

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Petition of)
John Korelich for Review of Order)
No. 79-77 of the California)
Regional Water Quality Control)
Board, Central Coast Region.)
Our File No. A-248.)

Order No. WQ 80 - 3

WQ
80-3

BY THE BOARD:

On October 13, 1978, the California Regional Water Quality Control Board, Central Coast Region (Regional Board) adopted Order No. 78-30, waste discharge requirements for John Korelich, Lost Oak Village Condominiums, San Luis Obispo County. The requirements prohibit the discharge of waste from this project. On May 17, 1979, in response to the project proponent's petition for review, the State Board adopted Order No. WQ 79-21 remanding the matter to the Regional Board for adoption of waste discharge requirements consistent with that order. At that time we concluded that there was insufficient evidence to support the prohibition.

On July 13, 1979, the Regional Board again considered this matter and adopted Regional Board Order No. 79-77, waste discharge requirements prohibiting discharge of waste from this project. On August 14, 1979, the State Board received a petition for review of Order No. 79-77 from the project proponent, John Korelich (petitioner).

I. BACKGROUND

The Petitioner proposes to construct 24 condominium units (a 12 duplex residential development) on about 1.5 acres of land near Los Osos, San Luis Obispo County. A total flow of 6,000 gallons

per day (gpd) of domestic wastewater will be discharged from the development into two aerobic/septic tank treatment systems. Treatment is to occur as the sewage flows through three tanks per system in series. Only the first of these tanks appears to contain a primary aeration/sludge removal chamber. The others appear to be dual chamber tanks. After passing through the tanks, effluent disposal will be by pumping into two dual subsurface leachfield systems totaling 2,400 sq. ft. per treatment system. Evapotranspiration may occur from these fields. The treatment and disposal systems have been designed for a maximum daily flow of 7,480 gallons.

Soils in this area are generally porous. The general soil profile is one to two feet of silty fine to medium sand. The drillers log from DWR Well 18S/11E-18k1, located $\frac{1}{4}$ mile southwest of the parcel in question, shows alternating yellow clay and yellow sand layers from 40 feet to 210 feet beneath ground surface.

The nearest water supply well is located approximately 350 feet northwest of the development and two other supply wells exist approximately 900 feet southwest. In general, the groundwater gradient drops 3-5% to the north.

The project as proposed will discharge primary effluent to the groundwater in this area. Petitioner states that a major portion of the sewage solids will be removed in its four chamber anerobic/aerobic (air injected) treatment system. Petitioner further claims that the physical removal of solids will produce an effluent which does not contain more than 1 mg/l settleable solids nor more than 20 mg/l BOD₅.

On July 13, 1979, when the Regional Board considered this matter pursuant to our remand of Order No. WQ 79-21, the Regional Board heard the testimony of Richard Zipp, Associate Engineering Geologist for the State Board, regarding the groundwater quality in this area. Mr. Zipp had done previous work in this area in response to Regional Board Resolution No. 78-07, adopted on September 8, 1978, which requests assistance from the State Board to help evaluate how on-site sewage system discharges affect water quality within the Baywood-Los Osos groundwater basin. Although Mr. Zipp's report was not finalized at the time of the Regional Board hearing, the facts and data accumulation had been completed and Mr. Zipp's testimony was based on said facts and data.

In October, 1979, the final report entitled, "Geohydrology and Water Quality - Baywood-Los Osos Groundwater Basin, San Luis Obispo County, California", by Richard Zipp, was published by the State Board. The Board by letter dated October 17, 1979, informed the petitioner that the Board takes official notice of this report. The petitioner was given an opportunity to file comments on this report; however, none were received. The petition was considered complete on November 1, 1979. However, after this matter was scheduled for discussion at the State Board workshop in December, the petitioner requested additional time to submit evidence. This request was granted and on December 31, 1979, the Petitioner submitted "A Report on Los Osos Groundwater Quality" prepared by James M. Montgomery, Consulting Engineers, Inc. This report is accepted and is part of the State Board record.

