ILLINOIS POLLUTION CONTROL BOARD
June 5, 1986

IN THE MATTER OF	)	
	)	
JOINT PETITION OF THE CITY OF METROPOLIS AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR EXCEPTION TO THE COMBINED SEWER OVERFLOW REGULATIONS	)	PCB 85-139

MR. PAUL HENRY APPEARED ON BEHALF OF THE CITY OF METROPOLIS.

MR. THOMAS DAVIS APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

OPINION AND ORDER OF THE BOARD (by J. Theodore Meyer):

This matter comes before the Board upon a September 12, 1985 joint petition filed on behalf of the City of Metropolis (City) and the Illinois Environmental Protection Agency (Agency) for an exception to 35 Ill. Adm. Code 306.305(a) and (b) of the Board's combined sewer overflow (CSO) regulations. An amendment to the joint petition was filed by the parties on November 5, 1985 which indicated that the City had complied with the notification dates of Section 306.351. Hearing was held on December 17, 1985 at which testimony and exhibits were presented by the parties. There was no disagreement as to the facts. No members of the public were present.

Sections 306.305(a) and (b) provide as follows:

> a) All dry weather flows, and the first flush of storm flows as determined by the Agency, shall meet the applicable effluent standards; and
>
> b) Additional flows [i.e. not dry weather flows or first flush storm 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 City contends that the existing overflows from its combined storm and sanitary sewer system have minimal impact on the water quality of the Ohio River (the receiving water) and do not restrict stream use, and that construction of CSO treatment

facilities at an estimated cost of $2.5 million (1980 dollars) would produce little benefit.

The City is located at the southern tip of Illinois in Massac County on U.S. Route 45 about 3 miles west of Interstate 24 on the northern bank of the Ohio River. The existing sewage treatment plant (STP) consists of a 1.5 million gallons per day (MGD) design flow primary treatment plant with peak flow of 2.0 MGD. Major units of the STP include bypass screens, primary clarifiers and a vacuum filter. A barminutor and grit chamber are presently out of service. The City asserts that, based on the Agency's monthly grab sample results, the present discharge of the City's STP exceeds the effluent limitations in its NPDES permit albeit no data is given on which to support this assertion.

The City is served by 13 miles of combined storm and sanitary sewers and 39 miles of separate sanitary sewers collecting wastes from approximately 7,200 people. The combined sewer collection system drains through a single 50 inch interceptor which has an estimated capacity of 50.7 MGD. Overflows from the 50 inch interceptor drain into the Ohio River. The only other overflow which exists in the system is an emergency STP bypass which is reserved for use when the STP is inoperable. The joint petitioners assert that no major local industries are connected to the City's sewer system. (Joint Pet. pp. 1-2). The Agency alleges that the City will receive Build Illinois Grant funds for design of the facilities recommended in the City's proposed STP upgrade. With the grant, the City's share will be about $1.5 million.

Pursuant to an Administrative Order issued by the United States Environmental Protection Agency, the City submitted a Municipal Compliance Plan to USEPA which outlines the City's efforts to assure full compliance with the Clean Water Act by July 1, 1988 which includes upgrading the present STP to a 2.0 MGD secondary treatment facility with a peak capacity of 4.25 MGD, rehabilitation of the wastewater collection system to remove an average of 0.7 MGD of infiltration and inflow and fixing a broken valve and constructing a sluice gate at the combined sewer outfall to eliminate flooding of the system during high river levels. The estimated cost of this upgrading is approximately $3.5 million. (Joint Exh. no. 5 pp. 5-7). The Agency, in support of this joint petition, has also required that the City screen overflows prior to discharge and provide for pumping wet weather flows during high river stages when gravity bypassing is not possible and protect manhole 707 from river intrusion. (Joint Pet. p. 3).

At the CSO discharge point, the Ohio River is generally used as a barge mooring area. The joint petitioners assert that a visual inspection of the slough leading to the Ohio River and the

river bank in the area surrounding the discharge point indicated that there was no effect of the CSO discharge on the river or the river bank. (Joint Exh. no. 3 and 4). The impact of the existing method of operation on the Ohio River was examined in the CSO Impact Evaluation Phase I, October 1983 which stated:

> "The 7 day 10 year low flow of the Ohio River in the vicinity of Metropolis is 44,820 CFS, or 28,966 MGD. Assuming all of the sewage from the combined system were dumped into the river, which it is not, the total discharge into the river would only be 0.22 MGD. This provides a dilution ratio of 130,000 to 1 at low flow. At average flow rates, the dilution ratio would be considerably higher, making the impact of the discharge on the Ohio River insignificant."

