

ILLINOIS POLLUTION CONTROL BOARD  
November 18, 1993

IN THE MATTER OF: )  
 )  
THE PETITION OF BORDEN CHEMICALS ) AS 93-2  
& PLASTICS OPERATING LIMITED ) (Adjusted Standard)  
PARTNERSHIP FOR AN ADJUSTED )  
STANDARD FROM 35 ILL. ADM. CODE )  
302.208 )

JAMES WARCHALL and DONNA KELLICK, SIDLEY and AUSTIN, APPEARED ON BEHALF OF BORDEN CHEMICALS & PLASTICS;

LISA MORENO APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY<sup>1</sup>.

OPINION AND ORDER OF THE BOARD (by G. T. Girard):

On February 26, 1993, Borden Chemicals & Plastics Operating Limited Partnership (BCP) filed a petition for an adjusted standard from the general use water quality standard for sulfate in 35 Ill. Adm. Code 302.208 for its facility located in Illiopolis, Sangamon County, Illinois. On March 25, 1993, the Board found that the petition filed by BCP was insufficient and ordered an amended petition to be filed to correct the deficiencies. BCP filed an amended petition on June 4, 1993. The Illinois Environmental Protection Agency (Agency) filed its recommendation on the amended petition on July 2, 1993.

A hearing was held on September 17, 1993, in Illiopolis, Illinois before hearing officer Allen Shoenberger. Members of the public attended the hearing. No briefs were filed in this matter.

The Board's responsibility in this matter arises from the Environmental Protection Act (Act) (415 ILCS 5/1 et seq. (1992)). The Board is charged therein to "determine, define and implement the environmental control standards applicable in the State of Illinois" (415 ILCS 5/5(b)(1992)) and to "grant \* \* \* an adjusted standard for persons who justify such an adjustment" (415 ILCS 5/28.1(a)(1992)). More generally the Board's responsibility is based on a system of checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the Agency

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<sup>1</sup> The Board notes that Charles Feinen also appeared on behalf of the Environmental Protection Agency. Mr. Feinen is presently an attorney with the Board. Upon hire, he withdrew his appearance in this case and did not participate in the Board's decision or deliberation in this matter.

is responsible for carrying out the principal administrative duties.

The Board finds that BCP has provided sufficient justification for the granting of an adjusted standard. The Board will explain the adjusted standard procedure and present BCP's justification for an adjusted standard.

#### ADJUSTED STANDARD PROCEDURE

The adjusted standard provision of the Act, at Section 28.1 (415 ILCS 5/28.1 (1992)), was created by the legislature to provide an expedited alternative to site-specific rulemaking. The result of either an adjusted standard or a site-specific rule proceeding is the same (i.e., relief from a particular rule). In both a general rulemaking proceeding and a site-specific rulemaking proceeding, the Board, pursuant to Section 27 of the Act, is required to take the following factors into consideration: the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. (See specifically, Section 27(a).)

Section 28.1 of the Act establishes the level of justification required for an adjusted standard and also requires the adjusted standard to be consistent with Section 27(a). The level of justification required, as set forth in Section 28.1(c), is that the petitioner present adequate proof that:

- . factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;
- . the existence of those factors justifies an adjusted standard;
- . the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and
- . the adjusted standard is consistent with any applicable federal law.

BACKGROUND

BCP's chemical plant is located in a rural area one mile west of Illiopolis, Illinois. (Pet. at 4.) The plant has been in operation since about 1960 and presently employs approximately 270 people. (Pet. at 4.) The plant produces PVC suspension and dispersion resin used by a variety of industries. (Pet. at 4.)

Treated wastewater from the plant is discharged into an unnamed ditch which has a 7-day, 10 year low flow (7Q10)<sup>2</sup> of zero. (Pet. at 5.) The ditch receives an average flow of 747,000 gallons a day from the BCP plant. (Pet. at 6.) The unnamed ditch drains into the Long Point Slough. (Pet. at 5.) The distance along the ditch from BCP's outfall to Long Point Slough is approximately three miles. (Pet. at 6.) The Long Point Slough enters the Sangamon River approximately two miles downstream of its confluence with the unnamed ditch. (Pet. at 7.)

