CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

DRAFT
ORDER NO. R3-2011-0006

CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES FROM IRRIGATED LANDS

The California Regional Water Quality Control Board, Central Coast Region finds that:

1. The Central Coast Region has approximately 435,000 acres of irrigated land and approximately 3000 agricultural operations, which may be generating wastewater that falls into the category of discharges of waste from irrigated lands.

2. The Central Coast Region has more than 17,000 miles of surface waters (linear streams/rivers) and approximately 4000 square miles of groundwater basins that are, or may be, affected by discharges of waste from irrigated lands.

3. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) are the principal state agencies with primary responsibility for the coordination and control of water quality pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act, codified in Water Code Division 7). The legislature, in the Porter-Cologne Act, directed the Water Board to exercise its full power and jurisdiction to protect the quality of the waters in the State from degradation, considering precipitation, topography, population, recreation, agriculture, industry, and economic development (Water Code § 13000).

4. On July 9, 2004, the Central Coast Regional Water Quality Control Board (Central Coast Water Board) adopted Resolution No. R3-2004-0117 establishing a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (2004 Agricultural Order). In the 2004 Agricultural Order, the Central Coast Water Board found that the discharge of waste from irrigated lands has impaired and polluted the waters of the State and of the United States within the Central Coast Region, has impaired the beneficial uses, and has caused nuisance. The 2004 Agricultural Order expired on July 9, 2009, and the Central Coast Water Board renewed it for a term of one year until July 10, 2010 (Order No. R3-2009-0050). On July 8, 2010, the Central Coast Water Board renewed the 2004 Agricultural Order again for an additional eight months until March 31, 2011 (Order No. R3-2010-0040).

This updated *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands,* Order No. R3-2011-0006 (Order), revises the 2004 Agricultural Order as set forth herein.

5. Since the 2004 Agricultural Order, the Central Coast Water Board has documented substantial empirical data demonstrating that water quality conditions in agricultural areas of the region continue to be severely impaired or polluted by waste discharges from irrigated agricultural operations and activities that impair beneficial uses, including drinking water, and impact aquatic habitat on or near irrigated agricultural operations. The most serious water quality degradation is caused by fertilizer and pesticide use, which results in run off of chemicals from agricultural fields into surface waters and percolation into groundwater. Runoff and percolation includes both irrigation water and stormwater.

6. Nitrate pollution of drinking water supplies is a critical problem throughout the Central Coast Region. Studies indicate that fertilizer from irrigated agriculture is the largest primary source of nitrate pollution in drinking water wells and that significant loading of nitrate continues as a result of agricultural fertilizer practices[1]. Researchers estimate that tens of millions of pounds of nitrate leach into groundwater in the Salinas Valley alone each year. Studies indicate that irrigated agriculture contributes approximately 78 percent of the nitrate loading to groundwater in agricultural areas[2]. Hundreds of drinking water wells serving thousands of people throughout the region have nitrate levels exceeding the drinking water standard[3]. This presents a significant threat to human health as pollution gets substantially worse each year, and the actual number of polluted wells and people affected are unknown. Protecting public health and ensuring safe drinking water is among the highest priorities for this Order.

7. Agricultural use of pesticides in the Central Coast Region and associated toxicity is among the highest in the State[4]. Agriculture-related toxicity studies conducted on the Central Coast since 1999 indicate that toxicity resulting from agricultural discharges of pesticides has severely impacted aquatic life in Central Coast streams[5,6,7]. Some agricultural drains have shown toxicity nearly every time the

[1] Carle, S.f., B.K. Esser, J.E. Moran, High-Resolution Simulation of Basin-Scale Nitrate Transport Considering Aquifer System Heterogeneity, Geosphere, June 2006, v.2, no. 4, pg. 195-209.
[2] Monterey County Flood Control and Water Conservation District, "Report of the Ad Hoc Salinas Valley Nitrate Advisory Committee." Zidar, Snow, and Mills. November 1990.
[3] California Department of Public Health Data obtained using GeoTracker GAMA (Groundwater Ambient Monitoring and Assessment) online database, http://geotracker.waterboards.ca.gov/gama/.
[4] Starner, K., J. White, F. Spurlock and K. Kelley. Pyrethroid Insecticides in California Surface Waters and Bed Sediments: Concentrations and Estimated Toxicities. California Department of Pesticide Regulation. 2006.
[5] Anderson, B.S., J.W. Hunt, B.M. Phillips, P.A. Nicely, V. De Vlaming, V. Connor, N. Richard, R.S. Tjeerdema. Integrated assessment of the impacts of agricultural drainwater in the Salinas River (California, USA). Environmental Pollution 124, 523 - 532. 2003.

drains are sampled. Twenty-two sites in the region - 13 of which are located in the lower Salinas/Tembladero watershed area, and the remainder in the lower Santa Maria area – have been toxic in 95% (215) of the 227 samples evaluated.

8. 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.

9. This Order regulates discharges of waste[8] from irrigated lands by requiring Dischargers to comply with the terms and conditions set forth herein to ensure that such discharges do not cause or contribute to the exceedance of any Regional, State, or Federal numeric or narrative water quality standard (hereafter referred to as exceedance of water quality standards) in waters of the State and of the United States.

10. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to meet water quality standards and achieve compliance with this Order.

11. Many owners and operators of irrigated lands within the Central Coast Region have taken actions to protect water quality. In compliance with the 2004 Agricultural Order, most Dischargers enrolled in the 2004 Agricultural Order, implemented the Cooperative Monitoring Program (CMP), participated in farm water quality education, developed farm water quality management plans and implemented management practices as required in the 2004 Agricultural Order. The 2004 Agricultural Order did not include conditions that allowed for determining the level of effectiveness of actions taken to protect water quality, such as individual discharge monitoring or evaluation of water quality improvements. This Order includes new or revised conditions to allow for such evaluations.

12. Water Code section 13260(a) requires that any person discharging waste or proposing to discharge waste within any region that could affect the quality of the waters of the State, other than into a community sewer system, shall file with the appropriate Regional Board a report of waste discharge (ROWD) containing such

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[6] Anderson B.S., B.M. Phillips, J.W. Hunt, V. Connor, N. Richard, R.S. Tjeerdema. "Identifying primary stressors impacting macroinvertebrates in the Salinas River (California, USA): Relative effects of pesticides and suspended particles" Environmental Pollution 141(3):402-408. 2006a.

[7] Anderson, B.S., B.M. Phillips, J.W. Hunt, N. Richard, V. Connor, K.R. Worcester, M.S. Adams, R.S. Tjeerdema. Evidence of pesticide impacts in the Santa Maria River Watershed (California, USA). Environmental Toxicology and Chemistry, 25(3):1160 - 1170. 2006b.

[8] This Order regulates discharge of "waste" as defined in Water Code section 13050 and "pollutants" as defined in the Clean Water Act. For simplicity, the term "waste" or "wastes" is used throughout. The term "waste" is very broad and includes "pollutants" as defined in the Clean Water Act.

information and data as may be required by the Central Coast Water Board, unless the Central Coast Water Board waives such requirement.

13. Water Code section 13263 requires the Central Coast Water Board to prescribe waste discharge requirements (WDRs), or waive WDRs, for the discharge. The WDRs must implement relevant water quality control plans and the Water Code.

14. Water Code section 13269(a) provides that the Central Coast Water Board may waive the requirements to submit an ROWD and to obtain WDRs for a specific discharge or specific type of discharge, if the Central Coast Water Board determines that the waiver is consistent with any applicable water quality control plan and such waiver is in the public interest, provided that any such waiver of WDRs is conditional, includes monitoring requirements unless waived, does not exceed five years in duration, and may be terminated at any time by the Central Coast Water Board.

15. As authorized by Water Code section 13269, this Order conditionally waives the requirement to file ROWDs and obtain WDRs for Dischargers who comply with the terms of this Order.

SCOPE OF ORDER NO. R3-2011-0006

Irrigated Lands and Agricultural Discharges Regulated Under this Order

16. This Order regulates (1) discharges of waste from irrigated lands where water is applied for producing commercial crops and includes, but is not limited to, land planted to row, vineyard, field and tree crops; (2) discharges of waste from commercial nurseries, nursery stock production and greenhouse operations with soil floors that do not have point-source type discharges, and are not currently operating under individual WDRs; and (3) discharges of waste from lands that are planted to commercial crops that are not yet marketable, such as vineyards and tree crops.

17. Discharges from irrigated lands regulated by this Order include discharges of waste to surface water and groundwater, such as irrigation return flows, tailwater, drainage water, subsurface drainage generated by irrigating crop land or by installing and operating drainage systems to lower the water table below irrigated lands (tile drains), stormwater runoff flowing from irrigated lands, stormwater runoff conveyed in channels or canals resulting from the discharge from irrigated lands, runoff resulting from frost control, and/or operational spills. These discharges can contain wastes that could affect the quality of waters of the State and impair beneficial uses.

Dischargers Regulated Under this Order

18. This Order regulates both landowners and operators (Dischargers) of irrigated lands on or from which there are discharges of waste that could affect the quality of any surface water or groundwater. Dischargers are responsible for complying with the conditions of this Order. The Central Coast Water Board will hold both the landowner and the operator liable for noncompliance with this Order.

19. The Central Coast Water Board recognizes that due to different types of operations and/or locations, discharges of waste from irrigated lands may have the potential for different levels of impacts on waters of the state or of the United States. This Order establishes three tiers of regulation to take into account the variation, including different regulatory conditions for the three tiers.

20. Dischargers must submit to the Central Coast Water Board a completed Notice of Intent (NOI) to comply with the conditions of this Order and receive a Notice of Enrollment from the Executive Officer of the Central Coast Water Board to comply with the Water Code.

21. Landowners and operators of irrigated lands who obtain a pesticide use permit from a local County Agricultural Commissioner may have a discharge of waste that could affect surface water and groundwater and therefore must submit to the Central Coast Water Board a completed NOI to comply with the conditions of this Order and receive a Notice of Enrollment from the Executive Officer of the Central Coast Water Board to be in compliance with the Water Code.

Agricultural Discharges Not Covered Under this Order and Who Must Apply for Individual Waste Discharge Requirements

22. This Order does not waive WDRs for commercial nurseries, nursery stock production and greenhouse operations that have point-source type discharges, and fully contained greenhouse operations (those that have no groundwater discharge due to impervious floors). These operations must eliminate all such discharges of wastes or submit a ROWD to apply for individual WDRs as set forth in Water Code section 13260 .

PUBLIC PARTICIPATION PROCESS

23. The Central Coast Water Board notified interested persons that the Central Coast Water Board will consider the adoption of this Order, which conditionally waives individual WDRs and establishes conditions for the control of discharges of waste

from irrigated lands to waters of the State, and provided several opportunities for public input.

24. In December 2008, the Central Coast Water Board invited members of the public to participate in development of this Order and provide recommendations to Central Coast Water Board staff. In particular, the Central Water Board requested the assistance of an Agricultural Advisory Panel in developing appropriate milestones, timetables, and verification monitoring programs to resolve water quality problems and achieve compliance with the Basin Plan. Additionally, in early 2009, the Central Coast Water Board notified all water purveyors, water districts and municipalities that staff was developing recommendations for this Order.

25. In December 2009, the Central Coast Water Board encouraged any interested person who wanted to present alternative recommendations to this Order to provide those recommendations in writing by April 1, 2010.

26. On February 1, 2010, the Central Coast Water Board publicly released a preliminary report and preliminary draft order for the regulation of discharges from irrigated lands and accepted comments on the preliminary draft order through June 4, 2010.

27. The Central Coast Water Board held two public workshops (May 12, 2010 and July 8, 2010) to discuss the preliminary draft order, public comments, and alternative recommendations.

28. Interested persons were notified that the Central Coast Water Board will consider adoption of an Order, which conditionally waives WDRs for discharges of waste from irrigated lands, as described in this Order, and were provided an opportunity for a public hearing and an opportunity to submit written comments.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

29. For purposes of adoption of this Order, the Central Coast Water Board is the lead agency pursuant to the California Environmental Quality Act (CEQA) (Pub. Res. Code §§ 21100 et seq.).

30. 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. The Central Coast Water Board staff reviewed the Negative Declaration prepared for the 2004 Agricultural Order, a revised environmental checklist considering proposed revisions to that Order, comments received on the project including alternatives proposed by interested persons, comments received from agencies, and other information provided in the record. Based on this review, staff concluded that evidence in the record suggested that proposed revisions to the 2004 Agricultural Order could result in an increase in the severity of certain previously identified environmental effects. See Cal. Code Regs, tit. 14, §15162, subd. (a)(1). In particular, members of the public suggested that implementation of some of the proposed new conditions could result in removing land from agricultural use either to install riparian buffer strips or due to financial impacts that make farming not economical. Some public agencies suggested that implementation of some of the proposed new conditions could result in reduced flows in surface water that could impact aquatic habitat. These environmental effects were previously evaluated in the Negative Declaration for the 2004 Agricultural Order and were found at that time not to be significant. Given the new comments, staff prepared an SEIR to evaluate whether there would be potentially significant environmental effects that could result from revisions to the 2004 Agricultural Order. The 2004 Negative Declaration and the SEIR constitute the environmental analysis under CEQA for this Order.

The Board finds that there is not sufficient evidence in the record to conclude whether in fact the potential effects would be more severe than under the 2004 Agricultural Order. Even if the effects could be more severe, they can be mitigated due to actions by

dischargers. The adoption of this Order is necessary to assure compliance with the Porter-Cologne Water Quality Control Act and associated plans, such as the Central Coast Water Board's Basin Plan and the State Water Resources Control Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program.

31. <Reserved for CEQA description. This section may be revised in compliance with CEQA requirements.>

ADDITIONAL FINDINGS

32. Attachment A to this Order, incorporated herein, includes additional findings that further describe a) the Water Board's legal and regulatory authority, b) the rationale for this Order, c) a description of the environmental and agricultural resources in the Central Coast Region, and d) impacts to water quality from agricultural discharges. Attachment A also identifies applicable plans and policies adopted by the State Water Board and the Central Coast Water Board that contain regulatory requirements that apply to the discharge of waste from irrigated lands. Attachment A also includes definitions of terms for purposes of this Order.

IT IS HEREBY ORDERED that:

1. Pursuant to Water Code sections 13263, 13267, and 13269, Dischargers must comply with the terms and conditions of this Order to meet the provisions contained in Water Code Division 7 and regulations and plans and policies adopted there under.

2. This Order shall not create a vested right to discharge, and all discharges of waste are a privilege, not a right, as provided for in Water Code section 13263(g).

3. Dischargers must not discharge any waste not specifically regulated by this Order except in compliance with the Water Code.

4. Pursuant to Water Code section 13269, the Central Coast Water Board waives the requirement for Dischargers to submit an ROWD pursuant to Water Code section 13260 and to obtain WDRs pursuant to Water Code section 13263(a) for discharges of waste from irrigated lands, if the Discharger enrolls in and complies with this Order, including Attachments, and Monitoring and Reporting Program (MRP) No. R3-2011-0006.

5. Pursuant to Water Code section 13269, this action waiving the issuance of WDRs for certain specific types of discharges: 1) is conditional; 2) may be terminated by the

Central Coast Water Board at any time; 3) may be superseded if the State Water Board or Central Coast Water Board adopts specific WDRs or general WDRs for this type of discharge or any individual discharger; 4) does not permit any illegal activity; 5) does not preclude the need for permits which may be required by other local or governmental agencies; and 6) does not preclude the Central Coast Water Board from requiring WDRs for any individual discharger or from administering enforcement remedies (including civil liability) pursuant to the Water Code.

6. The Executive Officer may propose, and the Water Board may adopt, individual WDRs for any Discharger at any time.

7. The Central Coast Water Board or the Executive Officer may, at any time, terminate applicability of this Order with respect to an individual Discharger upon written notice to the Discharger.

8. Dischargers are defined in this Order as both the landowner and operator of irrigated cropland, and both must comply with this Order. Landowners must ensure that any operator (person responsible for or otherwise directing farming operations in decisions that may result in a discharge of waste to surface water or groundwater, including, but not limited to, any lessee or sub lessee) is operating in compliance with this Order.

Part A. Tiers

9. Dischargers must meet conditions of this Order for the appropriate tier that applies to their land and/or their operations. The lowest tier, Tier 1, applies to dischargers who appear to discharge the lowest level of waste (amount or concentration) or pose the lowest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States. The highest tier, Tier 3, applies to dischargers who appear to discharge the highest level of waste or pose the greatest potential to cause or contribute to an exceedance of water quality standards in waters of the State or of the United States (see Figure 1).

10. **Tier 1** – Applies to all Dischargers who discharge the lowest level of waste or pose the least threat to water quality, and who meet all of the following sets of criteria **(1a), (1b), and (1c)**:

    1a. Discharger does not use chlorpyrifos or diazinon which are known to contribute to toxicity of surface waters in the Central Coast region;

    1b. Operation is not located within 1000 feet of a surface waterbody listed for toxicity, pesticides, nutrients, or sediment on the Clean Water Act section

303(d) 2010 List of Impaired Waterbodies (hereafter referred to as 2010 List of Impaired Waterbodies);

1c. If the Discharger grows crop types with high potential to discharge nitrogen to groundwater, including: beet, broccoli, cabbage, cauliflower, celery, Chinese cabbage (Napa), collard, endive, kale, leek, lettuce (leaf and head), mustard, onion (dry and green), parsley, pepper (fruiting), spinach, and strawberry, then the operation total irrigated acreage must be *less than* 1000 acres*;*

11. **Tier 2** – Applies to all Dischargers who discharge a moderate level of waste or pose a moderate threat to water quality, do not meet the Tier 1 or Tier 3 criteria, and meet one the following sets of criteria **(2a), (2b), or (2c)**:

2a. Operation is located within 1000 feet of a surface waterbody listed for toxicity, pesticides, nutrients, or sediment on the 2010 List of Impaired Waterbodies; and

Operation total irrigated acreage is *less than* 1000 acres; and

Discharger does not use chlorpyrifos or diazinon.

2b. Operation is not located within 1000 feet of a surface waterbody listed for toxicity, pesticides, nutrients, or sediment on the 2010 List of Impaired Waterbodies; and

Operation total irrigated acreage is *less than* 1000 acres; and

Discharger uses chlorpyrifos or diazinon.

2c. Operation is not located within 1000 feet of a surface waterbody listed for toxicity, pesticides, nutrients, or sediment on the 2010 List of Impaired Waterbodies; and

Operation total irrigated acreage is *greater than or equal to* 1000 acres; and

Discharger does not grow crop types with high potential to discharge nitrogen to groundwater, including: beet, broccoli, cabbage, cauliflower, celery, Chinese cabbage (Napa), collard, endive, kale, leek, lettuce (leaf and head), mustard, onion (dry and green), parsley, pepper (fruiting), spinach, and strawberry; and

Discharger does not use chlorpyrifos or diazinon.

12. **Tier 3** – Applies to all Dischargers who discharge a high level of waste or pose the highest threat to water quality, and meet one the following sets of criteria ***(3a) or (3b)***:

    3a. Discharger operates total irrigated acreage greater than or equal to 1000 acres; and either of the following:

        Discharger grows crop types with high potential to discharge nitrogen to groundwater, including: beet, broccoli, cabbage, cauliflower, celery, Chinese cabbage (Napa), collard, endive, kale, leek, lettuce (leaf and head), mustard, onion (dry and green), parsley, pepper (fruiting), spinach, and strawberry; *or*

        Discharger applies chlorpyrifos or diazinon, which contribute to toxicity of surface waters in the Central Coast region.

