Chapter 4
Revisions to the Draft Program Environmental Impact Report

4.1 Introduction

This chapter contains a record of changes made to the ILRP PEIR in response to comments received on the Draft document, identified in Chapter 3, Comments and Responses. None of the text changes result in new or significant environmental impacts than those previously disclosed in the Draft PEIR.

Revisions are presented in the order they appear in the Draft PEIR, organized by chapter, section, and appendix. Deletions are shown in ~~strikeout~~ and insertions are shown in double-underline. Three stars (***) indicates a break or continuation in a section where unchanged text was excluded from this errata.

4.2 Changes to the Draft PEIR

4.2.1 Chapter 1, Summary

Page 1-13, Table 1-1, Impact HYD-1

Table 1-1. Summary of Impacts and Mitigation Measures for the Irrigated Lands Regulatory Program

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
HYDROLOGY AND WATER QUALITY				
SWQ = surface water quality GWQ = groundwater quality				
HYD-1. Change in Quality of State Waters from Agricultural Discharge or Alteration of Hydrologic Patterns of Runoff or Infiltration	1	SWQ: Beneficial GWQ: ~~Potentially significant~~ Beneficial	SWQ: No mitigation is required. GWQ: No mitigation is required. ~~Mitigation Measure HYD-MM-1: Develop and Implement a Groundwater Quality Management Plan~~	SWQ: – GWQ: ~~Less than significant~~ –

4.2.2 Chapter 3, Program Description

Page 3-4, Alternative 1 – Full Implementation of Current Program (No Project Alternative)

3.2.1 Introduction

Under Alternative 1, the Central Valley Water Board would renew the current program and continue to implement it into the future. This would be considered the "No Project" Alternative per CEQA guidance at Title 14 CCR Section 15126.6(e)(3)(A): "When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the 'No Project' Alternative will be the continuation of the existing plan, policy, or operation into the future." Given the reasonably foreseeable ~~ministerial~~ nature of the extension or renewal of the ongoing waiver, which would allow continuation of the existing program, Alternative 1 is best characterized as the "No Project" Alternative. This approach best serves the purpose of allowing the Central Valley Water Board to compare the impacts of revising the ILRP with those of continuing the existing program (Title 14 CCR Section 15126.6[e][1]).

4.2.3 Section 5.5, Air Quality

Page 5.5-25, Assessment Methods, Table 5.5-8

Table 5.5-8. Summary of Management Practices and Potential Construction Emissions

Management Practice	Applicable Alternatives	Potential Construction Emissions
Nutrient management	Alternatives 1 through 4 where nutrient or dissolved oxygen problems are identified Alternative 5, all growers	N/A—no construction required under this management practice.[a]
Improved water management	Alternatives 1 through 5 where COCs are identified	N/A—no construction required under this management practice.[b]
Tailwater recovery system	Alternatives 1 through 5 where COCs are identified	Generation of exhaust emissions from construction equipment (e.g., backhoe, small bulldozer) required to dig and excavate the catchment pond and install pumps. Minor generation of fugitive dust from excavation activities.
Pressurized irrigation	Alternatives 1 through 5 where COCs are identified	If construction equipment is required to set up the irrigation system, ~~minor amounts of~~ exhaust emissions would be generated by construction activities including, but not limited to, erection of pumping facilities, trenching, and pipe installation.
Sediment trap, hedgerow, or buffer	Alternatives 1 through 5 where COCs are identified	Generation of exhaust emissions from construction equipment required to create the trap or physical barrier.
Cover cropping or conservation tillage	Alternatives 1 through 5 where COCs are identified	N/A—no construction required under this management practice.[c]

Management Practice	Applicable Alternatives	Potential Construction Emissions
Wellhead protection	Alternatives 2 through 5	Generation of exhaust emissions from construction equipment required to create the berm. Minor generation of fugitive dust from excavation activities.

Notes:
COCs = constituents of concern.
N/A = not applicable.
[a] This practice may result in reduced fertilizer and pesticide application, thereby reducing toxic air contaminants.
[b] This practice may reduce the amount of water currently being pumped, thereby reducing emissions associated with diesel exhaust.
[c] It is likely that this practice will reduce fugitive dust (PM10 and PM2.5) emissions by reducing the amount of soil exposed to the elements.

Page 5.5-26, Assessment Methods, Operational Emissions

Long-term air quality impacts are associated with changes in the permanent, continued daily use of the program area. Operational emissions from the program alternatives would primarily result from vehicle trips for site inspections and monitoring. Implementation of tailwater recovery systems and increased use of groundwater wells in support of sprinkler and drip irrigation systems would require the use of pumps, likely diesel powered, that also would be considered a source of operational emissions. Likewise, if individual groundwater wells or pressurized irrigation systems require diesel-powered pumps; these facilities would contribute to operational impacts. These sources are expected to be transitory ~~and short term~~ (e.g., seasonal irrigation-related use, semi-annual well sampling, back-up pump motors, and annual inspections).~~, but the extent of these activities is unknown at this time.~~ In the instance of pressurized irrigation, the creation of operational emissions may be offset by reduced need for mechanically powered diversions of surface and groundwater. The extent of these activities, and resulting reductions in offsetting activities, is unknown at this time.

Page 5.5-28, Alternative 1, Impact AQ-2

Impact AQ-2. Generation of Operational Emissions in Excess of Local Air District Thresholds

Alternative 1 does not involve any groundwater monitoring or grower site inspections. Operational emissions therefore would result from vehicle trips made by the coalition groups to perform surface water quality monitoring and from diesel-powered wells installed in tailwater recovery systems.

Surface water quality monitoring is already occurring under existing conditions. Alternative 1 therefore is not expected to result in an appreciable difference in operational emissions related to vehicle trips for monitoring. However, installation of diesel-powered pumps as part of tailwater recovery and/or pressurized irrigation systems would represent an additional source of emissions. With limited information on the number and hours of operation associated with these pumps, a quantitative analysis of emissions is not possible.

Any new emissions generated under Alternative 1 are not expected to be substantial or to exceed applicable air district thresholds. In addition, they may be moderated by emissions benefits related to management practices that reduce irrigation and cover crops (see Table 5.5-8). However, the difference in emissions relative to existing conditions is not known at this time and therefore cannot be compared to the significance criteria. This is considered a potentially significant impact. Implementation of **Mitigation Measure AQ-MM-2** would reduce this impact to a less-than-significant level.

Page 5.5-29, Alternative 2, Impact AQ-2

Impact AQ-2. Generation of Operational Emissions in Excess of Local Air District Thresholds

Under Alternative 2, operational emissions would result from vehicle trips made by the third-party groups to perform surface water and groundwater monitoring, and from new diesel-powered pumps installed as part of tailwater recovery and/or pressurized irrigation systems. Existing wells that are already in operation would be used to conduct the regional groundwater monitoring. Consequently, it is not anticipated that new stationary sources would be operated as part of the groundwater monitoring plans.

This alternative allows for a reduction in surface water quality monitoring under low-threat circumstances or when watershed or area management objectives plans have been adopted. Consequently, the number of trips, and thus operational emissions, associated with surface water quality monitoring may be reduced relative to existing regulations. However, new vehicle trips for regional groundwater monitoring and operation of new diesel-powered pumps for tailwater recovery systems may outweigh any emissions benefits achieved by this reduction. With limited information on the number and distances of vehicle trips associated with monitoring, and the number and hours of operation of the pumps, a quantitative analysis of emissions is not possible.

Any new emissions generated under Alternative 2 are not expected to be substantial or to exceed applicable air district thresholds. In addition, they may be moderated by emissions benefits related to management practices that reduce irrigation and cover crops (see Table 5.5-8). However, the difference in emissions relative to existing conditions is not known at this time and therefore cannot be compared to the significance criteria. This is considered a potentially significant impact. Implementation of **Mitigation Measure AQ-MM-2** would reduce this impact to a less-than-significant level.

Page 5.5-30, Alternative 3, Impact AQ-2

Impact AQ-2. Generation of Operational Emissions in Excess of Local Air District Thresholds

Operational emissions would result from vehicle trips made by the Central Valley Water Board or another implementation agency to conduct annual site inspections on 5 percent of farms and from new diesel-powered pumps installed as part of tailwater recovery and/or pressurized irrigation systems. This alternative does not require growers or the Central Valley Water Board to perform surface water or groundwater monitoring. Rather, individual growers would conduct visual inspections of their own farms. Consequently, minimal emissions would be associated with vehicle travel. Because surface water quality monitoring, which generates emissions from vehicle trips, is required under existing conditions, implementation of Alternative 3 would reduce emissions from this activity relative to existing regulations.

Operational emissions from vehicle travel for grower site inspections are expected to be minimal. The number and distances of trips that would be completed as part of Alternative 3 are not currently known. Likewise, the number of new well pumps to be installed as part of tailwater recovery systems is unavailable. Consequently, it is not possible to quantify emissions or determine whether new emissions from site inspections and well pumps would offset the reduction benefits achieved by eliminating vehicle trips for water quality monitoring.

Operational emissions would result in a significant effect if the incremental difference, or increase, relative to existing conditions exceeds any of the applicable air district thresholds shown in Table 5.5-2. Any increase in emissions generated by Alternative 3 is expected to be miniscule and may be moderated by emissions benefits related to management practices that reduce irrigation and cover crops (see Table 5.5-8). However, the magnitude of potential emissions is not known at this time. This impact is considered potentially significant. Implementation of **Mitigation Measure AQ-MM-2** would reduce this impact to a less-than-significant level.

Page 5.5-31, Alternative 4, Impact AQ-2

Impact AQ-2. Generation of Operational Emissions in Excess of Local Air District Thresholds

Under Alternative 4, operational emissions would result from vehicle trips made by lead entities to perform water quality monitoring, vehicle trips made by the Central Valley Water Board to perform grower site inspections, and new diesel-powered pumps installed as part of tailwater recovery and/or pressurized irrigation systems. Alternative 4 allows for individual growers to perform their own monitoring, depending on the threat level of their operation to water quality. Vehicle trips associated with this type of monitoring include those required to transport samples to the laboratory for analysis.

Emissions benefits may be achieved through practices that reduce irrigation and cover crops (see Table 5.5-8). However, in the absence of a quantitative analysis, data are insufficient to determine how the net operational emissions under Alternative 4 would change relative to existing regulations. Although any increases in emissions are expected to be minuscule and to not exceed air district thresholds, the magnitude of emissions is presently unknown. This is considered a potentially significant impact. Implementation of **Mitigation Measure AQ-MM-2** would reduce this impact to a less-than-significant level.

