

Comments on “Tiered Threat-Based Alternative to Regulate Discharges to Groundwater (Draft Statement)” – April 2009

John Letey

I was a member of the Nutrient Technical Advisory Committee (TAC) appointed by the State Water Resources Control Board in 1994. That committee proposed a set of recommendations to achieve groundwater protection from nitrates. I note that the present draft statement includes some of the concepts proposed by TAC to which I can relate. I was very involved in developing the Hazard Index (HI) by the UC Center for Water Resources. Furthermore, I have been very involved with research on the topic and understand the scientific principles that are involved.

One important scientific fact is that it is impossible to grow a crop without some water, nitrate, and salt moving below the root zone and migrating toward groundwater. Thus, zero discharge is scientifically impossible. Second, and more significant, good management practices cannot be differentiated from bad management practices by measuring the nitrate concentration in the soil-water below the root zone. I can present research results that support this conclusion. The practical significance of this is that monitoring must be directed toward management rather than soil-water measurements.

The latter fact creates a major dilemma that must be addressed and resolved. The Porter Cologne Water Quality Act (13360) does not allow the State and Regional Boards to specify the manner of compliance when issuing discharge requirements. In other words the result, usually a concentration or mass of discharge, can be regulated but not the manner by which the discharger achieves this result. This is appropriate for point sources, but not feasible for nonpoint sources degradation of groundwater. In my opinion, this is the primary factor contributing to the result that success has been achieved in improving surface water quality, but very little progress on groundwater quality.

I urge those involved to review the total report by TAC. We tried to address this dilemma and made some recommendations.

The following comments are specific for the present draft report.

P1 – The concept of tiers is similar to the proposal by TAC and is a good feature. However, changing the crop and/or irrigation system to produce a hazard index (HI) less than 20 as suggested on lines 39 and 40 may not always be feasible.

I do not completely understand the 3rd Party Group.

P4 – L22 I do not think that a crops person is necessarily the best or only person to evaluate a management plan. Who would certify this person and what are the qualifications for certification? I propose that the TAC committee suggestions be considered dealing with management plans.

For reasons that I stated above, **I am absolutely opposed based on scientific principles to all of the proposed monitoring provisions.** This entails a tremendous cost with essentially no benefit. These resources would be far more effective in achieving the goal if they were directed to monitoring and implementing sound management practices.

Long-Term Irrigated Lands Regulatory Program Alternatives – May 2009

Comments by John Letey

I will first make some general comments. The matter of degradation of groundwater by pesticides is vastly different from degradation by nitrates. Therefore guidelines and regulations concerning them must be kept separate and probably different. First, pest protection for good crop production is potentially feasible with no pesticide migration below the root zone. This is impossible for nitrates. The scientific principles concerning pesticide and nitrogen utilization, crop production, transformations and mobility are drastically different. My comments will be specifically related to the nitrate matter. I will also focus only on groundwater.

Alternative SW/GW 4 (a)

The regulatory requirements that are listed are reasonable. The groundwater monitoring would not be required by the regulated community. I have strongly stated previously that groundwater monitoring cannot be scientifically used to differentiate good from bad management. Specifying that the CVBWB would be responsible for publishing a report every 5 years summarizing any data collected is appropriate.

Alternative SW/GW 4(b)

I have stated my concerns about monitoring elsewhere, and these concerns relate to some items in this alternative. There are components of this alternative that are fine.

Monitoring wells are specified and I do not believe that this should be included.

Implementing farm water quality management plans is good. Development of NMP by a “certified nutrient management specialist” raises a question. Who will certify the specialist? What will be the qualifications for certification?

Monitoring soil nitrogen and phosphorus once every five years is of absolutely no value. These numbers are continually changing and one sample in a five-year period serves no purpose.

I repeat my opposition to groundwater monitoring for regulatory purposes.

Alternative GW 2

The introductory paragraphs only refer to pesticides. I will not comment on pesticides. However, under “monitoring provisions” nitrates and salts are included. This alternative is confusing as presented.

Alternative GW 3(a)

This alternative proposes a tier threat-based approach that I favor because it potentially allows major focus and resource allocation to the cases that pose the highest probability for groundwater degradation. However, there are major revisions that I would propose to the alternative as presently written. I will not in this statement make detailed statements but only more general statements.

The operation potential threat is stated to be determined by the nitrate hazard index and/or “Nolan and Hitt” approach. There are statements in the report that suggest that some of the features of the Hazard Index are not completely understood and I would modify some of these items. I have not read the Nolan and Hitt reference in the 2006 issue of Environ. Sci. and Technol., but I have read their report in the 2002 issue. I assume that the latter is a refinement of the earlier report but that the same basic approach is taken. They basically take a statistical approach to a large data set. The data set is from throughout the U.S. Some of the data would be for areas such as the Corn Belt where only one or two crops are extensively grown. Furthermore, they cover areas where only rain provides water and this raises a question concerning how irrigation fits into the analyses. I will quote from their 2002 paper conclusions (underlining is mine for emphasis). “The national probability map is intended for regional use and has several limitations.Variables not significant in national-scale regression ...or not considered or available during model calibration (such as irrigation) can affect nitrogen leaching locally, so the map should not be used for local management decisions.” I strongly urge that the Nolan and Hitt aspects of the management alternative to establish tiers be deleted.

I suggest a rework on the description of the tiers, regulatory requirements, and monitoring provisions, but I will not comment further at this time.

Alternative GW 3(b)

There will never be any Tier I operation. Any farmer that applies 0.9 to 1.0 times the nitrogen removed from the field in the crop will shortly be out of business. This proposal demonstrates ignorance on the dynamic nature of nitrogen transformations, mobility, and crop uptake factors that occur in a crop production operation. The appalling proposal for Tier I is only exceeded by the provision of “fertilizer applications should be 0.8 – 0.9 times the nitrogen that will be removed ...” stated for Tier II operations.

Alternative GW 3(b) absolutely should be dropped from further consideration.

My Suggestion

I believe that a combination of Alternative SW3 and a drastically rewritten Alternative GW 3(a) would allow an optimal plan for continued profitable agriculture and groundwater quality protection.