ILLINOIS POLLUTION CONTROL BOARD
January 23, 1986

GREATER PEORIA SANITARY DISTRICT, Petitioner,	)	
v.	)	PCB 86-14
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, Respondent.	)	

OPINION AND ORDER OF THE BOARD (by W. J. Nega):

This provisional variance request comes before the Board upon a January 23, 1986 Recommendation* of the Illinois Environmental Protection Agency (Agency). The Agency recommends that a 45-day provisional variance extension be granted to the Greater Peoria Sanitary District (GPSD) from 35 Ill. Adm. Code 304.120 (deoxygenating wastes), 35 Ill. Adm. Code 304.121 (bacteria), and 35 Ill. Adm. Code 304.122 (nitrogen) while portions of GPSD's secondary treatment facilities are temporarily out of service during the time period that necessary repairs are being made. The Board previously granted the Petitioner a 45-day provisional variance in PCB 85-193. (See: Opinion and Order of November 21, 1985 in PCB 85-193, Greater Peoria Sanitary District v. IEPA.) However, the Petitioner has found that the requisite repairs will take more time than originally anticipated and has, therefore, requested the instant provisional variance extension.

The Greater Peoria Sanitary District owns and operates wastewater treatment facilities serving the City of Peoria, some outlying communities, and several industries. The Petitioner's facilities include screening, grit removal, primary and secondary clarification, activated sludge, nitrification utilizing rotating biological contactors (RBC's), tertiary ponds, and chlorination equipment. Prior to its disposal, sludge is first thickened, treated anaerobically, and then dried. The Petitioner's treatment plant has a design average flow of 37 million gallons per day (MGD) and discharges directly into the Illinois River pursuant to the appropriate NPDES Permit authorization. (1st Rec. 1; 2nd Rec. 1-2).

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*The Agency has incorporated by reference its November 21, 1985 Recommendation in PCB 85-193 into its January 23, 1986 Recommendation in PCB 86-14. Accordingly, the November 21, 1985 Recommendation in PCB 85-193 will be cited as "1st Rec.", while the January 23, 1986 Recommendation in PCB 86-14 will be cited as "2nd Rec.".

During the middle of October, 1985, the Petitioner discovered that, due to groundwater related erosion problems, portions of its secondary treatment system's aeration tanks, aeration gallery, and secondary clarifiers had become seriously undermined. Bottoms of several aeration tanks, a part of the aeration gallery floor, and at least one corner of the bottom of one secondary clarifier had dropped up to two inches into the voids below. As a result of the leaks that had started developing in the walls and floors of its activated sludge tanks, mixed liquor was flowing in a stream up to 4 inches deep into the aeration gallery. The aeration gallery, which houses equipment for the aeration tanks, is a tunnel-like structure which is below grade and next to the aeration tanks.

To stop these leaks and to provide access for investigatory work and repairs as well as to minimize additional undermining of the tanks, the Petitioner removed nine of its twelve aeration tanks and three of its five secondary clarifiers from service in mid-October. Of the remaining three aeration tanks, two are being utilized as contact tanks and the third is being utilized as a reaeration tank. The Petitioner's employees have begun to dewater various aeration tanks in order to find the leaks. The apparent cause of the leaks is the development of "voids" (i.e., areas of water and/or mud) beneath aeration tanks. (1st Rec. 1; 2nd Rec. 2).

The Petitioner is currently required by its NPDES Permit #IL0021288 to meet effluent limitations of 20 mg/l of biochemical oxygen demand (BOD) on a 30 day average with a 40 mg/l BOD limit as a weekly average, and to meet effluent limitations of 25 mg/l of total suspended solids (TSS) on a 30 day average with a 45 mg/l TSS limit as a weekly average. This NPDES Permit also delineates a 2.5 mg/l effluent standard for ammonia nitrogen as N during the months of April through October, and a 4.0 mg/l effluent standard for ammonia nitrogen as N during the months of November through March. (1st Rec. 2).

According to discharge monitoring reports submitted to the Agency by the Petitioner, the following results were indicated:

Month	Flow (MGD)	Monthly BOD (mg/l)	Average TSS (mg/l)	NH_3-N (mg/l)
9/85	22.29	4	4	1.9
8/85	22.65	4	4	1.9
7/85	22.31	5	7	1.2
6/85	23.24	7	11	2.5
5/85	23.21	7	10	3.1
4/85	29.06	5	10	2.5

Month	Flow (MGD)	Monthly BOD (mg/1)	Average TSS (mg/1)	NH_3-N (mg/1)
3/85	34.39	7	20	1.8
2/85	29.12	5	8	2.6
1/85	25.57	7	8	2.1
12/84	28.18	4	7	1.4
11/84	26.14	7	7	3.0
10/84	22.99	12	7	3.8
Average	25.76	6.2	8.7	2.3

(1st Rec. 2).

However, due to the groundwater-related erosion problems and the tank leaks, the Petitioner has indicated to the Agency that its effluent quality has already significantly deteriorated. For example, the average BOD for all of October 1985 was 15 mg/1, while the average BOD for the last half of October, 1985, when flows had begun to be diverted, was 22 mg/1. (1st Rec. 2). The Petitioner has reported that TSS levels have experienced similar deterioration due to the problems at the facility. Moreover, it is possible that fecal coliform levels might rise due to increased chlorine demand and GPSD anticipates that the effluent quality will deteriorate even further in the near future. (1st Rec. 2).