4.2.4 Section 5.6, Climate Change

Page 5.6-2, Regulatory Framework, State

A variety of legislation has been enacted in California that relates to climate change, much of which sets aggressive goals for GHG reductions within the state. ~~However, none of this legislation provides definitive direction regarding the treatment of climate change in environmental review documents pursuant to CEQA.~~

Page 5.6-5, Regulatory Framework, Local

Bay Area Air Quality Management District

The BAAQMD ~~released~~ adopted its CEQA Air Quality Guidelines in ~~December 2009~~June 2010 (~~EDAW 2009~~Bay Area Air Quality Management District 2010). The guidance ~~proposes~~ establishes significance thresholds for operational GHG emissions. The BAAQMD currently does not recommend a construction GHG emission threshold because of insufficient information to determine an appropriate significance level. District staff recommends considering construction emissions on a case-by-case basis and encourages the implementation of BMPs.

The ~~proposed~~ threshold of significance for operational-related GHG emissions from land use projects is 1,100 metric tons of CO_2e per year. Projects exceeding this threshold would not be considered to result in a significant impact related to GHG emissions if their yearly GHG efficiency is less than 4.6 metric tons of CO_2e per service population (project jobs + projected residents) for mixed-use projects or if the project complies with an approved Climate Action Plan. The proposed threshold for stationary sources is 10,000 metric tons of CO_2e per year. If annual GHG emissions from project operations are below the above thresholds, the proposed project would result in a less-than-significant impact on global climate change (Bay Area Air Quality Management District 2010~~EDAW 2009~~).

Pages 5.6-11 and 5.6-12, Impacts, Assessment Methods

GHG emissions (CO_2, CH_4, and N_2O) from construction activities are primarily the result of fuel use by construction equipment, as well as worker and vendor trips to the project site. Management practices used to prevent impacts on water quality that require heavy-duty equipment would generate GHG emissions through equipment exhaust (see Table 5.5-8). As described in Section 5.5, construction activity, and thus the number and type of heavy-duty equipment, can vary depending on the management practices implemented under the proposed program. In general, however, construction required by the various management practices would be minor. Consequently, GHG emissions resulting from heavy-duty vehicle exhaust most likely would be miniscule.

Operational GHG emissions from the program alternatives would primarily result from vehicle trips for site inspections and monitoring. Diesel-powered well pumps for groundwater wells and tailwater recovery systems also may generate a minor amount of GHGs as exhaust. Likewise, pressurized irrigation systems may require diesel-powered or electric pumps, which will either contribute to direct exhaust emissions or indirect electricity generation emissions, respectively. As discussed in Section 5.5, the extent of these activities is unknown at this time. However, GHG emissions from these sources are expected to be transitory and short term (e.g., semi-annual well sampling, back-up pump motors, and annual inspections).

Certain management practices also may result in GHG emissions benefits relative to existing conditions. For example, improved irrigation management may reduce the amount of time that pressurized pump generators are used. This practice also will help create water-efficient irrigation systems and devices, thereby reducing the amount of water required. Enhanced nutrient application may minimize the number of tractors required to plow a field. This practice also may reduce fertilizer use, which is a source of N_20 emissions. However, as discussed above, the extent and intensity of these activities are unknown.

The amount of GHG emissions from construction equipment and vehicle trips is heavily dependent on the type of management practice and the frequency of monitoring and site inspections, respectively. The number of diesel-powered well pumps also impact the quantity of GHGs emitted during program operation. Likewise, GHG reductions from improvements in irrigation and nutrient management are dependent on the number of farmers implementing these strategies, as well as the condition of their existing facilities. Because information on these sources is currently unavailable, a quantified analysis of potential GHG emissions is not possible (please refer to Section 5.5 for an expanded discussion on the availability of existing data). Consequently, a qualitative analysis of GHG emissions was performed. The qualitative analysis took into account the following:

- Stipulations for the installation of monitoring wells,
- Combustion emissions from heavy-duty equipment required by potential management practices,
- Provisions for groundwater monitoring plans and site inspections, and
- Stipulations for nutrient monitoring plans.

It is important to note that CO_2 emissions from land use changes may be affected by implementation of the ILRP. Agricultural activities represent both an emissions sink (i.e., they reduce emissions) and source (i.e., they produce emissions). Carbon sequestration is the process by which atmospheric CO_2 is absorbed by flora and stored as carbon in biomass. Sequestration rates vary by crop, soil type, regional climate, and management practices, but certain types of cropland (primarily orchards, vines, and rangelands) and grassland are known to actively sequester atmospheric CO_2. The benefits of sequestration can be partially or fully offset when terrestrial carbon is released back into the atmosphere through decay or disturbances. For example, if agriculture practices that typically foster sequestration, such as tillage, are interrupted or altered, a portion of the accumulated carbon may be quickly released. The relationship between carbon sequestration and agricultural practices is therefore complex and at the forefront of several scientific studies. However, there are some agricultural management strategies that are known to sequester carbon and/or reduce GHG emissions. These are listed below in Table 5.6-5.

Table 5.6-5. Agricultural Practices that Sequester Carbon and/or Reduce GHG Emissions

Agricultural Practice	Effect on GHGs
Conservation riparian buffers	Increases carbon storage through sequestration
Conservation tillage on croplands	Increases carbon storage through enhanced soil sequestration, may reduce energy-related CO_2 emissions from farm equipment, and could affect N_2O positively or negatively.
Grazing land management	Increases carbon storage through enhanced soil sequestration and may affect emissions of CH_4 and N_2O.
Biofuel substitution	Substitutes carbon for fossil fuel and energy-intensive products. Burning and growing of biomass can also affect soil N_2O emissions.

Source: U.S. Environmental Protection Agency 2010.

The analysis of impacts to agricultural resources concludes that the ILRP will reduce agricultural resources, primarily through impacts to irrigated pasture acreage (see Impact AG-1). Thus, the ILRP will likely reduce existing cropland currently sequestering CO_2, thereby removing a potential GHG sink, but will also eliminate an existing source of emissions from biomass decomposition. Carbon sequestration rates may also be affected by the program's potential to increase use of the management practices listed in Table 5.6-6. Estimating the ILRP's effects on carbon sequestration and GHG emissions, and to the extent that one source outweighs the other, is thus far more uncertain and speculative than for other classes of emissions discussed above.[1] Consequently, emissions resulting from land use changes were not included in the analysis.

New Footnote 1: Analysis would require a detailed inventory of crop type and size, crop acreage, sequestration rate, soil moisture, and precipitation rates throughout the program area.

Page 5.6-12, Impacts, Significance Determinations

Based on 2010 State CEQA Guidelines Appendix G, an impact pertaining to climate change is considered significant if it would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with any applicable plan adopted for the purpose of reducing GHGs. In accordance with the CEQA Guidelines and scientific consensus regarding the cumulative nature of GHGs[2], this analysis includes a cumulative, rather than project-level, evaluation of climate change impacts.

> New Footnote 2: Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes (see Table 5.6-1), GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless sources past, present, and future. Therefore, GHG impacts are inherently cumulative.

~~Certain criteria must be examined to determine whether a project will result in a significant effect on the environment. As of the writing of this report, the agencies with jurisdiction over air quality regulation and GHG emissions, such as EPA, ARB, and the various local air districts, have not formally adopted applicable significance thresholds, standards, or analysis protocols for the assessment of GHG emissions (please refer to Section 5.6.2). Thus, a methodology to establish an appropriate baseline or develop a program-level inventory for the proposed program, which would allow for an appropriate analysis of the program's impacts on climate change or the impact of climate change on the proposed program, has not yet been established. Recent policy documents and proposed thresholds developed at federal, state, and local levels recommend that GHGs be addressed quantitatively based on their cumulative contribution to climate change impacts, rather than on a project-specific basis.~~

4.2.5 Section 5.7, Vegetation and Wildlife

Page 5.7-50, Mitigation and Improvement Measures

Mitigation Measure BIO-MM-1: Avoid and Minimize Impacts on Sensitive Biological Resources

Implementation of the following avoidance and minimization measures would ensure that the construction activities related to implementation of management practices and installation of monitoring wells on irrigated lands would minimize effects on sensitive vegetation communities (such as riparian habitat and wetlands adjacent to the construction area) and special-status plants and wildlife species as defined and listed in Section 5.7.3. In each instance where particular management practices could result in impacts on the biological resources listed above, growers should use the least impactful effective management practice to avoid such impacts. Where the ILRP water quality improvement goals cannot be achieved without incurring potential impacts, individual farmers, coalitions, or third-party representatives should implement the following measures to reduce potential impacts to less-than-significant levels.

- Where detention basins are to be abandoned, retain the basin in its existing condition or ensure that sensitive biological resources are not present before modification.
- Where construction in areas that may contain sensitive biological resources cannot be avoided through the use of alternative management practices, conduct an assessment of habitat conditions and the potential for presence of sensitive vegetation communities or special-status

plant and animal species prior to construction. this may include the hiring of a qualified biologist to identify riparian and other sensitive vegetation communities and/or habitat for special status plant and animal species;

- Avoid and minimize disturbance of riparian and other sensitive vegetation communities.
- Avoid and minimize disturbance to areas containing special-status plant or animal species.
- Where adverse effects on sensitive biological resources cannot be avoided, undertake additional CEQA review where appropriate and develop a restoration or compensation plan to mitigate the loss of the resources.

4.2.6 Section 5.8, Fish

Page 5.8-51, Impact FISH-3

In some cases, permanent loss of fish habitat may occur as a result of construction required for implementation of management practices. Some of the impact may be due to loss of structural habitat (e.g., vegetation) whereas loss of dynamic habitat (e.g., wetted habitat) could be an issue where tailwater augments natural flows or makes seasonal streams into perennial systems. This may be of concern in areas where tailwater return flows are composed mostly of pumped groundwater. Because the extent of the loss is not known, the impact is considered potentially significant. Implementation of **Mitigation Measure FISH-MM-~~2~~1** would reduce this impact to a less-than-significant level.

Page 5.8-51, Impact FISH-4

Polyacrylamides (PAMs) are applied to reduce erosion and sediment runoff and thereby improve water quality (Sojka et al. 2000). Anionic PAMs are safe to aquatic life when used at prescribed rates (Sojka et al. 2000). Because neutral and cationic PAMs may be toxic to fish and their prey (Sojka et al. 2000; Mason et al. 2005), application of anionic PAMs is not recommended in areas with sensitive fish species (Mason et al. 2005). This impact is considered potentially significant. Implementation of **Mitigation Measure FISH-MM-2** would reduce this impact to a less-than-significant level.

