adopted on the 22nd day of January 1987, by a vote of 6-0.


Dorothy M. Gunn, Clerk
Illinois Pollution Control Board