

ILLINOIS POLLUTION CONTROL BOARD
April 1, 1987

IN THE MATTER OF:)
)
THE SINGLE PETITION OF)
THE CITY OF PERU)
FOR EXCEPTION TO COMBINED) PCB 86-1
SEWER OVERFLOW REGULATIONS)

MR. DOUGLAS J. SCHWEICKERT APPEARED ON BEHALF OF THE CITY OF PERU;

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 January 2, 1986, petition filed by the City of Peru (Peru) seeking an exception to 35 Ill. Adm. Code 306.305 (a) and (b) of the Board's combined sewer overflow (CSO) regulations. A public hearing was held in Peru, Illinois on June 4, 1986. The Board received additional information from Peru on June 18 and September 3, 1986 and February 9, 1987. The Illinois Environmental Protection Agency (Agency) submitted comments to the Board on September 22, 1986.

CSO REGULATIONS

The CSO regulations are contained in 35 Ill. Adm. Code 306.302, et seq. Section 306.305 provides as follows:

All combined sewer overflows and treatment plant bypasses shall be given sufficient treatment to prevent pollution, or the violation of applicable water standards unless an exception has been granted by the Board pursuant to Subpart D.

Sufficient treatment shall consist of the following:

- 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, as determined by the Agency but not less than ten times to [sic] average dry weather flow for design year, shall receive a minimum of primary treatment and disinfection with adequate retention time; and
- c) Flows in excess of those described in subsection (b) shall be treated, in whole or in part, to the extent

necessary to prevent accumulations of sludge deposits, floating debris and solids in accordance with 35 Ill. Adm. Code 302.203, and to prevent depression of oxygen levels; or

- d) Compliance with a treatment program authorized by the Board in an exception granted pursuant to Subpart D.

Subpart D allows the discharger to file a petition for an exception either singly, or jointly with the Agency. The Agency testified that Peru did take all the necessary steps to qualify as joint petitioners with the Agency, including submitting a Phase I Study in June, 1983 and a Phase II Study in December, 1984. However, the Agency chose not to co-petition with Peru because of the unique geographic situation that exists at Peru, the fact that sludge and sewer-related debris were apparent at various points in the ravines which receive the CSO discharge, the sheer number and frequency of overflows and the fact that the comparatively low cost improvements planned by Peru will, for the most part, have no significant impact on either the number or frequency of overflows (R. at 11). The Agency also wants to see two additional improvements at a combined cost of \$155,000 added to Peru's proposed project. (R. at 11-13). The Agency also testified that it is not opposing or disputing any of the arguments raised in Peru's single petition and that it feels that Peru is the only single petitioner who not only aggressively pursued a joint petition but also has a reasonably sound basis for a CSO exception (R. at 10-11).

In order for a discharger to receive a CSO exception, a certain level of justification for the exception is required to be submitted. This level of justification differs depending on whether the discharger files a single or joint petition for CSO exception. The level of justification required of a joint petition is set forth in Section 306.362 which provides for a demonstration under Section 306.361(a) (i.e., minimal discharge impact) which is not available to single petitioners. However, Peru as a single petitioner, justifies its claim for a CSO exception based on Section 306.361(a). Notwithstanding this shortcoming, the Board finds that Peru has satisfied its justification burden for the following reasons.

Section 306.361(d), applicable to single petitioners under Section 306.362, provides that a discharger may establish that because special circumstances exist, an evaluation of CSO-related impacts would be inapplicable for reasons of irrelevancy or the expense of data collection in relation to the relevancy of the data.

In this regard, Mr. Toby Frevert of the Agency testified that he advised Peru to refrain from doing a detailed CSO impact study (i.e., a Phase III Study) because he felt that the results

obtained would not justify the expense. (R. at 81). He based this conclusion on a recently completed study on the water quality impacts of CSOs in Peoria in which it was concluded that because of the shoreline, rapid current, deep water depth and velocities of the Illinois River, there was little detectable CSO-related impacts on the Illinois River. This study cost approximately \$750,000. He testified that in his opinion he would not expect dramatically different results in Peru. (R. at 82).

Based on this testimony, the Board concludes that a Phase III-type study of CSO related impacts on the Illinois River in the Peru area would be of little utility in relation to the costs involved. In other words, the cost and time involved in having Peru complete a Phase III Study would not be justified in relation to the results obtained. In addition, the Board does have data on CSO-related impacts which were provided in Peru's Phase II Study -- Preliminary Stream Inspection -- which enables the Board to adequately evaluate the CSO problem in Peru and the related impacts on the receiving stream. For these reasons, therefore, the Board finds that Peru has satisfied its justification burden pursuant to Section 306.361(d) and while such justification should have been established in the petition itself, the Board believes that in the case of Peru, such justification, as a practical matter, could only be supplied at hearing.

