

ILLINOIS POLLUTION CONTROL BOARD

April 5, 1985

IN THE MATTER OF:)
JOINT PETITION OF THE CITY OF)
PONTIAC AND THE ILLINOIS)
ENVIRONMENTAL PROTECTION AGENCY) PCB 83-231
FOR EXCEPTION TO THE COMBINED)
SEWER OVERFLOW REGULATIONS)

ALAN M. SCHROCK, ASSISTANT CITY ATTORNEY, APPEARED ON BEHALF OF
THE CITY OF PONTIAC: AND

DAVID L. RIESER APPEARED ON BEHALF OF THE AGENCY.

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

This matter comes before the Board on the December 14, 1983 joint petition of the City of Pontiac (City) and the IEPA (Agency) for an exception to 35 Ill. Adm. Code 306.305(b) of the Board's combined sewer overflow (CSO) regulations which provides that

"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 joint petition alleges that the City's existing CSO discharges have minimal impact on Vermillion River water quality, and that construction of CSO treatment facilities at an estimated cost of \$1.1 million would produce little benefit.

This case is the first utilization of the Board's CSO "Exception Procedure", 35 Ill. Adm. Code 306.350 et seq. Hearing in this matter was held on February 15, 1984, at which some members of the public and press were in attendance. Testimony and exhibits (Exh. 1-5) were presented by the parties at hearing. Information not available at the time of hearing was filed in letter form by the Agency March 8, 1984; this letter, concerning the City's status on the Agency's restricted status or critical review lists, is hereby accepted as Exhibit 6, and the Board Orders referred to therein are incorporated by reference as if fully set forth. No other written submittals or comments con-

cerning this matter have been received. This matter is being given expedited consideration by the Board * as requested in the petition and at hearing, so as to improve the City's chances of receiving a 75% federal construction grant.

THE PONTIAC TREATMENT PLANT AND ITS CSO DISCHARGES

The City presented five witnesses at hearing: Mayor Dale Campbell, City Administrator Robert Karls, Department Head for the Sewer Department David Sullivan, Pontiac's engineering consultant George A. Farnsworth of Farnsworth & Wylie, and Glenn O. Chenoweth, who has resided since 1951 about 1½ miles downstream of the Pontiac sewage treatment plant (STP) in a home about 30 feet from the bank of the Vermillion River (R. 23-25, Exh. 1). The Agency presented one witness, Toby Frevert, an engineer in the Agency's Division of Water Pollution Control, whose duties include coordination of CSO exception applications and analysis. As much of the testimony related to the petition itself (Exh. 4) and exhibits submitted therewith (Exh. 2), hearing testimony will not be separately set forth, but will instead be referenced as appropriate.

The City of Pontiac, Livingston County, population 12,400 is located at the junction of Interstate 55 and Illinois Route 116 about 100 miles south of Chicago. The Vermillion River flows from east to west through the center of the City. Major local industries/institutions are Caterpillar Tractor Company, Kreger Printing, Interlake Steel Company and an Illinois State Correctional Center. The City is seeking relief from Section 306.305(b) which would require that the City construct combined sewer overflow pumping, grit removal, primary settling and disinfection facilities to treat excess storm flows up to 11.7 MGD.

The City is served by 7.9 miles of separate sanitary sewers and 25.5 miles of combined storm and sanitary sewers all collecting wastes from 3300 sewer users and draining 1400 urban acres. Five sewer interceptors, having a total capacity of 20.1 MGD, transport sewage to the treatment plant. The plant provides three-stage treatment and disinfection for dry weather flows and

*The Board wishes to note that the parties have greatly facilitated the Board's consideration of the first of these CSO cases by the manner in which the presentation was made. The joint petition itself properly included the engineering reports, stream use and water quality data, etc. supporting the conclusions in the petition. Each party made its necessary and knowledgeable resource persons available for explanations and questioning at hearing, avoiding the need for additional hearings to plug record gaps. Future CSO exception petitioners would be advised to examine the record in this matter.

primary treatment and disinfection for excess MGD flow. Design capacities are 2.13 MGD average and 4.3 MGD maximum for dry weather flow and up to 4.3 MGD excess flow. The plant is located on the west side of the City on Old Route 66 and discharges treated effluent to the Vermillion River.