    3b. Operation is adjacent to or contains a waterbody listed for toxicity or pesticides on the 2010 List of Impaired Waterbodies (Table 3); *and* Discharger applies chlorpyrifos or diazinon.

13. Dischargers may submit a request to the Executive Officer to approve transfer to a lower tier that must provide information to demonstrate they meet the criteria of the lower tier. 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.

14. The Executive Officer may elevate Tier 1 or Tier 2 Dischargers to a higher tier, if the Executive Officer finds that the Discharger poses a higher threat.

15. The Executive Officer may require Dischargers to enroll irrigated land with similar characteristics (e.g., same landowner or operator) and proximal/adjacent/contiguous location, as a single operation or farm/ranch.

16. Unless otherwise specified, the conditions of this Order apply to all Dischargers, including Tier 1, Tier 2, and Tier 3. Figure 1 illustrates a flowchart of the tiered discharge criteria.

Part B. Discharge Prohibitions that Apply to All Dischargers

17. The discharge of waste that causes or has a reasonable potential to cause, or contribute to an exceedance of water quality standards in waters of the State is prohibited.

18. The discharge of waste that creates conditions of pollution or nuisance as defined in Water Code sections 13050(l) and 13050(m) is prohibited.

19. The discharge of any waste not specifically regulated by the Order described herein is prohibited under this Order. To discharge waste not specifically regulated by this Order, the Discharger must comply with Water Code section 13260(a) by submitting a report of waste discharge and the Central Coast Water Board either issues WDRs pursuant to Water Code section 13263 or an individual waiver pursuant to Water Code section13269, or the conditions specified in Water Code section 13264(a) must be met by the Discharger.

20. The discharge of any waste at a location or in a manner different from that described in the approved Notice of Intent (NOI) is prohibited.

21. The discharge of waste to groundwater with the beneficial use of municipal or domestic water supply that causes or contributes to an exceedance of drinking water standards established by the United States Environmental Protection Agency (USEPA) or California Department of Public Health (CDPH), whichever is more stringent, is prohibited.

22. The application of fertilizer such that it results in a discharge of waste to groundwater, and causes or contributes to exceedances of water quality standards is prohibited.

23. The discharge of chemicals such as fertilizers, fumigants or pesticides down a groundwater well casing is prohibited.

24. The discharge of chemicals used to control wildlife (such as bait traps or poison) into surface waters, or at any place where the chemicals may contact or may eventually be discharged to surface waters is prohibited.

25. The presence of bare soil vulnerable to erosion such that it results in a discharge of waste and causes or contributes to exceedances of water quality standards in waters of the State is prohibited.

26. The discharge of agricultural rubbish, refuse, irrigation tubing or tape, or other solid wastes into surface waters, or at any place where they may contact or may eventually be discharged to surface waters, is prohibited.

27. The discharge of pollutants from point sources to waters of the United States where the Discharger is required to obtain an NPDES permit under Clean Water Act Sections 301, 402 is prohibited.

28. The discharge of pollutants to waters of the United States, including wetlands, where the Discharger is required to obtain a dredge and fill permit under Clean Water Act section 404 is prohibited. An area is considered a wetland if it meets the United States Army Corps of Engineers' definition as described in the Code of Federal Regulations and associated wetland delineation procedures, or relevant Water Board definitions.

Part C. General Conditions and Provisions for All Dischargers - Tier 1, Tier 2, and Tier 3

29. Dischargers must comply with the Central Coast Region Water Quality Control Plan (Basin Plan) and all other applicable water quality control plans as identified in Attachment A.

30. Dischargers must not cause or contribute to exceedances of water quality standards in waters of the State or United States, or cause or contribute to conditions of pollution or nuisance as defined in Water Code section13050. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

31. Dischargers must ensure that agricultural discharges percolating into groundwater must be of such quality at the point where they enter the ground to assure the protection of all actual or designated beneficial uses of groundwater, including drinking water.

32. Dischargers must comply with applicable Total Maximum Daily Loads (TMDLs), including any plan of implementation for the TMDL, commencing with the effective date or other date for compliance stated in the TMDL. A list of TMDLs adopted by the Central Coast Water Board is available on the Central Coast Water Board website at: http://www.waterboards.ca.gov/centralcoast/water_issues/ programs/ tmdl/index.shtml.

33. Dischargers must take action to comply with the terms and conditions of this Order and improve and protect waters of the State, and must take all reasonable steps to prevent any discharge in violation of this Order.

34. Dischargers who choose to utilize containment structures (such as retention ponds or reservoirs) to achieve treatment or control of the discharge of wastes, must construct and maintain such containment structures to avoid percolation of waste to groundwater that causes or contributes to exceedances of water quality standards, and to avoid surface water overflows that have the potential to impair water quality.

35. Dischargers must implement proper handling, storage, disposal and management of pesticides, fertilizer, and other chemicals to prevent discharge of waste to waters of the State.

36. Dischargers must properly destroy all abandoned groundwater wells, exploration holes or test holes, as defined by Department of Water Resources (DWR) Bulletin 74-81 and revised in 1988, in such a manner that they will not produce water or act as a conduit for mixing or otherwise transfer groundwater or waste constituents between permeable zones or aquifers. Proper well abandonment must be consistent with any applicable DWR requirements or local ordinances. Dischargers must report proper well abandonment in the Annual Compliance Document.

37. Dischargers must comply with any applicable stormwater permit.

38. Dischargers are encouraged to collaborate and coordinate implementation at the local or regional scale to implement water quality protection and treatment strategies to lower costs, maximize effectiveness, and achieve compliance with this Order.

39. Pursuant to Water Code section13267(c), Central Coast Water Board or its authorized representatives may (a) enter upon the Discharger's premises where a regulated operation or activity is located or conducted; (b) inspect or photograph any operation or activity pertinent to this Order, (c) have access to and copy any records pertinent to this Order; and (d) sample or monitor to determine compliance with this Order. The inspection may be made with the consent of the owner or possessor of the facilities, or if consent is withheld, with a duly issued warrant.

40. Pursuant to Water Code section13267, the Executive Officer may require Dischargers to locate (inventory) and conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, in compliance with Water Code section13304, the Central Coast Water Board may require Dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners.

41. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code Sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. Sections 1531 to 1544). If a "take" will result from any act authorized under this Order, the Dischargers must obtain authorization for an incidental take prior to taking action. Dischargers must be responsible for meeting all requirements of the applicable Endangered Species Act for the discharge authorized by this Order.

42. Dischargers must pay a fee to the State Water Resources Control Board in compliance with the fee schedule contained in Title 23 California Code of Regulations**.**

43. Dischargers must pay any relevant monitoring fees (e.g., Cooperative Monitoring Program) necessary to comply with monitoring and reporting requirements of this Order or comply with monitoring and reporting requirements individually.

Part D. Monitoring Requirements for All Dischargers- Tier 1, Tier 2, and Tier 3

44. Dischargers must sample private domestic and agricultural supply groundwater wells on their operations in compliance with Monitoring and Reporting Program (MRP) No. R3-2011-0006 to evaluate groundwater conditions in agricultural areas, identify areas at greatest risk for waste discharge and nitrogen loading and exceedance of drinking water standards, and identify priority areas for nutrient management.

45. In addition to sampling individual wells on operations, Dischargers are encouraged to participate in regional or local groundwater monitoring efforts conducted as part of existing or anticipated groundwater monitoring programs, including efforts related to regional and local salt and nutrient management plans, integrated regional water management (IRWM) plans, or the State Water Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program.

46. Dischargers must conduct receiving water quality monitoring in compliance with MRP No. R3-2011-0006 to a) assess the status of receiving water quality and beneficial use protection in agricultural watersheds, b) evaluate short term patterns and long term trends in receiving water quality, c) evaluate water quality impacts resulting from relevant tile-drain discharges, d) evaluate stormwater quality, and d) evaluate degradation of existing perennial, intermittent, or ephemeral streams or riparian or wetland area habitat resulting from erosion or agricultural discharges.

47. Dischargers are encouraged to choose participation in a cooperative monitoring program (e.g., the Cooperative Monitoring Program developed for the 2004 Agricultural Order) to comply with receiving water quality monitoring requirements. Dischargers not participating in a cooperative monitoring program must conduct receiving water quality monitoring that achieves the same purpose.

48. Tier 3 Dischargers must conduct individual discharge monitoring in compliance with MRP No. R3-2011-0006

Part E. Submittal of Technical Reports for All Dischargers- Tier 1, Tier 2, Tier 3

49. All technical reports submitted pursuant to this Order are required pursuant to Water Code section 13267. Failure to submit technical reports and/or the attachments in accordance with schedules established by this Order or MRP, or failure to submit a complete technical report (i.e., of sufficient technical quality to be acceptable to the Executive Officer), may subject the Discharger to enforcement action pursuant to Water Code section13268.

Notice of Intent (NOI) to Enroll under the Order for All Dischargers in Tier 1, Tier 2 and Tier 3

50. Dischargers seeking authorization to discharge under this Order must submit a completed NOI to the Central Coast Water Board in compliance with MRP No. R3-2011-0006. Upon review and approval of the NOI, the Executive Officer will issue the Discharger a Notice of Enrollment (NOE).

    a. In the case where an operator may be operating for a period of less than 12 months, the landowner must submit the NOI.

    b. **Within 30 days** of the adoption of this Order, any Discharger who did not enroll in the 2004 Agricultural Order must submit an NOI, unless otherwise directed by the Executive Officer.

    c. **Prior to any discharge or commencement of activities that may cause a discharge,** including land preparation prior to crop production, any Discharger proposing to control or own a new operation that has the potential to discharge waste that could directly or indirectly reach waters of the State and affect the quality of any surface water or groundwater must submit an NOI.

    d. **Within 30 days,** in the event of any change to operation or ranch/farm information, Dischargers must submit an updated NOI to reflect the change.

e. **Within 30 days**, in the event of a change in control or ownership of an operation or land presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner and operator of the existence of this Order by letter, and forward a copy of the letter to the Executive Officer.

f. **Within 30 days** of acquiring control or ownership of an operation (whichever is longer), any Discharger acquiring control or ownership of an existing operation must submit an NOI.

51. Dischargers must include all the information requested in the NOI, in a format specified by the Executive Officer, including but not limited to the following information:
    a. Identification of each property covered by enrollment,
    b. Landowner(s),
    c. Operator(s),
    d. Contact information,
    e. Location of operation, including specific farm(s)/ranch(es),
    f. Farm/ranch map with discharge locations and groundwater wells identified,
    g. Total and irrigated acreage,
    h. Crop type,
    i. Irrigation type,
    j. Discharge type,
    k. Chemical use,
    l. Presence and location of any perennial, intermittent, or ephemeral streams or riparian or wetland area habitat.

52. Dischargers must include in the NOI, a statement of understanding of the conditions of the Order and MRP signed by the Discharger (landowner or operator). If the operator signs and submits the NOI, the operator must provide a copy of the completed NOI to the landowner(s). Both the landowner and operator are responsible for complying with this Order.

53. Dischargers must identify in the NOI, if they are a Tier 1, Tier 2, or Tier 3 Discharger and provide information in the NOI that allows the Central Coast Water Board to confirm the appropriate tier. For Dischargers who do not provide adequate information for the Water Board to confirm or determine the appropriate Tier, the Executive Officer will place them in Tier 3.

54. Coverage under this Order is not transferable to any person except after submittal of an updated NOI and approval by the Executive Officer.

55. For Dischargers who do not enroll in the Order in a timely manner as specified in this Order, the Executive Officer may require submittal of an ROWD, and the Discharger may be subject to WDRs.

Notice of Termination (NOT) for All Dischargers

56. **Immediately**, if a Discharger wishes to terminate coverage under the Order, the Discharger must submit a completed Notice of Termination (NOT), per MRP No. R3-2011-0006. Termination from coverage is the date specified in the NOT, unless specified otherwise. All discharges, as defined in Attachment A, must cease before the date of termination, and any discharges on or after the date of termination shall be considered in violation of the Order, unless covered by other Waivers of WDRs, General WDRs, or individual WDRs cover the discharge.

Monitoring and General Technical Reports for All Dischargers

57. Dischargers must submit monitoring reports in compliance with MRP No. R3-2011-0006, in a format approved by the Executive Officer, including electronic format.

58. Dischargers, or a third party approved by the Executive Officer, must report water quality data to the Central Coast Water Board that is certified by a State registered professional engineer, registered geologist, State certified laboratory or third-party approved by the Executive Officer. Surface water quality data must be submitted in a format that is compatible with the Central Coast Ambient Monitoring Program (CCAMP), or as directed by the Executive Officer. Groundwater quality data must be submitted in a format compatible with the electronic deliverable format (EDF) used by the State Water Board's Geotracker data management system, or as directed by the Executive Officer.

59. Dischargers must submit technical reports that the Executive Officer may request to determine compliance with this Order as authorized by Water Code section13267.

60. Dischargers or a representative authorized by the Discharger must sign technical reports submitted to comply with the Order. Any person signing a report submitted as required by this Order must make the following certification:

"In compliance with Water Code section *13267, I certify under penalty of perjury that this document and all attachments were prepared by me, or under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge and belief, this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

Part F. Pollutant Specific Conditions for All Dischargers- Tier 1, Tier 2 and Tier 3

Pesticides and Toxicity

61. Dischargers must not cause or contribute to exceedances of pesticide and toxicity water quality standards in waters of the State or the United States. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

62. Dischargers must comply with any Department of Pesticide Regulation (DPR) adopted or approved surface water protection requirements.

Nutrients and Salts

63. Dischargers must not cause or contribute to exceedances of nutrient and salt water quality standards in waters of the State or the United States. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

64. **Within three years** from adoption of this Order or enrollment, Dischargers that apply fertilizers, pesticides, fumigants or other chemicals through an irrigation system must have functional and properly maintained back flow prevention devices installed at the well or pump to prevent pollution of groundwater or surface water, consistent with any applicable DPR requirements or local ordinances.. Back flow prevention devices used to protect water quality must be those approved by USEPA, DPR, CDPH, or the local public health or water agency.

Sediment, Turbidity, and Temperature

65. Dischargers must not cause or contribute to excursions or exceedances of sediment, turbidity, or temperature water quality standards in waters of the State or the United States. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

66. Dischargers must minimize the presence of bare soil vulnerable to erosion and soil runoff to surface waters to meet turbidity and sediment water quality standards in waters of the State or the United States and achieve compliance with this Order.

67. Dischargers must prevent or minimize discharges of waste to waters of the State and of the United States to protect beneficial uses of existing aquatic habitat (including perennial, intermittent, or ephemeral streams, lakes, and riparian and wetland area habitat or other waterbodies) to achieve compliance with this Order by:

a. Maintaining the following riparian functions: including but not limited to streambank stabilization and erosion control, stream shading and temperature control, sediment and chemical filtration, aquatic life support, and wildlife support;
b. Maintaining naturally occurring mixed vegetative cover (such as trees, shrubs, grasses, as described in NRCS Ecological Site Descriptions or other similar regional biological typologies) in aquatic habitat areas;
c. Implementing a Water Quality Buffer Plan (required for Tier 3 Dischargers);

68. In the case where disturbance of aquatic habitat is necessary for the purposes of water quality improvement or restoration activities, Dischargers must implement appropriate and practicable measures to avoid, minimize, and mitigate erosion and discharges of waste, including impacts to aquatic habitat.

69. Where required by California Fish and Game Code, Dischargers must submit proof of an approved Streambed Alteration Agreement from the California Department of Fish and Game (CDFG) for any work conducted within the bed, bank or channel of a lake or stream, including riparian areas, that has the potential to result in erosion and discharges of waste to waters of the State.

70. Where required by California Forest Practice Rules, Dischargers must submit proof of California Department of Forestry and Fire Protection authorization, and enrollment in the Central Coast Water Board's General Conditional Waiver of WDRs – Timber Harvest Activities in the Central Coast Region, for any commercial harvesting of timber that has the potential to result in erosion and discharges of waste to waters of the State.

71. Dischargers must implement erosion control, sediment, and stormwater management practices in non-cropped areas to protect unpaved roads and other heavy use or bare soil areas from concentrated flows of stormwater.

72. Dischargers are encouraged to coordinate the implementation of stormwater management practices with other Dischargers to maximize water quality protection and reduce costs.

<u>Farm Water Quality Management Plan (Farm Plan) Requirements</u>

73. **Within 18 months** of the adoption of this Order or enrollment, Dischargers must develop and implement a farm water quality management plan (Farm Plan). Farm Plans must:

a. Include a copy of this Order, a copy of the Notice of Intent (NOI) submitted to the Central Coast Water Board and a copy of the Notice of Enrollment (NOE) from

the Executive Officer for reference by operating personnel and inspection by Central Coast Water Board staff.

b. Include a signed statement by the landowner(s), operator(s), and key operating and site management personnel, that they are familiar with this Order and contents of the Farm Plan.
c. Include the date the Farm Plan was last updated.
d. Indicate how water quality data from receiving water quality monitoring, groundwater monitoring and individual discharge monitoring was used to design and implement management practices that will achieve compliance with this Order.
e. Identify actual and potential water quality impacts associated with discharges specific to the agricultural operation(s) and design and implement management practices that will correct the water quality impacts and achieve compliance with this Order.
f. Describe the farm water quality management practices planned and implemented to insure discharges do not cause or contribute to exceedances of water quality standards in receiving waters. This includes, but is not limited to, irrigation management, pesticide management, nutrient management, salinity management, sediment and erosion control (including stormwater management), and aquatic habitat protection to achieve compliance with this Order.
g. Include a time schedule for implementation of farm water quality management practices, including a list of farm water quality management practices in progress (identify start date), completed (identify completion date), and planned (identify anticipated start date).
h. Demonstrate that discharges do not cause or contribute to exceedances of water quality standards in waters of the State or the United States by including methods and results to evaluate progress and effectiveness of water quality management practices, treatment or control measures, or changes in farming practices implemented to achieve compliance with this Order.

74. Dischargers must update their Farm Plans at least annually.

<u>Education Requirements</u>

75. Dischargers must obtain appropriate farm water quality education and technical assistance necessary to achieve compliance with this Order.

76. **Within 18 months** of the adoption of this Order or enrollment, Dischargers must complete 15 hours of farm water quality education. Farm water quality education should focus on meeting water quality standards by identifying on-farm water quality issues, implementing pollution prevention strategies and implementing practices designed to protect water quality and resolve water quality issues to achieve compliance with this Order

77. Dischargers must maintain proof of completion of education requirements in the Farm Plan.

Part G. Additional Conditions that Apply to Tier 2 and Tier 3 Dischargers

Photo Monitoring for Tier 2 and Tier 3 Dischargers

78. By **October 1, 2012,** and every three years thereafter, Tier 2 and Tier 3 Dischargers with operations adjacent to or containing a waterbody identified on the 2010 List of Impaired Waterbodies as impaired for temperature, turbidity, or sediment (identified in Table 1) must conduct photo monitoring per MRP No. R3-2011-0006. Photo monitoring must document the condition of perennial, intermittent, or ephemeral streams and riparian and wetland area habitat, the presence of bare soil vulnerable to erosion, and relevant management practices and/or treatment and control measures implemented to address impairments. Photo documentation must be submitted with Annual Compliance document

Annual Compliance Document for Tier 2 and Tier 3 Dischargers

79. By **October 1, 2012, and annually thereafter**, Tier 2 and Tier 3 Dischargers must submit an Annual Compliance Document that includes all the information requested, in a format specified by the Executive Officer, per MRP No. R3-2011-0006. The purpose of the Annual Compliance Document is to provide up-to-date information to the Central Coast Water Board to assist in the evaluation of threat or impact to water quality from agricultural discharges and evaluate progress towards compliance with this Order, including implementation of management practices, treatment or control measures, or changes in farming practices.

