ILLINOIS POLLUTION CONTROL BOARD
October 1, 1967

CITY OF ROCK ISLAND,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 85-118
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

MR. ROY HARSCH APPEARED ON BEHALF OF PETITIONER.

MR. E. WILLIAM HUTTON APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by R. C. Flemal):

This matter comes before the Board upon the August 13, 1985, filing by the City of Rock Island, Department of Public Works, ("Rock Island") of a Petition for Variance. The Petition identifies three courses of possible variance relief which Rock Island requested that the Board consider in the alternative. At hearing[1] held July 15, 1987, in Rock Island, Rock Island and the Illinois Environmental Protection Agency ("Agency") presented a common recommendation that the Board consider only one of the original alternatives, and that in modified form (R. at 6-8). It is this modified alternative which is before the Board today.

Specifically, Rock Island requests, and the Agency recommends, that Rock Island be granted variance from 35 Ill. Adm. Code 304.106 and from 304.124(a) as it pertains to total suspended solids, iron, and manganese discharges to Black Hawk Creek. Variance is requested to expire on December 1, 1991, and to be subject to certain additional agreed-upon conditions.

For the reason discussed below, the requested relief will be granted. Having so said, the Board notes that the parties have left the record in the instant matter in a deplorable state. The Board finds the record to be extraordinarily confusing and

[1] A substantial number of procedural actions occurred during the period subsequent to the original filing and prior to the hearing. These included conferences between the parties and a variety of filings before the Board by both parties. Except as noted herein, these actions, among much other material in the record, are no longer germane to the matter as it now stands, and accordingly will not be reviewed here.

thereby to have required an excessive amount of the Board's time to sift and sort through. Rock Island, in particular, has developed a record which is largely designed to support a petition for a site-specific exemption, rather than focus on the variance matter which is at hand. Moreover, when Rock Island at hearing switched its attention to a bona fide variance request, it both failed to correlate the preceding record with its new position and continued to use the hearing in this matter to advocate its position respecting the hypothetical site-specific exemption. The Agency, for its part, presented nothing at hearing and in its very brief Amended Recommendation presents only very minimal guidance on such a critical matter as the environmental impact. Both parties also declined to submit post-hearing briefs, thus leaving the record without any summation and little apparent direction.

Under these circumstances the Board must properly ask itself whether it should return this matter to the parties for amendment of the record, or proceed to a decision in the best manner that the record allows. The Board believes that the latter course of action is the least objectionable. The matter is already over two years old, in spite of the fact that the Environmental Protection Act contemplates that timely decisions on variances be reached in no more than 120 days. The Board can not see that sending this matter back to the parties would do anything but continue to prolong an already over-prolonged proceeding.

PRIOR PROCEEDINGS BEFORE THE BOARD

The instant matter is closely related to two prior proceedings before the Board, both of which dealt with the Rock Island water supply system. They are R84-18 (In the Matter of:, Petition of City of Rock Island for a Site-Specific Exemption from 35 Ill. Adm. Code 304.106 for Sludge Discharge to the Mississippi River) and PCB 87-13 (City of Rock Island v. IEPA, May 14, 1967). In R84-18 Rock Island proposed a site-specific exemption for its sludge discharges. The site-specific relief would have allowed Rock Island to discharge all of its sludges directly to the Mississippi River without applying any treatment to the sludges. The Board dismissed this proposal on November 21, 1984, noting that "Rock Island's proposal is far too vague for the Board to act on" (61 PCB 245). Among specific deficiencies noted by the Board were failure to identify the location of the proposed discharge point and failure to provide any information on the environmental impact of the proposal.

In PCB 87-13 the Board granted Rock Island variance from the trihalomethane standard of 35 Ill. Adm. Code 604.202 and 604.203(d) until May, 1989, conditioned upon Rock Island's construction of facilities necessary to bring the Rock Island water supply into compliance with the trihalomethanes standard.

The production of trihalomethanes in the Rock Island water treatment system is in part related to the manner in which sludges are handled (see following).

