


September 27, 2010

Via Electronic Mail

ILRP Comments
Ms. Megan Smith
630 K Street, Suite 400
Sacramento, CA 95814

Re: Comments on the Central Valley Regional Water Quality Control Board's Draft Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (Staff Report), Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program (Economic Analysis), and Draft Program Environmental Impact Report (DPEIR)

Dear Ms. Smith:

These comments are submitted on behalf of California Rural Legal Assistance, Inc., California Rural Legal Assistance Foundation, Clean Water Action, Community Water Center, Environmental Justice Coalition for Water, Food & Water Watch, and Pacific Institute. We are a group of nonprofit organizations concerned about the impacts of groundwater contamination on Central Valley communities and the environment.

I. Executive Summary

In producing this set of documents, staff for the Central Valley Regional Water Quality Control Board (the Board) has conducted a severely lopsided analysis that results in a program that does not sufficiently protect water quality objectives or beneficial uses. The economic analysis significantly overestimates agricultural costs while simultaneously failing to make an equal, balanced attempt at quantifying and analyzing the costs and impacts of continued agricultural waste discharges to community drinking water systems, public health and the environment. Likewise, the environmental analysis also fails to differentiate among the environmental and public health impacts and benefits of the various regulatory alternatives. By failing to provide any analysis of the tradeoffs and opportunity costs of adopting a more or less stringent regulatory program, these documents not only promote uninformed decision making by the Board, but result in an analysis that vastly undervalues the economic, public health, and environmental benefits that would be realized with the adoption of an effective regulatory program. As a result, staff has recommended a skewed program to the Board that is not sufficiently protective of water quality objectives and beneficial uses.

In essence, staff has placed undue weight on one of the goals of the long-term Irrigated Lands Regulatory Program (ILRP), while disregarding the other three program goals as well as legal mandates contained in the Porter-Cologne Water Quality Control Act, the relevant Central Valley basin plans, and the State Water Quality Control Board's Anti-Degradation and Non-Point Source policies. When all of the program goals and objectives and legal mandates are accorded their proper weight, it is clear that Alternative 2, on which the Staff-Recommended Program is largely based, falls short in numerous ways and that Alternative 4 is the vastly superior program alternative that should form the basis of a substantially-revised, final staff-recommended program.

In this next phase, staff should revisit both its economic and its environmental analyses as well as the components of the final program it will recommend to the Board. This time around, rather than arbitrarily and capriciously basing all of its decisions on the costs of regulation to agriculture alone, it should balance the costs of imposing each potential regulatory component against (a) that component's predicted effectiveness at protecting and improving water quality and public health and (b) the associated and countervailing cost savings of such protection and improvement to Central Valley residents.

After a more fair and balanced analysis, we believe that the staff-recommended program will include the following key regulatory components, necessary to implement an effective program:

1. Collect basic information on farm practices and water quality to establish a baseline and effectively evaluate management practices. Specifically, an effective program must obtain sufficient information on what practices are in use, how much fertilizer and other chemicals are applied that may be impacting water quality, levels of water quality currently in agricultural areas (by sampling existing wells), the location of recharge areas, wells (active, abandoned, dry & standby), and other features that may act as direct pathways for contamination of groundwater aquifers without adequate protection measures.

2. Result in real farm-level changes to protect groundwater by including mechanisms to ensure adoption of best management practices (BMPs or BPTC), requiring farm-level education and assistance, and ensuring that practices are effective through representative monitoring.
3. Contain effective mechanisms to ensure accountability by setting clear standards for compliance that ensure that dischargers are not contributing to exceedances of water quality objectives and are minimizing degradation, and by ensuring that the Board has effective enforcement mechanisms to compel compliance.
4. Include a component to address both clean-up of legacy agricultural contamination and mitigation of continued degradation and exceedances.

II. Table of Contents

III. Why The Central Valley Needs an Effective Program

A. Extensive Surface and Groundwater Contamination

Runoff and leaching of agricultural chemicals, animal waste, and other contaminants present great risks to the Central Valley's surface and groundwater aquifers. The Central Valley's population has grown from 2 million to 3.8 million people since 1980 and is projected to reach 6 million by 2020. Urban groundwater use, while not yet superseding use for agricultural irrigation, has increased along with the population, increasing pressure on groundwater resources and affirming the need to protect groundwater quality over the long term.[1] While there is no over-arching program to monitor the Central Valley's groundwater, available data indicate persistent contamination problems.

In one study of domestic wells in the San Joaquin Valley between 2001 and 2003, researchers found that 44 percent of wells sampled had nitrate levels above the drinking water standards.[2] A 2010 report released by the state's Groundwater Ambient Monitoring and Assessment (GAMA) Domestic Well Project found that in Tulare County, 40 percent of private wells studied did not meet the drinking water standard for nitrates, and 33 percent of the wells tested positive for total coliform bacteria.[3] According to the State Water Resources Control Board, compared to other parts of California, the Central Valley region has the highest number of public drinking wells contaminated with nitrate above the drinking water standard of 10 micrograms per liter (mg/L).[4]

Historical data in the Eastern San Joaquin Valley indicate that nitrate concentrations in groundwater have increased each decade since the 1950s. The data indicate that nitrogen fertilizer is the largest contributor to this increase, although dairy production plays a large role as well. This study also reveals higher concentrations of nitrate and pesticides in shallow groundwater compared to deep. Because water can take between forty and fifty years to travel from the water table to deeper parts of the aquifer, the levels of nitrates and pesticides in deeper groundwater are expected to increase over the next several decades.[5]

Surface water in the Central Valley is severely impaired as well. The 2008/2010 303(d) list adopted by the State Board on August 4, 2010 shows a 64 percent increase of impaired water bodies statewide compared to the number of listings identified in 2006. In Region 5 (Central Valley), 342 water bodies were impaired in the 2006 303(d) list; staff have recommended the

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[1]Faunt, Claudia, Editor. "Groundwater Availability of the Central Valley Aquifer, California." USGS Groundwater Resources Program, Professional Paper 1766. 2009 at 1, 104.

[2]Burow, Karen R., et al. "Regional nitrate and pesticide trends in ground water in the Eastern San Joaquin Valley, California." *Journal of Environmental Quality*. Vol. 37. 2008 at S-262.

[3]Groundwater Ambient Monitoring and Assessment Domestic Well Project, California State Water Resources Control Board. "Groundwater Quality Data Report Tulare County Focus Area." March 2010 at 17.

[4]Cochrane, Christopher. "Groundwater Information Sheet: Nitrate/Nitrite." State Water Regional Control Board, Division of Clean Water Programs Groundwater Special Studies Unit. October 2002 at 2.

[5]Burow, Karen R., et al. "Regional Nitrate and Pesticide Trends in Ground Water in the Eastern San Joaquin Valley, California." *Journal of Environmental Quality*. Vol. 37. 2008 at S-261. *See also* Harter, Thomas. (2009). Agricultural Impacts on Groundwater Nitrate. *Southwest Hydrology* 8(4): 23.

addition of another 411 water bodies -- an increase of 120 percent -- and the removal of only 23 water bodies, for a total number of 730 impaired surface water bodies, the second-highest number of all regions in the state.[6] The vast majority of nitrate-impaired surface water bodies in the state are located in the Central Valley, according to the State Board.[7]

B. Irrigated Agriculture is the Major Contributing Source

There is scientific consensus that irrigated agriculture is a major source of water contamination.[8] The U.S. Geological Survey (USGS) has found that nitrate pollution of both surface and groundwater in the Central Valley is due primarily to the region's intensive irrigated agriculture and its use of chemical fertilizer.[9] Irrigated agriculture in the San Joaquin Valley alone produces approximately 528 million pounds of nitrogen that are potentially leaching into the groundwater each year.[10] Even the California Regional Water Quality Control Board for the Central Valley

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[6]State Water Resources Control Board. "Staff Report: 2010 Integrated Report Clean Water Act Sections 303 (d) and 305 (b)." April 19, 2010, at iv.

[7]State Water Resources Control Board. "2010 Integrated Report — All Assessed waters for Nitrate as Nitrate (NO3)." Available at http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

[8]Harter (2009). Dubrovsky, Neil, et al. (1998). Water Quality in the San Joaquin-Tulare Basins, California, 1992-95. U.S. Geological Survey Circular, 1159. Davisson, M. and R. Criss. (1993). Stable isotope imaging of a dynamic groundwater system in the southwestern Sacramento Valley, California (USA). *Journal of Hydrology*. 144: 213–246. Davisson, M., and R. Criss. (1996). Stable isotope and groundwater flow dynamics of agricultural irrigation recharge into groundwater resources of the Central Valley, California. In: International Symposium on Isotopes in Water Resources Management. IAEA-SM-336/14. Vienna: International Atomic Energy Agency, 405-418. Burow, K., J. Shelton, and N. Dubrovsky. (1998). Occurrence of nitrate and pesticides in groundwater beneath three agricultural land-use settings in the eastern San Joaquin Valley, California, 1993-1995. Sacramento: U.S. Geological Survey.

[9]Gronberg, J., C. Kratzer, K. Burow, J. Domagalski, and S. Phillips. (2004). Water-Quality Assessment of the San Joaquin–Tulare Basins—Entering a New Decade. Sacramento: U.S. Geological Survey. Burrow et al. 1998. Burrow et al. 2008. Suen, C.J. 2008. Using Isotopic Ratios and Major Minerals Data to Identify the Sources of Ground Water and Ground Water Nitrate in Relation to Pesticide Residues: California Department of Pesticide Regulation, Environmental Monitoring Branch, June 24, 2008. Esser, B.K. et al. 2009. California GAMA Program: Impact of Dairy Operations on Groundwater Quality: Lawrence Livermore National Laboratory under Contract W-7405-ENG-48, August 17, 2009. Green, C.T., L.H. Fisher, and B.A. Bekins. 2008. Nitrogen Fluxes through Unsaturated Zones in Five Agricultural Settings across the United States: Journal of Environmental Quality, May–June 2008, Vol. 37, pp. 1073–1085. Harter, T. et al. 2005. Deep vadose zone hydrology demonstrates fate of nitrate in eastern San Joaquin Valley: California Agriculture, Vol. 59, No.2, p.124–132. Singleton, M.J. et al. 2007. Saturated Zone Denitrification: Potential for Natural Attenuation of Nitrate Contamination in Shallow Groundwater Under Dairy Operations: Environmental Science & Technology, Vol. 41, p. 759–765. McNab, W.W. et al. 2007. Assessing the Impact of Animal Waste Lagoon Seepage on the Geochemistry of an Underlying Shallow Aquifer: Environmental Science & Technology, Vol. 41, p.753–758.

[10]*See* Harter (2009). National Agricultural Statistics Service. (2007). The Census of Agriculture. Washington: United States Department of Agriculture. The Staff Report indicates that the entire Central Valley produces approximately 513 million kilos, or 565,000 tons, of nitrogen per year. Staff Report, p.18 (citing Ruddy, B.C., D.L. Lorenz, D.K. Mueller. 2006. County-Level Estimates of Nutrient Inputs to the Land Surface of the Conterminous United States, 1982–2001. U.S. Geological Survey, Reston, VA. Scientific Investigations Report 2006-5012).

Region (the Board) has acknowledged irrigated agriculture's significant, ongoing contribution to water quality contamination in the Central Valley in its Basin Plans to protect water quality for the region.[11]

While irrigated agriculture is certainly not the only source contributing to surface and ground water contamination in the Central Valley, it is the most significant source and the only major source that is not yet regulated by a Waste Discharge Requirement (WDR). Communities already treat their wastewater and (particularly in small rural communities) are paying very high rates to do so.[12] Dairies also have requirements to protect water quality under their recent general WDR, which includes requirements for every dairy in the region to conduct monitoring and implement nutrient management plans. But there are currently no regulatory requirements whatsoever under any Board program to protect groundwater from fertilizers and pesticides, which irrigated agriculture applies intensively and extensively throughout the valley. We cannot expect to solve our drinking water crisis and prevent the loss of many more community water supplies without creating an effective program to regulate agricultural pollution, and this regulatory program should be consistent with the requirements for other major dischargers.

C. Disparate Impacts on Communities of Color

Furthermore, we can't afford to take another decade to get changes in place. Already, the Board's failure to enact groundwater protections has disproportionately impacted environmental justice (EJ) communities, and these disparities only increase each year and with each new

[11]Both basin plans in the Central Valley region document the significant negative impact that discharges to state waters from irrigated agriculture continue to have on water quality in the region. *See* California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th ed. (September 2009) (*hereinafter* SSJR Basin Plan), p.IV-2.00 (observing that "[i]rrigated agriculture accounts for most water use in the two sub-basins [Sacramento River and San Joaquin River,]" that "[a]gricultural drainage contributes salts, nutrients, pesticides, trace elements, sediments, and other by-products that affect the water quality of the rivers of the Delta[,]" that "[p]esticides and nutrients are . . . major ingredients of surface agricultural drainage" that "have found their way to ground and surface waters *in many areas of the basins*[,]" and that "[n]itrate and DBCP (1,2-Dibromo-3-chloropropane) levels exceeding State drinking water standards *occur extensively in ground water in the basins* and public and domestic supply wells have been closed because of DBCP, EDB, nitrates, and other contaminants in several locations") (emphases added), *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/; California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Tulare Lake Basin, 2d ed. (January 2004) (*hereinafter* TL Basin Plan), pp.IV-2 to IV-4 (observing that "[i]rrigated agriculture accounts for most water used in the Tulare Lake Basin[,]" that "[a]gricultural drainage . . . carries varying amounts of salts, nutrients, pesticides, trace elements, sediments, and other by-products to surface and ground waters[,]" that "[p]esticides and nutrients in agricultural drainage have found their way to ground waters *in many areas of the basin*[,]" that "[n]itrate and pesticide levels exceeding the State drinking water standards occur in some ground waters in the basin, and have caused closure of domestic supply wells in several locations[,]" and that "[o]ne of the biggest problems facing municipal water providers is the presence of the chemical dibromochloropropane (DBCP) in their wells") (emphasis added), *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

[12]Sewer treatment plants must secure an individual Waste Discharge Requirement (WDR) or NPDES permit, depending on the methods of disposal. In small rural communities like Yettem, sewer rates alone are over $75 per month, while the median household income is far below the poverty level.

community that loses a drinking water supply to agricultural contamination. Researchers at UC Berkeley have documented the reality that we already know on the ground, which is that nitrate contamination disproportionately impacts small, predominantly Latino communities and small communities with less homeowners.[13]

By disparately impacting low income, communities of color, the Board's failure to enact groundwater protections, violates our states commitment to equality and freedom from discrimination as laid out in California Government Code, Section 11135 which states that no person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency. Furthermore, the Board's failure to enact groundwater protections threatens California's Fair Employment and Housing Act, California Government Code 12900, et seq., which guarantee all Californians the right to hold and enjoy housing without discrimination based on race, color or national origin.

Should the Board fail to choose an alternative that adequately addresses groundwater protection and protects communities of color most impacted by contaminated drinking water, the Board may violate California's Equal Protection and Fair Housing Laws, including the Fair Employment and Housing Act and California Government Code 11135. Furthermore, California Government Code Section 65008 renders null and void any action undertaken by a local governmental agency that denies to any individual or group of individual the enjoyment of their residence, landownership or tenancy. The Board's decision, if it fails to protect the drinking water for California's most vulnerable communities, may be null and void.

These EJ communities are more likely to have contaminated drinking water sources that result in being unable to provide safe drinking water to their residents on an on-going basis. As a result, families in these communities have to buy alternative sources of drinking water while still paying high water bills, leading to a huge financial burden for our state's poorest families. Many families continue to drink the water, resulting in health impacts that may ranging from thyroid and kidney problems, to death in infants.

But these communities are really just the canaries in the coal mine. Because they are more vulnerable, they show the impacts of this contamination first and more severely, but in reality communities large and small and rich and poor are impacted and will only continue to be without real, concrete changes to protect our water sources.

[13]Balazs et al. 2010. Social Disparities in Nitrate Contaminated Drinking Water in California's Central Valley. *Draft under review.*

IV. Staff's Evaluation of the Program Alternatives is Flawed and Should Demonstrate that Alternative 4 is the Clearly Superior Alternative.

The Staff Report's evaluation of the long-term program alternatives against the program's goals and objectives,[14] if performed correctly, should conclude that Alternative 4 is the clearly superior program alternative. We understand that this analysis is not an exact science, but based on the evidence in the documents and on proper application of the actual meanings of the goals and objectives,[15] staff should conclude that Alternative 4 is best-equipped to meet the goals of the ILRP. Staff attempts to justify its rejection of all four program alternatives and the creation of its own hybrid proposed program, based largely on the deeply-flawed Alternative 2, by selectively changing the meaning of the goals and objectives and failing to make an honest effort to determine the differences among each of the alternatives in terms of their effectiveness at improving water quality, public health and the environment. As a result, the Staff-Recommended Program is missing the fundamental elements of an effective program, most of which *are* included in Alternative 4.

A. The Staff Analysis of the alternatives improperly changes Objectives 4 & 5 to impose a new requirement that is different than the stated objectives and ignores the components of Alternative 4 that are designed to conform precisely with the stated objectives of 4 & 5.