Nitrate Loading Risk Factor Determination

80. Tier 2 and Tier 3 Dischargers must calculate the nitrate loading risk factor for each ranch/farm included in their operation. The nitrate loading risk factor is a measure of the relative risk of loading nitrate to groundwater. Tier 3 Dischargers must determine the nitrate loading risk factor for each ranch/farm using the criteria below, based on the highest risk activity existing at each ranch/farm identified in Table 2.
    a. Nitrate Hazard Index Rating by Crop Type
    b. Irrigation System Type
    c. Irrigation Water Nitrate Concentration

81. Tier 2 and Tier 3 Dischargers may choose to subdivide the ranch/farm into "nitrate loading risk units", based on the variability of ranch/farm conditions for the purposes

of complying with this Order. A nitrate loading risk unit is a subdivided unit of the operation or ranch/farm with different farming conditions (irrigation system type, crop type, nitrate concentration in the irrigation water, etc.). The nitrate loading risk unit may be the total ranch, a number of blocks, or an individual block. If a Discharger chooses to subdivide the ranch/farm into individual nitrate loading risk units, the Discharger must maintain individual record keeping, and conduct monitoring and reporting for each nitrate loading risk unit.

82. Tier 2 and Tier 3 Dischargers must determine the ranch/farm's Nitrate Loading Risk, based on multiplication of the individual nitrate loading risk factors.
    a. LOW - Nitrate loading risk is less than 10;
    b. MODERATE – Nitrate loading risk is between 10 and 15;
    c. HIGH – Nitrate loading risk is more than 15;

83. **By October 1, 2012**, Tier 2 and Tier 3 Dischargers must report the nitrate loading risk factors and overall Nitrate Loading Risk calculated for each ranch/farm or nitrate loading risk unit in the Annual Compliance Document.

84. **Within two years** from adoption of this Order or enrollment, Tier 2 and Tier 3 Dischargers with High Nitrate Loading Risk must record total nitrogen applied per crop, per acre to each farm/ranch or nitrate loading risk unit (in units of nitrogen, in any product, form or concentration) including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water;

85. **By October 1, 2014 and annually thereafter**, Tier 2 and Tier 3 Dischargers with High Nitrate Loading Risk must report total nitrogen applied per crop, per acre to each farm/ranch or nitrate loading risk unit in the Annual Compliance Document.

Part H. Additional Conditions that Apply to Tier 3 Dischargers

86. **Within one year** from adoption of this Order or enrollment, Tier 3 Dischargers with a High Nitrate Loading Risk must determine the typical crop nitrogen uptake for each crop type produced and report the basis for the determination (e.g., developed by commodity or industry group, published agronomic literature, research trials, site specific analysis of dry biomass of crop for the nitrogen concentration). Dischargers must report the typical crop nitrogen uptake in the Annual Compliance Document.

<u>Irrigation and Nutrient Management Plan</u>

87. **Within two years** from adoption of this Order or enrollment, Tier 3 Dischargers with High Nitrate Loading Risk must develop and initiate implementation of an Irrigation

and Nutrient Management Plan (INMP) certified by a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy, or similar professional or third-party approved by the Executive Officer. The certification of the INMP must indicate that the relevant expert has reviewed all necessary documentation and testing results, evaluated nutrient balance calculations (total nitrogen applied relative to typical crop nitrogen uptake and nitrogen removed at harvest), evaluated estimated nitrate loading to groundwater, evaluated progress towards nutrient management targets, and conducted field verification to ensure accuracy of reporting.

a. The purpose of the INMP is to budget and manage the nutrients applied to each farm/ranch or nitrate loading risk unit considering all sources of nutrients, crop requirements, soil types, climate, and local conditions in order to minimize nitrate loading to surface water and groundwater in compliance with this Order.

b. As an alternative to the development and implementation of an INMP, Tier 3 Dischargers with High Nitrate Loading Risk may propose an individual discharge groundwater monitoring and reporting program (GMRP) plan for approval by the Executive Officer. The GMRP plan must evaluate waste discharge to groundwater from each ranch/farm or nitrate loading risk unit and assess if the waste discharge is of sufficient quality that it will not cause or contribute to exceedances of any nitrate water quality standards in groundwater.

88. Tier 3 Dischargers with High Nitrate Loading Risk must include the following elements in the INMP:
    a. Proof of INMP certification;
    b. Map locating each farm/ranch or nitrate loading risk unit;
    c. Identification of nitrate loading risk factors and overall Nitrate Loading Risk calculation for each ranch/farm or nitrate loading risk unit;
    d. Identification of crop nitrogen uptake values for use in nutrient balance calculations;
    e. Record keeping of the total nitrogen applied per crop, per acre to each farm/ranch or nitrate loading risk unit (in units of nitrogen, in any product, form or concentration) including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water;
    f. Dischargers must take a nitrogen soil sample prior to planting or seeding the field. The amount of nitrogen remaining in the soil must be accounted for as a source of nitrogen when budgeting, and the soil sample results must be maintained in the INMP.

g. Annual balance of nitrogen applied compared to typical crop nitrogen uptake for each ranch/farm or nitrate loading risk unit (Nitrogen Balance ratio);
h. Annual estimation of nitrogen loading to groundwater and surface water, including subsurface drainage (e.g., tiledrains), from each ranch/farm or nitrate loading risk unit;
i. Identification of irrigation and nutrient management practices in progress (identify start date), completed (identify completion date), and planned (identify anticipated start date) to reduce nitrate loading to groundwater to achieve compliance with this Order.
j. Annual evaluation of reductions in nitrate loading to groundwater resulting from decreased fertilizer use and/or implementation of irrigation and nutrient management practices;
k. Description of methods Discharger will use to verify overall effectiveness of the INMP in protecting groundwater quality and achieving water quality standards for nitrate over time.

89. **By October 1, 2014 and annually thereafter,** Tier 3 Dischargers with High Nitrate Loading Risk must report the following INMP elements in the Annual Compliance Document:
    a. Identification of crop nitrogen uptake values for use in nutrient balance calculations;
    b. Annual total of nitrogen units applied per crop, per acre to each farm/ranch or nitrate loading risk unit.
    c. Annual balance of nitrogen applied per crop compared to typical crop nitrogen uptake for each ranch/farm or nitrate loading risk unit (Nitrogen Balance ratio);
    d. Annual estimation of nitrogen loading to groundwater and surface water, including subsurface drainage (e.g., tile drains),from each ranch/farm or nitrate loading risk unit;
    e. Identification of irrigation and nutrient management practices in progress (identify start date), completed (identify completion date), and planned (identify anticipated start date) to reduce nitrate loading to groundwater to achieve compliance with this Order.
    f. Annual evaluation of reductions in nitrate loading to groundwater resulting from decreased fertilizer use and/or implementation of nutrient management practices;

90. **Within three years** from adoption of this Order or enrollment, Tier 3 Dischargers with High Nitrate Loading Risk must meet the following Nitrogen Balance ratio targets or implement an alternative to demonstrate an equivalent nitrogen load reduction. The Nitrogen Balance ratio refers to the total number of nitrogen units applied to the crop (considering all sources of nitrogen) relative to the typical

nitrogen uptake value of the crop (crop need to grow and produce, amount removed at harvest plus the amount remaining in the system as biomass).

a. Dischargers producing crops in annual rotation (such as a cool season vegetable in a triple cropping system) must achieve a Nitrogen Balance ratio target equal to one (1). A target of one (1) allows a Discharger to apply 100% of the amount of nitrogen required by the crop to grow and produce yield for every crop in the rotation. (Nitrogen applied includes any product, form or concentration, including but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil and nitrate in irrigation water.)

b. Dischargers producing annual crops occupying the ground for the entire year (e.g., strawberries or raspberries) must achieve a Nitrogen Balance ratio target equal to 1.2. A target of 1.2 allows a Discharger to apply 120% of the amount of nitrogen required by the crop to grow and produce a yield.

c. Beyond three years, Dischargers must demonstrate improved irrigation and nutrient management efficiency, improved Nitrogen Balance ratios, and reduced nitrate loading to groundwater. After three years, the Nitrogen Balance ratio must compare the total amount of nitrogen applied to the crop against the total nitrogen removed at harvest, rather than the typical nitrogen crop uptake, to accurately calculate the nitrogen remaining and available to the crop or that could load to groundwater.

91. **Within five years** from adoption of this Order or enrollment, Tier 3 Dischargers with High Nitrate Loading Risk must verify the overall effectiveness of the INMP in protecting groundwater quality and achieving water quality standards for nitrate. Dischargers must identify the methods used to verify effectiveness and include the results as a report in the Annual Compliance Document. The report must be prepared by a state registered professional engineer, professional geologist or a third party approved by the Executive Officer. Dischargers in the same groundwater basin or subbasin may choose to comply with this requirement as a group by submitting a single report that evaluates the overall effectiveness of the broad scale implementation of irrigation and nutrient management practices identified in individual INMPs to protect groundwater and achieve water quality standards for nitrate. Group efforts must use data from individual wells at each operation to adequately represent groundwater quality for all operations in the group. Dischargers must include the following:

a. An evaluation of measured progress towards protecting, preserving, and restoring groundwater quality in the upper-most aquifer, including reductions

in loading based on reduced fertilizer use and improved irrigation and nutrient management practices;

b. A description of the methodology used to evaluate and verify progress (e.g., lysimeter monitoring, shallow groundwater or soil monitoring, groundwater well monitoring, contaminant transport and flow modeling);
c. An evaluation of how discharges of waste and any associated reductions in nitrate loading will decrease the concentration of nitrate in the upper-most aquifer, commensurate with water quality standards, within a reasonable and foreseeable time frame, and compared to milestones identified in Table 3;
d. Based on estimated nitrate loading to the groundwater basin or subbasin, the estimated number of years to achieve water quality standards in receiving water;

Water Quality Buffer Plan

92. **By October 1, 2015,** Tier 3 Dischargers with operations adjacent to or containing a waterbody identified on the 2010 List of Impaired Waterbodies as impaired for temperature, turbidity, or sediment (see Table 1) must submit to the Executive Officer a Water Quality Buffer Plan that protects the listed waterbody and its associated perennial and intermittent tributaries. The purpose of the Water Quality Buffer Plan is to control discharges of waste that cause or contribute to exceedances of water quality standards in waters of the State or United States in compliance with this Order and the following Basin Plan requirement:

    a. Basin Plan (Chapter 5, p. V-13, Section V.G.4 – Erosion and Sedimentation, *"A filter strip of appropriate width, and consisting of undisturbed soil and riparian vegetation or its equivalent, shall be maintained, wherever possible, between significant land disturbance activities and watercourses, lakes, bays, estuaries, marshes, and other water bodies. For construction activities, minimum width of the filter strip shall be thirty feet, wherever possible as measured along the ground surface to the highest anticipated water line."*

    b. As an alternative to the development and implementation of a Water Quality Buffer Plan, Tier 3 Dischargers may submit evidence to the Executive Officer to demonstrate that any discharge of waste is sufficiently treated or controlled such that is of sufficient quality where it will not cause or contribute to exceedances of water quality standards in waters of the State or of the United States.

93. Tier 3 Dischargers with operations adjacent to or containing a waterbody identified on the 2010 List of Impaired Waterbodies as impaired for temperature, turbidity, or sediment must implement the Water Quality Buffer Plan immediately upon submittal, unless the plan requests a time extension that is approved by the Executive Officer.

If the Executive Officer determines the Water Quality Buffer Plan is not in compliance with this Order, the Executive Officer will notify the Discharger and the Discharger must make necessary modifications accordingly.

94. The Water Quality Buffer Plan must include the following or similar provisions to control discharges of waste and to meet the purpose of the plan:
    a. A minimum 30 foot buffer (as measured horizontally from the top of bank on either side of the waterway, or from the high water mark of a lake and mean high tide of an estuary);
    b. Any necessary increases in buffer width to adequately prevent the discharge of waste that may cause or contribute to any excursion above or outside the acceptable range for any Regional, State, or Federal numeric or narrative water quality standard (e.g., temperature, turbidity, sediment, nutrients, toxicity);
    c. Any buffer less than 30 feet must be justified based on site-specific conditions;
    d. Vegetated zones within the buffer to treat or control temperature, turbidity, sediment, nutrient and pesticide discharges;
    e. Schedule for implementation;
    f. Maintenance provisions to ensure water quality protection;
    g. Annual photo monitoring to be included in the Annual Compliance Document.

95. **Within six months** of adoption of this Order or enrollment, Tier 3 Dischargers must conduct individual discharge monitoring per MRP No. R3-2011-0006.

96. **Within two years** of adoption of this Order or enrollment and quarterly thereafter, Tier 3 Dischargers must submit individual discharge monitoring reports (including identification of any discharges that exceed water quality objectives identified in Attachment A) per MRP No. R3-2011-0006.

Part I. TIME SCHEDULE FOR ACHIEVING COMPLIANCE WITH WATER QUALITY STANDARDS AND MILESTONES

97. General time schedules for key compliance dates and milestones related to Order Conditions are identified in Table 4 (All Dischargers) and Table 5 (Tier 2 and Tier 3 Dischargers). Dischargers must achieve compliance with requirements by dates specified. Milestones indicate progress towards compliance. The Executive Officer may require additional monitoring and reporting as authorized by Water Code section 13267, in cases where Dischargers fail to demonstrate adequate progress towards compliance as indicated by milestones.

98. **Within two years** from the adoption date of this Order, Tier 3 Dischargers must demonstrate that they are not causing or contributing to exceedances of water quality standards for toxicity and pesticides in waters of the State or of the United States. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

99. Within **three years** from the adoption of this Order, Tier 3 Dischargers must demonstrate that they are not causing or contributing to exceedances of water quality standards for sediment and turbidity in waters of the State or of the United States. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

100. **Within four years** from the adoption of this Order, Tier 3 Dischargers must demonstrate that they are not causing or contributing to exceedances of water quality standards for nutrients and salts in surface waters of the State or of the United States. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

101. **Within 10 years** from adoption of this Order**,** Tier 3 Dischargers must demonstrate that they are not causing or contributing to exceedances of water quality standards for nitrate and salts in groundwater. Dischargers may have to implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.

102. This Order becomes effective on **17 March 2011** and expires on **16 March 2016** unless rescinded or renewed by the Central Coast Water Board.

I, ROGER W. BRIGGS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order and Attachments adopted by the California Regional Water Quality Control Board, Central Coast Region, on 17 March 2011.

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ROGER W. BRIGGS,
Executive Officer

Table 1. 2010 Clean Water Act Section 303(d) List of Impaired Waterbodies Impaired for Temperature, Turbidity, or Sediment

Waterbody	Impairment
Arroyo Seco River	Water Temperature
Aptos Creek	Sediment
Beach Road Ditch	Turbidity
Bean Creek	Sediment
Bear Creek (Santa Cruz County)	Sediment
Blanco Drain	Turbidity
Boulder Creek	Sedimentation
Bradley Canyon Creek	Turbidity
Branciforte Creek	Sedimentation
Carbonera Creek	Sedimentation
Carnadero Creek	Turbidity
Carneros Creek (Monterey County)	Turbidity
Casmalia Canyon Creek	Sedimentation
Chorro Creek	Sedimentation
Chualar Creek	Water Temperature Turbidity
Corralitos Creek	Turbidity
Elkhorn Slough	Sediment
Espinosa Slough	Turbidity
Fall Creek	Sediment
Furlong Creek	Turbidity
Gabilan Creek	Turbidity
Greene Valley Creek (Santa Barbara County)	Water Temperature Turbidity
Kings Creek	Sediment
Llagas Creek (above Chesbro Reservoir)	Water Temperature Turbidity Sediment
Lompico Creek	Sediment
Los Osos Creek	Sediment
Love Creek	Sediment
Main Street Canal	Turbidity
Merrit Ditch	Turbidity
Millers Canal	Water Temperature Turbidity

Moro Cojo Slough	Sediment
Morro Bay	Sediment
Moss Landing Harbor	Sediment
Mountain Charlie Gulch	Sediment
Natividad Creek	Water Temperature Turbidity
Newell Creek (Upper)	Sediment
Old Salinas River	Turbidity
Orcutt Creek	Water Temperature Turbidity
Pacheco Creek	Turbidity
Pajaro River	Turbidity Sediment
Prefumo Creek	Turbidity
Quail Creek	Water Temperature Turbidity
Rider Creek	Sediment
Salinas Reclamation Canal	Turbidity
Salinas River (lower, estuary to near Gonzales Rd crossing, watersheds 30910 and 30920)	Turbidity
Salinas River (middle, near Gonzales Rd crossing to confluence with Nacimiento River)	Water Temperature Turbidity
Salinas River Refuge Lagoon (South)	Turbidity
Salsipuedes Creek (Santa Cruz County)	Turbidity
San Benito River	Sediment
San Juan Creek (San Benito County)	Turbidity
San Lorenzo	Sediment
San Vicente Creek (Santa Cruz County)	Sediment
Santa Maria River	Turbidity
Santa Rita Creek (Monterey County)	Turbidity
Santa Ynez River (below city of Lompoc to Ocean)	Water Temperature Sediment
Santa Ynez River (Cachuma Lake to below city of Lompoc)	Water Temperature Sediment
Shingle Mill Creek	Sediment
Shuman Canyon Creek	Sediment
Soquel Lagoon	Sediment
Tembladero Slough	Turbidity
Tequisquita Slough	Turbidity

Uvas Creek (below Uvas Reservoir)	Turbidity
Valencia Creek	Sediment
Watsonville Slough	Turbidity
Zayante Creek	Sediment

Table 2. Nitrate Loading Risk Factor Criteria

A. Crop Type Nitrate Hazard Index Rating 1 - Bean, Grapes, Olive. 2 - Apple, Avocado, Barley, Blackberry, Blueberry, Carrot, Chicory, Citrus, Lemon Oat, Orange, Peach, Pear, Pistachio, Raspberry, Walnut, Wheat. 3 - Artichoke, Bean, Brussel Sprout, Corn, Cucumber, Daikon, Peas, Radish, Squash, Summer, Tomato, Turnip, Squash, Rutabaga, Pumpkin, Potato. 4 – Beet, Broccoli, Cabbage, Cauliflower, Celery, Chinese Cabbage (Napa),Collard, Endive, Kale, Leek, Lettuce, Mustard, Onion, Parsley, Pepper, Spinach, Strawberry. (Based on UC Riverside Nitrate Hazard Index)
B. Irrigation System Type Rating 1 - Micro-irrigation year round (drip and micro-sprinklers) and no pre-irrigation; 2 - Sprinklers used for pre-irrigation only and then micro-irrigation; 3 - Sprinklers used for germination or at any time during growing season; 4 - Surface irrigation systems (furrow or flood) at any, and/or in combination with any other irrigation system type; (Based on UC Riverside Nitrate Hazard Index, Adapted for the Central Coast Region)
C. Irrigation Water Nitrate Concentration Rating 1 – Nitrate concentration 0 to 45 mg/liter Nitrate NO3 2 - Nitrate concentration 46 to 60 mg/liter Nitrate NO3 3 - Nitrate concentration 61to 100 mg/liter Nitrate NO3 4 - Nitrate concentration > 100 mg/l Nitrate NO3
D. Nitrate Loading Risk Calculation = A x B x C LOW - Nitrate loading risk is less than 10; MODERATE – Nitrate loading risk is between 10 and 15; HIGH – Nitrate loading risk is more than 15; *Note: Dischargers must determine the nitrate loading risk factor for each ranch/farm, based on the criteria associated with the highest risk activity existing at each ranch/farm. For example, the ranch/farm is assigned the highest risk factor, based on the single highest risk crop in the rotation, on one block under furrow irrigation, or on one well with high nitrate concentration.*

