CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

Recommendations for an Updated Conditional Waiver of Waste Discharge Requirements for Irrigated Agricultural Waste Discharges, Pursuant to the California Water Code

Staff Report

Report Proposing a Draft Agricultural Order
For Water Board Action

March 2011

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LIST OF ACRONYMS/ABBREVIATIONS

ACL	Administrative Civil Liability
BAT	best available technology economically achievable
BCT	best practicable control technology currently achievable
BMP	best management practice
BPTC	best practicable treatment or control
CAC	County Agricultural Commissioner
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
Water Board	Central Coast Regional Water Quality Control Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
DPR	California Department of Pesticide Regulation
ECR	Existing Conditions Report
EIR	Environmental Impact Report
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FWQMP	farm water quality management plan
GQMP	groundwater quality management plan
GWMP	(local existing) groundwater management plan
GWPA	groundwater protection areas (DPR)
GWPL	groundwater protection list (DPR)
MAA	Management Agency Agreement
MCL	maximum contaminant level
MDL	method detection limit
MEP	maximum extent practicable
MP	management practice
MRP	monitoring and reporting program
NMP	nutrient management plan
NPDES	National Pollutant Discharge Elimination System
NPS Policy	State Water Board Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NPS	nonpoint source
PCPA	Pesticide Contamination Prevention Act

PEIR	Program Environmental Impact Report
PREC	Pesticide Regulation & Evaluation Committee (DPR)
PY	Personnel-year
RL	reporting limit
ROWD	report of waste discharge
State Water Board	State Water Resources Control Board
SVOC	semi-volatile organic compounds
SWAMP	Surface Water Ambient Monitoring Program
TMDL	Water Board Total Maximum Daily Load Program
TSS	total suspended solids
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
Waiver	conditional waiver of waste discharge requirements
Water Code	California Water Code
WDRs	waste discharge requirements
µg/l	micrograms per liter

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EXECUTIVE SUMMARY

Staff recommends that the Central Coast Water Board adopt the updated Conditional Waiver of Waste Discharge Requirements for Irrigated Agricultural Waste Discharges, Draft Order No. R3-2011-0006 (hereafter 2011 Draft Agricultural Order). The 2011 Draft Agricultural Order requires landowners and operators of irrigated agricultural lands to:

1. Minimize discharges of waste and meet, or make progress towards meeting, water quality standards and objectives.
2. Comply with conditions of waste discharge control through verification monitoring and reporting.
3. Provide accountability and transparency for the public on behalf of public resources.

Discharges of waste associated with agricultural discharges (e.g., pesticides, sediment, nutrients) are a major cause of water pollution in the Central Coast region. The water quality impairments are well documented, severe, and widespread. Nearly all beneficial uses of water are affected, and many (not all) agricultural waste discharges continue to contribute to already significantly impaired water quality and impose certain risks and significant costs to public health, drinking water supplies, aquatic life, and valued water resources.

The primary water quality issues associated with irrigated agriculture on the Central Coast Region are:

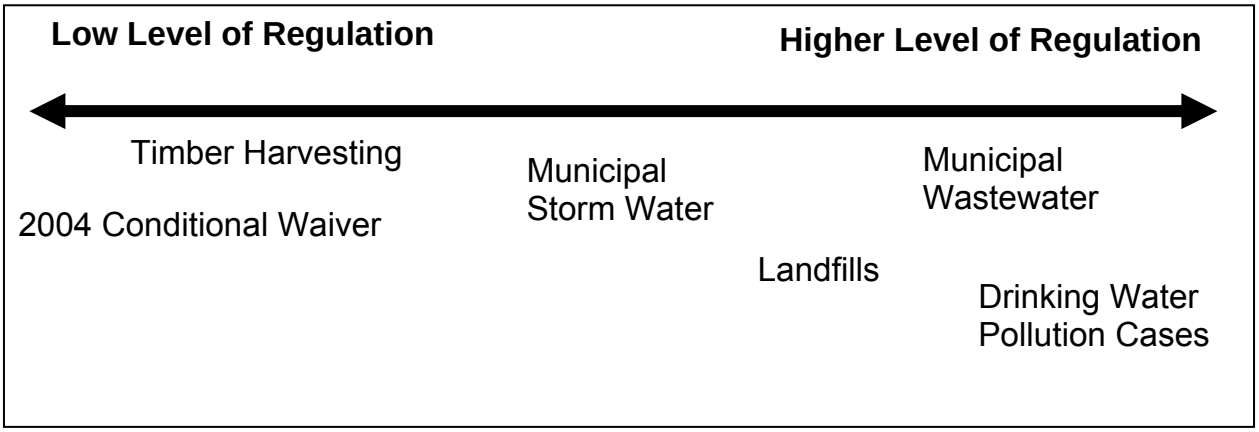
- Thousands of people are drinking water contaminated with unsafe levels of nitrate or are drinking treated or replacement water to avoid drinking contaminated water. The cost to municipalities, communities, families, and individuals for treating drinking water polluted by nitrate is estimated to be in the hundreds of millions of dollars and the health risks for drinking contaminated water are serious-- cancer, Parkinson's disease, thyroid inhibition, diabeters, endocrine disruption and Blue Baby Syndrome. Over 80% of the Central Coast population increasingly relies on groundwater, while pollutant loading also increases. This cycle is not sustainable.

- Large stretches of rivers, creeks, and streams in the Central Coast Region's major watersheds have been severely polluted by toxicity from pesticides, nutrients, and sediment. Agricultural waste discharges have caused some creeks to be found toxic (lethal to aquatic life) every time the site is sampled. As a result, these areas are often completely devoid of the aquatic life essential for a healthy functioning ecosystem. The pollution in some of these areas also creates conditions that are unsafe for recreation and fishing.

Existing and potential water quality impairment from agricultural discharges takes on added significance and urgency, given the impacts on public health, limited sources of drinking water supplies and proximity of the region's agricultural lands to critical habitat for species of concern. If the Water Board and the regulated community do not adequately address the protection of water quality and beneficial uses, the environmental and health affects will become more severe and widespread. Similarly the costs are likely to increase significantly. The environmental, health and cost impacts threaten to significantly affect the future uses of the Central Coast's water resources.

The Water Board adopted a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands in 2004 (2004 Conditional Waiver or 2004 Agricultural Order), that has been renewed twice. The 2004 Conditional Waiver expires in March 2011. In adopting the 2004 Conditional Waiver, the Water Board found that the discharge of waste from irrigated lands had impaired and polluted the waters of the State and of the United States within the Central Coast Region, impaired the beneficial uses, and caused nuisance. However, the 2004 Conditional Waiver did not try and address nitrate groundwater pollution at that time and did not include conditions consistent with typical orders to control waste discharges from industries or activities affecting water quality so severely. Figure 1 illustrates that the Water Board's current regulation of irrigated agriculture (via the 2004 Conditional Waiver) is very low relative to other programs.

Figure 1. Relative Degree of Water Board Regulation for Various Programs



Since the Water Board adopted the 2004 Conditional Waiver, some dischargers have undoubtedly improved their operations and reduced their pollutant discharges; others may not have improved, and others may have gotten worse. However, the 2004 Conditional Waiver provides no way for the Water Board and the public to directly measure these changes. The only measure is indirect; that is, general watershed-scale monitoring. This type of general monitoring is appropriate to determine if watershed-scale effects are occurring, which in fact has been confirmed; the effects are severe. This type of general monitoring is not appropriate to determine the relative contribution of pollution from individual dischargers, or changes in their discharges. Determining the relative contribution of pollution from individual dischargers is the necessary next step to resolve the severe water quality problems, and is a key component of staff's current proposal, as reflected in the tiering structure and requirements (such as individual monitoring for Tier 3 dischargers).

When staff began the renewal process, we described our intent to directly address the major water quality issues. The Executive Officer's December 2008 letter to stakeholders is available on the Water Board's website:
http://www.swrcb.ca.gov/rwqcb3/water_issues/programs/ag_waivers/docs/ag_order/letter_invitation_12_08.pdf

The Executive Officer's December 2008 letter states:

> *When we bring the Irrigated Ag Order to the Water Board for consideration in 2009, I will propose specific revisions to clarify existing requirements, and new requirements where necessary to directly address and resolve the major water quality issues associated with irrigated agriculture in our Region. These revisions will include time schedules to achieve compliance, milestones, and compliance verification monitoring to address each issue (surface and groundwater pollution, erosion and sedimentation, and habitat degradation). This letter briefly summarizes the main water quality issues we will address, and requests your participation in a series of meetings with us to discuss the Irrigated Ag Order revisions I will propose to the Water Board in July 2009.*

For the current renewal process, staff sought input from a wide group of stakeholders, which has increased the complexity of the process, and understandably has increased the tensions involved in drafting a meaningful Order. As a result of our current process, we now have many more divergent views on how comprehensive the requirements in the renewed Order should be. This is apparent from the many meetings we have attended and the comments submitted. A list of staff's outreach efforts is provided on the Water Board's website: http://www.swrcb.ca.gov/rwqcb3/water_issues/programs/ag_waivers/docs/ag_order/outreach_010711.pdf

During our two-year renewal process for the 2011 Draft Agricultural Order, we developed the requirements and conditions in the Order to address water quality issues, be consistent with Water Board direction, and to be responsive to public input where possible.

Water quality goals for the 2011 Draft Agricultural Order include:

- Eliminate toxic discharges of agricultural pesticides to surface waters and groundwater;
- Reduce nutrient discharges to surface waters to meet nutrient standards;
- Reduce nutrient discharges to groundwater to meet groundwater standards
- Minimize sediment discharges from agricultural lands;
- Protect aquatic habitat;
- Resolve water quality impairments associated with irrigated agriculture;
- Comply with minimum statutory requirements; and
- Establish milestones, targets, and schedules for achieving water quality standards and protecting beneficial uses.
- Establish transparent discharger monitoring and reporting to verify compliance with water quality standards.

Staff also identified the following key concepts as important to stakeholders and Water Board members from review of stakeholder and Board member input:

- Prioritize based on water quality affects and make protection of human health and drinking water the highest priority;
- "One size does not fit all." Require more of those discharging the most, creating the greatest affects, or most threatening water quality;
- Provide reasonable timeframes to control waste discharges and meet water quality goals;
- Require reasonable amount of implementation, monitoring and reporting requirements;

- Allow dischargers flexibility to comply with requirements based on uniqueness of individual operations.

With respect to protecting human health, staff considers this our top priority. The threat to rural homeowners from nitrates in domestic wells is the most important and challenging issue the Water Board and stakeholders are facing. As part of our outreach efforts, staff continues to work on informing other agencies about the severe threat to drinking water supplies. The Executive Officer's June 23, 2010 letter to public health agencies is posted on the Water Board's website:
http://www.swrcb.ca.gov/rwqcb3/NO3_letter_to_PHOs.pdf

The letter includes the following statement:

Section 116270 of the California Health and Safety Code states:

Every citizen of California has the right to pure and safe drinking water.

The 2011 Draft Agricultural Order reflects this priority by including groundwater monitoring and data submittal for all dischargers. Separate from the Agriculture Order, staff is also investigating groundwater well contamination in high risk areas for follow-up actions.

Central Coast Water Board Staff Considered Options and Alternatives

Staff considered a wide range of options based on staff research and input from stakeholders. Staff specifically considered alternatives submitted by interested persons by April 1, 2010. These alternatives included a range of conditions that scaled from low level of regulation, as discussed above, to higher level of regulation. Conditions in the alternative from OSR Enterprises and from the California Farm Bureau Federation (and other agricultural representatives) included relatively low levels of regulation. The alternative from the Environmental Defense Center (and other environmental organizations) was very similar to staff's February 1, 2010 Preliminary Draft Agricultural Order and included relatively higher levels of regulation. Staff considered these alternatives in preparing the Draft 2011 Agricultural Order distributed for public comment on November 19, 2010. The Draft 2011 Agricultural Order and its tiering structure reflect the range of alternatives submitted.

Staff further considered the Draft Central Coast Agriculture's Alternative Proposal for the Regulation of Discharges from Irrigated Agricultural Lands submitted by the California Farm Bureau Federation on behalf of seven County Farm Bureaus and numerous additional entities on December 3, 2010 (hereafter called the Farm Bureau Proposal).

Staff found that this Farm Bureau Proposal represents does not comply with basic statutory requirements and does not include requirements that will adequately protect water quality given the severity and magnitude of pollutant loading and water quality problems. However, there are elements of the Farm Bureau Proposal that may be effective, and staff incorporated those elements in its recommendation to the Water Board.

Specifically, staff identified the following limitations in the Farm Bureau Proposal:

- Monitoring:

    - Does not require monitoring that measures the effectiveness of on-farm management practices or pollutant load reduction;
    - All individual farm or operation data and information to be kept confidential;
    - Does not require individual or operation-level monitoring, but indicates it is optional for all growers, even high risk;
- Milestones and Timeframes:
    - Milestones indicate very limited progress towards meeting legal water quality standards, and many waterbodies will still exceed most legal water quality standards;
    - Long timeframes for very limited progress toward surface water quality milestones (4-10 years versus 2-3 years in Draft Ag Order);
    - No milestones or timeframes for groundwater loading or groundwater quality conditions;
- Reporting:
    - Does not include individual or farm or operation-level water quality sampling;
    - Management practice reporting includes results of surveys indicating if and which practices used, but not if effective at preventing or reducing pollution loading;
    - Includes aggregated information reporting for implementation actions (e.g. results for group of operations in a sub-watershed);
    - Content of aggregated reports unspecified (e.g. data will be collected during audits which will result in "points" based on unspecified criteria);
- Inconsistent with Plans and Policies:
    - Does not include measures of progress or achievement of legal water quality standards;
    - Does not include required measures of effectiveness of management practices;
    - Limits the Board's authority and discretion to enforce when the Board finds or measures discharges of wastes or exceedances of water quality standards by defining compliance with the "waiver" as implementation of farm water quality practices;
- Enforceability
    - The Proposal is not enforceable with respect to individual discharges of waste due the lack of specific monitoring and reporting, and the way coalitions would be set up.

Staff also identified the following benefits or improvements in the Farm Bureau Proposal:

- Contains implementation of management practices that address pollutant loading from irrigation, pesticides, sediment, and fertilizer;
- Contains surveys, audits and coalitions to assist growers to adapt and improve operations to improve water quality;
- Prioritizes operations growing crops with high potential to discharge nitrogen to surface and groundwaters (using same criteria as November 19, 2010 Draft Agricultural Order).

Staff integrated suggestions from all these alternatives where appropriate and legal in preparing this recommendation.

Central Coast Water Board Staff Recommendation

The 2011 Draft Agricultural Order groups farm operations, or dischargers, into three tiers, each tier distinguished by four criteria that indicate threat to water quality:

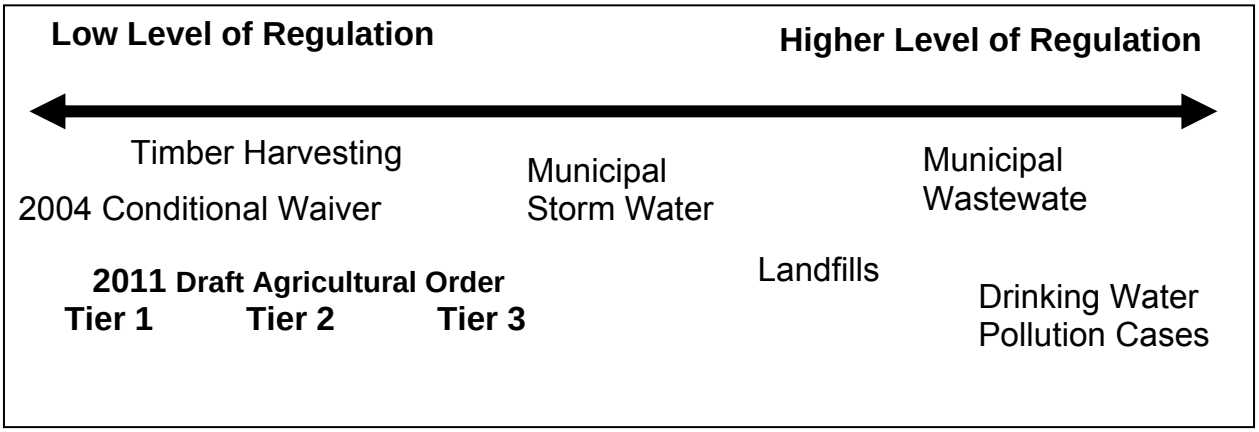
1. size of farm operation,
2. proximity to an impaired watercourse or public water system well,
3. use of chemicals of concern, and
4. type of crops grown.