4.2.7 Section 5.9, Hydrology and Water Quality

Pages 5.9-14 through 5.9-16, Alternative 1, Impact HYD-1

Nutrient management would improve both surface water quality and groundwater quality by improving the use of chemicals and using improved application techniques, and by limiting the use of nutrients as fertilizer that could potentially seep to groundwater and add nitrate to the groundwater table. Overall, nutrient management would reduce both soluble and insoluble constituents moving to water bodies. Improved water management also would benefit water quality by improving the application of water, and the possibility of using water additives to coagulate particles would reduce the potential sediment loads to water bodies. Pressurized irrigation is somewhat homogenous with the water management practice and would improve groundwater quality and surface water quality. Water would be applied at a rate that would allow for maximum plant consumption and would minimize the amount of groundwater infiltration, which would improve groundwater quality over time. While reduced infiltration would result in possible reduced groundwater recharge in areas where this practice is employed that are susceptible to such recharge, this decline is expected to be substantially offset by reduced irrigation water volume and a commensurate reduction in groundwater withdrawal.

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Overall, implementation of Alternative 1 would improve surface water quality over time in the subwatersheds with water quality impairments due to irrigated agriculture. Some of the management practices would slightly alter drainage patterns and runoff infiltration, but the amount of alteration is not considered a significant hydrologic impact compared to existing conditions. Some of the management practices could impact groundwater quality through infiltration during settling of particles. ~~Because~~ Although directly addressing groundwater quality is not part of Alternative 1, groundwater quality would not be worsened beyond baseline conditions by implementation of Alternative 1. Rather, increased surface water management practices are expected to indirectly improve groundwater quality over time, resulting in a probable beneficial impact to groundwater quality.~~continue to be impaired from agriculture practices. Implementation of **Mitigation Measure HYD-MM-1** would reduce this impact to a less-than-significant level.~~ No mitigation is required. However, implementation of **Mitigation Measure HYD-MM-1** would act to further improve groundwater quality.

Page 5.9-19, Mitigation and Improvement Measures

Each of the analyzed alternatives would result in beneficial impacts or neutral impacts on hydrology and water quality , therefore, no mitigation is required. However, implementation of the following measure would increase the beneficial impact of Alternative 1 on groundwater:

Mitigation Measure HYD-MM-1: Develop and Implement a Groundwater Quality Management Plan

Growers will design GQMPs to minimize waste discharge to groundwater from irrigated agricultural lands. Development of GQMPs involves collection and evaluation of available groundwater data, identification of GMAs of concern, identification of constituents of concern within the GMAs, prioritization of the GMAs and constituents of concern, identification of agricultural practices that may be causing or contributing to the problem, and identification of agricultural management practices that should be implemented by local growers to address the constituents of concern. The GQMPs will be reviewed by Central Valley Water Board staff, and approved only after staff judge that the implementation measures are adequate to meet the groundwater quality objectives of the Basin Plan and the State Antidegradation Policy.

4.2.8 Chapter 6, Cumulative and Growth-Inducing Impacts

Page 6-1, Cumulative Impacts

The cumulative impact analysis determines the combined effect of the proposed project and other closely related, reasonably foreseeable, projects. This section describes the methods used to evaluate cumulative effects, lists related projects and describes their relationship to the proposed program, identifies cumulative impacts by resource area, and recommends mitigation for significant cumulative effects. Section 15130 of the State CEQA Guidelines states that the discussion of cumulative impacts need not provide as much detail as the discussion of effects attributable to the program alone. The level of detail should be guided by what is practical and reasonable.

According to the State CEQA Guidelines (Section 15130), an adequate discussion of significant cumulative impacts should contain the following elements:

- An analysis of related future projects or planned development that would affect resources in the project area similar to those affected by the proposed project; or a summary of projections contained in an adopted local, regional or statewide plan […] that describes or evaluates conditions contributing to the cumulative effect,
- A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available, and
- A reasonable analysis of the cumulative impacts of the relevant projects. An EIR must examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.

Page 6-4, Cumulative Impacts by Resource, Fish

Given the ongoing ESA consultation process for pesticides as a result of recent court orders, it is reasonably foreseeable that further reasonable and prudent measures would be required by NMFS and USFWS that would improve water quality within the program area. Revision of water quality control plans and TMDLs also can be expected to improve water quality. These and other measures, in combination with the likely beneficial effects of the various program alternatives, suggest that the cumulative effects of the program alternatives are not cumulatively considerable with implementation of **Mitigation Measures FISH-MM-1**~~,~~ and **FISH-MM-2**~~, and **FISH MM-3**~~, described in Section 5.8, Fisheries.

Page 6-4, Cumulative Impacts by Resource, Hydrology and Water Quality

Program alternatives ~~2 through 5~~ would not result in adverse cumulative impacts on surface water quality, groundwater quality, or hydrology in the program area. Combining one of the program alternatives with other local state programs, such as the CV-SALTS program and the existing dairy program, could result in a cumulative beneficial water quality improvement over time. ~~Similarly, Alternative 1 would not result in adverse cumulative impacts on surface water quality or hydrology in the program area and could result in a cumulative beneficial water quality improvement for surface waters. However, Alternative 1 does not address issues pertaining to groundwater quality and therefore could contribute to cumulatively considerable impacts to groundwater quality as a result of discharges from irrigated lands.~~

Page 6-4, Cumulative Impacts by Resource, Agriculture Resources

*[**Staff-initiated Change:** this clarification was made to ensure consistency between the Program-specific impact to Agriculture Resources and the possible cumulative impacts to Agriculture Resources. The level and/or severity of the impact described has not been changed.]*

While conversion of important farmland may not continue at the accelerated rate of the past 10 years due to decreased demand for new housing, it is reasonably foreseeable that it will continue at a rate comparable to that seen since 1984. Given the magnitude of important farmland conversion expected from implementation of the ILRP alternatives, the program could result in considerably cumulative impacts to agriculture resources. ~~However,~~ While implementation of AG-MM-1, described in Section 5.10, Agriculture Resources, could reduce these impacts to a level that is not a cumulatively considerable contribution to this statewide impact, such a reduction cannot be quantified. As such, AG-MM-1 is inadequate to fully mitigate the contribution of the ILRP alternatives to this impact, and their contribution is potentially cumulatively considerable.

4.2.9 Draft PEIR, Appendix A

Page 31, Malathion and Thiobencarb

Six monitoring sites in four subbasins have shown two or more malathion exceedances; three sites (in two subbasins) are in the Sacramento River Basin, and three sites (in two subbasins) are in the San Joaquin River Basin. For thiobencarb, there are four coalition group monitoring sites (in two subbasins) with two or more exceedances in the San Joaquin River Basin. Thiobencarb results above the performance goals caused by rice applications (excepting wild rice) in the Sacramento River Basin are addressed through the Rice Pesticide Program, rather than through an ILRP management plan. See Figure 14 for malathion and thiobencarb data.

UC Davis monitoring resulted in an additional three sites (in different subbasins from the coalition group exceedances sites) showing two or more malathion exceedances—one in the Sacramento River Basin and two in the San Joaquin River Basin (both in the same subbasin). UC Davis monitoring also resulted in five more sites with more than one thiobencarb exceedance, all in the Sacramento River Basin.

There have been no sites with two or more malathion or thiobencarb exceedances in the Tulare Lake Basin in either the coalition group or UC Davis monitoring programs.

Malathion and thiobencarb exceedances caused by rice applications in the Sacramento River Basin are addressed through the Central Valley Water Board's Rice Pesticide Program, rather than the ILRP (excepting wild rice, which would be addressed through the ILRP).

Page 34, Surface Water Map Legends

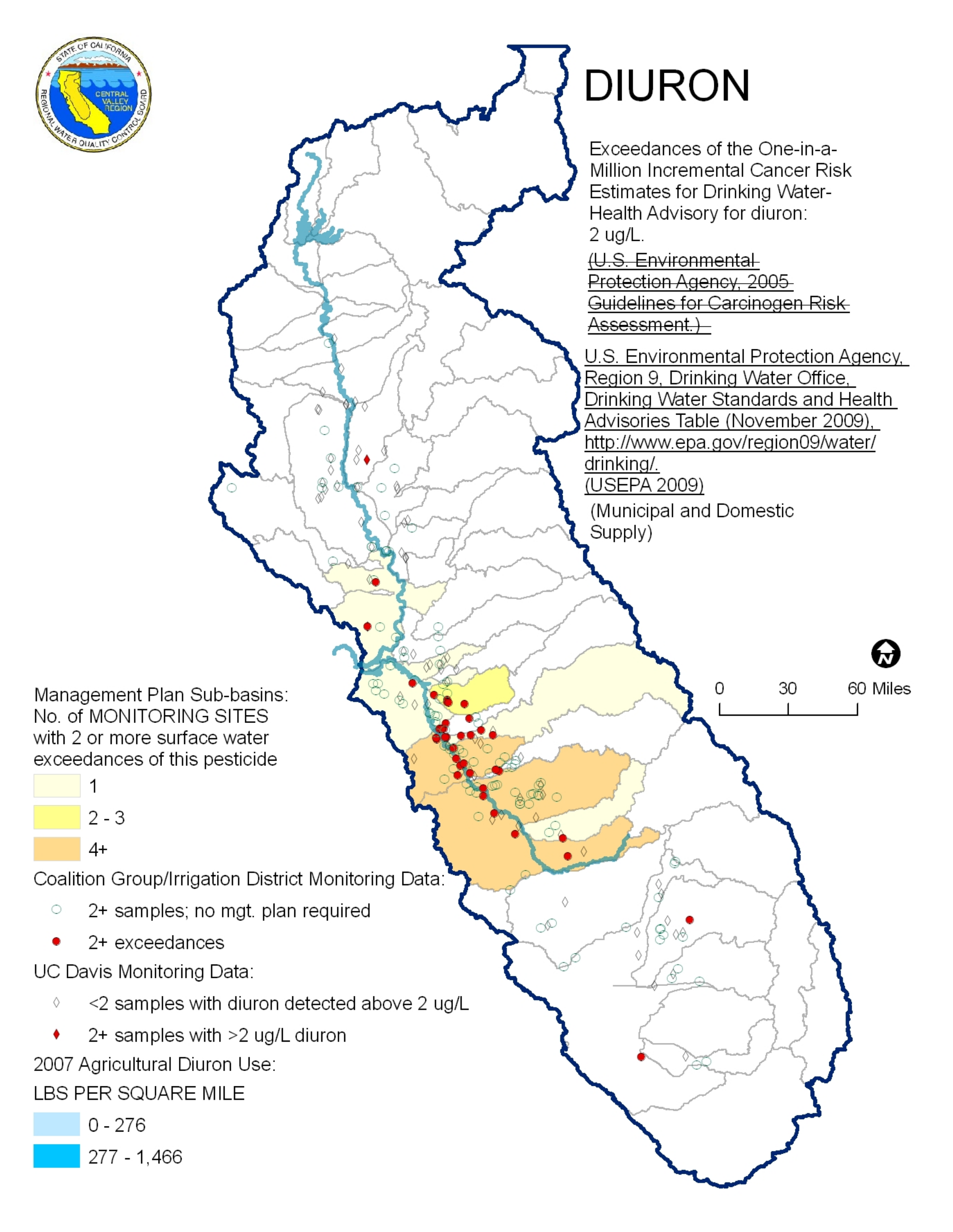
Figures 11 through 20 are side-by-side maps showing the distribution of management plans and other pertinent data throughout the Central Valley. Each figure contains two legend columns (one to the left of each map). Please note that the first map legend (legend to the far left) on each page includes information that applies to both maps, so refer to both legend columns for each map. More information on the water quality objectives and goals cited in this report (e.g., Figures 11–20) can be found in the Central Valley Water Board's July 2008 Staff Report titled: A Compilation of Water Quality Goals. The report is available online at:

<http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_standards_limits/water_quality_goals/wq_goals_2008.pdf>

Page 36, Figure 12 (Draft PEIR, Appendix A); Page 5.8-41 (main body of Draft PEIR), Figure 5.8-7

[The following graphic replaces the left half (Diuron) of Figure 12 (Draft PEIR, Appendix A) and Figure 5.8-7 (main body of Draft PEIR).]