Table 3. 2010 Clean Water Act Section 303(d) List of Impaired Waterbodies Impaired for Toxicity, Pesticides

Waterbody	Impairment
Alisal Slough (Monterey County)	Toxicity
Arana Gulch	Pesticides
Arroyo Paredon	Pesticides Toxicity
Bell Creek (Santa Barbara Co)	Toxicity
Blanco Drain	Pesticides
Blosser Channel	Pesticides Toxicity
Bradley Canyon Creek	Toxicity
Bradley Channel	Pesticides Toxicity
Branciforte Creek	Pesticides
Carpinteria Creek	Pesticides
Chualar Creek	Pesticides Toxicity
Elkhorn Slough	Pesticides
Espinosa Lake	Pesticides
Espinosa Slough	Pesticides Toxicity
Franklin Creek (Santa Barbara County)	Pesticides
Furlong Creek	Pesticides
Gabilan Creek	Toxicity
Glen Annie Canyon	Toxicity
Greene Valley Creek (Santa Barbara County)	Pesticides Toxicity
Little Oso Flaco Creek	Toxicity
Llagas Creek (below Chesbro Reservoir)	Pesticides
Main Street Canal	Pesticides Toxicity
Merrit Ditch	Toxicity
Millers Canal	Pesticides
Mission Creek (Santa Barbara County)	Toxicity
Moro Cojo Slough	Pesticides
Moss Landing Harbor	Pesticides
Natividad Creek	Toxicity
Nipomo Creek	Toxicity
Old Salinas River	Pesticides

	Toxicity
Old Salinas River Estuary	Pesticides
Orcutt Creek	Pesticides Toxicity
Oso Flaco Creek	Toxicity
Oso Flaco Lake	Pesticides
Pajaro River	Pesticides
Quail Creek	Pesticides Toxicity
Rincon Creek	Toxicity
Salinas Reclamation Canal	Pesticides Toxicity
Salinas River (lower, estuary to near Gonzales Rd crossing, watersheds 30910 and 30920)	Pesticides Toxicity
Salinas River (middle, near Gonzales Rd crossing to confluence with Nacimiento River)	Pesticides Toxicity
Salinas River Lagoon (North)	Pesticides
San Benito River	Toxicity
San Antionio Creek (San Antonio Watershed, Rancho del las Flores Bridge at Hwy 135 to downstream at Railroad Bridge)	Pesticides
San Juan Creek (San Benito County)	Toxicity
San Luis Obispo Creek (below Osos Street)	Pesticides
San Lorenzo River	Pesticides
Santa Maria River	Pesticides Toxicity
Schwan Lake	Pesticides
Tembladero Slough	Pesticides Toxicity
Watsonville Slough	Pesticides

Table 4. Time Schedule for Key Compliance Dates All Dischargers (Tier 1, Tier 2, and Tier 3)

REQUIREMENT	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 Updated NOI	Within 30 days, upon change
Submit Notice of Termination	Immediately, when applicable
Implement best management practices, treatment or control measures, or change farming practices to achieve compliance with this Order.	Immediately
Protect existing aquatic habitat to prevent discharge of waste	Immediately
Submit Quality Assurance Project Plan and, Sampling And Analysis Plan, for receiving water quality monitoring	Within three months
Initiate receiving water quality monitoring	Within six months
Submit receiving water quality monitoring annual report	Within one year, and annually thereafter
Initiate sampling of groundwater wells	Within 12 months
Develop and Implement Farm Plan	Within 18 months
Complete 15 Hours Of Farm Water Quality Education	Within 18 months
Submit Groundwater Report	Within two years
Install and Maintain adequate backflow prevention devices.	Within three years

[1] General time schedules for key compliance dates and milestones related to Order Conditions. Dates are relative to adoption of this Order or enrollment date for Dischargers enrolled after the adoption of this Order, unless otherwise specified. Dischargers must achieve compliance for requirements by dates specified. Milestones indicate progress towards compliance.

Table 5. Additional Time Schedule for Key Compliance Dates for Tier 2 and Tier 3 Dischargers

REQUIREMENT	COMPLIANCE DATE[1]
Tier 2 and Tier 3:	
Submit Annual Compliance Document with all required reporting information as listed in MRP No. R3-2011-0006)	October 1, 2012, and annually thereafter.
Conduct photo monitoring of riparian or wetland are habitat (if operation contains or is adjacent to a waterbody impaired for temperature, turbidity, or sediment)	October 1, 2012, and every four years thereafter
Report Nitrate Loading Risk level in Annual Compliance Document	October 1, 2012, and annually thereafter.
Report total nitrogen applied per acre, per crop in Annual Compliance Document (if discharge has High Nitrate Loading Risk)	October 1, 2014, and annually thereafter.
Only Tier 3:	
Submit Quality Assurance Project Plan and, Sampling And Analysis Plan, for Individual Discharge Monitoring	Within four months
Initiate individual discharge monitoring	Within six months
Determine Crop Nitrogen Uptake (if discharge has High Nitrate Loading Risk)	Within one year
Submit individual discharge monitoring annual report	Within two years, and annually thereafter
Develop Irrigation and Nutrient Management Plan (INMP) (if discharge has High Nitrate Loading Risk)	Within two years
Report INMP elements in Annual Compliance Document (if discharge has High Nitrate Loading Risk)	October 1, 2014, and annually thereafter
Demonstrate that discharge is not causing or contributing to exceedances of pesticide or toxicity water quality standards in waters of the State or United States[2].	Within two years *Milestones:* *Individual Discharge Monitoring indicates –* *12 Months - one of two samples is not toxic.* *24 Months - two of two samples is not toxic.*
Achieve Nitrogen Balance Ratio target equal to one (1) for crops in annual rotation (e.g. cool season vegetables), (if discharge has High Nitrate Loading Risk)	Within three years

Achieve Nitrogen Balance Ratio target equal to 1.2 for annual crops occupying the ground for the entire year (e.g. strawberries or raspberries), (if discharge has High Nitrate Loading Risk)	
Demonstrate that discharge is not causing or contributing to exceedances of sediment and turbidity water quality standards in waters of the State or United States[2].	Within three years *Milestones:* *Individual Discharge Monitoring indicates –* *12 Months – Four samples collected.* *24 Months – 75% reduction in turbidity / sediment load*
Demonstrate that discharge (not including subsurface drainage to tiledrains) is not causing or contributing to exceedances of nutrient water quality standards in waters of the State or United States[2].	Within four years *Milestones:* *Individual Discharge Monitoring indicates –* *12 Months – Four samples collected* *24 Months – 50% load reduction of measured nutrients in irrigation runoff* *36 Months – 75% load reduction of measured nutrients in irrigation runoff*
Submit Water Quality Buffer Plan (if operation contains or is adjacent to a waterbody impaired for temperature, turbidity, or sediment)	Within four years
Submit INMP Effectiveness Report (if discharge has High Nitrate Loading Risk)	Within five years
Demonstrate that discharge is not causing or contributing to exceedances of nitrate drinking water quality standards in groundwater[2].	Within 10 years *Milestones:* *Years 3 – 5, Annual reduction in nitrogen loading to groundwater*

[1] General time schedules for key compliance dates and milestones related to Order Conditions. Dates are relative to adoption of this Order or enrollment date for Dischargers enrolled after the adoption of this Order, unless otherwise specified. Dischargers must achieve compliance for requirements by dates specified. Milestones indicate progress towards compliance.

[2]Documentation may include data and information related to groundwater sampling, individual discharge monitoring, implementation of best management practices, treatment or control measures, or changes in farming practices to achieve compliance with this Order.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

DRAFT

ORDER NO. R3-2011-0006

ADDITIONAL FINDINGS, APPLICABLE WATER QUALITY CONTROL PLANS AND DEFINITIONS FOR CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM IRRIGATED LANDS

Order No. R3-2011-0006 (Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands) requires Dischargers to comply with applicable state plans and policies and applicable state and federal water quality standards and to prevent nuisance. Water quality standards are set forth in state and federal plans, policies, and regulations. The California Regional Water Quality Control Board Central Coast Region's (Central Coast Water Board) Water Quality Control Plan contains specific water quality objectives, beneficial uses, and implementation plans that are applicable to discharges of waste and/or waterbodies that receive discharges of waste from irrigated lands. The State Water Resources Control Board (State Water Board) has adopted plans and policies that may be applicable to discharges of waste and/or surface waterbodies or groundwater that receive discharges of waste from irrigated lands. The United States Environmental Protection Agency (USEPA) has adopted the *National Toxics Rule* and the *California Toxics Rule*, which constitute water quality criteria that apply to waters of the United States.

The specific waste constituents required to be monitored and the applicable water quality standards that protect identified beneficial uses for the receiving water are set forth in the Monitoring and Reporting Program Order No. R3-2011-0006.

This Attachment A lists additional findings (Part A), relevant plans, policies, regulations (Part B), and definitions of terms (Part C) used in Order No. R3-2011-0006.

PART A. ADDITIONAL FINDINGS

The California Regional Water Quality Control Board, Central Coast Region additionally finds that:

1. The Central Coast Water Board is the principle state agency in the Central Coast Region with primary responsibility for the coordination and control of water quality. (Cal. Wat. Code § 13001, Legislative Intent) The purpose of this Order is to is focus on the highest water quality priorities and maximize water quality protection to ensure the long-term reliability and availability of water resources of sufficient supply and quality for all present and future beneficial uses, including drinking water and aquatic life. Given the magnitude and severity of water quality impairment and impacts to beneficial uses caused by irrigated agriculture and the significant cost to the public, the Central Coast Water Board finds that it is reasonable and necessary to require specific actions to protect water quality.

2. The Central Coast Water Board recognizes that Dischargers may not achieve immediate compliance with all requirements. Thus, this Order provides reasonable schedules for Dischargers to reach full compliance over many years by implementing management measures and monitoring and reporting programs that demonstrate and verify measurable progress annually. This Order includes specific dates to achieve water quality standards in surface and groundwaters; some compliance dates may extend beyond the term of this Order.

3. According to California Water Code Section 13263(g), the discharge of waste to waters of the State is a privilege, not a right. It is the responsibility of dischargers of waste from irrigated lands to comply with the Water Code by seeking waste discharge requirements (WDRs) or by complying with a waiver of WDRs. This Order waiving the requirement to submit a report of waste discharge (ROWD) and the requirement to obtain WDRs provides a mechanism for dischargers of waste from irrigated lands to meet their responsibility to comply with the Water Code and to prevent degradation of waters of the State, prevent nuisance, and to protect the beneficial uses. Dischargers are responsible for the quality of surface waters and ground waters that have received discharges of waste from their irrigated lands.

AGRICULTURAL AND WATER RESOURCES IN THE CENTRAL COAST REGION

4. In the Central Coast Region, nearly all agricultural, municipal, industrial, and domestic water supply comes from groundwater. Groundwater supplies approximately 90 percent of the drinking water on the Central Coast. Currently, more than 700 municipal public supply wells in the Central Coast Region provide drinking water served to the public by cities, counties, and local water agencies. In

addition, based on 1990 census data, there are more than 40,000 permitted private wells, most providing domestic drinking water to rural households and communities from shallow sources. The number of private domestic wells has likely significantly increased in the past 20 years due to population growth.

5. In the Salinas, Pajaro, and Santa Maria groundwater basins, agriculture accounts for approximately 80 to 90 percent of groundwater pumping (MCWRA, 2007; PVWMA, 2002; Luhdorff and Scalmanini Consulting Engineers. April 2009).

6. The Central Coast Region supports some of the most significant biodiversity of any temperate region in the world and is home to the last remaining population of the California Sea Otter, three sub-species of threatened or endangered Steelhead (*Oncorhynchus mykiss*) and one sub-species of endangered Coho Salmon (*Oncorhynchus kisutch*). The endangered marsh sandwort (*Arenaria paludicola*), Gambel's watercress (*Nasturtium rorippa gambelii*), California least tern (*Sterna antillarum browni*), and threatened red-legged frog (*Rana aurora*) are present in the region.

7. Several watersheds drain into Monterey Bay National Marine Sanctuary, one of the largest marine sanctuaries in the world. Elkhorn Slough, is one of the largest remaining tidal wetlands in the United States and one of the National Oceanic and Atmospheric Administration (NOAA) designated National Estuarine Research Reserves. The southern portion includes the Morro Bay National Estuary and extensive salt marsh habitat.

8. The two endangered plants, marsh sandwort and Gambel's watercress are critically imperiled and their survival depends upon the health of the Oso Flaco watershed. The last remaining known population of marsh sandwort and one of the last two remaining known populations of Gambel's watercress occur in Oso Flaco Lake (United States Department of the Interior Fish and Wildlife Service, 2007).

9. The Central Coast of California is 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 and contributing to more than 14 percent of California's agricultural economy. The region produces many high value specialty crops including lettuce, strawberries, raspberries, artichokes, asparagus, broccoli, carrots, cauliflower, celery, fresh herbs, mushrooms, onions, peas, spinach, wine grapes, tree fruit and nuts. An adequate water supply of sufficient quality is critical to supporting the agricultural industry on the Central Coast.

LEGAL AND REGULATORY CONSIDERATIONS

10. This Attachment A to Order No. R3-2011-0006 identifies applicable plans and policies adopted by the State Water Board and the Central Coast Water Board that

contain regulatory requirements that apply to the discharge of waste from irrigated lands. This Attachment A also provides definitions of terms for purposes of this Order.

11. The Porter-Cologne Water Quality Control Act grants authority to the State Water Board with respect to State water rights and water quality regulations and policy, and establishes nine Regional Water Boards with authority to regulate discharges of waste that could affect the quality of waters of the State and to adopt water quality regulations and policy.

12. As further described in the Order, discharges from irrigated lands affect the quality of the waters of the State depending on the quantity of the discharge, quantity of the waste, the quality of the waste, the extent of treatment, soil characteristics, distance to surface water, depth to groundwater, crop type, implementation of management practices and other site-specific factors. Discharges from irrigated lands have impaired and will continue to impair the quality of the waters of the State within the Central Coast Region if such discharges are not controlled.

13. Water Code Section 13267(b)(1) authorizes the Central Coast Water Board to require dischargers to submit technical reports necessary to evaluate Discharger compliance with the terms and conditions of this Order and to assure protection of waters of the State. The Order, this Attachment A, and the records of the Water Board provide the evidence demonstrating that discharges of waste from irrigated lands have degraded and/or polluted the waters of the state. Persons subject to this Order discharge waste from irrigated lands that impacts the quality of the waters of the state. Therefore it is reasonable to require such persons to prepare and submit technical reports.

14. Water Code Section 13269 provides that the Central Coast Water Board may waive the requirement in Water Code section 13260 to submit a report of waste discharge and the requirement in Water Code section 13260(a) to obtain WDRs. Water Code section 13269 further provides that any such waiver of WDRs shall be conditional, must include monitoring requirements unless waived, may not exceed five years in duration, and may be terminated at any time by the Central Coast Water Board or Executive Officer.

15. Water Code Section 13269(a)(4)(A) authorizes the Central Coast Water Board to include as a condition of a Conditional Waiver the payment of an annual fee established by the State Water Board. California Code of Regulations, Title 23, Division 3, Chapter 9, Article 1, Section 2200.3 sets forth the applicable fees. The Order requires each Discharger to pay an annual fee to the State Water Board in compliance with the fee schedule.

16. The Water Quality Control Plan for the Central Coast Basin (Basin Plan) designates beneficial uses, establishes water quality objectives, contains programs of implementation needed to achieve water quality objectives, and references the plans and policies adopted by the State Water Board. The water quality objectives are required to protect the beneficial uses of waters of the State identified in this Attachment A.

17. The Order is consistent with the Basin Plan because it requires Dischargers to comply with applicable water quality standards, as defined in this Attachment A, and requires terms and conditions, including implementation of management practices as defined in Attachment B. The Order also requires monitoring and reporting as defined in Monitoring and Reporting Program (MRP) No. R3-2011-0006 to determine the effects of discharges of waste from irrigated lands on water quality, verify the adequacy and effectiveness of this Order's terms and conditions, and to evaluate individual Discharger's compliance with this Order.

18. Water Code Section 13246 requires boards, in carrying out activities that affect water quality to comply with State Water Board policy for water quality control. This Order requires compliance with applicable State Water Board policies for water quality control.

19. This Order implements and complies with the requirements of the *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy) adopted by the State Water Board in May 2004. The NPS Policy requires, among other key elements, that an NPS control implementation program's ultimate purpose shall be explicitly stated and that the implementation program must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable anti-degradation requirements. The NPS Policy improves the State's ability to effectively manage NPS pollution and conform to the requirements of the Federal Clean Water Act and the Federal Coastal Zone Act Reauthorization Amendments of 1990. The NPS Policy provides a bridge between the State Water Board's January 2000 *NPS Program Plan* and its 2010 *Water Quality Enforcement Policy*. The NPS Policy's five key elements are:

    a. Key Element #1 - Addresses NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses
    b. Key Element #2 - Includes an implementation program with descriptions of the Management Practices (MPs) and other program elements and the process to be used to ensure and verify proper MP implementation
    c. Key Element #3 - Includes a specific time schedule and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements

d. Key Element #4 - Contains monitoring and reporting requirements that allow the Water Board, dischargers, and the public to determine that the program is achieving its stated purpose(s) and/or whether additional or different MPs or other actions are required
e. Key Element #5 - Clearly discusses the potential consequences for failure to achieve the NPS control implementation program's stated purposes

20. This Order is consistent with provisions of State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California." Regional boards, in regulating the discharge of waste, must maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies. The Order will result in improved water quality throughout the region. Dischargers must comply with all applicable provisions of the Basin Plan, including water quality objectives, and implement best management practices to prevent pollution or nuisance and to maintain the highest water quality consistent with the maximum benefit to the people of the State. The conditions of this waiver will protect high quality waters and restore waters that have already experienced some degradation.

21. This Order is consistent with State Water Board Resolution 68-16. This Order requires Dischargers to 1) comply with the terms and conditions of the Order and meet applicable water quality standards in the waters of the State; 2) to develop and implement management practices, treatment or control measures, or change farming practices, when discharges are causing or contributing to exceedances of applicable water quality standards; 3) conduct activities in a manner to prevent nuisance, and 4) conduct activities required by MRP Order No. R3-2011-0006 and revisions thereto.

RATIONALE FOR THIS ORDER

22. On April 15, 1983, the Central Coast Water Board approved a policy allowing waivers of WDRs for 26 categories of discharges, including irrigation return flows and non-NPDES stormwater runoff. Pursuant to Water Code Section 13269, these waivers terminated on January 1, 2003.

23. On July 9, 2004, the Central Coast Water Board adopted Resolution No. R3-2004-0117 establishing the 2004 Agricultural Order.

24. Dischargers enrolled in the 2004 Agricultural Order established the Cooperative Monitoring Program (CMP) in compliance with monitoring requirements. The CMP collected and analyzed data for 15 to 20 parameters from 50 sites in multiple watersheds and identified severe surface water quality impairments resulting from

agricultural land uses and discharges. CMP did not attempt to identify the individual farm operations that are causing the surface water quality impairments. The lack of discharge monitoring and reporting, the lack of verification of on-farm water quality improvements, and the lack of public transparency regarding on-farm discharges, are critical limitations of the 2004 Agricultural Order, especially given the scale and severity of the surface water and groundwater impacts and the resulting costs to society. The Order addresses these limitations.