These tiering criteria were selected because they provide good indicators of threat to water quality from individual operations. The Water Board uses similar criteria, based on threat to water quality, in most other programs; it is simply a water quality prioritization approach. These criteria account for surface and ground water quality conditions in the Central Coast Region, can be determined efficiently by agricultural operators and the Water Board by simple surveys of agricultural operations, and they provide a reasonable approach for scaling regulatory requirements according to actual or potential effects of waste discharges on water quality. Owners/operators do not have to collect additional data or conduct complicated or expensive site evaluations to determine which tier applies to their operations. Water Board staff can quickly verify which operations are in which tier based on recent enrollment information submitted electronically. Finally, the tiering system proposed provides for an owner or operator of agricultural lands enrolling in the Order to present additional information to justify a more appropriate tier for their operations if warranted.

2004 requirements compared to 2011 requirements: Staff found that in a general comparison with the existing 2004 Conditional Waiver, the 2011 Draft Agricultural Order Tier **1 requirements are fewer** than the requirements in the existing 2004 Conditional Waiver. **Tier 2 requirements are comparable to the 2004 Conditional Waiver, with a few additional reporting requirements** to better indicate effectiveness of management practices and reduction in pollutant loading. **Tier 3 requirements are greater** than the requirements in the 2004 Conditional Waiver, as shown in Figure 2.

Staff included this tiering structure because it provides scaled, reasonable levels of conditions and reporting appropriate to threat to water quality. Some operations present a relatively low threat to water quality, while other large operations located close to impaired water bodies or drinking water wells pose a much higher risk.

Figure 2: Relative Degree of Regulation between the 2011 Draft Agricultural Order and Other Programs



This tiering structure places a much lower burden on small family farms (likely to be in Tier 1). There are about 1200 farmers in Tier 1. Staff will work with this group to make reporting requirements as easy as possible to help maintain small farms on the Central Coast. Staff's priority focus in implementing the Order will be on Tier 2 and Tier 3, with Tier 3 the highest priority.

With respect to the other key concepts identified by the Water Board and stakeholders, the 2011 Draft Agricultural Order includes reasonable timeframes, reporting, and flexibility, all relative to the threat to water quality.

The 2011 Draft Agricultural Order proposes the following implementation and reporting requirements:

- Implement pesticide management practices to reduce toxicity in waste discharges so receiving waterbodies meet water quality standards;
- Implement nutrient management practices to eliminate or minimize nutrient and salt in waste discharges to surface water so receiving waterbodies meet water quality standards;
- Implement nutrient management practices to minimize fertilizer and nitrate loading to groundwater to meet nitrate loading targets;
- Install and properly maintain back flow prevention devices for wells or pumps that apply fertilizers, pesticides, fumigants or other chemicals through an irrigation system;
- Implement erosion control and sediment management practices to reduce sediment in waste discharges so receiving water bodies meet water quality standards;
- Protect and manage existing aquatic habitat to prevent discharge of waste to waters of the State and protect the beneficial uses of these waters;
- Implement stormwater runoff and quality management practices;
- Develop, implement, and annually-update Farm Water Quality Management Plans;

- Submit an Annual Compliance Form electronically (for higher threat dischargers) that includes individual discharge monitoring results, nitrate loading risk evaluation and, if nitrate loading risk is high, report total nitrogen applied, irrigation and nutrient management plan, verification of irrigation and nutrient management plan effectiveness;
- Submit a water quality buffer plan (for higher threat dischargers), if operations contain or are adjacent to a waterbody identified on the Clean Water Act section 303(d) List of Impaired Waterbodies as impaired for temperature or turbidity.

The Draft Monitoring and Reporting Program (Draft MRP) includes receiving water monitoring, individual surface water discharge monitoring, individual groundwater sampling, and individual riparian and wetland photo-monitoring.

The Draft MRP recommends that all dischargers in Tier 1, the lowest Tier, conduct the following monitoring:

- Receiving water monitoring- monthly and in cooperation with other dischargers, unless a discharger elects to do this individually (similar to the existing MRP)
- Groundwater sampling- two times in one year during the five years of the Draft Agricultural Order.

The Draft MRP recommends that all dischargers in Tier 2 conduct the following monitoring:

- Receiving water monitoring- same as above for Tier 1
- Groundwater sampling- same as above for Tier 1
- Individual riparian and wetland photo-monitoring- once every three years and only for operations that contain or are adjacent to a waterbody impaired for temperature, turbidity, or sediment

The Draft MRP recommends that all dischargers in Tier 3, conduct the following monitoring

- Receiving water monitoring- same as above for Tiers 1 and 2
- Groundwater sampling- quarterly for one year
- Individual riparian and wetland photo-monitoring- same as above for Tier 2
- Individual surface water discharge monitoring- four times each year for operations greater than 5000 acres and two times each year for operations between 1000 and 5000 acres for these parameters.
    - Discharge Flow measured or calculated in gallons per day;
    - Field Parameters (Temp, pH, EC);
    - Clarity measure turbidity NTUs;
    - Nutrients (Nitrate and Ammonia) concentration measured mg/L;
    - Pesticides (chlorpyrifos and/or diazinon);
    - Toxicity

Other Options Considered

In addition to considering the alternatives submitted by various stakeholders, staff also considered many other options, which are discussed in Appendix D. These options include other regulatory mechanisms, such as Waste Discharger Requirements, to effectively regulate this category of dischargers.

Recommendation

Staff recommends that the Central Coast Water Board adopt the 2011 Draft Agricultural Order, which is the updated Conditional Waiver of Waste Discharge Requirements for Irrigated Agricultural Waste Discharges, Draft Order No. R3- 2011-0006. The 2011 Draft Agricultural Order will require landowners and operators of irrigated agricultural lands to 1) control discharges of waste that affect water quality, in a timely manner, in order to meet, or make progress towards meeting, water quality standards and objectives, 2) comply with conditions of waste discharge control through verification monitoring and reporting, and 3) provide accountability and transparency for the public on behalf of public resources.

Adoption of the Draft Agricultural Order will insure healthier water quality conditions that provide people with safe drinking water and fish and other aquatic organisms with safe habitats in their streams and estuaries.

1. INTRODUCTION

The Water Board currently regulates waste discharges from irrigated lands with a Conditional Waiver of Waste Discharge Requirements (Order No. R3-2010-0040, hereafter referred to as the 2004 Conditional Waiver) that expires in March 2011. The Water Board began a process in December 2008, to consider renewing the 2004 Conditional Waiver, including revising and adding conditions to more effectively reduce or eliminate discharges of waste associated with irrigated agriculture in the Central Coast Region (toxicity, pesticides, nutrients, sediment, affects on drinking water, degradation of aquatic habitat).

There are numerous and varying irrigated agricultural operations within the Central Coast Region that have varying degrees of affect on water quality. As indicated in a December 2008 letter to stakeholders, to directly address and resolve the major water quality issues associated with irrigated agricultural discharges in the Central Coast region, Water Board staff (staff) is recommending a revised Order that includes the following:

- Clear articulation of water quality standards to ensure consistency with applicable Water Board plans and policies;
- Specific conditions to address water quality impairments;
- Milestones to measure progress;
- Time schedules to achieve compliance;
- Monitoring and reporting to verify compliance;

This report (1) summarizes the information staff have considered in the development of a renewed Order, (2) describes the range of regulatory options considered, and (3) provides staff's recommendations for a revised Draft Agricultural Order.

What is the Central Coast Water Board's regulatory role?

The Central Coast Water Board has the statutory responsibility to protect water quality and beneficial uses such as drinking water and aquatic life habitat. Any Order adopted by the Water Board must be consistent with the California Water Code (Water Code) and Water Board plans and policies, including the Water Quality Control Plan for the Central Coast Region (Basin Plan) (Cal. Wat. Code § 13269). The Water Board regulates discharges of waste to the region's surface water and groundwater to protect the beneficial uses of the water. In some cases, such as the discharge of nitrate to groundwater, the Water Board is the principle state agency with regulatory responsibility for coordination and control of water quality (Cal. Wat. Code §13001).

Pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code Div. 7), the Water Board is required to regulate discharges of waste that could affect the quality of waters of the state. It can impose in orders, prohibitions on types of waste or location of discharges, requirements for discharging waste, and conditions on discharges of waste. The Water Board enforces violations of the prohibitions and requirements in these Orders. The Water Board also develops water quality standards and implements plans and programs. These activities are conducted to best

protect the State's waters, recognizing the local differences in climate, topography, geology and hydrology.

The 2004 Conditional Waiver expires in March 2011. The Water Board will consider renewing the 2004 Conditional Waiver, including revised and new conditions to assure protection of waters of the state within the Region.

One of the Water Board's highest priorities is to ensure that agricultural waste discharges do not continue to impair Central Coast communities' and residents' access to safe and reliable drinking water. This proposed Draft Agricultural Order prioritizes those agricultural operations and areas of the Central Coast Region already known to have, or be at great risk for, severe water quality pollution. The proposed Draft Agricultural Order would establish a known and reasonable time schedule, with clear and direct methods of verifying compliance and monitoring progress over time. The proposed Draft Agricultural Order must enable the regulated community and stakeholders to understand when Dischargers are in compliance with requirements and successfully reducing their contribution to the water quality problems and maintaining adequate levels of water quality protection.

What is the issue?

Agricultural waste discharges are a major cause of water pollution in the Central Coast region. The water quality impairments are well documented, severe, and widespread. Nearly all beneficial uses of water are affected, and agricultural waste discharges continue to contribute to already significantly impaired water quality and impose certain risk and significant costs to public health, drinking water supplies, aquatic life, and valued water resources.

The primary water quality issues associated with irrigated agriculture on the Central Coast are:

- Thousands of people are drinking water contaminated with unsafe levels of nitrate or are drinking treated or replacement water to avoid drinking contaminated water. The cost to municipalities, communities, families, and individuals for treating drinking water polluted by nitrate is estimated to be in the hundreds of millions of dollars;

- Large stretches of rivers, creeks, and streams in the Central Coast region's major watersheds have been severely polluted by toxicity from pesticides, nutrients, and sediment. Agricultural waste discharges have caused some creeks to be found toxic (lethal to aquatic life) almost every time the site is sampled (e.g., 4 times each year sampled for five years). As a result, these areas are often completely devoid of the aquatic life essential for a healthy functioning ecosystem. The pollution in these areas also creates conditions that are unsafe for recreation and fishing.

The Water Board has the authority and responsibility to protect water quality and beneficial uses. The regulated community has the responsibility to comply with the Water Code. Failure to do so could result in costs and other affects on water quality that are likely to increase significantly and severely limit the future of the Central Coast's water resources.

Why is the issue important?

Millions of Central Coast residents depend on groundwater for nearly all their drinking water from both deep municipal supply wells and shallow domestic wells. In addition, the Central Coast Region's coastal and inland water resources are unique, special, and in some areas still of relatively high quality. The Region supports some of the most significant biodiversity of any temperate region in the world and is home to many sensitive natural habitats and species of special concern. Agricultural waste discharges continue to severely affect and threaten these resources and beneficial uses.

At the same time, the agricultural industry in the Central Coast Region is also one of the most productive and profitable agricultural regions in the nation, reflecting a gross production value of more than six billion dollars in 2008, contributing 14 percent of California's agricultural economy. For example, agriculture in Monterey County supplies 80 percent of the nation's lettuce and nearly the same percentage of artichokes and sustains an economy of 3.4 billion dollars.[1]

Resolving agricultural water quality issues will greatly benefit public health, present and future drinking water supplies, aquatic life, recreational, aesthetic and other beneficial uses. Resolving agricultural water quality issues will also require changes in farming practices, will impose increasing costs to individual farmers and the agricultural industry at a time of competing demands on farm income, regulatory compliance efforts, and food safety challenges, and may impact the local economy. No industry or individual has a legal right to pollute and degrade water quality, while everyone has a legal right to clean water. Similar to all other Dischargers, the agricultural community is responsible for identifying, preventing and resolving pollution caused by irrigated agriculture and complying with water quality requirements.

Healthy watersheds and a sustainable agricultural economy can coexist. Protecting water quality and the environment while protecting agricultural benefits and interests will require change, and may shift who bears the costs and benefits of water quality protection. Continuing to operate in a mode that causes constant or increasingly severe receiving water problems is not sustainable.

2. STAFF RECOMMENDATION

Staff recommends that the Water Board adopt the 2011 Draft Agricultural Order to control waste discharges from irrigated lands. The rationale for this recommendation is summarized below and further explained in Sections 4 and 5 and the Appendices of this report.

The 2011 Draft Agricultural Order regulates discharges of waste from irrigated lands to ensure that such dischargers are not causing or contributing to exceedances of any Regional, State, or Federal numeric or narrative water quality standard, such that all beneficial uses are protected. The 2011 Draft Agricultural Order directly addresses agricultural waste discharges – especially contaminated irrigation runoff and percolation to groundwater causing toxicity, unsafe levels of nitrate, unsafe levels of pesticides, and excessive sediment in surface waters and/or groundwater. The 2011 Draft Agricultural Order also focuses on those areas of the Central Coast Region already known to have, or at great risk for, severe water quality impairment. In addition, the 2011 Draft Agricultural Order requires all dischargers to effectively implement management practices (related to irrigation, nutrient, pesticide and sediment management) that

[1] Salinas Valley Chamber of Commerce http://atlantabrains.com/ag_industry.asp

will most likely yield the greatest amount of water quality protection. The 2011 Draft Agricultural Order includes more stringent conditions to eliminate or minimize the most severe agricultural waste discharges and includes clear and direct methods and indicators for verifying compliance and monitoring progress over time. The proposed Draft Agricultural Order also includes reasonable time schedules to eliminate or minimize degradation from all agricultural waste discharges.

Staff recognizes that the pollution caused by irrigated agriculture is significant and will not be resolved in a short time frame. Staff's priority in the short term is to take deliberate steps towards water quality improvement and eliminate or minimize agricultural waste discharges that load additional pollutants to water bodies and groundwater basins that are already polluted or at high risk of pollution.

Given the scale and severity of pollution in agricultural areas and the affects on beneficial uses, including drinking water sources, staff recommends more stringent regulation, more monitoring and more reporting so discharger data and information is more accessible to the greater public and holds individual dischargers more accountable for reducing pollution loading from individual farm operations. Additionally, Water Board implementation of this 2011 Draft Agricultural Order and compliance by dischargers will be consistent with the State Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy), specifically by providing publicly-accessible data and information, and creating greater individual discharger accountability for measurable and trackable pollution reduction. Finally, the 2011 Draft Agricultural Order will insure progress towards or achievement of water quality standards through increased control of waste discharges to waters of the State and United States.

The range of stringency of Water Board regulation varies considerably, depending on the severity of the problem. At one end of the range are individual waste discharge requirements, which impose limits on specific pollutants in the waste discharge. For example, industrial wastewater treatment facilities have strict limits on the amounts of toxic pollutants they can discharge. At the other end of the range, for waste discharges with a low threat to water quality, the Water Board may only require use of management practices. The level of regulation proposed in the 2011 Draft Agricultural Order is near the middle of this range. Staff is not advocating an immediate shift to the most stringent level of regulation, because, as mentioned above, pollution caused by irrigated agriculture will not be resolved quickly, and because increases in technology and infrastructure will take some time.

Implementation of the Agricultural Order

As with all Orders issued by the Water Board, this Draft Agricultural Order sets the framework and authority for staff to use a routine progressive enforcement strategy, consistent with the State's Nonpoint Source Pollution Control and Enforcement Policies. The Draft Agricultural Order contains several general prohibitions and conditions. It also has some conditions with explicit timeframes for specific indicators or milestones to indicate compliance. Generally, the Draft Agricultural Order requires dischargers to effectively reduce pollutant loading and waste discharges to surface and groundwater from the irrigated agricultural operations under their control or ownership.