There are four combined sewer overflows from the City's sewer system. (See Exh. 3). Two overflows (003 and 004) located near the treatment plant have a combined capacity of about 9 MGD (14 cfs) and bypass storm flows from the interceptors directly to the Vermillion River. The other two overflows (004 and 005) having a total capacity of 5.9 MGD (9 cfs) are located in the upper part of the sewer system on the north side of the City and bypass storm flow to a storm sewer which discharges to the North Ditch, a drainage ditch tributary to the Vermillion River. Overflow points 004 and 005 were constructed about 3 years ago to bypass flows from the North Street sewer, a 100 year old 2' x 3' elliptical brick sewer. Overflow points 003 and 004 have been in existence for "many years," with NPDES 003 also being a bypass mechanism for the North Street sewer.

Studies of sewer hydraulics which have been confirmed by field sampling show that overflows do not operate until the wet weather first flush has passed. (See Exh.2, Section 3.3, Exhibit A.)* For comparison to overflow capacities cited, the Vermillion Rivers's mean annual flow is about 380 cfs. During normal dry weather, flow ranges from 20 to 60 cfs. Typical flow in the North Ditch, a small, man-cut drainage ditch with intermittent flow, is about 5 cfs. (See R. 37-40, Exh. 2, Exhibit G.)

The overflows are not monitored continuously, but it is known that bypassing begins at the two overflows located near the plant (003 and 004) during rains ranging from 0.5 to 1.0 inch/hour. One of the upstream overflows (005) will operate at about 0.3 inch/hour rainfall and the other (006) rarely operates.

Exhibit 2, Appendix to Exhibit A gives an analysis of the typical first flush and CSO pollutant load. The upstream overflow is usually quite dilute with BOD less than 50 mg/l and suspended solids less than 150 mg/l (see Figure 4-2B Appendix to Exhibit A). The overflows near the treatment plant after the first flush has passed show BOD around 100 mg/l. Suspended solids are 400+ mg/l but the volatile solids level of about 40% indicates that this is mostly inorganic grit. (See Figure 4-2A Appendix to Exhibit A.)

*References to Exh. 2 will contain references to a letter exhibit within the group exhibit, as this reflects the parties' original identification scheme.

The City's treatment plant was upgraded in 1976 under the old "PL660" grant program. Because that plant was designed before the major rule changes of PL92-500, that expansion did not include facilities for nitrification and the required amount of CSO treatment.

On February 23, 1979, the City received an Agency "notice of critical review," because it had reached 95% of its hydraulic load capacity of 21.3 MGD. It was in fact placed on critical review April 6, 1979. On March 6, 1981, the Agency issued a "notice of impending restricted status", because of lack of hydraulic capacity, organic overloading in excess of the 16,000 P.E. design capacity, and failure to meet certain interim BOD and TSS limitations. Treatment plant discharges were polluting the receiving stream sewer surcharging, and basement backups were a common occurrence, particularly along the North Street sewer (see Exh. 5, and Drake v. IEPA, PCB 81-54, Oct. 22, 1981 and Bergman v. IEPA, PCB 81-67, Sept. 3, 1981.)