BACKGROUND

Rock Island owns and operates a potable water treatment facility which provides clarified, filtered, and disinfected water to approximately 47,000 residents and 1,000 businesses in the city. Water treatment facilities include a raw water pumping station, a treatment plant, six elevated towers, and a distribution system consisting of cast iron, steel, and ductile iron mains. The water treatment facilities have a current capacity of approximately 16 million gallons per day, with all raw water being taken from the Mississippi River. Average pumping rate currently is approximately 6 million gallons per day (R. at 22).

Primary clarification is achieved through rapid-mix, flocculation, and sedimentation, aided by the addition of alum and lime. Clarified water from the sedimentation basins passes through gravity filters for filtration of remaining suspended solids. Finished water flows to "clear lakes" (finished water reservoirs) after chlorine disinfection and fluoridation. It is then routed either into on-site storage or pumped into the distribution system.

Chemicals added to the water as part of the treatment process consist of the following (Petition at 5):

Chemical	Average Dose	Function
Alum	6.4 mg/l	Clarification
Lime	29.6 mg/l	pH Adjustment
Fluoride	1.35 mg/l	Fluoridation
Chlorine	11.87 mg/l	Disinfection

Sludge (settled solids) accumulates in the flocculation and sedimentation basins at a rate of approximately 4,800 lbs/day. Forty-nine percent of the solids are composed of suspended particles present in the original raw river water. Twenty-three percent is composed of aluminum hydrate and twenty-seven percent is calcium hydrate[2].

Sludge handling facilities include a backwash recovery basin, a sludge thickener, and basket centrifuges for dewatering

[2] These data are provided in a Motion to Correct Record filed by Petitioner on September 28, 1987. The Motion is granted.

of the sludge. Flocculated raw water solids settle in the sedimentation basins, and some of the settled solids are routed to the sludge thickener. Filter backwash waste is routed to the backwash recovery basins and then into the sludge thickener. Dewatered solids, which consist of approximately nineteen percent of the total accumulated solids (Sept. 28 Motion at 2), are hauled to and disposed in a regional landfill. The remaining solids are presently flushed twice each year into a storm sewer, which in turn discharges into Black Hawk Creek (R. at 15). Each flushing event last five days and the solids discharge at a rate of approximately 144,000 lbs/day (Sept. 28 Motion at 2). Black Hawk Creek, which heads at the storm sewer, is tributary to the Rock River at a point approximately 3.8 miles upstream from the latter's confluence with the Mississippi River (R.a t 59).

Rock Island characterizes the need to discharge solids to Black Hawk Creek as follows (Petition at 4-5):

> The centrifuges are capable of handling all of the sludge removed by the four 65-foot diameter circular sludge rake mechanisms in the two sedimentation basins. As these circular sludge collectors were installed in rectangular basins, not all of the sludge is removed. These accumulated solids must periodically be removed before they reduce the effluent quality and capacity of the system. Effluent quality deteriorates in two ways. First, as the solids accumulate to the point that velocities become too high, the turbidity of the finished water will increase. Second, the organics in the sludge undergo gradual anaerobic decomposition. The products of this decomposition are believed to be precursors to trihalomethane (THM) formation.
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> * * * * *
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> To avoid the above problems, each sedimentation basin, as well as each of the flocculating basins, is taken out of service every three to six months to flush the solids out. Fire hoses are used to push the accumulated solids to the drain which is connected to the storm sewer.
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> The sludge flushed out of the basins enters a storm sewer that actually forms the headwaters of Black Hawk Creek. Black Hawk Creek flows in a southerly direction a total of 2.2 stream miles, where it joins the Rock River. Solids are typically discharged four times per year when the accumulated solids are flushed from the basins. Black Hawk Creek has received water treatment plant solids since 1910.

REQUESTED RELIEF

It is apparently conceded by the parties that the sludge discharges to Black Hawk Creek do not meet certain effluent standards of 35 Ill. Adm. Code 304.124(a). However, it is unclear from the record which standards are being exceeded and how these correlate with the relief requested. For the sake of bringing some focus to this proceeding, the Board will accept that the parameters for which relief is specifically requested are the only parameters of interest. These are total suspended solids, iron, and manganese. Accordingly, the matter of relief will be directed only to these three parameters.

