California Regional Water Quality Control Board

Central Coast Region

Revised Attachment A to Resolution R3-2024-0002
Basin Plan Amendment

Proposed Amendment to the Water Quality Control Plan for the Central Coastal Basin to Establish Total Maximum Daily Loads for Organophosphate Pesticides and Toxicity in the Lower Salinas River Watershed, Monterey County, California

Attachment A to Resolution R3-2024-0002

Revise the June 14, 2019 Basin Plan as follows:

Amendment to the Water Quality Control Plan for the Central Coastal Basin to Establish Total Maximum Daily Loads for Organophosphate Pesticides and Toxicity in the Lower Salinas River Watershed, Monterey County, California

Add the following to Chapter 4 after section 4.9.23:
4.9.24. Total Maximum Daily Loads (TMDLs) for Organophosphate Pesticides and Toxicity in the Lower Salinas River Watershed, Monterey County, California

The California Regional Water Quality Control Board, Central Coast Region (Central Coast Water Board) adopted these TMDLs on June 21, 2024.

These TMDLs were approved by:

The State Water Resources Control Board on: _____ Date

The California Office of Administrative Law on: _____ Date

The U.S. Environmental Protection Agency on: _____ Date

These TMDLs supersede the TMDL and Implementation Plan for Chlorpyrifos and Diazinon in the Lower Salinas River Watershed, Monterey County adopted via a single regulatory action through Resolution R3-2011-0005 on May 5, 2011, and reestablished through General Waste Discharge Requirements for Discharges from Irrigated Lands, Order R3-2021-0040, on April 21, 2021.Therefore, Table 4.10-1 of the Basin Plan will be amended to strike the TMDLs adopted via Resolution R3-2011-005.

Problem Statement

Surface waters in the lower Salinas River watershed are impaired due to one or more of the following conditions: excessive concentrations of organophosphate pesticides chlorpyrifos, diazinon, malathion, or water column toxicity (toxicity). These surface waters do not meet the Basin Plan general narrative water quality objectives for toxicity and pesticides, therefore aquatic life beneficial uses are not protected. The aquatic life 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), commercial and sport fishing (COMM), preservation of biological habitats of special significance (BIOL), and spawning and reproduction and/or early development (SPWN).

Waterbodies identified as impaired in this TMDL Project include:

- Moro Cojo Slough: toxicity
- Old Salinas River: chlorpyrifos, diazinon, toxicity

- Salinas River Lagoon: diazinon, toxicity
- Tembladero Slough: chlorpyrifos, diazinon, malathion, toxicity
- Merritt Ditch: diazinon, malathion, toxicity
- Alisal Slough: diazinon, malathion, toxicity
- Alisal Creek: chlorpyrifos, diazinon, malathion, toxicity
- Blanco Drain: diazinon, malathion, toxicity
- Salinas Reclamation Canal (Lower): chlorpyrifos, diazinon, malathion, toxicity
- Salinas Reclamation Canal (Upper): chlorpyrifos, diazinon, malathion, toxicity
- Salinas River (lower): toxicity
- Espinosa Slough: diazinon, malathion, toxicity
- Gabilan Creek: toxicity
- Natividad Creek: chlorpyrifos, diazinon, malathion, toxicity
- Santa Rita Creek: malathion, toxicity
- Quail Creek: chlorpyrifos, diazinon, malathion, toxicity
- Chualar Creek: chlorpyrifos, diazinon, malathion, toxicity

Controllable Water Quality Conditions

In accordance with the Basin Plan, controllable water quality conditions shall be managed to conform to or to achieve the water quality objectives and load and waste load allocations contained in this TMDL Project. 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, June 2019 edition, chapter 3, Water Quality Objectives, on page 30.)

Compliance with Anti-degradation Policy

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.

