

ILLINOIS POLLUTION CONTROL BOARD  
August 14, 1986

LAKE COUNTY PUBLIC WORKS DEPARTMENT, )  
WILDWOOD SUBDIVISION WATER )  
SUPPLY SYSTEM, )  
 )  
Petitioner, )  
 )  
v. ) PCB 86-75  
 )  
ILLINOIS ENVIRONMENTAL PROTECTION )  
AGENCY, )  
 )  
Respondent. )

JOHN DAVID KOENEN, ASSISTANT STATE'S ATTORNEY, APPEARED ON BEHALF OF PETITIONER; and

PETER ORLINSKY APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by J. Anderson):

This matter comes before the Board on a May 23, 1986 petition for variance filed by the Lake County Department of Public Works (County). The County seeks variance for one of 15 water supplies, that supply which serves the Wildwood subdivision (Wildwood). The County requests a five-year variance from 35 Ill. Adm. Code 602.105(a) "Standards for Issuance" and from 35 Ill. Adm. Code 602.106(b) "Restricted Status", to the extent these rules relate to the 5 pCi/l standard for combined radium-226 and radium-228 contained in 35 Ill. Adm. Code 604.301(a). On July 1, 1986 the Illinois Environmental Protection Agency (Agency) filed a Recommendation in support of variance, subject to conditions. Hearing was ordered by the Board and held on July 17, 1986, at which the County presented testimony by Martin A. Galantha, superintendant of the County's Department of Public Works. About 10 citizens attended and a few asked questions and indicated support of grant of variance.

The Wildwood Subdivision is located in an unincorporated area of Lake County which more or less surrounds Gages Lake, and is roughly bound by Route 120 on the south, Hunt Club Road on the east, Washington Street on the north, and Route 45 on the west. The Wildwood public water supply serves the needs of the area's 8,000 residents, as well as those of commercial, industrial and other users, including the College of Lake County and the Area Vocational School.

The average daily pumpage for the water system is approximately 626,400 gallons per day (gpd). Five wells currently supply these water needs; two are deep wells constructed in 1951 and 1970 (Well 2 and Well 4) and three are shallow wells constructed in 1959, 1986 and 1986 (Well 3, Well 5 and Well 6). An additional deep well, Well 7 has recently been put in operation.

Variance had previously been granted to the County in Lake County Department of Public Works v. IEPA, PCB 82-29, November 12, 1982. That variance related to exceedance not of the radium standard, which is the subject of this petition, but of the gross alpha particle activity standard. A one year variance was granted, subject to conditions, to allow the continued operation of the only wells then operational, deep wells 2 and 4 and shallow well 3. Subsequent testing (four consecutive quarters) showed that the system was in compliance with the gross alpha particle activity standard during the life of that variance.

However, by letter of October 4, 1985, the County was notified by the Agency that a composite sample (composite of what, the Agency did not specify) indicated that the water supply was in violation of the 5.0 pCi/l combined radium standard, as sampling results indicated radium-226 levels of 5.5 pCi/l and radium-228 levels of less than 1.0 pCi/l.\*

Immediately thereafter, the County caused water samples to be collected from each well for independent analysis. The sampling results, in addition to other pertinent information about each well, are reflected in Table 1:

Well	Depth in feet	Average pumpage in gpd	Ra-226 Level in pCi/l	Ra-228 Level in pCi/l	Other
2	1845	135,300	6.5±0.1	5.2±1.2	not currently in service
3	173	68,000	1.2±0.1	less than 0.8(sic)	
4	1320	324,100	0.1±0.1	3.1±0.9	
5	152	50,000	0.1±0.1	less than 0.8(sic)	
6	158	50,000	0.1±0.1	less than 0.8(sic)	
7	** (deep well)	**	**	**	

\*\* No comparative data was provided for Well 7. Testimony stated that Well 7 "slightly exceeds the standard", and that over 70% of the average daily demand of 626,600 gallons is supplied by deep wells, currently primarily Wells 4 and 7 (see R. 12,13,19). The water is distributed through a "random network of piping" with some wells pumping directly to the distribution system (R. 13).

\* This record indicates that gross alpha testing in Wildwood's water system was discontinued subsequent to the earlier showing of compliance (R. 29).

As a result of Wildwood's excursion of the 5.0 combined radium standard, the water supply system has been placed on restricted status. This prohibits the Agency from issuing permits for water main extensions for the following proposed and pending developmental projects within Wildwood: a) Woodland Hills - a development of townhomes, consisting of 180 units of attached single family residences, b) Woodland Meadows - 120 units of detached single family residences, c) Mariner's Cove - 110 units of detached single family residences, d) County Squire Village - 250 units of multi-family apartments in conjunction with commercial development, e) Dooley/Towne Development - 140 units of townhomes, f) Tomessen Development - 110 units of townhomes.

The County has investigated various compliance options, including a) treatment of its water by either the lime softening method, the reverse osmosis method, or the ion-exchange softening method, b) blending, and c) use of its Lake Michigan allocation. As to the various treatment methods, the County has provided no capital or operation and maintenance costs, but asserts that these methods are undesirable because of expense (particularly because the nature of the system is such that treatment facilities' would be required to be placed at more than one well rather than at a central location), and because these methods produce a radioactive sludge, disposal of which is difficult and costly.

