

**CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906**

RESOLUTION NO. R3-2016-0003

**AMENDING THE WATER QUALITY CONTROL PLAN FOR THE CENTRAL COASTAL
BASIN TO ADOPT TOTAL MAXIMUM DAILY LOADS FOR SEDIMENT TOXICITY AND
PYRETHROID PESTICIDES IN SEDIMENT IN THE LOWER SALINAS RIVER WATERSHED**

The Central Coast Regional Water Quality Control Board (Central Coast Water Board) finds:

1. The Central Coast Water Board adopted the Water Quality Control Plan for the Central Coastal Basin (Basin Plan) on March 14, 1975. The Basin Plan designates beneficial uses and water quality objectives, implementation programs for achieving water quality objectives addressing point source and nonpoint source discharges, prohibitions, and incorporates statewide plans and policies. The Basin Plan is periodically reviewed and revised. The Central Coast Water Board has determined that the Basin Plan requires further revision and amendment.
2. The Central Coast Water Board periodically revises and amends the Basin Plan. The Central Coast Water Board has determined the Basin Plan requires further revision and amendment to incorporate Total Maximum Daily Loads (TMDLs) and an implementation plan for sediment toxicity and pyrethroid pesticides in sediment for streams in the lower Salinas River watershed, which includes the waterbodies: Alisal Creek, Alisal Slough, Blanco Drain, Chualar Creek, Espinosa Slough, Gabilan Creek, Merritt Ditch, Natividad Creek, Old Salinas River, Quail Creek, Reclamation Canal, Salinas River (Lower), and Tembladero Slough.
3. The geographic scope of these TMDLs encompasses the approximately 250,000-acre lower Salinas River watershed located in northern Monterey County. The watershed is transected by two major drainages, the Salinas River and Reclamation Canal/Tembladero Slough that flow northward towards Monterey Bay and the Pacific Ocean. Irrigated agricultural crops comprised of primarily lettuce, broccoli, and strawberries dominate the rich alluvial valley floor. The major urban area is the City of Salinas in the center of the watershed with a population of approximately 150,000. There are also several much smaller communities (Castroville, Spreckels, and Chualar), within the jurisdiction of the County of Monterey. The valley is bound to the northeast by the Gabilan Range and to the Southwest by the Sierra de Salinas mountains. Grassland, chaparral, and oak woodland make up substantial parts of the upland watersheds.
4. Multiple waterbodies within the lower Salinas River watershed are listed on California's Clean Water Act section 303(d) list (303(d) List) for water quality impairments due to sediment toxicity. Additionally, multiple impairments not identified on the current 303(d) List were identified during development of the TMDL; the additional impairments are due to sediment toxicity and the presence of pyrethroid pesticides in sediment. Current 303(d) Listings and the additional impairments, all of which are addressed in the TMDL, are summarized in the table below. Due to the 303(d) Listings, the Central Coast Water Board is required to adopt a TMDL and an associated implementation plan (40 CFR [Code of Federal Regulations]130.6(c)(1) and 130.7; California Water Code section 13242).
5. The Central Coast Water Board is also undertaking this action under its authority in Porter-Cologne. This TMDL establishes a program of implementation for achieving water quality

objectives for the additional impairments identified during the development of this TMDL that are not yet listed on the 303(d) List. (California Water Code section 13242.)

Waterbody	303(d) Listed Pollutant	Additional Impairments ¹
Alisal Creek	--	Sediment Toxicity, Pyrethroids
Alisal Slough	Sediment Toxicity	--
Blanco Drain	--	Sediment Toxicity
Chualar Creek	--	Sediment Toxicity
Espinosa Slough	Sediment Toxicity	--
Gabilan Creek	Sediment Toxicity	--
Merrit Ditch	Sediment Toxicity	
Natividad Creek	Sediment Toxicity	Pyrethroids
Old Salinas River	Sediment Toxicity	--
Quail Creek	Sediment Toxicity	--
Salinas Reclamation Canal	Sediment Toxicity	Pyrethroids
Salinas River (lower)	--	Sediment Toxicity, Pyrethroids
Tembladero Slough	Sediment Toxicity	Pyrethroids

¹ Additional impairments are exceedances of water quality objectives in waterbodies identified during TMDL development and subsequent to the most recent 2010 303(d) listing cycle.

6. Waters described as additional impairments in Finding 4 are impaired due to the pollutants described in Finding 4. The additional impairments are not waters currently listed as impaired on the Clean Water Act section 303(d) List. However, the additional impairments qualify for inclusion on the 303(d) List per in the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (State Water Board Resolution No. 2004-0063). The Central Coast Water Board is developing the 2016 303(d) list that will be submitted to the State Water Board for approval. Alisal Creek, Blanco Drain, Chualar Creek, and Salinas River (lower) will be included in the draft 2016 303(d) list for sediment toxicity. As well, the Salinas Reclamation Canal will also be included for permethrin. The other waterbody/Pyrethroid combinations do meet the criteria for inclusion but some of the data relied upon by staff occurred after the cutoff for scientific data in the 2016 303(d) list. Therefore, the Central Coast Water Board is asking the State Water Resources Control Board (State Water Board) to also include these impairments on the 2016 303(d) List.
7. The Central Coast Water Board's goal for establishing TMDLs as described in the Basin Plan is to protect and restore beneficial uses of surface waters, which rely on established water quality objectives. There are two general narrative water quality objectives that pertain to the pesticide TMDL. One is the general objective for toxicity and the other is the general objective for pesticides. They are described as follows:

General Objective for Toxicity: 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. Compliance with the objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, toxicity bioassays of appropriate duration, or other appropriate methods.