Section 3.2 of the Basin Plan states that wherever the existing quality of water is better than the quality of water established as Basin Plan water quality objectives, such existing quality shall be maintained unless otherwise provided by the provisions of the State Water Resources Control Board Resolution. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (Anti-degradation Policy)

Compliance with anti-degradation requirements may be determined on the basis of trends in water quality in applicable waterbodies, consistent with the methodologies and criteria provided in section 3.10 of California's *Water Quality Control Policy for Developing California's Clean Water Act section 303(d) List* (California 303(d) Listing Policy), as adopted September 30, 2004, by State Water Resources Control Board (State Water Board) Resolution 2004-0063, and amended on February 3, 2015 by State Water Board Resolution 2015-0005. Section 3.10 of the California 303(d) Listing Policy explicitly addresses the anti-degradation component of water quality standards, as defined in Code of Federal Regulations, title 40, part 131.12, and provides for the

identification of declining water quality trends as a metric for 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: *"*A water segment shall be placed on the section 303(d) list 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.*"* This TMDL is designed to achieve water quality standards and therefore furthers the purposes of the Anti-degradation Policy.

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. This TMDL Project establishes acute and chronic individual organophosphate pesticide numeric targets, additive toxicity numeric targets, and a toxicity testing numeric target.

Individual Organophosphate Pesticide Numeric Targets

Acute and chronic receiving water numeric targets for chlorpyrifos, diazinon, and malathion, when individually present (meaning in the absence of the others), is presented in Table 1. Concentration units are parts per billion (ppb) which are equivalent to micrograms per liter (ug/L).

Table 1. Water column numeric targets for individual organophosphate pesticides.

Compound	CMC [A] (ppb)	CCC [B] (ppb)
Chlorpyrifos	0.025	0.015
Diazinon	0.16	0.10
Malathion	0.17	0.028

[A] . CMC – Criterion Maximum Concentration or acute criteria (1- hour average). Not to be exceeded more than once in a three-year period.

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

Additive Toxicity Organophosphate Pesticides Numeric Targets

Chlorpyrifos, diazinon, and malathion have the same mechanism of toxic action and exhibit additive toxicity to aquatic invertebrates when they co-occur. As such, the additive toxicity numeric target, when two or more of these organophosphate pesticides are present in the water column, is defined as the sum (S) of the concentration of chlorpyrifos divided by the numeric target for chlorpyrifos plus the concentration of diazinon divided by the numeric target for diazinon plus the concentration of malathion divided by the numeric target for malathion is equal to or less than one ($S \leq 1$). A sum greater than one ($S > 1$) does not support beneficial uses due to the additive toxicity of

one or more of these organophosphate pesticides (chlorpyrifos, diazinon, and malathion). Figure 1 depicts the numeric target equation for organophosphate pesticide additive toxicity.

$$\frac{C\ \text{Chlorpyrifos}}{NT\ \text{Chlorpyrifos}} + \frac{C\ \text{Diazinon}}{NT\ \text{Diazinon}} + \frac{C\ \text{Malathion}}{NT\ \text{Malathion}} = S;\ S \leq 1$$

Where:
C = the concentration of a pesticide measured in the receiving water.
NT = the numeric target for each pesticide present.
S = the sum; a sum exceeding one (1.0) indicates that beneficial uses may be adversely affected.

Figure 1. Equation for additive toxicity numeric target (S≤1).

The individual organophosphate pesticide receiving water numeric targets presented in Table 1 and the additive toxicity receiving water organophosphate pesticides numeric targets presented in Figure 1 are consistent with the Basin Plan narrative water quality objective for pesticides, which states:

> 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.

(Basin Plan, June 2019 edition, chapter 3, Water Quality Objectives, on page 31.)

Toxicity Testing Numeric Target

This TMDL Project establishes a toxicity testing numeric target to ascertain when and where water quality objectives for toxicity are achieved, and hence, when beneficial uses are protected. Aquatic toxicity is the adverse response of aquatic organisms from exposure to effluent or ambient water. Acute toxicity refers to adverse response (typically a lethal or low rate of survival in the sample compared to the control) from a short-term exposure. Chronic testing refers to longer exposure duration and measures of both lethal and sub-lethal adverse response (e.g., growth or reproduction). The toxicity testing numeric target is stated as the following:

> No significant toxic effect to the survival or sublethal (i.e., growth, reproduction, etc.) test endpoint.

Toxicity to invertebrates must be tested using chronic or acute toxicity tests. It is recommended that toxicity determinations be based on a comparison of the test organisms' responses to the receiving water sample compared to the control using the Test of Significant Toxicity (TST). 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 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). Other toxicity test methods, where determined appropriate for use, may be used to determine attainment of the numeric target. Using these methods, a significant toxicity is determined for receiving water samples where: 1) the statistical test confirms significant differences in test organism when compared to the control sample, and 2) a test organism performance is more than 20% lower in the sample than in the control sample.