The Staff Report erroneously concludes that Alternative 4 is only *partially* consistent with Objectives 4 & 5, but to reach this conclusion, it first reinterprets and thus effectively changes the meaning of these two objectives. In the section of the Staff Report entitled "Goals and Objectives of the Long-Term Irrigated Lands Regulatory Program," Objectives 4 and 5 are described as being that the ILRP promote coordination with other Central Valley Water Board programs and other regulatory and non-regulatory agencies.[16] In the section of the Staff Report entitled "Evaluation of Long-Term Program Alternatives," however, staff erroneously reinterprets Objectives 4 & 5 to mean that the ILRP must be managed at a regional level, on the theory that "management at the watershed level would promote coordination" better than "[m]anagement at the farm level . . . ."[17] There is no evidence to support that conclusion. Furthermore, such an interpretation substantively changes objectives that were established and approved by group consensus during the lengthy Stakeholder Advisory Workgroup process in August 2009.[18] In effect, staff appears to be changing Objectives 4 & 5 to mean that administrative costs for the Board must be minimized. While this is a laudable aim, it was *not* one of the Goals and Objectives of the program that were agreed upon during the lengthy stakeholder process. Instead, because administrative costs must ultimately be borne by the

[14]California Environmental Protection Agency, Regional Water Quality Control Board, Central Valley Region, Adam Laputz, et al., Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010), attached as Appendix A to Draft Irrigated Lands Regulatory Program, Program Environmental Impact Report (*hereinafter* Staff Report), pp.96-136.

[15]These goals and objectives are described in the Staff Report at pages 92-93.

[16]Staff Report, p.93.

[17]*See* Staff Report, p.102-103.

[18]*See* Staff Report, p.92.

dischargers through fees, the administrative costs are already incorporated into the Economic Analysis in terms of impacts on agriculture. In other words, the Board's administrative costs were not included among the explicit Goals and Objectives because stakeholders felt that what mattered most was the overall economic impacts of the program on agriculture, local communities, and the environment. As these Goals and Objectives have already been settled upon, they are not properly subject to revisions at this stage in the development of a long-term ILRP.[19]

The Board cannot, in the course of evaluating the program alternatives, change those objectives to mean something different than their plain meaning, namely, that programs should promote coordination with other existing regulatory and non-regulatory programs.

In any event, contrary to staff's assertions, adding an additional layer to the program in the form of sub-regional lead entities further complicates coordination of this program with the other Central Valley Water Board programs, such as the dairy general order, because it removes information, management, and, ultimately, enforcement from the dominion of Board staff. Furthermore, by utilizing coalitions, the Staff-Recommended Program creates even less transparency and injects yet another layer of bureaucracy to navigate and coordinate - one that is not part of any other existing agency, nor under the control of the Regional Board, nor conforms to watershed boundaries.

In contrast, Alternative 4 includes two key components that directly ensure that this alternative will be consistent with Objectives 4 and 5, by: 1) allowing for growers to create legally responsible and transparent groups to facilitate coordination with the Regional Board and other entities and programs, and 2) creating a regional monitoring program run by a third party.[20] In fact, this Alternative is more consistent with Objectives 4 and 5 than either Alternative 2 or the Staff-Recommended Program, because it would allow "the formation of responsible legal entities that could serve a group of growers who discharge to the same general location and share monitoring locations."[21] Such a structure is entirely consistent with the Grasslands Bypass Project and even the recently-proposed supplemental monitoring program within the Dairy general order, and far more so than either Alternative 2 or the Staff-Recommended Program. In fact, the Staff Report points to exactly this structure in the Grasslands Bypass program as a successful example of how one primary and legally-responsible entity can coordinate with a group of growers to ensure that they meet the program goals.[22] Furthermore, by having a *legally-responsible* entity, rather than an entirely separate third party that is not legally responsible to the Board (as in Alternative 2 and the Staff-Recommended Program), the structure proposed in Alternative 4 will be able to ensure compliance through direct enforcement actions, while still

[19]In fact, such an interpretation conflicts with the interpretation contained in staff's analysis of the lead entities program element, which states that "[p]rogram goals and objectives and policy requirements do not require that the lead entity be the Central Valley Water Board *or a third party*." Staff Report, p.138 (emphasis added).

[20]*See* ICF International, Draft Irrigated Lands Regulatory Program Program Environmental Impact Report, July 2010 (prepared for Central Valley Regional Water Quality Control Board) (*hereinafter* DPEIR), pp.3-16; 3-20; 3-24 to 3-25.

[21]DPEIR, p.3-20.

[22]*See* Staff Report, pp.80-81 (discussing the Grasslands Bypass project, which is implemented exactly through this kind of legally responsible third-party structure).

coordinating work on the watershed level. This structure will also ensure quality control and transparent reporting, both of which are integral to promoting coordination with other regulatory and non-regulatory programs.

Furthermore, and perhaps most clearly, Alternative 4 furthers coordination with other regulatory and non-regulatory programs by creating a regional monitoring program. This component alone promotes coordination with regulatory and non-regulatory programs more than any other alternative, as it would explicitly integrate existing agencies that could help conduct and create the criteria for regional monitoring that could be funded through this program so as to ensure that the program data can be directly integrated into existing monitoring efforts.[23] This is far more consistent with promoting coordination with regulatory programs, such as the dairy and storm water programs, by ensuring that the quality of data and accessibility of that data is sufficient for use in both existing regulatory and non-regulatory programs.

The staff analysis ignores these specific additional regional coordination components of Alternative 4 and instead erroneously evaluates it as being equal to Alternatives 3 and 5 merely because each grower would be enrolled directly in the program and required to develop individual farm water quality management plans (FWQMPs). In fact, the minimal, non-certified FWQMPs envisioned in Alternative 4 will actually promote coordination with local groundwater management planning programs and other existing programs by encouraging the implementation of exactly the kinds of practices identified in local/regional plans to be implemented at the farm level.[24] Without FWQMPs, growers have no guidance on what practices or measures would be most effective or appropriate for their own individual operations and therefore will be unlikely to implement new practices into their operations, resulting in minimal actual changes on the ground. The local management plans required by Alternative 2 and the Staff-Recommended Program include no mechanisms to require implementation of any of the practices identified in plans, and the third party lead entities (coalitions and/or local water agencies) do not have authority to require individual growers to implement management practices or even participate in monitoring. By requiring FWQMPs,[25] Alternative 4 will complement existing planning programs by helping to promote actual changes at the farm level that are consistent with those plans. In contrast, Alternative 2 and the Staff-Recommended Program would require changes in the existing groundwater management plans to meet the requirements of this program (or duplication of such plans through the creation of entirely new management plans), thereby interfering with ongoing processes rather than providing a mechanism that complements those existing efforts and helping growers utilize the guidance from those plans to determine how their own operations can minimize impacts on groundwater.

Staff's conclusion that Alternative 4 if only partially consistent with Objectives 4 and 5 is not supported by substantial evidence. Staff cannot ignore the regional components that make

[23]*See* DPEIR, p.3-25.

[24]Local Groundwater Management Plans are voluntary documents that do not actually require any of the components lists in AB 3030 nor do local agencies that administer the plans have the authority to require implementation of management practices or participation in monitoring programs. *See* Staff Report, p.88-89.

[25]Many of the requirements in FWQMPs are similar to the recommended components of AB 3030, making them particularly complementary and encouraging the implementation of existing SB303 plan practices on the farm level. *Compare* Attachment F of the Staff Report with Staff Report, pp.88-89.

Alternative 4 fully consistent with Objectives 4 and 5 just because this alternative includes enforcement mechanisms with individual growers and farm-level planning. While there may be ways to promote these objectives even further in a final program, that is the case for every alternative and all of the evaluation criteria. The fact that is possible to improve Alternative 4 should not form a basis for finding that it is only partially consistent with the objectives, given that there are direct measures built in to the alternative to do precisely what is required by these objectives. In fact, these measures are even in many cases more effective than those contained in Alternative 2, which staff found to be consistent with Objectives 4 and 5, despite the fact that the regional lead entities envisioned in this alternative do not coincide with watershed boundaries or any other existing boundaries utilized by other relevant agency and non-agency programs.

B. The Staff Analysis should have found that Alternative 4 is consistent with all criteria and therefore should have based its proposed program around Alternative 4.

Alternative 4 is the clearly superior alternative and should have formed the basis for the Staff-Recommended Program. Only Alternative 4 is consistent with all of the evaluation criteria. Given that Alternative 2 does not satisfy the legal requirements of the State Board's Nonpoint Source Policy and Anti-degradation Policy, it is not a feasible alternative. Furthermore, although the DPEIR fails to differentiate among the environmental impacts of the various alternatives, it should have found that Alternative 4 would greatly outperform Alternative 2 in terms of accomplishing Goals 1, 2, and 4, and that Alternative 4 sufficiently meets Goal 3.

While the Staff Report, DPEIR and Economic Analysis went into great detail analyzing the alternatives' relative differences in performance with respect to Goal 3, none of these documents contain any real analysis of the alternatives' relative differences in performance with respect to Goals 1, 2 and 4. Instead, staff has concluded that because all alternatives ask growers to "prevent nuisance conditions and/or exceedance of water quality objectives in State waters associated with waste discharge from their irrigated lands,"[26] so long as they have any reference to groundwater, any alternative (including Alternatives 2-5 and the Staff-Recommended Program) will all result in equal implementation of BMPs and improvements and protections of water quality.[27] This seems absurd and without any basis in reality. As a result of essentially ignoring any difference in the alternatives' impact on water quality, staff seem to be basing their entire Staff-Recommended Program purely on pursuing Goal 3 over all others, rather than trying to maximize water quality protection in the most economic way, consistent with all four goals.

Although the DPEIR does not sufficiently analyze the Alternatives to determine what is the clear "environmentally superior alternative[,]"[28] (see CEQA comments below), Alternative 4 is clearly more likely to result in improvements in water quality and reductions in degradation than Alternative 2 or even the Staff-Recommended Program, since it incorporates mechanisms to ensure that farms have guidance for how to protect water quality in their own individual

[26]Staff Report, p. 99.

[27]Staff Report, p. 100, 162-163.

[28]*Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010).

operations (FWQMPs), and the Board will have the ability to verify whether management plans are effective and ensure that BPTC is implemented.

The assumption that all practices may be implemented to a similar degree under any alternative and therefore environmental impacts are not expected to vary widely is without any supportable evidence and contrary to the experience of even this Regional Board in its own regulatory programs.[29] Certainly coalitions in the current ILRP and entities overseeing AB3030 and SB1938 groundwater management plans have not been able to show that best management practices have been adopted nearly to the same extent as more direct regulatory programs, such as the Grasslands Bypass Project, the Dairy General Order, and California Department of Pesticide Regulation's (DPR) Ground Water Protection Area (GWPA) permits. Therefore, there is not substantial evidence that all the Alternatives will perform equally towards Goals 1, 2, and 4 as indicated in the staff report.

In contrast to Alternatives 4 & 5, Alternative 2 & the Staff-Recommended Program are effectively voluntary programs where third parties voluntarily try to help growers implement monitoring and identify best management plans on a regional level, without any enforcement mechanisms to require growers to actually implement BMPs or even report basic information. The only enforcement that exists is the threat that the Board could regulate individual farms individually, which is no different than the current situation because the Board already has that threat and could regulate farms individually. Therefore, Alternative 2 and the Staff-Recommended Program become nothing more than voluntary programs, which cannot be found to result in the same level of environmental protection as programs with actual enforcement mechanisms, and therefore really should be evaluated as performing only marginally better than Alternative 1. As discussed below in the CEQA section, the staff cannot rely on the implementation of best practices if there is no enforceable mechanism to ensure that they are implemented at the farm level nor any means of monitoring whether they are meeting BPTC standards and sufficiently protecting water quality.[30]

Finally, Alternative 4 performs well towards meeting Goal 3 and protecting the economic viability of agriculture. The costs are estimated at being only a 7% increase from doing no groundwater program at all (Alternative 1), and that is an overestimate since 90% of those costs are attributed to implementing the most expensive management practices, without taking into account more cost effective practices that are more likely to be used as well as the cost savings of implementing those management practices in terms of water, energy and fertilizer and pesticide costs that might be reduced. (See comments below.) Nonetheless, Alternative 4 was found to not impose an appreciable difference in terms of economic impact than not having a groundwater program at all (Alternative 1). In fact, Alternative 4 was equal to Alternative 2 in its impact on total acres changed and total value of production, but was *superior* to Alternative 2 because it actually results in a net *increase* in jobs for the Basin.[31]

[29]*See* Staff Report, p.131; DPEIR, pp.5.9-16 to 5.9-18.

[30]*See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1260-61, 100 Cal. Rptr. 2d 301, 308-09 (2000).

[31]Staff Report, pp.128-129.

While we understand that the Staff should and can suggest ways to improve Alternative 4 to better achieve the Goals and Objectives, it should be used as the base Alternative as it is the only one that is consistent with all the evaluation parameters.[32] Instead the Staff seem to have used Alternative 2 as the Base and made a few small changes that are not sufficient to meet all the Goals and Objectives and most fundamentally, not sufficient to protect water quality (Goals 1, 2, & 4). The application of the analysis in essence weighs cost to agriculture over all other objectives.

Comments on the Staff-Recommended Program are included in detail below. But we encourage staff to provide an evaluation of each of the Alternatives, including the Staff-Recommended Program in order to see how well they perform towards accomplishing all of the Goals and Objectives.

C. The Staff Anti-Degradation Analysis is inadequate and results in inadequate consideration of reasonable protection measures.[33]

We appreciate that the Staff Report does acknowledge that degradation will occur as a result of this program. And we agree that agricultural operations are important to the State of California. However, recognition of the importance of an activity does not alone provide sufficient information to determine how much degradation from that activity is in the best interest of the people of the state. Rather it is vital that the staff attempt to estimate the level of degradation that will occur, and the cost of that degradation on other beneficial uses (including community water supplies and the environment) so that the Board can make an informed decision as to what level of degradation is truly in the best interest to the people of the state. In addition, the staff should consider whether lower water quality can be abated through reasonable means, and consider the implementation of feasible alternative treatment or control methods.[34] Without adequate detail and information on degradation, additional reasonable means or alternative methods cannot be suggested or evaluated.

We are sympathetic to the difficulty of attempting to estimate the level of degradation that is likely to occur as well as the cost of that degradation on other beneficial uses, such as drinking water supplies, at this programmatic level for the entire Central Valley region. Given the level of detail in this stage in the development of the program, it may not be possible to do an effective anti-degradation analysis. Because the Anti-degradation analysis is not complete or sufficient at this programmatic level, further analysis must be done before approving the program implementation measures or approved plans, which would effectively constitute site-specific degradation approvals.[35] We look forward to working with the Staff to help provide adequate analysis for consideration by the Board in the development of those more specific Orders and approvals.

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[32] Staff Report, p.97.

[33] This Section refers to the Anti-Degradation discussion in the Staff Report. See Staff Report, pp.57-68.

[34] *See* Staff Report, p.63.

[35] *See* Staff Report, p.63, n.30.

Even at this programmatic this level, however, we discuss approaches that may be used to quantify the potential impacts on drinking water systems in our comments below on the Economic Analysis. We urge the consideration of the addition of a requirement for dischargers that do contribute to degradation or are found to be contributing to exceedances of groundwater objectives to provide funding for alternative water supplies for communities impacted as an alternative treatment or control method.

V. The Key Components of an Effective Program

There are four basic components that we believe must form part of the final program in order for it to be truly effective. Three of these are currently included as part of Alternative 4, which we believe to be the clearly superior alternative. Most of these components are not included in Alternative 2 and many are not adequately included in the Staff-Recommended Alternative.

A. Collect Basic Information on Farm Practices and Water Quality

Without a better understanding of water quality and the activities that impact it, any proposed program cannot effectively target growers and practices or evaluate its own effectiveness. Specifically, an effective program must obtain sufficient information on: 1) what practices are already in use; 2) how much fertilizer and other chemicals are applied that may be impacting groundwater; 3) the water quality in agricultural areas (particularly levels of nitrate in agricultural areas where there are not public water systems because local residents rely on private domestic wells); and 4) recharge areas, wells (active, abandoned, dry & standby), and other features that may act as direct pathways for contamination of groundwater aquifers. Without this basic information, it will be impossible for the program to establish an initial baseline and then evaluate improvements going forward. Therefore, this information should be required from all growers, including sampling for basic constituents in existing wells, as part of the initial and periodic reporting requirements.

Alternative 4 fills this vast information gap by requiring precisely this kind of basic information from all growers. Specifically, Tier 2 and Tier 3 growers would be required to report sampling results of existing on-site wells and tail water and information about cropping practices and nutrient and pesticide application, in addition to participating in a regional monitoring program to evaluate BMPs. In less vulnerable Tier 1 areas, where initial testing shows that nitrate levels are less than the Action Level, *i.e.*, half the nitrate Maximum Contaminant Level (MCL), and there does not appear to be water quality degradation attributable to agricultural activities, sampling frequency requirements are greatly reduced.

Unfortunately, neither Alternative 2 nor the Staff-Recommended Program propose measures to collect this kind of basic data. Alternative 2 makes no attempt to provide basic farm-level information. The Staff-Recommended Program seems to request that regional management plans in Tier 2 areas provide some information on implementation of practices, but this proposed program does not have a mechanism to establish a baseline and determine in which tier growers should be placed in a manner that is sufficient to ensure that Tier 2 includes all growers that are contributing to exceedances of water quality objectives or water quality degradation. At the very

least, the Staff-Recommended Program should require the reporting of information necessary to determine water quality in areas without public wells in order to establish a baseline and to evaluate changes in water quality, as well as sufficient data on implementation of practices to the Board to evaluate the effectiveness of the program.