25. The Central Coast Water Board extended the 2004 Agricultural Order on July 10, 2009 and again on July 8, 2010 as documented in Order No. R3-2009-0050 and Order No. R3-2010-0040. The 2004 Agricultural Order expires on March 31, 2011.

26. The Central Coast Water Board reviewed all available data, including information collected in compliance with the 2004 Agricultural Order, and determined that discharges of waste from irrigated lands continue to result in degradation and pollution of surface water and groundwater, and impairment of beneficial uses, including drinking water and aquatic habitat, and determines that additional conditions are necessary to assure protection of water quality and to measure the effectiveness of implementation of the Order.

27. The Central Coast Water Board finds that it is appropriate to adopt a waiver of ROWDs and 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, reduced agricultural surface runoff, reduced chemical use, holding times, cover crops, etc.).

28. The Central Coast Water Board finds that it is appropriate to regulate discharges of waste from irrigated lands under a Conditional Waiver rather than individual WDRs in order to simplify and streamline the regulatory process. Water Board staff estimate that there are more than 3000 individual owners and/or operators of irrigated lands who discharge waste from irrigated lands; therefore, it is not an efficient use of resources to adopt individual WDRs for all Dischargers within a reasonable time.

29. This Order is in the public interest because:

    a. The Order was adopted in compliance with Water Code Sections 13260, 13263, and 13269 and other applicable law;
    b. The Order requires compliance with water quality standards;
    c. The Order includes conditions that are intended to eliminate, reduce and prevent pollution and nuisance and protect the beneficial uses of the waters of the State;

d. The Order contains more specific and more stringent conditions for protection of water quality compared to the 2004 Agricultural Order;
e. The Order contains conditions that are similar to the conditions of municipal stormwater NPDES permits, including evaluation and implementation of management practices to meet applicable water quality standards and a more specific MRP;
f. The Order focuses on the highest priority water quality issues and most severely impaired waters;
g. The Order provides for an efficient and effective use of Central Coast Water Board resources, given the magnitude of the discharges and number of persons who discharge waste from irrigated lands;
h. The Order 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.

30. This Order waives the requirement to submit ROWDs and to obtain WDRs for discharges of waste from irrigated lands. This Order is conditional; may be terminated at any time; does not permit any illegal activity; does not preclude the need for permits that may be required by other State or local government agencies; and does not preclude the Central Coast Water Board from administering enforcement remedies (including civil liability) pursuant to the Water Code.

31. The Central Coast Water Board may consider issuing some individual WDRs to some Dischargers because of their actual or potential contribution to water quality impairments, history of violations, or other factors.

IMPACTS TO WATER QUALITY FROM AGRICULTURAL DISCHARGES

Impacts to Groundwater – Drinking Water and Human Health

32. Nitrate pollution of drinking water supplies is a critical problem throughout the Central Coast Region. Studies indicate that fertilizer from irrigated agriculture is the primary source of nitrate pollution of drinking water wells and that significant loading of nitrate continues as a result of agricultural fertilizer practices (Carle, S.F., et. al., June 2006).

33. Groundwater pollution from nitrate severely impacts public drinking water supplies in the Central Coast Region. A Department of Water Resources (DWR, 2003) survey of groundwater quality data collected between 1994 and 2000 from 711 public supply wells in the Central Coast Region found that 17 percent of the wells (121 wells) detected a constituent at concentrations above one or more California Department of Public Health (CDPH) drinking water standards or primary maximum contaminant levels (MCLs). Nitrate caused the most frequent MCL

exceedances (45 mg/L nitrate as nitrate or 10 mg/L nitrate as nitrogen), with approximately 9 percent of the wells (64 wells) exceeding the drinking water standard for nitrate. According to data reported by the GeoTracker-State Water Board's Groundwater Ambient Monitoring and Assessment Program (GAMA) website (http://geotrackerbeta.ecointeractive.com/gama/), recent impacts to public supply wells are greatest in portions of the Salinas Valley (up to 20 percent of wells impacted) and Santa Maria (approximately 17 percent) groundwater basins. In the Gilroy-Hollister Groundwater Basin, 12.5 percent of the public supply wells are impacted (Data obtained using the GeoTracker DPH Public Supply Well Search Tool [http://geotrackerbeta.ecointeractive.com/gama/] for nitrate for wells located in the Gilroy-Hollister groundwater basin. The well data includes Department of Public Health data for well sampling information ranging from 2006 until 2009). CDPH identified over half of the drinking water supply wells as vulnerable to discharges from agricultural-related activities in that basin. This information is readily tracked and evaluated because data are collected on a regular frequency, made publicly available, and public drinking water supplies are regulated by CDPH as required by California law. (http://swap.ice.ucdavis.edu/tsinfo/tsintro.asp and a description of the methodology is available at http://ww2.cdph.ca.gov/certlic/drinkingwater/Documents/DWSAPGuidance/DWSAP_document.pdf).

34. Groundwater pollution from nitrate severely impact shallow domestic wells in the Central Coast Region resulting in unsafe drinking water in rural communities. Domestic wells (wells supplying one to several households) are typically drilled in relatively shallow groundwater, and as a result exhibit higher nitrate concentrations than deeper public supply wells. Water quality monitoring of domestic wells is not generally required and water quality information is not readily available; however, based on the limited data available, the number of domestic wells that exceed the nitrate drinking water standard is likely in the range of several hundreds or more. Private domestic well water quality is not regulated and it is estimated that thousands of rural residents drink water from these impaired sources without knowing the quality of drinking water and without treatment.

35. In the northern Salinas Valley, 25 percent of 352 wells sampled (88 wells) had concentrations above the nitrate drinking water standard. In other portions of the Salinas Valley, up to approximately 50 percent of the wells surveyed had concentrations above the nitrate drinking water standard, with average concentrations nearly double the drinking water standard and the highest concentration of nitrate approximately nine times the drinking water standard (Monterey County Water Resources Agency [MCWRA], 1995). Nitrate exceedances in the Gilroy-Hollister and Pajaro groundwater basins reflect similar severe impairment, as reported by local water agencies/districts for those basins (SCVWD, 2001; SWRCB, 2005; San Benito County Water District, 2007; Kennedy/Jenks Consultants, 2008).

36. Local county and water district reports indicate that in the Pajaro River watershed, the highest recent nitrate concentration (over 650 mg/L nitrate, more than 14 times the drinking water standard) occurred in shallow wells in the eastern San Juan subbasin under intense agricultural production. High values of nitrate concentration in groundwater (greater than 500 mg/L nitrate) have also been reported in the Llagas subbasin and the lower Pajaro coastal aquifer.

37. The costs of groundwater pollution and impacts to beneficial uses caused by irrigated agriculture are transferred to the public. Public drinking water systems expend millions of dollars in treatment and replacement costs and private well owners must invest in expensive treatment options or find new sources. Rural communities, those least able to buy alternative water sources, have few options to replace the contaminated water in their homes. This Order addresses groundwater pollution to ensure protection of beneficial uses and public health.

38. Excessive concentrations of nitrate-nitrogen or nitrite-nitrogen in drinking water are hazardous to human health, especially for infants and pregnant women. The United States Environmental Protection Agency (USEPA) established a nitrate drinking water standard of 45 mg/L nitrate as nitrate (10 mg/L nitrate as nitrogen). While acute health effects from excessive nitrate levels in drinking water are primarily limited to infants (methemoglobinemia or "blue baby syndrome"), research evidence suggests there may be adverse health effects (i.e., increased risk of non-Hodgkin's, diabetes, Parkinson's disease, alzheimers, endrocrine disruption, cancer of the organs) among adults as a result of long-term consumption exposure to nitrate (Sohn, E., 2009; Pelley, J., 2003; Weyer, P., et. al., 2001, Ward, M.H., et. al., 1996) .

39. Nitrogen compounds are known to cause cancer. University of Iowa research found that up to 20 percent of ingested nitrate is transformed in the body to nitrite, which can then undergo transformation in the stomach, colon, and bladder to form N-nitroso compounds that are known to cause cancer in a variety of organs in more than 40 animal species, including primates (Weyer, P., et. al., 2001).

40. In many cases, whole communities that rely on groundwater for drinking water are threatened due to nitrate pollution, including the community of San Jerardo and other rural communities in the Salinas Valley. Local agencies and consumers have reported impacts to human health resulting from nitrate contaminated groundwater likely due to agricultural land uses, and spent significant financial resources to ensure proper drinking water treatment and reliable sources of safe drinking water for the long-term (CCRWQCB, 2009).

41. Current strategies for addressing nitrate in groundwater to achieve levels protective of human health typically include avoidance (abandoning impacted wells

or re-drilling to a deeper zone), groundwater treatment to remove nitrate (i.e., dilution using blending, ion exchange, reverse osmosis, biological denitrification, and distillation), or developing additional water supplies (i.e., percolation ponds, surface water pipelines, reservoirs) to dilute nitrate-impacted sources (Lewandowski, A.M., May 2008; Washington State Department of Health, 2005).

42. The cost to treat and clean up existing nitrate pollution to achieve levels that are protective of human health are very expensive to water users (e.g., farmers, municipalities, domestic well users). Research indicates that the cost to remove nitrate from groundwater can range from hundreds of thousands to millions of dollars annually for individual municipal or domestic wells (Burge and Halden, 1999; Lewandowski, May 2008). Wellhead treatment on a region wide scale is estimated to cost billions of dollars. Similarly, the cost to actively cleanup nitrate in groundwater on a region wide scale would also cost billions of dollars, and would be logistically difficult. If the nitrate loading due to agricultural activities is not significantly reduced, these costs are likely to increase significantly.

43. Many public water supply systems are required to provide well-head treatment or blending of drinking water sources, at significant cost, to treat nitrate before delivery to the drinking water consumer due to elevated concentrations of nitrate in groundwater. The community of San Jerardo (rural housing cooperative of primarily low-income farmworker families with approximately 250 residents) initially installed well-head treatment to treat contaminated groundwater with nitrate and other chemicals at significant cost and incurs on-going monthly treatment costs of approximately $17,000. Monterey County public health officials determined that the community of San Jerardo requires a new drinking water well to ensure safe drinking water quality protective of public health at an approximate cost of more than $4 million. The City of Morro Bay uses drinking water supplies from Morro and Chorro groundwater basins. Study results indicate that agricultural activities in these areas, predominantly over-application of fertilizer, have impacted drinking water supplies resulting in nitrate concentrations more than 4 times the drinking water standard (Cleath and Associates, 2007). The City of Morro Bay must blend or provide well-head treatment to keep nitrate concentrations at levels safe for drinking water at significant cost (City of Morro Bay, 2006). The City of Santa Maria public supply wells are also impacted by nitrate (in some areas nearly twice the drinking water standard) and must also blend sources to provide safe drinking water (City of Santa Maria, 2008).

Impacts to Groundwater – Nitrate and Salts

44. Groundwater pollution due to salts is also one of the most significant and critical problems in the Central Coast Region. Agricultural activities are a significant cause of salt pollution (Monterey County Flood Control and Water Conservation District, 1990), primarily due to the following:

a. Seawater intrusion within the coastal basins (e.g., Salinas and Pajaro groundwater basins) caused by excessive agricultural pumping (MCWRA, 2007).
b. Agricultural pumping/recycling of groundwater that concentrates salts in the aquifers.
c. Agricultural leaching of salts from the root zone.
d. The importation of salts into the basin from agricultural soil amendments and domestic/municipal wastewater discharges.

45. Based on the high proportion of groundwater extractions, agricultural pumping of groundwater contributes to saltwater intrusion into the Salinas and Pajaro groundwater basins, which is causing increasing portions of the groundwater basins to be unusable for agriculture and municipal supply (MCWRA, 2008 and Pajaro Valley Water Resource Agency, 2002).

46. Agricultural activities contribute significant loading of nitrates into groundwater from the following sources (Monterey County Flood Control and Water Conservation District, 1988):

a. Intensive fertilizer applications on permeable soils.
b. Liquid fertilizer hookups on well pump discharge lines lacking backflow prevention devices.
c. Groundwater wells that are screened through multiple aquifers, thereby acting as conduits for pollution transport into deeper groundwater.
d. Spills and/or uncontrolled wash water or runoff from fertilizer handling and storage operations.

47. Agricultural discharges contribute to pollution of groundwater basins most vulnerable to waste migration including major portions of the Santa Maria, Salinas, and Gilroy-Hollister groundwater basins. However, any groundwater basin, including those that are confined (pressured), are susceptible to downward waste migration through improperly constructed, operated (e.g., fertigation or chemigation without backflow prevention), or abandoned wells. Additionally, land with permeable soils and shallow groundwater are susceptible to downward waste migration. Such areas of groundwater vulnerability often overlap with important recharge areas that serve to replenish drinking water supplies.

48. Agricultural discharges of fertilizer are the main source of nitrate pollution to shallow groundwater based on nitrate loading studies conducted in the Llagas subbasin and the lower Salinas groundwater basin (Carle, S.F., et al., June 2006). In 2007, the California Department of Food and Agriculture (CDFA) reported that approximately 56 million pounds of nitrogen were purchased as fertilizer in Monterey County. A 1990 Monterey County study of nitrate sources leaching to

soil and potentially groundwater in Santa Cruz and Monterey Counties indicated that irrigated agriculture contributes approximately 78 percent of the nitrate loading to groundwater in these areas (Monterey County Flood Control and Water Conservation District, November 1990).

49. A groundwater study in the Llagas subbasin indicates that nitrate pollution in groundwater is elevated in the shallow aquifer because it is highly vulnerable due to high recharge rates and rapid transport, and that the dominant source of nitrate is synthetic fertilizers. Groundwater age data in relation to nitrate concentration indicate that the rate of nitrate loading to the shallow aquifer is not yet decreasing in the areas sampled. In areas east of Gilroy, groundwater nitrate concentrations more than double the drinking water standard correspond to younger groundwater ages (less than seven years old and in some cases less than two years old), indicating that the nitrate pollution is due to recent nitrate loading and not legacy farming practices (Moran et al., 2005).

50. The University of California Center for Water Resources (WRC) developed the Nitrate Groundwater Pollution Hazard Index (Nitrate Hazard Index) in 1995. The Nitrate Hazard Index identifies agricultural fields with the highest vulnerability for nitrate pollution to groundwater, based on soil, crop, and irrigation practices. Based on the Nitrate Hazard Index, the following crop types present the greatest risk for nitrate loading to groundwater: Beet, Broccoli, Cabbage, Cauliflower, Celery, Chinese Cabbage (Napa),Collard, Endive, Kale, Leek, Lettuce, Mustard, Onion, Spinach, Strawberry, Pepper, and Parsley.

Impacts to Groundwater – Pesticides

51. The Department of Pesticide Regulation (DPR) has identified two Groundwater Protection Areas that are vulnerable to pesticide contamination in San Luis Obispo County (south of Arroyo Grande, west of Nipomo Mesa, and north of the Santa Maria River) and Monterey County (Salinas area).

52. Based on a 2007 DPR report, pesticide detections in groundwater are rare in the Central Coast region. Of 313 groundwater wells sampled in the Central Coast region, six wells (1.9%) had pesticide detections in less than two samples (considered unverified detections).

53. A review of DPR data collected from 1984 – 2009 indicates that the three pesticides/pesticide degradates with the highest detection frequency were chlorthal-dimethyl and degradates (total), TPA (2,3,5,6-tetrachloroterephthalic acl) and carbon disulfide. Compounds reported by DPR above a preliminary health goal (PHG) or drinking water standard include (by county): ethylene dibromide (2002), atrazine (1993), and dinoseb (1987) Monterey; heptachlor (1989), ethylene dibromide (1989) Santa Barbara; benzene (various dates 1994-2007), 1,2,4-

trichlorobenzene (1991) Santa Cruz; ethylene dibromide (1994, 2008, 2009) San Luis Obispo; and 1,1,2,2-tetrachloroethane (1998) Santa Clara.

54. Results from pesticide analyses conducted as part of the Groundwater Ambient Monitoring and Assesment Program (GAMA) studies in the Central Coast region (Kulongoski, 2007; Mathany 2010) indicate a significant presence of pesticides in groundwater. GAMA achieved ultra-low detection levels of between 0.004 and 0.12 micrograms per liter (generally less than .01 micrograms per liter). Out of 54 wells sampled in groundwater basins in the south coast range study unit (bounded by the Santa Lucia and San Luis Ranges, and San Raphael Mountains to the north and east, and the Santa Ynez mountains to the south), 28 percent of the wells had 11 pesticides or pesticide degradates detected in groundwater samples, with the three most abundant detections being deethylatrazine (18.5 percent), atrazine (9.3 percent), and simazine (5.6 percent). Twenty-eight percent of 97 wells sampled in the Monterey Bay and Salinas Valley Basins had pesticide detections, including 18 percent for simazine, 11 percent for deethylatrazine, and 5 percent for atrazine. None of the pesticides detected as part of the GAMA program exceeded any drinking water standard or health-based threshold value.

Impacts to Surface Water

55. The 2010 Clean Water Act Section 303(d) List of Impaired Waterbodies for the Central Coast Region (2010 List of Impaired Waterbodies) identified surface water impairments for approximately 700 waterbodies 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.

56. The impact from agricultural discharges on surface water quality is or has been monitored by various monitoring programs, including:

    a. The Central Coast Water Board's Ambient Monitoring Program: Over the past 10 years, the Central Coast Ambient Monitoring Program (CCAMP) has collected and analyzed water quality data to address 25 conventional water quality parameters from 185 sites across the Central Coast Region to assess surface water quality. To support analysis of conventional water quality data CCAMP has collected bioassessment data from 100 of the 185 sites, water toxicity data from 134 of the 185 sites, and sediment toxicity from 57 of the 185 sites. CCAMP data show widespread toxicity and pollution in agricultural areas.
    b. Cooperative Monitoring Program (CMP): Over the last 5 years, the CMP has focused on assessing agricultural water quality for the 2004 Agricultural Order, and collected and analyzed data for 15 to 20 parameters from 50 sites

in multiple watersheds. CMP data show widespread toxicity and pollution in agricultural areas.

57. Data from CCAMP and CMP indicate that surface waterbodies are severely impacted in the lower Salinas and Santa Maria watersheds due to the intensive agricultural activity in these areas, and water quality in these areas are the most severely impaired in the Central Coast Region.

Impacts to Surface Water – Nutrients

58. Nitrate pollution in surface water is widespread in the Central Coast Region, with 46 waterbodies listed as impaired for this pollutant on the 2010 List of Impaired Waterbodies List. Seventy percent of these nitrate listings occur in the three major agricultural watersheds: Salinas area (16 waterbodies), Pajaro River (5 waterbodies) and Santa Maria River (12 waterbodies). Other significant nitrate listings fall in small drainages in areas of intensive agriculture or greenhouse activity along the south coast, including Arroyo Paredon, Franklin Creek, Bell Creek, Los Carneros and Glen Annie creeks (CCRWQCB, 2009a)

59. The California Department of Public Health (CDPH) drinking water standard is 10 mg/L nitrate. The drinking water standard is not intended to protect aquatic life and Water Board staff estimates that 1 mg/L nitrate is necessary to protect aquatic life beneficial uses from biostimulation based on an evaluation of CCAMP data (CCRWQCB, 2009b). Water Board staff used this criteria to evaluate surface water quality impairment to aquatic life beneficial uses in the 2010 Impaired Waterbodies List.

60. In a broadly scaled analysis of land uses, nitrate pollution is associated with row crop agriculture. In addition, discharge from even a single agricultural operation can result in adjacent creek concentrations exceeding the drinking water standard and the much lower limits necessary to protect aquatic life. Many heavily urbanized creeks show only slight impacts from nitrate, with most urban impact associated with wastewater discharges. (CCAMP, 2010a).