General Objective for Pesticides: 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.

8. The Central Coast Water Board proposes to amend the Basin Plan by inserting amendments into Chapter Four, Section 9 (Total Maximum Daily Loads).
9. On May 20, 2004, the State Water Board adopted the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (Nonpoint Source Policy). These TMDLs are consistent with the Nonpoint Source Policy. The Nonpoint Source Policy requires the Regional Water Quality Control Boards to regulate all nonpoint sources of pollution using the administrative permitting authorities provided by the Porter-Cologne Water Quality Control Act (Porter-Cologne Act, Water Code Division 7). Consistent with the Nonpoint Source Policy and the Porter-Cologne Act, Regional Water Quality Control Boards regulate nonpoint source discharges with waste discharge requirements, waivers of waste discharge requirements, and/or basin plan prohibitions.
10. On May 20, 2004, the State Water Board adopted the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (State Water Board Resolution No. 2004-0063), hereafter referred to as the California 303(d) Listing Policy. These TMDLs are consistent with the California 303(d) Listing Policy. The California 303(d) Listing Policy describes the process by which the State Water Board and the Regional Water Quality Control Boards will comply with the listing requirements of the federal Clean Water Act. The objective of the California 303(d) Listing Policy is to establish a standardized approach for developing California's Clean Water Act section 303(d) list and to provide guidance for interpreting data and information to make decisions regarding water quality standards attainment.
11. On June 16, 2005, the State Water Board adopted the Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options (State Water Board Resolution 2005-0050), hereafter referred to as the Impaired Waters Policy. These TMDLs are consistent with the Impaired Water Policy. The Impaired Waters Policy provides policy and procedures for adopting TMDLs and addressing impaired waters in California. The Impaired Waters Policy states that the Regional Water Quality Control Boards have independent discretion, broad flexibility, numerous options, and some legal constraints that apply when determining how to address impaired waters.
12. The U.S. Environmental Protection Agency's (USEPA) published TMDL guidance (Guidance for Water Quality-Based Decisions: The TMDL Process – Chapter 1, Policies and Principles, USEPA 404/4-91-001, April 1991) explicitly states that implementation of TMDLs and water quality-based controls should not be delayed due to lack of information and uncertainties about pollution problems, particularly with respect to nonpoint sources. More information about the spatial extent and nature of water quality impairments can be collected during TMDL implementation. At this time, there is sufficient information to develop and implement total maximum daily loads for sediment toxicity and pyrethroid pesticides in sediment in the lower Salinas River watershed.
13. The elements of a TMDL are described in 40 CFR 130.2 and 130.7, section 303(d) of the Clean Water Act, and USEPA guidance documents. A TMDL is defined as "the sum of individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2). The Central Coast Water Board has determined that the TMDLs for sediment toxicity and pyrethroid pesticides in the lower Salinas River watershed are set at levels necessary to attain and maintain the applicable numeric water

quality objectives, taking into account seasonal variations and any lack of knowledge concerning the relationship between effluent limitations and water quality consistent with 40 CFR 130.7 (c) (1). The regulations in 40 CFR 130.7 also state that TMDLs shall take into account critical conditions for stream flow, loading, and water quality parameters. TMDLs are often expressed as a mass load of the pollutant but can be expressed as a unit of concentration if appropriate (40 CFR 130.2(i)). Expressing these TMDLs as units of concentration is appropriate because an existing concentration-based water quality objective is used as the basis for the TMDL numeric target and attaining that concentration-based water quality objective will result in protection of the beneficial uses.

14. Upon establishment of TMDLs by the state or USEPA, the state is required to incorporate the TMDLs, along with appropriate implementation measures, into the State Water Quality Management Plan (40 CFR 130.6(c)(1) and 130.7 and California Water Code sections 13050(j) and 13242). The Basin Plan and applicable statewide plans serve as the State Water Quality Management Plan governing the watersheds under the jurisdiction of the Central Coast Water Board.
15. The TMDLs and implementation plans in the TMDL are based on sound scientific knowledge, methods, and practices in accordance with Health and Safety Code section 57004. Health and Safety Code section 57004 requires external scientific peer review for certain water quality control policies. Scientific portions of these TMDLs are drawn exclusively from the Total Maximum Daily Loads for Toxicity and Pesticides in the Santa Maria Watershed (Resolution No. R3-2014-0009), which received independent scientific peer review in September 2012. As a result, the scientific methodologies used in development of these TMDLs have already undergone external, scientific peer review. As a result, the Central Coast Water Board has fulfilled the requirements of Health and Safety Code section 57004, and the proposed amendment does not require further peer review.
16. Central Coast Water Board staff will conduct a review of implementation activities when monitoring and reporting data are submitted as required by the 2017 Conditional Waiver of Waste Discharge Requirements for Irrigated Lands (Agricultural Order) and existing or future NPDES storm water permits, or when other monitoring data and/or reporting data are submitted outside the requirements of existing permits and orders. Central Coast Water Board staff will pursue modification of Agricultural Order conditions, NPDES stormwater permit conditions, or other regulatory means, as necessary, to address remaining impairments resulting from sediment toxicity and pyrethroid pesticides in sediment during the TMDL implementation phase.
17. Central Coast Water Board staff implemented a process to inform interested persons about the TMDLs. Central Coast Water Board staff's efforts to inform the public and solicit comment included public meetings with interested persons and a public notice and written comment period. Public notice of the proposed Basin Plan amendment provided the public a 45-day public comment period preceding the Central Coast Water Board hearing. Notice of public hearing was given by advertising in a newspaper of general circulation within the Region and by emailing a copy of the notice to all persons requesting such notice and applicable government agencies. Relevant documents and notices were also made available on the Central Coast Water Board website. Central Coast Water Board staff responded to oral and written comments received from the public. All public comments were considered.
18. Adoption of these TMDLs and Basin Plan amendment will not result in any degradation of water quality; in fact, they are designed to improve water quality. As such, these TMDLs and Basin Plan amendment comply with all requirements of both state and federal anti-