Collecting this basic information should not constitute a significant extra expense, as growers should be factoring nitrate levels and other basic water quality parameters into their nutrient budgeting and irrigation practices. If they are not already doing this, such a requirement would help them potentially save money by reducing the need to purchase expensive fertilizer. Additionally, this information may help growers determine what water quality is in their own domestic wells, so that they can protect their families and workers.

B. Result in Farm-Level Changes to Protect Groundwater

1. Result in Adoption of BMPs at the Farm Level

While there is some utility in third parties assisting growers to pool resources and information, the recommended practices actually need to be implemented on a farm level, which means that growers need to have clear guidance on how they can best protect water quality in their own operations.

Regional groundwater management plans have been in existence for a number of years in many areas of the valley, but they have not been able to show significant improvements in water quality, nor have they been able to show widespread implementation of BMPs on their own. Instead, many have become expensive paperweights that water agencies have used to check a box to receive certain sources of funding. While some have been effective at developing regional projects and planning for new development, regional management plans alone will not result in the kind of widespread adoption of BMPs and protection of water quality that is necessary to meet water quality objectives. This is because these documents are planning documents, not regulatory programs. In fact, the implementing agencies, whether coalitions or local water agencies, do not have the authority to require growers to implement BMPs or even participate in monitoring, and therefore any program relying on these entities is completely voluntary. While adoption of either Alternative 2 or the Staff-Recommended Program may lead to better collection and reporting of information to the Board than under the status quo, there is no reason to believe that either of these programs would lead to greater implementation of management practices than under a purely voluntary, educational program.[36] At the end of the day, what is most important is that water quality is protected, and to ensure that, growers need to know how they can integrate protections into their own operations.

While we certainly support the development of – and/or coordination with existing – regional water quality management plans, individual farms must have some guidance for what those regional plans mean for their individual operations and circumstances. For example, given a particular farm's crops, water use and infrastructure, soil, hydrology, and the kinds of wellheads,

[36] *See* Staff Report, p.140 (acknowledging that under third-party coalition structures, particularly those without individual farm management plans, it is difficult for the Board to enforce requirements to implement BMPs).

recharge ponds, and other areas vulnerable to "run-in" on or adjacent to the farm's operations, what should the grower do to minimize water impacts that are economically feasible?

Alternative 2 and the Staff-Recommended Program both contain NO mechanisms to ensure that growers are able to identify exactly what they can and should do to protect water quality in their own operations most effectively. The minimal, non-certified FWQMP requirement set forth in Alternative 4, which is to be kept on the farm unless requested by the Board, would ensure that growers have exactly that – a plan to identify what they can do to protect water quality. Such FWQMPs could still utilize existing or updated regional/local management plans to help identify general practices that are priorities in each region, but by forcing each grower to engage in a thinking exercise about the conditions and needs of his/her particular farm, and encouraging each grower to seek outside technical assistance with this process, FWQMPs would ensure that the guidance is customized to individual farm conditions, rather than consisting merely of general recommendations.

The basic farm-level plans envisioned in Alternative 4 would not impose burdensome costs on individual farms, since growers would not be required to obtain certification or even submit them to the Board. (Growers would merely need to keep their farm-level plans on file to provide to the Board upon request.) Additionally, where farms are only a minimal threat and therefore not contributing to water quality degradation, such as farms in Tier 1 areas under Alternative 4, farm-level plans may be minimal or even unnecessary. In areas where irrigated agricultural discharges are contributing to water quality degradation or exceedances of water quality objectives (Tier 2 and 3 areas under Alternative 4, or parts of Tier 1 areas and all Tier 2 areas under the Staff-Recommended Program), however, these individual plans are necessary to help growers identify what they can and should do to protect water quality. In areas where agriculture is contributing to exceedances of water quality objectives for particular constituents or threatening beneficial uses (Tier 3 areas under Alternative 4 and Tier 2 areas under the Staff-Recommended Program), more in-depth individual management plans tailored to the constituent should be required.

Furthermore, any recommended program should also foresee and facilitate joint management among dischargers when management practices may need to be implemented in coordination with more than one discharger (such as constructed wetlands or combined tail water returns). Alternative 4 allows dischargers to address these regional issues through creation of a legally responsible third party (such as a joint power authority) as is currently being implemented in the Grasslands Bypass Project.

2. Provide Farm-Level Education and Assistance

A significant body of knowledge regarding BMPs is being developed by programs such as the California Department of Food and Agriculture's Fertilizer Research and Education Program (FREP), DPR's Ground Water Protection Program, NRCS, and the UC Cooperative Extension. In conjunction with a requirement for farm-level plans, therefore, an effective program must include an educational and/or technical assistance component to help transfer this knowledge to farm operators and aid them in developing their FWQMPs for their own operations. Such an educational component is included in Alternative 4. Other sources of technical educational

information/assistance could include commodity groups and local water management agencies. Using the model of the Dairy General Order, growers approved by certification programs or other approved environmental compliance assistance programs could receive a discount on program fees.

3. Provide a Feedback Mechanism (Representative Monitoring) to Ensure Management Practices are Effective

An effective program must include feedback mechanisms to ensure that the practices being implemented by growers are truly effective at protecting water quality and therefore truly constitute BMPs (also known as Best Practical Treatment and Control, or BPTC, as required under the Anti-degradation Policy). Not only is this legally required by the State Board's Anti-degradation Policy and Non-Point Source Policy, but it is also the only way to ensure that what growers are doing is truly resulting in reductions in agricultural contributions to water quality degradation and exceedances in water quality objectives. To be effective, the final program the Board adopts must: a) establish guidance for regional monitoring to ensure that it is in fact representative; and b) ensure that it is clear which areas are being represented by each monitoring site so that it is also clear which dischargers will need to implement changes in practices that are shown to be insufficient by these regional monitoring programs.

While Alternative 4 does include such measures, Alternative 2 contains no method for accomplishing this, and the Staff-Recommended Program is limited to *regional* monitoring – it does not require reporting of water quality levels on individual farms, even in vulnerable Tier 2 areas. Furthermore, the Staff-Recommended Program only requires this regional monitoring to take place in Tier 2 areas, despite the fact that many of the areas classified as Tier 1 (under the current definitions used in the Staff-Recommended Program) may also be contributing to significant water quality degradation.

C. Contain Effective Mechanisms to Ensure Accountability

1. Set Clear Standards for Compliance

One of the most critical components of an effective program, and one of our biggest concerns with the staff proposal, is that the proposed program does not even define program compliance as not contributing to exceedances in water quality objectives. Porter-Cologne requires that the Board establish effluent limitations in order to meet water quality objectives, not just ask dischargers to make some improvements. Moreover, the relevant Central Valley Basin Plans and the state Anti-Degradation Policy require that, at a minimum, irrigated agricultural waste discharges may not cause or contribute to exceedances of water quality objectives.[37] No matter which alternative the Board adopts, therefore, the Board must set a clear standard for compliance, namely, that dischargers must not be contributing to exceedances of water quality objectives.

[37]Resolution 68-16. *See also* SWRCB Order Nos. WQ 81-5; WQ 2000-07.

2. Ensure the Board has Effective Enforcement Mechanisms

Enforceability makes all the difference between an effective program and a program that is essentially voluntary. In fact, the Staff Report explicitly acknowledges the difficulty that the Board has already experienced with using third-party coalitions, rather than utilizing legally-responsible third-party entities, as outlined in Alternative 4.[38] Alternative 2 does not include sufficient enforcement mechanisms, as it relies on the same ineffective coalition structure currently in place, or an even less accountable structure of existing water planning groups that lack any ability to compel individual dischargers to implement management practices or participate in monitoring programs.

Although we still believe that Alternative 4 is the most effective balance, the Staff-Recommended Program may be sufficient if it is amended to: 1) include a Prohibition of Discharge for non-enrollment; 2) require dischargers to enroll directly with the Board; and 3) require that coalitions demonstrate sufficient transparency as a condition of Board approval to represent groups of individual growers. Transparency must include not only the requirement that coalitions provide the Board with information regarding individual member grower non-compliance and the coalition's communication of program requirements with member growers, but also the requirement that coalitions provide information and transparency regarding data that is gathered, both to the general public and to the Board upon request. Without such accountability mechanisms, we will continue to repeat the mistakes of the current program.

Secondly, regional monitoring must be conducted by a third party that is not paid directly by dischargers. Structuring the monitoring program in this way will avoid conflicts of interest, ensure that this monitoring program can be more easily integrated with other monitoring programs the Board is undertaking or may undertake, and ensure high-quality, consistent data. The costs of the monitoring program should be built into the discharger fees, and the Board should contract with a neutral, scientific third party such as UC Davis or USGS to design and implement a regional monitoring program. Alternative 4 includes this component, which, as mentioned above, furthers Objectives 4 and 5 of promoting coordination with other existing monitoring programs and the establishment of a regional monitoring program that can be easily integrated with other discharger programs administered by the Board. Alternative 2 is missing this requirement all together. And because the Staff-Recommended Program does not utilize neutral expert third parties, it does not provide sufficient safeguards to ensure effective, objective, reliable, high-quality regional monitoring programs.

D. Clean-Up and/or Mitigate Contamination

One of the components not addressed adequately in any of the Alternatives is the problem of legacy groundwater pollution that has already occurred due in large part to agricultural pollution, including nitrate and pesticide contamination,[39] nor does it try to require mitigation for continued

[38] *See* Staff Report, pp.116-117.

[39] The ECR's main groundwater quality findings explicitly find that legacy pesticides will need to be addressed during the development of the long-term irrigated lands regulatory program. *See* Staff Report, p.20.

degradation or continued contribution to exceedances of water quality objectives. As the staff report indicates, at least $20.5 to $47.5 million are needed just to fund immediate solutions for community water systems impacted by nitrate contamination due at least in part to agricultural contributions.[40] As described below, this is a significant underestimate of the true costs, as it does not include any non-community water systems, such as schools, or any domestic wells, nor does it include any future impacts due to continued degradation which is expected to occur as a result of the program, or treatment costs for both nitrate and pesticides. Unfortunately, there is limited funding for these costs and the long-term ILRP should include a proposal for how this problem will be cleaned up and/or mitigated through such projects.

One proposal is for the Executive Officer to develop a Supplemental Environmental Program (SEP) that could be funded through compliance order contributions after enforcement actions and supplemented by money through the Clean Up and Abatement Account that could provide funding for mitigation of contamination and/or clean-up projects such as those that would rehabilitate wells, treat water sources, or otherwise secure a safe source of water for community drinking water systems and domestic wells that have been impacted by nitrate and pesticide contamination. One benefit of such a program is that it could not only be funded through enforcement actions with this program, but also utilize contributions from enforcement actions from other regulatory programs where dischargers have impacted nutrient and pesticide levels, such as dairies, other CAFOs, and sewer treatment plants. Furthermore, it could help ensure that those dischargers continuing to contribute to the exceedance of water quality objectives could help mitigate their impacts on beneficial uses.

We believe that including a SEP clean-up/mitigation program as part of the long-term IRLP would significantly further the goals and objectives of the program:

- it would provide a means of funding programs to restore water quality (in furtherance of Goal 1 and Objective 1);
- it would provide an economic incentive not to exceed water quality objectives and comply with the program, while only burdening those bad actors that require enforcement actions (in furtherance of Goals 2 and 3 and Objectives 2 and 3);
- it would provide a source of funding to help ensure that even with continued degradation, communities and residents can access funds to help secure safe drinking water sources (in furtherance of Goal 4 and Objective 2);
- it can be coordinated easily with other discharge programs (in furtherance of Objective 4); and
- it would supplement and help promote coordination with California Department of Public Health (CDPH) and U.S. Department of Agriculture (USDA) rural drinking water

[40]Staff Report, pp.50-52.

funding programs by providing a source of funding for those projects or aspects not otherwise covered by their funding sources (in furtherance of Objective 5).

While such a program will not solve all of the problems of legacy pollution and unsafe drinking water in the Central Valley, we believe it will be an important interim step towards developing a truly comprehensive program and can serve as a model or pilot for how a more comprehensive system might work.

Additionally, the Executive Officer or Board should look for ways to assert their authority to ensure that continued contributions to water quality exceedances impacting domestic drinking water supplies are mitigated. Pursuant to Water Code Section 13267, the Executive Officer may require dischargers to conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, pursuant to Water Code Section 13304, the Board may require dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners. These provisions should be utilized where appropriate.

VI. Comments on the Staff-Recommended Program

If, despite the fact that Alternative 4 is the clearly superior alternative, staff nevertheless chooses to move forward with its proposed program, we suggest that the following issues must be improved or clarified in order to ensure a truly effective program that meets all legal requirements and implements the program goals and objectives.

It should be noted, however, that the overall economic impact of the Staff-Recommended Program is worse than Alternative 4 in that it will result in overall job loss, rather than jobs gained, and that the savings from eliminating key components of Alternative 4 (including not requiring sampling of existing water quality and not requiring individual farm management plans) do not seem to result in any significant difference in the economic impact towards accomplishing Goal 3, but will result in significant loss in effectiveness towards Goals 1,2 & 4 of improving or protecting water quality and preventing impacts on community water supplies. Furthermore, the alternatives failed to show the varied water quality benefits by alternative, even though the economic analysis did have a clear cost differential by alternative. Just as economic impact is important to an assessment of an alternative relative to the recommended program, so to is the water quality benefits of each alternative relative to the staff-recommended program. The "Estimated Annualized Costs" show a cost differential on alternatives based in part on management practices, which will have a directly beneficial relationship with water quality. If the implementation of practices varies in cost (in particular in Alternative 5), then the water quality benefits must vary as well. Additional cost variables, like greater monitoring and administration can also have a positive effect on water quality. In order to provide the board with the tools to assess if the staff-recommended alternative is the preferred alternative, it is necessary to truly know the water quality benefits of each alternatives. If the presumption is that

the same goal will be attained by Alternatives 2, 3, and 4 but just in different time frames, then those varied timelines should be delineated as well.

A. The Lead Entity[41]

1. Ensuring Enforceability

Enforceability makes all the difference between an effective program and a program that is essentially voluntary, and is one of the elements required by the State Board's Non-point Source Policy.[42] Staff acknowledge the difficulty that the Board has already experienced with using third-party coalitions, rather than utilizing legally responsible third party entities (as proposed in Alternative 4).[43] Because coalition groups are not discharging waste, the Central Valley Water Board has limited authority to enforce program requirements directly. Program enforcement options are limited to direct actions upon irrigated agricultural operators, or revoking Water Board coalition approval. Most coalition groups do not have regulatory authority over members to require implementation of water quality management practices. As a result, the same difficulties experienced over the last five years with coalition implementation will continue into the long-term program under the Staff-Recommended Program.

While we are not clear why staff feel that it is preferable to continue to administer this program though third parties not directly accountable to the Board, we agree that it is critical that the long-term program enroll dischargers directly with the Board and incorporate transparency requirements before approval of any coalition representation of individual growers, including not only requiring coalitions to provide the Board with information regarding non-compliance, and requiring transparency and communication of requirements with growers, but also providing information and transparency regarding data gathered to the public or the Board upon request. Without accountability mechanisms we will continue to repeat the mistakes of the current program.

a. Public Accountability

The delegation of program elements to third party entities reduces the transparency of the program. To counter that problem, we suggest the following:

- Monitoring data submitted by coalitions should be made available in a publicly accessible form (for instance on Geotracker or other state databases) within 30 days of submission to the Board.
- The Board should establish a process for public review of and comment on management plans prior to approval.
- Annual reports submitted by the coalitions must contain detailed information about implementation of their management plans and be made publicly available at the time of

[41]Staff Report § X(B)(5), pp.147-49.
[42]Staff Report, p.55.
[43]*See* Staff Report, pp.116-117.

their submission to the Board. Furthermore, supporting data should be made available to the public or the Board upon request.

- Where the Board is asked to approve an existing plan – such as an existing groundwater management plan or an Integrated Regional Water Management Plan – the same requirements for public review and approval should apply.

These all seem consistent with the cost estimates of the Staff-Recommended Program, but should be made explicit in the description of the final long-term program adopted by the Board.

b. Failure to Enroll in ILRP

Full enrollment is a critical piece of an effective program and has a significant impact on water quality. Our understanding is that enrollment in the current coalitions varies widely. As the number of growers subject to this program increases with the inclusion of groundwater, so will the problem of full enrollment. Therefore, it is critical that the Board issue a Prohibition of Waste Discharge for all dischargers not enrolled in the program after a reasonable time period. After that time period, growers not enrolled should be issued an enforcement action and required to file a Report of Waste Discharge preparatory to issuance of an individual permit.

c. Inspections

In order to ensure that individual farms comply with the coalitions' regional water quality management plans, and in particular, implement required management practices, the Board or its contractor must conduct surprise inspections of 5% of growers, including annual inspections of growers within each coalition. This inspection requirement is already included in the DPEIR in Alternatives 3, 4, and 5 and should be consistent with the cost estimate for the Staff-Recommended Program. Inspections should be prioritized in ultra-high priority (Tier 2) areas that have been deemed extremely vulnerable. If, in addition to the Board inspections, the coalitions conduct their own inspections to verify the data that they are reporting, the Board must require that these inspections be without forewarning, and individual coalition employees should be subject to a significant civil penalty and removal from their position if it is discovered that they have forewarned farm operators of pending inspections.

d. Consequences for Non-Compliance

Existing law clearly establishes that noncompliant operations are to be held civilly liable for their violations. Under the California Water Code Section 13268, operations that have failed to furnish technical or monitoring program reports required by the Regional Board as part of a waste discharge requirement are guilty of a misdemeanor and may be held civilly liable by the Regional Board for a fine of up to $1,000 per day, for each day that the violation continues. California Water Code Section 13350 provides that any person who discharges waste in violation of WDR requirements shall be held civilly liable and may be subject to a fine imposed by the Regional Board of up to $5,000 per day, for each day that the violation continues. Imposition of civil liability on dischargers individually (including all dischargers covered by a coalition failing

to meet program requirements) should be explicitly included as a consequence in consideration of Key Element 5 of the State Board's Non-Point Source Policy.[44]

2. **Clarifying Coalition Responsibilities**

The coalition's main role is to facilitate communication between the Board and individual dischargers. In addition, the coalition should help disseminate best practices in order to assist dischargers with mitigating water pollution. In most cases, these best practices have already been developed by third-party groups (e.g. NRCS, UC Cooperative Extension, university researchers, commodity groups, etc.); the role of the coalitions is simply to facilitate the transfer of this information to dischargers and help identify which practices might be most appropriate for growers in the region. Unfortunately, there is almost no reference to this role for the coalitions in the Staff-Recommended Program.[45] The Staff-Recommended Program does not require a plan for how BMPs will be disseminated, or even a list of approved sources of BMP research and assistance from which the coalitions can draw.