Figure 12. Diuron and Dimethoate Use, Monitoring Data, and Management Plans



Page 46, Nutrients

Nitrate impacts on groundwater beneath agricultural areas are most effectively determined by means of shallow (installed in first encountered groundwater) monitoring wells constructed with short screen lengths (Burow et al. 1998, 2007; Fuhrer et al. 1999; ~~California GAMA Program 2008~~Gilliom and Hamilton 2006). While nitrate impacts may be detected most effectively in shallow wells, intensive pumping and recharge through irrigation can result in a vertically downward groundwater flux. This downward migration of nitrate may result in increasing concentrations in the deeper domestic and public-supply wells over time (Burow et al. 2007).

Pages 56 and 57, Central Valley Regional Water Quality Control Plans

Section 13240 of the CWC requires that the Regional Water Board formulate and adopt a water quality control plan, or Basin Plan, for all areas in the region. The Central Valley Water Board has two basin plans: one for the Tulare Lake Basin and one for the Sacramento River and San Joaquin River Basins.

The Basin Plans establish beneficial uses to be protected in Central Valley ground and surface waters (e.g., municipal supply, agricultural supply, warm and cold freshwater habitat, contact recreation); water quality objectives to protect the beneficial uses; and implementation plans to achieve the water quality objectives. Basin Plan adopted water quality objectives ensure the reasonable protection of beneficial uses in Central Valley ground and surface waters. For example, Basin Plans contain fecal coliform water quality objectives for any waters designated for contact recreation. The fecal coliform water quality objectives are designed to ensure the health and safety of people using waters for contact recreation.

All Water Board permits, WDRs, and waivers of WDRs must implement provisions of the Basin Plan. The long-term ILRP therefore must (1) require that Central Valley ground and surface waters accepting waste from irrigated agricultural operations meet applicable Basin Plan water quality objectives, and (2) be consistent with Basin Plan policies and implementation provisions, including time schedules, where applicable.

~~Basin Planning efforts look at all pollutant sources and identify what needs to be done to achieve water quality protection. For example, Central Valley Salinity Alternatives for Long-Term Sustainability (or CV-SALTS) has the goal of developing sustainable solutions to the increasing salt and nitrate concentrations in Central Valley surface and groundwater. The ILRP is relying on CV-SALTS to identify the actions that need to be taken by irrigated agriculture and others to address these constituents.~~

Recent Basin Plan amendments have addressed discharges of pesticides, oxygen-demanding substances, and salt from irrigated lands in specific portions of the Central Valley. Future Basin Plan amendments also are expected to include new requirements for waste discharges from irrigated agricultural lands. Examples of programs developing amendments include the methylmercury TMDLs, Central Valley pesticide TMDL, organochlorine pesticide TMDL, and the CV-SALTS program. The methylmercury TMDL has been approved by the Central Valley Water Board, and will be reviewed by the U.S. Environmental Protection Agency (USEPA). If approved by USEPA, the TMDL would establish new methylmercury loading limits for Central Valley surface waters.

As described above, the long-term ILRP is required to implement Basin Plan provisions, including new provisions adopted in a Basin Plan amendment. Therefore, it is important that the long-term ILRP be flexible enough to implement these and other future Basin Plan water quality requirements.

1. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)

As described in Section III.C of this report, increasing salinity is likely the largest long-term chronic water quality impairment to surface and groundwater in the Central Valley; also, there are a considerable number of wells in the Central Valley that have high levels of nitrate. Irrigated agricultural operations contribute to the growing problem by importing salts and nitrates -primarily with irrigation water and fertilizers. Salts and nitrates unused by plants may move offsite in tailwater, build-up in the soil profile, and move to groundwater through leaching or other means. Where salt build-up in soils leads to loss of crop productivity, irrigated agricultural operations must force the salts downward by applying large amounts of irrigation water.

Unfortunately, in many areas of the Central Valley, there is no natural mechanism for removal of imported salts leached to groundwater. Therefore, salts applied by agricultural operations that leach to groundwater essentially build-up in the groundwater basin. Over time, this build-up of salts may lead to impairment of beneficial uses. Management practices that operations will be implementing under the ILRP will work to reduce the amount of salts imported by irrigated agricultural operations. Examples of these practices include nutrient and irrigation water management to maximize the efficiency of applied fertilizers and irrigation water. However, in many areas of the Central Valley, this incremental reduction of salt loading, without mechanisms for removal, will only slow the build-up of salts.

CV-SALTS has the goal of developing sustainable solutions to the increasing salt and nitrate concentrations in Central Valley surface and groundwater. While the ILRP will work to reduce irrigated agricultural discharge of these constituents, the ILRP is relying on CV-SALTS to identify the actions that need to be taken by irrigated agriculture and others to provide a long-term solution for discharge of these constituents to State waters within the Central Valley. Initial CV-SALTS implementation requirements for salinity and nitrate are expected to be approved by the Board within the next five years, with future refinement anticipated.

Pages 57 and 59, State Antidegradation Policy

Basin Plan water quality objectives are developed to ensure that ground and surface water beneficial uses are protected. The quality of some State ground and surface waters is higher than established Basin Plan water quality objectives. For example, nutrient levels in good quality waters may be very low, or not detectable, while existing water quality standards for nutrients may be much higher. In such waters, some degradation of water quality may occur without compromising protection of beneficial uses. The policies described in this section guide when and how such degradation may be permissible. The section also describes a related State Water Board doctrine that applies in situations when waters are not high quality.

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The State Water Board has interpreted Resolution No. 68-16 to incorporate the Federal Antidegradation Policy in situations where the policy is applicable. (SWRCB Order No. WQ 86-17). The application of the federal Antidegradation Policy to nonpoint source discharges (including discharges from irrigated agriculture) is limited.[A]

New Footnote A: 40 CFR 131.12(a)(2) requires that the "State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and *all cost-effective and reasonable best management practices for nonpoint source control.*" The EPA Handbook, Chapter 4, clarifies this as follows: "Section 131.12(a)(2) does not mandate that States establish controls on nonpoint sources. The Act leaves it to the States to determine what, if any, controls on nonpoint sources are needed to provide attainment of State water quality standards (See CWA Section 319). States may adopt enforceable requirements, or voluntary programs to address nonpoint source pollution. Section 40 CFR 131.12(a)(2) does not require that States adopt or implement best management practices for nonpoint sources prior to allowing point source degradation of a high quality water. However, States that have adopted nonpoint source controls must assure that such controls are properly implemented before authorization is granted to allow point source degradation of water quality." Accordingly, in the context of nonpoint discharges, the BPTC standard established by state law controls.

Administrative Procedures Update 90-004, Antidegradation Policy Implementation for NPDES Permitting, provides guidance for the Regional Boards in implementing Resolution No. 68-16 and 40 CFR 131.12, as these provisions apply to NPDES permitting. APU 90-004 is not ~~controlling~~ applicable in the context of the irrigated lands long-term program because nonpoint discharges from agriculture are exempt from NPDES permitting.

Pages 59 through 61, Definitions, High Quality Waters

Resolution 68-16 ~~refers to~~applies whenever "existing quality of water ~~[that]~~ is better than quality established in policies as of the date such policies become effective,"[25] and 40 CFR 131.12 refers to "quality of waters [that] exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation." Such waters are "high quality waters" under the State and federal antidegradation policies. In other words, high quality waters are waters with a ~~baseline~~ background quality of better quality than that necessary to protect beneficial uses ~~(the term "baseline" is discussed below)~~.[26] The CWC directs the State Water Board and the Regional Water Boards to establish water quality objectives for the reasonable protection of beneficial uses. Therefore, where water bodies contain levels of water quality constituents or characteristics that are better than the established water quality objectives, such waters are considered high quality waters.

Both state and federal guidance indicates that the definition of high quality waters ~~may be~~is established by constituent or parameter [State Water Board Order No. WQ 91-10;EPA Water Quality Handbook, Chapter 4 Antidegradation (40 CFR 131.12) ("EPA Handbook")]. Waters can be of high quality for some constituents or beneficial uses but not for others.

With respect to degraded groundwater, a portion of the aquifer may be degraded with waste while another portion of the same aquifer may not be degraded with waste. The portion not degraded is high quality water within the meaning of Resolution No. 68-16. See State Water Board Order No. WQ 91-10.

In order to determine whether a water body is a high quality water with regard to a given constituent, the background quality of the water body unaffected by the discharge must be compared to the water quality objectives. That background is generally determined based on current conditions of the water body. See SWRCB Order Nos. WQ-2000-07 and WQ-86-8. If the quality of a water body has declined since the adoption of the relevant policies and that subsequent decline was not a result of regulatory action consistent with the State antidegradation policy, a baseline representing the historically higher water quality may be an appropriate representation of background.[27] However, if the decline in water quality was permitted consistent with State and federal antidegradation policies, the most recent water quality resulting from permitted action still constitutes the relevant baseline for determination of whether the water body is high quality. See, e.g., SWRCB Order No. WQ 2009-0007 at 12. Additionally, if water quality conditions have improved historically, the current higher water quality would again be the point of comparison for determining the status of the water body as a high quality water.