ENVIRONMENTAL IMPACT

The City of Peru is located along the north bank of the Illinois River approximately five miles downstream from the Starved Rock Lock and Dam. The City operates a secondary waste water treatment plant (WWTP) built in 1939 which operates under NPDES permit No. IL0030660. The plant has a maximum rated capacity of 4.53 million gallons per day (MGD); during 1985 the average daily flow through the plant was 2.7 MGD. R. at 18-19. The City has a population of 11,000 which is served by 38 miles of combined sewers and 11 miles of sanitary sewers. The major combined sewers are the Illinois River Interceptor, parallel to the Illinois river, and two interceptors located in ravines known as the West Ravine and the East Ravine. Each ravine contains an intermittent stream; the West Ravine drains to the Illinois River and the East Ravine drains to the Illinois and Michigan Canal (I & M Canal). Overflows from the combined sewer interceptors discharge to these streams or to the Illinois River. Including overflows and bypass at the WWTP, the City has 27 CSO outfalls. Each of the overflows in question consist of a manhole on the interceptor with an overflow pipe protruding through the wall of the manhole to the receiving stream.

The Illinois River Interceptor has eleven overflows and the WWTP bypass along its length of approximately 7,715 feet. These

overflows all discharge to the Illinois River and are located in an area zoned for manufacturing. Human contact activities include water skiing and fishing. The river supports white bass, walleye, sauger, catfish, as well as rough fish.

The Illinois River through Peru is approximately 600 to 800 feet wide and, in places, 30 feet deep. The flow in the river at Peru is approximately 35,033 cubic feet per second. The City has estimated the dilution ratio for a once in one year rainfall event at the Illinois River Interceptor at 293 to 1. The impact on the Illinois River is asserted to be minimal because of these large dilution ratios. In addition, the Peoria Phase III Study, asserted to be relevant to the City of Peru by the Agency, demonstrated that the potential impact of periodic overflows on the Illinois River is minimal because of the rapid current, deep water depth, and velocity of the river. R. at 81-82.

Inspection of the overflows revealed the presence of sewer-related debris at almost all of the outfalls; however, the debris was generally dissipated by the river within 25 feet. Varying odors were detected at outfalls No. 3, No. 4, No. 5, No. 8, and No. 9A. Sludge buildups were present at points No. 8, No. 9, No. 9A and the Wastewater Treatment Plant Bypass and Outfall (No. 22) but the river bed showed no evidence of sludge buildup. The Agency would like to see construction of a \$55,000 extension at point IR-No. 1 directly to the river where the amount of debris accumulation has been large. R. at 47. However, the City is of the opinion that those water quality problems can be cured by a proposed screening mechanism, but stated it would agree to install the improvements if deemed necessary by the Board. (R. at 33).

The West Ravine Interceptor has six overflows along its length of approximately 6,811 feet. The interceptor can carry at least 12.5 times dry weather flow before overflow occurs which Peru asserted is sufficient to handle first flush. (R. at 23). The minimum dilution ration in the ravine is 408:1. The City's consultant, Mr. William Etzenbach, testified that the ravine is very steep with very little room at the bottom for anything other than the stream itself. The stream was characterized as "pleasant appearing" although the stream bed has been scoured down approximately three feet to the limestone bedrock by the introduction of some large diameter storm sewers into the ravine. The ravine is privately owned over most of its length and because of its steeply sided slopes is not subject to further development than already exists. However, the interceptor passes a City Park near its upstream end which allows access by mainly children seeking to explore its upper length. Similarly, the middle and lower sections are accessible to those willing to climb the steep banks. Overflows occur between 10 and 20 times per year depending on rainfall volume and frequency. R. at 23-24. The City has noted the presence of some sewer borne debris

at some overflows and in certain reaches in the stream along with wind or stream borne trash. Phase II study at 3,5. In addition, two overflows (Nos. 4 and 6) terminate in shallow pools which contain some signs of sludge and sewer related debris. In one pool the sand and gravel was covered with a "thin black slimy deposit smelling strongly of sewage." Phase II study at 4. The last overflow on the West Ravine discharges to a pool, approximately 30 feet by 6-8 feet and one foot deep. Probing of the pool bottom turned the water "black and turbid with decaying sludge." Id. at 5. Downstream from this pool another pool is formed in which a cast iron trunk sewer runs exposed. At the time of inspection a hole cut in the pipe was allowing the discharge of approximately 10 gallons per minute of raw sewage into the pool. The pool had a "faint smell of fresh sewage at the water surface, however, none from a distance of 6 feet away." Id. at 6. Probing of the bottom revealed sewage sludge in various stages of decay. The pool is approximately 100 feet from the Illinois River. The City's engineer has estimated that it would cost approximately \$100,000 to extend the West Ravine Culvert to the Illinois River. The Agency has indicated their preference to see this extension made to enable any discharges to be readily assimilated by the river and thereby reduce aesthetic and potential public health problems. R. at 13. The City believes that this expenditure would not be cost-effective since there is little or no human contact in this area, but will agree to the expenditure if deemed necessary by the Board. R. at 33.