The primary uses of the ditch and the Slough are as conduits for agricultural run-off and wastewater treatment plant discharges. (Pet. at 5.) No water is withdrawn from either the ditch or the Long Point Slough for drinking water, agricultural or industrial purposes. (Pet. at 7.) The unnamed ditch and the Slough have not been specifically classified; therefore these waters are deemed as general use waters. (Pet. at 28.) A variety of aquatic species inhabit the ditch and the Slough. (Pet. at 5.)

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<sup>2</sup> The amount of water flowing in a stream may vary from day to day. The discharge of an effluent will be diluted to a greater or lesser degree depending upon how much flow is in the receiving stream at the time of discharge. More importantly, the downstream water quality concentration of a contaminant from an effluent will vary depending upon the flow in the receiving stream. For planning purposes the United States Environmental Protection Agency (USEPA) and the Board have selected one particular low flow condition called the 7Q10, the average minimum seven day low flow which occurs once in ten years. Not all low flows are 7Q10 flows. The Board's water regulations at 35 Ill. Adm Code 302.103 provide:

Except as otherwise provided in this Chapter, the water quality standards in this Part shall apply at all times except during periods when flows are less than the average minimum seven day low flow which occurs once in ten years.

The process of utilizing critical conditions for stream flow, loading and water quality parameters in the calculations is effectively required by federal regulations. See 40 C.F.R. 130.7(c)(1) (1992).

Due to the low and variable flows, these waters are of little use for recreational or other purposes. (Pet. at 5.) However, the Slough may be used for trapping, swimming, rough fishing and game fishing. (Pet. at 28.)

In its water quality-setting process the Board selected the "general use" designation for this type of waterway. (35 Ill. Adm. Code 303.201 (1992).) The purpose of the General Use Standards is stated at Section 302.202:

The general use standards will protect the State's water for aquatic life, wildlife, agricultural use, secondary contact use and most industrial uses and ensure the aesthetic quality of the State's aquatic environment. Primary contact uses are protected for all general use waters whose physical configuration permits such use.

In addition, pursuant to 35 Ill. Adm. Code 302.301, "...Waters of the State are generally designated for public and food processing use." Therefore, wildlife, agricultural use, and drinking water are clearly designated uses for the receiving water of BCP's effluent. The Board assigned "General Use" numeric criteria for sulfate that would protect such uses in the waterway. (35 Ill. Adm. Code 302.208 (1992).) It is the general use water quality standard for sulfate from which BCP seeks an adjusted standard.

Section 302.208 of the Board's regulations establishes a water quality standard where the level of sulfate shall not exceed 500 mg/l. (35 Ill. Adm. 302.208(e).) The sulfate level in the receiving stream has consistently been below 500 mg/l, although the level of sulfate in BCP's effluent often exceeds 500 mg/l. (Pet. at 1.) Borden's NPDES permit requires that the amount of sulfate in the effluent not exceed 500 mg/l.<sup>3</sup>

On November 29, 1990, the Board adopted a site-specific rule establishing a water quality standard for total dissolved solids and chloride for the Long Point Slough and its unnamed tributary. (In the Matter of: The Petition of Borden Chemicals & Plastics (November 19, 1990), R86-14.) This rule adopted section 303.431 which imposes a water quality standard of 3,000 mg/l for total dissolved solids and 900 mg/l for chloride for the Long Point Slough and its unnamed tributary. (35 Ill. Adm. Code 303.431.) This rulemaking also adopted section 304.211 which establishes an effluent standard for BCP's effluent of 3,000 mg/l for total

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<sup>3</sup> BCP filed an appeal of the permit conditions including the sulfate limitation on October 23, 1991. (See Borden v. Illinois Environmental Protection Agency PCB 91-200.) BCP's permit appeal is currently pending before the Board.

dissolved solids and 900 mg/l for chloride. (35 Ill. Adm. Code 304.211.)