degradation requirements (State Board Resolution 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" and 40 CFR 131.12).

19. The Central Coast Water Board recognizes that certain limited resource farmers (as defined by the U.S. Department of Agriculture) may have difficulty achieving compliance with these TMDLs. The Central Coast Water Board will prioritize assistance for these farmers, including, but not limited to, technical assistance, grant opportunities, and necessary flexibility to achieve compliance (e.g., adjusted monitoring, reporting, or time schedules).
20. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Water Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.) requirements for preparing environmental documents (14 Cal. Code Regs. §15251(g); 23 Cal. Code Regs. § 3782). Central Coast Water Board staff has prepared "substitute environmental documents" for this project that contain the required environmental documentation as set forth in the State Water Board's CEQA regulations (23 Cal. Code Regs. § 3777). The substitute environmental documents include the TMDL staff report and several of its attachments, including: (1) this Resolution and the Basin Plan amendment Language (Attachment 1 of the staff report); (2) *Total Maximum Daily Loads Report for Sediment Toxicity and Pyrethroid Pesticides in Sediment in the Lower Salinas River Watershed, Monterey County, California, Technical Project Report* (Attachment 2 of the staff report); (3) the CEQA checklist and analysis (Attachment 3 of the staff report); and (4) the comments and responses to comments (Attachment 5 of the staff report). The staff report also includes the Notice of Public Hearing/Notice of Filing (Attachment 4 of the staff report). The project itself is the establishment of TMDLs for sediment toxicity and pyrethroid pesticides in sediment in the lower Salinas River watershed. The Central Coast Water Board exercises discretion in assigning waste load allocations and load allocations, determining the program of implementation, and setting various milestones in achieving the water quality standards. The CEQA checklist and other portions of the substitute environmental documents contain significant analysis and numerous findings related to impacts and mitigation measures.
21. A CEQA scoping meeting was conducted on March 3, 2015, in the City of Salinas; a notice of the CEQA scoping meeting was sent to interested persons prior to the scoping meeting on February 3, 2015. The notice included the background of the project, the project purpose, a meeting schedule, and directions for obtaining more detailed information through the Central Coast Water Board website; the notice and project summary were available on the website or by requesting hard copies via telephone.
22. Public Resources Code section 21159 provides that an agency shall perform, at the time of the adoption of a rule or regulation requiring the installation of pollution control equipment or a performance standard or treatment requirement, an environmental analysis of the reasonably foreseeable methods of compliance, and an analysis of the reasonably foreseeable environmental impacts of the methods of compliance, an analysis of reasonably foreseeable mitigation measures to lessen the adverse environmental impacts, and an analysis of reasonably foreseeable alternative means of compliance with the rule or regulation that would have less significant adverse impacts. Section 21159(c) requires that the environmental analysis take into account a reasonable range of environmental, economic, and technical factors; population and geographic areas; and specific sites. The staff report prepared for this Basin Plan amendment, in particular the CEQA checklist and analysis (Attachment 3), provides the environmental analysis required by Public Resources Code section 21159 and is hereby incorporated as findings in this Resolution.

23. In preparing the substitute environmental documents, the Central Coast Water Board has considered the requirements of Public Resources Code section 21159 and California Code of Regulations, title 14, section 15187, and intends those documents to serve as a Tier 1 environmental review. This analysis is not intended to be an exhaustive analysis of every conceivable impact, but an analysis of the reasonably foreseeable consequences of the adoption of this regulation, from a programmatic perspective. Compliance obligations will be undertaken directly by public agencies that may have their own obligations under CEQA. Project level impacts may need to be considered in any subsequent environmental analysis performed by other public agencies, pursuant to Public Resources Code section 21159.2. To the extent applicable, this Tier 1 substitute environmental document may be used to satisfy subsequent CEQA obligations of those agencies.
24. Consistent with the Water Board's substantive obligations under CEQA, the substitute environmental documents do not engage in speculation or conjecture, and only consider the reasonably foreseeable environmental impacts, including those relating to the methods of compliance, reasonably foreseeable feasible mitigation measures to reduce those impacts, and the reasonably foreseeable alternative means of compliance, that would avoid or reduce the identified impacts.
25. The staff report, the draft Basin Plan amendment, and the CEQA checklist and analysis provide the necessary information pursuant to state law to conclude that the proposed TMDLs, implementation plan, and the associated reasonably foreseeable methods of compliance will not have a significant adverse effect on the environment with the exception of potentially significant impacts associated with the following:
- Agricultural Resources – convert Farmland to non-agricultural use or reduce productivity;
 - Air Quality – violate air quality standards and expose sensitive receptors to pollutants;
 - Water Quality – degradation of water quality from replacement pesticides;
 - Land Use and Planning – conflicts with county agricultural plans;
 - Utilities and Service Systems – impacts from construction of new stormwater systems; and
 - Mandatory Finding of Significance – cumulative effects in connection to past TMDL projects.