Since 1981, the City has taken major steps to turn around a rapidly deteriorating STP and sewer situation. Since 1981, the City has spent \$831,000 to separate combined sewers (R. 18). An ongoing program for the yearly cleaning of all combined sewers in the months between May and November was instituted, at a cost in 1981 of \$57,000 (R. 79, 96). [By contrast, sewer cleaning in other communities is done on a 3 to 5 year rotation basis (R. 86)]. The City believes that its sewer separation program, in combination with its street and sewer cleaning efforts, have reduced the occurrences of sewer surcharging and basement back-ups due to plugged sewers. The City notes, however, that some basement flooding continues to occur due to the nature of the Pontiac system and its relation to the river. Many of the areas served by combined sewers are in the floodway or floodplain, and so are flooding when the river backs up into low-lying, flat sewers (R. 82, 88-92).

Pursuant to permits issued in July, 1981, the City has made certain "interim" improvements to its STP, including expansion of its capacity to handle organic loads. The City currently remains on critical review with 1470 P.E. of capacity remaining. The Agency notes that the City may apply for review of its status by submitting additional capacity and influent information (Exh. 5).

The City has, meanwhile, completed design work for additional upgrading of its STP. The City Step I Facilities Plan for Phase II was approved by the Agency and certified to Region V USEPA on September 30, 1983. This expansion will cost in excess of \$8 million.

Under the assumption that it would be eligible for a 75% federal construction grant (rather than the 55% grant available

after October 1, 1984), the City petitioned the courts for permission to hold a special election to get authority to issue bonds for the 25% matching funds -- \$2 million. On February 6, 1983, the Agency advised the City that no grant funds were available to it in 1983 because of its priority number. The referendum was nonetheless held on February 7, 1983, and approved by a vote of 882-119. (The City notes that it would lack legal authority to issue bonds to raise a 45% match, even with voter approval, because of restrictions on total bonding levels in relation to the City's total assets). The City is nonetheless proceeding with finalization of design work and other pre-grant activities, since, in the words of Mr. Frevert;

"...it is still a horse race amongst the municipalities in the State of Illinois for grant funds... The name of the game is to have your planning work done, and to have your local funding available, have your design work done, and have your plans and specs ready to go, so you are in the starting gate, and realistically are in competition for those funds when they become available."
(R. 105-106)

The approved STP improvement plan (described in Exh. 2, Sections 3.1 and 3.2 of Exhibit A) proposes construction of facilities for:

- a. Additional capacity for three-stage dry weather flow treatment (average of 3.45 MGD up to maximum of 8.40 MGS).
- b. Capture and storage of "first flush" (0.41 MG) for treatment later during dry weather.
- c. Nitrification of all dry weather and first flush flows.
- d. Sludge stabilization and disposal.
- e. CSO treatment of up to 11.7 MGD above maximum dry weather flow for compliance with Section 306.305(b).

The construction (capital) cost of the proposed improvements were estimated as follows:

- | | |
|--|------------------|
| a. Dry weather flow treatment, nitrification, first flush capture and sludge treatment | \$7,100,000 |
| b. Additional CSO treatment to meet Section 306.305(b) | <u>1,100,000</u> |
| | \$8,200,000 |

The estimated annual cost of sewer maintenance and the operation and maintenance (O&M) of the existing and proposed treatment plant shown in Exh. 2, Exhibit B are as follows. Figures shown do not include financing and capital costs.

a.	Existing treatment plant and sewer system O&M	\$470,000/yr.
b.	Additional O&M of proposed dry weather flow treatment, nitrification, first flush capture and sludge treatment	80,000/yr.
c.	Additional CSO treatment O&M	<u>50,000/yr.</u>
	Total Annual O&M	\$600,000/yr.

The estimated cost of financing of the city's share of the proposed Phase II project costs is as follows. Costs shown assume a 25 percent city share financed with a 20-year revenue bond issued at 11 percent interest requiring 25 percent annual coverage of principal and interest.

a.	Additional dry weather flow treatment, nitrification, first flush capture	\$275,000/yr.
b.	CSO treatment	<u>45,000/yr.</u>
	Total Annual Financing Cost	\$320,000/yr.

The above shows that the relief sought by the Petitioners to avoid constructing the CSO treatment facilities would save \$1,100,000 in construction costs and \$95,000 per year in O&M and financing costs.