Nevertheless, the Board can not help noting that data supplied by Rock Island in its original filing (Petition, Ex. 1a) implies that wet base concentrations of other parameters identified in 35 Ill. Adm. Code 304.124(a) also exceed the established standards. Among these are a concentration of barium at 8.8 mg/l versus a standard of 2.0 mg/l, copper at 11.4 mg/l versus a standard of 0.5 mg/l, and lead at 1.2 mg/l versus a standard of 0.2 mg/l. The parties must be aware that granting of relief as requested does not provide relief from compliance with other than the three specified standards.

The parties also request relief from 35 Ill. Adm. Code 304.106, which reads:

> **Section 304.106 Offensive Discharges**
>
> In addition to the other requirements of this Part, no effluent shall contain settleable solids, floating debris, visible oil, grease, scum or sludge solids. Color, odor and turbidity must be reduced to below obvious levels.

There is no discussion in the record of most of the pollutants mentioned in 304.106, even though relief is apparently being requested from the entire list.

COMPLIANCE CONSIDERATIONS

Rock Island has investigated a number of options to rectify the Black Hawk Creek situation, including:

1) Discharging sludges to the Rock Island sewage treatment plant;

2) Relocating its discharge to the Mississippi River;

3) Maintaining the status quo; and

4) Installing control equipment to eliminate all discharges.

Discharging sludges to the municipal sewage treatment plant is not considered feasible because the sewage treatment plant currently exceeds its solids capacity and is near its hydraulic capacity (R. at 19). Accordingly, it is believed that the sewage treatment plant would not handle the added load without large-scale additions for facilities (R. at 18).

Neither the second nor third option would eliminate violations of the standards in question. Accordingly, Rock Island has considered requesting site-specific exception if either of these two options were to be followed. Rock Island has further conjectured that site-specific relief would be more defensible if the discharge were to the large Mississippi River than if it were to remain to the small Black Hawk Creek (Petition at 12). For this reason, Rock Island has rejected permanent maintainance of the status quo (Id.).

The solution that Rock Island would apparently prefer is to relocate all of its discharges to the Mississippi River. It was to this end that Rock Island proposed the aborted plan of R84-18[3]. Subsequently Rock Island has attempted to rectify the deficiences in the R84-18 proposal (Petition at 6-7) and has contended that it will file a new site-specific proposal premised on diverting all discharges to the Mississippi River[4]. To this extent, Rock Island has not abandoned the relocation option.

However, Rock Island is apparently aware of the long-standing holding that mere speculation that a site-specific proposal may be filed, yet alone that the site-specific proposal might be acted upon in a manner favorable to the proponent, is an insufficient basis for the granting of a variance. See Modine Manufacturing v. IEPA, PCB 79-112, August 18, 1982; Modine Manufacturing v. IEPA, PCB 85-59, May 16, 1985; Borden Chemical v. IEPA, PCB 82-82, December 5, 1985; City of Mendota v. IEPA,

[3] Additionally, in one of the alternatives posed in the original Petition in the instant matter, Rock Island proposed to relocate the discharge point to the Mississippi River during the term of the variance (Petition at 1), and to use the record thus developed as a basis for seeking site-specific relief. This alternative has been withdrawn, and Rock Island currently intends to maintain the Black Hawk Creek discharge during the full course of the variance.

[4] The Board notes that this proposal was filed on September 29, 1987, and is docketed by the Board in separate action taken this date, October 1, 1987.

PCB 85-182, July 11, 1986; Schrock/A Tappan Division v. IEPA, PCB 86-205, March 5, 1987. In so holding, the Board has affirmed that a variance is properly a temporary compliance exemption granted under the circumstance where petitioner would suffer an arbitrary or unreasonable hardship not justified by the environmental impact if required to come into immediate compliance. Explicit is that petitioner commits to achieving timely compliance through a specifically identified compliance program.