To further this goal, the Staff-Recommended Program should incorporate a requirement for education and incentives to utilize technical assistance providers. This kind of a requirement is included in Alternative 4 but does not seem to be included in the Staff-Recommended Program. Including this requirement will further the goals of Objectives 4 and 5 to promote coordination with other Central Valley Water Board programs and other regulatory and non-regulatory agencies.[46]

Furthermore, using the model of the Dairy General Order, growers approved by certification programs or other approved environmental compliance assistance programs could receive a discount on program fees as it would reduce the administrative burden for coalitions or the Board to work with and oversee individual growers. Such a program would further the goals and objectives of providing incentives to reduce and minimize discharges and make implementation of BMPs more effective.

Although we do not believe the coalitions should play a role in the regional monitoring program laid out in the Staff-Recommended Program (see below), as part of its role in facilitating identification and implementation of BMPs, coalitions should be encouraged to facilitate monitoring at the individual farm level to assist growers in designing and implementing BMPs (e.g. sampling for nutrient levels as part of nutrient management plans). Dischargers may wish to undertake monitoring beyond what is required under the ILRP in order to gauge progress and impacts from changes to BMPs. Coalitions are in a position to assist with this internal technical monitoring, but this is separate and apart from the design and implementation of a regional monitoring program to gauge the effectiveness of the program implementation (again, see below.)

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[44] *See* Staff Report, p.167.

[45] The Staff Report only makes passing reference to this role on p.147 under "Lead Entity": "Work with the Central Valley Water Board to inform growers of program requirements, provide coordination to ensure that water quality concerns are addressed, and provide informational materials on potential environmental impacts of water quality management practices."

[46] Staff Report, p.93.

3. **Removing the Monitoring and Reporting Program from Coalition Jurisdiction**

We understand the utility of working within the existing coalition structure given the limited resources available to the Board and staff. That said, we are very concerned about turning over the administration and reporting of the monitoring program to coalition entities paid directly by the operations whose water they are monitoring. In the staff's proposal, very little direct communication takes place between the Board and the individual dischargers; most information, including suggestions on best practices and the results of monitoring tests, is communicated between the coalitions and the dischargers and then reported by the coalitions to the Board. This puts the coalitions in a position of effectively enforcing the program requirements because they are the first point of contact with the dischargers, even though they have no actual regulatory authority over members to require implementation.[47] This is problematic to say the least. It is particularly problematic given that the coalitions are paid directly by the dischargers for this service, a major conflict of interest, and are directly accountable to their discharger-members.[48] At the very least, the monitoring program -- essentially a way to gauge how well the ILRP is working -- should be administered by an entity accountable to the public.

We agree that all stakeholders need better data, collected in a cost-efficient manner, to evaluate what is working and what is not and to ensure that the operations can respond in a timely way to that data in order to mitigate contamination. But this can and must be accomplished in a way that does not create a direct financial connection between the operations and the coalition or other third-party administrators of the monitoring program. What is the coalition's interest in reporting data showing continued contamination, especially if the Board does not directly review the results of individual monitoring?

If the Board itself cannot administer this program, at the very least the direct financial connection between the dischargers and the monitoring program administrator must be broken. Rather than having the program administered by a third party paid by the dischargers, participating dischargers should pay a higher fee to the Board as part of their permit fee and the additional money should be used to pay a neutral third party hired by the Board to administer the program. This will ensure that the program administrator is accountable to the public, not to entities with a financial stake in the outcomes of the monitoring and reporting.

Having a neutral third party do the regional monitoring will facilitate the Board's goal of eventually establishing a regional monitoring program that will cover all of its programs, because this program can be more easily integrated with other programs. All programs could be feeding into the same regional monitoring program administered by the same publicly-accountable party. This vision for the monitoring program meets the goals of Objectives 4 and 5 to coordinate with state and regional agencies.

Finally, this administrative structure will protect against problems with quality control on the monitoring data. Alternative 4 accomplishes this by promoting the use of third parties, such as UC Davis or USGS to design and conduct the regional monitoring program with costs being

[47]Staff Report, p.9.
[48]Staff Report, p.147.

incorporated into the discharger fees and having the Board contract for those services directly. (See discussion above regarding Alternative 4).

B. Regulatory Requirements[49]

1. Improving Tier Classification and Collection of Basic Baseline Data

In order to develop a robust tiering system and track progress over time, basic data must be compiled both initially as a baseline and through implementation of the program. The Staff-Recommended Program proposes to use existing water quality data from Basin Plans, GAMA, the Department of Pesticide Regulations and other sources to develop the tiering system. This data, while an important piece of the puzzle, provides incomplete information on discharge potential and the impact of agricultural practices on water resources, and therefore must be supplemented.

a. Collect and Incorporate Data on Water Quality in Shallow Domestic Wells in Areas Without Sufficient Public Data.

Many rural agricultural areas may not have publicly available data on nutrients and pesticides because there may not be public drinking water systems in the immediate area. However, there are likely domestic wells in those agricultural areas and therefore all farms should be required to do an initial and periodic sampling of water quality in existing wells, including domestic wells on or nearby the property.

b. Collect and Incorporate Information on Practices and Pesticide and Fertilizer Use to Identify Areas of Higher Risk.

As noted in the Staff Report, water quality detections in public drinking water supply wells, which supplies most of the available groundwater data, likely underestimates the actual area of impact because they sample deeper waters below shallow, nitrate-affected waters or sample wells with long screen intervals.[50] The indicator of fertilizer and pesticide use (along with vulnerability maps as proposed in Alternative 4), rather than water quality data (along with vulnerability maps as in the Staff-Recommended Program), is a better indicator of actual areas of impact from agriculture.[51] Furthermore, the use of this data would further Objectives 2 & 3 of the program by providing incentives for agricultural operations to institute management practices and minimize waste by tying tier designation to actual use, rather than general deep-water well data that may be less immediately tied to growers' practices.

c . Vulnerable Areas Should Include Recharge Areas, Dry and Improperly Abandoned or Sealed Wells, and Other Pathways for "Run-In" Contamination.

[49]Staff Report § X(B)(6), pp.149-156.

[50]Staff Report, p.47.

[51]*See* Staff Report, p.47; *see also*

Burow, K.R., and Green, C.T., 2008, Spatial and temporal trends in nitrate concentration in the Eastern San Joaquin Valley Regional Aquifer and implications for nitrogen fertilizer management: California Plant and Soil Conference: Conservation of Agricultural Resources, February 5 & 6, 2008, Visalia, California, p. 47-52.

Nutrient and pesticide contaminants from agricultural dischargers can enter groundwater through (1) run-in, and (2) leaching.[52] While the groundwater vulnerability maps help identify those areas most likely to be impacted by leaching, run-in is not incorporated. Run-in is likely to impact areas with fractured bedrock, sinkholes, or poorly constructed wells.[53] However, nowhere does the staff alternative propose to collect information to identify those areas. Characterization of those areas susceptible to "run-in" should also be included as a requirement of reporting requirements and those areas should be classified as Tier 2 when appropriate.

2. Ensuring Tiers Reflect High and Low Priority Areas

The Tiers should first and foremost ensure that requirements are focused on high priority areas where agriculture is contributing to exceedances of water quality objectives, but also should ensure compliance with the Basin Plans by also prioritizing those areas where agriculture is contributing to significant degradation. As currently articulated, Tier 1 includes those in the latter category, where water quality is not yet exceeded and it is not in a vulnerable hydrologic area, but still may be in an area that is just below the water quality objective where agricultural contributions to degradation still may be significant. In order to address this issue, Tier 2 should include those areas exceeding the Action Level (50% of the MCL) for those contaminants attributable to agriculture operations, rather than just those areas exceeding MCL.

Alternatively the staff could approach this issue by limiting Tier 1 to growers who can definitively show that they are not contributing to the degradation of California's waters as defined by the California Water Code, and leave those that are contributing to degradation in Tier 2. Tier 1 growers should be allowed to show that they are not contributing to degradation by demonstrating effective implementation of the following practices: elimination of all tail water; use of integrated pest management techniques and no use of pesticides identified as having a high potential to degrade/pollute surface or groundwater; implementation of a nutrient management plan certified by an appropriate professional certification to be protective of water quality; and implementation of storm water control measures to minimize erosion and sediment deposition using best practicable treatment or control.

3. Requirements for Tier 1 Areas

As discussed above, Tier 1 growers should be limited to those who can definitively show that they are not contributing to the degradation of California's waters as defined by the California Water Code. However a widespread lack of data makes trend analysis (and therefore anti-degradation analysis) problematic in some cases. We recommend that those operations that cannot show that they are not contributing to degradation of surface or groundwater should be classified as Tier 2 operations until such data is forthcoming. If staff chooses not to do this, then it must assume that a number of Tier 1 operations are contributing to degradation and therefore subject to greater requirements to protect water quality. At a minimum, therefore, Tier 1 operators under the current definition or those operators that are contributing to degradation

[52]Staff Report, p.45.
[53]Staff Report, p.45.

should be required to prepare and implement a farm water quality management plan to control sources as described in Alternative 4.[54] Staff could avoid having all Tier 1 growers subject to FWQMP requirements by collecting basic data from growers sufficient to indicate whether or not they are contributing to groundwater degradation (not just exceedances), as discussed in the section above.

By the same token, all growers in the program, including Tier 1 growers, should be required to report their on-farm fertilizer application and report periodic water quality sampling results. These results should be included in the first and 5-year reports. There is precedent for this requirement, including DPR's requirement for full pesticide use reporting, and the Dairy program requirements for manure application.

4. Requirements for Tier 2 Areas

Tier 2 is currently defined as very vulnerable areas or areas that are already exceeding water quality objectives. In these cases, much more intervention is needed to ensure that changes are made that will result in ensuring that agricultural discharges are not contributing to exceedances of water quality objectives. In order to meet the requirements for compliance with Porter-Cologne and the State Board's Anti-Degradation Policy, the Board must have a means of ensuring BMPs/BPTCs are implemented at the farm level. In Tier 2 areas, which the Staff-Recommended Program currently limits to those areas where agriculture is (or is likely to be) contributing to exceedances of water quality objectives, the Board must at the very least require individual water quality management plans in order to provide a mechanism for enforcement with individual dischargers, or hold all dischargers covered by a Regional Water Management Plan liable for failure to achieve compliance. The latter option would not be possible under the coalition structure proposed in the Staff-Recommended Program without FWQMPs (although it would be possible under Alternative 4's proposed structure).[55] Therefore, if staff wants to use a coalition structure, it must at a minimum require individual farm water quality management plans for Tier 2 dischargers, in addition to any Regional Water Management Plan Requirements.

a. Individual Farm Water Quality Management Plans for all Tier 2 Dischargers

The current Staff-Recommended Program states that individual water quality management plans would be put into place where regional plans have been ineffective, but it is unclear how farms would be chosen for individual plans or why all farms in Tier 2 should not be required to do individual farm water quality management plans given that Tier 2 already currently limited to those areas with exceedances of water quality objectives where agriculture is a source, or at high risk of having agricultural sources cause exceedances. Staff appears to be weighing the economic considerations more heavily than the environmental ones or even legal obligations to achieve water quality objectives or the ability of the Board to reasonably enforce the program.

FWQMPs for Tier 2 should contain, at a minimum, identification of practices that are currently being or will be implemented to address irrigation management, pesticide management, nutrient

[54] *See* DPEIR, p.3-21.

[55] *See* Staff Report, p.140 (discussing individual and regional water management plans and implications for enforcement with dischargers).

management and erosion control to protect water quality. Plans should account for specific nitrate concentrations in irrigation water and soil in determining agronomic nitrogen application rates to ensure that current discharges to groundwater do not further degrade groundwater. Farm Plan nutrient management plan element must be certified by professional to be protective of water quality. Additionally, plans should contain a schedule for implementation of practices. Lists of water quality protection practices are available for several sources, including the University of California farm plan template available from the University of California and on-line at http://anrcatalogue.ucdavis.edu/merchant.ihtml?pid=5604&step=4.

Management practices must be designed and implemented to achieve improvements in water quality and compliance with the conditions in the Waivers and the State and Regional Board Plans and Policies. The plan must identify future actions necessary to improve and protect water quality.

b. Regional Groundwater Quality Management Plans (GQMPs)

Regional Groundwater Quality Management Plans (GQMPs) required in the Staff-Recommended Program should include the following clarifications for the current elements basic elements, as well as a number of additional requirements as follows:

Required Element #1: Identify areas covered by the plan

Particularly if regional monitoring is conducted by coalitions themselves, GQMPs should not only clearly identify all areas associated with constituents of concern addressed by the management plans but also explicitly link those areas to a specific representative area included in the regional monitoring program. (See comments in the Monitoring section regarding the importance of ensuring that regional monitoring programs actually are designed to be representative of the groundwater management areas for the constituents of concern.)

Required Element #2: Summarizing and Assessing Data

In summarizing and assessing water quality data generated by other entities that are available to the coalition at the outset, the coalition should be required to specify in the GQMP the detected *levels* of those constituents which the coalition has identified as "constituents of concern" in the region pursuant to Element #1. Thus, for example, if the coalition identifies nitrate as a constituent of concern in the GQMP, and the coalition has data at its disposal showing that wells in the region have detected nitrate at levels approaching the Maximum Contaminant Level (MCL), the coalition should indicate as much in the GQMP.

Required Element #3: Identifying Contamination Sources

In identifying the potential sources of water quality problems, including sites and management practices, abandoned wells in the region should be mapped out, as these constitute a significant potential vector of contamination absent wellhead protection measures. Furthermore, in order to promote coordination with Local Groundwater Quality Management Plans (consistent with Objective 5) GQMPs should be required to identify wellhead protection areas and recharge areas

as well as areas in need of wellhead abandonment that may be pathways for contamination via "run-in" and leaching.[56]

Required Element #4: Identifying Good Management Practices

GQMPs, at a minimum, should include the following management practices to address constituents of concern:

1. Practices to reduce pesticide and fertilizer use (i.e., Integrated Pest Management and nutrient management)
2. Measures to prevent groundwater wells from serving as a conduit for groundwater contamination, including
    a. Backflow prevention measures to prevent groundwater contamination for dischargers that fertigate, chemigate or otherwise apply chemicals through an irrigation system connected to a groundwater well;
    b. Destruction of all abandoned wells, test holes or exploration holes, as defined by DWR bulletin 74-81 as revised in 1988. in such a manner that they will not provide a conduit for mixing or otherwise transferring groundwater between permeable zones or aquifers;
3. Construction and maintenance of ponds, reservoirs or other water containment structures to avoid leaching of waste to groundwater
4. Irrigation practices that reduce leaching of contaminants below the root zone.

Required Element #5: Evaluation of Management Plan Effectiveness

The monitoring program adopted as part of the Groundwater Management Plan should be designed to ascertain the success of the adopted BMPs. As discussed below, the Board needs to provide as a basic guideline the requirement that regional monitoring be representative and that those farms being represented by the selected monitoring sites be bound by the same requirements to implement BMPs as the actual monitored site, where monitoring reveals water quality degradation or exceedances in water quality objectives.

Required Element #6: Description of Outreach to Growers

The coalition should help disseminate best practices in order to assist dischargers with mitigating water pollution. In most cases, these best practices have already been developed by third-party groups, including university researchers; the role of the coalitions is simply to facilitate the transfer of this information to dischargers. To further this goal, the GQMPs should require not just a description of outreach on the water quality issues in the area, but also a plan for how BMPs will be disseminated and a list of approved sources of BMP research and contacts of assistance providers.

Required Element #7: Tracking Management Practices

[56]*See* Staff Report, pp.88-89 (containing a description of AB 3030 recommended components of local groundwater management plans).

The use and efficacy of agreed-upon BMPS is a critical required element of the annual report to the Board. The report should specifically cite which growers are employing agreed upon or recommended BMPs and which are not. This should include identification of Tier 2 growers without FWQMPs.

Required Elements #8: Monitoring Plans to Track Changes in Water Quality

As stated above, we believe that a regional monitoring program is more effectively designed and implemented by a third party that is not paid directly by the dischargers. In general, however, we agree with the current description in this element of the contents of such a plan, although feel it is vital that the program be required to be representative of all growers in management plan areas and that each representative cite be explicitly linked with the areas of which it is representative. (See our comments on the monitoring section below as well as our comments regarding implementation of regional monitoring by coalitions.)