Dischargers are legally obligated to comply with the prohibitions and conditions immediately. However, the 2011 Draft Agricultural Order, in Finding 2, also acknowledges that it will take time for pollution sources to be controlled enough to meet water quality standards in receiving water.

In practice, the Water Board can withhold enforcement for failure to meet individual general conditions immediately, if dischargers are meeting conditions of the Draft Agricultural Order regarding implementation, monitoring and reporting. To evaluate an enforcement recommendation to the Board for failure to meet one or several conditions of the Order, staff will consider documentation of data and information related to groundwater sampling, individual discharge monitoring, implementation of management practices, treatment or control measures, or changes in farming practices to achieve compliance with this Order, and compliance history. For example, one way a discharger can demonstrate compliance with a timeframe and milestone is to show that irrigation runoff from an individual operation is meeting water quality standards. However, a discharger can also show compliance with timeframes and milestones by showing improvement in the other indicators or parameters required to be measured or observed at the place where a specific condition or action is required by the Order (See content of the Annual Compliance Document in the Monitoring and Reporting Program in Attachment B). Many dischargers (such as those enrolled in stormwater discharge permits) and grant-funded project directors are evaluating or have evaluated effectiveness of their water quality improvement practices using measurements, estimations, or simple modeling of pollution load reduction. This Draft Agricultural Order will impose similar and routine regulatory requirements and compliance evaluations on agricultural dischargers as currently exists for municipal and other industrial wastewater dischargers and stormwater dischargers.

The 2011 Draft Agricultural Order is consistent with legal requirements and goals and criteria established by the Water Board for developing a revised or new Order (see Appendix I.). The 2011 Draft Agricultural Order also incorporates all comments and suggestions made by Water Board members during public workshops (see Sections 4.B. and 4.C.). Staff incorporated all of the Water Board members' suggestions in the Draft Ag Order by:

- Building on the Preliminary Draft Agricultural Order distributed on February 1, 2010;
- Making human health protection the highest priority for waste discharge control;
- Including short term actions that will immediately improve and protect drinking water;
- Targeting the most impaired areas;
- Prioritizing operations with highest risk for their waste discharge to affect water quality;
- Using prioritization criteria that provide integration of water quality impairments (their locations, severity and human health risks) with characteristics of operations that inform where and which operation are highest risk for discharging waste that affects water quality (e.g., size, crop types, fertilizer and pesticide use), thereby increasing efficiency ;
- Including more implementation, monitoring and reporting requirements for the high risk operations;
- Including specific timeframes to reduce waste discharge and pollutant loading from high risk operations;
- Including targeted monitoring and reporting to collect best information to determine reductions in waste discharges, reductions in pollutant loading, and water quality improvements in receiving surface and groundwater;
- Including reduced monitoring and reporting for operations with low risk discharges;
- Allowing proprietary information to remain in Farm Plans and only requiring reporting of information that indicates effectiveness of waste discharge control practices and reductions in pollutant loads;
- Streamlining reporting information and improving information management systems and tools so staff can more efficiently and effectively evaluate data and information so limited staff resources are focused on highest priority compliance assistance and enforcement activities;

In developing this recommendation, staff also considered and compared several options or alternatives to this 2011 Draft Agricultural Order (see Section 3.C., 4.B., 4.C., and Appendix D). These included the existing 2004 Conditional Waiver, the Preliminary Draft Agricultural Order distributed February 1, 2010, three alternatives submitted April 1, 2010- one from the California Farm Bureau Federation and other agricultural groups, one from OSR Enterprises, Inc. and one from the Monterey Coastkeeper and other environmental groups, and another alternative submitted December 3, 2010 by the California Farm Bureau Federation. Staff also considered several different options for implementation, monitoring and reporting requirements within the Draft Agricultural Order (see Section 3.C and Appendix D).

Staff's recommendation is responsive to the comments and suggestions from interested parties representing regulated agriculturalists or industry representatives, environmental protection organizations, environmental justice advocates for clean drinking water for rural residents, and several other members of the public (see Section 4.B., 4.C., 4.D., and Appendix E).

Finally, staff developed this proposed 2011 Draft Agricultural Order to address the documented severe and widespread water quality problems in the Central Coast Region, predominately unsafe levels of nitrate in groundwater used for drinking water and toxicity decimating or impairing communities of aquatic organisms (see Section 4.D. and Appendix G).

Staff recommends that the Central Coast Water Board adopt the 2011 Draft Agricultural Order, which is the updated Conditional Waiver of Waste Discharge Requirements for Irrigated Agricultural Waste Discharges, Draft Order No. R3- 2011-0006. The 2011 Draft Agricultural Order will require landowners and operators of irrigated agricultural lands to 1) control discharges of waste that affect water quality, in a timely manner, in order to meet, or make progress towards meeting, water quality standards and objectives, 2) comply with conditions of waste discharge control through verification monitoring and reporting, and 3) provide accountability and transparency for the public on behalf of public resources.

3. PROPOSED DRAFT AGRICULTURAL ORDER

A. Summary of Proposed Draft Conditions, Monitoring and Reporting Requirements

The Draft Agricultural Order establishes three tiers of conditions based on threat to water quality. The Draft Agricultural Order requires Dischargers to comply with conditions for the "tier" that applies to their operation. The tiers are based on four criteria that indicate threat to water quality: size of farm operation, proximity to an impaired surface waterbody or public water system well, use of chemicals of concern, and type of crops grown. Dischargers with the highest threat have the greatest amount of waste discharge control requirements, monitoring and reporting. Conversely, dischargers with the lowest threat have the least amount of discharger control requirements, individual monitoring and reporting. Staff estimates that approximately 377 (13%) operations covering 54% of the total irrigated crop acres in the Central Coast Region will fall into Tier 3 (highest threat); 1,367 (46%) operations covering 25% of total irrigated crop acres will

fall into Tier 2 (moderate threat); 1,256 (42%) operations covering 21% of total acres will fall into Tier 1. Tiers and the rationale for the criteria are discussed further in Section 3.C.

Dischargers must comply with the conditions and monitoring and reporting requirements for their tier. The conditions in the Draft Agricultural Order are summarized in Table 1 below.

Table 1. Summary of Required Conditions (Compliance dates are shown in Tables 3 and 4)

All Dischargers must:
Comply with applicable water quality standards for pesticide, toxicity, nutrient, sediment, turbidity, or temperature as defined in Attachment A, protect the beneficial uses of waters of the State and prevent nuisance.
Have properly maintained back flow prevention devices installed at the well or pump to prevent pollution of groundwater or surface water.
Properly destroy all abandoned groundwater wells, exploration holes or test holes.
Implement proper handling, storage, disposal and management of pesticides, fertilizer, and other chemicals to prevent or control the discharge of waste to waters of the State.
Implement source control or treatment management practices to prevent erosion, reduce stormwater runoff quantity and velocity, and hold fine particles in place.
Minimize the presence of bare soil vulnerable to erosion and soil runoff to surface waters and implement erosion control, sediment, and stormwater management practices in non-cropped areas.
Maintain existing, naturally occurring, riparian vegetative cover (such as trees, shrubs, and grasses) in aquatic habitat areas as necessary to minimize the discharge of waste; maintain riparian areas for effective streambank stabilization and erosion control, stream shading and temperature control, sediment and chemical filtration, aquatic life support, and wildlife support to minimize the discharge of waste.
Update an existing or develop and implement a new farm water quality management plan.
Obtain appropriate farm water quality education and technical assistance necessary to achieve compliance with this Order.
Tier 2 and Tier 3 Dischargers also must:
Submit an Annual Compliance Form electronically to provide up-to-date information so the Water Board can evaluate the effect of agricultural waste discharges on water quality, and the effectiveness of waste discharge control or pollution load reduction from implementation of management practices, treatment or control measures, or changes in farming practices to comply with this Order.

Evaluate the nitrate loading risk factor (as high, medium or low) for each ranch/farm , annually.
Conduct Photo monitoring to document the condition of perennial, intermittent, or ephemeral streams and riparian and wetland area habitat, and demonstrate compliance with Basin Plan erosion and sedimentation requirements, if have a farm/ranch that contains or is adjacent to a waterbody identified on the Clean Water Act Section 303(d) List of Impaired Waterbodies as impaired for sediment, temperature or turbidity.
Record total nitrogen applied for each ranch/farm if have high nitrate loading risk.
Tier 3 Dischargers also must:
Conduct individual discharge monitoring
Determine the typical crop nitrogen uptake for each crop type produced if have nitrate loading risk.
Develop and implement a certified Irrigation and Nutrient Management Plan (INMP) to meet specified nitrogen balance ratio targets if have high nitrate loading risk.
Meet the following Nitrogen Balance ratio targets or implement an alternative to demonstrate an equivalent nitrogen load reduction: for crops in annual rotation (such as a cool season vegetable in a triple cropping system), achieve a Nitrogen Balance ratio target equal to one (1); for crops occupying the ground for the entire year (e.g., strawberries or raspberries) must achieve a Nitrogen Balance ratio target equal to 1.2.
Develop a Water Quality Buffer Plan to protect listed waterbody and its associated perennial and intermittent tributaries, including adjacent wetlands as defined by the Clean Water Act, from discharges of waste, if have a farm/ranch that contains or is adjacent to a waterbody identified on the Clean Water Act Section 303(d) List of Impaired Waterbodies as impaired for sediment, temperature or turbidity.

Description of Monitoring

The Draft Agricultural Order proposes the following types of monitoring for Dischargers in each Tier as follows.

Tier 1: Receiving surface water monitoring and individual groundwater sampling

Tier 2: Receiving surface water monitoring, individual groundwater sampling, and individual riparian and wetland photo-monitoring

Tier 3: Receiving surface water monitoring, individual groundwater sampling, individual riparian and wetland photo-monitoring, and individual surface water discharge monitoring

B. Summary of Time Schedule for Compliance

Table 2 describes the general time schedules to comply with conditions of the Order for all dischargers. Table 3 describes the same for Tier 2 and Tier 3 Dischargers. Table 4 describes milestones..

Table 2. Time Schedule for Key Compliance Dates All Dischargers (Tier 1, Tier 2, Tier 3)

CONDITIONS	COMPLIANCE DATE[1]
Submit Notice of Intent (NOI)	Within 30 days of adoption of Order or Within 30 days acquiring ownership/ control, and prior to any discharge or commencement of activities that may cause discharge.
Submit Update to NOI	Within 30 days, upon adoption of Order and upon change
Submit Notice of Termination	Immediately, when applicable
Submit Monitoring Reports per MRP	Per date in MRP
Implement, and update as necessary, management practices to achieve compliance with this Order.	Ongoing
Protect existing aquatic habitat to prevent discharge of waste	Immediately
Submit surface receiving water quality monitoring annual report	Within one year, and annually thereafter by January 1
Develop/update and implement Farm Plan	October 1, 2012
Install and maintain adequate backflow prevention devices.	October 1, 2012
Submit groundwater sampling results and information	October 1, 2013
Properly destroy abandoned groundwater wells.	October 1, 2015

Table 3. Additional Time Schedule for Key Compliance Dates for Tier 2 and Tier 3 Dischargers

CONDITIONS	COMPLIANCE DATE
Tier 2 and Tier 3:	
Submit electronic Annual Compliance Form	October 1, 2012, and updated annually thereafter by October 1.
Submit photo documentation of riparian or wetland area habitat (if operation contains or is adjacent to a waterbody impaired for temperature, turbidity, or sediment)	October 1, 2012, and every four years thereafter by October 1.
Calculate Nitrate Loading Risk level and report in electronic Annual Compliance Form	October 1, 2012, and annually thereafter by October 1.
Submit total nitrogen applied in electronic Annual Compliance Form (if discharge has High Nitrate Loading Risk)	October 1, 2014, and annually thereafter by October 1.
Only Tier 3:	

Initiate individual surface water discharge monitoring	October 1, 2011
Determine Crop Nitrogen Uptake (if discharge has High Nitrate Loading Risk)	October 1, 2012
Submit individual surface water discharge monitoring data	October 1, 2013 and annually thereafter by October 1
Develop Irrigation and Nutrient Management Plan (INMP) or alternative (if discharge has High Nitrate Loading Risk)	October 1, 2013
Submit INMP elements in electronic Annual Compliance Form (if discharge has High Nitrate Loading Risk)	October 1, 2014, and annually thereafter by October 1
Achieve Nitrogen Balance Ratio target equal to one (1) for crops in annual rotation (e.g. cool season vegetables) or alternative, (if discharge has High Nitrate Loading Risk)	October 1, 2014
Achieve Nitrogen Balance Ratio target equal to 1.2 for annual crops occupying the ground for the entire year (e.g. strawberries or raspberries) or alternative, (if discharge has High Nitrate Loading Risk)	
Submit Water Quality Buffer Plan or alternative (if operation contains or is adjacent to a waterbody impaired for temperature, turbidity, or sediment)	October 1, 2015
Submit INMP Effectiveness Report (if discharge has High Nitrate Loading Risk)	October 1, 2015

Table 4. Milestones

MILESTONES[1]	DATE
Tier 1, Tier 2 and Tier 3:	
Measurable progress towards water quality standards in waters of the State or of the United States[1], or	Ongoing
Water quality standards met in waters of the State or of the United States.	October 1, 2015
Only Tier 3:	
Pesticide and Toxic Substances Waste Discharges to Surface Water	
- One of two individual surface water discharge monitoring samples is not toxic	*October 1, 2012*
- Two of two individual surface water discharge monitoring samples are not toxic	*October 1, 2013*

Sediment and Turbidity Waste Discharges to Surface Water *- Four individual surface water discharge monitoring samples are collected and analyzed for turbidity.* *- 75% reduction in turbidity or sediment load in individual surface water discharge relative to October 1, 2012 load (or meet water quality standards for turbidity or sediment in individual surface water discharge)*	 *October 1, 2012* *October 1, 2013*
Nutrient Waste Discharges to Surface Water *- Four individual surface water discharge monitoring samples are collected and analyzed* *- 50% load reduction in nutrients in individual surface water discharge relative to October 1, 2012 load (or meet water quality standards for nutrients in individual discharge)* *- 75% load reduction in nutrients in individual surface water discharge relative to October 1, 2012 load (or meet water quality standards for nutrients in individual surface water discharge)*	 *October 1, 2012* *October 1, 2013* *October 1, 2014*
Nitrate Waste Discharges to Groundwater *- Achieve annual reduction in nitrogen loading to groundwater based on Irrigation and Nutrient Management Plan effectiveness and load evaluation*	 *October 1, 2013 and annually thereafter*

[1] Indicators of progress towards milestones includes, but is not limited to data and information related to a) management practice implementation and effectiveness, b) treatment or control measures, c) individual discharge monitoring results, d) receiving water monitoring results, and e) related reporting.

C. Justification for Staff Recommendations and Options Considered

[NOTE TO READER:This section was added to the Staff Report and was not contained in the November 19, 2010 Staff Report.]

Staff drafted the 2011 Draft Agricultural Order based on review of data and information collected by the Water Board (e.g., Central Coast Ambient Monitoring Program water quality data), review of related literature, and information gathered through numerous discussions with agricultural representatives, environmental organization representatives, environmental justice organization representatives, agency staff, farmers and other members of the public. Staff also evaluated and compared several options (some recommended and some considered) to determine which regulatory tool, tiering criteria, conditions and requirements to recommend. The options considered and the justification for the recommended requirements are discussed in detail in

Appendix D. Where a specific recommendation is based on published information, staff referenced the source of that information directly in the 2011 Draft Agricultural Order. Where staff reasoned a recommendation using best professional judgment, the rationale for the recommendation is provided either in this Staff Report, Appendix D or in the 2011 Draft Agricultural Order. The following paragraphs summarize the justification for the main components of the 2011 Draft Agricultural Order and those areas that received the most public comment.

Recommended Regulatory Tool – Conditional Waiver of Waste Discharge Requirements

Staff considered a variety of regulatory tools (e.g. conditional waiver, individual or general waste discharge requirements) and combinations of those tools for the regulation of agricultural discharges (see Appendix D – Options Considered). Each regulatory tool can be structured to achieve protection of water quality and associated beneficial uses.