Borden proposes the following language for the adjusted standard:

The general use water quality standard for sulfate contained in Section 302.208 shall not apply to Long Point Slough and its unnamed tributary, which receives discharges from the Illiopolis, Illinois facility of Borden Chemicals & Plastics Operating Limited Partnership ("BCP"), from the point of discharge from that facility downstream to the confluence of Long Point Slough with the Sangamon River. Instead, this water shall comply with a sulfate standard of 1000 mg/l. In addition, the sulfate discharges from BCP's Illiopolis, Illinois facility into an unnamed tributary of Long Point Slough shall comply with a daily maximum effluent limitation of 1000 mg/l as measured at the point of discharge to the unnamed tributary. (Pet. at 2.)

The Agency recommends the following language for the adjusted standard:

The general use water quality standard for sulfate contained in Section 302.208 shall not apply to Long Point Slough and its unnamed tributary, which receives discharges from the Illiopolis, Illinois facility of Borden Chemicals & Plastics Operating Limited Partnership ("BCP"), from the point of discharge from that facility downstream to the confluence of Long Point Slough with the Sangamon River. Instead, this water shall comply with a sulfate standard of 1000 mg/l. (Ag. Rec. at 6.)

The language recommended by the Agency does not include a level for sulfate in the effluent discharge. The primary component of the requested relief is the change in water quality standards that affect the water quality of the unnamed ditch and Long Point Slough. The Board must focus on these numerical alternative water quality standards, and not simply the impact of BCP's current effluent, for three reasons. First, the Act at Section 28.1 requires the Board to focus on whether the requested adjustment is consistent with the factors applied to general rulemaking<sup>4</sup> or will result in unexpected results. Since BCP's

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<sup>4</sup> Those factors, set forth in Section 27(a) are: the existing physical conditions, the character of the area involved,

requested adjustment is numerical water quality values of 1000 mg/l of sulfate, this is the value the Board must determine to be consistent with the factors in order to grant the adjusted standard. Second, Section 28.1 requires the Board to evaluate consistency with federal law, and federal law places significant emphasis on the numeric water quality values and use designations of the waterway. Third, water quality values represent an official state determination that long-term exposure at such levels will not cause harm or adverse environmental consequences.<sup>5</sup>

The Board finds that the language relating to the sulfate level of the effluent is not appropriate for an adjusted standard because the effluent level is not determined by regulation but is contained in BCP's permit. While there is a relationship between the sulfate level in the permit and the water quality standard, the procedure to challenge permit conditions is a permit appeal and not an adjusted standard. Therefore, the Board will grant the adjusted standard with the language as recommended by the Agency.

Mr. Peter Guay, technical manager of the plant, testified on the sources of sulfate in the plant. (Tr. at 11-14.) He also identified the relevant wastestreams in the plant. (Tr. at 14 & 15.) Mr. Sam Shelby, an engineer with the ADVENT Group, an environmental consulting and engineering firm, testified on the technologies that BCP considered to reduce sulfate. (Tr. at 20-30.) He concluded that the options were extremely expensive or were technically infeasible. (Tr. at 30.) Ms. Robin Garibay is a project scientist with the ADVENT Group. (Tr. at 30.) She testified on the stream study and the effects of a sulfate level of 1000 mg/l.

In support of its petition BCP provided a summary of effluent sulfate data based on twenty-four hour composite samples collected from May of 1991 through December of 1992. (Pet. at 9,

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including the character of surrounding land uses, zoning classifications, the nature of the... receiving body of water...and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution.

<sup>5</sup> Promulgation of water quality standards based upon numbers which reflect a "worst case scenario" in actuality represent a legal determination, governed largely by federally required procedures, of the appropriateness of water quality at that level to protect the designated uses. Such promulgation will, in fact, allow the discharger subject to its limits to routinely discharge at levels which achieve, but do not exceed, that standard at all times.