Required Element #9: Schedules and Milestone

See our comments below regarding compliance schedules.

Missing Educational Requirement / Assistance to farmers on BMPs

As discussed above, the Staff-Recommended Program should incorporate a requirement for growers to complete a set minimum hours of education on water protection practices, which could include utilizing technical assistance providers, such as UC Cooperative Extension, NRCS, etc. GQMPs should include a list of educational opportunities, contact information of technical assistance providers, and a list of dischargers that have not complied with this requirement.

Missing Mitigation Reporting

In addition to the current requirements for GQMPs, an element should be added to require reporting of mitigation actions undertaken to address impacts to sources of domestic water supplies by agricultural discharges. Such actions may include the sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater, as well as contributions to the provision of alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners.

5. Requirements for Growers Who Do Not Join Coalitions

Growers should have the option not to join a coalition, particularly if they already implement a full suite of BMPs recommended for their particular crop selection and soil type. In this case, individual WDRs for these growers should require the development of individual farm water quality management plans that are certified by a qualified third party. For organic farmers, this requirement could potentially be fulfilled through their current certification process, so long as they can show implementation of nutrient management practices (i.e. nutrient budgeting), measures to prevent groundwater wells from serving as a conduit for groundwater contamination, including backflow prevention measures to prevent groundwater contamination for dischargers that fertigate, chemigate or otherwise apply chemicals through an irrigation

system connected to a groundwater well, destruction of all abandoned wells, test holes or exploration holes, as defined by DWR bulletin 74-81 as revised in 1988. in such a manner that they will not provide a conduit for mixing or otherwise transferring groundwater between permeable zones or aquifers; construction and maintenance of ponds, reservoirs or other water containment structures to avoid leaching of waste to groundwater, and use of irrigation practices that reduce leaching of contaminants below the root zone. However, such operations should also be required to sample existing wells on the property for any constituents of concern and provide periodic reports to the Board to ensure that water quality objectives are being met.

C. Monitoring Provisions[57]

1. All Monitoring

a. The Monitoring Sites Selected by Coalitions Must Be Representative and Binding on All Represented Growers

We recognize and acknowledge that certain monitoring practices, such as the installation of monitoring wells, can be quite expensive and burdensome. Since this reality invariably limits the amount of monitoring that can be conducted pursuant to this program, it is that much more important that the monitoring that *is* conducted be meaningful and further the goals and objectives of the ILRP. Although the Board may very well need to develop more specifically-tailored monitoring requirements in the individual orders, it should at minimum establish in this program-wide document the general requirement that third party coalitions select locations for both "regional monitoring" and "[t]argeted site-specific studies" that are in fact representative. The Board itself need not identify the parameters by which the individual coalitions determine representativeness, but it should establish this requirement as a guiding consideration for the coalitions in selecting monitoring sites. The Board can impose this requirement on coalitions as a general rule without micromanaging the coalitions' siting decisions. If the Board does not include language in the ILRP establishing this basic requirement, such an omission might hinder its ability to impose such a requirement in individual enforcement actions once the program is underway.

Such a requirement is quite simply common sense and costs the Board nothing. Without it, coalitions, at least as they are currently structured, wherein they are directly funded by growers, have a structural incentive to select monitoring sites with the least likelihood of detecting water quality problems (*e.g.*, sites up gradient of discharges), so as to avoid the imposition of draconian management practice requirements on the growers that fund their existence. Unrepresentative monitoring is truly a waste of everyone's time and money and does not further the goals and objectives of the ILRP, including Objective 2, which is to "encourage implementation of management practices that improve water quality in keeping with the first objective [*i.e.*, ensuring that water quality objectives are met] without jeopardizing the economic viability [of agriculture] . . . ."[58]

[57]Staff Report § X(B)(7), pp.156-58.
[58]Staff Report, p.93.

Additionally, the ILRP should establish that if water quality problems are detected at the representative monitored site, all operations represented by that site must implement the changes in management practices deemed necessary at the monitored site.[59] Failure to include this requirement would undermine the entire purpose of having a third party lead entity in the first place (namely, to maximize administrative resources while still achieving maximum valley-wide compliance with ILRP requirements.)

To facilitate Board oversight of this requirement, water quality management plans should be required to include a provision specifying the parameters by which the coalition selects representative sites for monitoring and identifying which areas and farms are being represented by each monitoring site.

b. Sufficient Data

The sites a coalition selects for "regional" monitoring must not only be representative of those areas not being directly monitored, but also temporally and spatially sufficient in order to characterize water quality in the region adequately. Again, the Board can impose this requirement on coalitions as a general rule without micromanaging the coalitions' siting decisions.

2. Low-Priority Groundwater Monitoring (Tier 1 Areas)

The Staff-Recommended Program needs to be clear that in Tier 1 areas, growers will participate in regional monitoring every five years, and that this regional monitoring will include individual grower reporting of management practices, including rates of fertilizer and pesticide application. As part of this regional monitoring every five years, all growers also must be required to sample all existing wells on their farms for nitrate, at minimum. This requirement is neither particularly onerous nor expensive (*e.g.*, it generally costs about $40 to sample for nitrate.) Without this basic information generated every five years, the ILRP will never generate meaningful information from Tier 1 areas and will perpetuate the cycle of information gaps.

3. High-Priority Groundwater Monitoring (Tier 2 Areas)

In order to ensure that groundwater monitoring is effective in Tier 2 areas, a meaningful baseline must be established. In order to establish this baseline, all growers in Tier 2 areas must be required to sample all existing wells on their farms for nitrate, at minimum. This requirement is neither particularly onerous nor expensive (*e.g.*, it generally costs about $40 to sample for nitrate.) In addition, growers must provide a description of the groundwater hydrology for the aquifers from which they pump water and to which they discharge wastes.

[59]The issue of identifying represented farms is alluded to in Appendix D of the Staff Report, in the first element in the list of required elements for GQMPs, but the current language does not go far enough. First, it appears limited to monitored sites where there are "exceedances." Staff Report, p.D-3. Second, it suggests that not all sites will in fact be representative. *See id.* Third, it does not require that a coalition identify the parameters by which it determines representativeness or impose resulting management practice changes on all represented farms. *See id.*

D. Time Schedule for Compliance[60]

1. Defining What Constitutes "Compliance"

Porter-Cologne requires the Board to comply with applicable basin plans when adopting the long-term ILRP.[61] The relevant basin plans for the Central Valley are (1) the Water Quality Control Plan for the Sacramento and San Joaquin River Basins and (2) the Water Quality Control Plan for the Tulare Lake Basin.[62] These basin plans establish water quality objectives (WQOs) for various constituents, including nitrates and pesticides, which are legally-enforceable water quality standards.[63]

For all water resources in the Central Valley that include drinking water as a designated beneficial use, the basin plans establish numerical WQOs for nitrates and pesticides that are linked to the maximum contaminant levels (MCLs) specified in Title 22, Chapter 15 of the California Code of Regulations.[64] In other words, the WQO for each of these constituents in both basin plans is that the water resource shall not contain concentrations of the constituent in excess of that constituent's state MCL.

As currently proposed by Board staff, the long-term ILRP will serve as an overarching framework that will guide the Board in its subsequent adoption of eight to twelve general orders, either in the form of waste discharge requirements (WDRs) or conditional waivers.[65] These WDRs and conditional waivers will not just serve as implementation mechanisms for the long-term ILRP, however; they are also the primary vehicles for implementing the basin plans with respect to irrigated agriculture.[66] In other words, the subsequent general orders are the mechanisms for bringing irrigated agriculture into compliance with the water quality objectives established in the basin plans. In fact, Porter-Cologne explicitly directs the Board, when issuing

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[60]Staff Report § X(B)(8), pp.158-160.

[61]*See* California Water Code (CWC) § 13247 ("State offices, departments, and *boards, in carrying out activities which may affect water quality, shall comply with water quality control plans* approved or adopted by the state board unless otherwise directed or authorized by statute[.] . . .") (emphasis added).

[62]*See* California Environmental Protection Agency, Central Valley Regional Water Quality Control Board, Basin Planning, *at* http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/ (last visited September 15, 2010).

[63]*See* CWC § 13247.

[64]California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th ed. (September 2009) (*hereinafter* SSJR Basin Plan), p.III-3.00 (WQO for "Chemical Constituents" in surface water) *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/; *id.* at p.III-6.00 (WQO for Pesticides in surface water); *id.* at p.III-10.00 (WQO for "Chemical Constituents in groundwater); California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Tulare Lake Basin, 2d ed. (January 2004) (*hereinafter* TL Basin Plan), pp.III-3 to III-4 (WQOs for "Chemical Constituents" and Pesticides in surface water), *available at* http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/; *id*. at p.III-7 (WQO for "Chemical Constituents" in groundwater).

[65]Staff Report, pp.144-146.

[66]*See* CWC §13263(a) (WDRs "shall implement any relevant water quality control plans"); CWC § 13242(a) (the basin plan's implementation program must include "actions" that are necessary to achieve water quality objectives); SSJR Basin Plan, p.III-2.00 ("[Water quality] objectives are to be achieved primarily through the adoption of waste discharge requirements . . . ."); TL Basin Plan, p.III-2 (same).

its subsequent WDRs, to include requirements in those WDRs "implement[ing]" the relevant basin plans and to "take into consideration" both "the beneficial uses to be protected[]" and "the water quality objectives reasonably required for that purpose[.]"[67] Likewise, if the Board opts to issue a conditional waiver in lieu of a WDR, both the waiver and its conditions must be "consistent with any applicable [basin] plan . . . ."[68] If the long-term ILRP and its subsequent general orders do not require irrigated agriculture to comply fully with the water quality objectives established in the basin plan, essentially nothing will. Such a program would directly undermine the basin plans, in violation of Sections 13247, 13263, and 13269 of the California Water Code.

Furthermore, the State Water Resources Control Board (the State Board) has adopted a Policy for Implementation and Enforcement of the Nonpoint Sources of Pollution Control Program (NPS Policy) that requires the ILRP to "promote attainment of water quality objectives."[69] Irrigated agricultural waste discharges to state waters constitute a form of nonpoint source pollution, so the NPS Policy requires that the implementation orders (the general WDRs and/or conditional waivers) address irrigated agricultural discharges "in a manner that *achieves* and maintains *water quality objectives* . . . ."[70] Thus, a long-term ILRP that does not define program compliance as compliance with water quality objectives also violates Key Element 1 of the State Board's NPS Policy.

As currently drafted, staff's proposed long-term ILRP does not require full compliance with water quality objectives. Instead, staff proposes to define compliance with the program as "demonstrated *improvement in water quality* or *reduction in discharge*" or "documented *implementation of management practices*," among other things.[71] Each of these standards falls far short of meeting WQOs, which are the basin plans' mandatory, enforceable, numeric water quality standards. We strongly recommend that staff revise this aspect of its proposed program to define an individual grower's compliance with the long-term ILRP as compliance with the basin plan, or, stated differently, to define compliance as not contributing to exceedances in WQOs.

Not only is there explicit legal authority for making this change, but it also makes sense from a policy standpoint. The Board has already incorporated considerations of technical and economic feasibility for dischargers into the establishment of WQOs in the region's two basin plans.[72]

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[67]CWC § 13263(a); *see also* SSJR Basin Plan, pp.IV-7.00 to IV-8.00 (discussing the types of remedial measures the Board can utilize to implement the water quality objectives, foremost among these being WDRs, and noting that "[w]hatever actions the Regional Water Board implements must be consistent with the Basin Plan's beneficial uses and water quality objectives"); TL Basin Plan, pp.IV-19 to IV-20 (same).

[68]*See* CWC § 13269(a)(1).

[69]*See* Staff Report, p.54. *See also* California Environmental Protection Agency, State Water Resources Control Board and California Coastal Commission, Nonpoint Source Program Strategy and Implementation Plan, 1998-2013 (January 2000), *available at* http://www.swrcb.ca.gov/water_issues/programs/nps/protecting.shtml.

[70]*See* Staff Report, p.55 (emphases added).

[71]Staff Report, p.160 (emphases added).

[72]*See* CWC § 13241(c), (d) (directing regional boards, in establishing water quality objectives, to consider both (a) the level of water quality "that could *reasonably* be achieved through the coordinated control of all factors which affect water quality in the area" and (b) "[e]conomic considerations") (emphasis added).

Moreover, the WQOs for areas designated for drinking water are linked to state MCLs, which also already balance public health against considerations of economic and technical feasibility.[73] In other words, both the Central Valley Regional Board and the California Department of Public Health have already deemed the WQOs to be reasonable standards that are both technically and economically feasible for dischargers to achieve.

Furthermore, staff's proposed program creates a significant loophole by permitting "modif[ication of] these [compliance] schedules based on evidence that meeting [water quality objectives by] the compliance date is *technically or economically infeasible* . . . ."[74] Since WQOs already incorporate technical and feasible considerations, extra time should only be given through enforcement orders so that some fee or mitigation can be required to offset impacts on beneficial uses, such as domestic water supplies. (See discussion above of mitigation programs that could be incorporated into this program to help address impacts to local drinking water sources.)

2. Establishing a *Reasonable* Time Schedule for Compliance

Although it is within the Board's authority to establish a time schedule for an irrigated agriculture operation to comply with WQOs "when it appears that the discharger cannot immediately meet the requirements[,]" both state regulation and the State Board's NPS Policy dictate that this time schedule may "not permit any unnecessary time lag" and must include a date for "*full compliance* with requirements."[75] The current compliance schedule does not contain a date for full compliance with WQOs; in fact, as discussed above, it does not currently require full compliance with WQOs *at all*. Thus, not only does staff need to revise its proposed program to require compliance with WQOs, but if it does not intend to require *immediate* compliance with those standards, it must establish a reasonable time schedule within which full compliance must be achieved.[76]

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[73]*See* California Health & Safety Code § 116365(b)(3); *see also* California Department of Public Health, CDPH's Process for Adoption of a Maximum Contaminant Level, *at* http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLprocess.aspx (last visited September 22, 2010) (acknowledging that the agency sets an MCL "at a level as close as is *technically and economically feasible* to its public health goal") (emphasis added).

[74]Staff Report, p.159 (emphasis added).

[75]23 California Code of Regulations (CCR) § 2231(b), (c) (emphasis added). *See also* Staff Report, p.55 (construing Key Element 3 of the NPS Policy as requiring the Board to "include a *specific time schedule* and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements [water quality objectives]" when the Board "determines it is necessary to allow time to achieve water quality objectives").

[76]At the lower bound, the EPA has interpreted three years as a reasonable compliance period. *See Miccosukee Tribe of Indians of Florida v. United States of America, et al.*, 1998 U.S. Dist. LEXIS 15838, *26 (S.D. Fla. 1998) (quoting a deposition by the EPA official charged with deciding whether Florida's new time schedule for compliance de facto changed water quality standards in that case). At the upper bound, the Board has interpreted ten years as a reasonable compliance period. *See* SSJR Basin Plan, pp.III-2.00, IV-16.00; TL Basin Plan, pp.IV-22 to IV-23. Both of these terms are counted from the date a water quality standard is adopted, however, not from the commencement date of a program implementing those standards, such as the ILRP. Thus, for long-standing WQOs, such as that for nitrate, even with a ten-year compliance period, compliance should be immediate.

If the program sets the benchmark for program compliance at less than full compliance with water quality objectives, this constitutes an impermissible *de facto* change in water quality standards. The same goes for an unnecessarily lengthy (or, as here, indefinite) time schedule for compliance. The impact of delaying the deadline for full compliance is that the program suspends enforcement of the basin plan and authorizes growers to continue contributing to exceedances in water quality objectives in the interim, with impunity. If that interim period extends beyond what is reasonable and necessary, this effectively authorizes ongoing violation of WQOs; the clear force of such a program is to alter the water quality standards in this region.[77] The ILRP is not the appropriate vehicle for making such a change.

For the foregoing reasons, staff should amend its proposed program (1) to define compliance as not contributing to exceedances in WQOs and (2) to require all growers be in full compliance with all WQOs, as measured at first encountered groundwater, as soon as is practicable but in no case more than five years from the date of adoption of the ILRP implementation orders. The program should specify a penalty for growers that fail to comply with this deadline.

Finally, as stated above, pursuant to Water Code Section 13304, the Central Valley Water Board may require Dischargers to provide alternative water supplies or replacement water service. Including wellhead treatment, to affected public water suppliers or private domestic well owners. The provision of alternative water supply or replacement water service could take place within the basin; or could be program-wide in the form of a mitigation payment into a cleanup and abatement fund targeting small, low-income communities that are most at risk from the negative impacts of drinking water contamination that are largely attributable to continuing agricultural discharges into Central Valley waters.

VII. Comments on the Economic Analysis

A. The Economic Analysis is One-Sided and Distorts the Whole Program

Perhaps what is most clear from this document is that staff has looked very closely at the economic impacts to agriculture and barely considered impacts to the rest of valley residents and the environment – and apparently included none of those costs and benefits in its modeling efforts. As a result:

- There is insufficient information to determine the costs and benefits of each alternative;
- The determination of an environmentally superior alternative lacks any analysis of environmental costs and benefit;
- The relative impacts and benefits to agriculture, communities and the environment have been skewed and do not provide appropriate qualitative guidance on an appropriate preferred program;

[77] *See generally Miccosukee Tribe of Indians of Florida*, 1998 U.S. Dist. LEXIS at *43-*53. While obviously not binding precedent for the Board, this case could be deemed persuasive by a California court, as it provides a cogent and well-reasoned explanation for why an unnecessarily prolonged time schedule for compliance effectively constitutes a de facto change in water quality standards.