61. Agricultural discharges result in significant nitrate pollution in the major agricultural areas of the Central Coast Region (CCAMP, 2010a). More than sixty percent of all sites from CCAMP and CMP combined datasets have average nitrate concentrations that exceed the drinking water standard and limits necessary to protect aquatic life (CCAMP, 2010b). Ten percent of all sites have average nitrate concentrations that exceed the drinking water standard by five-fold or more. Some of the most seriously polluted waterbodies include the following:

    a. Tembladero Slough system (including Old Salinas River, Alisal Creek, Alisal Slough, Espinosa Slough, Gabilan Creek and Natividad Creek),

b. Pajaro River (including Llagas Creek, San Juan Creek, and Furlong Creek),
c. Lower Salinas River (including Quail Creek, Chualar Creek and Blanco Drain),
d. Lower Santa Maria River (including Orcutt-Soloman Creek, Green Valley Creek, and Bradley Channel),
e. Oso Flaco watershed (including Oso Flaco Lake, Oso Flaco Creek, and Little Oso Flaco Creek).

62. Dry season flows decreased over the last 5 years in some agricultural areas that have large amounts of tailwater runoff. 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. Some sites that show increasing concentrations of nitrate have coincident declining trends in flow, possibly due to reductions in tailwater (CCWQP, 2009a). CCAMP monitoring has detected declining flows at other sites elsewhere in the Region through the end of 2009 (CCAMP, 2010a), likely because of drought.

63. Some statistically significant changes in nitrate concentration are evident in CCAMP and CMP data. Several drainages are improving in water quality in the Santa Barbara area (such as Bell Creek, which supports agricultural activities) and on Pacheco Creek in the Pajaro watershed. However, in some of the most polluted waters, nitrate concentrations are getting worse at many sites (CCAMP, 2010a). In the lower Salinas and Santa Maria watersheds, flow volumes are declining at some sites (CCWQP, 2009a; CCAMP, 2010a), so at these locations nitrate loads may actually be improving in spite of increasing trends in concentrations.

64. Nitrate concentrations in Oso Flaco Lake exceed the levels that support aquatic life beneficial uses, threatening remaining populations of two endangered plants, marsh sandwort and Gambel's watercress. In 25 water samples taken from Oso Flaco Lake in 2000-2001 and 2007, levels of Nitrate/Nitrite (as N) averaged 30.5 mg/L with a minimum of 22.0 mg/L and a maximum of 37.1 mg/L (CCAMP, 2010a). Biostimulation in Oso Flaco Lake has caused the rapid and extreme growth of common wetland species, which are now crowding out sensitive species that have not become similarly vigorous (United States Department of the Interior Fish and Wildlife Service, 2010).

65. Agricultural discharges result in un-ionized ammonia concentrations at levels that are toxic to salmonids at some sites in areas dominated by agricultural activity (USEPA, 1999). The waterbodies where these sites are located are on the 2010 List of Impaired Waterbodies due to un-ionized ammonia, particularly in the lower Salinas and Santa Maria river areas (CCRWQCB, 2009).

Impacts to Surface Water – Toxicity and Pesticides

66. The Basin Plan general objective for toxicity states the following: "All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal or aquatic life." The Basin Plan general objective for pesticides states the following: "No individual pesticide or combination of pesticides shall reach concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life."

67. Based on CCAMP, CMP, and other monitoring data, multiple pesticides and herbicides have been detected in Central Coast surface waterbodies (identified below). This is a violation of the Basin Plan general objective for pesticides. Many currently applied pesticides have not been tested for, and staff is not aware of any fungicide data for the Central Coast Region. Additional monitoring for individual pesticides is needed to identify changes in pesticide loading and also to identify concentration of toxic substance not previously identified.

2,4-D	esfenvalerate	oryzalin
alachlor	ethalfluralin	oxadiazon
aldicarb	ethoprop	oxamyl
atrazine	fenamiphos	oxyfluorfen
azinphos-methyl	fenoxycarb	paraquat dichloride
benefin	fenpropathrin	pendimethalin
bentazon, sodium salt	fipronil	permethrin
bifenthrin	glyphosate	phorate
bromacil	hexazinone	phosmet
bromoxynil octanoate	hydramethylnon	prodiamine
butylate	imidacloprid	prometon
carbaryl	lambda cyhalothrin	prometryn
carbofuran	linuron	propanil
chlorpyrifos	malathion	propargite
chlorthal-dimethyl	MCPA	propiconazole
cycloate	MCPA, dimethylamine salt	propoxur
cyfluthrin	metalaxyl	propyzamide
cypermethrin	methidathion	pyriproxyfen
DDVP	methiocarb	S.S.S-tributyl phosphorotrithioate
deltamethrin	methomyl	siduron
diazinon	methyl isothiocyanate	simazine
dicamba	methyl parathion	tebuthiuron

dicofol	metolachlor	terbuthylazine
dimethoate	metribuzin	tetrachlorvinphos
disulfoton	molinate	thiobencarb
diuron	naled	triallate
endosulfan	napropamide	triclopyr
EPTC	norflurazon	trifluralin

68. Multiple studies using Toxicity Identification Evaluations (TIEs) have shown that organophosphate pesticides and pyrethroid pesticides in Central Coast waters are likely causing toxicity to fish and invertebrate test organisms (CCAMP, 2010a, CCWQP, 2008; CCWQP, 2009a; Hunt et al., 2003, Anderson, et al. 2003; Anderson et al., 2006b. This is a violation of the Basin Plan general objective for toxicity.

69. Agricultural use of pesticides in the Central Coast Region and associated toxicity is 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 and lethal to aquatic life (42 percent), and the highest rate (by three-fold) of active ingredients applied (113 lbs/acre) (Starner, et al. 2006) .

70. Agriculture-related toxicity studies conducted on the Central Coast since 1999 indicated that toxicity resulting from agricultural discharges of pesticides has caused declining aquatic insect and macroinvertebrate populations in Central Coast streams (Anderson et al., 2003; Anderson et al., 2006a; Anderson et al., 2006b; Anderson et al., 2010). This is a violation of the Basin Plan general objective for toxicity.

71. The breakdown products of organophosphate pesticides are more toxic to amphibians than are the products themselves (Sparling and Fellers, 2007).

72. The lower Salinas and Santa Maria areas have more overall water column invertebrate toxicity than other parts of the Central Coast Region, with much of the toxicity explained by elevated diazinon and chlorpyrifos concentrations (CCAMP, 2010a, CCWQP, 2008; CCWQP, 2009a; Hunt et al., 2003, Anderson, et al. 2003; Anderson et al., 2006a). Some agricultural drains have shown toxicity every time the drains are sampled (CCAMP, 2010a).

73. The National Oceanic Atmospheric Administration National Marine Fisheries Service (NMFS) issued a Biological Opinion that concluded that US EPA's registration of pesticides containing chlorpyrifos, diazinon, and malathion is likely to

jeopardize the continued existence of 27 endangered and threatened Pacific salmonids and is likely to destroy or adversely modify designated critical habitat for 25 threatened and endangered salmonids because of adverse effects on salmonid prey and water quality in freshwater rearing, spawning, migration, and foraging areas (NMFS, 2008)

74. Three court-ordered injunctions impose limitations on pesticide use (including chlorpyrifos, diazinon, and malathion) within certain proximity of waterbodies to protect endangered species (DPR, 2010).

75. Creek bottom sediments are most consistently toxic in the lower Salinas and Santa Maria watersheds, areas dominated by intensive agricultural activity. Seventy percent of sites sampled for sediment in the Central Coast region have been toxic at least once (although sites selected for sediment toxicity sampling typically represent higher risk areas) (CCAMP, 2010a).

76. Research has shown pyrethroid pesticides are a major source of sediment toxicity in agricultural areas of the Central Coast Region (Ng et al., 2008; Anderson et al., 2006a, Phillips et al., 2006; Starner et al., 2006).

Impacts to Surface Water – Turbidity and Temperature

77. Turbidity is a cloudy condition in water due to suspended silt or organic matter. Waters that exceed 25 nephalometric turbidity units (NTUs) can reduce feeding ability in trout (Sigler et al., 1984). Elevated turbidity during the dry season is an important measure of discharge across bare soil, and thus can serve as an indicator of systems with heavy irrigation runoff to surface waters.

78. The Basin Plan requires that "Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses" (CCRWQCB, 1994).

79. Most CCAMP sites outside of agricultural areas have a median turbidity level less than 5 NTUs (CCAMP, 2010a). Many sampling sites that include significant agricultural discharge have turbidity levels that exceed 100 NTUs as a median value (CCAMP, 2010a).

80. Agricultural discharges cause and contribute to sustained turbidity throughout the dry season at many sampling sites dominated by agricultural activities. Resulting turbidity greatly exceeds levels that impact the ability of salmonids to feed. Many of these sites are located in the lower Santa Maria and Salinas-Tembladero watersheds. The CMP detected some increasing trends in turbidity on the main stem of the Salinas River (CCRWQCB, 2009a; CCAMP, 2010a; CCWQP, 2009a).

81. Agricultural discharges and vegetation removal along riparian areas cause and contribute to water temperatures that exceed levels that are necessary to support 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. A good example of this is Orcutt Creek (CCAMP, 2010a), where upstream shaded areas are cooler than downstream exposed areas, in spite of lower upstream flows. Tailwater discharge and removal of riparian vegetation in downstream areas cause temperatures to rise above levels safe for trout. Several locations impacted by temperature are in major river corridors that provide rearing and/or migration habitat for salmonids. These include the Salinas, Santa Maria, and Santa Ynez rivers (CCAMP, 2010a).

82. Biological sampling shows that benthic biota are impaired in the lower Salinas and Santa Maria watersheds, and also shows that several measures of habitat quality, such as in-stream substrate and canopy cover, are poor compared to the upper watersheds and to other high quality streams in the Central Coast Region (CCWQP, 2009b; CCWQP, 2009c, CCWQP, 2009d; CCWQP, 2009e; CCAMP, 2010b)

83. Agricultural land use practices, such as removal of vegetation and stream channelization, and discharges from agricultural fields, can cause the deposition of fine sediment and sand over stream bottom substrate (Waters, 1995). This problem is especially prevalent in areas dominated by agricultural activity (lower Salinas and Santa Maria rivers) (CCWQP, 2009b; CCWQP, 2009c, CCWQP, 2009d; CCWQP, 2009e; CCAMP, 2010b). This deposition of fine sediment and sand in streams causes major degradation of aquatic life beneficial uses by eliminating pools and by clogging gravel where fish eggs, larvae, and benthic invertebrates that serve as a food source typically live (CCAMP, 2010b; Waters, 1995).

Impacts to the Marine Environment

84. The marine environment in the Central Coast Region is impacted by runoff from irrigated agriculture and other sources. Legacy pesticides have impacted the marine environment and are still found in sediment and tissue at levels of concern today (CCLEAN, 2007; Miller et al., 2007; Dugan, 2005, BPTCP, 1998). Currently applied pesticides are persistent in the aquatic environment, but initial testing has not found them in offshore areas of Monterey Bay (CCAMP, 2010b).

85. Two Marine Protected Areas (MPAs), Elkhorn Slough and Moro Cojo Slough, are heavily impacted by agricultural chemicals and activities in the vicinity. The Elkhorn Slough and Moro Cojo Slough MPAs are at very high to extremely high risk for additional degradation of beneficial uses. Other MPAs that are relatively near shore in agricultural areas are at medium risk for degradation of beneficial

uses; these include the South Santa Ynez River MPA, and the two Monterey Bay MPAs. Other MPAs that are not near agricultural areas are at medium to low risk from agricultural discharges (CCAMP, 2010b).

86. Nitrate loading from the Pajaro and Salinas Rivers to Monterey Bay has been found to be a potential driver of plankton blooms during certain times of year. Research shows a clear onshore to offshore gradient in nitrate load influence from rivers, and also shows overall increasing trends in loading from rivers, whereas nitrate loading from upwelling shows no trends (Lane, 2009; Lane et al., in review). Using infrared remote sensing, Monterey Bay Aquarium Research Institute researchers have documented bloom initiation immediately following "first flush" events just offshore Moss Landing and Pajaro River discharges, that then evolved into very large red tides that killed many sea birds (Ryan, 2009; Jessup et al., 2009). These bloom initiation events were documented in 2007 and 2008.

Impacts to Aquatic Habitat and Riparian and Wetland Areas

87. Riparian and wetland areas play an important role in protecting several of the beneficial uses designated in the Basin Plan. Agricultural activities have degraded, and threaten to degrade, these beneficial uses related to aquatic habitat, which include, but are not limited to:

    a. Ground Water Recharge;
    b. Fresh Water Replenishment;
    c. Warm Fresh Water Habitat;
    d. Cold Fresh Water Habitat;
    e. Inland Saline Water Habitat;
    f. Estuarine Habitat;
    g. Marine Habitat;
    h. Wildlife Habitat;
    i. Preservation of Biological Habitats of Special Significance;
    j. Rare, Threatened or Endangered Species;
    k. Migration of Aquatic Organisms;
    l. Spawning, Reproduction and/or Early Development;
    m. Areas of Special Biological Significance;

88. The Basin Plan contains requirements to protect aquatic habitat, including, but not limited to, Chapter 2, Section II Water Quality Objectives to Protect Beneficial Uses, and Chapter 5, Page V-13, V.G. Erosion and Sedimentation :A filter strip of appropriate width, and consisting of undisturbed soil and riparian vegetation or its equivalent, shall be maintained, wherever possible, between significant land disturbance activities and watercourses, lakes, bays, estuaries, marshes, and other water bodies. For construction activities, minimum width of the filter strip

shall be thirty feet, wherever possible as measured along the ground surface to the highest anticipated water line.

89. Riparian and wetland areas play an important role in achieving several water quality objectives established to protect specific beneficial uses. These include, but are not limited to, those water quality objectives related to natural receiving water temperature, dissolved oxygen, suspended sediment load, settleable material concentrations, chemical constituents, and turbidity.

90. The 2004 Agricultural Order required protection of beneficial uses including aquatic and wildlife habitat. This Order includes that requirement to achieve protection of aquatic life beneficial uses and to address water quality degradation that has occurred, in part, as a result of encroachment by agricultural land uses on riparian and wetland areas.

91. In particular, seasonal and daily water temperatures are strongly influenced by the amount of solar radiation reaching the stream surface, which is influenced by riparian vegetation (Naiman, 1992; Pierce's Disease/Riparian Habitat Workgroup (PDRHW), 2000.). Removal of vegetative canopy along surface waters threatens maintenance of temperature water quality objectives, which in turn negatively affects dissolved oxygen related water quality objectives, which in turn negatively affects the food web (PDRHW, 2000).

92. Riparian and wetland areas function to retain and recycle nutrients (National Research Council (NRC), 2002; Fisher and Acreman, 2004), thereby reducing nutrient loading directly to surface water or groundwater. Riparian and wetland areas trap and filter sediment and other wastes contained in agricultural runoff (NRC, 2002; Flosi et al., 1998; PDRHW, 2000; Palone and Todd,1998), and reduce turbidity (USEPA, 2009). Riparian and wetland areas temper physical hydrologic functions, protecting aquatic habitat by dissipating stream energy and temporarily allowing the storage of floodwaters (Palone and Todd, 1998), and by maintaining surface water flow during dry periods (California Department of Water Resources, 2003). Riparian and wetland areas regulate water temperature and dissolved oxygen, which must be maintained within healthy ranges to protect aquatic life (PDRHW, 2000). In the absence of human alteration, riparian areas stabilize banks and supply woody debris (NRC 2002), having a positive influence on channel complexity and in-stream habitat features for fish and other aquatic organisms (California Department of Fish and Game 2003).

93. Riparian areas are critical to the quality of in-stream habitat. Riparian vegetation provides woody debris, shade, food, nutrients and habitat important for fish, amphibians and aquatic insects (California Department of Fish and Game 2003). Riparian areas help to sustain broadly based food webs that help support a diverse assemblage of wildlife (NRC, 2002). More than 225 species of birds, mammals,

reptiles, and amphibians depend on California's riparian habitats (Riparian Habitat Joint Venture, 2004).

94. Riparian vegetation provides important temperature regulation for instream resources. In shaded corridors of the Central Coast region, temperatures typically stay under 20 degrees Celsius (within optimum temperature ranges for salmonids), but can rapidly increase above 20 degrees Celsius when vegetation is removed. Orcutt Creek in the lower Santa Maria watershed is an example where upstream shaded areas remain cooler than downstream exposed areas, in spite of lower upstream flows (CCAMP, 2010a).

95. Land management and conservation agencies describe three vegetated zones within a riparian buffer that can provide water quality protection (NRCS, 2006; Welsch, 1991, Tjaden and Weber). These zones are described below:
    a. Zone 1 – The goal for this zone is to control temperature and turbidity discharges by establishing a mix of trees and shrubs that provide shade and streambank stability. A mix of native woody species that vary from large tree species as they mature to understory trees and shrubs will provide canopy cover and shading next to the water.
    b. Zone 2 – The goal for this zone is to establish a mix of trees and shrubs that will absorb and treat waterborne nutrients and other pollutants and allow water to infiltrate into the soil.
    c. Zone 3 – The goal for this zone is to act as a transitional zone between cropland and zones 1 and 2, serving to slow flows, disperse flows out into more diffuse, sheet flow, and promote sediment deposition. The use of stiff multi-stemmed grasses and forbs are preferred and will help disperse concentrated flows.

96. CCAMP and CMP bioassessment data show that streams in areas of heavy agricultural use are typically in poor condition with respect to benthic community health and that habitat in these areas is often poorly shaded, lacking woody vegetation, and heavily dominated by fine sediment. Heavily sedimented stream bottoms can result from the immediate discharge of sediment from nearby fields, the loss of stable, vegetated stream bank habitat, the channelization of streams and consequent loss of floodplain, and from upstream sources.

97. Up to approximately 43 percent of the federally threatened and endangered species rely directly or indirectly on wetlands for their survival (United States Environmental Protection Agency, 2008). Of all the states, California has the greatest number of at-risk animal species (15) and, by far, the greatest number of at-risk plant species (104) occurring within isolated wetlands (Comer et al., 2005).

98. California has lost an estimated 91 percent of its historic wetland acreage, the highest loss rate of any state. Similarly, California has lost between 85 and 98

percent of its historic riparian areas (State Water Resources Control Board, 2008). Owners and operators of agricultural operations historically removed riparian and wetland areas to plant cultivated crops (Braatne et al., 1996; Riparian Habitat Joint Venture, 2004).

99. The California Wetlands Conservation Policy (Executive Order W-59-93), also known as "the No Net Loss Policy," adopted by Governor Wilson in 1993, established the State's intent to develop and adopt a policy framework and strategy to protect California's unique wetland ecosystems. One of the goals of this policy is to ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property.

100. Real and/or perceived incompatible demands between food safety and environmental protection are a major issue in the Central Coast Region. Technical Assistance Providers have reported that growers have removed vegetated management practices intended to protect water quality (in some cases, after receiving substantial public funds to install vegetated management practices).

101. 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 to prevent pollution from pathogens such as the O157:H7 bacteria. 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 (RCDMC, 2007). According to a follow-up spring 2009 survey by the Resource Conservation District of Monterey County, growers are being told by their auditors and/or buyers that wetland or riparian plants are a risk to food safety (RCDMC, 2009).

