

ILLINOIS POLLUTION CONTROL BOARD  
March 16, 1978

CITY OF CAIRO, )  
 )  
 Petitioner, )  
 )  
 v. ) PCB 77-256  
 )  
 ENVIRONMENTAL PROTECTION AGENCY, )  
 )  
 Respondent. )

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

Petitioner has sought a Variance from Rule 602(c) of Chapter 3: Water Pollution Rules and Regulations. An Agency Recommendation in support of the Variance was filed on December 19, 1977. The Petitioner waived a hearing on this matter.

The City of Cairo is located at the confluence of the Mississippi and Ohio Rivers. The population of 6500 is presently served by a combined sewer system and a primary treatment facility with a 1.9 MGD capacity. The hydraulic load to the Cairo STP typically exceeds 1.0 MGD; however, the organic load is substantially less because of unusual infiltration into the system and the absence of industrial users. Information supplied by Petitioner shows the following effluent characteristics: BOD-32 mg/l; suspended solids-20 mg/l; fecal coliform-1,300,000/100 ml (24 hour composite). Effluent is discharged into the Ohio River.

The unusual hydraulic characteristics of Cairo complicate operation of the sewage treatment facilities. Because Cairo is located essentially on a sand spit between the two rivers, local groundwater levels tend to correspond closely to the water stages of the rivers. The Corps of Engineers (Memphis District) operates four lift stations along the Ohio River to prevent interior flooding of Cairo's levees.

The flow in the sewers is proportional to the river stages as a result of ground water levels and infiltration into the combined system. One pumping station at 10th Street pumps dry weather flow into the STP further downstream. Any flow over the capacity of this pump is picked up by the other three stations and pumped directly into the Ohio River. Generally, direct pumping is required only when river stages exceed 29 feet.

Excess flows that are pumped directly to the river have the following characteristics: BOD-20 mg/l; SS-20 mg/l; fecal coliform-300,000/100 ml. Residual BOD in the Ohio River, due to pumping, are infinitesimal and range between the 0.0035 mg/l and 0.000089 mg/l with two pumps operating at capacity (120 cfs). Testing by Petitioner shows fecal coliform counts in the Ohio, after first flush, to be insignificant.

Petitioner holds NPDES permit No. IL 0023825. A revised Step I facilities plan is currently undergoing final review by the Agency. For flows up to 1.9 MGD, Cairo proposed to upgrade the existing primary plant and install a micro-strainer with effluent disinfection, an additional aerobic digester, and sludge dewatering equipment. Design effluent BOD/SS will be 20/25. Operation, assuming Step II and III approval, is scheduled for March, 1980.

Petitioner and the Corps of Engineers have studied the feasibility of separating the combined sewer system to upgrade treatment since 1970. Corps involvement was essential because of their flood control responsibilities. It has been concluded that separation is not feasible for a number of reasons; principally that a population the size of Cairo could not financially support the construction necessitated by the unusual soil and infiltration conditions. Such a project would cost \$25,000,000 in 1980 dollars; Cairo's share would be 25% with the rest in federal funding. Storage of storm water and later treatment is also not feasible since the system, with two pumps running at capacity, would be handling 77.56 MGD. Cairo has in the past required such pumping for periods greater than 60 consecutive days.

The alternative proposal included in the Step I plan provides that the Corps abandon the 38th Street station and reconstruct the 28th and 10th Street stations with three pumps each. When the river stage reaches a gauge reading of 29 feet, a "first flush," equal to ten times the average treatment flow, will be pumped to a holding pond at the sewage treatment plant. The holding pond's design capacity is 6.5 million gallons. Contents of the pond would be returned to the system for treatment as the dry weather flow resumes. Excess would be pumped directly to the Ohio River through "cone type" screens to eliminate floating material.

