

ILLINOIS POLLUTION CONTROL BOARD
October 2, 1980

MARATHON OIL COMPANY,)
)
) Petitioner,)
)
) V.) PCB 80-102
)
) ENVIRONMENTAL PROTECTION AGENCY,)
)
) Respondent.)

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

This matter comes before the Board upon a variance petition filed May 9, 1980 by Marathon Oil Company (Marathon) an Ohio corporation qualified and authorized to do business in Illinois. The petition requests for five years a variance from the chloride and total dissolved solids (TDS) water quality standards of Rule 203(f) of Chapter 3: Water Pollution (Rules), as that rule applies to discharges from Marathon's petroleum refinery near Robinson, Crawford County. On June 12, 1980 the Environmental Protection Agency (Agency) recommended that the variance be granted with conditions. On June 18, 1980 Petitioner filed an objection and renewed request for hearing. On August 6, 1980 the Agency filed an amended recommendation, recommending a grant of the variance with modified conditions. On August 19, 1980 Marathon withdrew its request for a hearing and on August 29, 1980 filed an affidavit in support of its petition. No hearing was held and the Board has received no public comment. The Agency's motions for leave to file the recommendation and amended recommendations are granted. Marathon's August 29, 1980 affidavit is an amendment to the petition which will fix the filing date for the purposes of the decision period.

Marathon operates a crude oil refinery on the eastern edge of Robinson, Crawford County. The facility is situated within Sections 34, 35 and 36 of T. 7 N. and Sections 2 and 3 of T. 6 N., R. 6 W., 2 PM (Ex. A). The refinery has a capacity of about 195,000 barrels of crude oil per day. It employs 678 personnel with an average weekly payroll of \$350,000. It pays about \$3 million annually in state and local taxes and purchases local goods and services having a value of \$5 million approximately (Pet. 2).

Marathon possesses for the facility NPDES permit IL0004073 which became effective April 20, 1979 and which will expire September 30, 1980. The permit requires that Marathon's discharge not cause violation of the chloride or TDS water quality standards of Rule 203(f). A major source of these contaminants is chloride

salts in crude oil. Marathon operates a wastewater treatment system in connection with the refinery. This system consists of two API separators operated in parallel, a chemical flocculation unit followed by an air flotation unit, an aerated surge basin followed by an activated sludge basin with final clarification, an equalization pond which maintains a constant load on the tertiary sand filters and a storm water impoundment basin with recycle to the aerated surge basin. Marathon's refinery provides no treatment for TDS or chloride.

Discharge from the treatment system, apparently identified as outfall 001 in the permit, is to an unnamed ditch in the NE $\frac{1}{4}$ of NE $\frac{1}{4}$ of Sec. 35, T. 7 N., R. 12 W., 2 PM (Pet. 2, 5; Exs. A, C; Rec. 2; Amended Rec. 4). The ditch flows about 4 miles east into Sugar Creek which is tributary to the Wabash River about nine miles east of the discharge point (Pet. 2). The unnamed ditch has a natural seven day, ten year low flow of zero, but a low flow of 16.1 Ml/day (6.57 cubic feet per second) with wastewater discharges included. The low flow of Sugar Creek is not given (Rec. 2; Exs. A, C).

The Robinson Municipal Sewage Treatment Plant (STP) discharges into the ditch upstream of Marathon's point of discharge (Rec. 4; Ex. A). In 1976 a biological investigation by the Illinois Natural History Survey found stream degradation downstream of these discharges (Rec. 4). In the summer of 1978 the Agency conducted a water quality investigation of the Sugar Creek basin. In general this study concluded that chemical water quality was notably degraded by wastewater discharges from the Robinson STP and Marathon (Rec. 4). One and one-half miles downstream from Marathon there were average TDS levels in excess of 1900 mg/l and average chloride levels of 400 mg/l. Downstream 3.7 miles TDS averaged 1550 mg/l and chloride 130 mg/l (Rec. 5). Rule 203(f) sets water quality standards at 1000 mg/l TDS and 500 mg/l chloride.

Marathon monitors TDS and chloride levels in both its discharge and the receiving stream. The Agency has presented the results from May, 1979 through April, 1980 (Rec. 3). The average flow was 7.0 Ml/day (1.8 million gallons per day). Marathon states that its discharge is 11 Ml/day (2.9 million gallons per day) (Pet. 3). The ranges and the averages of monthly averages are presented below, along with the Agency data for Sugar Creek. (All values given as mg/l.)

	Chloride			TDS		
	<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>	<u>Min.</u>	<u>Avg.</u>	<u>Max.</u>
Effluent	275	*437	680	1277	*1944	2690
"Stream"	140	*349	560	383	*1393	2424
1.5 miles	265	401	620	1390	1916	2740
3.7 miles	180	330	460	840	1554	2140

*Numerical averages of values presented in the recommendation (p. 35). These are not flow-weighted.

Based on the data in the recommendation and Marathon's value for the flow, it is discharging about 4800 kg (5.3 tons) of chloride and 21,000 kg (24 tons) of dissolved solids per day.