This determination is based on best available information in an effort to fully inform the interested public and the decision makers of potential environmental impacts. "Significant effects" on the environment are defined as "*a substantial, or potentially substantial, adverse change within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance*" (14 Cal. Code Regs. § 1538). When the entities and responsible parties responsible for implementing these TMDLs determine how they will precede, the agencies responsible for those parts of the project can and should incorporate such alternatives and mitigation into any subsequent projects or project approvals. Feasible alternatives and mitigation measures are described in more detail in the substitute environmental documents (14 Cal. Code Regs. § 15091(a)(2)). Legal considerations may make some of the mitigation measures that could be implemented infeasible.

26. Pursuant to CEQA Guidelines section 15093, the Central Coast Water Board hereby finds that the project's benefits override and outweigh its potential significant adverse impacts, for the reasons more fully set forth in the staff report and attachments thereto. Specific environmental benefits justify the adoption of these TMDLs despite the project's potential significant adverse short-term environmental impacts. The Central Coast Water Board has the authority and responsibility to regulate discharges of waste associated with the sources of

pollution causing impairment to water quality. Many of those discharges have caused significant widespread degradation and/or pollution of waters of the state as described in the *Total Maximum Daily Loads Report for Sediment Toxicity and Pyrethroid Pesticides in Sediment in Monterey County, California* and associated reference materials. These TMDLs would result in actions to restore the quality of the waters of the state and protect the beneficial uses, including aquatic habitat. While some impacts could occur from the implementation of management practices to comply with the TMDLs, the benefits, which include contributing to the present and future restoration of beneficial water uses, and reducing or eliminating pollution, nuisance and contamination, warrant approval of the TMDLs, despite each and every unavoidable impact.

27. The CEQA checklist and analysis (staff report Attachment 3) identifies mitigation approaches that should be considered at the project level.
28. The Central Coast Water Board will request that the State Water Board approve the Basin Plan amendments incorporating TMDLs for sediment toxicity and pyrethroid pesticides in sediment in the lower Salinas River watershed. The TMDLs and implementation plan will become effective upon approval by the California Office of Administrative Law. The TMDLs must also be approved by USEPA.
29. The Basin Plan amendment may have an effect on fish and wildlife. The Central Coast Water Board will, therefore, forward fee payments to the Department of Fish and Wildlife under the California Fish and Game Code section 711.4.
30. The proposed Basin Plan amendment meets the "Necessity" standard of the Administrative Procedures Act, Government Code, section 11353, subdivision (b). As specified in Finding 14, federal regulations require that TMDLs be incorporated into the Water Quality Management Plan. The Central Coast Water Board's Basin Plan is the Central Coast Water Board's component of the Water Quality Management Plan, and the Basin Plan is how the Central Coast Water Board takes quasi-legislative planning actions. Moreover, these TMDLs are a program of implementation for existing water quality objectives, and is, therefore, appropriately a component of the Basin Plan under the California Water Code, section 13242. The necessity of developing TMDLs is established in the TMDL staff report, the Clean Water Act section 303(d) list, and the data contained in the administrative record documenting the sediment toxicity and pyrethroid pesticides in sediment impairments in the lower Salinas River watershed.
31. Consistent with Water Code section 13141, the Basin Plan amendment includes an estimate of the total cost of implementation of the agricultural related portions of these TMDLs and identifies potential sources of financing.
32. On May 13, 2016, in Watsonville, California, and on July 14, 2017, in Watsonville, California, the Central Coast Water Board held public hearings and heard and considered all public comments and evidence in the record.

THEREFORE, be it resolved that:

1. Pursuant to sections 13240, 13242, 13243, and 13244 of the California Water Code, the Central Coast Water Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the Basin Plan amendment in Attachment A. to Resolution No. R3-2016-0003.

2. The Central Coast Water Board Executive Officer is directed to forward copies of the Basin Plan amendment to the State Water Board in accordance with the requirements of section 13245 of the California Water Code.
3. The Central Coast Water Board requests that the State Water Board approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward them to the California Office of Administrative Law and the USEPA for approval.
4. The Central Coast Water Board also requests that the State Water Board recommend the additional impairments identified during the TMDL development for inclusion on the 303(d) List.
5. The Executive Officer is authorized to sign a Certificate of Fee Exemption or transmit payment of the applicable fee as may be required to the Resources Agency.
6. If, during the approval process, Central Coast Water Board staff, State Water Board staff, the State Water Board, or the California Office of Administrative Law determines that minor, non-substantive corrections to the language of the Basin Plan amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Central Coast Water Board of any such changes.
7. The environmental documents prepared by the Central Coast Water Board staff pursuant to Public Resources Code 21080.5 are hereby certified.

I John M. Robertson, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a resolution adopted by the Central Coast Regional Water Quality Control Board on July 14, 2017.