The CSO Phase II Report stated further that the expenditure of $2.5 million is not justified to cope with the City's CSO problem since it contributes such a minor flow to the Ohio River and the biochemical oxygen demand (BOD) and suspended solids (SS) concentrations in the receiving water would not be appreciably altered by the City's storm flow discharge. (Joint Pet. p. 3).

A Combined Sewer Overflow Study was conducted by Clark, Dietz Engineers in October 1980 (1980 CSO study) which addressed the quality and quantity of the City's CSO discharge during two storms in September and October of 1979 and provided several alternatives to solve the City's CSO problem. Based on the data received from the two storms, the climatological background and visual observation, the report concluded that the overflow has a considerable impact on the area surrounding the overflow and the river itself. Presently, water ponds immediately below the CSO outfall and when temperatures are high and conditions are dry, the odors from this pool are strong. Also, floating paper and rags have accumulated on limbs of trees that have been pushed into the slough creating a nuisance. (Joint Exh. no. 1, p. 27).

The 1980 CSO study also determined that the first flush volume for the design storm (1 year - 1 hour) would be 400,000 gallons. By relating the amount of rainfall, including the BOD load, of the September and October 1979 storms to that of the design storm, the study concluded that the design storm would generate 325 lbs. of BOD which converts to a concentration of approximately 98 mg/l. No data was presented on the SS concentration of the first flush of the design storm. (Joint Exh. no. 1 p. 36).

Four alternatives were examined to handle the City's CSO problem. Alternative no. 1 would provide treatment of all dry weather flows and first flush flows at an estimated cost of $2.5 million (1980). Alternative no. 2 is the same as alternative no.

1 except that, after the first flush basin is filled, the excess flow will be directed to a 5.0 MGD primary treatment and disinfection system, then discharged to the Ohio River. The estimated cost of this alternative is $3.15 million (1980). Alternative no. 3 is the same as Alternative no. 1 except that, after the first flush basin is filled, excess flow will be directed to a 10.0 MGD primary treatment and disinfection system, then discharged to the Ohio River. The estimated cost of this alternative is $3.3 million (1980). Lastly, Alternative no. 4 is the same as Alternative no. 1 except that, after the first flush basin is filled, the excess flow will be directed to a 20.0 MGD primary treatment and disinfection system, then discharged to the Ohio River. The estimated cost of this Alternative is $4.2 million (1980). All of these alternatives are predicated on the present STP being upgraded in accordance with the Municipal Compliance Plan referred to above. In accordance with the Municipal Compliance Plan, the City purposes to modify the combined sewer overflow structure for $200,000. These improvements will include screening of overflows, protecting against backup under flood conditions, pumping of wet weather flows during high river stages as needed to prevent river intrusion and providing treatment to plant capacity prior to allowing overflows.

Another study was conducted by Cepheus Industries, Inc. in September 1984. (1984 Cepheus study). This study sampled the soils both upstream and downstream as well as the soils in the slough which leads from the CSO discharge to the Ohio River for copper, lead and zinc. The study concluded that in all cases there is an increase in metal concentrations in the downstream samples as compared to the upstream samples with the percent variation ranging from an increase of 16% for zinc to a 592% increase for lead. The study went on to state that considering the small number of samples and the high readings from the "uncontaminated" upstream sample, the significance of these data is difficult to determine (Joint Exh. no. 4).

At the outset, the Board notes that the City's CSO discharges to a slough which floods at least one or more times every year. (R. 11). The 1980 CSO study examined the slough and the surrounding area and concluded that the City's CSO has a considerable impact on the area surrounding the overflow and the river itself with strong odors present when temperatures are high and conditions are dry as well as floating paper and rags. In contrast, the 1984 Cepheus study examined the slough and concluded that there was little indication that the slough was utilized for sewage overflows. The study also examined the pool under the CSO outfall and concluded that small pockets of gray material on the pool bottom felt and smelled like sludge but the bottom was comprised mostly of red-brown clay, sticks and leaves with very little sludge present. In attempting to reconcile these two studies, the Board concludes that the impacts observed

during the 1980 CSO study were either no longer present or present in small amounts during the 1984 study. The Board notes that sludge was observed in the pool at the base of the CSO outfall but concludes that the environmental impact of these amounts are minimal.