Turning to the East Ravine Interceptor, nine overflows are present along its length of approximately 7,890 feet. The interceptor can carry at least 12.5 times dry weather flow before overflow occurs. The minimum dilution ratio in the stream is 166:1. The ravine and discharge areas are privately owned and it appears that further development of the areas is unlikely. The areas in the vicinity of the five upstream overflows are accessible to human contact due to the local practice of utilizing these areas for nature walks and physical fitness. The next three overflows are not as accessible, but human contact may occur for those willing to negotiate the steep banks. The remaining overflow is located in a manufacturing area and discharges to the I & M Canal approximately 800 feet upstream of its confluence with the Illinois River. The Petitioner states that this area does not offer much potential for human contact activities. The East Ravine also carries a great deal of storm runoff and has been channelized. However, according to Mr. Etzenbach, the water appears clear when flowing and the stream has a good appearance. This ravine is also very steeply-sided with little opportunity for public access. R. at 24-25. On inspection trips, problems were noted at the East Ravine Overflow No. 2 where the pool and stream showed evidence of sludge. The deposits continued downstream to some extent for a distance of 75 feet and ranged in depth from 2 inches to 1/8 inch. Sewer borne debris was also noted. Deposits were also noted at East Ravine

Overflow C-5, while sewage debris was found at points C-5, 2A, 3, 3A and 4. In its February 4, 1987 letter, however, the City states that at ER-2, ER-2A and C-5 the City reconstructed 600 feet of combined sewer so that the overflows function infrequently with a "negligible effect" on the stream. February 4, 1987 letter at Par. E. The East Ravine Stream discharges to the I & M Canal which is a narrow back water in the flood plain of the Illinois River. This area is accessible but not attractive to public use. The outlet is narrow, approximately one foot deep and has a very weak, muddy bottom. About 1,000 feet west of the mouth of the East Ravine Stream, towards the Illinois River, the canal bed has been dredged out to a width and depth which will accept barge traffic and this portion is used as a barge loading and unloading area. The City states that it was unable to inspect the confluence of the creek and canal for unnatural deposits due to its semi-frozen condition. However, from a point 100 feet from the confluence, the water quality was stated to be quite clear with no noticeable color, odor or organic matter. The City states that since sludge deposits do not occur upstream at the actual points of overflow it seems highly unlikely that sludge would be deposited in the canal after the stream had traveled approximately 2,000 feet.

A remaining outfall, IMC-No. 1 which is located approximately 1,000 feet west of the East Ravine Mouth also discharges to the I & M Canal in the barge loading area. No visible signs of debris were noted although probing of the black silt resulted in a slight sewage odor. The City noted, however, that a similar odor is characteristic of the river bed and backwater lakes in the area. Phase II Study at 10.

COMPLIANCE OPTIONS

The City states that the cost to undertake a construction program to achieve full compliance would be \$40,832,000 with an annual cost including debt retirement and operations and maintenance costs of \$6,025,300. R. at 40. This plan, "Plan A", would include the construction of new interceptor sewers sized to carry a volume of 8.25 MGD of first flush for a once in one year rainfall. Facilities designed to give secondary treatment to the first flush volume and primary treatment to 24.5 MGD would also need to be constructed. Because of the size and location of the current plant, all the flow to be treated would need to be pumped across the Illinois River where the facilities would be constructed. Phase II Study at 14.

An alternative Plan B would provide for all treatment at the existing site north of the river. Additional secondary treatment capacity capable of handling 4.67 MGD of first flush and additional capacity for primary treatment of 6.1 MG is contemplated under Plan B. The cost for plan B is \$15,846,000. Id. at 21.

Under Plan C, 1.28 MGD of first flush would receive secondary treatment and 6.1 MGD would receive primary treatment at a total cost of \$11,297.00. Plan D, at a cost of \$9,595,000 would treat the same flows as under Plan C but would not involve the same degree of sewer system rehabilitation. Id. at 25-31.

The plan urged by the City was explained at hearing and is contained in Exhibit 2C.