This toxicity testing numeric target is consistent with the Basin Plan narrative water quality objective which states:

> 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 this 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 as specified by the Regional Board.

(Basin Plan, June 2019 edition, chapter 3, Water Quality Objectives, on page 31.)

Source Analysis

Chlorpyrifos, diazinon, and malathion are man-made pesticides primarily used in the lower Salinas River watershed for agricultural purposes; however, malathion is also used in urban areas and therefore will require more than one regulatory mechanism (permit) to address the impairments. The agricultural application of chlorpyrifos has declined significantly, likely due to the discontinued chlorpyrifos use on crops in 2020. Diazinon is currently used on agricultural crops within the lower Salinas River watershed, primarily on strawberries and beets and its' agricultural application rates and detection in surface waters has declined significantly since 2006. Malathion is currently used on agricultural crops within the lower Salinas River watershed, primarily lettuce, strawberries, celery, and berries, however its agricultural application rates have remained consistently high and detection in surface waters has significantly increased since 2006.

Several urban pesticide studies conducted by the California Department of Pesticide Regulation (DPR) indicate that malathion is commonly detected in urban stormwater runoff throughout the state (see DPR references in TMDL Project Technical Report). The primary sources of malathion in the urban environment are from its' unrestricted urban and residential uses on lawns, ornamental plants, gardens, structures, and dwellings. Malathion may also be used in the treatment of industrial sites, refuse and solid waste sites, private roads, uncultivated areas, lumber, and several other applications, therefore there is a reasonable expectation that industrial and construction stormwater, as well as cannabis operations, may be sources. Although malathion is restricted for use in cannabis cultivation, malathion could be used on the cannabis disturbed area or property that is regulated.

TMDLs

The TMDLs for organophosphate pesticides and additive toxicity in the lower Salinas River watershed are the same as the individual acute and chronic organophosphate pesticide receiving water numeric targets identified in Table 1 and the additive toxicity organophosphate pesticides receiving water numeric targets referenced in Figure 1.

Table 2. Concentration-based TMDLs for chlorpyrifos.

Waterbodies Assigned TMDLs	CMC (ppb)	CCC (ppb)
Moro Coho Slough	0.025	0.015
Old Salinas River	0.025	0.015
Salinas River Lagoon	0.025	0.015
Tembladero Slough	0.025	0.015
Merritt Ditch	0.025	0.015
Alisal Slough	0.025	0.015
Alisal Creek	0.025	0.015
Blanco Drain	0.025	0.015
Salinas Reclamation Canal (Lower)	0.025	0.015
Salinas Reclamation Canal (Upper)	0.025	0.015
Salinas River	0.025	0.015
Espinosa Slough	0.025	0.015
Gabilan Creek	0.025	0.015
Natividad Creek	0.025	0.015
Santa Rita Creek	0.025	0.015
Quail Creek	0.025	0.015
Chualar Creek	0.025	0.015

Table 3. Concentration-based TMDLs for diazinon.

Waterbodies Assigned TMDLs	CMC (ppb)	CCC (ppb)
Moro Cojo Slough	0.16	0.10
Old Salinas River	0.16	0.10
Salinas River Lagoon	0.16	0.10
Tembladero Slough	0.16	0.10
Merritt Ditch	0.16	0.10
Alisal Slough	0.16	0.10
Alisal Creek	0.16	0.10
Blanco Drain	0.16	0.10
Salinas Reclamation Canal (Lower)	0.16	0.10
Salinas Reclamation Canal (Upper)	0.16	0.10
Salinas River	0.16	0.10
Espinosa Slough	0.16	0.10
Gabilan Creek	0.16	0.10
Natividad Creek	0.16	0.10

Waterbodies Assigned TMDLs	CMC (ppb)	CCC (ppb)
Santa Rita Creek	0.16	0.10
Quail Creek	0.16	0.10
Chualar Creek	0.16	0.10

Table 4. Concentration-based TMDLs for malathion.