II. CONTENTIONS AND FINDINGS

The petitioner contends that the determination to prohibit the discharge from this project is contrary to State Board Order No. WQ 79-21, and is further improper because it is not supported by substantial evidence in the record as required by Section 13280 of the California Water Code. The petitioner urges several arguments in support of this contention.

State Board Order No. WQ 79-21 orders that the Regional Board adopt waste discharge requirements which allow the discharge consistent with that Order. However, between the time of adoption of that Order on May 17, 1979, and Regional Board reconsideration on July 13, 1979, the gathering of the data for Mr. Zipp's report was completed. This data and the final report provides the needed evidence to more thoroughly examine the water quality effects of this project. We find that it was proper and necessary for the Regional Board to consider this evidence.

Section 13280 of the Water Code states:

"A determination that discharge of waste from existing or new individual disposal systems or from community collection and disposal systems which utilize subsurface disposal should not be permitted shall be supported by substantial evidence in the record that discharge of waste from such disposal systems will result in violation of water quality objectives, will impair present or future beneficial uses of water, will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of any waters of the state."

Regional Board Order No. 79-77 includes the following findings in support of the prohibition:

- " 8. The use of individual sewage disposal systems and small, privately owned and operated treatment and disposal systems in the area of the discharge, which is presently unsewered, represents a potential threat to water quality and public health.

"10. Present and anticipated beneficial uses of groundwaters in the vicinity of the discharge include:

- a. Domestic and municipal water supply.
- b. Agricultural water supply.

"16. The Board finds that the proposed project would contribute substantially to degradation of the groundwater in the area and impair present or future beneficial uses."

While these findings set forth the statutory standard necessary to support a prohibition of discharge, the critical issue in this petition is whether the evidence in the record supports these findings. We find that it does.

The definition of substantial evidence contained in the record is accurate and is as follows:

"Evidence which if true has probative and material force on the issues. It's more than just any evidence. It means such evidence as a reasonable mind might accept as adequate to support a conclusion. It must be credible and of substantial value."

Substantial evidence now appears in the record that the proposed discharge will contribute to a serious and worsening groundwater quality problem. Testimony by Richard J. Zipp at the Regional Board hearing shows that based on evidence he has gathered: Groundwater flows are generally to the north from the site of the proposed Korelich development; Groundwater wells in the area to the north (downgradient) of the proposed Korelich discharge contain water which approaches and in many cases exceeds the 45 mg/l public health limit for nitrate concentration in drinking water; The primary source of the nitrate is effluent

percolating down from individual sewage treatment leachfields; and The Korelich project will add a finite increment to this degradation of water quality in the area.

Petitioner contends that this testimony is not substantial evidence. A key argument made by Petitioner at the Regional Board hearing is that the exact direction of underground water flow from the Petitioner's project has not been demonstrated. However, Mr. Zipp testified as follows:

". . . We don't have a sufficient number of data points to really pinpoint the flow. It is in a northerly direction. It may be somewhat to the northwest or northeast, but from my understanding of the Korelich position, the location of the development, the water will be flowing essentially up into that red mass"

The "red mass" referred to is a group of red colored hexagons shown on an exhibit near the project representing wells which were producing water containing concentrations higher than the public health standard for nitrate in drinking water, 45 mg/l. From the groundwater elevation contours of Mr. Zipp's final report, it appears that his quoted understanding of flow direction has been finalized and is correct. The latest submittal of Petitioner also supports this conclusion.

The Petitioner argues that the impact on water quality of the discharge from the project would not be significant. Mr. Zipp did testify that the discharge would have a "finite incremental" effect. However, Mr. Zipp also testified that beneficial use of water from the shallow aquifer was already impaired by nitrate

concentrations high enough to cause illness in young children. A continued increase in discharge could as well eventually impair the use of the deeper portion of the aquifer. This would appear to be a significant degradation. Any further discharge of nitrates, no matter how small, to this groundwater basin would seem to be an addition to an already significant groundwater quality problem and thus is unreasonable.

