SLO CSA #9

TE OF CALIFORNIA

PETE WILSON, *Governor*

LIFORNIA REGIONAL WATER QUALITY CONTROL BOARD —
NTRAL COAST REGION
HIGUERA STREET, SUITE 200
LUIS OBISPO, CA 93401-5414
5) 549-3147

June 17, 1993

Percy Garcia
Water Quality Manager
San Luis Obispo County Engineering Department
County Government Center, Room 207
San Luis Obispo, CA 93408

Dear Mr. Garcia:

PRELIMINARY DRAFT REPORT FOR THE LOS OSOS NITROGEN STUDY

We reviewed the subject document and have several comments.

1. The report incorrectly mixes terms for nitrate. Most data refers to nitrate as N, whereas other parts of the report refer to nitrate as NO_3. For example, the nitrate groundwater data in Appendix B is reported in as N. Page 31, paragraph 2 indicates the maximum contaminant level for nitrate in groundwater is 45 mg/l, the value used when nitrate is expressed as NO_3. Also, Page 30, Section 7.6 Regional Saturated Zone Groundwater Sampling, Paragraph 2 states groundwater beneath residential areas to range from 5 to 35 mg/l and refers to Figure 25. Figure 25 shows groundwater nitrate contours as NO_3. The groundwater beneath the residential areas contains nitrate concentrations expressed as N, not NO_3! Figure 26 is ambiguous.

   The report should reference all measurements of nitrogen as N in order to provide a proper comparison of all terms of nitrogen. It should also refer to any standard in the same terms. To maintain proper comparisons, the report should include a separate discussion of how nitrate and other forms of nitrogen are reported. A new Section 4.2 may be a good place following the introduction to Transport and Fate of Nitrogen Soil. It should also include a discussion of the state health drinking water limit of 45 mg/l which is expressed as NO_3. Data used in this report should be compared to the drinking water limit of 10 mg/l expressed as N.

2. Page 3, paragraph 1 - Reference to a "low infiltration rate" septic system is misleading. A low infiltration rate usually refers to a site with slow permeability soils which do not exist in sandy soils typical of the Los Osos area.

3. Page 10, paragraph 1 - Do "high rate infiltration systems" achieve 30 to 60 percent removal of nitrogen because of high rate infiltration or because of a flooding-drying cycle? Please clarify conclusions of the studies referenced.

4. Page 23, paragraph 1 - the report indicates denitrification occurs at 50 foot depth as evidenced by appearing ammonium and disappearing nitrate as shown on Figure 14. It is not evident how this conclusion is shown on Figure 14. Please clarify.

5. Page 28, last paragraph - Clarify how 80 to 90 percent nitrate removal occurs at depth due to denitrification. Bayridge Estates Water Quality Data, Appendix B, show nitrate concentrations at 15 foot depth to vary from 0.2 to 7 mg/l. However, the data also show significant amounts of TKN and NO2 (5/3/93 sample). Because the depth is still relatively shallow and because the leachfield is operated in wetting/drying cycles, doesn't this data show that nitrification is not complete? Nitrogen in TKN form still has the potential to convert to nitrate.

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6. Page 31, Summary and Conclusions, paragraph 1 - Please clarify the first sentence. It indicates degradation by nitrogen contamination appears to have occurred due to urban development. This study measured nitrogen concentrations between septic tank seepage pit/leachfields and ground water. Shouldn't it say nitrate contamination in groundwater in the Los Osos area has occurred due to discharges from septic tank seepage pit/leachfield systems? If not, please provide a complete explanation based on good science.

7. Page 31, Paragraph 2 - The MCL is 10 mg/l when expressed an N. See comment 1 above.

8. Page 31, Paragraph 5 - The "conclusion" that septic tank effluent nitrate reaches groundwater at a concentration as low as 1 mg/l may not be accurate. The lower values of nitrate used in this conclusion apparently are from the Bayridge data. As discussed in comment 5 above, water collected at the 15 foot depth contains other forms of nitrogen which still have the potential of converting to nitrate.

   Furthermore, it is likely that concentrations of ammonia are higher in groundwater than measured in the sample collected. Some indeterminate amount of ammonia is lost by the suction used to collect water from the lysimeter although nitrate and other non-volatiles are probably not affected. Because of other forms of nitrogen besides nitrate that were not measured, please clarify how the lower value of nitrate (1 mg/l) used in the conclusion is entering groundwater.

9. Page 32, paragraph 2 - Again the MCL of 45 mg/l is incorrectly used. The appropriate value for comparison purposes should be 10 mg/l.

10. Page 32, paragraph 3 - Please provide the data that shows low nitrate concentrations are associated with a decrease in groundwater level during drought or low recharge periods.

11. Figure 8 - Is the route showing NH3/NH4 going to assimilation correct assuming that assimilation is plant uptake?

    The general conclusion that septic tank effluent in the Los Osos/Baywood park area is contributing to nitrate contamination in groundwater is supported by the data developed. Data from the 13th and 14th Street sites show nitrate at the 40 foot depth to average from 12 to 36 mg/l (as N). As depth decreases, nitrate concentrations generally increase. Coupled with the fact that three sites were rejected from the study due to high groundwater where high groundwater was not expected, nitrate contamination can only be expected to be worse in many areas if not most areas of Los Osos. By rejecting half the sites because of unfavorable conditions, this study evaluated sites from parts of the community with the <u>most</u> favorable conditions, and concludes that the <u>most</u> favorable sites cause ground water to violate public health standards.

Thank you for the opportunity to comment. If you have any questions, please refer them to Jay Cano of my staff.

Sincerely,

for WILLIAM R. LEONARD
Executive Officer

JC2/sm:Los