The blending option has also been rejected by the County. This option was the subject of considerable analysis by the Agency in its Recommendation; it is the Agency's opinion that blending is not a practicable solution. The County has not provided, either in the petition or at hearing, a concise and detailed description of its distribution system, which handicaps the Board's understanding of this situation. However, Wells 5 and 6 are located at one site, Wells 3 and 7 and an elevated water tank are located at another site geographically distant from Wells 5 and 6, and Wells 2 and 4 are located at two separate sites located between the other two sites. Some wells (unspecified) pump directly into the distribution system, and others pump into the elevated water tank (R. 13). The level of water in the tank is contingent on the demand of the system; as the pressure in the distribution system drops the level of water in the tank drops, causing the pump(s) to turn on automatically to restore the water level in the tank and hence the water pressure in the system (Rec., p. 6-7).

The Agency does not believe that blending of Wells 5, 6 and 7 in the tank is feasible, "because the total pumpage capacity of these three wells is not adequate to meet system demands, [and] the elevated tank should not be taken out of service because this volume of water [120,000 gallons] should always be available so

as to maintain distribution system pressures and for emergencies such as fire protection". (Rec. p. 8)

The Agency states that it would also be possible to blend Wells 3 and 7 through existing tanks at the elevated tank site, while allowing Wells 4,5 and 6 to pump directly into the distribution system. While this alternative could provide sufficient water to meet Wildwood's current average and peak demands, the Agency stated that it had insufficient information to assess whether this method would provide sufficient water to satisfy the peak hourly demand once all of the 910 units of proposed development is hooked on to the system (Rec. p. 8).

The County's preferred compliance option is utilization of the Lake Michigan water allocation granted to it in 1981. Pursuant to this allocation, in 1982, the County entered into an agreement with Gurnee, Grayslake, Libertyville, Lake Bluff, Vernon Hills and Mundelein (which has since withdrawn) establishing the Central Lake County Water Supply Committee (Committee). Since that time, the Committee, to which the County has contributed approximately \$20,000, has retained various consultants to investigate various engineering and funding options associated with utilization of each entity's Lake Michigan allocation. The County has provided no estimate as to when the Committee, or any entity formed as a result of the Committee's activities, might actually be delivering finished water. (The Board notes that the November, 1986 start-up date projected in the County's petition in PCB 82-29 is clearly incapable of being met.) The County also states that, independent of Committee activities, the County, Gurnee, Wildwood and Grayslake have begun discussions with Waukegan and the public water district in Zion concerning the possibilities of purchasing water on a short-term basis, but no details concerning these discussions have been provided (R. 30).

The County asserts that denial of variance would impose an arbitrary or unreasonable hardship. The County believes that grant of variance will not be harmful to the residents of Wildwood. While no formal assessment of health effects was presented by the County in the petition or at hearing, the County relies upon and incorporates testimony presented by Richard E. Toohey, Ph.D and James Stebbings, Ph.D, both of the Argonne National Laboratory, in the R85-14 regulatory proceeding, as well as a statement of the Agency's Dorothy L. Bennett, attached to the petition as Exhibit 5.

By contrast, the County believes that denial of variance would have a large and adverse effect on the Wildwood area. In addition to any other economic effects of the halting of new development, the County asserts that as an "enterprise funder utility", it is dependent on user fees for funds to maintain and upgrade its system. As capital costs to deliver Lake Michigan

water (or to achieve compliance in some other fashion) can be extreme, the larger the base of consumer rate-payers is, the smaller the financial impact will be on each rate-payer.

The Agency does not dispute the County's various assertions. The Agency recommends grant of variance for five years, subject to conditions.

Given Wildwood's minimal excursion from the standard, its participation in Committee activities, and its economic assertions, the Board finds that denial of a short-term variance would impose an arbitrary or unreasonable hardship. The Board also notes that Well 2, which appears to be the primary cause of the noncompliance, has been out of service for several months and, when operating, was the last one used in sequence since the radium problem was discovered.

However, the Board does not believe that this record supports the grant of a full five year variance. The information presented by the County is sketchy or vague in many respects. The County did not provide information at hearing, in response to the Agency's Recommendation, to allow assessment of the possibility of blending waters from Well 7 at the elevated tank site and directly pumping from Wells 4,5 and 6 to the system, or whether peak hourly demand could be met; as earlier noted, there is no hard data presented concerning Well 7, or details concerning the distribution system. No projections have been made concerning when compliance might be achieved by using blending, the Lake Michigan allocation, buying from other communities, or any other option, and hard cost figures are non-existent.

Under these circumstances, the Board believes that only a one-year variance is justified, which will allow the County to gather necessary information and to rationally assess interim as well as long-term compliance options, particularly in light of the "slippage" of the Committee's timetable as reported in the 1982 variance petition. Meanwhile, this record does indicate that methods, possibly unsuitable for the long-term, can be used in the short-term to achieve compliance, or close to it, during the period in which longer term methods are selected and implemented. Specifically, the Board will condition this variance on the continued non-use, or restricted use, of Well 2 and the blending/direct pumpage use of Wells 3,4,5,6 and 7, if feasible, as described in the Agency's Recommendation (Agency Rec. 21), consistent with peak hourly demand needs.