ENVIRONMENTAL IMPACT OF THE DISCHARGE

The parties' conclusions that existing storm overflows from the Pontiac combined sewer system are having minimal impact on Vermillion River water quality, and that stream use is not being restricted, are based on reviews of existing water quality data, as well as field observations by Agency personnel and George Farnsworth, the City's consulting engineer. Historical data available, as summarized at p. 7 of the petition (Exh. 4) reveals the following (references are to letter exhibits within Exhibit 2):

- "a. Exhibit D summarizes existing stream biological data from various stations in the Vermillion River basin. Researchers noted consistent minor violations of ammonia, boron and lead standards up to 1980. Fisheries data showed good diversity of species and

high numbers of sport and non-tolerant species present. No conclusion on basin condition was made because of limited data. [This report was prepared as part of the Section 208 Water Quality Management Program.]

- b. Exhibit E is water quality data for [and collected by the] Streator, Illinois water treatment plant intake located 25 miles downstream from Pontiac. Streator is the nearest point downstream where the River is used for domestic water supply. There appears to be no impact on raw water quality at Streator's intake from Pontiac's discharges.*
- c. Exhibit F is a compilation of available water quality data for stations near Pontiac [furnished by the U.S. Geological Survey and the Agency]. Stream water quality violations noted in Exhibit E are summarized in Exhibit F. No correlation in violations with Pontiac CSO events is evident and violations are minor. [No data is presented for 1982-1983; water quality standards violated are usually those for total iron and fecal coliform.]
- d. Exhibit G is a compilation of available river flow data at Pontiac from 1942 to 1982 [furnished by the U.S. Geological Survey and the Agency]. Average flow of record is 380 cfs. Extremes of flow are one no-flow event in 1953 and 14,500 cfs in 1980."

Visual inspections of the areas for about 300 feet below each CSO outfall and the treatment plant outfall were made by Mr. Farnsworth on June 21, 1983 (R. 48-49, Exh. 2, Exhibit A, §4.1). Some evidence of sludge deposition was discovered near the STP outfall. However, the source of that sludge is believed to be a floor drain connected to the outfall sewer, and the City intends to correct that design flaw in the plant expansion project.

Evidence of sludge deposition was found in the first 30 feet of the river downstream of Outfalls 003 and 004, but the deposits were shallow (less than 2 inches deep) and difficult to differentiate from natural stream silt. Odor was evident only when the deposits were disturbed. Some small amount of CSO-related "trash" was discovered near Outfall 003 for about 10 feet downstream, but it was quickly collected.

*It should additionally be noted that Streator pumps water from the Vermillion into a side channel reservoir. Water from the reservoir is then pumped into the water purification plant for treatment (R. 112).

In the area of the North Ditch outfalls, one sludge deposit less than 2 inches deep and roughly 5 feet by 6 feet was discovered immediately downstream of the outfall. Ditch flow was low, with isolated pools evident (from which children were catching minnows).

On September 14, 1983, two Agency field biologists inspected the river and the North Ditch (Exh. 2, Exhibit C). Their report concluded that conditions in the river have not changed since a 1976 biological survey indicated "unbalanced" stream conditions.*

As to the North Ditch, at a sampling point just downstream of Outfalls 005 and 006, no sludge was found but the stream condition was "semi-polluted." However, sludge and oil was found at a sampling station upstream of the outfalls where the stream condition was also semi-polluted. The biologists concluded that:

"The two CSO's that discharge directly to the Vermillion River appear to have no more adverse effect on the River than does the STP discharge. Similarly, the CSO's on North Ditch also appear to have no adverse effect on the Vermillion River although there does seem to be some degradation of North Ditch. Because of these findings, we feel that the complete treatment of the Pontiac CSO's would not significantly improve the water quality of the Vermillion River." (Exh. 2, Exhibit C)

At hearing, it was stated that it was the "definite opinion" of the authors of the report that the water quality deterioration in the North Ditch was not attributable to the City's CSO overflows, but to some other upstream source (R. 106).

