

ILLINOIS POLLUTION CONTROL BOARD
February 7, 1980

VILLAGE OF GLASFORD,)
)
 Petitioner,)
)
 v.) PCB 79-238
)
 ENVIRONMENTAL PROTECTION AGENCY,)
)
 Respondent.)

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

This matter comes before the Board upon a variance petition filed November 13, 1979 by the Village of Glasford (Glasford). The petition requests a variance from the fluoride limitation of Rule 304(B) and the gross alpha particle and radium limitation of Rule 304(C)(1) of Chapter 6: Public Water Supplies (Rules). On January 16, 1980 the Environmental Protection Agency (Agency) recommended that the variance be granted with conditions. Glasford waived its right to a hearing and the Board has received no public comments.

Glasford operates a public water supply system in Peoria County. The supply serves 1100 residents with about 100,000 gallons of water per day. The system draws from two 1700 foot deep wells, each with a capacity of approximately 200 gallons per minute. The system has a 50,000 gallon aerated storage reservoir, chlorination equipment and a 35,000 gallon water tower. Glasford also operates a sewage treatment plant which discharges to Dry Run Creek, a tributary of the Illinois River.

Rule 304(B)(4) sets a limit of 2.0 mg/l fluoride in finished water in public water supplies in Peoria County. (This is in excess of the 1.8 mg/l limit for the southern counties.) The recommendation contains a summary of Agency sampling of the wells and finished water. All indicate violations of the fluoride standard. The finished water ranged from 2.7 to 3.7 mg/l with an average of 3.0 mg/l in eight samples taken during the spring of 1979.

Rule 304(C)(1) sets maximum limits for radium-226, -228 and gross alpha particle activity in public water supplies. Combined radium-226 and -228 may not exceed 5 pCi/l and gross alpha particle activity may not exceed 15 pCi/l. Rule 309(C)(1) provides that compliance is determined on the basis of quarterly samples averaged over a year. The Agency has collected only one recent

sample. This shows 55.4 ± 11.9 pCi/l in the distribution system. Apparently this is gross alpha particle activity. Although quarterly samples are not yet available, the Agency believes this is sufficiently beyond the present limit to indicate that a violation most probably exists.

Glasford offered two alternative compliance plans. The first involves drilling a shallow well to provide water with a low fluoride and radium content to blend with the deep well water to provide a satisfactory mix. Glasford estimates that this would cost \$50,000. The Agency estimates that another \$50,000 will be necessary to provide two miles of six-inch main from the nearest likely site for the well. In the alternative Glasford proposed to lower the fluoride level with an activated alumina filter and the radium with a zeolite softener. This was estimated to cost \$200,000 to construct.

The Agency opposes zeolite softening because it increases the sodium content of the finished water and because it produces as a side product liquid waste which would present disposal difficulties. The Agency also opposes activated alumina treatment for fluoride because the technology is expensive and uncertain. The Agency recommends lime softening to treat both contaminants. Although lime softening is not the most common method of treating for fluoride, the United States Environmental Protection Agency (USEPA) Manual of Treatment Techniques states that excess lime softening has been shown to remove fluoride from high magnesium water by co-precipitation with magnesium hydroxide (Rec., Ex. D). Apparently Glasford has high magnesium water. The Agency estimates the cost of lime softening at around \$200,000, the same as Glasford's estimates for its suggested treatment.

The standards for both fluoride and radium are mandated by USEPA regulations. Under the Safe Drinking Water Act variances cannot extend beyond January 1, 1981. However, the Agency has joined the Illinois Department of Public Health and other states in recommending that USEPA raise the fluoride standard to four times the optimum level, that is to 4.0 mg/l. The Agency believes that at Glasford's level there should be little or no noticeable fluorosis, or dental mottling.

Bills have been introduced in Congress to require suspension of the radium standards until new studies of health effects have been conducted. The Agency tends to agree with experts that the radium standard is too stringent at present. It has attached a

statement by Dr. R. E. Rowland, Director, Radiological and Environmental Research Division, Argonne National Laboratory (Rec., Ex. B). A major part of the radium problem is that it can be incorporated into bone tissues in place of calcium which is chemically similar to radium. Among other things, Dr. Rowland contends that early studies on which the radium exposure guidelines were based assumed that the body incorporated radium at a rate ten times higher than presently estimated. Based on Dr. Rowland's conclusions, the Agency believes that a standard of 90 pCi/l for gross alpha count may provide adequate protection at a large savings over the present standard.

Glasford contends that its residents have been using deep well water since 1947 with no apparent ill effects. The Agency does not recommend that Glasford be required to undertake epidemiological studies. Glasford has offered to notify the consumers of its water of the violations on a three month basis by direct mail, publication in the local newspaper and announcements on the local radio and television stations.

The Board finds that it would impose an arbitrary and unreasonable hardship to require Glasford to undertake immediate actions to reduce its fluoride and radium levels. Glasford is granted a variance through January 1, 1981 upon condition that it submit to the Agency a compliance plan within 150 days of the date of this Order. The Agency will schedule a hearing on the compliance plan to satisfy the requirements of the Safe Drinking Water Act. In the event Congress or the USEPA takes actions which would allow a variance beyond this date, Glasford may petition the Board for extension of this variance.

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

ORDER

The Village of Glasford is granted a variance from the fluoride limitation of Rule 304(B), from the combined radium-226 and -228 limitation of Rule 304(C)(1)(a) and from the gross alpha particle activity limitation of Rule 304(C)(1)(b) of Chapter 6: Public Water Supplies, subject to the following conditions:

1. This variance will expire on January 1, 1981.

2. Petitioner shall undertake any reasonable measures within the limitations of its existing equipment to minimize the concentration of radium and fluoride in its public water supply.
3. Within thirty days of this Order, and at ninety day intervals thereafter, Petitioner shall notify the consumers of its water that the water does not meet the standards for fluoride and radium.
4. Within 150 days of the date of this Order Petitioner shall submit to the Agency a compliance plan detailing its programs to come into eventual compliance with the fluoride and radium standards.
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 79-238, hereby accept that Order and agree to be
bound by all of its terms and conditions.

SIGNED _____

TITLE _____

DATE _____

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 7th day of February, 1980 by a vote of 4-0.



Christan L. Moffett, Clerk
Illinois Pollution Control Board