Waterbodies Assigned TMDLs	CMC (ppb)	CCC (ppb)
Moro Cojo Slough	0.17	0.028
Old Salinas River	0.17	0.028
Salinas River Lagoon	0.17	0.028
Tembladero Slough	0.17	0.028
Merritt Ditch	0.17	0.028
Alisal Slough	0.17	0.028
Alisal Creek	0.17	0.028
Blanco Drain	0.17	0.028
Salinas Reclamation Canal (Lower)	0.17	0.028
Salinas Reclamation Canal (Upper)	0.17	0.028
Salinas River	0.17	0.028
Espinosa Slough	0.17	0.028
Gabilan Creek	0.17	0.028
Natividad Creek	0.17	0.028
Santa Rita Creek	0.17	0.028
Quail Creek	0.17	0.028
Chualar Creek	0.17	0.028

Table 5. TMDLs for additive toxicity of diazinon, chlorpyrifos, and malathion.

Waterbodies assigned TMDLs	Additive toxicity TMDLs
Moro Cojo Slough	S≤1
Old Salinas River	S≤1
Salinas River Lagoon	S≤1
Tembladero Slough	S≤1
Merritt Ditch	S≤1
Alisal Slough	S≤1
Alisal Creek	S≤1
Blanco Drain	S≤1
Salinas Reclamation Canal (Lower)	S≤1
Salinas Reclamation Canal (Upper)	S≤1
Salinas River	S≤1
Espinosa Slough	S≤1
Gabilan Creek	S≤1
Natividad Creek	S≤1

Waterbodies assigned TMDLs	Additive toxicity TMDLs
Santa Rita Creek	S≤1
Quail Creek	S≤1
Chualar Creek	S≤1

Allocations

TMDLs determine a pollutant reduction target and allocate load reductions necessary to achieve that target to point and nonpoint sources of the pollutant. Point source discharges, such as urban stormwater, are regulated with NPDES permits and receive waste load allocations, while irrigated agricultural discharges are considered nonpoint sources and receive load allocations.

Table 6 shows the waste load allocations assigned to responsible parties (for point source discharges) and Table 7 shows the load allocations assigned to responsible parties (for nonpoint source discharges). These allocations are equal to the TMDLs and are assigned as receiving water allocations.

Table 6. Waste Load Allocations.

Responsible Party	Permit/Order	Source	Allocation
City of Salinas	Phase I MS4 Stormwater Permit (Order R3-2019-0073, NPDES CA0049981)	Municipal stormwater	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5
County of Monterey	State Water Board Phase II MS4 General Stormwater Permit (Order 2013-0001 DWQ)	Municipal stormwater	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5
Industrial General Permit enrollees	Industrial General Permit (Order 2009-0009 amended by Order 2014-0057-DWQ, NPDES CAS000001)	Industrial stormwater	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5
Construction General Permit enrollees	Construction General Permit (Order 2012-0006-DWQ, NPDES CAS000002)	Construction stormwater	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5

Table 7. Load Allocations.

Responsible Party	Permit/Order	Source	Allocation
Owners/operators of irrigated agricultural lands or facilities	General Waste Discharge Requirements for Discharges from Irrigated Lands (Order R3-2021-0040)	Irrigated agriculture, nurseries, greenhouses	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5
Owners/operators of cannabis cultivation facilities	General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities (Order WQ 2019-0001-DWQ)	Cannabis cultivation, nurseries, greenhouses	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5
Handlers of Fertilizer or Pesticides Subject to WDRs	General Waste Discharge Requirements for Fertilizer/Pesticide Handling (Order R3-2005-0001) and Individual Waste Discharge Requirements (Orders)	Fertilizer or pesticide handling facilities	As determined in TMDL tables: Table 2 Table 3 Table 4 Table 5

All receiving water samples collected within the applicable averaging period (i.e., 1-hour CMC and 4-day CCC) will be used to determine compliance with the allocations for chlorpyrifos, diazinon, and malathion. Prior to performing any averaging calculations, only chlorpyrifos, diazinon, and malathion laboratory results from the same receiving water sample will be used in calculating the sum (S) to determine additive toxicity, as described in the TMDL and allocations. For purposes of calculating the sum (S), analytical results that are reported as “non-detectable” concentrations are considered to be zero if the method detection limit is below the chronic criteria. Analytical results will not be used for calculating the sum (S) when results are reported as non-detectable and the method detection limit is above the chronic criteria.