Exh. G.) This data shows that the average sulfate concentration of the effluent was 617 mg/l and the maximum sulfate concentration was 880 mg/l. (Pet. at 9, Exh. G.) BCP contends that the sources of sulfate in the effluent have remained substantially the same over the past seventeen years and therefore this data is representative of BCP's long-term average discharges of sulfate. (Pet. at 10.)

Factors relating to BCP are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation

In adopting the general water quality standards the Board stated that:

. . . all waters should be protected against nuisances and against health hazards to those near them; that all waters naturally capable of supporting aquatic life, . . . should be protected to support such life; and that waters that are used for public water supply should be clean enough that ordinary treatment processes will assure their potability.

(In the Matter of: Effluent Criteria (March 7, 1972), R70-8, 3 PCB 755, 759.)

In adopting the water quality standard for sulfate, the Board concluded that a limit was "desirable to protect stock watering and fish." (In the Matter of: Effluent Criteria (March 7, 1972), R70-8, 3 PCB 755, 762.) The Board found that a level of 500 mg/l would provide adequate protection for fish and avoid serious adverse effects on public water supplies. (In the Matter of: Effluent Criteria (March 7, 1972), R70-8, 3 PCB 755, 762.)

BCP contends that the stream study demonstrates that the amount of BCP's effluent does not adversely affect fish or other aquatic life. (Pet. at 16.) BCP argues that there is no adverse effect on livestock because there is no cattle in the area. (Pet. at 16.) Further, BCP claims that the unnamed ditch and Long Point Slough are not used as sources of drinking water; therefore the current discharges are protective of water supplies. (Pet. at 16.) BCP argues that the receiving waters of BCP's effluent are uniquely suited to receive a higher concentration of sulfate. (Pet. at 16.)

The Agency believes that BCP has shown that the factors of this proceeding are substantially and significantly different than those factors relied on by the Board in adopting the water quality standard for sulfate. (Ag. Rec. at 8.) The Agency notes that BCP has shown that the unnamed ditch and the Long Point Slough are not sources for stock watering or for public water supply. (Ag. Rec. at 7.) In addition, the Agency notes that BCP has provided evidence that the sulfate level will be protective

of livestock watering if the waterway were to be used for livestock watering in the future. (Ag. Rec. at 7.) The Agency also contends that the studies show that the sulfate level would be protective of aquatic life of the unnamed tributary and Long Point Slough. (Ag. Rec. at 8.)

The existence of those factors justifies an adjusted standard

Section 28.1(c)(2) requires the petitioner to prove that the existence of the substantially different factors justifies an adjusted standard. BCP contends that the receiving waters of BCP's effluent are uniquely suited to receive a higher concentration of sulfate than the water quality-based effluent limitation. (Pet at 16.) BCP also contends that compliance with the sulfate level would result in a substantial hardship to BCP with no corresponding benefit. (Pet. at 40.)

The Agency believes that the factors justify an adjusted standard. (Ag. Rec. at 8.) The Agency recommends that the Board grant the adjusted standard at the level requested by BCP.

The requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability

A stream study of the unnamed ditch and Long Point Slough, performed in 1984, found that the dissolved salts in BCP's effluent do not adversely affect fish. (Pet. at 16.) The study found twenty-five species of fish, including six species classified as sportfish. (Pet. at 16, Exh D at 64.)

BCP also references a 1981 study that concluded that a sulfate standard of 1000 mg/l would be protective of fish species. (Pet. at 22.) The study exposed fish species native to Illinois to varying concentrations of sulfate. (Pet. at 22, Exh. K.) BCP also references a 1976 study on cattle that showed that heifers were able to tolerate 2500 mg/l of sulfate in their drinking water without adverse effects. (Pet. at 24, Exh. M.) BCP also notes another study where two cows were fed water containing 4546 to 7369 mg/l of salts for two years with no adverse effects. (Pet. at 25, Exh. N.) The Board notes that these studies observed the effect of sulfate concentrations in general and did not consider the particular factors relating to BCP's facility.

The Agency believes that the proposed limit of 1000 mg/l of sulfate will not result in environmental or health effects significantly or substantially more adverse than the effects considered by the Board in adopting the water standard. (Ag. Rec. at 9.)