Accordingly, Rock Island at hearing (R. at 6-8) and on the apparent recommendation of the Agency has agreed to a specific compliance program which contains, inter alia, the following elements:

1) Submission to the Agency by December 1, 1989, of a plan describing the facilities necessary for bringing the discharges into compliance with Board regulations;

2) A date-specific construction schedule for the facilities identified in (1), with construction to be completed and full operational status achieved by December 1, 1991;

3) Specification that conditions of the variance would be suspended upon the date of any Board Order exempting Rock Island from any treatment or storage requirements for its sludges; and

4) Specification that pendency of any rulemaking concerning the Rock Island discharges shall not excuse any delay or failure to meet conditions of the variance.

It is to be noted that Rock Island does not now identify the specific facilities it will construct to come into compliance. Rather, it requests that it have until December 1, 1989, approximately two years, to make this determination. This notwithstanding, Rock Island has investigated several possibilities. Among these are a recommendation by Rock Island's consulting engineerings that Rock Island construct three circular clarifiers to replace the existing sludge basins (R. at 32). Other options including adding sludge drying beds, which appears to be Rock Island preferred alternative at this time (R. at 48).

HARDSHIP

Rock Island presents three areas of hardship which it contends are sufficient to warrant grant of the requested relief. First, it asserts that treatment of any kind presents a

financial hardship, based on the combined premises that treatment is costly and that treatment is not necessary for environmental protection. Second, it asserts that elimination of all discharges would require prohibitively high capital expenditures. Third, it contends that valuable recreational and park land would be lost concomitant with installation of control equipment.

The Board believes that Rock Island has not yet made the demonstration sufficient to conclude that no treatment is necessary. For this reason, the Board can not conclude that Rock Island's first contention of hardship has merit.

However, the Board does agree that Rock Island would incur substantial financial hardship if required to immediately eliminate all sludge discharges. The required new flocculation and sedimentation basins are estimated to cost $2.5 million (R. at 17). If other costs are also factored in, elimination of all discharges to Black Hawk Creek are alleged cost $4 million (R. at 18).

Rock Island contends that it would have to finance any large improvements to the water system via a bond issue. However, Rock Island currently has no bond rating due to an approximately $1.5 million deficit in the city's general fund (R. at 28), and thus Rock Island believes that selling of the bonds could be accomplished only under conditions of "a pretty severe interest penalty" (R. at 30). Additionally, Rock Island points out that its current water rates are the highest in the Quad Cities area and will rise 10% again in April 1988 as part of a scheduled rate increase designed to eliminate a current deficit (R. at 24-31).

Installation of new facilities at the current water treatment plant would require utilizing land from the adjacent Reservoir Park. Rock Island points out that over 26,500 participants uses this 8.6 acre park annually for a variety of recreational and organized sports activities (Petition at 15-16; Ex. 4). Rock Island further contends that expansion of the water treatment facilities would require taking a minimum of three acres of the park out of recreational use, with the possibility that all of the park land would be required (R. at 34-7). Mr. Jack Fogel, Director of Parks and Recreation for Rock Island, testified that the park is highly valued in the local community and that it would not be readily replacable (R. at 50-5).

The Agency submits that while each area of hardship is not substantial, "the cumulative effect creates a hardship sufficient to allow the granting of a variance" (Amended Rec. at 12). The Board agrees.

ENVIRONMENTAL IMPACT

Rock Island characterizes Black Hawk Creek and the impact that its sludge discharges have on the Creek as follows (Petition at 5-6):

> Black Hawk Creek starts 0.4 miles south of the water treatment plant, in a densely wooded ravine. The ravine is bordered by residences and several commercial establishments in its northern reaches. It also flows past the County Sanitarium and a school before entering Black Hawk State Park for approximately the last stream mile before the confluence with the Rock River.
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> Access to the ravine is restricted in much of the residential area by the steeply sloping sides of the ravine. The heavy, dense vegetation shields the stream from view except at several road crossings. Dumping of branches, grass clippings and other materials into the ravine is common in the residential area.
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> During discharge of the water treatment sludge to Black Hawk Creek, the Creek becomes a milky color due to the high solids discharge. However, this discoloration does not appear at the mouth because of the high turbidity in the Rock River. Once the water treatment plant ceases the discharge, the Creek soon returns to its natural condition. Given the steep drop in the Creek's elevation, 90 feet over 2.2 miles, limited sludge accumulation occurs in Black Hawk Creek. Sludge accumulation is present in the wider areas of the Creek, mostly in the upstream reaches. However, the vast majority of Black Hawk Creek has a sand/gravel base.
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> As Black Hawk Creek is an intermittent stream, with shallow depths because of the steep elevation change, the only fish that inhabit the Creek are minnows. Near the confluence of Black Hawk Creek with the Rock River, the Creek widens and deepens and this 100 yard stretch would be expected to be similar to the Rock River in its fish population and diversity. In addition to the water treatment plant discharge, Black Hawk Creek receives stormwater discharges, and one sanitary sewer relief point near the mouth of the river.