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for
John M. Robertson
Executive Officer

Attachment: Attachment A to Resolution No. R3-2016-0003: Amendment to the Water Quality Control Plan for the Central Coastal Basin to Incorporate Total Maximum Daily Loads for Sediment Toxicity and Pyrethroid Pesticides in Sediment in the Lower Salinas River Watershed

**California Environmental Protection Agency
Central Coast Regional Water Quality Control Board**

**Basin Plan Amendment
Attachment A to Resolution No. R3-2016-0003**

Amendment to the Water Quality Control Plan for the Central Coastal Basin
to Incorporate Total Maximum Daily Loads for Sediment Toxicity and
Pyrethroid Pesticides in Sediment in the Lower Salinas River Watershed



ATTACHMENT A TO RESOLUTION NO. R3-2016-0003

Revise the September 8, 1994 Basin Plan as follows:

AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE CENTRAL COASTAL BASIN TO INCORPORATE TOTAL MAXIMUM DAILY LOADS FOR SEDIMENT TOXICITY AND PYRETHROID PESTICIDES IN SEDIMENT IN THE LOWER SALINAS RIVER WATERSHED

Add the following to Chapter 4 after IX.T.:

IX. U. TOTAL MAXIMUM DAILY LOADS FOR SEDIMENT TOXICITY AND PYRETHROID PESTICIDES IN SEDIMENT IN THE LOWER SALINAS RIVER WATERSHED

The Regional Water Quality Control Board adopted these TMDLs on July 14, 2017. These TMDLs were approved by:

The State Water Resources Control Board on: _____

The California Office of Administrative Law on: _____

The U.S. Environmental Protection Agency on: _____

Problem Statement

Surface waters in the lower Salinas River watershed are impaired for sediment toxicity to the aquatic invertebrate (*Hyalella azteca*) and pyrethroid pesticides in sediment. These surface waters do not meet the Basin Plan general narrative objectives for toxicity and pesticides and aquatic life beneficial uses are not protected. The aquatic habitat beneficial uses currently being degraded include the following: cold fresh water habitat (COLD), warm fresh water habitat (WARM), wildlife habitat (WILD), rare threatened or endangered species (RARE), estuarine habitat (EST), migration of aquatic organisms (MIGR), and spawning, and reproduction and/or early development (SPWN). The sediment toxicity has been linked in several studies and in the TMDL analysis predominantly to pyrethroid pesticides in sediment. Pyrethroid pesticides are used extensively for agricultural and urban insect pest control.

The following impairments are addressed with these TMDLs:

- Alisal Creek: sediment toxicity, pyrethroids
- Alisal Slough: sediment toxicity
- Blanco Drain: sediment toxicity
- Chualar Creek, sediment toxicity
- Espinosa Slough: sediment toxicity
- Gabilan Creek: sediment toxicity
- Merrit Ditch: sediment toxicity
- Natividad Creek: sediment toxicity, pyrethroids
- Old Salinas River: sediment toxicity
- Quail Creek: sediment toxicity
- Reclamation Canal: sediment toxicity, pyrethroids
- Salinas River (lower): sediment toxicity, pyrethroids
- Tembladero Slough: sediment toxicity, pyrethroids

Numeric Targets

Numeric targets are water quality thresholds developed and used to ascertain when and where water quality objectives are achieved, and hence, when beneficial uses are protected.

Sediment Toxicity Numeric Target

Species and method identified in Table 1 shall be used to assess whether the sediment toxicity numeric target is achieved. Assessments will be conducted with receiving water(s) sampled at key indicator sites, which will be defined in proper sampling plans with quality assurance and quality controls consistent with SWAMP protocols.

Table 1. Standard aquatic toxicity tests (sediment toxicity numeric target)

Parameter	Test	Biological Endpoint Assessed
Sediment Toxicity	Hyalella azteca (10-day chronic)	Survival

Toxicity to invertebrates shall be tested using chronic toxicity test, 10-day sediment exposure with *Hyalella azteca* (USEPA, 2000). It is recommended (not required) that toxicity determinations be based on a comparison of the test organisms' response to the receiving water sample compared to the control using the Test of Significant Toxicity, also referred to as the TST statistical approach (USEPA 2010; Denton et al., 2011). If a sample is declared "fail" (i.e., toxic), then the target is not met and additional receiving water sample(s) should be collected and evaluated for this specific receiving water to determine the pattern of toxicity and whether a toxicity identification evaluation, also referred to as a TIE, needs to be conducted to determine the causative toxicant(s). If the causative toxicant(s) is already known (e.g., based on land use patterns and similar responses in sub-watersheds) then implementation of management practices, management plans etc. should be examined for effectiveness if already in place, or implemented to reduce the toxicant(s).

Pyrethroid Sediment Concentration Toxicity Unit Numeric Target

The pyrethroid sediment concentration toxicity unit (TU) numeric targets are a comparison of toxic levels of pyrethroids in sediment to published criteria (refer to Table 2). Samples and criteria are for organic carbon normalized concentrations (oc). The pyrethroid TU formula is as follows:

$$\text{Pyrethroid TU} = \frac{\text{sample concentration (oc)}}{\text{known LC50 concentrations values (oc)}}$$

Pyrethroid TUs for the pyrethroid concentrations measured in sediment are summarized using the following formula. The summary is for two toxicity unit formulas but it could be applied to additional pyrethroids in found in Table 2:

$$\text{Sum Pyrethroid TUs} = \text{Pyrethroid TU (1)} + \text{Pyrethroid TU (2)}$$