To build upon the existing 2004 Conditional Waiver, Staff recommended the continued use of a conditional waiver with the addition of tiers. Dischargers are familiar with many of the terms and conditions of the 2011 Draft Agricultural Order, since they generally build upon those contained within the existing 2004 Conditional Waiver. Staff found that it is appropriate to adopt a conditional waiver of Reports of Waste Discharge (ROWDs) and Waste Discharge Requirements (WDRs) for this category of discharges because, as a group, the discharges have the same or similar waste from the same or similar operations and use the same or similar treatment methods and management practices (e.g., source control, irrigation efficiency - reduced agricultural irrigation runoff, reduced chemical use, nutrient management, cover crops, erosion control, vegetative treatment systems, etc.). In addition, the 2011 Draft Agricultural Order provides for an efficient and effective use of Water Board resources, given the magnitude of the discharges and number of persons who discharge waste from irrigated lands. The 2011 Draft Agricultural Order and tiering structure also provides reasonable flexibility for the Dischargers who seek coverage under this Order by providing them with a reasonable time schedule and options for complying with the Water Code commensurate with the specific level of waste discharge and threat to water quality.

The 2011 Draft Agricultural Order is in the public interest because the 2011 Draft Agricultural Order requires compliance with water quality standards and includes conditions that are intended to eliminate, reduce and prevent pollution and nuisance and protect the beneficial uses of the waters of the State. In addition, the 2011 Draft Agricultural Order tiering structure focuses on the highest priority water quality issues and most severely impaired waters.

Recommended Structure for Agricultural Order - Tiers

Staff considered different tiering methods for the 2011 Draft Agricultural Order (see Appendix D – Options Considered). The 2011 Draft Agricultural Order establishes three tiers of regulation based on specific criteria selected to take into account the characteristics of a specific operation, the level of waste discharge, relative threat to water quality, and known information about local water quality conditions.

Staff developed general tiering criteria in the 2011 Draft Agricultural Order and described in detail below. These tiering criteria were selected because they provide good indicators of threat to water quality from individual operations, account for surface and ground water quality conditions in the Central Coast Region, can be determined efficiently by agricultural operators and the Water Board by simple surveys of agricultural operations, and they provide a reasonable approach for scaling regulatory requirements according to actual or potential effects

of waste discharges on water quality. Owners/operators do not have to collect additional data or conduct complicated or expensive site evaluations to determine which tier applies to their operations. Finally, the tiering system proposed provides for an owner or operator of agricultural lands enrolling in the Order to present additional information to justify a more appropriate tier for their operations if warranted. Tier 1 includes Dischargers with a very low level of waste discharge and very limited threat to water quality (similar to a low-threat discharge). Tier 2 includes Dischargers with a moderate level of waste discharge and moderate threat to water quality. Tier 3 includes Dischargers with the highest level of waste discharge and highest threat to water quality.

Staff considered requiring discharge monitoring and reporting from all Discharges to comprehensively evaluate specific quality of discharge from individual operations for the purposes of discharge characterization and establishing tiers (see p. 24 of Appendix D – Individual Discharge Characterization Monitoring). Sufficient data regarding individual discharges is currently not available such that it could be used for the purposes of tiering. Staff found that it was unreasonable to impose such discharge characterization monitoring and reporting requirements on all Dischargers. Individual discharge characterization monitoring would require a significant amount of resources by every Discharger to implement, and a significant amount of resources by Staff to evaluate. In addition, the use of individual discharge characterization monitoring would likely result in a significant amount of time necessary before the Discharger or Water Board could assign the appropriate tier, delaying the implementation of requirements.

Staff included the tiering criteria described in the 2011 Draft Agricultural Order in response to early stakeholder comments that the order must not be “one size fits all”, that the Board should consider “the scale of water quality risks and potential loading posed by smaller operations compared to larger operations”, that the Board should “impose the least requirements for areas that are not impaired”, that the Board should consider “existing indicators of risk, including the nitrate hazard index”, and specifically that the Board should consider “tiers” to scale level of requirements. In addition, staff also recommended tiering criteria to facilitate implementation of requirements to initiate focus on the highest priority operations with the greatest relative threat to water quality in the most impaired areas. Finally, staff also considered the complexity of the proposed tiering criteria with the goal of selecting criteria that enabled the Board and growers to quickly identify the appropriate tier.

Staff evaluated the number of operations and estimated total acreage that would be included in each Tier based on criteria described in the 2011 Draft Agricultural Order, and Water Board enrollment data and information from the County Agricultural Commissioners. As illustrated in Table 5, staff estimates that the fewest number of operations would be included in the proposed Tier 3 and that the most operations would be included in the moderate Tier 2. Conversely, staff estimates that the largest total acreage would be included in Tier 3 and the lowest acreage would be included in Tier 1. This is consistent with the fact that the recommended Tier 3 criteria are focused on the largest operations with relatively higher threat to water quality and Tier 1 characteristics represent lower threat, smaller operations.

Table 5. Summary of estimated number of operations and acreage in Draft Ag Order tiers.

SUMMARY	Tier 3	Tier 2	Tier 1	Total
Estimated Total Operations	377	1367	1256	3000
% Total Operations	13%	46%	42%	100%
Estimated Total Acreage	233,000	110,000	92,000	435,000
% Total Acreage	54%	25%	21%	100%

The defining characteristics for the recommended 2011 Draft Agricultural Order tiers include: 1) use of specific pesticides known to cause toxicity and surface water impairments, including chlorpyrifos and diazinon, 2) location of operation in proximity to an impaired waterbody, 3) production of crop types with high potential for nitrate loading, and 4) operation size. In addition, based on stakeholder comments on the 2011 Draft Agricultural Order received during the public comment period, staff recommends an additional tiering criterion related to location of operation in proximity to a public water system well that is polluted by nitrate. The basis for these tiering criteria is explained in detail below.

Tiering Criteria – Use of Specific Pesticides, Including Chlorpyrifos and Diazinon

Staff considers low-threat operations that do not use chemicals known to cause water quality problems as a lower priority for monitoring and reporting requirements in the 2011 Draft Agricultural Order. In the Central Coast region, there are currently forty-five Clean Water Act 303(d) impaired waterbody listings for toxicity, twenty-six listings for chlorpyrifos, and thirteen listings for diazinon. In addition, there is substantial evidence that chlorpyrifos and diazinon are major causes of severe toxicity in agricultural areas (see 2011 Draft Agricultural Order findings 58, 68-78). Thus, staff finds that Dischargers who apply these chemicals may discharge these chemicals in irrigation and stormwater runoff, and pose a relatively greater risk to water quality than those Dischargers who do not apply these chemicals. Furthermore, staff finds that Dischargers who apply these chemicals at operations adjacent to streams already impaired for toxicity and pesticides are the highest priority for monitoring and reporting requirements in the Draft Ag Order.

Staff considered including alternative or additional chemicals for use in tiering criteria. For example, staff considered using existing high risk or restricted use pesticides developed by the Department of Pesticide Regulation (DPR). At the time of staff's evaluation, many of the pesticides on these DPR lists were not in broad use locally and were not yet documented to cause toxicity or pesticide specific surface water or groundwater problems in the Central Coast region. Staff decided not to use general high risk or restricted use pesticide lists because they were not necessarily related to water quality problems in the Central Coast region and because such tiering criteria could result in an unnecessary burden to growers. Staff also considered including those specific pesticides that were in agricultural use and detected in surface waters in the Central Coast region. The list of pesticides detected in the Central Coast region is very extensive (more than 75 individual pesticides, see 2011 Draft Agricultural Order finding #69) and would result in a very complicated tiering process. To focus on priority water quality issues and provide for a less complicated tiering process, staff chose to include only those pesticides that are currently documented as a primary cause of toxicity in the Central Coast region –

chlorpyrifos and diazinon. (Relatedly, staff recommended monitoring requirements to track effects of other pesticides causing toxicity so dischargers, the Water Board or members of the public can respond to new or increasing problems from other chemicals.)

Tiering Criteria – Location of Operation in Proximity to an Impaired Surface Waterbody-

Staff considers low-threat operations in unimpaired areas as a low priority for monitoring and reporting requirements in the 2011 Draft Agricultural Order. Staff recommends proximity to impaired waterbodies as a tiering criterion, and specific monitoring and reporting requirements for Dischargers in closest proximity to impaired surface waterbodies

The proximity distance of 1000 feet is commonly used in evaluations of preliminary environmental site assessment, source water assessment, sanitary surveys to evaluate the watershed for surface water sources and vulnerability assessments for groundwater sources, and similar evaluations of potentially contaminating activities. In such examples, potentially contaminating activities within 1000 feet (or similar distance) are evaluated in the context of posing an increased threat to water quality relative to those activities outside 1000 feet. The 2011 Draft Agricultural Order prioritizes operations located near an impaired waterbody as higher priority for implementation of this Order compared to similar operations not located near an impaired waterbody.

As a related example, California Department of Health Services (CDPH) requires public water systems to identify possible contaminating activities (PCAs) that are considered potential sources of contamination within drinking water source areas (for surface water bodies and groundwater wells) and its protection zones (CDPH, 2000). Possible contaminating activities include activities associated with both microbiological and chemical contaminants. CDPH evaluates possible contaminating activities and potential risk to water sources based on risk ranking and proximity to the water source. CDPH identifies agricultural drainage from irrigated crops as a possible contaminating activity associated with a moderate to high potential risk ranking, primarily relating to chemical contaminants. In general, CDPH requires an assessment of potentially contaminating activities within the watershed for surface water sources, and recommends a distance of between 400 and 2500 feet for surface water protection zones. In the case of groundwater sources and chemical contamination, CDPH recommends a minimum radius of 1000 to 2250 feet for the purposes of assessing vulnerability to potentially contaminating activities and protecting groundwater wells.

While the purpose of the CDPH assessments are focused on evaluating risk to drinking water sources, the same methodology can be applied for the purposes of identifying and evaluating possible contaminating activities at risk for impacting any surface water or groundwater source. Efforts to conduct preliminary environmental site assessments, sanitary surveys, and environmental vulnerability assessments utilize similar methodologies.

Staff estimated the number of operations that would be included in various proximal distances to impaired surface waterbodies, based on Water Board enrollment data and information from the County Agricultural Commissioners Office (Table 6).

Table 6. Comparison of proximal distance to impaired surface waterbodies and estimated number of operations in proximal area

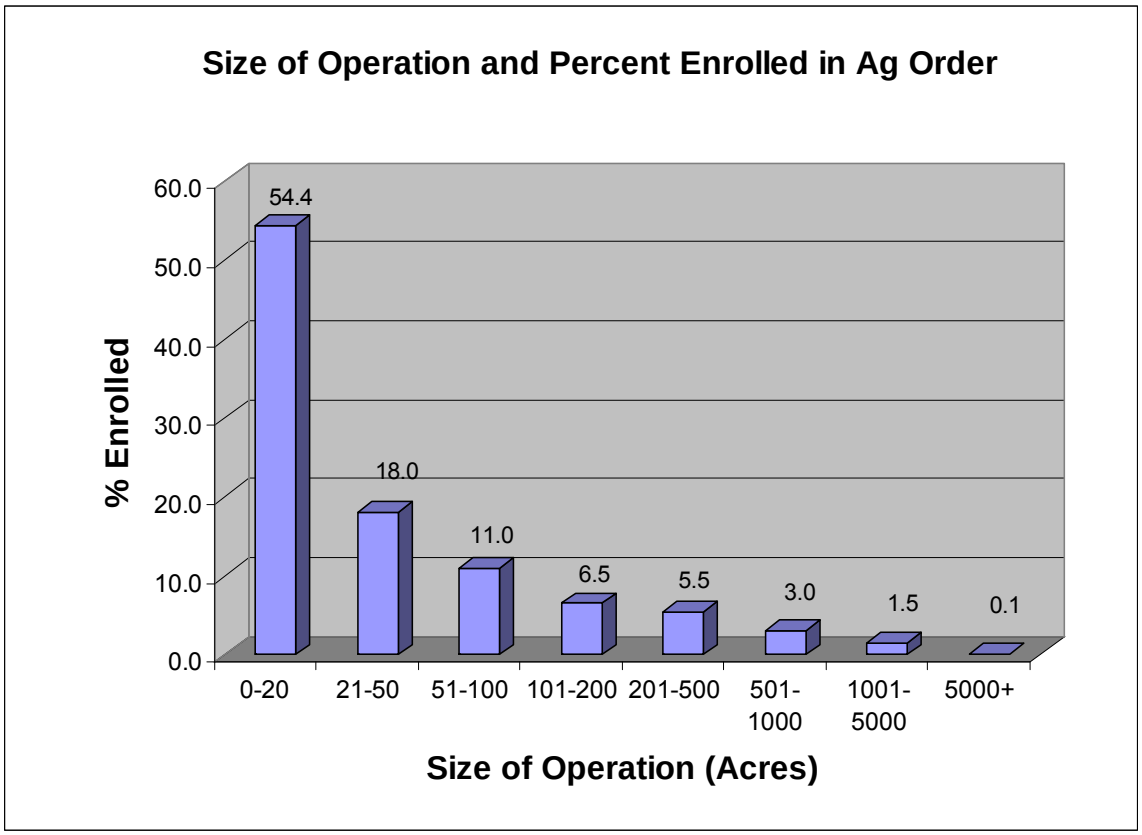
Proximal Distance to Impaired Surface Waterbody	Estimated Number of Operations	Estimated Percent of Total Operations
1000 feet	880	30%
500 feet	682	23%
250 feet	586	20%

Tiering Criteria - Production of Crop Types with High Nitrate Loading Risk and Operations greater than 1000 acres-

Nitrate pollution of groundwater drinking water supplies is a critical problem throughout the Central Coast Region (see Draft Ag Order findings 34-52). The protection of drinking water sources is among the highest priorities for this order. There is substantial evidence that specific crops (identified in Draft Ag Order finding 52) load more nitrate to groundwater relative to other crops and pose a greater threat to water quality, especially drinking water. Additional crops with high nitrate loading potential have been identified by public comments, including crops in the Brassica family with high nitrate loading potential, leafy greens with high nitrate loading potential, artichokes, beans, beets, com, cucumber, daikon, leek, onion, peas, pepper, pumpkin, potato, radishes, squash, strawberries, and tomatoes. In addition, in many cases, the production of these crops also involves the application of chlorpyrifos and diazinon, presenting additional threat to water quality. Staff prioritized operations producing these crops for specific conditions and prohibitions, including monitoring and reporting requirements.

Staff prioritized larger operations that produce crops likely to load nitrate to groundwater and using chemicals known to cause toxicity to focus initial implementation efforts. Staff acknowledges that operations less than 1000 acres may discharge similar or greater amounts of waste, and thus pose similar or greater risk to water quality. Staff estimated that 33 (2%) of approximately 1900 Dischargers enrolled in the existing 2004 Conditional Waiver have operations greater than or equal to 1000 acres (see Figure 2). Staff found it reasonable to prioritize initial implementation efforts on this limited number of dischargers who discharge a relatively high level of waste or pose a high threat to water quality. It is important to note that the 2011 Draft Agricultural Order requirements for Tier 3 Dischargers require dischargers to evaluate nitrate loading risk at the farm or ranch level and implement specific irrigation and nutrient management requirements only for those farms/ranches that have the greatest potential of nitrate loading.

Figure 3. Percent of total operations enrolled in existing Ag Order compared to size of operation in acres.



Tiering Criteria – Location of Operation in Proximity to Public Water System Polluted by Nitrate-

As stated above, nitrate pollution of groundwater drinking water supplies is a critical problem throughout the Central Coast Region (see Draft Ag Order findings 34-52). As a result, the protection of drinking water sources is among the highest priorities for this order. In the Central Coast Region, approximately 263 public water system wells exceed the drinking water standard for nitrate. In response to stakeholder comments on the Draft Ag Order received during the public comment period, staff is recommending an additional tiering criterion related to location of operation in proximity to a public water system well that is polluted by nitrate. Consistent with proximal distances recommended by the DPH for source water assessment and protection, staff is proposing an additional Tier 2 criterion that would include growers who produce crops with high potential to discharge nitrogen to groundwater and within 1000 feet of a public water system polluted by nitrate (but less than 1000 acres).

Staff evaluated the number of operations that are within 1000 feet of a public water system well with exceedances above the nitrate drinking water standard and estimates that an additional 15 operations would be included in Tier 2 (that are not already included based on other Tier 2 criteria).

