

ILLINOIS POLLUTION CONTROL BOARD
September 18, 1975

CITY OF MARION,)
Petitioner,)
v.) PCB 75-220
ENVIRONMENTAL PROTECTION AGENCY,)
Respondent.)

OPINION AND ORDER OF THE BOARD (by Mr. Dumelle):

The City of Marion (Petitioner) filed a variance petition on May 23, 1975, seeking relief from Rule 203(c) of Chapter 3: Water Pollution Regulations, as applied to phosphorus. On July 18, 1975, pursuant to a Board Order, Petitioner submitted additional information concerning algae blooms in Crab Orchard Lake and their effect upon the dissolved oxygen in benthic organisms of the Lake. The Environmental Protection Agency (Agency) filed its Recommendation to grant the variance, on August 19, 1975. No hearing was held.

Petitioner is a municipal corporation and operates four independent treatment plants: a 1.3 MGD trickling filter plant, a single cell lagoon, and two 3-cell lagoon systems with chlorination. Petitioner is currently under a Board Order to upgrade its trickling filter plant, and has failed to comply with this Order. The Agency has sought enforcement in Circuit Court.

Petitioner has accepted a grant by the Agency for the replacement of its existing facilities with a new tertiary treatment plant. The proposed plant will remove phosphorus through a liquid alum chemical process. Petitioner states that its new plant will meet all of the Chapter 3 effluent standards. However, the proposed facility will discharge to Crab Orchard Creek, a tributary to Crab Orchard Lake. The phosphorus concentration in Crab Orchard Creek as it enters Crab Orchard Lake periodically exceeds 0.05 mg/l. In addition, Petitioner's plant effluent will constitute the principal flow in Crab Orchard Creek below its confluence with West End Creek during 7-day, 10-year low flow conditions. Rule 402

of Chapter 3 requires that no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standards. Where a violation exists, the Agency may require the discharger to meet whatever effluent limits are necessary to insure compliance with the water quality standards. Since Petitioner's proposed discharge will be tributary to Crab Orchard Creek, a tributary to Crab Orchard Lake, Rule 402 is applicable. Petitioner's effluent must not contribute to a violation of the Rule 203(c) water quality standard for phosphorus. Petitioner's effluent is limited to the Rule 203(c) standard of 0.05 mg/l phosphorus and it is from this standard that Petitioner seeks a variance.

Petitioner seeks a limitation of 1.5 mg/l on its phosphorus effluent. Petitioner claims it is not technically feasible to consistently meet the 0.05 mg/l standard with existing removal technology. Petitioner also states that as an alternative, diversion 4.5 miles to another watershed with a higher allowable standard would cost \$1,050,000 and thus be prohibitively expensive compared to chemical removal methods.

Petitioner has not considered land application as an alternative. The Agency indicates in its Recommendation that since the Petitioner is under a Board Order, "to install and operate upgraded improved sewage treatment facilities ...", and since Petitioner accepted an Agency grant offer which was based upon a determination by the Agency of the most cost-effective means of treatment, that it would be inappropriate to consider land application at this time. The Board does not agree that it is for the Agency to make any final "cost-effective" determinations binding upon the Board.

Petitioner states that its chemical removal system will cost approximately \$19,700 a year to remove phosphorus to a level of 1.5 mg/l. Petitioner contends that to remove phosphorus to the 0.05 mg/l level would cost an additional \$29,222 for a total yearly removal cost of \$48,922. Petitioner alleges that this additional cost would be prohibitive. Petitioner fails to present data beyond a mere assertion, that this cost increase would be a financial hardship. Petitioner presents no data as to the cost of reaching a removal level of 1 mg/l phosphorus.

The Agency states in its Recommendation that while it does not believe it is chemically feasible to remove phosphorus consistently to a level of 0.05 mg/l, that Petitioner can reach a level of 1 mg/l simply by adding additional chemicals. The Agency states that the proper dosage with the proposed equipment can best be determined after the facility commences operation. The Agency admits that the purchase of alum and polymers is a major cost in phosphorus removal.

The Agency Recommendation notes that given the 2.5 MGD average design flow of Petitioner's proposed facility, with an approximate phosphorus concentration of 1 mg/l, the Petitioner would discharge about 7,619 pounds of phosphorus per year. The concentration of phosphorus found in Crab Orchard Creek, approximately 1-1/2 miles south of Marion, below West End Creek which carries Petitioner's trickling filter plant effluent, averaged 1.71 mg/l in 1974 and 1975. The Agency states in its Recommendation that the U.S. Environmental Protection Agency (U.S. EPA) estimates that Petitioner currently contributes 35,450 pounds per year of phosphorus to Crab Orchard Lake, or 22% of the annual influx. The U.S. EPA also indicates that Crab Orchard Lake may be nitrogen, rather than phosphorus, limited since the nitrogen:phosphorus ratio is 4.79:1.