The City proposes to raise the point of each overflow to a point at least above the top of the pipe of the interceptor. A bar screen will be constructed within each overflow manhole which will be subject to regular maintenance. R. at 30. The City will also renew broken pipe in the trunk sewers to eliminate inflow. The West Ravine Interceptor can carry at least 12.5 times average dry weather flow before it discharges to the stream. However, there is a bottleneck at the West Ravine Overflow No. 6 caused by reduction of the sewer pipe to 12 inch. The City will replace this with 18 inch pipe so that the entire reach of the sewer can carry 12.5 times average dry weather flow. Along the Illinois River Interceptor, flap gates will be constructed to eliminate the possibility of river water backing up into the system. In addition, the overflow pipes will be extended to the river's edge. R. at 31-32. WWTP improvements contemplated by the City include the construction of a mechanically cleaned bar screen; the construction of a grit removal unit; rehabilitation of an old primary settling tank to treat 6.1 MGD; flood proofing of the WWTP; and provision of an alternate power source. R. at 36-38. The proposed improvements to the WWTP and the city collection system would cost \$1,593,250. On an annual basis, the debt retirement and the operation and maintenance costs would total \$1,287,000 and result in a total residential user rate of approximately \$8/month. R. at 40. The proposed improvements are to be completed and in full operation by July 1, 1988. The City believes that these improvements will remove 93% of the pollutants which would otherwise be removed under a full compliance plan. R. at 39. The Agency questions the accuracy of this appraisal but does not have a more accurate one. R. at 61-62. The City estimates that the number of overflow events will drop from approximately 20 to 10 per year. R. at 54.

CONCLUSION

The Board shares the Agency concerns as to whether the proposed improvements will adequately control any environmental impacts and believes that this situation warrants the imposition of a temporary exception until such time as adequate information concerning impacts after the improvements are made can be obtained. The temporary exception will be timed so as to allow two years from the July 1, 1988 completion date to gather full post-operational data. The Board will also retain jurisdiction. The Board also concludes that without extension of

the West Ravine Culvert, water quality violations are likely to occur in the inlet. In addition, the testimony indicates that some human contact does occur in this area. Thus, the Board will direct that this extension be undertaken. Concerning the Illinois River Overflow No. 1, the Board believes that the City's proposed construction of bar screens may eliminate the accumulation of debris in this area. Accordingly, the Board will not require implementation of this extension at this time but will require periodic observation of this overflow point. Should these observations reveal a continuing accumulation of debris, the City may be required to extend this overflow point. The Board notes that the City will be required to file an amended petition for permanent exception, following which the Board will schedule a hearing.

The Board also finds it is advisable to provide for constraints on expansion of the service area, but will allow the City, by way of motion for modification, to request hook-ons beyond the residential 15 Population Equivalent (PE) limitation. (See Par. 7 of Order). The Board cautions the City that it must submit justification data of sufficient specificity for the Board to evaluate the hydraulic effects of the new loadings on the system, including upstream-overflows, and the effects on the quality of the overflows. The Board notes that the relief is restricted to those substantive requirements for treatment of CSCs and not to relief from water quality standards. To assure that this issue is clear, the Board will introduce into this Order language identifying the scope of the exceptions as granted. In summary, the Board finds that, taking into account the factors contained in 27(a) of the Act, the City of Peru has not justified a permanent exception, but has justified a temporary exception with conditions.

ORDER

The City of Peru (Peru) is hereby granted a temporary exception from the treatment requirements of 35 Ill. Adm. Code 306.305(a), as such provisions relates to first flush of storm flows, and to 35 Ill. Adm. Code 306.305(b), for discharges into the West Ravine Interceptor, East Ravine Interceptor, and Illinois River until July 1, 1990, or until March 1, 1990 if the City fails to comply with paragraph 6 of this Order, subject to the following conditions:

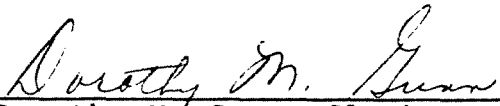
1. The City shall construct and operate the improvements to its wastewater collection system and wastewater treatment plant as described in Exhibit C by July 1, 1988. In addition, the City shall also extend the west Ravine Culvert.

2. The City shall continue street and sewer cleaning efforts so as to minimize the bypassing of solid materials.
3. The City shall continue its monitoring of the combined sewer overflows on a weekly basis and after every major rainfall and make written reports thereon and take corrective actions as necessary.
4. This grant of exception does not preclude the Agency from exercising its authority to require as a permit condition a CSO monitoring program sufficient to assess compliance with this exception and any other Board regulations and other controls, if needed, for compliance, including compliance with water quality standards
5. 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.
6. If, on or before March 1, 1990, the City of Peru fails to submit an amended petition for exception, this temporary exception will terminate on March 1, 1990.
7. Unless authorized by the Board upon petition for modification of this Order, there shall be no expansion of the service area tributary to the combined sewers except for residential hookups that do not exceed 15 population equivalents as defined in 35 Ill. Adm. Code 301.345.
8. The Board will retain jurisdiction in this matter.

IT IS SO ORDERED.

J. D. Dumelle and J. Anderson concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 1st day of April, 1987, by a vote of 6-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board