102. Riparian vegetation and vegetated buffer zones are critically important to prevent the transport of sediment and bacteria, which may include the downstream transport of O157:H7 bacteria. Tate et al. (2006) tested vegetated buffers on cattle grazing lands and found that they are a very effective way to reduce inputs of waterborne E. coli into surface waters. Data indicates that the major source of O157:H7 bacteria are cattle, not wildlife (RCDMC, 2006). In many agricultural areas of the Central Coast Region, cattle operations are located upstream of irrigated agricultural fields. Therefore, the removal of riparian and wetland vegetation and their buffer zones increases the transport of pathogens such as O157:H7 and the risk of food contamination. The removal of riparian and wetland vegetation for food safety purposes is not warranted, is not supported by the literature, and may increase the risk of food contamination.

103. Vegetated riparian areas provide greater environmental value than unvegetated floodplains or cropped fields. Riparian forests provide as much as 40 times the water storage of a cropped field and 15 times that of grass turf (Palone and Todd, 1998) Agricultural floodplains are approximately 80 to 150 percent more erodible than riparian forest floodplains (Micheli et al., 2004) and riparian forest floodplains serve a valuable function by trapping sediment from agricultural fields (National Resource Council, 2002; Flosi and others, 1998; PDRHW 2000; Palone and Todd 1998).

104. Riparian and wetland areas are an effective tool in improving agricultural land management. Wide riparian areas act as buffers to debris that may wash onto fields during floods, thereby offsetting damage to agricultural fields and improving water quality (Flosi et al., 1998; PDRHW, 2000).

105. Exotic plant species exclude native riparian and wetland vegetation by out-competing native species for habitat. Additionally, exotic plants do not support the same diversity of wildlife native to riparian forests, often use large amounts of water, and can exist as monocultural stands of grass. Grass habitat is very different from the complex habitat structure provided by a diversity of riparian trees and shrubs, and results in habitat changes that affect the aquatic based food web (California Department of Fish and Game, 2003).

MANAGEMENT PRACTICE IMPLEMENTATION

106. Commercial agriculture is an intensive use of land. Relatively sophisticated agronomic and engineering approaches are available and necessary to minimize the discharge of waste from irrigated lands, including sediment, nutrients, and pesticides that impact water quality and beneficial uses of waters of the State. Traditionally, conservation practices available to Dischargers were developed for irrigation efficiency or for erosion control, and not necessarily for water quality protection. To achieve water quality protection and improvement, Dischargers are responsible for selecting and effectively implementing management strategies to resolve priority water quality problems associated with the specific operation and receiving water, utilize proper management practice design and maintenance, and implement effectiveness monitoring.

107. Dischargers are responsible for implementing management measures to achieve water quality improvement, including practices and projects at the scale of a single farm, or cooperatively among multiple farms in a watershed or sub watershed.

108. The Farm Plan is an effective tool to identify the management practices that have been or will be implemented to protect and improve water quality in compliance

with this Order. Elements of the Farm Plan include irrigation management, pesticide management, nutrient management, salinity management, sediment and erosion control, and aquatic habitat protection. Farm Plans also contain a schedule for implementation of practices and an evaluation of progress in achieving water quality improvement. The development and implementation of Farm Plans was a requirement of the 2004 Agricultural Order. This Order renews the requirement to prepare the Farm Plan, and adds new conditions requiring each discharger to verify the implementation of management practices focused on resolving water quality issues and for a subset of dischargers considered a higher threat to water quality to conduct individual discharge monitoring to verify the effective implementation of management practices.

109. Dischargers can significantly reduce the potential impact from agricultural discharges by the effective implementation of management practices identified in Farm Plans focused on priority water quality issues related to the specific operation and watershed.

110. Individual on-farm water quality monitoring is critical to adaptively manage and effectively implement practices to protect water quality. The data and reporting will inform the Discharger, the Water Board, and the public regarding compliance with this Order, and increases the potential success in adapting management practices to address priority water quality issues. Dischargers participating in on-farm water quality monitoring have reported, in some cases, significant reduction or elimination of their discharge of waste through effective and adaptive management practice implementation.

111. Agricultural discharges, especially surface irrigation runoff, have the potential to transport sediments and associated waste constituents that exceed water quality standards. Minimizing irrigation runoff is an effective way to minimize and/or eliminate agricultural discharges of waste to waters of the State.

112. Agricultural water quality research identifies the importance of minimizing the amount of water runoff coming from farms. Irrigation runoff occurs when the application rate of the irrigation system exceeds the infiltration rate of the soil due to numerous factors, including poor irrigation efficiency. The percent of applied water lost to runoff may start off low, and increase towards the end of longer irrigations, or with frequent irrigation where soil is saturated. Fields with soils susceptible to low infiltration rates may lose 5 percent to 30 percent or more of their applied water to runoff.

113. Applying fertilizer, soil amendments, or agricultural products directly through an irrigation system (fertigation) increases nitrate levels in irrigation water. Runoff from fertigations is likely to be extremely high in nitrate concentrations. Agricultural research conducted in the Pajaro Valley and Salinas Valley watersheds has

identified nitrate values in agricultural tailwater and drainage ditches exceeding 100 mg/L nitrate in some cases (more than ten times the drinking water standard, and likely more than 100 times the level necessary to protect aquatic life) (Anderson, 2003).

114. Agricultural studies document the common over-application of fertilizers, and fertilizer and animal manure are the most dominant and widespread nitrate sources to groundwater (Harter, 2009; Kitchen, 2008; Lawrence Livermore National Lab GAMA Studies Llagas subbasin, 2005). Effective irrigation and nutrient management practices to reduce the concentration of nutrients in irrigation runoff, deep percolation, and stormwater, include but are not limited to, irrigation efficiency to reduce runoff and deep percolation, nutrient budgeting to optimize fertilizer application and eliminate excessive nutrient applications, and techniques to trap nutrients between crop growing seasons and during intense periods of rainfall.

115. Agricultural studies and practices demonstrate that minimizing the production of polluted tailwater through irrigation efficiency and nutrient management practices and keeping runoff from leaving the farm is cost effective (Meals, 1994). Improving irrigation water application according to real time soil moisture data has resulted in some of the lowest concentrations of nutrients in percolating waters, confirming that irrigation efficiency is a key factor in reducing leaching of nutrients (United Water Conservation District, 2007).

116. Agricultural land uses can disrupt the natural vegetation-soil cycles and biota diversity, keeping the soil surface unprotected and vulnerable to erosive forces (wind and rain), which increases the amount of sediments dispersed and transported from agricultural lands into surface water (USEPA, 2003).

117. Agricultural mechanization and tillage of soil and land for bed preparation, crop maintenance and pest control, can destroy the soil structure and degrade the land, which increases the amount of sediment and associated waste constituents discharged into surface water (Fawcett, 2005).

118. Managing uncropped areas, minimizing and protecting bare soil and heavy use areas and unpaved road from concentrated flows of water, and implementing practices to detain or filter sediment and runoff before it leaves agricultural operations are effective ways to reduce soil erosion and capture sediment before it enters waterways, where it can cause water quality impairments downstream (ANR Publications 8124 and 8071).

119. Stormwater runoff from irrigated lands often results in significant erosion and the discharge of sediment, nutrients, and pesticides. Effective erosion control and sediment control management practices include but are not limited to cover crops, filter strips, and furrow alignment to reduce runoff quantity and velocity, hold fine

particles in place, and increase filtration to minimize the impacts to water quality (USEPA, 1991). Crops grown using impervious plastic can be particularly problematic as they often result in significantly increased irrigation runoff volumes and velocities in agricultural furrows and ditches that may drain to waters of the State.

120. Education and technical assistance is an important tool in advancing the implementation of new effective management practices that protect and enhance water quality.

AGRICULTURAL REGULATORY PROGRAM IMPLEMENTATION

121. The Central Coast Water Board is maximizing regulatory effectiveness by identifying and prioritizing actions that address the most significant agricultural water quality problems in the Central Coast Region, including nitrate in groundwater from discharge related to excess fertilizer application, the discharge of waste in agricultural tailwater, surface water toxicity resulting from pesticides, surface water nutrients from fertilizer, increasing salinity, sediment discharge, and degradation of aquatic habitat.

122. The Central Coast Water Board is addressing priority agricultural water quality issues, on a watershed basis in coordination with other Water Board programs and efforts, focused in the most intensive agricultural areas of the region including the Salinas, Pajaro, and Santa Maria watersheds. In addition, Central Coast Water Board staff will assess and track progress towards specific measures of water quality improvement, and adapt to the feedback the tracking provides.

123. The Central Coast Water Board will evaluate compliance of individual Dischargers with the terms and conditions of this Order based on enrollment information, threat of water quality impairment, content of technical reports (including Annual Compliance Document, Farm Plan, Irrigation and Nutrient Management Plan, and Water Quality Buffer Plan), prioritized inspections, and water quality monitoring data. In addition to the determination of noncompliance and water quality impairment, the Central Coast Water Board will enforce the conditions of this Order in a manner similar to enforcement of WDRs and consistent with the State Water Board's Enforcement Policy, focusing on the highest priority water quality issues and most severely impaired waters.

124. The Central Coast Water Board will consider the history of compliance and violations and progress made toward compliance and water quality improvement demonstrated by individual Dischargers when determining potential enforcement actions. In some cases, the Central Coast Water Board may terminate coverage under this Order and require the Discharger to submit a ROWD and comply with the Water Code pursuant to individual WDRs.

PART B. RELEVANT PLANS, POLICIES, AND REGULATIONS

Water Quality Control Plan

The *Water Quality Control Plan for the Central Coast Region* (Basin Plan) was adopted by the Central Coast Water Board in 1975 and is periodically revised. Tables 1A and 1B include a summary of Narrative and Numeric Water Quality Objectives. The Basin Plan is available by contacting the Central Coast Water Board at (805) 549-3147 or by visiting the Central Coast Water Board's website at: http://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/

Other Relevant Plans, Policies, and Regulations

State Water Resources Control Board, Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California,* October 1968.

State Water Resources Control Board, *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*, June 1972.

State Water Resources Control Board, Resolution No. 74-43, *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*, May 1974.

State Water Resources Control Board, Resolution No. 88-63, *Sources of Drinking Water Policy*, May 1988.

State Water Resources Control Board, *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program,* May 2004.

State Water Resources Control Board, *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP)*, February 2005

State Water Resources Control Board, *Water Quality Control Plan for Ocean Waters of California (CA Ocean Plan),* September 2009.

State Water Resources Control Board, *Water Quality Enforcement Policy,* May 20, 2010.

US EPA, *National Toxics Rule*, 40 CFR 131.36, 57 FR 60848, December 1992.

US EPA, *California Toxics Rule*, 40 CFR 131.38, 65 FR 31682, May 2000.

Table 1A. Narrative and Numeric Water Quality Objectives for Surface Water.

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	BENEFICIAL USE
TOXICITY	
Toxicity *(BPGO, III-4)* *Narrative Objective:* All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life. *Indicators of Narrative Objective:* Chemical concentrations in excess of toxic levels for aquatic life including but not limited to the following: Chlorpyrifos 0.025 ug/L Diazinon 0.14 ug/L *(Source: Sipmann and Finlayson 2000)*	All Surface Waters
TOXICANTS	
Nutrients	
Ammonia, Total (N) *(BPSO, Table 3.3)* >30 mg/L NH4-N	AGR
Ammonia, **Un-ionized** *(BPGO, III-4)* 0.025 mg/L NH3 as N	All Surface Waters
Nitrate *(a. BPSO, Table 3-2* *b. BPSO, Table 3-3)* a. 10 mg/L NO3-N b. >30 mg/L NO3-N	a. MUN b. AGR
Organics	
Chemical Constituents *(BPSO, III-5 and* *Table 3-2)* Waters shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Article 4, Chapter 15,	MUN

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
Section 64435, Tables 2 and 3 as listed in Table 3-2.	
Chemical Constituents *(BPSO, III-5 and Table 3-3)* Waters shall not contain concentrations of chemical constituents in amounts which adversely affect the agricultural beneficial use. Interpretation of adverse effect shall be as derived from the University of California Agricultural Extension Service guidelines provided in Table 3-3. In addition, waters used for irrigation and livestock watering shall not exceed concentrations for those chemicals listed in Table 3-4	AGR
Chemical Constituents *(BPSO, III-10, Table 3-5, Table 3-6)* Waters shall not contain concentrations of chemical constituents known to be deleterious to fish or wildlife in excess of the limits listed in Table 3-5 or Table 3-6.	COLD, WARM, MAR
Oil and Grease *(BPGO, III-3)* *Narrative Objective:* Waters shall not contain oils, greases, waxes, or other similar materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.	All Surface Waters
Organic Chemicals *(BPSO, III-5 and Table 3-1)* All inland surface waters, enclosed bays, and estuaries shall not contain concentrations of organic chemicals in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Chapter 15, Article 5.5, Section 64444.5, Table 5 and listed in Table 3-1.	MUN
Other Organics *(BPGO, III-3)* **Phenol** *(BPSO, III-5)* Waters shall not contain organic substances in concentrations greater than the following:	All Surface Waters

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
Methylene Blue Activated Substances < 0.2 mg/L Phenols < 0.1 mg/L Phenol (MUN) ≤ 1.0 µg/L PCB's < 0.3 µg/L Phthalate Esters < 0.002 µg/L	
Metals	
Chromium *(BOSP, III-12)* ≤ 0.01 mg/L	SHELL
Cadmium *(BPGO, III-11)* ≤ 0.03 mg/L in hard water or ≤.0.004 mg/L in soft water (Hard water is defined as water exceeding 100 mg/L $CaCO_3$).	COLD, WARM
Chromium *(BPGO, III-11)* ≤ 0.05 mg/L	COLD, WARM
Copper *(BPGO, III-11)* ≤ 0.03 mg/L in hard water or ≤.0.01 mg/L in soft water (Hard water is defined as water exceeding 100 mg/L $CaCO_3$).	COLD, WARM
Lead *(BPGO, III-11)* ≤ 0.03 mg/L	COLD, WARM
Mercury *(BPGO, III-11)* ≤ 0.0002 mg/L	COLD, WARM
Nickel *(BPGO, III-11)* ≤ 0.4 mg/L in hard water or	COLD, WARM

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
≤.0.1 mg/L in soft water (Hard water is defined as water exceeding 100 mg/L $CaCO_3$).	
Zinc *(BPGO, III-11)* ≤ 0.2 mg/L in hard water or ≤.0.004 mg/L in soft water (Hard water is defined as water exceeding 100 mg/L $CaCO_3$).	COLD, WARM
CONVENTIONALS	
Biostimulatory Substances *(BPGO, III-3)* *Narrative Objective:* Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. *Indicators of Narrative Objective:* Indicators of biostimulation include chlorophyll-a, dissolved oxygen, phosphorous, and nitrate. Water Board staff estimates that 1 mg/L nitrate is necessary to protect aquatic life beneficial uses from biostimulation. *(Source: Central Coast Water Board. April 2009. Central Coast Ambient Monitoring Program Technical Paper: Interpreting Narrative Objectives for Biostimulatory Substances Using the Technical Approach for Developing California Nutrient Numeric Endpoints)*	All Surface Waters
Boron *(BPSO, III-13)* Waterbody specific. Median values, shown in Table 3-7 for surface waters. Sub-Basins Objectives range from 0.2 – 0.5 mg/L.	Specific Surface Waters
Chloride *(BPSO, III-13)* Waterbody specific. Median values, shown in Table 3-7 for surface waters. Sub-Basins Objectives range from 150-1400 mg/L.	Specific Surface Waters
Color *(BPGO, III-3)* Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses. Coloration attributable to materials of waste origin shall not be	All Surface Waters

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
greater than 15 units or 10 percent above natural background color, whichever is greater.	
Conductivity *(BPSO, III-8, Table 3-3)* >3.0 mmho/cm	AGR
Dissolved Oxygen (DO) *(BPGO, III-2)* Mean annual DO $\geq$ 7.0 mg/L Minimum DO $\geq$ 5.0 mg/L	All Ocean Waters
Dissolved Oxygen *(BPGO, III-4)* For waters not mentioned by a specific beneficial use: DO $\geq$ 5.0 mg/L DO Median values $\geq$ 85 percent saturation	All Surface Waters
Dissolved Oxygen *(BPSO, III-10)* DO $\geq$ 7.0 mg/L	COLD, SPWN
Dissolved Oxygen *(BPSO, III-10)* DO $\geq$ 5.0 mg/L	WARM
Floating Material *(BPGO, III-3)* *Narrative Objective:* Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.	All Surface Waters
pH *(BPSO, III-10)* The pH value shall not be depressed below 7.0 nor above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters.	COLD, WARM,

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
pH ***(****BPSO, III-10)* The pH value shall not be depressed below 7.0 or raised above 8.5[1]. Changes in normal ambient pH levels shall not exceed 0.2 units.	MAR
pH ***(****BPSO, III-5)* The pH value shall not be depressed below 6.5 nor above 8.3.	MUN, REC-1, REC-2, AGR
Settleable Material *(BPGO, III-3)* *Narrative Objective:* Waters shall not contain settleable material in concentrations that result in deposition of material that causes nuisance or adversely affects beneficial uses.	All Surface Waters
Sodium *(BPSO, III-13)* Waterbody specific. Median values, shown in Table 3-7 for surface waters. Sub-Basins Objectives range from 20-250 mg/L.	
Sulfate *(BPSO, III-13)* Waterbody specific. Median values, shown in Table 3-7 for surface waters. Sub-Basins Objectives range from 10-700 mg/L.	
Suspended Sediment *(BPGO, III-3)* *Narrative Criteria:* The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.	All Surface Waters
Suspended Material *(BPGO, III-3)* *Narrative Criteria:* Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	All Surface Waters

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
Taste and Odor *(BPGO, III-3)* *Narrative Criteria:* Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance, or that adversely affect beneficial uses.	All Surface Waters
Temperature *(BPGO, III-3)* *Narrative Criteria:* Natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.	All Surface Waters
Temperature *(BPGO, III-4)* *Narrative Objective:* Natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses. *a) Indicators of Narrative Objective for COLD Habitat:* **Coho** December - April 48-54 ºF 7-DAM[2] 56-58 ºF 1-DAM May – November 57-63 ºF 7-DAM 68-70 ºF 1-DAM **Steelhead** December - April 55-57 ºF 7-DAM 56-58 ºF 1-DAM May – November 56-63 ºF 7-DAM 70-73 ºF 1-DAM *(Source: Hicks 2000)* *b) Indicators of Narrative Objective for WARM Habitat:*	All Surface Waters a) COLD

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
Stickleback Upper optimal limit = 75 ºF (This temperature is also the low end of the upper lethal limit for steelhead) *(Source: Moyle 1976)* Note: 7-DAM refers to the rolling arithmetic average of seven consecutive daily maximum temperatures. 1-DAM refers to the highest daily maximum temperature.	b) WARM
Temperature *(BPSO, III-10)* At no time or place shall the temperature be increased by more than 5°F above natural receiving water temperature.	COLD, WARM
Total Dissolved Solids (TDS) *(BPSO, III-13)* Waterbody specific. Median values, shown in Table 3-7 for surface waters. Sub-Basins Objectives range from 10-250 mg/L.	
Turbidity *(BPGO, III-3 and* *WDR R3-2006-0032)* Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits in receiving water: a. Five NTU, where natural turbidity is less than 25 NTU b. Twenty percent, where natural turbidity is between 25 and 50 NTU. c. Ten NTU, where natural turbidity is between 50 and 100 NTU. d. Ten percent, where natural turbidity is greater than 100 NTU.	All Surface Waters
PATHOGEN INDICATORS	
Fecal Coliform *(BOSP,III-5)* Log mean 200 MPN/100mL. Max 400 MPN/100mL.	REC-1
Fecal Coliform *(BOSP,III-10)* Log mean 2000 MPN/100mL.	REC-2

SURFACE WATER QUALITY OBJECTIVE *(Source of WQO-Page in Basin Plan)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
Max 4000 MPN/100mL.	
E. coli *(USEPA)* Max 235 MPN/100 mL	REC-1
Total Coliform *(BOSP,III-12)* Median $\leq$ 70/100 MPN/100mL Max 230 MPN/100 mL	SHELL

Table 1B. Narrative and Numeric Water Quality Objectives for Groundwater.