Moving Between Tiers-

For tiering, the 2011 Draft Order includes a process for Dischargers to move to a different tier, if information they submit shows a lower level of discharge or lower threat to water quality. Staff clarified this issue in the 2011 Draft Agricultural Order (see condition #15). The Order states that "Dischargers may submit a request to the Executive Officer to approve transfer to a lower tier. The request must provide information to demonstrate a lower level of waste discharge and a lower threat to water quality, including site-specific operational and water quality information. Dischargers remain in the tier determined by the criteria above, and must meet all conditions for that tier until the Executive Officer approves the request to transfer to a lower tier." Thus, if the Discharger provides evidence that treatment has effectively removed pollutants from the discharge and the Discharger plans to maintain such treatment or control, then the Executive Officer can determine that this Discharger can be designated in a lower tier.

Recommended Implementation Conditions and Requirements

Staff considered a variety of conditions and requirements to regulate discharges of waste from agricultural operations (see Appendix D – Options Considered). To build upon the existing 2004 Conditional Waiver, Staff included a majority of the terms and conditions in the existing 2004 Conditional Waiver in the 2011 Draft Agricultural Order, as well as revised or new conditions to better protect water quality in agricultural areas and to better measure progress towards water quality improvement and compliance with water quality standards.

Consistent with the legal requirements and goals and criteria established by the Water Board for developing the 2011 Draft Agricultural Order and feedback from Water Board members and stakeholders, staff 1) included specific conditions and requirements such as short term actions to protect human health and prioritize protection of drinking water, 2) targeted the most impaired areas and prioritized operations with greatest potential for waste discharges to affect water quality, and 3) required less monitoring and reporting for operations with the lowest potential for waste discharges to affect water quality.

Specifically, the 2011 Draft Agricultural Order includes general prohibitions and conditions targeting priority water quality issues in agricultural areas (nitrate in groundwater, toxicity/pesticides, nutrients in surface water, sediment/turbidity) for all Dischargers with minimal monitoring and reporting for the lowest threat operations in areas without water quality impairments (Tier 1). To protect drinking water, staff included additional conditions for Tier 2 and Tier 3 dischargers to evaluate the nitrate loading risk and to report total nitrogen applied at those operations with high nitrate loading risk operations. To further protect drinking water supplies from the effects of waste discharge from operations that pose the highest threat, staff included conditions for Tier 3 operations with high nitrate loading risk to also implement an Irrigation and Nutrient Management Plan. Additionally, to prevent sediment, turbidity, and temperature waste discharges adjacent to already impaired surface waterbodies, the 201 1 Draft Agricultural Order requires the highest risk operations in Tier 3 to also implement a Water Quality Buffer Plan.

Staff found that in a general comparison with the existing 2004 Conditional Waiver, the recommended 2011 Draft Agricultural Order Tier 1 requirements represent fewer requirements than the existing 2004 Conditional Waiver. Tier 2 requirements are comparable to the 2004 Conditional Waiver, with a few additional reporting requirements to better indicate effectiveness of management practices and reduction in pollutant loading. Tier 3 requirements are greater than the 2004 Conditional Waiver. Staff recommended these implementation conditions and requirements, based upon the tiering criteria, because they are reasonable and appropriate

given the severity and magnitude of water quality problems in the agricultural areas of the Central Coast region.

Furthermore, many of the conditions in the 2011 Draft Agricultural Order are consistent with water quality management practices and measures of effectiveness or pollution loading already implemented by many growers effectively and promoted by technical experts and technical assistance providers working in the Central Coast region. Several examples follow below. Field demonstrations conducted by University of California Cooperative Extension (UCCE) documented that improved fertilizer management and efficient irrigation management practices for vegetable production significantly reduces off-site nutrient loss and that current fertilization practices can be improved without risk of crop loss (Hartz et al, 2009; Pettygrove et al, 2003). Technical assistance providers also promote minimizing and protecting bare soil areas to reduce soil erosion and waste discharge to surface water (ANR, 2004). In another example, the Central Coast Vineyard Team Sustainable in Practice (SIP) certification requires vineyard operations to implement a vegetated perimeter buffer of no less than 25 feet from the edge of perennial and intermittent streams and wetland areas to control erosion and off site movement of contaminants (Central Coast Vineyard Team, 2011). Related to groundwater quality, technical experts at the Natural Resources Conservation Service (NRCS) and University of California Division of Agriculture and Natural Resources also recommend groundwater sampling of domestic wells and irrigation wells at a frequency of once or twice a year because shallower wells are prone to short-term variations in groundwater quality and contamination (ANR, 2003).

Recommended Monitoring and Reporting Requirements

Staff considered a variety of monitoring and reporting requirements for inclusion in the 2011 Draft Agricultural Order (see Appendix D – Options Considered). To build upon the existing 2004 Conditional Waiver, staff included the continuation of surface water receiving water monitoring, implemented individually or by a cooperative monitoring program. To address drinking water protection as the highest priority for the 2011 Draft Agricultural Order, staff included basic groundwater sampling and reporting for nitrate in domestic drinking water wells and primary irrigation well at all agricultural operations. In addition, staff included basic annual reporting for moderate threat operations (Tier 2) to document status and effectiveness of waste discharge control and pollution reduction at operations and due to changes or management practices. For higher risk operations still within Tier 2 (high nitrate loading risk or operations containing or adjacent to 303(d) Listed Waterbodies impaired for sediment, turbidity, or temperature) staff included additional reporting of total nitrogen applied annually and photo monitoring, respectively.

For a limited number of the highest risk operations (Tier 3), staff included more stringent monitoring and reporting requirements related to the effective implementation of irrigation and nutrient management and water quality buffer plans, and individual discharge monitoring to evaluate waste discharge control, affects on receiving water, and progress towards milestones and compliance with the 2011 Draft Agricultural Order.

Staff finds that the recommended monitoring and reporting requirements, are commensurate with the level of waste discharge and threat to water quality with desired focus on the highest water priorities, and are reasonable and appropriate given the severity and magnitude of water quality problems in the agricultural areas of the Central Coast region. Additionally, these types of monitoring and reporting requirements are necessary for compliance and consistency with

the Water Code and State Nonpoint Source Policy requirements to include monitoring that demonstrates effectiveness of the Order, protects water quality and makes this type of information available to the public.

Recommended Milestones and Timeframes

Adequate timeframes and milestones are necessary to evaluate and ensure timely compliance and progress towards water quality improvement. Staff considered a variety of milestones and timeframes to regulate discharges of waste from agricultural operations (see Appendix D – Options Considered). The 2011 Draft Agricultural Order did not set achievement of water quality objectives in receiving waters within the timeframe of the 2011 Draft Agricultural Order, as staff recognizes that it will take time to address all sources of pollution and fully resolve the severe water quality impairments. However, the conditions and requirements in the 2011 Draft Agricultural Order include measurable indicators of progress towards meeting water quality objectives and set short timeframes so both the indicators and appropriate responses to the indicators can be evaluated and improved in the short-term, if necessary. For the subset of dischargers that pose the highest threat (Tier 3), the 2011 Draft Agricultural Order sets timeframes of two to five years to show pollutant load reduction in individual discharges to surface water and to show pollutant load reduction in discharge to groundwater. Staff's recommendation for milestones and timeframes is based upon known half-lives of pesticides known to cause toxicity (e.g. half-lives of chlorpyrifos and diazinon are significantly less than two years) and demonstrated success at reducing nutrient and sediment loading through on-farm improvements implemented as part of grant-funded projects, waste discharge control required by the Water Board and independently by individual growers.

In the case of irrigation efficiency projects, many successful grant-funded examples exist in the Central Coast Region where growers were able to significantly reduce their irrigation run-off and in some cases, completely eliminate tailwater during the irrigation season within a 3-year timeframe. Similar examples exist related to nutrient management, with resulting fertilizer efficiency and reduction in nutrient load to surface water and groundwater. For example, the Cachuma Resource Conservation District worked with a number of growers to implement an Irrigated Agriculture Best Management Practices (BMP) Implementation grant which reported the following water quality improvements over a 3-year period from 2006 - 2009: 645 tons of nitrate-nitrogen fertilizer application were eliminated; 20,710 tons of soil were prevented from entering the waterways; 276 acres of strawberries had at least 1 application of pesticide eliminated; 833 acre feet per year (ac-ft/yr) of irrigation water were conserved; 24.65 tons of nitrate-nitrogen conserved with irrigation water (Prop 50 Ag Water Quality Grant Program, 2009). Another grant project implemented at several individual vineyard operations reported average soil erosion reduction of 15 tons/acre/year measured using the RUSLE 2model over a 3-year period (Central Coast Vineyard Team, 2005). Examples also exist at the watershed scale, demonstrating effective wetland treatment of large fractions of nitrate and suspended sediment inputs with retention times of several days, and some treatment of nutrients and pesticides over longer retention times (Prop 13 NPS Grant Program, Gabilan Watershed).

In the case of nutrient management practices, there are many documented cases where growers achieved annual fertilizer application reductions by up to 50% in some cases, which significantly reduces the potential for nitrogen loading to groundwater. In addition, the effective implementation of vegetative treatment systems have demonstrated significant nitrate removal from surface water (in some cases ~50% NO3-N removed) has also been reported within the term of 3-year grant projects. In the Franklin Creek watershed in Santa Barbara County,

compliance with Water Board regulatory actions taken in 2002 led to a decline in nitrate loading from waste discharges from nurseries and greenhouses. Nitrate concentrations have been on a steady (and statistically significant) decline in Franklin Creek since then. This represents a change of approximately 30% decrease in nine years for receiving water, with an unreported but likely significant improvement in loading from individual discharges. In another location, in a small watershed where agricultural activity ceased completely (and voluntarily), a 90% decline in nitrate concentrations was documented in five years in receiving water. Complete cessation of agricultural activity is not a viable or desirable waste discharge control option, but cessation of the nitrate sources in these cases represents the magnitude of change that is possible in receiving waters and the direct cause and effect between farming practices and water quality.

While the 2011 Draft Agricultural Order provides for various alternative methods to achieve compliance, the above examples demonstrate that significant improvement can be measured within the five-year term of the 2011 Draft Agricultural Order and timeframes described within. Staff found that the recommended milestones and timeframes are reasonable and appropriate given the severity and magnitude of water quality problems in the agricultural areas of the Central Coast region.

4. DEVELOPMENT OF THE DRAFT AGRICULTURAL ORDER

A. Results of Public Outreach/Comparison of Alternatives and Proposals

Workshop Outcomes

At the Workshop on May 12, 2010, staff presented a summary of water quality conditions, preliminary draft staff recommendations, and an evaluation of the alternatives submitted that concluded the agricultural alternatives did not meet the criteria set forth by the Board nor the water quality goals and requirements that staff established as necessary for a revised order when development of the 2011 Draft Agricultural Order began prior to December 2008. Staff evaluated the Farm Bureau Proposal subsequently submitted by agricultural representatives on December 3, 2010. This proposal came closer to meeting the goals and requirements but staff concluded that the Farm Bureau Proposal does not comply with basic statutory requirements and falls short of containing requirements that will resolve the water quality problems effectively given their severity and magnitude. The Farm Bureau Proposal is discussed in detail in Appendix D. Options Considered. In summary, staff identified the following limitations in the Farm Bureau Proposal:

- Monitoring:
    - Does not require monitoring that measures the effectiveness of on-farm management practices or pollutant load reduction;
    - All individual farm or operation data and information to be kept confidential;
    - Does not require individual or operation-level monitoring, but indicates it is optional for all growers, even high risk;
- Milestones and Timeframes:

    - Milestones indicate very limited progress towards meeting legal water quality standards, and many waterbodies will still exceed most legal water quality standards;
    - Long timeframes for very limited progress toward surface water quality milestones (4-10 years versus 2-3 years in Draft Ag Order);
    - No milestones or timeframes for groundwater loading or groundwater quality conditions;
- Reporting:
    - Does not include individual or farm or operation-level water quality sampling;
    - Management practice reporting includes results of surveys indicating if and which practices used, but not if effective at preventing or reducing pollution loading;
    - Includes aggregated information reporting for implementation actions (e.g. results for group of operations in a sub-watershed);
    - Content of aggregated reports unspecified (e.g. data will be collected during audits which will result in "points" based on unspecified criteria);
- Inconsistent with Plans and Policies:
    - Does not include measures of progress or achievement of legal water quality standards;
    - Does not include required measures of effectiveness of management practices;
    - Limits the Board's authority and discretion to enforce when the Board finds or measures discharges of wastes or exceedances of water quality standards by defining compliance with the "waiver" as implementation of farm water quality practices;
- Enforceability
    - The Proposal is not enforceable with respect to individual discharges of waste due the lack of specific monitoring and reporting, and the way coalitions would be set up.

Staff also identified the following benefits or improvements in the Farm Bureau Proposal:

- Contains implementation of management practices that address pollutant loading from irrigation, pesticides, sediment, and fertilizer;
- Contains surveys, audits and coalitions to assist growers to adapt and improve operations to improve water quality.
- Prioritizes operations growing crops with high potential to discharge nitrogen to surface and groundwaters (using same criteria as November 19, 2010 Draft Agricultural Order).

The Farm Bureau Proposal is compared to the earlier alternatives in Table 7 below per the requirements and goals the Water Board and staff set for revising the 2004 Conditional Waiver. The general requirements and components for a revised Order are shown in the bold headings in the columns. The detailed information in each cell is the unique component from each alternative proposed for each of the general components for a revised Order.

Table 7. Evaluation of Alternatives[1] based on Agricultural Order Requirements[2]

Authority	Legal Requirement	Confirmation of Compliance	Point of Compliance	Milestone(s) to Measure Progress	Time to Compliance
Porter-Cologne, Basin Plan	Eliminate toxic discharges of agricultural pesticides to surface waters and groundwater	Farm Bureau: Practice survey reporting; Coalition audit aggregated summary reports; Watershed scale monitoring and reporting	Farm None Watershed scale, in stream	General management practice implementation; 50% reduction in chlorpyrifos and diazinon toxic units; meet Water Quality Objectives (WQOs)	4 years for toxic units; 8 years to meet WQOs
		OSR: Individual monitoring (no reporting); Cooperative monitoring and reporting; Practice checklist reporting; Biannual aggregated summary of implementation and water quality	None Watershed scale, in stream None None	General management practice implementation	5 years for education; 2 years for farm plan and checklist
		ENV: On- farm monitoring and reporting; Watershed scale monitoring and reporting; Farm plan compliance document reporting	Farm; Edge of farm; Watershed scale, in stream Farm; Edge of farm	Meet WQOs in discharge Various indicators of practice effectiveness to control waste discharges or reduce pollution load (e.g. reduced volume of runoff)	Within a few months Annually

Authority	Legal Requirement	Confirmation of Compliance	Point of Compliance	Milestone(s) to Measure Progress	Time to Compliance
Porter-Cologne, Basin Plan	Reduce nutrient discharges to surface waters to meet nutrient standards	Farm Bureau: Practice survey reporting; Coalition audit aggregated summary reports; Watershed scale monitoring and reporting	Farm None Watershed scale, in stream	General management practice implementation; 10% load reduction	10 years
		OSR: Individual monitoring (no reporting); Cooperative monitoring and reporting; Practice checklist reporting; Biannual aggregated summary/survey of implementation and water quality	None Watershed scale, in stream None None	General management practice implementation	5 years for education; 2 years for farm plan and checklist
		ENV: On- farm monitoring and reporting; Watershed scale monitoring and reporting; Farm plan compliance document reporting	Farm; Edge of farm; Watershed scale, in stream Farm; Edge of farm	Meet WQOs in discharge Various indicators of practice effectiveness to control waste discharges or reduce pollution load (e.g. total nitrogen applied)	4 years
		OSR: None	None	None	None

