

ILLINOIS POLLUTION CONTROL BOARD
July 31, 1986

BLOOMINGTON AND NORMAL SANITARY)
DISTRICT,)
)
Petitioner,)
)
v.) PCB 86-116
)
ILLINOIS ENVIRONMENTAL)
PROTECTION AGENCY,)
)
Respondent.)

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

This provisional variance request comes before the Board upon a July 31, 1986 Recommendation of the Illinois Environmental Protection Agency (Agency). The Agency recommends that a 45-day provisional variance be granted to the Bloomington and Normal Sanitary District from 35 Ill. Adm. Code 304.120(c) and 35 Ill. Adm. Code 304.141(a) to allow the Petitioner to exceed its NPDES Permit effluent biochemical oxygen demand (BOD) and total suspended solids (TSS) limits during the time period that the tertiary filters are bypassed while the filters are out of service for structural inspection and repair. The Bloomington and Normal Sanitary District was previously granted a provisional variance in PCB 85-34 on March 22, 1985 to allow the rebuilding and replacement of the tertiary filters' media and to allow the construction of some piping changes around the filters. (See: Opinion and Order of March 22, 1985 in PCB 85-34, Bloomington-Normal Sanitary District v. IEPA). However, the Petitioner has not yet completely rebuilt and replaced the media of its tertiary filters because of unanticipated wastewater treatment plant operating constraints. (Rec. 1).

The Bloomington and Normal Sanitary District, which serves approximately 85,000 residents in a 25 square mile area, owns and operates three wastewater treatment facilities. Preliminary, primary, and secondary treatment are provided by each of these three wastewater facilities before their secondary effluents are combined for tertiary treatment and disinfection. (Rec. 1). Additionally, each facility has the capacity to disinfect its secondary effluent individually if necessary. These three facilities have a total design average flow of 16.0 million gallons per day (mgd). Effluent from the Petitioner's wastewater treatment facilities is discharged to Sugar Creek, tributary to Salt Creek, the Sangamon River, and the Illinois River. (Pet.

The Petitioner's NPDES Permit #IL0027731 provides that its wastewater treatment facilities must meet tertiary effluent concentration limits of 10 milligrams per liter (mg/l) biochemical oxygen demand and 12 mg/l total suspended solids as a monthly average and 15 mg/l BOD and 18 mg/l TSS as a 7-day maximum average plus associated loadings limits. In its letter to the Agency dated July 24, 1986, the Petitioner submitted the following table which summarizes the relevant monitoring and past secondary effluent data pertaining to actual flow, BOD, and total suspended solids levels:

TABLE I
BLOOMINGTON AND NORMAL SANITARY DISTRICT

| | 1984 | | | 1985 | | | 12 month period July '85 - June '86 |
|---------------------------|------|-------|------|------|-------|------|--|
| | Aug. | Sept. | Oct. | Aug. | Sept. | Oct. | |
| <u>*Plant 1</u> | | | | | | | |
| Flow(mgd) | 5.4 | 3.9 | 6.5 | 8.8 | 6.1 | 7.6 | 8.1 |
| BOD(mg/l) | 31.8 | 27.4 | 23.8 | 17.3 | 26.6 | 17.0 | 23.4 |
| SS(mg/l) | 28.0 | 22.7 | 21.9 | 20.2 | 21.0 | 24.6 | 28.0 |
| <u>Plant 2</u> | | | | | | | |
| Flow(mgd) | 0.5 | 1.7 | 2.0 | 1.6 | 1.9 | 1.7 | 2.1 |
| BOD(mg/l) | 15.8 | 8.8 | 7.4 | 4.9 | 8.3 | 9.3 | 13.0 |
| SS(mg/l) | 26.9 | 11.6 | 8.5 | 5.0 | 9.3 | 21.1 | 15.6 |
| <u>Plant 3</u> | | | | | | | |
| Flow(mgd) | 5.9 | 7.0 | 6.3 | 5.9 | 6.0 | 7.2 | 7.4 |
| BOD(mg/l) | 8.4 | 9.6 | 7.6 | 5.1 | 8.1 | 6.1 | 6.6 |
| SS(mg/l) | 9.8 | 13.7 | 10.7 | 6.4 | 12.3 | 16.0 | 11.2 |
| <u>**Composite Sample</u> | | | | | | | |
| Flow(mgd) | 11.8 | 12.6 | 14.8 | 16.3 | 14.0 | 16.5 | 17.6 |
| BOD(mg/l) | 19.4 | 15.0 | 14.7 | 11.7 | 16.2 | 11.4 | 15.1 |
| SS(mg/l) | 18.9 | 16.0 | 15.3 | 13.7 | 15.7 | 20.5 | 19.5 |
| <u>***Final Effluent</u> | | | | | | | |
| Flow(mgd) | 11.9 | 12.5 | 14.8 | 16.2 | 14.0 | 16.6 | 17.6 |
| BOD _T (mg/l) | 11.0 | 10.0 | 10.0 | 8.0 | 10.0 | 6.0 | 10.2 |
| BOD _C (mg/l) | N/A | N/A | N/A | 5.4 | 7.9 | 5.3 | 7.6 |
| SS(mg/l) | 3.0 | 3.0 | 4.0 | 4.0 | 5.0 | 6.0 | 8.8 |