Petitioner also implies that Mr. Zipp's data may not be representative of conditions. Mr. Zipp's testimony indicates that nitrate levels in any given well can vary from day-to-day and season-to-season. Conducting the study in the winter and spring may have caused the nitrate concentrations observed to be higher than usual. Mr. Zipp also testified that although the samples could be biased upward, it was not done intentionally, and the important fact was that it had been shown that a nitrate problem exists. He added that, ideally, a nitrate problem should be investigated when it is at the maximum; and, in this instance, circumstances were such that the study was conducted during late winter and early spring. We find petitioner's implication to be erroneous.

We have considered the December 31, 1979 report submitted by Montgomery Engineers which criticizes the analysis made by Mr. Zipp. Our review of this report does not cause us to alter our conclusions with respect to Mr. Zipp's analysis. The Montgomery report makes the following additional points:

1. That septic tank leachfield systems are not the prime cause of nitrate concentrations in the area.
2. That groundwater movement will dissipate nitrate concentration through a mixing and spreading out process.

We feel that Mr. Zipp's report demonstrates to our satisfaction that neither dairy or other agricultural activities are a significant source of the nitrate concentration problem. The minimal extent of such activities clearly indicates this fact. Petitioner cites well data indicating that nitrate concentrations differ in populated portions of the area. The implication is that a variable other than septic tanks causes such differences. However, it is clear that the Petitioner's samples of high concentrations are from shallow wells and that samples indicating low concentrations are from deeper wells. Petitioner's attempt to draw conclusions from such dissimilar samples must be rejected. Such data simply does not refute Mr. Zipp's conclusion that shallow wells have been degraded by effluent from leachfields and that additional disposal to land will compound the problem.

We also must reject Petitioner's contention that groundwater movement will dissipate the nitrate concentrations. Dilution is much slower than indicated by Petitioner. In addition, nitrates are being added to the area faster than they can be purged.

The report from Petitioner's consultant^{1/} contains water quality data from an observation well 500 feet west of the project site. Data from this well indicates that nitrate levels in November of 1979 were 37 mg/l. This level approaches the public health limit for drinking water of 45 mg/l. Further review of the data and current literature has shown that with groundwater nitrate concentrations of this level and with per capita nitrate contributions of 50 pounds per year,^{2/} Petitioner's project could raise the nitrate levels in the sub-site groundwater to 43.6 mg/l as nitrate (assuming Petitioner's flow figures are correct). This review effectively refutes the contention in the Montgomery report that the effluent from Petitioner's project would be of better quality than the groundwater.

The evidence is clear. Groundwater flows under Petitioner's project toward an area of high groundwater nitrate concentrations in shallow domestic wells. Petitioner's project will be adding an incremental amount of nitrate to this flow. Such an addition would contribute to an already identified threat to public health.

1/ "A Report on Los Osos Groundwater Quality", J. M. Montgomery Engineers, December 1979, Page 12.

2/ EPA Publication 600/2-78-173, "Management of Small Waste Flows", September 1978; University of California Division of Agricultural Sciences Publication, "Nitrates in the Upper Santa Ana River Basin In Relation to Groundwater Pollution, May 1973, Bulletin 861; Internal Memorandum from Dick Zipp dated January 11, 1980.

Any amount of recycling of this flow by use of water in down-gradient shallow wells will cause an increase in the already high levels of nitrate. This increase could be to a level in excess of public health limits. We conclude that, because the proposed discharge could raise the nitrate levels in the groundwater to near or above the public health limit, the expected incremental addition of nitrate would be significant. At the present time deep municipal wells are not pumping enough water to induce a cone of depression of a magnitude great enough to reach degraded shallow water. But as demand increases, greater vertical mixing of the groundwater could take place. Permitting a further degradation of the shallow water would only exacerbate the situation.

Water Code Section 13281 requires that only relevant evidence be considered in making determinations to prohibit the discharge of waste from an individual disposal system utilizing subsurface discharge. Specific factors must be considered.^{3/} Upon further review of the record, we find that the Regional Board also considered the relevant evidence required by Water Code Section 13281.