Authority	Legal Requirement	Confirmation of Compliance	Point of Compliance	Milestone(s) to Measure Progress	Time to Compliance
Porter-Cologne, Basin Plan	Reduce nutrient discharges to groundwater to meet groundwater standards	Farm Bureau: Practice survey reporting; Coalition audit aggregated summary reports; Well sampling annually (no reporting)	Farm None None	Nutrient management plan	1 year
		OSR: None	None	None	None
		ENV: On- farm monitoring and reporting Groundwater basin scale monitoring and reporting; Farm plan compliance document reporting	Farm; On-farm Basin scale, groundwater Farm; Edge of farm	Eliminate or measure reduced nitrate in discharge Various indicators of practice effectiveness to control waste discharges or reduce pollution load (e.g. total nitrogen applied)	6 years Annually
Porter-Cologne, Basin Plan	Minimize sediment discharges from agricultural lands	Farm Bureau: Practice survey reporting; Coalition audit aggregated summary reports; Watershed scale monitoring and reporting	Farm None Watershed scale, in stream	General management practice implementation 20 % load reduction	5 years
		OSR: Individual monitoring (no reporting); Cooperative monitoring and reporting;	None Watershed scale, in stream		

Authority	Legal Requirement	Confirmation of Compliance	Point of Compliance	Milestone(s) to Measure Progress	Time to Compliance
		Practice checklist reporting; Biannual aggregated summary/survey of implementation and water quality	None None	General management practice implementation	5 years for education; 2 years for farm plan and checklist
		ENV: On- farm monitoring and reporting; Watershed scale monitoring and reporting; Farm plan compliance document reporting	Farm Watershed scale, in stream Farm	Meet WQOs in discharge Various indicators of practice effectiveness to control waste discharges or reduce pollution load (e.g. vegetative cover for bare soil)	3 years

[1]Alternatives:
Farm Bureau = CA Farm Bureau Federation and other Ag Organizations, December 3, 2010 version
OSR = OSR Enterprises, Inc.
ENV = Monterey Coast keeper and other Environmental Organizations
[2]Requirements established as framework for development of Draft Ag Order in December 2008

In Table 8, below, all the alternatives and proposals submitted are compared more generally to the 2004 Conditional Waiver and 2011 Draft Agricultural Order. Each alternative, proposal or order appears in a cell in the table if the alternative, proposal or order addresses the component representing that cell. For example, all six of the alternatives, proposals or orders include some form of reporting or monitoring to confirm compliance with the requirement to "eliminate toxic discharges of agricultural pesticides to surface waters and groundwater" so their abbreviations (per the key at the bottom of Table 8) appear in the cell labeled "Confirmation of Compliance" on the same line that has "eliminate toxic discharges of agricultural pesticides to surface waters and groundwater" in the cell labeled "Legal Requirement." For another example, only the alternative submitted by Monterey Coast Keeper and other Environmental Organizations (ENV) and the 2011 Draft Agricultural Order (DRAFT) include explicit dates by which dischargers must reduce nutrient discharges to groundwater to meet groundwater standards so their abbreviations appear in the cell labeled "Time to Compliance" on the same line that has "reduce nutrient discharges to groundwater to meet groundwater standards" in the cell labeled "Legal Requirement."

Table 8. Comparison of Alternatives based on Agricultural Order Requirements

Comparison of Alternatives[1] based on Agricultural Order Requirements[2]					
Authority	**Legal Requirement**	**Confirmation of Compliance**	**Point of Compliance**	**Milestone(s) to Measure Progress**	**Time to Compliance**
Porter-Cologne, Basin Plan	Eliminate toxic discharges of agricultural pesticides to surface waters and groundwater	FARM BUREAU OSR ENV 2011 ORDER 2004 WAIVER	FARM BUREAU ENV 2011 ORDER 2004 WAIVER	FARM BUREAU OSR ENV 2011 ORDER	FARM BUREAU OSR ENV 2011 ORDER
Porter-Cologne, Basin Plan	Reduce nutrient discharges to surface waters to meet nutrient standards	FARM BUREAU OSR ENV 2011 ORDER 2004 WAIVER	FARM BUREAU ENV 2011 ORDER 2004 WAIVER	FARM BUREAU OSR ENV 2011 ORDER	FARM BUREAU OSR ENV 2011 ORDER
Porter-Cologne, Basin Plan	Reduce nutrient discharges to groundwater to meet groundwater standards	FARM BUREAU ENV 2011 ORDER 2004 WAIVER	FARM BUREAU ENV 2011 ORDER	ENV 2011 ORDER	ENV 2011 ORDER
Porter-Cologne, Basin Plan	Minimize sediment discharges from agricultural lands	FARM BUREAU OSR ENV 2011 ORDER 2004 WAIVER	FARM BUREAU ENV 2011 ORDER 2004 WAIVER	FARM BUREAU OSR ENV 2011 ORDER	FARM BUREAU OSR ENV 2011 ORDER
Porter-Cologne, Basin Plan	Protect aquatic habitat	OSR ENV 2011 ORDER 2004 WAIVER	ENV 2011 ORDER	ENV 2011 ORDER	ENV 2011 ORDER

[1]Alternatives:
Farm Bureau = CA Farm Bureau Federation and other Ag Organizations, December 3, 2010 version
OSR = OSR Enterprises, Inc.
ENV =Monterey Coast keeper and other Environmental Organizations
2011 ORDER = 2011 Draft Agricultural Order
2004 WAIVER = Existing 2004 Conditional Waiver for Irrigated Agriculture
[2]Requirements established as framework for development of Draft Ag Order in December 2008

The Board listened to public comments on the recommendations, and public presentations on proposed alternatives for regulating agricultural waste discharges. More than 375 members of the public attended the meeting and more than 80 individuals addressed the Water Board.

Proponents of the various alternatives described their alternatives to the Board. Interested persons, including regulated agricultural owners and operators, agricultural industry representatives, environmental protection agencies and organizations, environmental justice advocates for clean drinking water for rural residents, and several other members of the public, showed both support and opposition for the Order and commented on the following issues. A wide range of views were expressed on each issue:

- The effects of agricultural waste discharges on beneficial uses, including drinking water;
- Costs to clean up the nitrate being transferred to the public, increased health care costs, bottled water costs, and missing work;
- Complexity, cost, and feasibility of requirements
- Timelines to compliance;
- The collaborative process;
- Numeric requirements, streamside buffers and riparian protections;
- individual farm monitoring;
- Legality and appropriateness of the alternatives

Board members offered their own comments on what they heard at the Workshop and read in the staff reports and preliminary Draft Agricultural Order. Some of the key comments that Board members made include:

- Tiered approach and phasing are essential; we need to focus on short term actions that address drinking water concerns. The worst areas should be addressed first.
- How do we coordinate with the food safety issues?
- Will there be enough staff to analyze all the information being requested from the Ag community?
- Will we be able to protect proprietary information requested in the farm plans?
- A required education element should be considered (15 hours in five years?).
- Need reasonable timelines.
- Individual Waste Discharge Requirements might have a role.
- There should be enforcement on the remaining growers that are not enrolled.
- Water quality issues identified are real and need to be addressed; consider prioritization of the issues.
- Perhaps the next waiver should look like a ten year plan and consider other components, and lay the framework at how we are going to get at all these issues.

Board members concluded that staff should move forward with next steps considering stakeholder and Board member input from the Workshop, meeting with stakeholders further and preparing a revised Draft Agricultural Order. They also agreed to continue the Workshop at the July Board meeting in Watsonville.

On Thursday, July 8, 2010 the Water Board held a public workshop continuing the May 12 public workshop. Staff received 16 additional comment letters. These comments generally covered issues similar to the comments submitted prior to the May 12 Board Workshop and included:

General Support for Preliminary Draft Agricultural Order (over 880 letters including multiple copies of some form letters):

- Support for the process, the Agricultural Regulatory Program and preliminary draft recommendations for an updated Agricultural Order.
- Support for the prioritization of agricultural water quality and urges Water Board to take timely actions to prevent further degradation.
- Support for the regulation of agricultural waste discharges to groundwater and the protection of drinking water sources.
- Support for requirements for individual groundwater monitoring, including private domestic wells and submittal of data and technical reports.

General Concern about Preliminary Draft Agricultural Order (over 200 letters):

- Requirements will result in economic hardship.
- Requirements will result in crop yield reductions and farmers will go out of business.
- The current process is inadequate, including California Environmental Quality Act (CEQA) requirements and specifically requirements to consider the social, environmental and economic impacts, and evaluate alternatives.
- Lack of cooperation with the growers and farm organizations to develop requirements.
- Objections to proposed aquatic habitat requirements.
- Objections to individual monitoring and reporting.

At the workshop, commenters presented the following issues and made the following comments:

- Advocacy for "SMART" sampling which is similar to the current confidential on-farm monitoring that the Cooperative Monitoring Program (CMP) conducts;
- Examples of ranchers who have adapted their practices and operations in response to SMART sampling to improve water quality;
- Expert presentations on technical hurdles of reducing nitrate loading to levels protective of water quality;
- Advocacy for individual discharger monitoring and riparian protection;
- Advocacy for protecting drinking water quality and preventing related public health impacts
- Consideration of individual commodities (like strawberries);
- Need for flexibility;
- Need to evaluate technical feasibility of water quality improvements;
- Need for long timeframes;
- Include education requirements;
- Set reasonable and scientifically determined targets;
- Recognize benefits and challenges (costs and effectiveness) of riparian and vegetative buffers.
- Agricultural alternatives do not meet the criteria set forth by the Board.

Board members made the following observations:

- Affects to human health are the highest priority and need a short-term response;
- Build on original draft, and use good ideas heard at workshop;
- Support tiered approach and prioritizing where main problems are and based on commodities that are biggest risks;

- Consider recommendation to allow two years of private monitoring, and then require submittal of data and make it public;
- Focus on what staff can do in the next five years given reduced resources;
- Refine tiers beyond just impaired and unimpaired areas; also consider threats to water quality; find ways to tier requirements for groundwater affects;
- Measure trends and hope to show improvements and meeting goals;
- No need for another workshop but anyone who wants to offer information to the Board should submit it or contact staff.

Staff incorporated all of the Water Board member's suggestions in the Draft Agricultural Order by:

- Building on the preliminary Draft Agricultural Order distributed on February 1, 2010
- Making human health protection the highest priority for waste discharge control
- Including short term actions that will immediately improve and protect drinking water
- Targeting the most impaired areas
- Prioritizing operations with highest risk for their waste discharge to affect water quality
- Using prioritization criteria that provide integration of water quality impairments (their locations, severity and human health risks) with characteristics of operations that inform where and which operation are highest risk for discharging waste that affects water quality (e.g., size, crop types, fertilizer and pesticide use), thereby increasing efficiency
- Including more implementation, monitoring and reporting requirements for the high risk operations
- Including specific timeframes to reduce waste discharge and pollutant loading from high risk operations
- Including targeted monitoring and reporting to collect best information to determine reductions in waste discharges, reductions in pollutant loading, and water quality improvements in receiving surface and ground- waters
- Including reduced monitoring and reporting for operations with low risk discharges
- Allowing proprietary information to remain in Farm Plans and only requiring reporting of information that indicates effectiveness of waste discharge control practices and reductions in pollutant loads
- Streamlining reporting information and improving information management systems and tools so staff can more efficiently and effectively evaluate data and information so limited staff resources are focused on highest priority compliance assistance and enforcement activities

<u>Public Outreach Meetings</u>

Following the release of the draft report and supporting documents and continuing through September 2010, Staff participated in several outreach meetings and events. To ensure a diverse representation of stakeholders, staff initially made a deliberate effort to engage stakeholders who were not represented on the Ag Panel and who were not already actively participating in the process to renew the Agricultural Order, including technical assistance providers, municipalities, environmental justice organizations, and agricultural industry groups not yet involved. In addition to discussing potential conditions and alternatives, staff met with stakeholders to discuss water quality conditions and priorities, methods to outreach to underrepresented groups, technical considerations associated with achieving water quality standards, potential costs of compliance to agriculture and potential costs to communities

affected by agriculture. Staff also met specifically with representatives from agriculture and specific commodity groups.

Specific outreach meetings and events are shown in Table 9.

Table 9. Agricultural Order Renewal Outreach Meetings and Event

DATE	MEETING / EVENT
November 17, 2009	Staff Presentation at 2009 Sustainable Ag Expo in San Luis Obispo, sponsored by the Central Coast Vineyard Team
January 12, 2010	Staff Presentation at American Society of Agronomy Conference, California Certified Crop Advisers
February 17, 2010	Monterey Coastkeeper
February 22, 2010	Santa Cruz County, Resource Conservation District of Santa Cruz County, and Big Sur Land Trust
March 3, 2010	San Luis Obispo County Water Resources Advisory Committee
March 8, 2010	Technical Assistance Providers (University of California Cooperative Extension, Cal Poly Irrigation Training Research Center, Monterey Bay National Marine Sanctuary, Natural Resources Conservation Service, Resource Conservation District of Monterey County)
March 9, 2010	Staff Presentation to Spanish speaking growers and irrigators - Annual Monterey County Ag Expo
March 17, 2010	California Strawberry Commission
March 22, 2010	San Luis Obispo County Farm Bureau – North Coast Farm Center
March 23, 2010	The Commonwealth Scientific and Industrial Research Organization (CSIRO) and Antinetti Consulting, Inc.
March 30, 2010	Central Coast Vineyard Team, Department of Pesticide Regulation, State Water Resources Control Board, Central Valley Regional Water Quality Control Board
April 11, 2010	Executive Officer Presentation to Association of California Water Agencies on Water Quality and Water Supply
April 14, 2010	Agricultural Water Quality Alliance (Monterey Bay National Marine Sanctuary, Resource Conservation District of Monterey County, Natural Resources Conservation Service, Central Coast Agricultural Water Quality Coalition, Central Coast Water Quality Preservation, Inc., Resource Conservation District of Monterey County, University of California Cooperative Extension, AWQA RCDs)
April 28, 2010	Interagency Meeting (U.S. Environmental Protection Agency, U.S. Fish and Wildlife, California Department of Public Health, California Department of Water Resources, California Department of Food and Agriculture, California Department of Fish and Game, California State Parks, County public health agencies, County Agriculture Commissioners)
April 28, 2010	Stanford Law School – Environmental Law Clinic, Monterey Coastkeeper
April 29, 2010	Farm, Food Safety, Conservation Network
April 30, 2010	California Association of Nurseries and Garden Centers, University of California Cooperative Extension
May 12, 2010	Central Coast Water Board Public Workshop – San Luis Obispo
May 24, 2010	Staff Presentation to Spanish speaking growers - Agriculture & Land-Based Training Association
July 8, 2010	Central Coast Water Board Public Workshop – Watsonville
August 16, 2010	Multiple Agricultural Stakeholders: CA Farm Bureau Federation, County Farm Bureaus, Coalition, Grower-Shipper Association, Strawberry Commission, Central Coast Vineyard Team,and Other Agricultural Industry Representatives

August 16, 2010	Public Meeting: Scoping for California Environmental Quality Act
August 17, 2010	Environmental Defense Center, Monterey Coastkeeper, Surfrider, Santa Barbara Channelkeeper, Environmental Justice Coalition for Water
August 18, 2010	CA Association of Nurseries and Garden Centers, Nursery/Greenhouse Representatives
August 19, 2010	San Luis Obispo County Farm Bureau, Local Agricultural Representatives
September 8, 2010	California Strawberry Commission
November 10, 2010	Board Member field trip to runoff treatment sites in Monterey County
November 15, 2010	Staff Presentation at Sustainable Ag Expo in Seaside, Monterey County, sponsored by Central Coast Vineyard Team
December 1, 2010	Staff Presentation at Western Plant Health Association Conference
December 3, 2010	Staff Presentation at Cal Poly Sustainable Agriculture Conference
December 6, 2010	Staff Panel Participation At CA Farm Bureau Federation Annual Conference
December 7, 2010	The Commonwealth Scientific and Industrial Research Organization (CSIRO) and Antinetti Consulting, Inc.
December 14, 2010	California Strawberry Commission
December 15, 2010	Multiple Agricultural Stakeholders: CA Farm Bureau Federation, Santa Clara County Farm Bureau, Grower-Shipper Association, Santa Barbara County Farm Bureau, Monterey County Farm Bureau, Western Growers, Cut Flower Commission, Central Coast Vineyard Team, Central Coast Water Quality Preservation Inc. and Other Agricultural Industry Representatives
December 15, 2010	Central Coast Water Quality Preservation Inc.
January 10, 2011	Staff Presentation to San Luis Obispo County Public Health Commission
January 28, 2011	California Avocado Commission
February 3, 2011	Central Coast Water Board Public Workshop – San Luis Obispo
February 18, 2011	Environmental Defense Center, Monterey Coastkeeper, Santa Barbara Channelkeeper, San Luis Obispo Coastkeeper, Environmental Justice Coalition for Water.
February 24, 2011	Staff Presentation to Spanish speaking growers and irrigators - Annual Monterey County Ag Expo

Changes in Response to Public Input

Staff changed the Preliminary Draft Agricultural Order based on feedback received from stakeholders and included the following changes in the 2011 Draft Agricultural Order.