*Plant 1,2,3 secondary effluents

**Composite sample based upon weighted averaging for 3 plant secondary effluents.

***Final effluent is with tertiary filtration

BOD_T = BOD carbonaceous + nitrogenous demand

BOD_C = BOD carbonaceous demand

The Petitioner has requested effluent limitations of 25 mg/l for both BOD and TSS as 30 day averages during the requested 45-day provisional variance period. Those limits will be determined from a composite sample based upon the weighted averaging for the three secondary plant effluents with no tertiary filter treatment. From the past secondary effluent data delineated in Table I, the Agency has concluded that the "Petitioner should generally be able to meet the requested effluent limits without the tertiary filters". (Rec. 2).

In reference to the rationale for its provisional variance request, the Petitioner stated in its letter to the Agency dated July 24, 1986 that:

". . . The tertiary filter has recently exhibited structural problems with the media support floors. On a preliminary basis, these problems have been identified as loosening and failure of the media support anchor system. The floor in one of the cells has "blown up" during backwash, with pull-out of the anchors and cracking of some of the media support plates. Other cells also exhibit substantial movement of floor during backwash. The District intends to implement a comprehensive structural investigation to determine the cause of this failure and to develop a program for correction. In order for the District to implement such an investigation and take corrective action, it will have to removal all of the media to inspect the media support anchoring system in all 16 cells.

Additionally, the tertiary filter has experienced media loss over the past several years. The District was in the process of addressing the media loss problem when the structural failure problem came into existence. In order for the District to rebuild the media and bring the filter up to optimum operational capability, the structural problem has to be corrected first. Recent evidence indicates that some media loss may be occurring due to floor uplift, in addition to media loss over the weirs. Compliance with provisions of the Act will certainly impose an arbitrary and unreasonable hardship since the District cannot provide tertiary level treatment if the filter is out of service. The District is able to provide good quality secondary effluent without filtration. Additionally, the filter does not have the structural integrity and physical media capability to handle high flows in its present condition. Furthermore, the other media support floors may buckle, if kept in operation, leaving the District with a filter in a more extensive state of repair." (Pet. 1-2).

As indicated in the aforementioned statements of the Petitioner, the Bloomington and Normal Sanitary District does not intend to replace and rebuild the media until the serious problem relating to the media support floors has been investigated and appropriately repaired. In reference to the propriety of this method of operation, the Respondent has indicated that "the Agency agrees with Petitioner that it would be unwise to replace and rebuild the media prior to investigating and correcting the media support floor problem." (Rec. 2). To rectify its media support floor problems, the Petitioner intends to remove the media from all sixteen of the tertiary filter cells so that the media support floor in each cell can be carefully inspected. The Bloomington and Normal Sanitary District has entered into a contract with, and already retained, the structural consulting firm of Wyss, Janney and Elstner to analyze and evaluate the structural capacity of the tertiary filter through detailed physical inspection of the media support floor and the media support anchoring system; by thorough physical inspection and review of all pertinent design criteria; and by performing the requisite testing before replacement of the media and placement of the filter in operation. The structural engineering consulting firm has been retained to appropriately evaluate the situation and to present its conclusions and to recommend engineering solutions to the Petitioner, since the sanitary district is, at the present time, unsure of the solution to its problems. (Rec. 2). The Petitioner has estimated that it will cost approximately \$250,000.00 to properly effectuate its filter restoration. (Pet. 3).

The Petitioner has asserted that it has previously demonstrated good faith by diligently working to keep the tertiary filter out of service a minimum time during 1985. The sanitary district has noted that it enhanced effluent quality by re-routing the drain-down water piping and removing it from the filter-bypass line and by making chlorine piping changes at the filter in 1985 to provide better cleaning capability, while keeping the filter out of service only three days during these piping operations. (Pet. 4-5).

In the present situation, the Petitioner has indicated that "the actual time needed for restoration of the filter can only be determined when the extent of the structural problem is known and the method of correction is defined." (Pet. 4).

The Petitioner believes that, at the present time, there is no practical alternative to removing the tertiary filters from service in order to properly evaluate and correct the media support floor problem. The Petitioner has stated that:

". . . There are no other alternatives to consider if the filter is to be put back into full operational

capability. The structural integrity of the filter has to be restored. As the media has to be removed to inspect the floor and anchor system, the opportunity to restore the media to the proper depth can also be achieved at this time. If the District is not allowed to take the filter out of service, it will only be a short matter of time before the filter floor collapses and the District will no longer be able to achieve compliance with its NPDES permit limits." (Pet. 4).

