SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

2503 Eastbluff Dr, Suite 206
Newport Beach, California 92660
Fax: (949) 717-0069

Matt Hagemann
Tel: (949) 887-9013
Email: mhagemann@swape.com

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Mr. Michael Lozeau
Lozeau | Drury LLP
1516 Oak Street
Alameda, California 94501

Subject: Comments on the Draft Program Environmental Impact Report for the Long-term Irrigated Lands Regulatory Program

Dear Mr. Lozeau:

I have reviewed the "Draft Program Environmental Impact Report (PEIR) for the Long-term Irrigated Lands Regulatory Program (ILRP) within the Central Valley Region" ("PEIR") (July 28, 2010). I have also reviewed the "Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010) and the "Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program" (July 2010). I have prepared comments on the PEIR that address proposed surface water and groundwater monitoring and management practices.

1. The Alternatives are not Adequately Evaluated

The PEIR does not evaluate the relative effectiveness of the five alternatives in the control of contaminated discharges from agricultural operations in the Central Valley. Furthermore, the PEIR provides no quantitative analysis of the amount of contaminant loading to surface water and groundwater that would result from implementation of the alternatives. These are fundamental flaws of the PEIR that leave the reader with no basis to judge the merits and shortcomings of the alternatives. Because contaminant loads are not quantified, the cumulative impact to water quality cannot be predicted, as discussed in Comment (2) below. Finally, the PEIR fails to provide a basis to determine best practicable control or technology (BPTC) as required by Resolution No. 68-16 (Oct. 28, 1968).

Our brief qualitative analysis of the alternatives is as follows.

Alternative 1, because it is the status quo would fail to reduce contaminant loads and improve water quality and, because it relies on regional or watershed scale monitoring, would not allow for a determination of BPTC. To determine BPTC, monitoring and data comparison is necessary upgradient and downgradient of points of control, i.e., where measures are implemented in the field. Because of the reliance on current management practices and because only regional monitoring is to be used, Alternative 1would not result in measureable improvement to water quality and in fact foster further degradation of water quality.

Alternative 2, which includes some groundwater management practices, would not demonstrably reduce contaminant loads and improve water quality. The groundwater management practices include only token wellhead protection measures involve only the placement of dirt in berms adjacent to the wellhead to prevent movement of surface water to the wellhead. These minor improvements are already required under Title 3, California Code of Regulations Division 6 (effective May 27, 2004) for areas where pesticides are mixed, rinsed and stored. (http://www.cdpr.ca.gov/docs/emon/grndwtr/gwregsinfo0702.pdf) Implementation of these measures more broadly, i.e., at all farms, is not likely to result in significant water quality gains because the berms would only marginally protect against pesticide and nitrate transport in stormwater in the areas where wellheads are located and would not address subsurface transport of pesticides and nitrates.

No farm-scale monitoring requirements are included under Alternative 2 and therefore, a determination of BPTC is not possible. Because only token wellhead protection measures are to be undertaken, Alternative 2, like Alternative 1, would not result in measureable water quality improvements and may be just as likely to result in water quality degradation.

Alternative 3 requires farm plans that use a tiered approach to address water quality concerns. This alternative is an improvement and may result in some gains in water quality; however, because no surface water or groundwater monitoring is required, the implementation of this alternative would not result in measureable improvement to water quality and the lack of monitoring does not allow for BPTC determinations.

Alternative 4 provides for nutrient management and regional or individual monitoring under a tiered hierarchy. Whereas use of tiering is acceptable in determining the intensity of monitoring, the option to participate in regional scale monitoring would not allow for the determination of BMP effectiveness nor BPTC. Costs under Alternative 4 could also be reduced by incorporating groundwater quality information from public water supply systems into a database to compliment the data obtained from Tier 2 and Tier 3 farms that would be required to participate in regional groundwater monitoring. As with Alternative 3, Alternative 4 may provide some gains in water quality; however, those gains would not be measurable because only regional monitoring is required.

Alternative 5 requires surface water and groundwater monitoring at individual farms and would likely be most protective of water quality. Because discharger-scale monitoring

would be required, BMP effectiveness could be evaluated and a determination of BPTC could be made. As monitoring data from BMPs are evaluated, BPTC can be determined and deployed in the field.

The monitoring under this alternative, however, is duplicitous and overly burdensome. Instead, use of a tiering scheme (i.e., to reduce monitoring at low risk farms in low risk environments) would reduce costs as would better coordination between farms in fulfilling monitoring requirements. For example, if groundwater wells were to be installed, groundwater monitoring at neighboring farms could be coordinated with one farm's downgradient well serving as the adjacent farm's upgradient location. Alternative 5, while inefficient, would result in the greatest potential for water quality gains because of the monitoring that would be required at farms.