- There is insufficient evidence to make an anti-degradation determination in compliance with the Anti-degradation policy.
- The board lacks the information to make an informed decision.

An oversimplified and underestimated analysis of community costs and impacts was pasted on to the end of the economic analysis, but not included in the model that was actually used to develop the analysis – which means that environmental and community impacts were not meaningfully integrated into the process of developing a preferred alternative.

The IMPLAN model used in the analysis allows for the input of other costs and benefits. Direct costs and costs avoided for communities can and should be included in the model developed for this analysis and be treated in the IMPLAN model as a boost to disposable incomes just as the reduction agriculture profits was put into the model. Money that is not spent on bottled water or increased water treatment is money that could be spent on other things in the community. Below are several suggestions on how community costs of continued contamination can be quantified and integrated into the overall economic analysis. We also include some discussion of problems in the existing economic analysis.

Not only where community economic impacts left out of the economic impact (IMPLAN) model, but the assumptions used in the agricultural impact analysis where grossly overestimated, by including unrealistic assumptions, like in the implementation of practices and monitoring requirements, as well as cropping changes that where blind to other market forces.

B. Improving the Estimate of Community Costs

1. Including *All* Impacted Communities

The current economic analysis identifies a very narrow universe of impacted communities, consisting only of those small water systems that have identified an exceedance of nitrates but have not yet provided a long-term solution. This approach severely underestimates the total community impact of nitrate contamination, and therefore inaccurately compares the costs and benefits of the different alternatives. In particular, it skews the data in favor of Alternative 2, which does not set water quality objectives, and away from Alternative 4, which does.

a. The Cost Analysis for Communities Identified in the Report is Inaccurate and Incomplete.

The report uses the Department of Public Health Source Water Assessment data (collected from 2000-2003) to determine that only 45 wells currently listed as contaminated by nitrate were impacted by agriculture. Unfortunately, the data used to create these Source Water Assessments was extremely limited; recharge areas were not identified, nor were other aquifer characteristics. Essentially, these small systems were asked to draw a circle around their well and then list the Potentially Contaminating Activities that were situated within that circle - this bears little resemblance to the way an aquifer functions.. This lack of basic information about the aquifers makes the information unusable for this analysis. To gain a better understanding of the impact of agricultural activities on these wells, we recommend instead that the systems be identified by

their basin, and that the agricultural contribution to contamination be based on the presence or absence of agricultural activity within that basin. This creates an appropriately conservative estimate that also reflects the implementation mechanism proposed in the staff alternative.

A second difficulty is that the well costs identified fail to list the cost of drilling deep wells. When a contaminated source must be replaced by a new well, that well tends to be deeper, in order to access a cleaner part of the aquifer. Additionally, wells in the southern San Joaquin County tend to be deeper than in northern counties, a factor that should be included in the cost estimates.

The report also fails to provide information on the impact of pesticides on community water systems. While the Department of Pesticide Reform (DPR) has a groundwater protection policy, that policy does not meet the conditions of the anti-degradation policy that guides the Board's regulatory program; deferring to DPR's existing programs is not sufficient to achieve water quality objectives. In terms of cost, the detection of pesticides does not necessarily trigger well closure and replacement; in some cases, treatment is available, at a cost to the community. At a minimum, for the purposes of this analysis, staff should evaluate the data used to create Tables 5.9-1, -2, and -3 of the PEIR to identify trends in contamination and identify the cost of remediating drinking water in those wells that have exceeded a drinking water standard..

b. Analysis Fails to Include the Community Impact of Domestic Well Contamination.

According to the Groundwater Ambient Monitoring & Assessment Program, there are an estimated 600,000 private domestic wells in California and 10 percent of those tested have nitrate levels above the legal limit.[78] According to the USGS, there is a population of 813,390 in Central Valley counties who rely on domestic wells (See Table 2).[79] The percentage of wells contaminated per county in the Central Valley ranged widely, from less than 1% in Tehama to 40% of those tested in Tulare County. The extent to which contamination originates from agricultural run-off is not known, in part due to a lack of systematic monitoring of run-off and ground water quality. Most researchers agree that agriculture is the leading source of nitrate contamination of ground water in the Central Valley.[80]

[78]State Water Resources Board, Groundwater Ambient Monitoring & Assessment Program (2010). *Summary of Detections Above a Drinking Water Standard, GAMA Domestic Well Project*. Accessed on September 20, 2010 from http://www.swrcb.ca.gov/gama/domestic_well.shtml.

[79]USGS (2000) Estimated Use of Water in the United States County-Level Data for 2000. Online at http://water.usgs.gov/watuse/data/2000/index.html

[80]United States Geological Survey (1995) *Water Quality in the San Joaquin-Tulare Basins, California, 1992-95*. Accessed on September 20, 2010 from http://pubs.usgs.gov/circ/circ1159/sec6.html.

Table 2. Population Served by Domestic Wells in Central Valley Counties

County	Total Population	Population served by domestic wells	As percentage of total population
Butte	203,170	38,400	19%
Colusa	18,800	7,060	38%
Fresno	799,410	41,730	5%
Glenn	26,450	12,260	46%
Kern	661,650	76,050	11%
Kings	129,460	20,990	16%
Madera	123,110	49,070	40%
Merced	210,550	53,140	25%
Placer	248,400	25,920	10%
Sacramento	1,223,500	64,030	5%
San Joaquin	563,600	102,340	18%
Shasta	163,260	25,560	16%
Stanislaus	447,000	85,170	19%
Sutter	78,930	21,310	27%
Tehama	56,040	32,590	58%
Tulare	368,020	103,420	28%
Yolo	168,660	33,460	20%
Yuba	60,220	20,890	35%
TOTAL	**5,550,230**	**813,390**	**15%**

The cost of ensuring safe drinking water to the users of these wells must cover strategies for reducing nitrate levels or accessing an alternative water source. This may include installing treatment technology or a filter, drilling a new well, or buying bottled or vended water. According to Culligan, one of the leading purveyors of filter systems in the Valley, a typical nitrate filter costs $336 per fixture per year including

maintenance.[81] Our cost estimate assumes that only 10 percent of the Central Valley population relying on domestic wells have high nitrates. Assuming only 60% of the contamination affecting these 16,713 households have agricultural run-off as a contaminating activity, the costs for each of them to install a Culligan filter total at $5,615,734. In the above-mentioned EPA report on CAFOs, a domestic well owner's Willingness to Pay for nitrate levels being brought down to the MCL is valued at $718.67 per year (inflation adjusted from $583 in 2001 dollars). Using this as the annual cost per household, the annual costs to domestic well owners amount to $12,011,486.

c. Analysis Does Not Include Other Impacted Communities.

There are several other impacted groups that missing from this analysis:

- Schools and other non-community water systems. These systems, most run as part of private businesses, are impacted by a lack of clean drinking water. At a minimum, the cost of providing point of use treatment should be included as a cost for the smaller businesses. Schools face the same costs as small communities (new wells or centralized treatment costs).
- Communities who have removed wells from production or switched to wells with other contaminants. Systems with multiple wells typically blend contaminated water to meet safe drinking water requirements or removed contaminated wells from production, thereby reducing their overall capacity. In some cases this can lead to reliance on water with other contaminants; for instance, Monterey Park Tract in Stanislaus County is currently listed by the state as being in compliance with the drinking water standard for nitrate. However, compliance was achieved by turning off the well with nitrate contamination, and relying wholly on a single well that exceeds the drinking water standard for arsenic. This community still has unsafe drinking water. Unfortunately, the state does not maintain a database of wells closed due to contamination, but a review of wells that have exceeded the nitrate standard over the past 10 years to discover which are still in production would provide some guidance.
- Communities treating drinking water for agricultural contaminants. Where treatment is affordable - this could be because a treatment is inexpensive, like granular activated carbon for VOCs or some pesticides, or because a community is large enough to reduce the per capita cost - it is generally already in place. This report does not identify the costs paid by these communities for safe drinking water; the information is not maintained centrally, but could be obtained through a survey of Central Valley water systems located in vulnerable hydrologic regions.

d. Analysis Fails to Identify a Trend of Increasing Contamination.

The community impact analysis shows a snapshot of current contamination, but fails to identify the problem of increasing nitrate levels in Central Valley Drinking Water Wells. Our organizations worked with Pacific Institute to identify trends of nitrate contamination. Analysts at Pacific Institute carried out a regression analysis to estimate the number of wells currently under the MCL that can be expected to rise above this threshold in the next ten years. Using a

[81]Culligan (2010) Personal Communication 9/17/10.

database including all nitrate measurements from 1980 to present in the GAMA database for Kern County, wells were selected that had ten or more samples recorded (678 wells), and fit a trend line of nitrate concentration versus time, using ordinary least squares regression. Pacific Institute used the uncertainty associated with this relationship to calculate the percent likelihood of exceeding the 45 mg/L threshold in 2010, 2015, and 2020.

Based on this analysis, Pacific Institute found 33 wells where the likelihood of exceeding the MCL is 75%. In 2015, this increases to 50 and in 2020 rises to 65 (See Table below). This is almost a doubling of the number of wells with nitrate levels above the MCL by 2020, an increase from 5% to 10% of monitored wells. Based on current trends, we estimate that the number of wells exceeding the MCL in Kern County will double in the next ten years. See comments submitted by Pacific Institute for greater detail on this analysis

Trend analysis of nitrate levels in Kern County wells

Groundwater Basin	Total number of Wells	Number of wells with greater than 75% likelihood of exceeding MCL in 2010	Number of wells with greater than 75% likelihood of exceeding MCL in 2015	Number of wells with greater than 75% likelihood of exceeding MCL in 2020
Antelope Valley (6-44)	29	0	0	0
Brite Valley (5-80)	4	0	0	0
Castac Lake Valley (5-29)	6	0	0	0
Cuddy Canyon Valley (5-82)	5	0	0	0
Cuddy Ranch Area (5-83)	4	0	0	0
Cuddy Valley (5-84)	6	0	0	0
Cummings Valley (5-27)	14	2	2	3
Fremont Valley (6-46)	11	0	0	0
Indian Wells Valley (6-54)	36	0	0	0
Kern River Valley (5-25)	55	4	7	8
Mil Potrero Area (5-85)	2	0	0	0
No Basin Found	67	1	2	2
San Joaquin Valley - Kern County (5-22.14)	417	24	37	50
Tehachapi Valley East (6-45)	3	0	0	0
Tehachapi Valley West (5-28)	18	2	2	2
Walker Basin Creek Valley (5-26)	1	0	0	0
TOTAL	**678**	**33**	**50**	**65**

Kern County was chosen because it is the county with the highest number of nitrate detections in the Central Valley, and so had more data available to develop a trend analysis. A land use analysis by basin can provide a correlation between agriculture and nitrate contamination.

This analysis is not just important to inform this DPEIR; it is critical to predicting the success of the program. Mitigation of groundwater contamination is a long-term effort, and this type of analysis will be needed for each constituent of concern in each basin. in order to measure interim progress. We urge staff to develop this analysis for all of Region 5's groundwater resources.

2. Estimating the Cost to Community Members and Regions

The economic analysis fails assess the cost to communities that lack access to safe drinking water from their tap. This is a significant cost that reduces available income for other purposes, so it does shape the local economy. Additionally, impacts to the local economy are not calculated in this analysis. Our organizations have worked with Pacific Institute to develop some cost estimates for impacted households.

a. ILRP Costs to Drinking Water Consumers[82]

It has been well documented that households impacted by groundwater contamination incur significant costs to avoid contaminated tap water. A series of studies using the "avoidance cost" method—that is, "assessing the costs of actions taken to avoid or reduce damages from exposure to groundwater contaminants"—have demonstrated that household responses to contamination of domestic water supplies is far from inexpensive and that these expenditures must be taken into consideration in valuing the costs and benefits of groundwater protection.[83][1],[2],[3] To avoid nitrate-contaminated tap water, households must install costly reverse osmosis filters, order domestic water service to their home, or buy gallons of vended and bottled water for consumptive household uses such as cooking and drinking.
In the summer of 2010, Pacific Institute conducted a survey of 21 out of the 28 households connected to the community water system, Beverly Grand Mutual Water Company, which was in violation of the 45 mg/L MCL for nitrate concentration. Respondents were asked a series of questions about household socioeconomic and demographic information, perception of contamination, household water use, and expenditures on tap water, filters, and alternative sources of water (such as vended and bottled water).

Preliminary analysis of the survey shows that households that are aware of contamination in their water and that drink and cook with exclusively non-tap sources of water pay on average 77% more than they would have had they solely used tap water for these consumptive household uses. On average, non-tap water expenditures for these households constituted 2% of household

[82]See written comments by Pacific Institute for more details on the costs to consumers.
[83]Abdalla, Charles W. *Measuring Economic Losses from Ground Water Contamination: An Investigation of Household Avoidance Costs.* Water Resources Bulletin Vol. 26 No. 3, 451-463. Collins, Alan R. and Scott Steinback (1993). *Rural Household Response to Water Contamination in West Virgina.* Water Resources Bulletin Vol. 29 No. 2, 199-209. Laughland, Andrew S., Musser, Lynn M., Musser, Wesley N., and James S. Shortle (1993). *The Opportunity Cost of Time and Averting Expenditures for Safe Drinking Water.* Water Resources Bulletin Vol. 29 No. 2, 291-299.

income, although some households spent up to 4.2% of their income on bottled and vended water for use in the home. On average, households that exclusively use non-tap sources of water for cooking and drinking spend $5.46 per person per month on vended and bottled water for use in the home (although some households spent up to $14.08 per person per month). This suggests that, collectively, the 1.3 million people connected to water systems with contaminated groundwater supplies may spend approximately $7.1 million to avoid nitrate-contaminated water.

b. Regional Economic Impacts

Clearly, there are very real economic impacts to communities' ability to attract economic development when drinking water sources are contaminated that are above and beyond the direct costs to the residents and water systems trying to mitigate the problem. For instance, many communities are unable to provide will-serve letters to allow for new connections into the system because they have had to close wells due to nitrate or pesticides. For example, the community of Orosi has had to limit its capacity to provide water to new developments because it lacked sufficient supply after nitrate levels in a new well rose above the MCL between the time of a test well and the drilling and testing of the final well. Residents in the community of Strathmore had trouble getting loans for real estate sales after nitrate levels rose above the MCL.

These same impacts are felt at the county level, as scarce resources are directed to communities to help pay for new wells. These impacts come from several sources; counties often administer state and federal grants and loans for small communities; some provide matching funds; and Community Development Block Grants are used to solve problems in some systems. In each case, scarce county funding is diverted from other purposes.

When financing and water supplies are not available, development will not occur and valley communities are further economically harmed. The economic analysis fails to allocate any regional impacts or benefits to the provision of clean water, yet communities without safe water are clearly impacted by their inability to add homes or businesses. Several data points could be use to develop such regional costs. Property tax receipts for communities impacted by nitrates could be compared with unincorporated areas within the county as a whole; county expenditures for community expenses (such as administering grants, providing matching dollars for grants, or expenditure of Community Development Block Grants for new wells) could be analyzed to measure funds diverted from other needed services.

C. Flaws in the Current Economic Analysis for Agricultural Costs

The reality of economic impact reports is that they are based on assumptions. Based on the assumptions and the extension of time that the model examines, you can have varied results; in fact, you can have completely inversed results. The IMPLAN model has been used in the Central Valley many times to assess the impact of many land-use and water quality programs, like the Westlands Land Retirement Program that was found to have a net economic benefit to agriculture. Ironically, the Retirement Program was put in place because of the lack of drainage and therefore increasing salinity problem and harmful to the long-term viability for a sustainable agricultural productivity for the west side. Irrigated Lands Program is no different, in order to

secure a sustainable agricultural for the Central Valley we must protect our groundwater quality supply. CV Salts is a clear recognition that nutrient loading is not just a problem of nitrate contamination of drinking water supplies, but of overall excessive loading that if left unmanaged will result in an inevitable impact to agriculture productivity.

The economic analysis failed to evaluate the economic harm to agriculture of doing nothing or the economic harm of doing little to address the nutrient loading. The economic impact analysis should be analyzing the threshold on where the investment for agriculture today will pay off for tomorrow, for themselves and for their communities. Unfortunately, the assumptions used in the IMPLAN model fail to incorporate the variables and the time frame for truly beneficial analysis for developing this critical program. Including, failing to include integrated pest management as management practice, assuming the implementation of practices and monitoring requirements, assuming no outside market forces in cropping changes; the analysis fails to evaluate the relative costs and contribution to water quality of each of the management practices listed; and the analysis did not attribute any cost benefits to the implementation of the specified management practices, including practices that would reduce the use and therefore the cost of fertilizer, or conserve water.

D. The Legal Requirement to Do This

The Staff Report through its anti-degradation analysis is asking the board to make a finding that it is okay to allow for continued degradation of water quality in order to meet economic interests in reduced costs to agriculture. However, nowhere in the economic analysis does the staff provide an estimate of what level of degradation will be allowed or what the cost of that degradation will be. Without that basic information, it is impossible for the Board to make an informed decision or finding based on substantial evidence that allowing degradation is in the best interest of the people of the state, as required by the Anti-degradation Policy.