The adjusted standard is consistent with any applicable federal law

Section 28.1(c)(4) of the Act requires the petitioner to show by adequate proof that the adjusted standard is consistent with any applicable federal law. BCP asserts that the adjusted standard is consistent with federal law. (Pet. at 27.) BCP contends that the adjusted standard does not interfere with any of the existing or reasonably likely future uses of these waters. (Pet. at 28.)

The Agency believes that the adjusted standard would be consistent with federal law. (Ag. Rec. at 9.) The Agency notes that Section 303 of the Clean Water Act, 33 U.S.C. §1313, granted states the authority to promulgate water quality standards subject to the approval of the USEPA. (Ag. Rec. at 9.) The Agency also notes that the states were authorized to revise the adopted water quality standards. (Ag. Rec. at 9.)

Alternate Technologies

BCP considered three end-of-pipe sulfate reduction options and four pretreatment sulfate reduction options. (Tr. at 20.) BCP concluded that all the options considered were either technically or economically infeasible. (Tr. at 21.) The three end of pipe alternatives considered were reverse osmosis, distillation and deionization. (Tr. at 20.) The use of reverse osmosis and distillation were determined to present a greater threat to the environment than the present system of discharge. (Pet. at 23 & 24.) The use of deionization would increase the effluent sulfate level. (Pet. at 25.)

Borden also investigated the following pretreatment options: reverse osmosis; use of hydrochloric acid for ion exchange regeneration; the use of sodium bicarbonate for ion exchange regeneration; and off-site disposal of spent sulfuric acid. (Tr. at 27.) BCP found the use of reverse osmosis to be cost prohibitive with capital costs of \$5.2 million and annual operating and maintenance costs of \$199,000. (Tr. at 27, Exh. W.) The use of hydrochloric acid was found to be not environmentally sound due to increases in the discharge of chloride. (Pet. at 27.) The use of sodium bicarbonate will not provide the water quality needed in BCP's production process. (Pet. at 28.) Annual costs for off-site disposal were estimated to be between \$5 million and \$7.5 million. (Tr. at 29.) BCP found the option of off-site disposal to be expensive and merely transfers the sulfate to another location with no environmental benefit. (Tr. at 29.)

The Agency concludes that the options considered show that treatment to remove sulfate is technically feasible but not economically reasonable. (Ag. Rec. at 4.) The Agency contends

that the alternatives are economically unreasonable considering the lack of any associated environmental benefit. (Ag. Rec. at 5.)

CONCLUSION

For all of the above reasons, the Board finds that BCP has presented adequate proof of justification for the requested standard as set forth in Section 28.1(c) of the Act and the requested adjusted standard, as presented in this proceeding, is consistent with the factors set forth in Section 27(a) of the Act.

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

ORDER

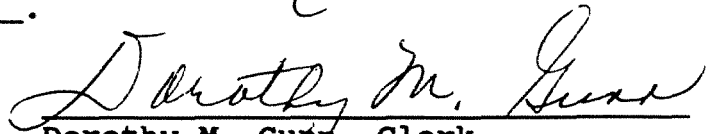
The Board hereby grants Borden Chemicals & Plastics' request for an adjusted standard for its Illiopolis plant from the general use water quality standards for sulfate in 35 Ill. Adm. Code 302.208(e). Borden Chemical is hereby granted the following adjusted standard:

The general use water quality standard for sulfate contained in Section 302.208 shall not apply to Long Point Slough and its unnamed tributary, which receives discharges from the Illiopolis, Illinois facility of Borden Chemicals & Plastics Operating Limited Partnership ("BCP"), from the point of discharge from that facility downstream to the confluence of Long Point Slough with the Sangamon River. Instead, this water shall comply with a sulfate standard of 1000 mg/l.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act, (415 ILCS 5/41 (1992)), provides for appeal of final orders of the Board within 35 days. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill. Adm. Code 101.246, Motion for Reconsideration.)

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 18<sup>th</sup> day of November, 1993, by a vote of 5-0.

  
Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board