The Agency has also indicated that, in view of the need to remove the tertiary filters from service in order to resolve the media support floor problem, it "agrees with Petitioner's assessment of the alternatives". (Rec. 2)

The sanitary district has stressed that it anticipates no adverse environmental impact on the receiving stream during the time period of the requested provisional variance. In its assessment of the environmental impact, the Petitioner notes that:

". . . The receiving stream has sufficient flow available at this time of year (August-October) to adequately handle effluent of good secondary quality. Table I contains monitoring information on the District's facilities. Table II reflects the downstream fish monitoring results obtain in 1985. Tables III and IV reflect the 5 year period from May 1, 1980 to April 30, 1985 and indicate percent of total flow given complete treatment (tertiary). The District is able to disinfect the three secondary effluents. The District maintains a 14 station water quality monitoring network throughout its 25 square mile service area, including 5 stations up to four miles downstream of the treatment plant. Any changes in water quality from 1-4 miles downstream can be detected. Furthermore, the District maintains a 20 station biological monitoring network. The District will be able to document any changes in fish number or fish species for a distance of up to 20 miles downstream. It should be noted that under average flow conditions and within 5 days, the effluent will have traveled 113 miles distance and will have reached a point 18 miles in the Illinois River where the average flow is 17,600 cfs." (Pet. 3-4).

The Agency agrees with the Petitioner's environmental assessment and believes that "the expected environmental impact will be minimal because disinfected secondary effluent will be discharged". (Rec. 2-3). Additionally, the Agency thinks that any adverse environmental impact will be readily detected, and treatment operations modified accordingly by the Petitioner as capabilities allow, because the sanitary district "has

established its own water quality and biological monitoring stations downstream of its discharge". (Rec. 3).

The Petitioner has claimed that denial of its requested provisional variance would cause an arbitrary or unreasonable hardship "since the District cannot provide tertiary level treatment if the filter is out of service" and it would be unfair and inappropriate to require the Petitioner to meet tertiary effluent limits while being physically able to provide only secondary treatment. The Agency agrees with the Petitioner's contention in regard to such hardship and has indicated that denial of the requested relief would place an arbitrary or unreasonable hardship on the sanitary district because the Petitioner: (1) "wants to evaluate and correct the problem as quickly as possible so the tertiary filters can be returned to service"; (2) "has, and is willing to spend, the money necessary to evaluate and correct the tertiary filter problems", and (3) "has demonstrated via past data that it has the capability to produce good secondary effluent while the tertiary filters are out of service". (Rec. 2).

Accordingly, the Agency has concluded that compliance on a short-term basis with the provisions of 35 Ill. Adm. Code 304.120(c) and 304.141(a) would impose an arbitrary or unreasonable hardship upon the Petitioner. The Agency has stated that there are no Federal regulations which would preclude the granting of the requested relief and there are no downstream public water supplies which would be adversely affected by the granting of the provisional variance. Therefore, the Agency recommends that the Board grant the Bloomington and Normal Sanitary District a provisional variance from Sections 304.120(c) and 304.141(a) for a period of 45 days, subject to certain conditions.

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

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

ORDER

The Petitioner, the Bloomington and Normal Sanitary District, is hereby granted a provisional variance from 35 Ill. Adm. Code 304.120(c) and 35 Ill. Adm. Code 304.141(a), subject to the following conditions:

1. This provisional variance shall begin when the tertiary filters are first removed from service and shall continue for 45 days, or until the tertiary filters are returned to service, whichever occurs first.

2. Effluent shall be limited to 25 mg/l weighted average of the three secondary effluents for both BOD and TSS as monthly averages. Effluent shall be sampled by the Petitioner according to NPDES Permit #IL0027731 as to frequency and sample type. Analysis results shall be submitted to the Agency on the monthly discharge monitoring report as 30 day averages.

3. The Petitioner shall notify Pat Lindsey of the Agency's Compliance Assurance Section via telephone at 217/782-9720 when the tertiary filters are taken out of service and when they are returned to service. Written confirmation of each telephone notification shall be submitted within 5 days to the Agency at the address given below:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Compliance Assurance Section
2200 Churchill Road
Springfield, Illinois 62706
Attention: Pat Lindsey

4. The Petitioner shall keep the Agency apprised of the tertiary filter situation, especially concerning necessary corrective measures and estimated time frames to implement and complete them.

5. The replacement and rebuilding of the tertiary filter media shall be included as part of the final scheme for returning the tertiary filters to service.

6. The Petitioner shall operate the remainder of the three treatment facilities so as to produce the best effluent possible.

7. 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 86-116 dated July 31, 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 31st day of July, 1986 by a vote of 5-0.

Dorothy M. Gunn
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board