Furthermore, as described above, once the Economic Analysis attempts to conduct a comprehensive economic analysis above and beyond what is required by Porter Cologne,[84] which merely requires the Board to calculate the direct costs to dischargers, it must do so in a way that attempts to be truly comprehensive of both sides and not arbitrarily ignore the costs on one side of the equation and therefore distort the decision-making process. To do that would leave the Board without a substantial or rational basis for making a determination on what would be the preferred program.

VIII. Comments on the DPEIR

A. The DPEIR is Insufficient for a Tiered, Programmatic EIR

The Draft Irrigated Lands Regulatory Program Program Environmental Impact Report (the DPEIR) falls afoul of the California Environmental Quality Act (CEQA)[85] in numerous ways.

[84]CWC § 13141.

[85]California Public Resources Code § 21000 et seq.

To begin with, staff has titled this document a "*Program* Environmental Impact Report." If staff intends for this to serve as a programmatic environmental impact report (EIR), as contemplated in Section 15168, Title 14 of the California Code of Regulations, and if staff intends to roll out streamlined project EIRs for the general orders implementing the ILRP within a year of the program's adoption, then this DPEIR needs substantial additional documentation and analysis. The current draft cannot be characterized as an "exhaustive consideration of effects and alternatives" that has "deal[t] with the effects of [the ILRP] as specifically and comprehensively as possible."[86] As is, a significant amount of further environmental analysis will be required for each of the subsequent WDRs and conditional waivers that the Board intends to issue as implementation mechanisms for the ILRP, making staff's projected one-year timeline for the Board to adopt each of these mechanisms extremely unrealistic.

Staff has chosen to take a mile-high view of the program in this document, but in so doing, it has obscured the details to such an extent that the very purposes of CEQA have been undermined: this current DPEIR does not arm the Board with the information it needs to make an informed decision, nor does it provide the public with sufficient information to participate in the decision making process.[87]

B. The DPEIR Must Sufficiently Analyze the Proposed Project

Numerous revisions are necessary to transform this DPEIR into a useful document and a true programmatic EIR. Foremost among these is the requirement that staff analyze the environmental impacts of the *proposed project*, which is the staff-recommended alternative.[88] Currently, the extent of staff's impacts "analysis" of the recommended program is buried at the end of the Staff Report, a mere appendix to the DPEIR, and consists of less than two full pages. Not surprisingly, then, given its brevity, this section of the Staff Report consists of little more than cursory conclusions and fails to "reflect the analytic route the agency traveled from evidence to [recommended] action."[89] In this significant respect, the DPEIR does not satisfy CEQA's requirements, including that the DPEIR itself analyze the proposed project and that it do so with "a sufficient degree of analysis to provide decision makers [here, the Board and members of the public] with information which enables them to make a decision which intelligently takes account of environmental consequences."[90]

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[86] 14 CCR § 15168(b)(1), (c)(5).

[87] *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008) ("The purpose of an EIR is to give the public and government agencies the information needed to make informed decisions . . . .") (quoting *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal. 3d 553, 564 (1990)); *Marin Mun. Water Dist. v. Kg Land Cal. Corp.*, 235 Cal. App. 3d 1652, 1660 (1991) ("[T]he essential purpose of the EIR is to inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made.") (emphasis added).

[88] 14 CCR § 15126(a).

[89] *Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 733, 270 Cal. Rptr. 650, 670 (1990). *See also Preservation Action Council v. City of San Jose*, 141 Cal. App. 4th 1336, 1353 (2006) (observing that the agency must "set forth facts and meaningful analysis . . . *rather than just the agency's bare conclusions or opinions*") (internal quotations omitted; emphasis added).

[90] 14 CCR §§ 15126(a), 15151.

C. The DPEIR Must Analyze a Reasonable Range of Alternatives

An EIR is an "informational document" – its essential purpose is to provide the Board with detailed information about the environmental consequences of the proposed program before any final decisions are made.[91] To satisfy this informational purpose, the DPEIR must consider a "reasonable range of alternatives" to the proposed program, the purpose of which is to "to allow the decision maker to determine whether there is an environmentally superior alternative that will meet most of the project's objectives[.] . . ."[92] To constitute a reasonable range, the alternatives put forth in the DPEIR must satisfy two basic requirements: (1) they must "feasibly attain most of the basic objectives of the project . . . [,]" and (2) they must "offer *substantial environmental advantages* over the project proposal[.]"[93] Ultimately, the DPEIR must "provide a meaningful basis for comparison" between the environmental impacts of the proposed project and the environmental impacts of the alternatives, in order for the Board to evaluate the proposed program properly and make the environmentally-informed decision that CEQA requires.[94]

With respect to water resources, in particular, the DPEIR as currently drafted does not fulfill this duty. Staff has cursorily concluded that none of the program alternatives will have any significant impact on water quality,[95] without "set[ting] forth facts and meaningful analysis of these alternatives . . . ."[96] Staff has chosen in the DPEIR to define a significant impact to water resources as "contribut[ion] to degradation of state waters as a result of agricultural discharge[.]"[97] Because each of the regulatory program alternatives put forth in the DPEIR is designed, at least in theory, to reduce irrigated agriculture's contribution to groundwater contamination in the Central Valley (except the no-project alternative, which would not extend the ILRP to groundwater), staff has reasoned that none of these alternatives will have a significant negative environmental impact on water resources. Staff may be correct, at least in theory, that each of the program alternatives promises some environmental benefit with respect to water quality, but this is no excuse for failing to perform the requisite comparative analysis among the different program alternatives.[98] Because staff has failed to conduct any rigorous analysis as to the relative environmental merits of the various program alternatives, this document does not provide any guidance or assistance to the Board in comparatively evaluating

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[91] *Goleta Union School Dist. v. Regents of University of California*, 37 Cal. App. 4th 1025, 1030 (1995); *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008); *Marin Mun. Water Dist. v. Kg Land Cal. Corp.*, 235 Cal. App. 3d 1652, 1660 (1991).

[92] *Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010); *City of Long Beach v. Los Angeles Unified School Dist.*, 176 Cal. App. 4th 889, 920 (2009); 14 CCR § 15126.6.

[93] *In re Bay-Delta*, 43 Cal. 4th at 1162; *City of Long Beach v. Los Angeles Unified School Dist.*, 176 Cal. App. 4th 889, 920 (2009) (quoting *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 566 (1990)); *Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010) (emphasis added).

[94] *See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1264-65 (2000).

[95] *See* DPEIR, pp.5.9-16 to 5.9-18.

[96] *Preservation Action Council v. City of San Jose*, 141 Cal. App. 4th 1336, 1353 (2006) (internal quotations omitted).

[97] DPEIR, p.5.9-14.

[98] If the alternatives will truly result in no differences, then they are not sufficiently different to constitute a reasonable range of alternatives for the purposes of CEQA. *See, e.g., Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1264 (2000).

the various program alternatives and identifying which among them are "environmentally superior," as CEQA requires.[99]

Furthermore, the long-term ILRP constitutes a regulatory program that establishes a performance standard (namely, the achievement of water quality objectives), within the meaning of Section 15187, Title 14 of the California Code of Regulations. Thus, the EIR for this program "must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved[,]"[100] including "[a]n analysis of the reasonably foreseeable *environmental impacts of the methods of compliance*" and "[a]n analysis of the reasonably foreseeable *alternative means of compliance* with the rule or regulation[.] . . ."[101] "[C]ompliance with the rule or regulation" here refers to compliance with the performance standard of achieving water quality objectives.[102] Clearly, a regulation establishing a performance standard will almost always be designed to improve on environmental conditions.[103] According to staff's reasoning, therefore, it would never need to conduct a comparative environmental analysis of the different potential program structures that could be deployed to achieve the performance standard, thereby evading acknowledgement of the tradeoffs in choosing more or less stringent program structures. This would clearly contravene Section 15187, which envisions comparative environmental analysis of the various alternative "methods of compliance[.]"[104]

To measure and facilitate comparison of each alternative's environmental impact, the DPEIR must attempt to project what the future will look like under each program alternative and compare that future scenario to the baseline of existing water quality conditions today.[105] In order for the DPEIR to fulfill its statutory purpose of serving as a meaningful, informative environmental document that will help guide the Board in making an environmentally-informed

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[99] *Watsonville Pilots Assn.*, 183 Cal. App. 4th at 1089.

[100] 14 CCR § 15187(a). More completely, this subsection provides:

> At the time of the adoption of a rule or regulation . . . establishing a performance standard, . . . all regional water quality control boards, . . . must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved.

Id.

[101] 14 CCR § 15187(b), (c)(1), (c)(3) (emphases added).

[102] *See* 14 CCR § 15189 ("This section applies to projects consisting solely of compliance with a performance standard . . . which was the subject of an environmental analysis as described in Section 15187.").

[103] As discussed elsewhere in these comments, the staff-recommended program does not even require compliance with water quality objectives, *see* Staff Report, pp.158-160, so it's not clear that the proposed project would even meet the goals of the program or meet the performance standard of meeting water quality objectives. *See* 14 §§ CCR 15187, 15189.

[104] *See* 14 CCR § 15187.

[105] To be clear, this baseline is not the current *rate* of agricultural discharge to state waters, but the actual conditions of water quality at the time of the CEQA analysis, *i.e.*, "real conditions on the ground" or "existing physical conditions in the affected area" today. *See Communities for a Better Environment v. South Coast Air Quality Management District et al.*, 48 Cal. 4th 310, 320-21, 226 P.3d 985, 992-93, 106 Cal. Rptr. 3d 502, 511-12 (2010).

choice, staff must provide some comparative analysis by evaluating the varying degrees to which each of the alternatives improve upon this baseline.

For example, common sense would suggest that less stringent regulatory programs like the proposed project (the Staff-Recommended Program) and Alternative 2, which have virtually no enforcement mechanisms and limited monitoring requirements, would not result in reductions in agricultural discharges and achievement of water quality objectives throughout the Central Valley as quickly as programs with real enforcement mechanisms and comprehensive monitoring and data collection like Alternatives 4 and 5. Staff's baseless conclusion to the contrary is founded on the unspoken assumption that each of the proposed regulatory programs would result, apparently instantaneously, in the universal adoption of best management practices (BMPs) by growers throughout the valley. However, if staff is going to assert that any given program alternative will have no significant impact on water resources on the theory that growers will be implementing required management practices pursuant to that program, then the program must actually make "provision" for ensuring that those practices will "actually be implemented" and fully enforceable through permit conditions, including a workable "monitoring program to ensure that [those management practices] are implemented."[106] If implementation of management practices cannot be meaningfully monitored and enforced on all growers, then it is purely speculative to suggest that these practices will actually be implemented and to use them as a basis for a finding that impacts on water quality will not be significant.

Thus, one obvious method by which staff could distinguish among the relative environmental merits of the various alternatives is by projecting how quickly each program will lead to valley-wide adoption of BMPs and the resulting situation in which irrigated agriculture no longer contributes to exceedances in water quality objectives (thereby achieving full compliance with the ILRP). Where data are available on the implementation rates of specific BMPs under current voluntary programs, staff should incorporate those data into the analysis.

For example, citing Orang et al. (2005),[107] the Staff Report indicates that under the current regulatory setting, in which growers' adoption of BMPs has been purely voluntary, there has been a 30% transition from gravity-driven "flood and furrow" irrigation systems to more environmentally-beneficial drip irrigation systems over the course of 30 years.[108] Staff could presume, therefore, that a purely voluntary program like those envisioned in the proposed project (the Staff-Recommended Program) and Alternative 2 will result in a drip irrigation implementation rate of 1% of total Central Valley irrigated acreage per year, meaning that all growers in the Central Valley would be utilizing drip irrigation systems by the year 2070. Thus, under these program alternatives, a steadily declining proportion of total irrigated acreage would continue to contribute to exceedances in water quality objectives for 59 years (from 2011 to 2069). Once staff completes a more robust analysis of the costs that ongoing contaminated

[106] *See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1260-61, 100 Cal. Rptr. 2d 301, 308-09 (2000).

[107] Orang, M., R. Snyder, and S. Matyac. 2005. Survey of Irrigation Methods in California. California Department of Water Resources and University of California, Davis. California Water Plan Update 2005. Volume 4, pg 299–318.

[108] *See* Staff Report, p.16. Here, drip irrigation is presumed to be a BMP, although a feedback mechanism in the form of adequate monitoring would be required to ensure that transition to such a system actually leads to compliance in terms of no longer contributing to exceedances in water quality objectives.

drinking water imposes on municipalities (specifically, treatment costs) and on smaller communities (including economic costs associated with driving to the market and purchasing bottled water to supplement a monthly flat rate for tap water and medical and lost income costs from health incidents related to exposure to contaminated water), the environmental and public health costs associated with each year of delay in valley-wide implementation of BMPs will become much more clear. This figure can be multiplied times the number of acres per year that are estimated as continuing to utilize non-BMP irrigation methods, such as flood and furrow.

Where data indicate that a particular BMP is *declining* in usage under voluntary programs, however, this also must be incorporated into the analysis. Thus, for example, citing Glass (2003),[109] the Staff Report indicates that synthetic nitrogen fertilizer usage has steadily increased in California, specifically threefold over the course of approximately 40 years (from 1961 to 2008).[110] Under voluntary programs like the proposed project and Alternative 2, staff must presume that nitrogen fertilizer use will continue to increase at this rate indefinitely, with associated annual economic, environmental, and public health costs on drinking water systems and Central Valley residents. Again, staff simply MUST perform a robust and balanced analysis of the impacts of the various program alternatives, including attempting to estimate community costs with as much dedication as it currently documents costs to the irrigated agriculture industry. Without this information, staff will continue to underestimate vastly the comparative environmental impacts and public health trade-offs of the various alternative regulatory structures being considered in the EIR.

In contrast, for program alternatives that include: (a) meaningful enforcement mechanisms; (b) comprehensive monitoring that serves as a feedback mechanism to ensure that management practices being implemented really are reducing discharges to state waters (and thus really do constitute BMPs); and (c) a reasonable time schedule for compliance, namely, reaching a point where irrigated agriculture no longer contributes to exceedances in water quality objectives, staff could presume that full compliance would be achieved by that deadline. Under this scenario, it is not speculative for staff to assume that required management practices will actually be implemented.[111] Irrigated agriculture's annual contribution to exceedances in water quality objectives could be measured at a declining rate over that period, and this figure could be multiplied by the foregoing estimated annual cost of contaminated water to drinking water systems and Central Valley communities.

Where staff does not yet have sufficient information regarding estimated implementation rates for the various potential management practices, including but not limited to those contained in Table 5.1.1 of the DPEIR, which, incidentally, omits any mention of Integrated Pest Management for the reduction of pesticide usage, CEQA requires it to conduct this further analysis. It is against everyone's interests, and furthermore illegal, for staff to rush forward with proposing an ILRP that not only violates CEQA but ultimately amounts to a paper tiger. The information that staff currently lacks is not unimportant and insignificant to the larger goals and objectives of the program, including protecting water quality and community drinking water

[109]The Staff Report, presumably by mistake, does not include a full citation to this source in its References section.
[110]Staff Report, p.16.
[111]*See Federation of Hillside & Canyon Assocs.*, 83 Cal. App. 4th at 1260-61.

sources.[112] By engaging in such a process, staff would be able to evaluate the various program alternatives in the DPEIR comparatively and quantitatively, which would allow the Board to identify the "environmentally superior alternative" and make a *truly* environmentally-informed decision about which program alternative to adopt, as CEQA requires.[113]

D. The Alternatives Must Be Feasible

The alternatives in the DPEIR must be feasible, meaning they must comply with existing law.[114] Only Alternatives 4 & 5 comply with the State Board's anti-degradation policy, however.[115] Therefore, Alternatives 2 & 3 are not feasible alternatives.

E. Mitigation in the Interim While Waiting to Meet Water Quality Objectives

Given that there is likely to be some period of delay between approval of the program and significant reductions in agricultural contributions to water quality degradation and even continued exceedances of water quality objectives, this program should include mitigation measures to offset these impacts on public health and the environment. Pursuant to Water Code Section 13267, the Executive Officer may require dischargers to conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, pursuant to Water Code Section 13304, the Board may require dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners. This program should include utilizing this power, as well as the creation of a SEP to facilitate use of enforcement actions to support improvements in local impacted drinking water supplies, as described in the sections above.

F. The DPEIR fails to address both Programmatic and Cumulative Impacts to Public Health.

This document already acknowledges that the No Project Alternative fails to protect water quality; in addition, we assert in other areas of this document that Alternative 2 and the Staff Alternative also fail to do so. The failure of these alternatives to reverse the degradation of groundwater quality leads directly to a public health impact that is not analyzed in this document. Moreover, these health impacts are cumulative, as other environmental stressors already impact community health in Region 5. This document must identify the impact of nitrates on public

[112] *See* Staff Report, pp.92-93.

[113] *See Watsonville Pilots Assn.*, 183 Cal. App. 4th at 1089; *Federation of Hillside & Canyon Assocs.*, 83 Cal. App. 4th at 1264.

[114] *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008) ("CEQA defines 'feasible' as 'capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.'") (quoting California Public Resources Code § 21061.1).

[115] *See* Staff Report, p.114 (Table 15).

health as a *significant impact* for Alternatives 1 and 2 that is not capable of mitigation, as well as the staff alternative.

1. Health Effects

The final document should acknowledge the following short and long-term risks of exposure to nitrates in the water supply.