Rock Island also presented two witnesses, Messrs. Gerald Roach and James E. Huff, both of Huff & Huff, Incorporated, who testified to the present character of Black Hawk Creek and the impact of the sludge discharges on it. Mr. Roach's field investigations, which were based on sampling of benthic organisms, indicate that Black Hawk Creek has poor water quality (R. at 65; Ex. 6). Specifically, Mr. Roach calculated the

Macroinvertebrate Biotic Index ("MBI") at various sites in the Black Hawk Creek Drainage Basin. He found that eighteen of nineteen MBI values ranged between 6.2 and 11.0, where any value between 6.0 and 11.0 is considered indicative of poor water quality (R. at 60; Ex. 6, attach. 3 and 4). Nevertheless, Mr. Roach concludes that elimination of the sludge discharges would not improve the MBI values. This conclusion is based on analysis of the substrate of Black Hawk Creek, which suggests "that some other environmental factor, other than accumulated water treatment plant sludge, is limiting the biological quality" (R. at 62). It is further based on comparison of the MBI values of Black Hawk Creek with the values of two tributaries of Black Hawk Creek and of a similar nearby creek which does not receive a water treatment plant discharge; in all cases the MBI's are similar (R. at 63).

Mr. Huff testified that there is no long-term accumulation of sludge deposits within Black Hawk Creek (R. at 71), although some sludge does temporarily accumulate during low flow conditions and is flushed out during high flow periods (R. at 72). Mr. Huff also testified that he observed the Creek during a flushing event, and that no odors could be detected (Id.).

The Agency concludes that "grant of a variance will result in an environmental impact, as periodic discharges to Black Hawk Creek will continue" (Amended Rec. at 14). Nevertheless, the Agency concludes that "on balance, the hardship to Petitioner outweighs any adverse environmental impact" (Id.). As mitigating factors in the environmental impact, the Agency notes that water quality standards applicable to Black Hawk Creek will remain in effect, and that Rock Island will continue to operate its existing facilities during the period of the variance (Id. at 14-5).

"NO TREATMENT" ALTERNATIVE

Rock Island and the Agency[5] have posed to the Board the question of whether the Board would refuse to grant a proposed site-specific rule on the sole ground that the actual impact of a "no treatment" alternative had not been studied (Amended Rec. at 8; R. at 7). This question arises in the context of Rock Island's contemplated request for a site-specific rule which would allow Rock Island to discharge its sludges directly to the Mississippi River without providing any treatment to them.

[5] The Agency emphasizes that in posing this question it is not endorsing Rock Island's speculative "no treatment" site-specific proposal. To the contrary, the Agency notes that based upon its present knowledge it would oppose such a rulemaking (Amended Rec. at 9).

Additionally, both Rock Island and the Agency note that the Board denied similar relief in a recent proceeding (In the Matter of: Petition for Site Specific Exception to Effluent Standards for the Illinois-American Water Company, East St. Louis Treatment Plant, R51-11, September 25, 1986) based in part on that proposal's failure to provide for any treatment of sludge effluent.

This is a question which the Board can not answer without greater specifity of Rock Island's intent. However, some guidance may be provided by noting that it is incumbent upon the proponent of any site-specific rule to show that promulgation of the rule would not cause an undue environmental harm. Thus, should Rock Island wish to propose a site-specific rule premised upon discharging its sludges directly to the environment without providing treatment of any type, demonstration of no (or at least minimal) environmental harm would certainly be an essential element in making that proposal successful. Under these circumstances, if Rock Island were unable to make the demonstration because it had not studied the matter, the Board would be likely to deny the site-specific relief.