To properly evaluate the five alternatives, a quantitative estimate of the contaminant loads to surface water and groundwater needs to be integrated into Chapter 3 of the PEIR, Program Description. Additionally, consideration of each alternative's capability to meet BPTC needs to be incorporated into Chapter 3, including specification of monitoring at a scale that allows for the determination of BPTC.

2. Cumulative Impacts on Downstream Ecologic Receptors are not Assessed

The PEIR fails to consider cumulative impacts of the alternatives on ecologic receptors downstream of the agricultural discharges in the Central Valley, namely the Delta and the San Francisco Bay and Estuary. Wildlife in the Delta and the Bay at risk include, for example, special-status fish species such as the Delta Smelt and anadromous fish such as Chinook Salmon and Steelhead Trout. Clearly, contaminant loading of pesticides and nutrients to upstream waters impacts habitat for these fish and their prey yet no consideration of these or any individual species is given in Section 6, Cumulative and Growth-Inducing Impacts. The PEIR states only in Chapter 6:

> Because many of the existing effects discussed in the section "Existing Effects of Impaired Water Quality on Fish" are cumulative, it is difficult to determine the relative contribution of irrigated lands and other sources. For example, low DO in the Stockton Deepwater Ship Channel is a result of contamination from upstream nonpoint sources (possibly including agricultural runoff) and discharges from the Stockton sewage treatment plant (Lehman et al. 2004; Central Valley Water Board 2005). Application of pesticides to non-agricultural lands such as urban parks and the resultant contaminant runoff also cumulatively contribute to impacts of inputs from irrigated lands.

This level of analysis is insufficient and provides no basis for comparison of the cumulative impacts that would result from the five alternatives. Section 6 should be re-written to estimate and incorporate contaminant loads from agricultural practices on irrigated lands to both surface water and groundwater under each alternative. The contaminant loads should be compared to other contaminant loads (other agricultural operations (e.g, dairies) and industrial discharge (e.g., treated sewage discharges) that are

contributed to downstream water bodies, including the Delta and the San Francisco Bay, to predict cumulative impacts from Central Valley irrigated agricultural operations.

Cumulative effects are essential to consider, given the impact of poor water quality on downstream ecologic receptors. For example, pelagic organisms such as the delta smelt are in decline in the upper San Francisco Estuary. The decline is not only because of direct smelt mortality from entrainment at pump intakes but also because of exposure of smelt and smelt prey to toxics and nitrogen. (http://www.sciencedaily.com/releases/2010/05/100517161144.htm and http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/pelagic_organism/docs/pod_ieppodmt_2007synthesis_011508.pdf) Studies have also shown that contaminants, including pesticides, have been linked to the decline of striped bass in the Upper Sacramento River http://www.sciencedaily.com/releases/2008/12/081209100940.htm. Cumulative impacts are also important to consider in the decline of anadromous fish, where contaminants are one factor contributing to significant population reductions (see, for example PEIR p. 5.8-20)

Cumulative impacts are also important to consider in impacts on recreation. For example, the growth of water hyacinth (Eichhornia crassipes) in the Sacramento-San Joaquin River Delta as a result of increased nutrient loads (nitrogen and phosphorus). (http://www.dbw.ca.gov/PDF/Egeria/WHSciProbsExcerpts.pdf) The rapid growth of water hyacinth has resulted in impacts to boating and recreational use by impeding waterway navigation and swimming.

Despite these and other well-known and significant impacts, the PEIR fails to discuss cumulative impacts to water quality, fisheries, and recreation from implementation of the five alternatives. The failure to consider cumulative impacts stems from the fact that contaminant and nutrient loads were not quantified in the PEIR, by alternative, as noted in Comment 1. The PEIR needs to conduct a thorough assessment of cumulative impacts that will include consideration of contaminant contributions from irrigated agricultural lands to surface water and groundwater under each alternative.