> Revised Footnote 27: The ~~year 1968 represents the year in which the~~ State antidegradation policy was adopted in 1968, therefore water quality as far back as 1968 may be relevant to an antidegradation analysis. For purposes of application of the federal antidegradation policy only, the relevant year would be 1975. ~~Because the State policy applies to all waters of State, 1968 is the appropriate year in this analysis.~~

~~Baseline Condition~~

~~The term "baseline" is not used in the State or federal antidegradation policies but is a significant concept for application of the antidegradation law. In order to determine whether a water body is a high quality water with regard to a given constituent, the quality of that water at some baseline point must be compared to the water quality objectives. That baseline is not necessarily current conditions and may be very complicated to determine. Generally, baseline quality is the best quality of the receiving water that has existed since 1968,[27] unless subsequent lowering was a result of regulatory action consistent with State and federal antidegradation policies. If poorer water quality was permitted consistent with State and federal antidegration policies, the most recent water quality resulting from permitted action is the baseline water quality to be considered in an antidegradation analysis. If degradation in the water quality was attributable to activity not permitted in compliance with the antidegradation policy, the baseline is not current conditions. Conversely, if water quality conditions have improved since 1968, baseline would be reevaluated to represent the higher water quality.~~

~~In the context of the long-term ILRP, which aims to regulate discharges to a very large number of water bodies, each with numerous constituents, determination of a baseline water quality is a near impossible task. There is no comprehensive, waste constituent–specific information for all Central Valley surface and groundwater accepting agricultural wastes available for 1968 conditions, nor are comprehensive data available on changes in water quality since 1968.~~

~~In some cases, current water quality may be the appropriate baseline. Trends in agricultural irrigation practices since 1968 may indicate reduction in potential waste discharge. Section III.A of this report, Industry Summary, describes a general increase in efficient irrigation practices (drip, sprinkler) from 1970 to 2000. Irrigation water provides crops with water and a means for movement of waste constituents off site in tailwater discharge. Also, application of irrigation water may move waste constituents to groundwater through leaching losses. More efficient water use would work to minimize tailwater discharge and leaching of water that could carry waste to groundwater. Trends showing more efficient water use have been motivated by increased demand on fresh water supplies. This trend likely will continue into the future with or without increased Central Valley Water Board regulation.~~

~~This analysis is qualitative in nature. However, the logic of the analysis is appropriate given that technology has advanced over time, irrigation water has become more expensive, and irrigation water is not a "waste" that irrigated agricultural operations are tasked with "discharging" (it is a purchased commodity that can cut into profits). Considering this, it makes sense that operations, over time, would use better technology to reduce costs, thereby reducing use. Nevertheless, it~~

~~cannot be assumed that current water quality is always the appropriate baseline for Central Valley water bodies.~~

~~Given the complexity of determining the baseline quality in the long-term ILRP context and the significant variation in conditions over the broad areas covered by the program, any antidegradation analysis in support of an order implementing the long-term program will assume that at least some of the waters into which agricultural discharges will occur are high quality waters because unpermitted degradation has occurred since 1968. Moreover, available data show that currently existing quality of certain water bodies is better than the water quality objectives. Degradation of such waters can be permitted only consistent with the State and federal antidegradation policies.~~

~~Additionally, data collected by the Central Valley Water Board, dischargers, educational institutions, and others demonstrate that many water bodies in the Central Valley Region are already impaired for various constituents associated with irrigated agricultural activities, including pesticides (e.g., diazinon, chlorpyrifos, soil fumigants), salt, sediment, and nitrate. Many surface water bodies have been listed as impaired for these constituents pursuant to Clean Water Act Section 303(d) (see ECR and Section III.C of this report for information on surface and groundwater quality). The antidegradation policies, as interpreted in State Board Orders, require at a minimum that where a water body is already impaired, any discharge to that water body must not cause or contribute to an exceedance of water quality objectives.~~

Pages 61 and 62, Best Practicable Treatment or Control

Resolution 68-16 requires that, where degradation of high quality waters is permitted, ~~any activity that results in discharge to existing high quality waters meet WDRs that result in~~ best practicable treatment ~~and~~ or control (BPTC) limits the amount of degradation that may occur. Neither the CWC nor Resolution 68-16 defines the term “best practicable treatment or control.” ~~The federal antidegradation provision, 40 CFR 131.12, does not contain a similar provision that would apply to nonpoint sources.[28]~~

> Deleted Footnote 28: ~~40 CFR 131.12(a)(2) requires that the “State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and *all cost-effective and reasonable best management practices for nonpoint source control.*” The EPA Handbook, Chapter 4, clarifies this as follows: “Section 131.12(a)(2) does not mandate that States establish controls on nonpoint sources. The Act leaves it to the States to determine what, if any, controls on nonpoint sources are needed to provide attainment of State water quality standards (See CWA Section 319). States may adopt enforceable requirements, or voluntary programs to address nonpoint source pollution. Section 40 CFR 131.12(a)(2) does not require that States adopt or implement best management practices for nonpoint sources prior to allowing point source degradation of a high quality water. However, States that have adopted nonpoint source controls must assure that such controls are properly implemented before authorization is granted to allow point source degradation of water quality.” Accordingly, in the context of nonpoint discharges, the BPTC standard established by state law controls.~~

Despite the lack of a BPTC definition, ~~Several~~ certain State Water Board water quality orders ~~have~~ and other documents provide direction on the interpretation of BPTC. ~~evaluated what level of treatment or control is technically achievable using “best efforts.” and applied the best efforts factors in interpreting BPTC. In~~ The State Water Board has stated “one factor to be considered in determining BPTC would be the water quality achieved by other similarly situated dischargers, and the methods used to achieve that water quality.” (See Order WQ 2000-07, at pages 10–11). In a “Questions and Answers” document for Resolution 68-16 (the Questions and Answers Document), BPTC is interpreted to additionally include~~determining BPTC, the discharger should~~ a comparison of~~e~~ the proposed method to existing proven technology; evaluation of~~e~~ performance data (through treatability studies);~~,~~ and comparison of~~e~~ alternative methods of treatment or control~~, and consider the method currently used by the discharger or similarly situated dischargers. (SWRCB Order Nos. WQ 81-5, WQ 82-5, WQ 90-6, and WQ 2000-07)~~.[29] Many of the above considerations are made under the "best efforts" approach described later in this section [see section E.4, infra]. In fact, the State Water Board has not distinguished between the level of treatment and control required under BPTC and what can be achieved through "best efforts."

Revised Footnote 29: ~~This approach is summarized in~~ See *Questions and Answers, State Water Resources Control Board, Resolution No. 68-16*~~,~~ (February 16, 1995).

The Regional Water Board may not "specify the design, location, type of construction, or particular manner in which compliance may be had with [a] requirement, order, or decree" (CWC 13360). However, the Regional Water Board still must require the discharger to demonstrate that the proposed manner of compliance constitutes BPTC (SWRCB Order No. WQ 2000-7).

The requirement of BPTC is discussed in greater detail below.

Pages 62 through 66

Maximum Benefit to People of the State

Resolution 68-16 requires that where degradation of water quality is permitted, such degradation must be consistent with the "maximum benefit to people of the State." Only after "intergovernmental coordination and public participation" and a determination that "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located" does 40 CFR 131.12 allow for degradation.

As described in the Question and Answers Document, ~~Factors~~ factors considered in determining whether degradation of water quality is consistent with maximum benefit to people of the State include economic and social costs, tangible and intangible, of the proposed discharge, ~~compared to the benefits,~~ as well as the environmental aspects of the proposed discharge, including benefits to be achieved by enhanced pollution controls. Closely related to the BPTC requirement, consideration must be given to alternative treatment and control methods and whether ~~a~~ lower water quality can be abated or avoided through reasonable means, and the implementation of feasible alternative treatment or control methods should be considered.

USEPA guidance clarifies that the federal antidegradation provision "is not a 'no growth' rule and was never designed or intended to be such. It is a policy that allows public decisions to be made on important environmental actions. Where the State intends to provide for development, it may decide under this section, after satisfying the requirements for intergovernmental coordination and public participation, that some lowering of water quality in "high quality waters" is necessary to accommodate important economic or social development" (EPA Handbook for Developing Watershed Plans to Restore and Protect Our Waters, Chapter 4). Similarly, under Resolution 68-16, degradation is permitted where maximum benefit to the people of the State ~~important economic or social factors are~~is demonstrated.

32. Water Quality Objectives and Beneficial Uses

[[This section has been moved up from below what was Section 2 and is now Section 4, “Application of Antidegradation Requirements…”]]

As described above, Resolution 68-16 and Section 40 CFR 131.12 are both site-specific evaluations that are not easily employed to address large areas or broad implementation for classes of discharges. However, Aas a floor, any degradation permitted under the antidegradation policies must not cause an exceedance of water quality objectives or a pollution or nuisance. Furthermore, the NPS Policy establishes a floor for all water bodies in that implementation programs must address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses regulatory program must prohibit agricultural discharges from causing or contributing to exceedances of water quality objectives to ensure that beneficial uses are protected, and that a pollution or nuisance is not caused.[31] It should be noted that, where natural background conditions exceed water quality objectives for a given constituent in a water body, the objectives do not require improvement over natural conditions. See Policy for Application of Water Quality Objectives contained in the Basin Plan for the Sacramento River and San Joaquin River Basins (IV-16 *et seq*.) and the Basin Plan for the Tulare Lake Basin (IV-21 *et seq*.).

Deleted Footnote 31: See SWRCB Order Nos. WQ 81-5; WQ 2000-07.

43. Waters That are Not High Quality: The “Best Efforts” Approach

Where a water body is at or exceeding water quality objectives already, it is not a high quality water with respect to the constituent exceeding objectives and is not subject to the requirements of the antidegradation policies. As stated previously, data collected by the Central Valley Water Board, dischargers, educational institutions, and others demonstrate that many water bodies in the Central Valley Region are already impaired for various constituents associated with irrigated agricultural activities.

Where a water body is not high quality and the antidegradation policies are accordingly not triggered, the Central Valley Water Board is required under State Water Board precedent to set limitations more stringent than the objectives set forth in the Basin Plan. The State Water Board has directed that, “where the constituent in a groundwater basin is already at or exceeding the water quality objective, . . . the Regional Water Board should set limitations more stringent than the Basin Plan objectives if it can be shown that those limitations can be met using “best efforts.” SWRCB Order No. WQ 81-5; *see also* SWRCB Orders Nos. WQ 79-14, WQ 82-5, WQ 2000-07. Finally, the NPS Policy establishes standards for management practices.

The “best efforts” approach involves the Regional Water Board establishing limitations expected to be achieved using reasonable control measures. Factors which should be analyzed under the “best efforts” approach include the effluent quality achieved by other similarly situated dischargers, the good faith efforts of the discharger to limit the discharge of the constituent, and the measures necessary to achieve compliance. (SWRCB Order No. WQ 81-5, at page 7.). The State Water Board has applied the “best efforts” factors in interpreting BPTC. (See SWRCB Order Nos. WQ 79-14, and WQ 2000-07.).