An analysis of the sediments in the area surrounding the overflow and in the river itself were also examined by the 1980 CSO study and the 1984 Cepheus study though the sediments were examined for different constituents. The 1980 CSO study concluded that "very few of the overflow plume area samples contain definite sludge or organic deposits. Apparently the dilute overflow after first flush and the volume of flow in the river tend to carry and disperse the settleable solids further downstream." (Joint Exh. 1, p. 28). The 1984 Cepheus study which obtained samples from the same area concluded that there was an increase in some metal concentrations in the downstream sediment samples as compared to the upstream sediment samples. However, the study concluded that because of the small sample size and the contaminated upstream samples, the significance of the samples was difficult to determine.

Based on the 1980 CSO study, the Board concludes that the impact from the City's CSO is minimal. While this study observed the presence of sludge, these amounts were insignificant. The Board reaches a similar conclusion based on the 1984 Cepheus study. Though this study revealed increased metal concentrations in the sediments surrounding the CSO outfall area, this study was inconclusive. Since the area surrounding the CSO outfall regularly floods, it is difficult to determine the origin of these metals. Nothing in the record suggests that the increased metal concentrations are being produced by the City's CSO and may, in fact, be produced upstream of the CSO outfall. Moreover, no conclusions can be drawn on the impact of the City's CSO based on this study because of the small sample size and the contaminated upstream samples. The Agency testified that its inspections convinced them "that there are no problems and no aesthetic problems or evidence of pollution in the receiving stream." (R. p. 17). Therefore, on balance, the Board concludes that the adverse environmental impacts, if this exception is granted, are minimal.

In examining the alternatives, the Board concludes that Alternative nos. 2-4 are not justified environmentally or economically. These alternatives are designed to capture increasing amounts of excess flows and transport them to a primary treatment and disinfection system. These excess flows are those past first flush and consequently have lower concentrations of pollutants and will have a minimal impact on the slough and the Ohio River. In light of these facts, the construction of additional CSO facilities is not economically justified. The City asserts that in lieu of Alternative no. 1,

it believes that the upgrading of the present STP including the conditions required by the Agency will solve the City's CSO problems at a savings of approximately $2.0 million. The Board agrees. The pollutant load of the first flush will not have a significant impact on the receiving water. This conclusion is supported by the CSO Phrase II report which determined that the BOD and SS concentrations in the receiving water would not be appreciably altered by the City's CSO discharge. Also, upgrading the present STP will enable the City to capture and treat greater amounts of flows, thereby decreasing the occurrence of overflow events.

In conclusion, the Board finds that the evidence in the record supports granting the City an exception to 35 Ill. Adm. Code 306.305(a) and (b), subject to conditions. The Board notes that the impact of the City's CSO discharge on the water quality of the Ohio River will be minimal. In addition, the Board notes that alternative controls as well as the cost of complete control are high. The Board will require that the City implement its Municipal Compliance Plan along with the requirements suggested by the Agency and maintain its sewer system in optimal operating condition prior to and during any overflow event.

ORDER

The City of Metropolis (City) is hereby granted an exception from 35 Ill. Adm. Code 306.305(a) as such provision relates to first flush of storm flows and 306.305(b) for its combined sewer overflows into the Ohio River at River Mile 944.1, subject to the following conditions:

1. The City shall construct the necessary improvements to its sewage treatment plant pursuant to the timetable in its Municipal Compliance Plan which is hereby incorporated by reference.

2. The City shall provide for screening of overflows prior to discharge and protect the overflow structure against river water backing into the sewer during high river stages.

3. The City shall provide for pumping overflows during high river stages when gravity bypassing is not possible.

4. Overflows shall occur only while the treatment plant is receiving and treating its design maximum flow.

5. The City shall maintain its Municipal Sewer System in optimal operating condition prior to and during any overflow event.

6. This grant of exception does not preclude the Agency from exercising its authority to require as a permit condition:

   a. A CSO monitoring program sufficient to assess compliance with this exception and any other Board regulations, including Section 306.305(c); and

   b. Other controls if needed for compliance.

7. This grant of exception is not to be construed as affecting the enforceability of any provisions of this exception, other Board regulations, or the Environmental Protection Act.

IT IS SO ORDERED.

Board Member B. Forcade dissented.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 5th day of June, 1986 by a vote of 6-1.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board