3. Surface Water Monitoring Required under Alternatives 4 and 5 is Vague

The PEIR lacks fundamental detail regarding those alternatives where farm-scale surface water monitoring may be conducted (i.e., Alternatives 4 and 5). The PEIR describes Tier 2 and Tier 3 monitoring for Alternative 4 as follows (p. 3-19):

> Tier 2: Individual tailwater, stormwater, tile drainage monitoring for constituents of concern 1 year of every 5 years
>
> Tier 3: Individual tailwater, stormwater, tile drainage monitoring for constituents of concern

The PEIR describes surface water monitoring under Alternative 5 as follows:

> Under Alternative 5, each operation would be required to conduct the following monitoring and tracking for each field and submit the results to the Central Valley Water Board annually.
>
> - Discharge monitoring for constituents of concern
> - Tailwater discharges monthly.
> - Storm water discharges during the first event of the wet season (between October 1 and May 31) and once during the peak storm season (typically February).
> - Discharges of subsurface (tile) drainage systems annually. (PEIR, p. 3-28)

The PEIR is vague on how surface water monitoring practices and resultant data would be reviewed stating only that the Regional Board would review and approve monitoring plans of third parties and legal entities and would review monitoring reports (PEIR, p. 3-21). The PEIR does not specify criteria that would define acceptable practices for monitoring including use of appropriate QA/QC, use of state-certified laboratories, methodology for selection of constituents of concern, and required locations for stormwater sampling (i.e., upgradient/downgradient, pre- and post BMP). We understand the PEIR is a programmatic EIR; however, some level of detail is needed in a revised PEIR to evaluate the effectiveness of the farm-scale surface water monitoring that is proposed in Alternatives 4 and 5.

4. Public Health Impacts from Exposure to Contaminated Groundwater is not Considered

More than two million Californians have been exposed to harmful levels of nitrates in drinking water over the past 15 years and the population of those exposed keeps growing. The PEIR acknowledges the extent of nitrate contamination and includes, as Figure 5.9-17, a map that shows nitrate contamination to be concentrated in the Central Valley. Incredibly, however, the PEIR makes no attempt analyze how nitrogen-based fertilizer application in the Central Valley results in significant exposure of the public to contaminated groundwater, the health impacts of that exposure, or how implementation of any of the five alternatives would reduce or increase exposure, other than to say, for Alternative 1:

> Nutrient management would improve both surface water quality and groundwater quality by improving the use of chemicals and using improved application techniques, and by limiting the use of nutrients as fertilizer that could potentially seep to groundwater and add nitrate to the groundwater table. (PEIR, p. 5.9-14)

The assertion that ongoing nutrient management efforts would somehow improve water quality is not borne out by recent data. In fact, the status quo, as proposed in Alternative 1, has resulted in an increase, statewide, in the number of wells that exceeded the health limit for nitrates, from nine in 1980 to 648 by 2007. (http://articles.sfgate.com/2010-05-17/news/20901575_1_nitrate-contamination-water-supply-water-systems) Of 13,153 wells sampled statewide, 1,077 active and standby drinking water wells have

concentrations of nitrate above the drinking water standard of 45 mg/L. (http://www.swrcb.ca.gov/water_issues/programs/gama/docs/coc_nitrate.pdf) In Tulare County, more than 40% of private domestic water wells exceed the drinking water standard for nitrate and statewide, the majority of nitrate exceedences appear to be in the Central Valley. (http://www.swrcb.ca.gov/gama/docs/ekdahl_gra2009.pdf) On the basis of more than 25 years of data, the number of wells that exceed the drinking water standard for nitrate is growing as a percentage of all nitrate detections. (http://www.swrcb.ca.gov/gama/docs/ekdahl_gra2009.pdf) Clearly the status quo is not working and implementation of Alternatives 1 and 2 would likely lead for further increases in nitrate drinking water violations in the Central Valley.

Health effects of exposure to nitrates most notably results in methemoglobinemia or "blue baby syndrome." Toxic effects of methemoglobinemia occur when bacteria in the infant stomach convert nitrate to more toxic nitrite, a process that interferes with the body's ability to carry oxygen to body tissues. Infants with these symptoms need immediate medical care since the condition can lead to coma and eventually death. Pregnant women are susceptible to methemoglobinemia and should be sure that the nitrate concentrations in their drinking water are at safe levels. Additionally, some scientific studies suggest a linkage between high nitrate levels in drinking water with birth defects and certain types of cancer. (http://www.swrcb.ca.gov/water_issues/programs/gama/docs/coc_nitrate.pdf)

The PEIR should be rewritten to include an assessment of the potential for the public to be exposed to nitrates in drinking water from agricultural practices in the Central Valley. The assessment of each alternative should include an estimate of nitrogen loading to fields; nitrogen fate and transport in soil, surface water, and groundwater; nitrogen monitoring; and a summary nitrogen impacts to water supplies. Linking monitoring to measurement of each of the alternatives is critical. An annual assessment of the performance of the alternative that is selected should be required and use of the 13,000-well California Department of Public Health database should be required as a tool for evaluation of nitrate trends.

Sincerely,

Matt Hagemann, P.G.