Marathon states that its effluent creates no injury to or interference with the health, general welfare or physical property of the people of Crawford County. The receiving water is a drainage ditch which is not large enough for recreational uses such as swimming, boating, fishing or other water activities. Water from the ditch is not and has never been used for human consumption. No uses of the receiving waters or the lands abutting to it are adversely affected by the effluent (Pet. 5). There will be no significant adverse environmental impact on Sugar Creek or the Wabash River (Pet. 6). The discharge will not lead to a violation of any water quality standards in the Wabash River and the river will suffer no adverse environmental impact (Rec. 6; Ex. G).

Rule 408(b) of Chapter 3 sets an effluent standard for TDS of 3500 mg/l. Marathon has no difficulty in meeting this effluent standard. However, Rule 402 requires that no effluent, either alone or in combination with other sources, cause a violation of any applicable water quality standard. Rule 203(f) sets water quality standards of 500 mg/l chloride and 1000 mg/l TDS. Marathon cannot consistently keep its discharge below these levels. Since its discharge constitutes about 80% of the low flow in the ditch, Marathon cannot avoid causing water quality violations in the ditch during low flow periods (Pet. 3). It states that there is no economically reasonable and technologically feasible way for it to meet the water quality standards for TDS and chloride in the receiving water (Pet. 5). Marathon would have to employ expensive, energy intensive non-conventional control technology. The Agency supports the proposal before the Board in R76-21 to delete the TDS effluent standard. The Agency agrees that there is currently no economically feasible treatment (Rec. 3). The Board notes that possible treatment technologies include reverse osmosis and distillation. Besides the cost and energy consumption

involved, these treatments produce concentrated brines which must either be landfilled or discharged.

For the reasons noted above, the Board finds that it would impose an arbitrary and unreasonable hardship to require Marathon to maintain the water quality standards for TDS and chloride in the unnamed ditch. The variance will be granted with conditions similar to those suggested by the Agency. In addition the Board will require that, prior to termination of the variance, Marathon conduct a study including the following:

1. Feasibility of separate treatment and disposal of high TDS waste streams.
2. Feasibility of constructing a holding basin to retain the high TDS water until it can be released during times of high flow.
3. Feasibility of obtaining low TDS water for dilution of the effluent during times of low flow, including a study of whether this would be a sound conservation practice.

In the amended recommendation the Agency has recommended that Marathon's effluent concentrations from outfall 001 not exceed 700 mg/l chloride or 3500 mg/l TDS (Amended Rec.). In its filing of August 18, 1980 Marathon has apparently agreed to these limitations with the proviso that modification may be required if the chloride concentration of its crude oil feedstock were to increase. The Board notes that the parties seem to be requesting not a modified water quality standard for the ditch, but a variance conditioned upon Marathon meeting an effluent standard. This departs from the Board's usual practice. The suggested condition will be in a sense more restrictive than the modified water quality standard since Marathon will be obliged to meet it even during times of high flow when there would be no danger of a water quality violation. The Board will award a variance conditioned on an effluent limitation.

Rule 402 provides that effluents not cause water quality violations. In view of the Board's decision to condition the variance on an effluent limitation rather than a modified water quality standard, a variance from Rule 402 would be more appropriate. Accordingly, the variance will be granted from Rule 402 as it applies to discharges causing violations of the chloride and TDS water quality standards.

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

ORDER

Petitioner, Marathon Oil Company, is granted a variance from Rule 402 of Chapter 3: Water Pollution, as that rule applies to discharges causing violations of the chloride and total dissolved solids (TDS) water quality standards of Rule 203(f), subject to the following conditions:

1. This variance will expire October 2, 1985.
2. Petitioner's outfall 001 shall not exceed the following effluent limitations:

Chloride	700 mg/l
TDS	3500 mg/l
3. Petitioner shall operate its existing treatment facilities so as to minimize its discharges of chloride and TDS and in accordance with its representations contained in Exhibit F to the petition.
4. On or before April 2, 1985 Petitioner shall forward to the Environmental Protection Agency (Agency) a study which shall include the following:
 - a. Feasibility of separate treatment and disposal of high TDS waste streams.
 - b. Feasibility of constructing a holding basin to retain the high TDS water until it can be released during times of high flow.
 - c. Feasibility of obtaining low TDS water for dilution of the effluent during times of low flow, including a study of whether this would be a sound conservation practice.
5. Within forty-five days of the date of this Order, Petitioner shall execute and forward to the Illinois Environmental Protection Agency, Variance Section, 2200 Churchill Road, Springfield, Illinois 62706, a Certificate of Acceptance and Agreement to be bound to 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 the Certificate shall be as follows:

CERTIFICATION

I, (We), _____, having read and fully understanding the Order in PCB 80-102, hereby accept that Order and agree to be bound by all of its terms and conditions.

SIGNED _____
TITLE _____
DATE _____

6. The Agency's motions for leave to file are granted.

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order were adopted on the 2ND day of October, 1980 by a vote of 50.



Christan L. Moffett, Clerk
Illinois Pollution Control Board