Responsible parties must determine compliance by demonstrating their discharges do not cause or contribute to exceedances of allocations within receiving waters.

Margin of Safety

These TMDLs include an implicit margin of safety in the water column numeric targets selected for chlorpyrifos, diazinon, and malathion which are expressed as concentration-based TMDLs.

The TMDLs assume no significant reductions in chlorpyrifos, diazinon, or malathion loading due to removal from the water column by degradation and/or adsorption to sediment particles and subsequent sediment deposition. Since these processes are likely to take place, this assumption contributes to the implicit margin of safety in the proposed allocation methodology.

Central Coast Water Board staff used pesticide water quality criteria methodologies for chlorpyrifos, diazinon, and malathion developed by the California Department of Fish and Wildlife and University of California, Davis, and USEPA protocols (USEPA 1985) to establish loading capacities for these TMDLs. Therefore, the loading capacity has the same conservative assumptions used in those procedures.

Implementation

Irrigated Agricultural Land Discharges:

Discharges from irrigated agricultural lands are considered nonpoint sources of pollution, which are therefore not subject to federal NPDES permits, but regulated pursuant to waste discharge requirements. Waste discharges from irrigated agricultural lands are currently regulated under the Central Coast Water Board's General Waste Discharge Requirements for Discharges from Irrigated Lands (Order R3-2021-0040; the "Agricultural Order") and the associated Monitoring and Reporting Program (MRP) (Agricultural Order, Attachment B). The Agricultural Order currently does not include these TMDLs because they have not yet been approved and established into the Basin Plan. However, when the Agricultural Order is modified in the future, the intent is to modify the Agricultural Order to implement these TMDLs in the lower Salinas River watershed.[1] Through the modified Agricultural Order or any successor waste discharge requirements that incorporate the TMDL allocations as limits and attainment dates as compliance dates, owners and operators of irrigated agricultural lands would be required to comply with waste discharge requirements terms and conditions established to: 1) meet load allocations, 2) achieve the TMDLs according to the TMDL compliance schedule, and 3) help rectify the impairments addressed in this TMDL Project. The current Agricultural Order regulates:

(1) discharges of waste from commercial irrigated lands, including, but not limited to, land planted to row, vineyard, field, and tree crops where water is applied for producing commercial 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 waste discharge requirements; and

(3) discharges of waste from lands that are planted as commercial crops that are not yet marketable, such as vineyards and tree crops.

[1] The Agricultural Order will be revised pursuant to State Water Resources Control Board (State Water Board) Order WQ 2023-0081, *In the Matter of Review of General Waste Discharge Requirements for Discharges from Irrigated Lands, Order R3-2021-0040*, issued September 20, 2023.

The Agricultural Order requires owners and operators of irrigated lands to do the following:

A. Comply with surface receiving water limits based on load allocations in TMDL project areas.

B. Conduct surface receiving water quality monitoring and reporting to evaluate the impact of irrigated agricultural waste discharges on receiving waters, the condition of existing perennial, intermittent, and ephemeral streams and wetland areas, and compliance with applicable load allocations, as well as to assist in the identification of specific sources of water quality problems.

C. Identify and implement follow-up actions including outreach, education, additional monitoring and reporting, and management practices to abate sources of water quality impacts and meet interim milestones and load allocations.

D. Potentially complete ranch-level surface discharge monitoring and reporting in areas where water quality issues persist or applicable load allocations are not met by their TMDL compliance dates.

E. Report on irrigation system type, discharge type, slope, impermeable surfaces (i.e., plastic covered surfaces that do not allow fluid to pass through, including polyethylene mulch and hoop houses), and presence and location of any waterbodies on or adjacent to irrigated lands.

F. Manage stormwater discharge intensity and volume from fields with 50 to 100 percent coverage of impermeable surfaces or with greater than or equal to one-half (0.5) acre of impermeable surfaces so as not to exceed stormwater discharges from the equivalent permeable field area.