Variance is accordingly granted for one year subject to the conditions outlined below.

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

ORDER

1) Petitioner is granted a variance from 35 Ill. Adm. Code 602.105(a) Standards of Issuance, and 602.106(b) (Restricted Status) but only as they relate to the combined radium-226 and radium-228, subject to the following conditions:

2. This variance expires, August 15, 1987, or when analysis pursuant to 35 Ill. Adm. Code 605.105(a) shows compliance with the combined radium standard, whichever first occurs.

3. In consultation with the Agency, Petitioner shall continue its sampling program to determine as accurately as possible the level of radioactivity in each of its deep wells and finished water.

a) During the term of this variance, Petitioner shall collect four quarterly samples of its water from its distribution system, shall composite and shall analyze them by a laboratory certified by the State of Illinois for radiological analysis so as to determine the concentration of radium in its water. The results of the analyses shall be reported to the Water Quality Unit, Division of Public Water Supplies, 2200 Churchill Road, IEPA, Springfield, Illinois 62706, within 30 days of receipt of each analysis. At the option of Petitioner, the quarterly samples may be analyzed when collected. The running average of the four quarterly sample results shall be reported to the above address within 30 days of receipt of the result of time analysis of most recent quarterly sample.

b) For Wells 2, 4 and 7, during the term of this variance, Petitioner shall collect quarterly samples from each well, and shall analyze them when collected by a certified laboratory as described in a) above, to determine the concentrations of radium-226 and radium-228 in each well. The results of these analyses, in addition to the average daily pumpage for each well, shall be reported to the Agency at the address in a) above, within 30 days of receipt of result of the analysis.

4. Petitioner shall take all reasonable short-term measures to minimize the level of radium in its finished water. Specifically, Petitioner shall minimize its use of Well 2 to the maximum extent feasible. Within two months of this grant of variance, the Petitioner shall report to the Agency at the address in paragraph 3, above, its determination as to the feasibility of blending Wells 3 and 7, and allowing Wells 4,5 and 6 to pump directly to the distribution system. If feasible, this system shall be initiated expeditiously as an interim measure and continued as long as peak hourly demand is satisfied.

5. Within three months of the grant of the variance, if the blending program described in paragraph 4 above is not determined to be a feasible long-term compliance option,

a) The Petitioner shall secure professional assistance (either from present staff or an outside consultant) in investigating long-term compliance options (including costs), and including the possibility and feasibility of achieving compliance by blending water from its shallow well(s) with that of its deep well(s) and with Lake Michigan water, or purchase of water from another source.

b) Within seven months of the grant of the variance, the Petitioner shall have selected a compliance plan after investigating compliance methods, including those treatment techniques described in the Manual of Treatment Techniques for Meeting the Interim Primary Drinking Water Regulations, USEPA, May 1977, EPA-600/8-77-005, and have prepared a detailed Compliance Report showing how compliance shall be achieved with the shortest practicable time.

c. This Compliance Report shall be submitted within nine months of the grant of this variance to IEPA, DPWS.

6. Pursuant to 35 Ill. Adm. Code 606.201, in its first set of water bills or within three months after the date of this Variance Order, whichever occurs first, and every three months thereafter, Petitioner will send to each user of its public water supply a written notice to the effect that Petitioner has been granted by the Pollution Control Board a variance from 35 Ill. Adm. Code 602.105(a) Standards of Issuance and 35 Ill. Adm. Code 602.106(b) Restricted Status, as it relates to the combined radium-226 and radium-228 standard.

7. Pursuant to 35 Ill. Adm. Code 606.201, in its first set of water bills or within three months after the date of this Order, whichever occurs first, and every three months thereafter, Petitioner will send to each user of its public water supply a written notice to the effect that Petitioner is not in compliance with the standard in question. The notice shall state the average radium-226 and radium-228 content of samples taken since the last notice period during which samples were taken.

8. That within forty-five days of the date of this Order, Petitioner shall execute and forward to Wayne Wiemerslage, Enforcement Programs, Illinois Environmental Protection Agency,

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.

I, (We), \_\_\_\_\_, having read the Order of the Illinois Pollution Control Board, in PCB 86-75, dated August 14, 1986, understanding and accept the said Order, realizing that such acceptance renders all terms and conditions thereto binding and enforceable.

\_\_\_\_\_  
Petitioner

\_\_\_\_\_  
By: Authorized Agent

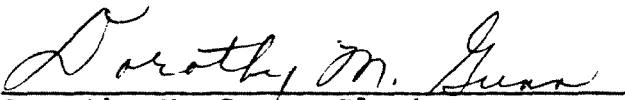
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Title

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Date

IT IS SO ORDERED.

J. D. Dumelle and B. Forcade dissented.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 14<sup>th</sup> day of August, 1986 by a vote of 4-2.

  
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Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board