Uses of the Vermillion River and the North Ditch were discussed both by the City and the Agency. In addition to the River's use as a public water supply for Pontiac and for downstream Streator, it provides an "aesthetic quality" for the residential homes along its banks, and a "desirable and utilized recreational opportunity" (R. 103). The area near the Vermillion River CSO outfalls has become an increasingly popular fishing spot, as, in the last 5 years, the type and quality of fish caught have improved; shallow ponds in the North Ditch are a popular source of minnows for bait. The River is used for canoeing, although it is too shallow for swimming. Mr. Chenowith, a 30-plus year resident of a river bank home a mile and a half

*In this classification system, based on analysis of the benthic macroinvertebrate population in a water body, the "best" stream condition is "balanced", followed by "unbalanced", "semi-polluted", and "polluted".

downstream of the STP outfall, and a longtime outdoorsman and conservationist, characterizes the River as currently "nice and clear", and "look [ing] real good" (R. 28, 26).

Given all of the above, the Agency, in its concluding remarks, noted that it feels that the Vermillion River is a valuable resource worthy of protection in the way of additional improvements to the City's STP and control of first flush. However, capture and treatment of ten times dry weather flow at a capital cost of \$1.1 million would not result "in a justifiable improvement or return in water quality" (R. 104).

THE RESOLUTION

The Board finds, based on the uncontroverted evidence in this record, that the granting of an exception to 35 Ill. Adm. Code 306.305(b) has been justified. This determination is based on the general improvement to water quality attributable to upgrading of the City's STP, the Agency's assessment of the minimal environmental impact attributable to the City's CSO discharges, the high cost of 10 times dry weather flow capture and treatment facilities, particularly given the City's grant funding prospects. However, the question arises as to whether this exception should be granted without conditions.

Much discussion at hearing centered around the City's combined sewer cleaning program, and the effect it might have on CSO discharges. As aforementioned, the program was instituted, not to control the strength of first flush storm flows, but to eliminate basement back ups resulting from sewer blockages. According to Mr. Sullivan and Mr. Farnsworth, the investment in metering and sampling equipment necessary to determine the effect of the program on CSO flows would be substantial, so that no quantitative evidence has been gathered. Their qualitative observation is that there is substantial solids removal. While Mr. Farnsworth believes that "a rainfall a month would keep the sewers pretty clean", nonetheless annual combined sewer cleaning is "more or less insurance". It is, however, Mr. Farnsworth's conclusion that, even if the City did not perform sewer cleaning, the impact of grant of an exception from the ten times dry weather flow capture and treatment provision would be the same -- minimal (R. 84-85, 63).

When inclusion of a sewer cleaning requirement was discussed at hearing, the City stated that it has no specific objections to such a condition, based on its intent to continue the program for its own purposes. To the extent there is an objection, it relates to the removal of discretion from a City administration "twenty years down the road" (R. 121).

The data presented to the board reflects observations and estimates based on cleaning of the combined sewers. The Board therefore believes that, to maintain the status quo, it is the better course to require continuation of the sewer cleaning program despite lack of data quantifying its effects, and will so order. However, to provide the City with a measure of flexibility, the Board will order only that the City clean its combined sewers once every three years, in line with the practice in other communities. The Board does, however, encourage continuation of annual combined sewer cleaning.

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

ORDER

The City of Pontiac is hereby granted an exception from 35 Ill. Adm. Code 306.305(b) requiring treatment and disinfection of 10 times dry weather storm flows, provided that the City cleans its combined sewers at least once every three years, in the manner, described in the hearing in this matter on February 15, 1984.

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 5th day of April, 1984 by a vote of 6-0.


Christan L. Moffett, Clerk
Illinois Pollution Control Board