G. Implement, assess, and report on all management practices related to sediment, erosion, irrigation, stormwater, roads, agricultural drainage pumps, and impermeable surfaces, and maintain records of all management practices used to reduce erosion and sediment loading.

H. Avoid disturbance (i.e., removal, degradation, or destruction) of existing, naturally occurring, and established native riparian vegetative cover and report on average width and length of riparian area.

Monitoring and reporting programs for organophosphate pesticides and toxicity in a watershed must be adequate to evaluate progress toward achieving load allocations, and consequently, water quality objectives. When the Agricultural Order is modified to implement these TMDLs as surface receiving water limits, owners and operators of irrigated lands enrolled in the Agricultural Order must re-evaluate the surface receiving water monitoring and reporting work plan and follow-up surface receiving water

implementation work plan required by the Agricultural Order and its monitoring and reporting program (MRP), to determine whether the work plans continue to meet the requirements of the Agricultural Order and its MRP, such that the enrolled discharger will meet the new receiving water limits by their respective compliance dates. If the work plans are deficient, they must be updated and must consider the level of water quality impairment identified through surface receiving water monitoring. Where necessary, the work plan must identify follow-up actions to restore degraded areas to meet load allocations and identify additional surface receiving water monitoring locations for pollutant source identification and abatement.

Storm Drain Discharges to Municipal Separate Storm Sewer Systems (MS4s):
The TMDLs will be implemented through permits regulating the discharges from two MS4s in the watershed, operated by the City of Salinas and Monterey County. Both MS4s must develop implementation plans to attain TMDL waste load allocations in the receiving waters into which they discharge.

City of Salinas:
The City of Salinas (City) is subject to the National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for City of Salinas Municipal Stormwater Discharges (Order R3-2019-0073, NPDES CA0049981) (Phase I MS4 Stormwater Permit) or any future NPDES permits regulating the City's MS4 discharges. This MS4 Permit requires the City to comply with applicable water quality-based effluent limitations and associated compliance schedules that implement the waste load allocations assigned to the City in approved TMDL Projects. Within one year of approval of these TMDLs by the Office of Administrative Law (OAL), the City must prepare a plan to address the TMDL waste load allocations assigned to the City. The MS4 Permit requires the City's plan, referred to as a Pollutant Load Reduction Plan, to address all waterbody-pollutant combinations identified in the MS4 Permit for which the City has not yet demonstrated waste load allocation attainment. As such, the City will be required to update its Pollutant Load Reduction Plan to incorporate its assigned waste load allocations for organophosphate pesticides and toxicity in the lower Salinas River watershed. In addition, if and when this Permit is reissued, it will implement the TMDL waste load allocations and TMDL compliance schedule, which the City will be required to meet.

Monterey County:
The County of Monterey (County) is subject to the General Permit for Waste Discharge Requirements for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (Water Quality (WQ) Order 2013-0001-DWQ NPDES CAS000004, as amended by Order WQ 2015-0133-EXEC, Order WQ 2016-0069-EXEC, WQ Order 2017-XXXX-DWQ, Order WQ 2018-0001-EXEC, and Order WQ 2018-0007-EXEC) (Phase II Small MS4 Permit) or any future NPDES permits regulating the County's MS4 discharges. After adoption of these TMDLs, this General Permit requires the County to develop, submit, and begin implementation of an Allocation Attainment Program that identifies actions the County will take to attain its waste load allocations within one year of OAL approval of these TMDLs, or within one year of General Permit renewal,

whichever comes first. The following permit requirements related to TMDL attainment may change in subsequent permit reissuances, and the County will be required to implement revisions at that time.

The Allocation Attainment Program for these TMDLs shall include:

1. A detailed description of the strategy the MS4 permittee will use to guide Best Management Plan (BMP) selection, assessment, and implementation to ensure that BMPs implemented will be effective at abating pollutant sources, reducing pollutant discharges, and achieving waste load allocations according to the TMDL compliance schedule.
2. Identification of sources of the impairment within the MS4 permittee's jurisdiction, including specific information on various source locations and their magnitude within the jurisdiction.
3. Prioritization of sources within the MS4 permittee's jurisdiction, based on suspected contribution to the impairment, ability to control the source, and other pertinent factors.
4. Identification of BMPs that will address the sources of impairing pollutants and reduce the discharge of impairing pollutants.
5. Prioritization of BMPs, based on suspected effectiveness at abating sources and reducing impairing pollutant discharges, as well as other pertinent factors.
6. Identification of BMPs the MS4 permittee will implement, including a detailed implementation schedule. For each BMP, identify milestones the MS4 permittee will use for tracking implementation, measurable goals the MS4 permittee will use to assess implementation efforts, and measures and targets the MS4 permittee will use to assess effectiveness. The Allocation Attainment Program shall include expected BMP implementation for future implementation years, with the understanding that future BMP implementation plans may change as new information is obtained.
7. A quantifiable numeric analysis that uses published BMP pollutant removal estimates, performance estimates, modeling, best professional judgment, and/or other available tools to demonstrate that the BMP selected for implementation will likely achieve the MS4's waste load allocation by the schedule identified in the TMDL Project. This analysis will most likely incorporate modeling efforts. The MS4 permittee shall conduct repeat numeric analyses as the BMP implementation plans evolve and information on BMP effectiveness is generated. Once the MS4 permittee has water quality data from its monitoring program, the MS4 permittee shall incorporate water quality data into the numeric analyses to validate BMP implementation plans.
8. A detailed description, including a schedule, of a monitoring program the MS4 permittee will implement to assess discharge and receiving water quality, BMP effectiveness, and progress towards any interim targets and ultimate attainment of the MS4s' waste load allocation. The monitoring program shall be designed to validate BMP implementation efforts and quantitatively demonstrate attainment of interim targets and waste load allocations.
9. If the approved TMDL Project does not explicitly include interim targets, the MS4 permittee shall establish interim targets (and dates when stormwater discharge

conditions will be evaluated) that are equally spaced in time over the TMDL compliance schedule and represent measurable, continually decreasing MS4 discharge concentrations or other appropriate interim measures of pollution reduction and progress towards the waste load allocation. At least one interim target and date must occur during the first five years commencing on January 1, 2019. The MS4 permittee shall achieve its interim targets by the date specified in the Allocation Attainment Program. If the MS4 does not achieve its interim target by the date specified, the MS4 permittee shall develop and implement more effective BMPs that it can quantitatively demonstrate will achieve the next interim target.

10. A detailed description of how the MS4 permittee will assess BMP and program effectiveness. The description shall incorporate the assessment methods described in the California Stormwater Quality Association (CASQA) Municipal Storm Water Program Effectiveness Assessment Guide.
11. A detailed description of how the MS4 permittee will modify the program to improve upon BMPs determined to be ineffective during the effectiveness assessment.
12. A detailed description of information the MS4 permittee will include in annual reports to demonstrate adequate progress towards attainment of waste load allocations according to the TMDL compliance schedule.
13. A detailed description of how the MS4 permittee will collaborate with other agencies, stakeholders, and the public to develop and implement the Allocation Attainment Program.
14. Any other items identified by Integrated Report fact sheets, TMDL Project Reports, TMDL Resolutions, or that are currently being implemented by the MS4 permittee to control its contribution to the impairment.

Non-stormwater discharges consist of all discharges from an MS4 that do not originate from precipitation events. The stormwater permits pertaining to the City and County effectively prohibit non-stormwater discharges through an MS4 into waters of the United States. Certain categories of non-stormwater discharges are conditionally exempt from the prohibition of non-stormwater discharge, as specified at 40 Code of Federal Regulations section 122.26(d)(2)(iv)(B)(1). Non-stormwater discharges that are regulated by a separate NPDES permit are not subject to the non-stormwater discharge prohibition.

MS4 Monitoring

MS4 operators with operations and stormwater conveyance systems discharging to receiving waters in the lower Salinas River watershed are currently required to develop and submit monitoring programs as part of their MS4 permit requirements. For the City, the goals of their monitoring program are described in the requirements of their Pollution Load Reduction Program; for the County, these goals are described in their Allocation Attainment Program. To comply with the permit terms implementing these TMDLs, the City should include the collection of water samples and laboratory analysis for malathion at all existing stormwater outfall locations identified in the NPDES permit, consistent with the monitoring and reporting frequency in that permit. The City's MRP contains

receiving water toxicity testing provisions that are adequate for evaluating progress towards meeting the TMDL waste load allocations.