- removed conditions related to rainwater and containerized plants;
- clarified the intent to address irrigation runoff in the short term with immediate conditions vs. tiledrains in the long term;
- removed “tributaries” as a consideration for prioritizing farming operations in close proximity to impaired waterbodies for more stringent or immediate conditions;
- revised the table of high risk pesticides;
- revised aquatic habitat conditions;
- revised the level of prescription in conditions ;
- developed a compliance document for reporting instead of using the Farm Plan;
- included evaluations or milestones for pollutant loading in exchange, or in addition to, pollutant concentrations;
- evaluated and developed additional ways to define tiers of dischargers and associated conditions based on relative threat to water quality and apply the most stringent compliance requirements to highest threat tier;

- increased and staggered timeframes for compliance with various requirements;
- evaluated and developed additional options for monitoring and reporting that scale monitoring requirements so highest threat dischargers have more monitoring requirements than lower threat dischargers.

B. Summary of Public Comments on Draft Agricultural Order

[NOTE TO READER: THIS IS A PLACEHOLDER FOR A SUMMARY OF COMMENTS. SUMMARY WILL BE PROVIDED AS A SUPPLEMENTAL SHEET TO THE WATER BOARD.]

C. Summary of Environmental Setting and Water Quality Conditions

1. Water Resources on the Central Coast

The Central Coast Region's coastal and inland water resources are unique, special, and in some areas still of relatively high quality. Many Central Coast residents depend heavily on groundwater for drinking water from both deep municipal supply wells and shallow domestic wells. In addition, the region supports some of the most significant biodiversity of any temperate region in the world and is home to many sensitive natural habitats and species of special concern. These resources and the beneficial uses of the Central Coast water resources are severely affected or threatened by agricultural waste discharges.

Thousands of people rely on public supply wells with unsafe levels of nitrate and other pollutants. Excessive nitrate concentration in drinking water is a significant public health issue resulting in risk to infants for methemoglobinemia or "blue baby syndrome", and adverse health effects (i.e., increased risk of non-Hodgkin's, diabetes, Parkinson's disease, Alzheimers, endocrine disruption, cancer of the organs) among adults as a result of long-term consumption exposure. Staff estimates several additional thousands of people are drinking from shallow private domestic wells. Shallow groundwater is generally more directly susceptible to pollution from overlying land use. Groundwater quality data collection from shallow wells (especially agricultural or domestic drinking water wells) is not yet required and data is only broadly available, thus limiting evaluations related to potential public health risks and shorter term indications of water quality changes. For these wells, water quality is not regulated, not treated, or treated at significant cost to the well owner.

Agricultural discharges of fertilizer are the main source of nitrate contamination to groundwater based on local nitrate loading studies. In some cases, up to 30 percent of applied nitrogen may have leached to groundwater in the form of nitrate. Due to elevated concentrations of nitrate in groundwater, many public water supply systems have abandoned wells and established new wells or sources of drinking water, or are required to remove nitrate before delivery to the drinking water consumer, often, at significant cost.

Agricultural waste discharges have impaired surface water quality in the Central Coast Region, such that some creeks are found toxic (lethal to aquatic life) every time the site is sampled and as a result many areas are devoid of aquatic organisms essential to ecological systems.

Vertebrates, including fish, rely on invertebrates as a food source. Consequently, invertebrates are key indicators of stream health, and are commonly used for toxicity analyses and assessments of overall habitat condition. The majority of creeks, rivers and estuaries in the Central Coast Region are not meeting water quality standards. Most of these waterbodies are affected by agriculture. These conditions were determined and documented on the Central Coast Water Board's 2008 Clean Water Act Section 303(d) List of Impaired Waterbodies. The three main forms of pollution from agriculture are excessive runoff of pesticides and toxicity, nutrients, and sediments. In a statewide study, the Central Coast Region had the highest percentage of sites with pyrethroid pesticides detected and the highest percentage of sites exceeding toxicity limits. In addition, there are more than 46 waterbodies that exceed the nitrate water quality standard and several waterbodies routinely exceed the nitrate water quality standard by five-fold or more. In addition to causing the human health affects discussed previously, these high levels of nitrate are affecting sensitive fish species such as the threatened Steelhead, endangered Coho Salmon, by causing algae blooms that remove oxygen from water, creating conditions unsuitable for aquatic life.

The water quality conditions throughout the region are also affecting several other threatened and endangered species, including the marsh sandwort (*arenaria paludicola*), Gambel's watercress (*nasturtium rorippa gambelii*), California least tern (*sterna antillarum browni*), and red-legged frog (*Rana aurora*). The last remaining known populations of the two endangered plants, marsh sandwort and Gambel's watercress, occur in Oso Flaco Lake, are critically imperiled and depend upon the health of the Oso Flaco watershed to survive.

2. Summary of Groundwater Quality Conditions

To develop a comprehensive assessment of groundwater quality in agricultural areas throughout the Region, staff evaluated available groundwater data collected by the California Department of Water Resources, California Department of Public Health (CDPH), U.S. Geological Survey (USGS), State Water Resources Control Board (SWRCB) Groundwater Ambient Monitoring and Assessment (GAMA) Program, Lawrence Livermore National Laboratory (LLNL), local and county water resources agencies, and researchers. Although available groundwater quality data generally represent conditions at the groundwater basin and sub-basin scale, these data indicate widespread and severe nitrate affects due to agricultural land uses over a broad scale given major portions of entire groundwater basins or aquifers are severely affected with nitrate in areas subject to intensive irrigated agricultural activity. Groundwater quality data for the purposes of characterizing specific individual agricultural waste discharges are generally not available. However, a growing number of studies are available showing a direct link between irrigated agricultural practices and ongoing and significant nitrate loading to groundwater. In addition, numerous studies indicate nitrate in groundwater is the most significant water quality problem nationally, statewide and within the Region and that commercial fertilizer is the primary source of loading, particularly in areas of intensive agriculture.

The report contained within Appendix G focuses primarily on nitrogen/nitrate pollution. The report also refers to a more limited body of data that indicates irrigated agriculture is likely responsible for widespread leaching of salts and discharges of other chemicals such as pesticides with the potential to affect drinking water beneficial uses.

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An evaluation of the sources of nitrogen, nitrogen loading to groundwater from irrigated agriculture and groundwater quality conditions is detailed in Appendix G to this staff report (with references cited) and summarized below.

Sources of Nitrogen Input and Loading Analyses -

- Fertilizer accounts for approximately 69 percent of the estimated available nitrogen input regionally of the three largest sources of nitrogen within the Region related to human activities (fertilizer, human waste and livestock waste).
- Approximately 83.6 percent of the estimated nitrogen loading to groundwater in the Salinas Valley is attributable to the commercial application of agricultural fertilizers.
- Approximately 45,404 tons of nitrogen were applied on average every year for agricultural purposes within the Region between 1998 and 2008.
- Over 17,000 tons of nitrogen (75,225 tons of nitrate) has been estimated to discharge/leach to groundwater on average every year for the last ten years from irrigated agriculture in the Region. This equates to an average groundwater loading of approximately 74 pounds of nitrogen (327.5 pounds of nitrate) per cropping acre of irrigated agriculture per year.
- For lettuce, nitrogen leachate concentrations of 104.9 to 178 mg/L nitrate-N were documented in a 2009 study in the Salinas Valley. These leachate concentrations are approximately 10 to 18 times the drinking water standard (using the federal standard convention of 10 mg/L nitrate-N for comparison) and would consequently require up to 18 times as much clean groundwater flowing under the site as the water percolating down from irrigation (volume of leachate) to dilute the water to the standard. And of course up gradient water is typically not "clean," but also carries some nitrogen load. Based on 2008 and 2009 county Ag Commissioner cropping acre data, lettuce accounts for approximately 45 percent of the cropping acres in Monterey County and 38 percent in the Region. Lettuce typically requires less fertilizer-nitrogen application than the four other primary crops grown in the Region, strawberries, broccoli, cauliflower and celery.
- A 2005 report by Lawrence Livermore National Laboratory indicates that nitrate affects within the shallow aquifer of the Llagas subbasin are due to more recent fertilizer-nitrogen loading and not that of legacy farming practices or other sources. Groundwater ages in shallow aquifer wells east of Gilroy containing nitrate concentrations, exceeding twice the drinking water standard, were determined to be less than seven years old and in some locations less than two years old. Similarly, preliminary data from a 2010 LLNL special study indicated that shallow wells sampled in the Arroyo Seco area also had relatively "young" groundwater-about five years old.
- The potentially significant loading of salts to groundwater from irrigated agriculture warrants the collection and analysis of groundwater quality data for salt constituents and metrics of salinity within and around agricultural areas.

Nitrate Affects on Groundwater Beneficial Uses -

- 55 percent of the drinking water standard violations in public supply wells (for water systems with fifteen or more service connections) in the Central Coast Region were attributable to nitrate (data from Department of Water Resources).
- Approximately 9.4 percent of all public water supply wells in the Region had concentrations of nitrate in excess of the drinking water standard between 1994 and 2000.
- 18 percent of public supply wells within the Salinas Valley groundwater basin (excluding the Paso Robles subbasin), contained nitrate in excess of the drinking water standard during the period between 1979 and 2009. Excluding the Seaside, Langley and Corral de Tierra subbasins of the Salinas Valley groundwater basin that are not as intensively farmed but are subject to greater potential nitrogen loading from septic systems, the number of wells containing nitrate in excess of the drinking water standard increased to 23 percent. Approximately 37 percent of the public supply wells in the Salinas Valley contained nitrate concentrations between background levels and the drinking water standard.

- 27 percent of public supply wells in the Santa Maria groundwater basin contained nitrate in excess of the drinking water standard. 40 percent of the wells contained nitrate concentrations between background levels and the drinking water standard.
- 19 percent of the small water supply system (with two to 14 service connections) wells sampled in Monterey County exceeded the nitrate drinking water standard and 44 percent contained nitrate concentrations between background levels and the drinking water standard during the 2008-2009 fiscal year.
- 55.3 percent of the 508 domestic wells sampled in the Llagas subbasin had concentrations of nitrate in excess of the drinking water standard at levels and up to 4.5 times the drinking water standard, as well as average and median nitrate concentrations just above the drinking water standard during a voluntary nitrate sampling program conducted in 1998. Comparison of the 1998 domestic well data with three previous domestic well studies indicated that average nitrate concentrations within domestic wells in the Llagas subbasin increased steadily from 19.5 mg/L nitrate-NO_3 in 1963 to 47.7 mg/L nitrate-NO_3 in 1998. The relative percentage of wells with nitrate in excess of the drinking water standard increased from 11.3 to 55.3 percent in the Llagas subbasin during this time period.

Pesticide in Groundwater-

- 6.9 percent of wells sampled in the Region contained pesticides, although numerous well sampling data collected by DPR between 1984 and 2009 indicated pesticides are infrequently detected above preliminary health goals or drinking water standards.

3. Summary of Surface Water Quality Conditions

Surface water bodies throughout the region are degraded as evidenced by high levels of nitrates and consistent toxicity measurements. The highest nitrate concentrations and most severe toxicity occur in agricultural watersheds.

To determine surface water conditions, staff reviewed data collected by CMP and CCAMP, and conducted a review of other water quality available water quality information, for marine areas for example, in the Central Coast Region.

Surface water conditions are detailed in Attachment G to this staff report and summarized below.

Indicators of Surface Water Quality Impairment-

- Most of the same areas that showed serious contamination from agricultural pollutants five years ago are still seriously contaminated.
- The proposed 2010 Clean Water Act Section 303(d) List of Impaired Waters for the Central Coast Region (Impaired Waters List) identifies surface water impairments for approximately 167 water quality limited segments related to a variety of pollutants (e.g., salts, nutrients, pesticides/toxicity, and sediment/turbidity). Sixty percent of the surface water listings identified agriculture as one of the potential sources of water quality impairment.
- Agricultural waste discharges most severely affect surface waterbodies in the lower Salinas and Santa Maria watersheds, both areas of intensive agricultural activity. Evaluated through a multi-metric index of water quality, 82 percent of the most degraded sites in the Central Coast Region are in these agricultural areas.

- Nitrate concentrations in areas that are most heavily affected are not improving significantly or in any widespread manner and in a number of sites in the lower Salinas/Tembladero and Santa Maria watershed areas appear to be getting worse in the last few years (from CCAMP and CMP data) .
- Thirty percent of all sites from CCAMP and CMP have average nitrate concentrations that exceed the drinking water standard, and approximately 60 percent exceed the level identified to protect aquatic life. Several of these water bodies have average nitrate concentrations that exceed the drinking water standard by five-fold or more. Some of the most seriously polluted waterbodies include the Tembladero Slough system (including Old Salinas River, Alisal Creek, Alisal Slough, Espinosa Slough, Gabilan Creek and Natividad Creek), the Pajaro River (including Llagas Creek, San Juan Creek, and Furlong Creek), the lower Salinas River (including Quail Creek, Chualar Creek and Blanco Drain), the lower Santa Maria River (including Orcutt-Soloman Creek, Green Valley Creek, and Bradley Channel), and the Oso Flaco watershed (including Oso Flaco Lake, Oso Flaco Creek, and Little Oso Flaco Creek).
- Toxicity is widespread in Central Coast waters, with 65 percent of all waterbodies monitored for toxicity showing some measure of lethal effect. Twenty-nine waterbodies are on the proposed 2010 Clean Water Act, Section 303(d) List of Impaired Waters because of sediment and/or water toxicity.
- Ninety percent of severely toxic sites are in agricultural areas of the lower Santa Maria and Salinas/Tembladero watershed areas.
- Waste discharges from a number of agricultural drains have shown toxicity nearly every time the drains are sampled. Researchers collaborating with CCAMP have shown that these toxic discharges can cause toxic effects in river systems that damage benthic invertebrate communities.
- Water column invertebrate toxicity is primarily associated with high concentrations of diazinon and chlorpyrifos pesticides; sediment toxicity is likely caused by chlorpyrifos and pyrethroid pesticide mixtures.
- Agricultural use of pyrethroid pesticides in the Central Coast Region and associated toxicity are among the highest in the state. In a statewide study of four agricultural areas conducted by the Department of Pesticide Regulation (DPR), the Salinas study area had the highest percent of surface water sites with pyrethroid pesticides detected (85 percent), the highest percent of sites that exceeded levels expected to be toxic (42 percent), and the highest rate (by three-fold) of active ingredients applied (113 lbs/acre).
- Agricultural waste discharges contribute to sustained turbidity with many sites heavily influenced by agricultural waste discharges exceeding 100 NTUs as a median value. For comparison, most CCAMP sites have a median turbidity level of under 5 NTUs. Resulting turbidity greatly exceeds levels that affect the ability of salmonids to feed. Many of these more turbid sites are located in the lower Santa Maria and Salinas-Tembladero watersheds.
- Lack of shading in creek channels modified for agricultural purposes can cause water temperatures to exceed levels that are healthy for salmonids. Several high temperature areas are in major river corridors that provide rearing and/or migration habitat for salmonids. These include the Salinas, Santa Maria, and Santa Ynez rivers.
- Bioassessment data shows that creeks in areas of intensive agricultural activity have impaired benthic communities. Aquatic habitat is often poorly shaded, high in temperature, and has in-stream substrate heavily covered with sediment.
- Several Marine Protected Areas (MPAs) along the Central Coast are at risk of pollution affects from sediment and water discharges leaving river mouths. Three of the MPAs,

Elkhorn Slough, Moro Cojo Slough and Morro Bay, are estuaries that receive runoff into relatively enclosed systems. In two of these MPAs (Moro Cojo Slough and Elkhorn Slough), nitrates, pesticides and toxicity are documented problems.