The numeric target for the sum pyrethroid TUs is where:

$$\text{Sum Pyrethroid TUs} < 1.0$$

Table 2. Pyrethroid sediment criteria

Chemical	LC 50 ¹ ng/g ² (ppb ³)	LC50 ug/g ⁴ oc ⁵ (ppm ⁶)	Reference
Bifenthrin	12.9	0.52	(Amweg et al., 2005)

Chemical	LC 50 ¹ ng/g ² (ppb ³)	LC50 ug/g ⁴ oc ⁵ (ppm ⁶)	Reference
Cyfluthrin	13.7	1.08	(Amweg et al., 2005)
Cypermethrin	14.87	0.38	(Maund et al., 2002) mean value
Esfenvalerate	41.8	1.54	(Amweg et al., 2005)
Lambda- Cyhalothrin	5.6	0.45	(Amweg et al., 2005)
Permethrin	200.7	10.83	(Amweg et al., 2005)

¹Median lethal concentration (LC50) for amphipods (*Hyalella azteca*), ² nano grams per gram (ng/g), ³ parts per billion, ⁴ microgram per gram (ug/g), ⁵ organic carbon normalized concentrations (oc), ⁶ parts per million (ppm)

Numeric Targets for Pyrethroid Concentrations in Water

UC Davis developed the water criteria (UC Davis Criteria) that are the basis of the water concentration targets for the pyrethroids addressed in the TMDL: bifenthrin, cyfluthrin and lambda-cyhalothrin; refer to Table 3 (Palumbo et al., 2010 and Fojut et al., 2010). The UC Davis Criteria represents a concentration of pyrethroids in water that should not affect aquatic life in the lower Salinas River watershed, or in other words, when a waterbody is protected.

The UC Davis Criteria were developed as criteria protective of aquatic life using a transparent and scientific methodology of statistically evaluating toxicity data for multiple species. The criteria were established for freely dissolved concentrations of the pyrethroids and not concentrations bound to suspended solids and dissolved organic material. For assessment, staff recommends the numeric targets for pyrethroid concentrations in water be compared to the freely dissolved (bioavailable) concentrations of pyrethroids in water and not whole water samples. However, staff supports environmental managers' choosing the appropriate assessment method and recognizes there are situations in which whole water samples may be an appropriate assessment method.

The UC Davis researchers noted that pyrethroid toxicity is inversely proportional to temperature, lower temperatures increase the sensitivity of organisms to pyrethroids, but it was infeasible for them to incorporate temperature into the criteria.

Table 3. Pyrethroid water numeric targets

Chemical	Acute Target – CMC ¹ ug/L ³ (ppb ⁴)	Chronic Target – CCC ² ug/L (ppb)	Reference
Bifenthrin	0.004	0.0006	(Palumbo et al., 2010)
Cyfluthrin	0.0003	0.00005	(Fojut et al., 2010)
Lambda- cyhalothrin	0.001	0.0005	(Fojut et al., 2010)

¹ CMC – Criterion Maximum Concentration (Acute: 1- hour average). Not to be exceeded more than once in a three-year period.

² CCC – Criterion Continuous Concentration (Chronic: 4-day [96-hour] average). Not to be exceeded more than once in a three-year period.

³ microgram per liter (ug/L), ⁴ parts per billion

Source Analysis

Sediment toxicity was detected in stream sediments throughout the lower Salinas River watershed. Several special sediment monitoring studies in the watershed link the sediment toxicity to pyrethroid pesticides in both agricultural and municipal runoff. Watershed land use analysis indicates that the lower Salinas River watershed is comprised of 30% cropland and 17% developed urban areas. Pyrethroid pesticide use data was analyzed for detected pyrethroids and associated crop sources, which are as follows:

- Bifenthrin – strawberries, artichokes
- Cypermethrin – lettuce, spinach, broccoli, peas, other crops
- Esfenvalerate – artichoke, broccoli, lettuce
- Lambda-cyhalothrin – lettuce

Statewide urban pesticide studies indicate that pyrethroids are commonly detected in urban runoff and the primary sources are outdoor applications by pest control professionals and to a lesser extent consumer use.

TMDLs

The sediment toxicity and pyrethroid in sediment loading capacities or TMDLs are the amount of pollutants that can be received in surface waters without exceeding the Basin Plan’s pesticide and toxicity water quality objectives. TMDLs are calculated as the sum of waste load allocations and load allocation along with a margin of safety. A wasteload allocation is a TMDL allocated to point source dischargers in the watershed and load allocation is a TMDL allocated to nonpoint sources of pollution. According to the Code of Federal Regulations, Title 40, §130.2[i], TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure.

The TMDLs for sediment toxicity are equal to the sediment toxicity numeric targets, refer to Table 4, and the TMDLs for pyrethroid pesticides are equal to the pyrethroid sediment concentration toxicity unit numeric targets (see above section on Numeric Targets).

Table 4. TMDLs

<u>TMDL</u>	<u>Criteria</u>
Sediment toxicity	Sediment toxicity numeric target
Pyrethroids in sediment	Pyrethroid sediment concentration toxicity unit numeric target

Allocations and Responsible Parties

The allocations and parties responsible for the allocations are listed in the following table.