The Agency notes that two eutrophication studies have been made of Crab Lake. Both found algae in various numbers in the Lake. Although there is evidence that blooms do occur about twice a year, neither study clearly demonstrates the presence of algae blooms. Nor do the studies reveal oxygen depletion arising from algae die-off.

No hypolimnion study has been conducted on Crab Lake. The Agency indicates that an adequate study, would not be justified in this proceeding as it could not be accomplished within the 30 days which the Agency has to answer a variance petition, and would be an unreasonable financial hardship upon the Petitioner.

The Agency states if Petitioner is allowed a variance at 1 mg/l of phosphorus, the anticipated environmental impact in Crab Orchard Lake will be minimal, as the Lake appears to be limited by nitrogen rather than phosphorus at the present.

The Board finds that based on Petitioner's existing obligation as to upgrade its sewage treatment facilities, the inclusion in the proposed treatment facility of a phosphorus removal system, the economic and administrative constraints which preclude alternative removal methods and the projected minimal impact of Petitioner's discharge upon Crab Orchard Lake at a level of 1 mg/l, Petitioner would suffer an arbitrary and unreasonable financial hardship if compelled to meet Rule 203(c) at the present time. However, Petitioner has failed to clearly demonstrate economic hardship as to cost increments in achieving compliance below a level of 1.5 mg/l. In addition, the Agency indicates a level of 1 mg/l phosphorus can be reached by a higher chemical dosage. In light of this information and Petitioner's position as a major contributor of phosphorus to Crab Orchard Lake, the Board finds that a

limit of 1 mg/l phosphorus maybe justified. Petitioner will be required to install equipment capable of achieving 1 mg/l. Since Crab Lake may be nitrogen-limited, operation at 1.5 mg/l phosphorus in the effluent will be permitted. In future variance or regulatory proceedings, the needed research can be presented for further determinations.

Because of the interrelationship in the protection of water quality between the relief sought -- a variance from the phosphorus standard -- and other pollutants such as BOD and suspended solids, we will condition the grant of this variance with the operation of Petitioner's sewage treatment plant so as to afford the best practicable treatment in accordance with the prior Board Order in PCB 71-25.

Because Petitioner is required to obtain an NPDES permit, the Board may grant a variance for up to a five year period. The Board has determined that Petitioner should be granted a variance until July 1, 1977.

This Opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

The Pollution Control Board hereby grants the City of Marion a variance from Rule 203(c) of Chapter 3 until July 1, 1977 subject to the following conditions:

1. Petitioner's proposed waste treatment facility effluent shall be limited in its phosphorus discharge to 1.5mg/l but shall be capable of achieving 1.0 mg/l if necessary.

2. Petitioner shall adhere to the project schedule set forth on the first page of its original petition for variance, submitted to the Board on May 27, 1975.

3. Petitioner shall maintain its present sewer treatment facility so as to afford the best practicable treatment and in accordance with the dictates of the prior Board Order (PCB 71-25) to wit:

a. The City of Marion shall operate its existing waste treatment facilities in such manner that no effluent shall exceed 25 mg/l BOD or 25 mg/l suspended solids except that wet weather flows in excess of 1.3 MGD shall not be subject to this requirement. Chlorine residual in the treated effluent shall be maintained between 0.5 mg/l and 1.0 mg/l during this interim period.

b. The City of Marion shall provide suitable sampling taps for all effluent and bypass lines in accordance with the provisions of Rule 502 of the Water Pollution Control Regulations within 30 days of receipt of this Order.

c. The City of Marion shall submit monthly progress reports to the Environmental Protection Agency. Said progress reports shall commence on September 23, 1975 and shall provide details of Petitioner's progress toward completion of the new waste treatment facilities.

4. Within 35 days after the date of the Board Order herein, the City of Marion shall execute and submit to the Manager, Variance Section, Division of Water Pollution Control, Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois, 62706, a Certification of Acceptance and agreement to be bound to all terms and conditions of the variance. The form of said certification shall be as follows:

C E R T I F I C A T I O N

I (We), _____ having read and fully understanding the Order of the Illinois Pollution Control Board in PCB 75-220 hereby accept said Order and agree to be bound by all terms and conditions thereof.

Signed _____
Title _____
Date _____

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 18th day of September, 1975 by a vote of 4-0.



Christan L. Moffett, Clerk
Illinois Pollution Control Board