Since GPSD's rotating biological contactor nitrification system is currently receiving much of the plant's primary effluent, a very real risk of overloading the RBC shafts exists. The Petitioner is now providing effluent treatment by use of its three in-service aeration tanks and by diverting flows to the RBC's, and then to the polishing pond and chlorination. In reference of this diversion of flows to the RBC's, the Agency has stated that:

> "... the RBC's were not designed to treat the strength of wastes that are now being applied to them. Based upon the Agency's past experience with RBC's, structural failure of the RBC's could result due to the increased biomass growth on the units thus causing the shafts to break due to the extra weight of the biomass. Petitioner's personnel are routinely monitoring the performance of the RBC's and will be able to provide minimum treatment consisting of primary clarification, tertiary clarification, the polishing lagoon, and chlorination." (1st Rec. 2).

The Agency has noted that GPSD has already begun corrective action in that core drillings which are about two inches in diameter have been completed which led to the determination that some of the voids beneath the aeration gallery floor are as deep

as 89 inches. The Petitioner's core drillings were taken about every five to ten feet through the aeration gallery floor and core samples which are about five inches in diameter have been analyzed.

In reference to the plan of corrective action and the necessary repair and maintenance work, the Agency has indicated that:

> "The core drillings have been completed and Petitioner has determined a course of corrective action. Another 150 holes will be drilled in the floor of the gallery and the aeration tanks. Also, the drainage system under the tanks will be plugged. Once these actions are completed, Petitioner will begin pumping pressure grouting.
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> ...At the last meeting of Petitioner's Board of Trustees, a proposal was made by Petitioner's technical staff to begin these repairs under change order, thus expediting the commencement of repairs. The Board agreed and the additional borings should have already begun. Pumping of the pressure grout should begin in two (2) weeks. Petitioner believes that repairs should be completed by February 19, 1986. Petitioner does not know how much grout will have to be pumped in order to repair the tanks.
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> ...Petitioner has been using its remaining treatment units as required by the previous order. The RBC's are currently loaded at about 75% of their design loading and if biomass continues to grow as expected, these units may have to be partially by-passed to prevent their failure.
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> ...Petitioner reports that it is meeting the terms of the variance. However, it is concerned that because of the reduced treatment capability and thus increased chlorine demand that fecal coliform levels in its effluent are high while chlorine residual levels are at or near zero. The chlorination equipment is apparently operating at its maximum capacity. Petitioner has been continuing its ammonia nitrogen study on the Illinois River and believes that there has been no noticeable impact even though the

Illinois River is now below normal pool elevation."

(2nd Rec. 2-3).

The Agency expects that there will be little adverse environmental impact upon the Illinois River from GPSD's presently degraded discharge, because the Illinois River at Petitioner's discharge point provides a dilution ratio of about 74 to 1 using the Illinois River's 7 day, 10 year low flow and GPSD's average flow over the past year (1st Rec. 2-3). Moreover, the Petitioner will also be providing as much treatment as possible which will serve to reduce the environmental impact further over the discharging of raw sewage. (1st Rec. 3; 2nd Rec. 3). The Petitioner's discharge is approximately 168 miles upstream from the nearest public water supply intake which is the City of Alton's intake on the Mississippi River. (1st Rec. 3; 2nd Rec. 4).

Based on the inability of the Petitioner to provide full treatment when units had to be taken out of service to retain what was left of their structural integrity, the Agency has stated that the "Petitioner's hardship in this case is readily apparent." (1st Rec. 2; 2nd Rec. 3). The Agency has also indicated that there are no federal regulations that would preclude the granting of the provisional variance.

The Agency has therefore concluded that compliance with applicable standards would impose an arbitrary or unreasonable hardship upon the Greater Peoria Sanitary District. (1st Rec. 2; 2nd Rec. 1). Accordingly, the Agency has recommended that the Board grant Petitioner a provisional variance extension from 35 Ill. Adm. Code 304.120, 304.121, and 304.122, subject to certain conditions.

Pursuant to Section 35(b) of the Illinois Environmental Protection Act, the Board will grant the provisional variance extension as recommended.

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

ORDER

The Greater Peoria Sanitary District is hereby granted a 45-day extension of its prior provisional variance from 35 Ill. Adm. Code 304.120, 304.121, and 304.122, subject to the following conditions:

1. The provisional variance shall commence on January 5, 1986 and shall terminate 45 days thereafter.

2. During the term of this provisional variance, the Petitioner's effluent shall be limited as follows:

Parameter	Monthly Average
BOD	50 mg/l
TSS	50 mg/l

Ammonia nitrogen discharges shall not cause a violation of water quality standards.

3. Chlorination shall be provided for all flows discharged through Outfall 001a and the Petitioner shall make every effort to comply with the 400/100 ml fecal coliform standard.

4. The Petitioner shall provide the maximum degree of treatment possible by using all treatment units possible.

5. The Petitioner shall immediately notify the Agency's Peoria Regional Office by telephone if more units are removed from service and when the aeration units are returned to service. This notification shall be supplemented by a written notice within 5 days submitted to:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
Springfield, Illinois 62706
Attention: Mr. Roger Cruse

6. Within 10 days of the date of the Board's Order, the Petitioner shall execute a Certification of Acceptance and Agreement which shall be sent to Mr. James Frost of the Agency at the following address:

Mr. James Frost
Illinois Environmental Protection Agency
Division of Water Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

This certification shall have the following form:

I, (We), _____, having read the Order of the Illinois Pollution Control Board in PCB 86-14, dated January 23, 1986, understand and accept the said Order, realizing that such acceptance renders all terms and conditions thereto binding and enforceable.

_____
Petitioner

_____
By: Authorized Agent

Title

Date

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 23rd day of January, 1986 by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board