Table 5. Wasteload and load allocations

Waste Load Allocations		
Responsible Party	Source	Allocation
City of Salinas - NPDES No. CA00049981	Municipal Stormwater	1 & 2

County of Monterey - NPDES No. CAS000004	Municipal Stormwater	1 & 2
Load Allocations		
Responsible Party	Source	Allocation
Owners/operators of irrigated agricultural lands in the lower Salinas River watershed	Discharges from irrigated lands	1 & 2
<u>Allocation-1</u> : Equal to Sediment Toxicity TMDLs <u>Allocation-2</u> : Equal to Pyrethroids in Sediment TMDLs		

Controllable Water Quality Conditions

In accordance with the Basin Plan, controllable water quality shall be managed to conform or to achieve the water quality objectives and load allocations contained in these TMDLs. The Basin Plan defines controllable water quality conditions as follows: *“Controllable water quality conditions are those actions or circumstances resulting from man’s activities that may influence the quality of the waters of the State and that may be reasonably controlled.”* – Basin Plan Chapter 3, Water Quality Objectives, page III-2.

Compliance with Anti-degradation Requirements

State and federal anti-degradation policies require, in part, that where surface waters are of higher quality than necessary to protect beneficial uses, the high quality of those waters must be maintained unless otherwise provided by the policies. The federal anti-degradation policy, 40 CFR 131.12(a), states in part, *“Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State’s continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located...”*

Compliance with anti-degradation requirements may be determined on the basis of trends in declining water quality in applicable waterbodies, consistent with the methodologies and criteria provided in Section 3.10 of the California 303(d) Listing Policy (adopted, September 20, 2004, SWRCB Resolution No. 2004-0063). Section 3.10 of the California 303(d) Listing Policy explicitly addresses the anti-degradation component of water quality standards as defined in 40 CFR 130.2(j), and provides for identifying trends of declining water quality as a metric for assessing compliance with anti-degradation requirements.

Section 3.10 of the California 303(d) Listing Policy states that pollutant-specific water quality objectives need not be exceeded to be considered non-compliant with anti-degradation requirements: *“if the water segment exhibits concentrations of pollutants or water body conditions for any listing factor that shows a trend of declining water quality standards attainment”*.

Margin of Safety

A margin of safety is incorporated in these TMDLs implicitly through conservative assumptions. The desired water quality is achieved through allocations and targets equal to desired water quality; hence an implicit conservative approach. If, during the TMDL implementation phase, staff develops numeric targets and TMDLs that better reflect the desired water quality, the allocations will be set equal to these modified targets and TMDLs.

Implementation

Discharges from Irrigated Agricultural Lands:

Implementing parties will comply with the Conditional Waiver of Waste Discharge Requirements for Irrigated Lands, Order R3-2017-0002, (Agricultural Order) and the Monitoring and Reporting Programs in accordance with Orders R3-2017-0002-01, R3-2017-0002-02, and R3-2017-0002-03 to meet load allocations and achieve the TMDL.

Current requirements in the Agricultural Order that will achieve the load allocations include:

1. Implement, and update as necessary, management practices to reduce pesticide loading.
2. Develop and update and implement Farm Plans. The Farm Plans need to incorporate measures designed to achieve load allocations assigned in this TMDL.
3. Implement monitoring and reporting requirements described in the Agricultural Order.

The purpose of the Agricultural Order requirements, in part, is for growers to implement management practices to achieve water quality standards, along with these TMDL allocations and numeric targets. The grower then assesses whether those implemented management practices are effective and will ultimately achieve water quality standards. If the grower determines through the assessment that the management practices will not achieve water quality standards, then the grower tries other, improved, management practices. The grower implements this trial-assessment, or iterative process, until he or she finds and implements practices that will achieve water quality standards, TMDL allocations, and numeric targets. The Agricultural Order contains reporting requirements that Water Board staff uses to verify that the iterative process is being implemented.

The TMDL implementation plan also recommends that grower utilize an interagency approach among the California Department of Pesticide Regulation (DPR), the State Water Resources Control Board, and the Central Coast Water Board to address impairments. The approach is described in the California Pesticide Management Plan for Water Quality (California Pesticide Plan), which is an implementation plan of the Management Agency Agreement (MAA) between DPR and the Water Boards.

Monitoring

Owners and operators of irrigated agricultural lands will perform monitoring and reporting in accordance with Monitoring and Reporting Program Orders R3-2017-0002-01, R3-2017-0002-02, and R3-2017-0002-03 (agricultural monitoring program), or succeeding monitoring and reporting program orders as applicable to the operation.

Due to the present complexities in monitoring and evaluating freely dissolved concentrations of pyrethroids in water, staff recommends that the monitoring and evaluation of numeric targets for pyrethroid concentrations in water be conducted by state and/or regional monitoring programs such as SWAMP/CCAMP and the DPR surface water monitoring program. Staff recommends these programs and agricultural and municipal stormwater monitoring programs share monitoring results with each other. Staff recommends that the agricultural monitoring program continues to focus monitoring efforts on sediment toxicity and adds annual monitoring concentrations of pyrethroids in sediment.

Determination of Progress and Attainment of Load Allocations

Demonstration of compliance with the load allocations is consistent with compliance with the Agricultural Order. Load allocations will be achieved through a combination of implementation of management practices and strategies to reduce pesticide loading and water quality monitoring.