GROUNDWATER QUALITY OBJECTIVE *(Source of WQO-Page in BP)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
TOXICANTS	
Chemical Constituents *(BPSO, III-14)* Groundwaters shall not contain concentrations of chemical constituents in excess of federal or state drinking water standards.	MUN
Chemical Constituents *(BPSO, III-14 and Tables 3-3 and 3-4)* Groundwaters shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use. Interpretation of adverse effect shall be as derived from the University of California Agricultural Extension Service guidelines provided in Table 3-3. In addition, water used for irrigation and livestock watering shall not exceed the concentrations for those chemicals listed in Table 3-4.	AGR
Total Nitrogen *(BPSO, III-15 and Table 3-8)* Groundwater Basin Objectives for Median values range from 1-10 mg/L as N.	Specific Groundwater Basins

GROUNDWATER QUALITY OBJECTIVE *(Source of WQO-Page in BP)* (Objectives are numeric unless labeled "narrative")	**BENEFICIAL USE**
CONVENTIONALS	
Total Dissolved Solids (TDS) *(BPSO, III-15)* Groundwater Basin Objectives for median values range from 100-1500 mg/L TDS.	Specific Groundwater Basins
Chloride (Cl) *(BPSO, III-15)* Groundwater Basin Objectives for median values range from 20-430 mg/L Cl.	Specific Groundwater Basins
Sulfate (SO_4) *(BPSO, III-15)* Groundwater Basin Objectives for median values range from 10-1025 mg/L SO_4.	Specific Groundwater Basins
Boron (B) *(BPSO, III-15)* Groundwater Basin Objectives for median values range from 0.1-2.8 mg/L B.	Specific Groundwater Basins
Sodium (Na) *(BPSO, III-15)* Groundwater Basin Objectives for median values range from 10-730 mg/L.	Specific Groundwater Basins

Acronyms:
BP = Basin Plan or Water Quality Control Plan for the Central Coast Region
BPGO = Basin Plan General Objective
BPSO = Basin Plan Specific Objective related to a designated beneficial use
TMDL = Specific Objective related to an adopted Total Maximum Daily Load
WDR = Waste Discharge Requirements
SB = State Board established guideline
USEPA = US Environmental Protection Agency
CCAMP = Central Coast Ambient Monitoring Program
SWAMP = Surface Water Ambient Monitoring Program
MCL = Maximum Contaminant Level, California drinking water standards set forth in California Code of Regulations, Title 22.
NTU = Nephelometric Turbidity Unit
mg/L = milligram/Liter
MPN = Most Probable Number

PART C. DEFINITIONS

The following definitions apply to Order No. R3-2010-0006, and Monitoring and Reporting Program as related to discharges of waste from irrigated lands. The terms are arranged in alphabetical order. All other terms not explicitly defined for the purposes of this Order and Monitoring and Reporting Program shall have the same definitions as prescribed by California Water Code Division 7 or are explained within the Order or the Monitoring and Reporting Program documents.

1. Anti-degradation. The State Water Board established a policy to maintain high quality waters of the State - Resolution 68-16 "*Statement of Policy with Respect to Maintaining High Quality Waters in California*." Resolution 68-16 requires existing high quality water to be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of water, and will not result in water quality less than that prescribed in the policies. Regional Water Boards are required to ensure compliance with Resolution 68-16. The Central Coast Water Board must require discharges to be subject to *best practicable treatment or control* of the discharge necessary to avoid pollution or nuisance and to maintain the highest water quality consistent with maximum benefit to the people of the State. Resolution 68-16 has been approved by the USEPA to be consistent with the federal anti-degradation policy.

2. Aquatic Habitat. The physical, chemical, and biological components and functions of riparian areas and wetlands and their buffer zones.

3. Back flow Prevention. Back flow prevention devices are installed at the well or pump to prevent contamination of groundwater or surface water when fertilizers, pesticides, fumigants, or other chemicals are applied through an irrigation system. Back flow prevention devices used to comply with this Order must be those approved by USEPA, DPR, CDPH, or the local public health or water agency.

4. Basin Plan. The Basin Plan is the Central Coast's Region Water Quality Control Plan. The Basin Plan describes how the quality of the surface and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan includes beneficial uses, water quality objectives, and a program of implementation.

5. Beneficial Uses. The Basin Plan establishes the beneficial uses to be protected in the Central Coast Region. Beneficial uses for surface water and groundwater are divided into twenty-four standard categories identified below. The following beneficial uses have been identified in waterbodies within the Region:

- agricultural supply (AGR)
- aquaculture (AQUA)
- areas of special biological significance (ASBS)
- cold freshwater habitat (COLD)
- commercial and sportfishing (COMM)
- estuarine habitat (EST)
- freshwater replenishment (FRESH)
- groundwater recharge (GWR)
- hydropower generation (POW)
- industrial process supply (PRO)
- industrial service supply (IND)
- inland saline water habitat (SAL)
- marine habitat (MAR)
- municipal and domestic supply (MUN)
- migration of aquatic organisms (MIGR)
- navigation (NAV)
- non-contact recreation (REC2)
- preservation of biological habitats of special significance (BIOL)
- rare, threatened or endangered species (RARE)
- shellfish harvesting (SHELL
- spawning, reproduction, and development (SPWN)
- warm freshwater habitat (WARM)
- water contact recreation (REC1)
- wildlife habitat (WILD)

6. Chemigation. The application of pesticides, fertilizers, fumigants or other chemicals through an irrigation system.

7. Commercial. Irrigated lands producing commercial crops are those operations that have one or more of the following characteristics:

    a. The property owner/operator holds a current Operator Identification Number/Permit Number for pesticide use reporting;
    b. The crop is sold, including but not limited to (1) an industry cooperative, (2) harvest crew/company, or (3) a direct marketing location, such as Certified Farmers Markets;.
    c. The federal Department of Treasury Internal Revenue Service form 1040 Schedule F Profit or Loss from Farming is used to file federal taxes.

8. Concentration. The relative amount of a substance mixed with another substance. An example is 5 parts per million (ppm) of nitrogen in water or 5 mg/L.

9. Discharge. A release of a waste to waters of the State, either directly to surface waters or through percolation to groundwater. Wastes from irrigated agriculture include but are not limited to earthen materials (soil, silt, sand, clay, and rock), inorganic materials (metals, plastics, salts, boron, selenium, potassium, nitrogen, phosphorus, etc.) and organic materials such as pesticides.

10. Discharger. The owner and operator of irrigated lands that discharge or have the potential to discharge waste that could directly or indirectly reach waters of the State and affect the quality of any surface water or groundwater.

11. Discharges of Waste from Irrigated Lands. Surface water and groundwater discharges, such as irrigation return flows, tailwater, drainage water, subsurface drainage generated by irrigating crop land or by installing and operating drainage systems to lower the water table below irrigated lands (tile drains), stormwater runoff flowing from irrigated lands, stormwater runoff conveyed in channels or canals resulting from the discharge from irrigated lands, runoff resulting from frost control, and/or operational spills containing waste.

12. Ephemeral Stream. A channel that holds water during and immediately after rain events.

13. Erosion. The wearing away of land surface by wind or water, intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

14. Erosion and Sediment Control Practices. Practices used to prevent and reduce the amount of soil and sediment entering surface water in order to protect or improve water quality.

15. Environmental Justice. Providing equal and fair access to a healthy environment for communities of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies; and proactive efforts to take into account existing environmental injustices and to protect from new or additional environmental hazards and inequitable environmental burdens;

16. Exceedance. A reading using a field instrument or a detection by a California State-certified analytical laboratory where the detected result is above an applicable water quality standard for the parameter or constituent. For toxicity tests, an exceedance is a result that is statistically lower than the control sample test result.

17. Farm. For the purposes of this Order, a tract of land or operation where commercial crops are produced made up of a parcel(s) that have a similar operator or landowner(s).

18. Farm Water Quality Management Plan (Farm Plan). The Farm Plan is a document that contains, at a minimum, identification of management practices that are being or will be implemented to protect and improve water quality by addressing irrigation management, pesticide management, nutrient management, salinity management, sediment and erosion control, and aquatic habitat protection. Farm Plans also contain a schedule for the effective implementation of management practices and verification monitoring to determine compliance with the requirements of this Order (schedules, milestones, effluent limits, etc.). Consistent with the Conditional

Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands adopted by the Board in July 2004 (Order No. R3-2004-0117), this Order requires Dischargers to develop and implement a Farm Plan focused on the priority water quality issues associated with a specific operation and the priority water quality issues associated with a specific watershed or subwatershed.

19. Fertigation. The application of fertilizers through an irrigation system.

20. Freshwater Habitat. Uses of water that support cold or warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

21. Groundwater. The supply of water found beneath the earth's surface, usually in aquifers, which supply wells and springs.

22. Groundwater Protection Practices. Management practices designed to reduce or eliminate transport of nitrogen, pesticides, and other waste constituents into groundwater.

23. Integrated Pest Management Program (IPM). A pest management strategy that focuses on long-term prevention or suppression of pest problems through a combination of techniques such as encouraging biological control, use of resistant varieties, or adoption of alternative cultivating, pruning, or fertilizing practices or modification of habitat to make it incompatible with pest development. Pesticides are used only when careful field monitoring indicates they are needed according to pre-established guidelines or treatment thresholds.

24. Intermittent Stream. A stream that holds water during wet portions of the year.

25. Irrigated Lands. For the purpose of this Order, irrigated lands include lands where water is applied for the purpose of producing commercial crops and include, but are not limited to, land planted to row, vineyard, field and tree crops as well as commercial nurseries, nursery stock production and greenhouse operations with soil floors, that do not have point-source type discharges, and are not currently operating under individual Waste Discharge Requirements (WDRs). Lands that are planted to commercial crops that are not yet marketable, such as vineyards and tree crops, must also obtain coverage under this Order.

26. Irrigation. Applying water to land areas to supply the water and nutrient needs of plants.

27. Irrigation Management Practices. Management practices designed to improve irrigation efficiency and reduce the amount of irrigation return flow or tailwater, and

associated degradation or pollution of surface and groundwater caused by discharges of waste associated with irrigated lands.

28. Irrigation Runoff or Return Flow. Surface and subsurface water that leaves the field following application of irrigation water. See also, Tailwater.

29. Irrigation System Distribution Uniformity. Irrigation System Distribution Uniformity is a measure of how uniformly irrigation water is applied to the cropping area, expressed as a percentage. A nonuniform distribution can deprive portions of the crop of sufficient irrigation water, and can result in the excessive irrigation leading to water-logging, plant injury, salinization, irrigation runoff and transport of chemicals to surface water and groundwater.

30. Landowner. An individual or entity who has legal ownership of a parcel(s) of land. For the purposes of this Order, the landowner is responsible for ensuring compliance with this Order and for any discharge of waste occurring on or from the property.

31. Load. The concentration or mass of a substance discharged over a given amount of time, for example 10 mg/L/day or 5 Kg/day, respectively.

32. Monitoring. Sampling and analysis of receiving water quality conditions, discharge water quality, aquatic habitat conditions, effectiveness of management practices, and other factors that may affect water quality conditions to determine compliance with this Order or other regulatory requirements. Monitoring includes but is not limited to: surface water or groundwater sampling, on-farm water quality monitoring undertaken in connection with agricultural activities, monitoring to identify short and long-term trends in in-stream water quality or discharges from sites, inspections of operations, management practice implementation and effectiveness monitoring, maintenance of on-site records and management practice reporting.

33. Nitrate Hazard Index. In 1995, the University of California Center for Water Resources (WRC) developed the Nitrate Groundwater Pollution Hazard Index (Nitrate Hazard Index). The purpose of the Nitrate Hazard Index is to identify agricultural fields with the highest vulnerability for nitrate pollution to groundwater, based on soil, crop, and irrigation practices. The hazard index number can range from 1 through 80 with the hazard increasing with increasing hazard index number. The WRC states that an index number greater than 20 indicates greater risk for nitrate pollution to groundwater and should receive careful attention. http://www.lib.berkeley.edu/WRCA/WRC/wqp_hazard.html

34. Nitrate Loading Risk Factor. A measure of the relative risk of loading nitrate to groundwater based on the following criteria a) Nitrate Hazard Index Rating by Crop Type, b) Irrigation System Type, and c) Irrigation Water Nitrate Concentration.

35. Non-point Source Pollution (NPS). Diffuse pollution sources that are generally not subject to NPDES permitting. The wastes are generally carried off the land by runoff. Common non-point sources are activities associated with agriculture, timber harvest, certain mining, dams, and saltwater intrusion.

36. Non-Point Source Management Measures. To combat NPS pollution, the State Water Board NPS Program adopted management measures as goals for the reduction of polluted runoff generated from five major categories, including agriculture. Management measures address the following components for agriculture: Erosion and sediment control; facility wastewater and runoff from confined animal facilities; nutrient management; pesticide management; irrigation water management; grazing management, and groundwater protection.

37. Non-Point Source Management Practices. Methods or practices selected by entities managing land and water to achieve the most effective, practical means of preventing or reducing pollution from diffuse sources, such as wastes carried off the landscape via urban runoff, excessive hill, slope or streambed and bank erosion, etc. Management Practices include, but are not limited to, structural and nonstructural controls and operation and maintenance procedures. Management Practices can be applied before, during, and after pollution-causing activities to prevent, reduce, or eliminate the introduction of wastes into receiving waters.

38. Nutrient. Any substance assimilated by living things that promotes growth.

39. Nutrient Management Practices. Management practices designed to reduce the nutrient loss from agricultural lands, which occur through edge-of-field runoff or leaching from the root zone.

40. Operator. Person responsible for or otherwise directing farming operations in decisions that may result in a discharge of waste to surface water or groundwater, including, but not limited to, a farm/ranch manager, lessee or sub-lessee. The operator is responsible for ensuring compliance with this Order and for any discharge of waste occurring on or from the operation.

41. Operation. A distinct farming business, organized as a sole proprietorship, partnership, corporation, and/or cooperative.

42. Operational Spill. Irrigation water that is diverted from a source such as an irrigation well or river, but is discharged without being delivered to or used on an individual field.

43. Perennial Stream. A stream that holds water throughout the year.

44. Pesticide Management Practices. Management practices designed to reduce or eliminate pesticide runoff into surface water and groundwater.

45. Point Source. Any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which wastes are or may be discharged.

46. Pollutant. The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water, including dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

47. Quality of the Water. The "chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use" as defined in the California Water Code Sec. 13050(g).

48. Receiving Waters. Surface waters or groundwater that receive or have the potential to receive discharges of waste from irrigated lands.

49. Requirements of Applicable Water Quality Control Plans. Water quality objectives, prohibitions, Total Maximum Daily Load (TMDL) Implementation Plans, or other requirements contained in the Basin Plan, as adopted by the Central Coast Water Board and approved according to applicable law.

50. Riparian Area. Vegetation affected by the surface water or groundwater of adjacent perennial or intermittent streams, lakes or other waterbodies. Vegetation species are distinctly different from adjacent areas or are similar to adjacent areas but exhibit more vigorous or robust growth forms indicative of increased soil moisture. Riparian areas may also include floodplains. Floodplains are critical areas for retaining floodwaters, allowing for sediment deposition and the natural movement of riparian areas, as well as space for colonization of new riparian and wetland vegetation necessary due to natural meandering. (Dall et. al. 1997, p.3)

51. Source of Drinking Water. Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan and/or as defined in SWRCB Resolution No. 88-63.

52. Stormwater. Stormwater runoff, snow melt runoff, and surface runoff and drainage, as defined in 40 CFR 122.26(b)(13).

53. Subsurface Drainage. Water generated by installing drainage systems to lower the water table below irrigated lands. The drainage can be generated by subsurface drainage systems, deep open drainage ditches or drainage wells.

54. Surface Runoff. Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions; a major transporter of non-point source wastes in rivers, streams, and lakes.

55. Tailwater. Runoff of irrigation water from the lower end of an irrigated field. See also, Irrigation Runoff or Return Flow.

56. Tile Drains. Subsurface drainage which removes excess water from the soil profile, usually through a network of perforated tile tubes installed 2 to 4 feet below the soil surface. This lowers the water table to the depth of the tile over the course of several days. Drain tiles allow excess water to leave the field. Once the water table has been lowered to the elevation of the tiles, no more water flows through the tiles.

57. Total Maximum Daily Load (TMDL). The condition of an impaired surface waterbody (on the List of Impaired Waterbodies) that limits the amount of pollution that can enter the waterbody without adversely affecting its beneficial uses, usually expressed as a concentration (e.g., mg/L) or mass (e.g., kg); TMDLs are proportionally allocated among dischargers to the impaired surface waterbody.

58. Total Nitrogen Applied. Total nitrogen applied includes nitrogen in any product, form or concentration) including, but not limited to, organic and inorganic fertilizers, slow release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and nitrate in irrigation water; Reported in units of nitrogen per crop, per acre for each farm/ranch or nitrate loading risk unit;

59. Waste. "Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal" as defined in the California Water Code Sec. 13050(d). "Waste" includes irrigation return flows and drainage water from agricultural operations containing materials not present prior to use. Waste from irrigated agriculture includes *earthen materials* (such as soil, silt, sand, clay, rock), *inorganic materials* (such as metals, salts, boron, selenium, potassium, nitrogen, phosphorus), and *organic materials* such as pesticides.

60. Water Quality Buffer. A water quality protection zone surrounding perennial or intermittent channels with riparian vegetation and/or riparian functions that support beneficial uses and protect water quality.

61. Water Quality Control. The "regulation of any activity or factor which may affect the quality of the waters of the State and includes the prevention and correction of water pollution and nuisance" as defined in the California Water Code Sec. 13050(i).

62. Water Quality Criteria. Levels of water quality required under Sec. 303(c) of the Clean Water Act that are expected to render a body of water suitable for its designated uses. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes. The *California Toxics Rule* adopted by USEPA in April 2000, sets numeric Water Quality Criteria for non-ocean waters of California for a number of pollutants. See also, Water Quality Objectives.

63. Water Quality Objectives. "Limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area," as defined in Sec. 13050(h) of the California Water Code. Water Quality Objectives may be either numerical or narrative and serve as Water Quality Criteria for purposes of Section 303 of the Clean Water Act. Specific Water Quality Objectives relevant to this Order are identified in this Appendix A in Tables 1A and 1B.

64. Water Quality Standard. Provisions of State or Federal law that consist of the beneficial designated uses or uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular waterbody, and an anti-degradation statement. Water quality standards includes water quality objectives in the Central Coast Water Board's Basin Plan, water quality criteria in the California Toxics Rule and National Toxics Rule adopted by USEPA, and/or water quality objectives in other applicable State Water Board plans and policies. Under Sec. 303 of the Clean Water Act, each State is required to adopt water quality standards.

65. Waters of the State. "Any surface water or groundwater, including saline waters, within the boundaries of the State" as defined in the California Water Code Sec. 13050(e), including all waters within the boundaries of the State, whether private or public, in natural or artificial channels, and waters in an irrigation system.

66. Wetland. Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 230.3(t)).

67. Wildlife Habitat. Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.