- Research in the Monterey Bay area has shown that discharge of nitrate from the Salinas and Pajaro river systems can increase the initiation and development of phytoplankton blooms, and some of these blooms have resulted in the deaths of hundreds of sea birds.

Indicators of Surface Water Quality Trends -

- Some drainages in the Santa Barbara area are improving in nitrate concentrations (such as Bell Creek, which supports agricultural activities) and on Pacheco Creek in the Pajaro watershed. A number of locations in the lower Salinas and Santa Maria areas show increasing nitrate concentrations over the past five years of the CMP. However, flow volumes have declined at some of these sites, so at these locations nitrate loads may not necessarily be getting worse in spite of upward trends in concentrations;
- Dry season flow volume is declining in some areas of intensive agriculture, implying reductions in tailwater volume;
- Detailed flow analysis by the CMP showed that 18 of 27 sites in the lower Salinas and Santa Maria watersheds had statistically significant decreases in dry season flow over the first five years of the program;
- CCAMP monitoring has detected declining flows at other sites elsewhere in the Region, likely because of drought;
- Several sites along the main stem of the Salinas River showed significant increases in turbidity during the dry season; significant decreases in turbidity were seen at two locations in the Santa Maria watershed.
- One CCAMP monitoring site on the Salinas Reclamation Canal (309JON) shows statistically significant improvement in survival of invertebrate test organisms in water.

Surface Water Quality Data and Information Gaps -

- The timeframe and frequency of data collection, especially for toxicity, limit the evaluation of statistical trends for some water quality parameters in surface waterbodies;
- In-stream water quality is an effective long-term measure of water quality improvement (especially for nutrients), and more time may be necessary in some locations to identify significant change.
- In-stream water quality monitoring data is necessary to show compliance with Total Maximum Daily Loads and to list or delist waterbodies from the Clean Water Act, Section 303(d) List of Impaired Waters. These are both key Water Board management tools.
- Flow information and water quality data are not reported for agricultural waste discharges from individual farms, so correlations cannot be made between reductions in irrigation runoff or improvements in agricultural discharge quality and in-stream changes.
- Because there is no individual on-farm monitoring or reporting, it is unknown how individual farms contribute to surface water quality improvement or impairment. In addition, it is unknown if individual Dischargers are in compliance with water quality standards (given the magnitude and scale of documented affects, it is highly likely that most waste discharges are not in compliance).
- In Marine Protected Areas, there is no monitoring of sediments that carry pesticides in attached forms. Without this information it is difficult to determine if these pesticides, carried downstream attached to sediments and discharged to the ocean, harm marine life.

- Additional research could increase understanding of the affects of nutrient discharges from rivers to nearshore ocean waters.

4. Summary of Aquatic Habitat Conditions

Aquatic habitat is degraded in many areas of the region as evidenced by poor biological and physical conditions. Most surface waterbodies in agricultural watersheds are not suitable for safe recreational fishing or to support aquatic life.

To determine aquatic habitat conditions, staff reviewed data collected by CMP and CCAMP, and conducted a review of available riparian and wetland information for the Central Coast Region. While the 2004 Conditional Waiver did not specifically require aquatic habitat monitoring, it stated that cooperative monitoring of in-stream effects would enable the Water Board to assess the overall affect of agricultural waste discharges to beneficial uses, such as aquatic life and habitat. The 2004 Conditional Waiver also requires protection of beneficial uses including aquatic and wildlife habitat. The proposed 2010 order continues that requirement.

Aquatic habitat conditions are detailed in Appendix D and G to this staff report and summarized below.

Indicators of Aquatic Habitat Degradation -

- Agricultural activities result in the alteration of riparian and wetland areas, and continue to degrade the waters of the State and associated beneficial uses. Owners and operators of agricultural operations historically removed riparian and wetland areas to plant cultivated crops and in many areas continue to do so.
- As a result of riparian and wetland habitat degradation, watershed functions that serve to maintain high water quality, aquatic habitat and wildlife - by filtering pollutants, providing shade and protection from predators, recharging aquifers, providing flood storage capacity, have been disrupted.
- Data collected from CCAMP and CMP indicate that population characteristics of aquatic insects (benthic macroinvertebrates) important to ecological systems reflect poor water quality, degradation or lack of aquatic habitat, and poor overall watershed health at sites in areas with heavy agricultural land use. Aquatic habitat is often poorly shaded, high in temperature, and stream bottoms are heavily covered with sediment.
- The lower Salinas watershed and lower Santa Maria watersheds score low for common measures of benthic macroinvertebrate community health and aquatic habitat health.
- Unstable, bare dirt and tilled soils, highly vulnerable to erosion and stormwater runoff, are common directly adjacent to surface waterbodies in agricultural areas. Erosion and stormwater runoff from agricultural lands contribute sediment and sustained turbidity at levels that affect the ability of salmonids to feed. Many of these sites are located in the lower Santa Maria and Salinas-Tembladero watersheds.
- Degradation of aquatic habitat also results in water temperatures that exceed levels that are desirable for salmonids at some sites in areas dominated by agricultural activity. Several of these sites are in major river corridors that provide rearing and/or migration habitat for salmonids. These include the Salinas, Santa Maria, and Santa Ynez rivers.
- Real and/or perceived incompatible demands between food safety and environmental protection and subsequent actions taken by Dischargers to address food safety concerns associated with environmental features have resulted in the removal of aquatic habitat and related management practices.

- According to a Spring 2007 survey by the Resource Conservation District of Monterey County (RCDMC), 19 percent of 181 respondents said that their buyers or auditors had suggested they remove non-crop vegetation from their ranches. In response to pressures by auditors and/or buyers, approximately 15 percent of all growers surveyed indicated that they had removed or discontinued use of previously adopted management practices used for water quality protection. Grassed waterways, filter or buffer strips, and trees or shrubs were among the management practices removed. Some of these projects were funded with state grants.

Indicators of Aquatic Habitat Improvements -

- Riparian areas can improve water quality by trapping sediment and other pollutants contained in terrestrial runoff (NRC 2002; Flosi and others 1998; Pierce's Disease/Riparian Habitat Workgroup PDRHW 2000; Palone and Todd 1998). intact riparian area helps decrease rate of water flow, stores floodwaters, and dissipates stream energy, increasing infiltration (Palone and Todd 1998).
- The Watershed Institute Division of Science & Environmental Policy at California State University Monterey Bay implemented wetland restoration projects in the Gabilan Watershed and surrounding Southern Monterey Bay Watersheds. These projects increased plant and bird populations and improved water quality (removed sediment, nitrate and pesticides loading to waterbodies).
- Coastal Conservation and Research and Moss Landing Marine Laboratories implemented restoration projects in the Moro Cojo Slough. These projects reduced nitrate levels in runoff, increased plants and vertebrate populations, and supported endangered species.
- The Watershed Institute at California State University Monterey Bay and Moss Landing Marine Laboratories studied changes in stream turbidity in restoration sites in the Hansen Slough area near Watsonville. The study concluded that stream turbidity decreased by more than 50-fold and nitrate concentrations in water flowing through decreased from levels at and above 140 mg/L to levels between 5 mg/L and 40 mg/L.

5. Waste Discharges from Irrigated Agricultural Lands

Water quality of agricultural waste discharges is often poor, carrying nitrates at concentrations above safe drinking water levels and pesticides at concentrations above toxic levels to waterbodies in the region. Agricultural waste discharges contribute significantly to water quality conditions. In some cases, agricultural waste discharges are the sole or primary source of pollution in impaired waterbodies. Even in areas where agricultural is not the only source of pollution, it is a primary contributor.

Numerous studies document the affect of agricultural waste discharges on water quality and specific pollutants contained in irrigation runoff. Research conducted by the Food and Agriculture Organization of the United Nations found that irrigation return flow resulted in a significant increase in nitrogen, phosphorous, pesticide residues, and sediments. Agricultural research conducted by University of California Cooperative Extension (UCCE) found nitrate values in agricultural tailwater at 26, 53, and 75 mg/L NO3-N (up to 7.5 times the drinking water standard). UCCE researchers indicated that the high levels of nitrate at the site were likely caused by the grower injecting nitrogen fertilizer into the irrigation water during the 2nd and 3rd irrigation events. A UC Davis study of Salinas Valley farms found that by the second and third crop cycles, farm soils had begun to accumulate nitrogen, but that growers continued with the same fertilization schedule. In addition, soils are high enough in phosphorus that in some areas

no added phosphorus is necessary; however, growers continue to add this chemical to their fields. These practices lead to excess fertilizer leaving the farm, which ultimately cause significant water quality impairment. Similar to tailwater, tile drain water with elevated nitrate levels has been found draining into surface water bodies. Nitrate concentrations in selected waterbodies in the Pajaro Valley Watershed have been found to range from 19 to 89.5 mg/l NO3 as N (compared to the drinking water standard, 10 mg/l).

Pesticides have been detected in agricultural tailwater and routinely exceed the toxicity water quality standard (lethal to aquatic life). Regionwide, CCAMP and the Cooperative Monitoring Program have conducted toxicity monitoring in 80 streams and rivers. Some measure of lethal effect (as opposed to growth or reproduction effect) has been observed at 65 percent of the waterbodies monitored.

D. Summary of Environmental Analysis Pursuant to CEQA

Staff conducted an environmental analysis pursuant to the California Environmental Quality Act (CEQA). The results are summarized below and the documents are included in Appendix H. Cost considerations related to CEQA are contained in Appendix F.

In 2004, the Central Coast Water Board adopted the 2004 Agricultural Order and a Negative Declaration prepared in compliance with CEQA. CEQA Guidelines state that no subsequent environmental impact report (SEIR) shall be prepared when an EIR has been certified or negative declaration adopted for a project unless the lead agency determines based on substantial evidence in light of the whole record, one or more of the following:

> *(1) if substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects; or,*
>
> *(2) if substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental impacts or a substantial increase in the severity of previously identified significant effects; or*
>
> *(3) if new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, becomes available.*
>
> (Cal. Code Regs., tit. 14, § 15162(a).)

This regulation applies if there is a modification of a previous project. In this case, the Central Coast Water Board is proposing to renew the 2004 Agricultural Order, which is the previous project, with clarifications and new conditions. To assist in determining whether an SEIR would be necessary, the Central Coast Water Board staff held a CEQA scoping meeting on August 16, 2010 to receive input from interested persons and public agencies on potentially significant environmental effects of the proposed project. Staff also accepted written comments regarding scoping up until August 27, 2010 in order to allow for comments from those who were unable to attend the meeting and/or for those who wished to submit additional comments. Members of the public and representatives of public agencies provided comments regarding their views on significant environmental effects associated with the adoption of a renewed Agricultural Order. Prior to the scoping meeting in August, 2010, and described elsewhere in this staff report and in the Order, significant public participation activities had occurred.

In preparing the Draft SEIR, Central Coast Water Board staff reviewed the 2004 Negative Declaration, including the Initial Study (Environmental Checklist), considered the comments received during the public participation process with respect to renewal of the 2004 Agricultural Order, including evidence in the record, written and oral comments, proposed alternatives, and information provided at and following the August 16, 2010 scoping meeting, and comments received on the Draft SEIR. Review of this information did not result in identification of any new environmental effects that had not already been evaluated in the 2004 Negative Declaration. Staff identified two areas included on the Environmental Checklist where there was a potential for an increase in the severity of environmental effects previously identified. These areas are (1) the potential for more severe impacts on agricultural resources due to the potential for an increase in the use of vegetated buffer strips and economic impacts due to new requirements that could take some land out of direct agricultural use and (2) the potential for more severe impacts on biological resources due to the potential for a reduction in water flows in surface waters.

The Central Coast Water Board issued a Notice of Availability on October 25, 2010 and provided the public with 45 days to submit written comments on the Draft SEIR. The Water Board received 12 written comment letters. Responses to the comments are in Section 7 of the Final SEIR. In response to comments, the Central Coast Water Board staff revised the Draft SEIR and prepared a draft Final SEIR for the Central Coast Water Board's certification. The 2004 Negative Declaration and the Final SEIR constitute the environmental analysis under CEQA for this Order.

With respect to Agricultural Resources, the Final SEIR concludes that adoption of the proposed alternative could result in some economic or social changes but that there was insufficient evidence to conclude that the economic changes would result in adverse physical changes to the environment. Commenters speculated that the economic impacts would be so large as to result in large scale end to agriculture and that land would be sold for other uses that would result in impacts on the environment. No significant information was provided to justify that concern. As described in the Section 2.4 of this Final SEIR, the draft 2011 Agricultural Order would impose additional conditions on approximately 100 to 300 of the estimated 3000 owners or operators currently enrolled in the 2004 Agricultural Order. CEQA states that economic or social effects of a project shall not be treated as significant effects on the environment. (Pub. Res. Code § 21083.) The Final SEIR concludes that due to some new conditions, particularly the requirement that some dischargers may be required to implement vegetated buffer strips, could result in loss of land for agricultural production since the buffer strips would generally not produce crops and some land could be converted to other uses. This impact was found to be less than significant2 and that mitigation could reduce impacts further. The Central Coast Water Board may not generally specify the manner of compliance and therefore, dischargers may choose among many ways to comply with the requirement to control discharges of waste to waters of the state. Even if all dischargers who could be subject to the condition to use vegetated buffers or some other method to control discharges in the draft 2011 Agricultural Order (Tier 3 dischargers) chose to use vegetated buffers or converted to other uses, the total acreage is quite small compared to the total amount of acreage used for farming and was, therefore, found to be less than significant. In addition, since the land would be used as a vegetated buffer to comply with the Order, this would result in beneficial impacts on the environment, not adverse impacts.

With respect to Biological Resources, the Final SEIR concludes that wide scale water conservation could result in lower flows into surface water resulting in impacts on aquatic life. The Central Coast Water Board may not specify the manner of compliance so it has insufficient information to evaluate the extent to which dischargers would choose to use water conservation to comply and to evaluate potential physical changes to the environment that could result. Reduction in toxic runoff may offset impacts due to the reduced flows that could occur. In addition, reduction in water use could result in increased groundwater levels that would also result in more clean water to surface water.

Based on this information, the Final SEIR concludes that the environmental effects associated with the draft 2011 Agricultural Order may be significant with respect to biological resources. However, given the uncertainty associated with evaluating the available information, it is possible that the effects may turn out to be less than significant. In Resolution R3-2011-0006, the Central Coast Water Board has made findings consistent with the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15091) and a statement of overriding considerations (Cal. Code Regs., tit. 14, § 15093) with respect to biological resources.

E. Conclusion

Discharges of waste associated with agricultural discharges (e.g., pesticides, sediment, nutrients) are a major cause of water pollution in the Central Coast region. The water quality impairments are well documented, severe, and widespread. Nearly all beneficial uses of water are affected, and agricultural waste discharges continue to contribute to already significantly impaired water quality and impose certain risks and significant costs to public health, drinking water supplies, aquatic life, and valued water resources. Existing and potential water quality impairment from agricultural discharges takes on added significance and urgency, given the impacts on public health, limited sources of drinking water supplies and proximity of the region's agricultural lands to critical habitat for species of concern.

The Water Board and the regulated community must act to resolve these serious water quality issues and protect water quality and beneficial uses. Without adequate response, the environmental and health affects are likely to become more severe and widespread. Similarly the costs are likely to increase significantly. The environmental, health and cost impacts threaten to significantly affect the future uses of the Central Coast's water resources.

Staff recommends that the Central Coast Water Board adopt the updated Conditional Waiver of Waste Discharge Requirements for Irrigated Agricultural Waste Discharges, Draft Order No. R3-2011-0006. The Draft Order will require landowners and operators of irrigated agricultural lands to 1) control discharges of waste that affect water quality, in a timely manner, in order to meet, or make progress towards meeting, water quality standards and objectives, 2) comply with conditions of waste discharge control through verification monitoring and reporting, and 3) provide accountability and transparency for the public on behalf of public resources.

This Draft Agricultural Order will secure measurable pollutant load reduction to surface water and groundwater in the Central Coast. Adoption and implementation of the Draft Agricultural Order will insure healthier water quality conditions that provide people with safe drinking water and fish and other aquatic organisms with safe habitats in their streams and estuaries.