Rule 602(c) provides in pertinent part that:

All combined sewer overflows and treatment plant bypasses shall be given sufficient treatment to prevent pollution or the violation of applicable water quality standards. Sufficient treatment shall consist of the following:

- (1) All dry weather flows, and the first flush of storm flows as determined by the Agency, shall meet the applicable effluent standards;
- (2) Additional flows, as determined by the Agency but not less than ten times the average dry weather flow for the design year, shall receive a minimum of primary treatment and disinfection with adequate retention time;

The two-year Variance from 602(c) is apparently sought for flows in excess of the plant capacity until the new treatment facility is completed. Rule 602(c) requires that STP bypasses be given sufficient treatment to prevent violation of the applicable water quality standards. Board standards applicable here are BOD/SS of 30/37 as contained in Rule 404(a) of Chapter 3. The more stringent federal standards of 30/30 control. However, fecal coliform standards of Rule 405 in Chapter 3, 400/100 ml; also apply.

The situation in Cairo presents an unusual problem as the effluent due to excess flows meets the BOD/SS standards even without primary treatment. For first flush flows, meeting the standards satisfies the rule of sufficient treatment in 602(c). Such is not the case for flows above the first flush where Rule 602(c) requires at least "primary treatment" under sub-part (2). Were the Board to follow the literal meaning of 602(c)(2), the Petitioner would be required to perform an act that would not result in any improvement of effluent quality. Additionally, such a requirement would result in incredible economic hardship due to problems associated with storing prior to treatment. Since the Petitioner complies with the purpose and standards of Rule 602(c) as to effluent quality for BOD/SS, a Variance is not necessary under the facts of this case.

Petitioner does not comply with fecal coliform standards for either first flush or greater flows. Completion of the new facility will ultimately provide disinfection for the first flush and thus compliance with the standards. A Variance for first flush is only necessary for the two year period until the new plant is operational. An additional six months shall be provided so that this problem can be remedied finally without further Board action.

Flows in excess of the ten times daily average have the same problem as was discussed in relation to BOD/SS. A literal reading of 602(c)(2) requires "disinfection". Since the Petitioner has presented no plans to disinfect these flows once the treatment plant is complete, the nature of the request approaches a permanent Variance. This the Board is powerless to grant. The fecal coliform standards are presently under revision in R77-12. It may be that the effluent will comply with the amended standards. While Petitioner submitted some data showing insignificant amounts of fecal coliform due to pumpage, it was not sufficient to ascertain compliance. It does however, indicate that no environmental degradation is likely under present conditions. Under the cir-

cumstances, a Variance from the disinfection standard is reasonable until such time as R77-12 is decided, in no case for a period greater than two years.

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

ORDER

It is the Order of the Pollution Control Board that:

1. Petitioner's Variance request for first flush and excess flows under Rule 602(c) and applicable BOD/SS standards is dismissed as moot since effluent pumped directly into the Ohio River complies with such standards.
2. Petitioner's Variance request for first flush flows under Rule 602(c)(1) and applicable standards for fecal coliform is granted for thirty months from the date of this Order or until the new STP is operational, whichever occurs first.
3. Petitioner's Variance request for flows in excess of ten times average daily flow under Rule 602(c)(2) and applicable standards for fecal coliform is granted for two years from the date of this Order or until the proceedings in R77-12 are complete, whichever occurs first.
4. The Agency is authorized to modify Petitioner's NPDES permit in conformance with this Opinion and Order.
5. Petitioner, within 45 days after the Board Order in this matter, shall execute and forward to the Illinois Environmental Protection Agency, Manager, Variance Section, 2200 Churchill Road, Springfield, Illinois 62706, and to the Pollution Control Board, a Certificate of Acceptance and agreement to be bound by all terms and conditions of the Variance. This 45 day period shall be held in abeyance during any period this matter is being appealed. The form of such certification shall be as follows:

CERTIFICATION


The City of Cairo has received and understands the Order of the Illinois Pollution Control Board in PCB 77-256 and hereby accepts said Order and agrees to be bound by all of the terms and conditions thereof.

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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 16<sup>th</sup> day of March, 1978 by a vote of 5-0.

  
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Christan L. Moffett, Clerk  
Illinois Pollution Control Board