In summary, the Board may set discharge limitations more stringent than water quality objectives even outside the context of the antidegradation policies. The “best efforts” approach must be taken where a water body is not “high quality” and the antidegradation policies are accordingly not triggered.

~~2~~4. Application of Antidegradation Requirements to the Long-Term Irrigated Lands Regulatory Program

Whether a water body is a high quality water within the meaning of the antidegradation policies is a water body-specific and constituent-specific determination. Very little guidance has been provided in State or federal law with respect to applying the antidegradation policy to a program or general permit where multiple water bodies are affected by various discharges, some of which may be high quality waters and some of which may by contrast have constituents at levels that already exceed water quality objectives. In the context of the Long-term ILRP, which aims to regulate discharges to a very large number of water bodies, each with numerous constituents, making comprehensive determinations as to water quality is a near impossible task. There is no comprehensive, waste constituent-specific information for all Central Valley surface and groundwater accepting agricultural wastes available for current conditions. Likewise, there is no comprehensive historic data.[B]

> New Footnote B: Irrigated lands discharges have been regulated under a conditional waiver since 1982, but comprehensive data as to trends under the waiver are not available.

Data collected by the Central Valley Water Board, dischargers, educational institutions, and others demonstrate that many water bodies in the Central Valley Region are already impaired for various constituents associated with irrigated agricultural activities, including pesticides (e.g., diazinon, chlorpyrifos, soil fumigants), salt, sediment, and nitrate. Many surface water bodies have been listed as impaired for these constituents pursuant to Clean Water Act Section 303(d) (see ECR and Section III.C of this report for information on surface and groundwater quality). However, available data show that currently existing quality of certain water bodies is better than the water quality objectives. For example, Figure 16 shows surface waters sampled for nitrate and whether these waters exceed objectives. As shown in the figure, there are water bodies sampled throughout the Central Valley that do not exceed water quality objectives for nitrates. These waters are considered "high quality" with respect to nitrates. Degradation of such waters can be permitted only consistent with the State and federal antidegradation policies.

Given the significant variation in conditions over the broad areas covered by the program, any discussion of the antidegradation principles in evaluation of the Long-term Program should account for the fact that at least some of the waters into which agricultural discharges will occur are high quality waters. Further, the discussion should also account for the fact that even where a water body is not high quality (such that discharge into that water body is not subject to the antidegradation policy), the Board is required under State Water Board precedent to impose limitations more stringent than the objectives set forth in the Basin Plan, if those limits can be met by "best efforts."

It is not possible to identify all areas in a large geographic region where ~~existing~~ background water quality may be higher than ~~background~~applicable ~~baseline~~ water quality objectives and ensure that the antidegradation policies are followed through a uniform set of requirements in addressing such waters. Instead, any program instituted to permit a type of discharge or category of discharge needs to be protective of beneficial uses throughout the entire geographical area to which the program applies and provide a means to evaluate and implement BPTC to minimize degradation of high quality waters ~~on a site-specific basis~~ where such degradation may be occurring.[30] Where waters are already degraded, the program should provide a means to evaluate and implement the "best efforts" approach.

As stated, given the complexity of determining baseline background water quality and in applying the antidegradation policy to a wide set of water bodies and constituents, the long-term ILRP assumes that some of the water bodies receiving irrigated agricultural discharges are high quality waters. From a programmatic standpoint, irrigated land waste discharges have the potential to cause degradation of surface and groundwater, and the requirements of the anti-degradation policies must be followed. Moreover, existing data show that some waters already have constituents associated with irrigated agricultural discharges in levels at or exceeding water quality objectives. Accordingly, the long-term ILRP must comply be consistent with the antidegradationResolution 68-16 and related policies by requiring ensuring that:

- at a minimum, irrigated agricultural waste discharges must be addressed in a manner that achieves and maintains may not cause or contribute to exceedances of water quality objectives and beneficial uses;
- because it is expected that there may be degradation of some Central Valley high quality waters receiving irrigated agricultural discharges, maximum benefit to the people of the State must be shown;
- the requirements implementing the long-term ILRP must result in use of BPTC where irrigated agricultural waste discharges may cause water quality degradation of high quality waters; where waters are already degraded, the requirements must result in the pollution controls that reflect the "best efforts" approach.

Any long-term ILRP must ensure that all these requirements are met.

45. Consistency with Maximum Benefit to the People of the State

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In summary, while the implementation of antidegradation requirements in the long-term ILRP aims to prevent further degradation, staff is cognizant that it is also assumed that there may be cases where irrigated agricultural waste discharges threaten to some degradeation of high quality waters would occur from irrigated agricultural waste discharge. Considering, however, that:,

- Central Valley communities depend on irrigated agriculture for employment,
- the State and nation depend on Central Valley agriculture for food,
- the long-term ILRP would work to prevent further degradation of surface and groundwater, and
- the long-term ILRP would ensure that all State waters in the Central Valley meet applicable water quality objectives.,

Continued continued waste discharge associated with irrigated agricultural operations that may cause degradation of high quality waters is, at a programmatic level, consistent with the maximum benefit to the people of the State.

Pages 66 through 68, BPTC

56. Consistency with BPTC and the "Best Efforts" Approach

As discussed, without site-specific information on high quality waters and each agricultural input to those waters, it is not possible to do a "site- or discharge-" specific antidegradation analysis to support the general orders/waivers for the long-term ILRP as a whole. Instead, implementation of the program must work to achieve site-specific antidegradation and antidegradation-related requirements through implementation of BPTC/"best efforts" as appropriate and representative monitoring to confirm the effectiveness of the BPTC/"best efforts" measures in achieving their goals~~preventing or minimizing degradation~~. Any regulatory program adopted will rely on implementation of practices and treatment technologies that constitute BPTC/"best efforts," based to the extent possible on existing data, and require monitoring of water quality to ensure that the selected practices in fact constitute BPTC where degradation of high quality waters is or may be occurring, and "best efforts" where waters are already degraded. Because the State Water Board has not distinguished between the level of treatment or control required under BPTC and what can be achieved through "best efforts," it is likely that the Central Valley Water Board would set a single set of requirements that would apply equally to high quality waters and already degraded waters. Of course, the selected practices must also be considered adequate "management practices" within the meaning of the NPS Policy.

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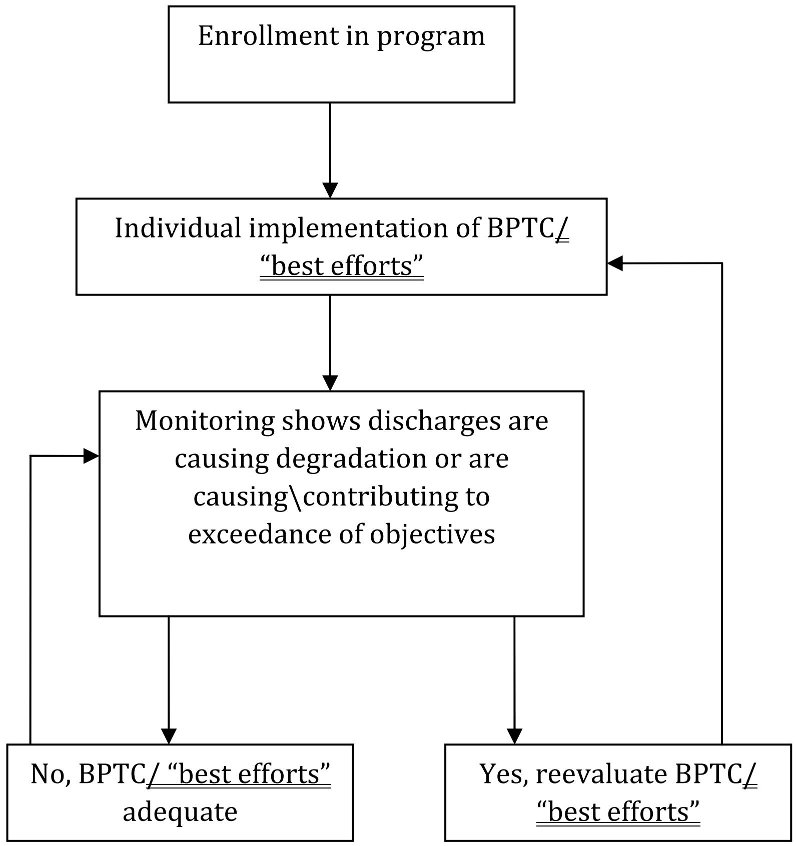
The goals for local selection of management measures include:

- minimize waste discharge off site in surface water,
- minimize erosion,
- minimize percolation of waste to groundwater,
- work to match nutrient application to predicted crop uptake, ~~and~~
- prevent pollution and nuisance,
- achieve and maintain water quality objectives and beneficial uses,
- implement wellhead protection measures.

Implementation of management measures that meet the above goals would be expected to constitute BPTC/"best efforts." However, where degradation is occurring, irrigated agricultural operators must *demonstrate* that any set of practices proposed for implementation represents BPTC and will be required to consider existing water quality data or conduct monitoring in support of this demonstration. It is expected that this will be an iterative process whereby the effectiveness of any set of practices in minimizing degradation will be periodically reevaluated as necessary and/or as more recent and detailed water quality data become available. Figure 21 is a logic flow diagram summarizing the antidegradation and antidegradation-related approaches for the long-term ILRP.

Page 68, Figure 21

Figure 21. Flow Diagram for Long-Term ILRP Antidegradation Approach



Page 72, Surface Water Protection Program

Under the California Pesticide Management Plan for Water Quality, DPR will investigate pesticides of concern and help develop recommended use practices designed to reduce or eliminate the impact of pesticides on surface water quality. Management practices designed to reduce contamination usually will be implemented initially through voluntary and cooperative efforts. Depending on the source of the residue problems, mitigation may include outreach programs to educate residential and professional users on ways to reduce pesticides in urban waters as well as programs targeted at modifying use practices among agricultural pesticide users. If the revised use practices (which are voluntarily adopted by pesticide users) do not adequately mitigate the impacts, DPR can use its wide-ranging regulatory authority to impose use restrictions. DPR may modify the use of pesticides by regulation or permit conditions to prevent excessive amounts of residues from reaching surface water. DPR has the role of evaluating the feasibility of these modifications and conditions, and of promulgating any necessary regulations. Although the State and Regional Water Boards independently could use their authorities to regulate the discharge of pesticides, they often will work with DPR first to address these issues.

Page 80, Coordination of Groundwater Programs, Regulatory Authorities

The difference in Water Board and DPR regulatory authorities highlights the need for coordination between programs. For example, reported detection of pesticide residues in groundwater by either the Water Board or DPR would initiate an investigation. DPR would collect additional information to support the current regulatory process. While DPR proceeds with regulatory actions for the new detections, the long-term ILRP could immediately review the data, and where necessary, and inform growers using the pesticide in the affected area of the need to implement management practices to meet the requirements of the ILRP to prevent further degradation of groundwater. The information collected (monitoring data and practices implemented) could be integrated into DPR's geographic approach to require management practices in other areas of the State with similar vulnerable characteristics.