In the short-term, nitrates can cause: Methemoglobinemia, or "Blue Baby Syndrome"[116]; Indigestion, inflammation of the stomach and gastrointestinal tract (gastroenteritis), with abdominal pain, diarrhea, and blood in the urine and feces[117]

In the long-term, scientific and medical studies have linked nitrates to:[118] Multiple digestive tract impairments, including dyspepsia[119]; Depression, headache and weakness[120]; Miscarriage,[121] stillbirths or premature birth[122]; Sudden Infant Death Syndrome (SIDS)[123]; Mutagenicity (DNA damage) and tetragenicity[124]; Impaired growth of fetuses *in utero*, leading to neural tube disabilities and other birth-related disabilities[125]; Cancers of the digestive system,[126] stomach,[127] esophagus,[128] lungs,[129] colon,[130] bladder and ovaries,[131] testicles,[132] uro-genital tract,[133] and non-

[116]U.S. Environmental Protection Agency. (2010). Basic Information about nitrate in drinking water. Retrieved June 4, 2010, from http://www.epa.gov/safewater/contaminants/basicinformation/nitrate.html. Knobeloch, L., B. Salna, A. Hogan, J. Postle, and H. Anderson. (2000). Blue Babies and Nitrate-Contaminated Well Water. *Environmental Health Perspectives* 108.

[117]Fassett, D. (1973). Nitrates and Nitrites. *Toxicants Occurring Naturally in Foods*. Washington: National Academy Press.

[118]Camargo and Alonso (2006).

[119]Fassett (1973).

[120]Ibid.

[121]Manassaram, D., L. Backer, and D. Moll. (2006). A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes. *Environmental Health Perspectives* 114:320-327. Fan, A., and V. Steinberg. (1996). Health implications of nitrate and nitrite in drinking water: an update on methemoglobinemia occurrence and reproductive and developmental toxicity. *Regulatory Toxicology and Pharmacology* 23:35-43.

[122]Manassaram et al (2006).

[123]U.S. EPA (2010).

[124]Camargo and Alonso (2006).

[125]Manassaram et al (2006). See also: Dorsch, M., R. Scragg, A. McMichael, P. Baghurst, and K. Dyer. (1984). Congenital Malformations and Maternal Drinking Water Supply in Rural South Australia: a Case-Control Study. *American Journal of Epidemiology* 119:473-86; Knox, E. (1972). Anencephalus and dietary intake. *British Journal of Preventive and Social Medicine.* 26: 219–23; Super, M., H. Heese, D. MacKenzie, W. Dempster, J. Du Plessis, and J. Ferreira. (1981). An epidemiological study of well-water nitrates in a group of South West African/Namibian infants. *Water Resources* 15:1265-1270. Croen, L., K. Todoroff, and G. Shaw. (2001). Maternal exposure to nitrate from drinking water and diet and risk for neural tube defects. *American Journal of Epidemiology*. 153:325–331.

[126]Powlson, D., T. Addiscott, N. Benjamin, K. Cassman, T. de Kok, H. van Grinsven, J. L'Hirondel, A. Avery, and C. van Kessel. (2003). When does nitrate become a risk for humans? *Journal of Environmental Quality* 37:291-5.

[127]World Health Organization International Agency for Research on Cancer Monograph Working Group. (2006). Carcinogenicity of nitrate, nitrite, and cyanobacterial peptide toxins. *Lancet Oncology*, 7:628-629.

[128]Zhang, X., Z. Bing, Z. Xing, Z. Chen, J. Zhang, S. Liang, F. Men, S. Zheng, X. Li, and X. Bai. (2003). Research and control of well water pollution in high esophageal cancer areas. *World Journal of Gastroenterology* 9:1187-90.

Hodgkins lymphoma[134]; Nervous system disabilities[135]; Dieresis (increased urination), increased starchy deposits and hemorrhaging of the spleen[136]; Active ulcerative colitis and Crohn's disease[137]; Pancreatitis,[138] which is highly associated with pancreatic cancer[139]; Thyroid disruption, including hypertrophy[140].

Vulnerable populations are especially sensitive to nitrate contamination, including children and pregnant women.[141] Nitrates can also have indirect health impacts. In particular, diabetes may be indirectly linked,[142] because impaired pancreas functioning can lead to diabetes mellitus, and

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[129]Greenblatt, M., S. Mirvish, and B. So. (1971). Nitrosamine Studies: Induction of Lung Adenomas by Concurrent Administration of Sodium Nitrite and Secondary Amines in Swiss Mice. *Journal of National Cancer Institute* 46:1029-1034.

[130]Ward, M. (2006). Workgroup report: Drinking-water nitrate and health--recent findings and research needs. *Environmental Health Perspectives* 114:A458-9; A459-61. See also: Gulis, G., M. Czompolyova, and J. Cerhan. (2002). An ecologic study of nitrate in municipal drinking water and cancer incidence in Trnava District, Slovakia. *Environmental Resources* 88:182-187.

[131]Weyer, P., J. Cerhan, B. Kross, G. Hallberg, J. Kantamneni, G. Breuer, M. Jones, W. Zheng, and C. Lynch. (2001). Municipal drinking water nitrate level and cancer risk in older women: the Iowa Women's Health Study. *Epidemiology* 12:327-38.

[132]Moller, H. (1997). Work in agriculture, childhood residence, nitrate exposure, and testicular cancer risk: a case-control study in Denmark. *Cancer Epidemiology, Biomarkers and Prevention* 6:141-144.

[133]Lubin, F., H. Farbstein, A. Chetrit, M. Farbstein, L. Freedman, E. Alfandary, and B. Modan. (2000). The role of nutritional habits during gestation and child life in pediatric brain tumor etiology. *International Journal of Cancer* 86:139-143.

[134]Gulis et al (2002).

[135]Manassaram, D., L. Backer, and D. Moll. (2006). Ingested nitrate and nitrite, and cyanobacterial peptide toxins. *Monographs On The Evaluation Of Carcinogenic Risks To Humans*. International Agency for Research on Cancer 94.

[136]U.S. E.P.A. (2010).

[137]Kimura, H., S. Miura, T. Shigematsu, N. Ohkubo, Y. Tsuzuki, I. Kurose, H. Higuchi, Y. Akiba, R. Hokari, M. Hirokawa, H. Serizawa, and H. Ishii. (1997). Increased nitric oxide production and inducible nitric oxide synthase activity in colonic mucosa of patients with active ulcerative colitis and Crohn's disease. *Digestive Diseases and Science* 42:1047-54. See also: National Institute of Public Health and Environmental Protection. (2010). Nitrate. International Program on Chemical Safety. Retrieved April 5, 2010, from http://www.inchem.org/documents/jecfa/jecmono/v35je14.htm.

[138]Carmargol et al (2008).

[139]Coss, A., K. Cantor, J. Reif, C. Lynch, and M. Ward. (2004). Pancreatic Cancer and Drinking Water and Dietary Sources of Nitrate and Nitrite. *American Journal of Epidemiology* 159:693.

[140]Van Maanen, J., A. van Dijk, K. Mulder, M. de Baets, P. Menheere, and D. van der Heide. (1994). Consumption of Drinking Water with High Nitrate Levels Causes Hypertrophy of the Thyroid. *Toxicology Lett*ers 72:365-374.

[141]McCasland, M., N. Trautmann, and S. Porter. (2008). Nitrate: Health Effects In Drinking Water. Natural Resources Cornell Cooperative Extension. Retrieved June 5, 2010, from http://psep.cce.cornell.edu/facts-slides-self/facts/nit-heef-grw85.aspx.

[142]Kostraba, J., E. Gay, M. Rewers, and R. Hamman. (1992). Nitrate Levels in Community Drinking Waters and Risk of IDDM, an Ecologic Analysis. *Diabetes Care* 15:1505-1508. See also: Parslow R., P. McKinney, G. Law, A. Staines, R. Williams, and H. Bodansky. (1997). Incidence of Childhood Diabetes Mellitus in Yorkshire, Northern England, is Associated with Nitrate in Drinking Water: an Ecologic Analysis. *Diabetologia* 40:550-556.

nitrates are associated with chronic pancreatitis. In fact, nitrate concentrations in blood have been recommended as a marker for diabetes.[143]

2. Measured Health Impacts in Tulare County

The Community Water Center has assembled detailed information on the rates of diseases in Tulare County (where 20% of public supply wells and 40% of domestic wells exceed the drinking water standard for nitrates) associated with nitrates, as outlined in scientific and medical literature. This data reinforces our contention that the health impacts of not reducing nitrate contamination in groundwater are significant.

The following tables present information on health outcomes that occur at elevated levels within Tulare County and are associated with high nitrate levels. Information for health outcomes that occur at average statewide rates are not included. All statistics are expressed as "death rates," which refer to the rate of death for each associated disease per 100,000 people. The death rate for each disease varies depending on the health outcome, but in each outcome listed, Tulare County's death rate occurred at levels significantly higher than the state rate.

3. Reproductive and Infant Health Concerns

Tulare County's infant mortality rate is higher than the state average – 6.4 versus 5.3 (per 100,000 infant births).[144] These rates have remained consistently high since 1990.[145] Another cause for concern is that studies have shown that drinking water contaminated with both bacteria and nitrates can make methemoglobinemia (blue baby syndrome) more likely.[146] In private well testing in Tulare County, 15 percent of wells tested exceeded MCLs in both categories.[147]

[143]Nunes, S., I. Figueiredo, P. Soares, N. Costa, M. Lopes, and M. Caramona. (2008). Semicarbazide-sensitive amine oxidase activity and total nitrite and nitrate concentrations in serum: novel biochemical markers for type 2 diabetes? *Acta Diabetologica* 46:135-140.

[144]California Department of Public Health. (2010). County Health Status Profiles. Retrieved June 8, 2010, from http://www.cdph.ca.gov/programs/ohir/Pages/CHSP.aspx.

[145]California Department of Health Services. (2005). Leading Causes of Infant Death, California Counties, 2005 (By Place of Residence). Sacramento: Center for Health Statistics.

[146]Fan and Steinberg (1996).

[147]State Water Resources Control Board (2006).

Health outcome associated with high nitrate levels	**Death rate in Tulare County**
Sudden Infant Death Syndrome	146 to 252 percent of state rate (2003)
Methemoglobinemia, or "Blue Baby Syndrome"	140 percent of state rate, ranking Tulare County 42nd of all California counties (2006)
Congenital malformations, deformations and chromosomal abnormalities, including neural tube disabilities[148]	109 percent of state rate (2003); leading cause of infant death in 2005
Certain Conditions Originating in the Prenatal Period	250 percent of state rate (2003)
Spontaneous abortion, miscarriage	211 percent of state rate (2001-2003)

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

[148]California Department of Health Services (2005).

4. Incidences of Cancers Associated with Nitrate Contamination

Health outcome associated with high nitrate levels	Death rate in Tulare County
Digestive System Cancers	125 percent of state rate
Pancreatic cancer	121 percent of state rate
Esophogus Cancer	Between 125 and 134 percent of state rate (2001 - 2005); as high as 153 percent for females
Stomach Cancer	#8 in state for deaths caused by stomach cancer (1988-2005)
Bladder Cancer	111 percent of state rate (2003)
Ovarian Cancer	116 percent of state rate (2001-2005)
Testicular Cancer	107 percent of state rate (2002 – 2006)
Colon Cancer	113 percent of state rate (2005)
Non-Hodgkin lymphoma	119 percent of state rate for females (2001-2005)
Lung Cancer	108 percent of state rate (2001-2005); as high as 115 percent in 2005

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

4. Gastrointestinal Illnesses

Many gastrointestinal illnesses are related to nitrates.[149] One of the acute impacts of consuming nitrate-contaminated water is a variety of gastrointestinal illnesses. Almost 17 percent of farm workers in Tulare experienced at least monthly bouts of diarrhea, vomiting, and/or stomach pains.[150] While these may or may not be linked to nitrates, gastrointestinal inflammation exacerbates the more serious health impacts of nitrate contamination, such as pancreatitis and cancers of the gastrointestinal tract.

[149]Laboratory for Toxicology, National Institute of Public Health and Environmental Protection. (n.d.). Nitrate. National Institute of Public Health and Environmental Protection: International Programme on Chemical Safety. Retrieved January 21, 2009, from http://www.inchem.org/documents/jecfa/jecmono/v35je14.htm.

[150]Frisvold, G., R. Mines., and J. Perloff. (1988). The Effects of Job Site Sanitation and Living Conditions on the Health and Welfare of Agricultural Workers. *American Journal of Agricultural Economics* 70(4):875-85.

Health outcome associated with high nitrate levels	Death rate in Tulare County
Diseases of the Digestive System	149 percent of state rate (2003)
Peptic Ulcer	140 percent of state rate (2003)
Chronic Liver Diseases and Cirrhosis	133 percent of state rate (2003)
Other Liver diseases	224 percent of state rate (2003)
Pancreatitis	180 percent of state rate (2003)

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

5. Additional Health Outcomes Associated with Nitrate Contamination

Several other health outcomes associated with nitrates occur at notably high rates in Tulare County. For example, consumption of water high in nitrates has been shown to increase hypertrophy, a condition marked by enlargement of the thyroid, which is responsible for many of the body's endocrine and hormonal functions.[151] Tulare County's rate of death for these diseases is exceptionally high. Another endocrine-related disease is diabetes mellitus, which is associated with the endocrine portion of the pancreas.[152] Nitrates are associated with chronic pancreatitis, and total nitrate concentrations in blood serum have been suggested as a prognostic marker for diabetes.[153]

Health outcome associated with high nitrate levels	Death rate in Tulare County
Endocrine, Nutritional and Metabolic Diseases (including thyroid disorders)	172 percent of the state rate (2003)
Respiratory problems; shortness of breath; acute respiratory infections	119 percent of state rate (2007)
Diabetes	148 - 158 percent of state rate (2003 - 2006)

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

6. Health Impacts are Cumulative

[151]Van Maanen et al (1994).

[152]Kostraba et al 1992. See also: Parslow et al (1997).

[153]Nunes et al (2008).

Health problems associated with nitrate contamination in drinking water may be exacerbated and/or compounded by many other environmental and health stressors.[154] As the National Academy of Sciences notes, multiple stressors, ranging from chemicals released from noxious land uses to socioeconomic factors, can exacerbate the impacts of one particular source. They recommend "that exposure assessment methods [for environmental hazards] be expanded to consider exposures to multiple chemicals with multiple routes of exposure...These models need to be able to assess the cumulative effects of chemicals that may have either synergistic or antagonistic actions."[155]

If cumulative risks make certain communities more vulnerable to stressors,[156] such as drinking water contamination, the residents in the San Joaquin Valley are extremely vulnerable. In addition to nitrate contamination, residents face a host of other drinking water pollutants, including pesticides, arsenic, disinfectant by-products, and gasoline additives.[157]

Residents of the San Joaquin Valley are also assaulted by some of the most polluted air in the U.S. According to the American Lung Association, five of the nation's top 25 cities most polluted by particle matter are in the San Joaquin Valley.[158] In addition, five San Joaquin Valley counties make the top 25 list of the most polluted counties for both ozone and particulate matter.[159]

Given the multiple and severe health risks encountered by communities in Tulare County, the cumulative impact of any one stressor is significant. In addition, without a strong regulatory program, such as that identified in Alternative 4, the number of wells with nitrates in excess of the drinking water standard can be expected to increase, exacerbating the already significant health impact of Alternatives 1 and 2.

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[154]Koppe, J., A. Bartonova, G. Bolte, M. Bistrup, C. Busby, M. Butter, P. Dorfman, A. Fucic, D. Gee, P. van den Hazel, V. Howard, M. Kohlhuber, M. Leijs, C. Lundqvist, H. Moshammer, R. Naginiene, P. Nicolopoulou-Stamati, R. Ronchetti, G. Salines, G. Schoeters, G. ten Tusscher, M. Wallis, and M. Zuurbier. (2006). Exposure to multiple environmental agents and their effect. Acta Paediatrica Supplement 95(453):106-13.

[155]Committee on Pesticides in the Diets of Infants and Children, National Research Council. (1993). *Pesticides in the Diets of Infants and Children*. Washington: National Academy Press.

[156]National Environmental Justice Advisory Committee Cumulative Risks and Impacts Group (2004).

[157]Gronberg et al (2004). See also: Ramos (2003); Ferriss, S. (August 18, 2009). Central Valley continues marathon fight for clean drinking water. *Sacramento Bee*; Troiano, J., T. Barry, C. Nordmark, and B. Johnson. (1997). Profiling areas of ground water contamination by pesticides in California: phase II - evaluation and modification of a statistical model. *Environmental Monitoring and Assessment* 45(3):301-318; Environmental Working Group. Drinking Water Quality Report, City of Tulare. Retrieved February 23, 2010, from http://www.ewg.org/tap-water/whatsinyourwater/CA/City-of-Tulare/5410015/. The State Water Resources Control Board's Geotracker database compiles cases of leaking underground storage tanks, leaking landfills, and other sources of potential aquifer contamination. The database on January 7, 2009 listed over 60,000 cases, of which over 24,000 are open. Most of the contaminants listed are gasoline, diesel, heating oil, hydraulic fluid, benzene and solvents.

[158]American Lung Association. (2010). *State of the Air 2010*. Washington: American Lung Association.

[159]Ibid.

Conclusion

Thank you for your consideration of these comments. If you have any questions or concerns, please do not hesitate to contact us. We look forward to continuing to work with staff and the Board to develop an effective long-term irrigated lands regulatory program.

Sincerely,

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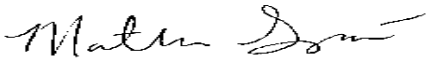

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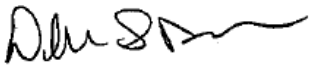

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