Water Code Section 13283 requires the State Board, when reviewing such a prohibition, to preliminarily review possible alternatives necessary to achieve protection of water quality. The record shows that a serious degradation of the top portion of the Baywood-Los Osos Groundwater Basin has occurred and continues to

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3. These factors include those set forth in Water Code Section 13241, possible adverse impacts if such discharge is permitted, failure rates of existing systems, prior or potential contamination, land use patterns, dwelling density, and population growth.

occur. The record also shows that septic tank leachfields are prime contributors to the degradation and thus should not be considered as a viable alternative.

A community collection system alternative is being studied as part of the 201 Facilities Planning effort in this area. The facilities plan should have as one of its overall goals decreasing the nitrate concentration in the upper portion of the groundwater aquifer. Community collection could take one of several forms. The ultimate system would require an extensive pipe grid collection system feeding a regional treatment plant. Alternatives to be studied for discharge from this plant include subsurface discharge to poorer quality groundwater or surface discharge to Los Osos Creek, Morro Bay, the Pacific Ocean, or land area. The Water Quality Control Plan for the Central Coast Basin (Basin Plan) indicates that the Pacific Ocean may be the least environmentally sensitive area for such a discharge. Even with this indication the Basin Plan recommends in its Implementation Plan that all municipal disposal operations in the region should be components of a wastewater reclamation and reuse program.

The Basin Plan recommendations are appropriate but do not address what alternatives are available to the petitioner in the short term. It does not appear that a viable short-term alternative exists. Two short-term disposal methods might be considered to meet the requirement that no further significant addition of nitrogen to

the groundwater beneath petitioner's project should be allowed; these are disposal to a holding tank or tanks which are pumped out periodically or use of a nitrogen removal treatment system. Neither system seems particularly desirable or practical.

Holding tanks are costly to maintain. They require continual maintenance, access to a treatment facility with the capacity to receive the septage, and are prone to overflow and odor problems if not maintained properly. Cost of installation would be lost once discharge to a community system becomes a reality. The annual hauling cost could exceed \$47,500 per year at the average rate of \$.03/gallon. Holding tanks are discouraged throughout most of California because of problems attributable to frequent pump-outs and illegal dumping.

Package treatment plants which are designed to remove nitrogen are available but even these may not be feasible. Such package plants with nitrogen removal units are very expensive and require a high degree of technical training to operate and maintain. A package plant does have resale value and can be installed where space is limited. The major drawback to such systems is that while removing a large percentage of nitrogen, they do not remove all total nitrogen concentration. In addition, should operator error or plant breakdown occur, effluent high in nitrogen concentration would be discharged to an already degraded groundwater source.

III. CONCLUSIONS

Substantial evidence exists in the record as required by Section 13280 of the Water Code to prohibit waste discharge from

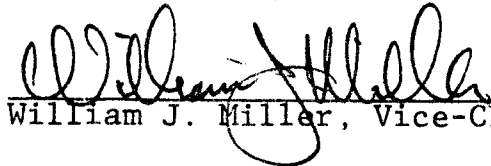
this project. In addition, no immediate feasible waste disposal alternative exists for this project other than what may result from the 201 Facilities Planning effort.

IV. ORDER

IT IS HEREBY ORDERED that Regional Board Order No. 79-77 is appropriate and proper and that this petition for review is therefore dismissed.

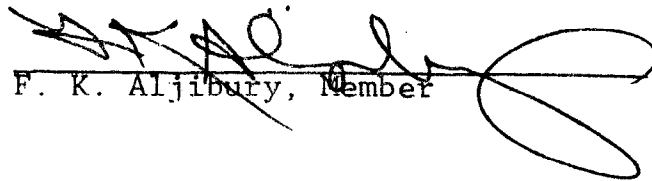
DATED: February 21, 1980


Carla M. Bard, Chairwoman


William J. Miller, Vice-Chairman


L. L. Mitchell, Member


Jill B. Dunlap, Member


F. K. Aljibury, Member