Page 93, Program Goals and Objectives

The overall goals of the ILRP are to (1) restore and/or maintain the highest reasonable quality of State waters[33] considering all the demands being placed on the water, (2) minimize waste discharge from irrigated agricultural lands[34] that could degrade the quality of State waters, (3) maintain the economic viability of agriculture in California's Central Valley, and (4) ensure that irrigated agricultural discharges do not impair Central Valley communities' and residents' access to safe and reliable drinking water. In accordance with these goals, the objectives of the ILRP are to those listed below.

- Restore and/or maintain appropriate applicable beneficial uses established in Central Valley Water Board Water Quality Control Plans by ensuring that all state waters within the Central Valley meet applicable water quality objectives.

Page 98, Objectives

(1) *Restore and/or maintain appropriate applicable beneficial uses established in Central Valley Water Board Water Quality Control Plans by ensuring that all State waters meet applicable water quality objectives*

Page 111, Key Element 4

The goals of the program include restoring and/or maintaining the highest reasonable quality of State waters, minimizing waste discharge from irrigated agricultural lands, and restoring and/or maintaining appropriate applicable Basin Plan beneficial uses. Agricultural operations would work to achieve these goals through implementation of water quality management measures. Feedback mechanisms for determining whether these goals would be met include water quality monitoring and tracking of practices implemented.

Page 114, Antidegradation

Implementation of the program must work to achieve site-specific antidegradation and antidegradation-related requirements through iterative implementation of BPTC/"best efforts" and representative monitoring (i.e., where monitoring indicates degradation, BPTC/"best efforts" would evolve to prevent such degradation).

Page 115, Alternative 1

Alternative 1 would not establish requirements for operations to implement BPTC/"best efforts" where trends in surface or groundwater monitoring show degradation attributable to agricultural waste discharges. The alternative would require management plans to work toward mitigating agriculturally related exceedances of surface water quality objectives.

Alternative 1 would not implement the iterative BPTC/"best efforts" and monitoring process for addressing degradation to groundwater. Through development and implementation of SQMPs, Alternative 1 would partially implement the iterative process for addressing degradation to surface waters (i.e., proposed process is geared toward identifying exceedances and not degradation). *Alternative 1 is not consistent with the proposed antidegradation approach.*

Page 115, Alternative 2

Under local groundwater management plans, management practices could be recommended based on information collected. Where degradation is occurring, antidegradation and antidegradation-related provisions require management practices implementing BPTC/"best efforts." Under third-party-developed GQMPs, groundwater quality management practices would be identified and implemented to the "maximum extent practicable." Groundwater quality monitoring would not be required under GQMPs to determine whether degradation is occurring and/or evaluate BPTC/"best efforts" effectiveness. *Alternative 2 is partially consistent with the proposed antidegradation approach.*

Page 116, Alternative 3

Alternative 3 would require all operations to develop individual FWQMPs. FWQMPs would be certified by the Central Valley Water Board or authorized certifying entity. Implementation of certified FWQMPs would be considered BPTC/"best efforts." Surface and/or groundwater quality monitoring would not be required under Alternative 3 to determine effectiveness of BPTC/"best efforts" and whether degradation is occurring. *Consequently, Alternative 3 is partially consistent with the proposed antidegradation approach.*

Page 116, Alternative 4

Alternative 4 would require all operations to develop individual FWQMPs. The alternative also would require individual and/or regional surface and groundwater monitoring. Implementation of FWQMPs would constitute BPTC/"best efforts." Results of surface and groundwater quality monitoring could be used to determine effectiveness of BPTC/"best efforts" and/or whether discharges are causing degradation. *Alternative 4 is consistent with the proposed antidegradation approach.*

Page 116, Alternative 5

Alternative 5 would require all operations to develop individual FWQMPs. The alternative also would require individual surface and groundwater monitoring. Implementation of FWQMPs would constitute BPTC/"best efforts." Results of surface and groundwater quality monitoring could be used to determine effectiveness of BPTC/"best efforts" and/or whether discharges are causing degradation. *Alternative 5 is consistent with the proposed antidegradation approach.*

Page 134, Potentially Significant Impacts Common to All Alternatives

Where an irrigated agricultural operation/third-party group determines that a proposed management practice/monitoring well may affect a sensitive resource, the ILRP will require that the responsible party (e.g., irrigated agricultural operation/third party) either (1) select a different management practice (or location of practice/monitoring well) that meets water quality goals, but does not involve impacts on a sensitive resource; (2) implement the mitigation measures described in the implementation mechanism *(e.g., WDRs/ waiver)* for the potentially affected resource; or (3) work with the Central Valley Water Board to obtain an individual waste discharge permit and site-specific CEQA analysis.

Pages 134 and 135, Alternative-Specific Potentially Significant Impacts

In addition to the above impacts, there are ~~a number of potentially significant impacts that are specific to alternatives. Resource areas that have~~ alternative-specific potentially significant impacts ~~are~~on~~:~~

- ~~hydrology and water quality (contribute to degradation of groundwater—Alternative 1), and~~
- agriculture resources (loss of farmland from increased regulatory costs).

~~Hydrology and Water Quality~~

~~Alternative 1 would involve full implementation of the current ILRP. The Draft PEIR indicates that the surface water focus of Alternative 1 may lead to continued degradation of groundwater from agricultural practices. This potentially significant impact can be mitigated to less than significant through the development of a groundwater management plan that would be implemented by irrigated agricultural operations. The groundwater management plan would need to identify practices that would minimize waste discharge to groundwater from irrigated agricultural operations.~~

~~Alternatives 2–5 would require development of groundwater management plans—regional for Alternative 2, and individual for Alternatives 3–5. Alternative 2 is essentially Alternative 1 with groundwater management plan requirements. The groundwater management plans identified for Alternatives 2–5 would establish management practices that would work to minimize waste discharge to groundwater.~~ ~~*The measure described as mitigation for Alternative 1 would be a required part of the program under Alternatives 2–5.*~~

~~Agriculture Resources~~

The Economic Impacts section of this report summarizes economic modeling that has been conducted for the long-term ILRP. The modeling estimates economic impacts on irrigated agriculture by estimating change in production acreage and value of production based on increased regulatory costs.

Page 136, Waste Discharge to Groundwater

Options: Include groundwater requirements—Alternatives 2–5
Do not include groundwater requirements—Alternative 1

All the alternatives except Alternative 1 contain requirements for protecting groundwater from irrigated agricultural waste discharge. Alternative 1 did not fully meet the goals of the long-term ILRP, CWC requirements for protecting beneficial uses, and antidegradation requirements. This is mainly because Alternative 1 would not address waste discharge to groundwater from irrigated agricultural operations.

~~The Draft PEIR identifies significant environmental impacts on groundwater under full implementation of Alternative 1 mainly because of continued waste discharge to groundwater associated with agricultural operations.~~

> Recommendation: Include groundwater requirements.

Pages 139 and 140, Water Quality Management Plans

Antidegradation and antidegradation-related requirements establish that BPTC/"best efforts" must be implemented as appropriate~~where degradation of water quality is occurring~~. Regional and individual water quality plans would work to implement BPTC/"best efforts." However, the approach outlined in Alternatives 1 and 2 would require plans only in areas that already have exceedances of water quality objectives. In order to meet antidegradation requirements, regional plans also should be developed in areas where irrigated agricultural waste discharges are causing degradation.

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> Recommendation: Regional water quality plans similar to those described in Alternatives 1 and 2 with additional requirements to (1) ensure the plans are designed to implement BPTC/"best efforts" to minimize degradation and address exceedances of water quality objectives, and (2) develop individual water quality management plans where regional plans have been ineffective.

Page 142, Recommended Long-Term Irrigated Lands Regulatory Program

This section includes the following topics:

- Scope
- Goals and objectives
- Timeframe for implementation
- Implementation mechanism
- Lead entity
- Regulatory requirements
- Monitoring provisions
- Time schedule for compliance
- Fees

Pages 147 and 148, Third Party

8. If a monitoring well is proposed, for compliance with the ILRP, that may affect a sensitive resource (e.g., endangered species habitat, sensitive plant communities), the entity responsible for selection and location of the well (e.g., third party) must (1) select a different monitoring well location that meets water quality goals, but does not involve impacts on the resource, or (2) implement the mitigation measures described in the implementation mechanism (e.g., WDRs/ waiver) for the potentially affected resource, or (3) work with the Central Valley Water Board to obtain a site-specific CEQA analysis.[51]

Page 150, Regulatory Requirements

5. Where a management practice is proposed, for compliance with the ILRP, and the irrigated agricultural operation responsible for selection and implementation of the practice determines that it may affect a sensitive resource (e.g., endangered species habitat, sensitive plant communities), the irrigated agricultural operation must (1) select a different management practice that meets water quality goals, but does not involve impacts on a sensitive resource, or (2) locate the management practice outside of sensitive resource areas, or (3) implement the mitigation measures described in the implementation mechanism (e.g., WDRs/ waiver) for the potentially affected resource, or (4) work with the Central Valley Water Board to obtain an individual waste discharge permit and site-specific CEQA analysis.[54]

Page 152, Tier 1

Under this tier, the Central Valley Water Board considers the existing level of management objectives as BPTC/"best efforts," and protective of surface and groundwater quality. Third-party groups are required to describe the area's existing water quality management objectives in a report to the Central Valley Water Board. Management practices tracking, every 5 years, would be the method by which the Central Valley Water Board would evaluate, in general, whether operations are continuing to meet existing management objectives.

Pages 153–155, Tier 2

An SQMP must be developed for the watershed represented by the monitoring site for any parameter that exceeds water quality objectives two or more times in a 3-year period. Surface water quality management plans developed under the existing ILRP would be accepted under the long-term ILRP. Under SQMPs, irrigated agricultural operations are required to implement management practices to achieve BPTC/"best efforts"[58] of the constituent of concern. Monitoring and other collected information would be used to assess the effectiveness of management practices and whether BPTC/"best efforts" has been achieved. Additional practices/monitoring may be necessary, in an iterative process, to address water quality concerns. Required elements of SQMPs are given in Appendix D.

Revised Footnote 58: BPTC/"best efforts" is considered here to comply with State Water Board Resolution 68-16, *State Antidegradation Policy* *and antidegradation-related requirements* (see Section IV.E of this report).

Constituent of concern is defined as: waste constituent discharged from irrigated agricultural operations with the potential to degrade surface or groundwater quality or contribute or cause exceedances of water quality objectives.