Conversely, should Rock Island propose a site-specific rule involving some treatment to its sludges, it is not apparent that failure to study the no-treatment alternative would be of significance. The obligation would then be to show that the partially treated sludges would not cause an undue environmental harm.

In posing this question, Rock Island is seemingly also probing for an answer to the question of how it might assess environmental impact of a discharge which at this time remains only hypothetical. Rock Island opines that "no detailed impact on the Mississippi River can be made without the actual discharge being directed there" (Petition at 11-A). However, the Board notes that Rock Island's situation is not at all uncommon. Large numbers of examples exist where it is necessary to predict an environmental impact before undertaking an action. Indeed, in most cases it would be irresponsible to undertake an action without first determining that the action is not environmentally harmful. The solution is that there are various devices such as modeling, analogy, and analysis of detrimental components which can be successfully used to assess environmental impact of even hypothetical discharges.

CONCLUSION

Given the entirety of the circumstances in this matter, the Board finds that Petitioner would suffer an arbitrary or unreasonable hardship not justified by the environmental impact if required to come into immediate compliance. For this reason the requested variance will be granted, subject to conditions as stipulated to by the parties (R. at 6-8, 39).

Unfortunately, the abundant speculation about a site-specific rulemaking in the record of the instant matter obscures the fundamental issue at hand. The possibility that Rock Island's site-specific proposal may or may not be decided favorably from Rock Island's perspective is irrevelant to the instant matter. The fundamental issue is that hardship exists, and that Rock Island commits to achieving compliance by a date certain.

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

ORDER

Petitioner, the City of Rock Island, is hereby granted variance from 35 Ill. Adm. Code 304.106 and from 304.124(a) (as it applies to total dissolved solids, iron, and manganese) for discharges from Petitioner's potable water treatment works to Black Hawk Creek, subject to the following conditions:

a) Variance expires on December 1, 1991, upon the completion of treatment facilities necessary to achieve compliance, or upon the date of a Board Order exempting Petitioner from any treatment or storage requirements for its sludges, whichever occurs earlier.

b) Petitioner shall apply for a NPDES permit authorizing present discharges of sludges on or before February 1, 1987.

c) Petitioner shall continue to operate its existing sludge treatment facilities during the variance period, and shall operate these facilities so as to minimize the discharge of sludges to the environment.

d) Petitioner shall monitor its discharges during each basin flushing event, and shall provide the following information to IEPA/DWPC/CAS on or before the last business day of the month following the month of the basin flushing: duration of discharge, quantity of sludge discharged, quantity of flush water discharged, and the range of effluent concentration of total suspended solids.

e) Petitioner shall submit a compliance plan to the IEPA/DWPC/CAS on of before December 1, 1989, unless prior to that date a Board site specific rule change exempts it from any treatment or storage requirements for its sludges. This plan will describe the construction of facilities necessary to achieve compliance with Board regulations of general

applicability or as modified specific to these discharges.

f) Petitioner shall construct the above facilities in accordance with the following schedule:

Item	Completion Date
Submit permit application(s)	1/15/90
Obtain permits	5/1/90
Commence construction	8/1/90
Complete construction and obtain full operational status	12/1/91

g) The pendency of any rulemaking concerning these discharges shall not excuse any delay or failure to meet conditions e) and f), above.

Within forty-five days of the date of this Order, Petitioner shall execute and forward to Wayne L. Wiemerslage, Enforcement Programs, Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois 62706, a Certificate of Acceptance and Agreement to be found by all terms and conditions of this variance. This forty-five day period shall be held in abeyance for any period this matter is being appealed. The form of said Certification shall be as follows:

CERTIFICATION

I, (We), _____, having read the Order of the Illinois Pollution Control Board, in PCB 85-118, dated October 1, 1987, 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.

Board Member B. Forcade dissented; Board Member M. Nardulli abstained.

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 October, 1987, by a vote of 5-1.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board