To allow for flexibility, Central Coast Water Board staff will assess progress towards and attainment of load allocations using one or a combination of the following:

1. Attaining the load allocations in receiving waters.
2. Attaining toxicity numeric targets attributable to pesticides in receiving water.
3. Implementing management practices that are capable of achieving load allocations identified in this TMDL.
4. Providing sufficient evidence to demonstrate that they are and will continue to be in compliance with the load allocations; such evidence could include documentation submitted by the owner or operator to the Executive Officer that the owner or operator is not causing waste to be discharged to impaired waterbodies resulting or contributing to violations of the load allocations.

Municipal Stormwater Discharge:

The Central Coast Water Board will require MS4 entities, the City of Salinas and Monterey County, to each develop and submit for Executive Officer approval a Wasteload Allocation Attainment Program (WAAP). The WAAP will be submitted within one year of approval of the TMDL by the Office of Administrative Law, or within one year of a stormwater permit renewal, whichever occurs first. The WAAP will include descriptions of the actions that will be taken by the MS4 entity to attain the TMDL waste load allocations.

Urban stormwater pesticide problems are not unique to the MS4s in the Salinas River watershed, but are problems faced by MS4s throughout the state. Staff recognizes that attainment of water quality goals in the TMDL will rely on the effectiveness of statewide pesticide programs and regulations by California Department of Pesticide Regulation (DPR) to control pesticides. The MS4s are encouraged to participate in statewide programs and regulations to help attain the TMDL and describe in WAAP how the MS4s plan to support and engage in the statewide efforts. MS4s are encouraged to include in the WAAP mitigation measures developed in the DPR surface water regulations as stormwater Best Management Practices (BMPs). The statewide program is described in the California Pesticide Management Plan for Water Quality (California Pesticide Plan), which is an implementation plan of the Management Agency Agreement (MAA) between DPR and the Water Boards.

Waste load allocations will be achieved through implementation of management practices and strategies to reduce pesticide loading, and wasteload allocation attainment will be demonstrated through water quality monitoring. Implementation can be conducted by MS4s specifically and/or through statewide programs addressing urban pesticide water pollution. The WAAP may include participation in statewide efforts, by organizations such as California Stormwater Quality Association (CASQA), that coordinate with DPR and other organizations taking actions to protect water quality from the use of pesticides in the urban environment.

MS4 Stormwater Monitoring

The MS4s are required to develop and submit monitoring programs as part of their WAAP. The goals of the monitoring programs are described in the requirements of the WAAP.

The MS4s must prepare a detailed description, including a schedule, of a monitoring program the MS4 will implement to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment of the MS4s' wasteload allocations. The monitoring program shall be designed to validate BMP implementation efforts and quantitatively demonstrate attainment of interim and final wasteload allocations. The Central Coast Water Board may approve participation in statewide or regional monitoring programs as meeting all, or a portion of monitoring requirements.

Staff encourages the implementing parties to develop and submit creative and meaningful monitoring programs. Monitoring strategies can use a phased approach, for example, whereby outfall or receiving water monitoring is phased in after best management practices have been implemented and assessed for effectiveness. Pilot projects where best management practices are implemented in well-defined areas covering a fraction of the MS4 that facilitate accurate assessment of how well the best management practices control pollution sources are acceptable, with the intent of successful practices then being implemented in other or larger parts of the MS4.

Determination of Progress and Attainment of Waste Load Allocations

Waste load allocations will be achieved through a combination of implementation of management practices and strategies to reduce pesticide loading, and water quality monitoring. To allow for flexibility, Water Board staff will assess progress towards and attainment of waste load allocations using one or a combination of the following:

1. Attaining the waste load allocations in the receiving water.
2. Demonstrating compliance by measuring pesticide concentrations and sediment toxicity at stormwater outfalls.
3. Any other effluent limitations and conditions that are consistent with the assumptions and requirements of the waste load allocations.
4. MS4 entities may be deemed in compliance with waste load allocations through implementation and assessment of pollutant loading reduction projects, capable of achieving interim and final waste load allocations identified in this TMDL in combination with water quality monitoring for a balanced approach to determining program effectiveness.

Actions can also be demonstrated through participation in statewide efforts, through organizations such as California Stormwater Quality Association that coordinate with DPR and other organizations to protect water quality from the use of pesticides.

Timelines

The estimated date to achieve the allocations from municipal sources is five years after approval of the TMDL by the Office of Administrative Law. This estimate is based on the utilization of the existing DPR urban pyrethroid regulations to achieve municipal TMDLs. The estimated timeframe to achieve Agricultural allocations is 10 years after Office of Administrative Law approval. The agricultural timeline accounts for the need to develop agricultural pyrethroid implementation efforts.

Table 6. TMDL time schedule

Year After Approval	Milestone
Current	Existing DPR urban pyrethroid regulations that were adopted in 2012.
3 Years	Agricultural program developed to address sediment toxicity and pyrethroids in sediment
5 Years	Municipal allocations achieved to meet TMDLs
10 years	Agricultural allocations achieved to meet TMDLs
15 Years	Targets achieved in receiving waters as indicators of meeting TMDLs

Tracking and Evaluation

After the TMDLs are approved by Office of Administrative Law, the Central Coast Water Board periodically will perform a review of implementation actions, monitoring results, and evaluations submitted by responsible parties of their progress toward achieving their allocations, dependent upon

staff availability and priorities. The Central Coast Water Board will use annual reports, nonpoint source pollution control implementation programs, evaluations submitted by responsible parties, and other available information to determine progress toward implementing required actions and achieving the allocations and the numeric goal.