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Third-party group develop and submit for Central Valley Water Board approval a GQMP within 18 months of issuance of the geographic/commodity specific WDRs by the Central Valley Water Board [except in areas where a local groundwater management plan has been developed and approved (by the Central Valley Water Board) for substitution].[59] Under GQMPs or local groundwater management plans, irrigated agricultural operations would be required to implement management practices to achieve BPTC/"best efforts" of the constituent of concern.[60] Monitoring and other collected information would be used to assess the effectiveness of management practices and whether BPTC/"best efforts" has been achieved. Additional practices/monitoring may be necessary, in an iterative process, to address water quality concerns.

Page 156, Monitoring provisions

The general goals of the ground and surface water quality monitoring efforts are to determine:

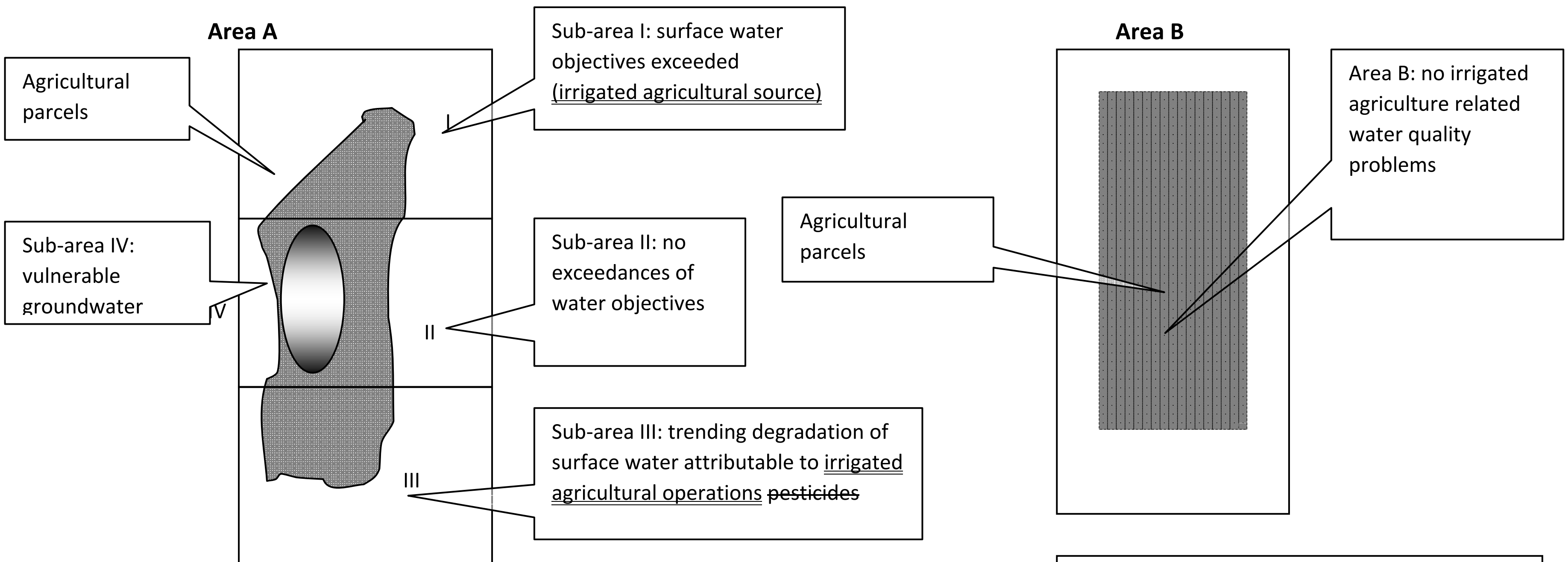
- whether the discharge of waste from irrigated lands are in compliance with applicable water quality objectives, total maximum daily loads (TMDLs), and implementation plans in the Basin Plans;
- the extent of management practice implementation;
- the effectiveness of implemented management practices and whether those practices achieve BPTC/"best efforts;"
- the effectiveness of any applicable regional ground or SQMP; and
- compliance with the requirements or conditions of applicable WDRs or waivers of WDRs.

Page 159, Priority Surface Water Quality Issues

3. Which pollutants are considered priority?—those pollutants that cause or contribute to a violation of water quality objectives or degradation of surface water quality associated with the priority beneficial uses and water bodies.

Page 161, Figure 23

Figure 23. Long-Term ILRP Prioritization Scheme Example



Area A: WDRs	Sub-area I	Sub-area II	Sub-area III	Sub-area IV
SW requirements	Tier 2	Tier 1	Tier 2	Tier 1
GW requirements	Tier 1	Tier 1	Tier 1	Tier 2

Area B: Waiver of WDRs:

Tier 1 surface water requirements/monitoring

Tier 1 groundwater requirements/monitoring

Page 167, Antidegradation

Applicable antidegradation provisions and the ILRP's strategy for meeting the provisions are described in Sections IV.E and IX.A.4 of this report. Generally, to be consistent with antidegradation provisions, the ILRP must include the following programmatic approach:

> ***Implementation of the program must work to achieve site-specific antidegradation and antidegradation-related requirements through iterative implementation of BPTC/"best efforts" and representative monitoring (e.g., where monitoring indicates degradation, BPTC would evolve to prevent such degradation).***

In Section IX.A.4, only Alternatives 4 and 5 were found to be fully consistent with antidegradation provisions. Alternative 2 was found to be partially consistent with antidegradation requirements. This is because the regional surface and groundwater management plan approach would require implementation of management practices where there are exceedances of water quality objectives, whereas ~~the~~ antidegradation and antidegradation-related provisions require implementation of management practices (BPTC/"best efforts") as appropriate where degradation is occurring. Also, inconsistent with the programmatic approach described above, Alternative 2 would not require groundwater quality monitoring. The recommended ILRP includes Alternative 2's regional ground and surface water management approach, but includes (1) provisions to ensure that management practices (BPTC/"best efforts") would be required as appropriate ~~where degradation is occurring~~, and (2) regional surface and groundwater monitoring similar to Alternative 4. *The recommended ILRP is consistent with the antidegradation approach.*

Pages 171 and 172, Recommended Irrigated Lands Regulatory Program Environmental Impacts

Potential significant environmental impacts of all five alternatives are associated with implementation of water quality management practices, construction of monitoring wells, and potential loss of agriculture resources. Loss of agricultural resource lands has been estimated using economic modeling procedures, considering the potential costs of each alternative. Alternatives with lower costs are estimated to result in less loss of agriculture resources (see Section IX.C.2). ~~Additionally, Alternative 1 may have significant environmental impacts on groundwater quality because of failure to institute requirements to protect groundwater quality.~~

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> *Where an irrigated agricultural operation/third-party group determines that a proposed management practice/monitoring well, for which they have responsibility for selection and implementation, may impact a sensitive resource, the ILRP will require that the ~~irrigated agricultural operation/third~~responsible* party *(whomever is responsible for selection and implementation of the practice or monitoring well) (1) select a different management practice (or location of practice/monitoring well) that meets water quality goals, but does not involve impacts on a sensitive resource, or (2) implement the mitigation measures described in the implementation mechanism (e.g., WDRs/ waiver) for the potentially affected resource, or (3) work with the Central Valley Water Board to obtain an individual waste discharge permit and site-specific CEQA analysis.*

Page 182, References

Gilliom, R.J., Hamilton, P.A., 2006. Pesticides in the Nation's Streams and Ground Water 1992-2002 – A summary: USGS Fact Sheet 2006-3028.

Glass, A.D.M., 2003. Nitrogen Use Efficiency of Crop Plants: Physiological Constraints upon Nitrogen Absorption: *Critical Reviews in Plant Sciences*, 22(5): 453-470.

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U.S. Environmental Protection Agency (USEPA). 2009. Drinkng Water Standards and Health Advisories Table, U.S. Environmental Protection Agency. http://www.epa.gov/region9/water/drinking/files/DWSHATv09.pdf

Page B-8, Major Non-Agricultural Sources of Nitrate

Publicly Owned Treatment Works

Land applications of effluent and biosolids from publicly owned treatment works (POTWs) have been identified as one of the sources of nitrate found in California's groundwater (Anton, et. al., 1988). This conclusion has been supported by studies conducted by the State Water Board which have identified discharges of municipal wastewater as one of the anthropogenic sources responsible for nitrate groundwater impacts (State Water Resources Control Board, Division of Water Quality, GAMA Program 2010).

Pages B-44 and 46, Selected References and Bibliography

Anton, E.C., J.L. Barnickol, D.R. Schnaible. 1988. Nitrate in Drinking Water Report to the Legislature: State Water Resources Control Board, Division of Water Quality: Report No. 88-11WQ, October 1988.

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California State Water Resources Control Board, Division of Water Quality, GAMA Program, Groundwater Information Sheet—Nitrate: August 2010.

Page D-1, Surface Water Quality Management Plan Requirements

3. Identification of irrigated agriculture source(s)—general practice(s) or specific location(s)—that may be the cause of the water quality problem. If the potential sources are not known, a study design must be included to determine the source(s) or to eliminate agriculture as a potential source. Source identification can include more intensive sampling in the watershed or field studies to quantify the relevant waste discharge from irrigated lands. In lieu of conducting additional source analysis, the management plan can focus on ensuring that all growers are implementing practices that achieve BPTC/"best efforts" for the parameter(s) of concern.

Page D-3, Groundwater Quality Management Plan Requirements

3. Identification of irrigated agriculture source(s)—general practice(s) or specific location(s)—that may be the cause of the water quality problem. If the potential sources are not known, a study design must be included to determine the source(s) or to eliminate agriculture as a potential source. Source identification can include more intensive sampling in the relevant

aquifer or field studies to quantify the relevant waste discharge from irrigated lands. In lieu of conducting additional source analysis, the management plan can focus on ensuring that all growers are implementing practices that achieve BPTC/"best efforts" for the constituent(s) of concern.

Page D-6, Individual FWQMP Requirements

FWQMP content at a minimum would include (1) name and contact information of owner/operator; (2) description of operations, including number of irrigated acres, crop types, and chemical/fertilizer application rates and practices; (3) maps showing the location of irrigated production areas, discharge points and named water bodies; (4) applicable information on water quality management practices used to achieve general ranch/farm management objectives and reduce or eliminate discharge of waste to ground and surface waters; (5) measures instituted to ~~comply with California Code of Regulations, Title 3, Section 6609 requirements for wellhead protection (from pesticide contamination) along with methods for~~ensure wellhead protection from fertilizer use; and 6) identification of any potential conduits to groundwater aquifers on the property (e.g., active, inactive, or abandoned wells; dry wells; recharge basins; ponds) and steps taken, or to be taken, to ensure all identified potential conduits do not carry contamination to groundwater.