The City must develop and submit monitoring and implementation programs. Monitoring strategies can use a phased approach, for example, by phasing in outfall or receiving water monitoring after BMPs have been implemented and assessed for effectiveness. Pilot projects, where BMPs are implemented in well-defined areas covering a fraction of the MS4, may facilitate accurate assessment of how well the BMPs control the pollution sources are acceptable, with the intent of successful practice then being implemented in other or larger parts of the MS4.

Monitoring conducted in the watershed by programs such as the Central Coast Ambient Monitoring Program (CCAMP) contain routine sampling for toxicity and organophosphate pesticides and this data is adequate to evaluate progress toward and attainment of the County's waste load allocations.

Industrial and Construction Stormwater Discharges:
Industrial facilities and construction operators are expected to meet the proposed waste load allocations through their existing permits after such time when these TMDLs have been implemented in those permits. To maintain existing water quality and prevent any further water quality degradation, these permitted industrial facilities and construction operators shall continue to implement and comply with the requirements of the statewide General Permit for Stormwater Discharges Associated with Industrial Activities (Order 97-03-DWQ, as amended by Order 2014-0057-DWQ, NPDES CAS000001) or the statewide General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009, as amended by Order 2012-0006-DWQ, NPDES CAS000002), or any subsequent Industrial or Construction General Permits.

The Industrial General Permit regulates industrial stormwater discharges from industrial facilities in California. Industrial facilities such as manufacturers, landfills, mines, steam generating electricity facilities, hazardous waste facilities, transportation facilities with vehicle maintenance, large sewage and wastewater plants, recycling facilities, oil and gas facilities, and agricultural processing facilities are typically required to obtain Industrial General Permit coverage. Except for non-stormwater discharges authorized in Section IV of the Industrial General Permit, discharges of liquids or materials other than stormwater, either directly or indirectly, to waters of the United States are prohibited unless authorized by another NPDES permit. Unauthorized (unpermitted) non-stormwater discharges must be either eliminated or the discharger must seek authorization under a separate NPDES permit or waste discharge requirements.

Chlorpyrifos is readily adsorbed to soil particles and susceptible to soil transport via erosion into surface water bodies. Dischargers whose projects disturb one or more acres of soil are required to enroll under the Construction General Permit. The Construction General Permit requires the development of a Storm Water Pollution

Prevention Plan (SWPPP) by a Qualified SWPPP Developer. The SWPPP development includes site assessment and sediment and erosion control BMP selection.

Cannabis Cultivation

The TMDLs will also be implemented through General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Dischargers of Waste Associated with Cannabis Cultivation Activities (Order WQ 2019-0001-DWQ) (Cannabis General Order), the associated Monitoring and Reporting Program (MRP), and any future permits regulating the discharge of waste from commercial cannabis operations.

The Cannabis General Order specifically requires owners, operators, and landowners of commercial cannabis cultivation operations (dischargers) to comply with the following general requirements and prohibitions:

- Prior to commencing any cannabis cultivation activities, including cannabis cultivation land development or alteration, the cannabis cultivator shall comply with all applicable federal, state, and local laws, regulations, and permitting requirements, as applicable. (Cannabis General Order, Attachment A, Section 1, Term 1.)
- The cannabis cultivator shall comply with all water quality objectives/standards, policies, and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Water Code, division 7), section 13000 et seq. or federal Clean Water Act section 303 (33 U.S.C. section 1313). (Cannabis General Order, Attachment A, section 1, requirement 14.)
- Cannabis cultivators shall not discharge waste in a manner that creates or threatens to create a condition of pollution or nuisance, as defined by Water Code section 13050. (Cannabis General Order, Attachment A, section 1, requirement 25.)
- Except as allowed and authorized by the Cannabis General Order, cannabis cultivators shall not discharge: irrigation runoff, tailwater, sediment, plant waste, or chemicals to surface water or via surface runoff; waste classified as hazardous (California Code of Regulations, title 23, section 2521(a)) or defined as a designated waste (Water Code section 13173); or waste in violation of, or in a manner inconsistent with, the appropriate Water Quality Control Plan(s). (Cannabis General Order, Attachment A, section 1, requirement 26.)
- Cannabis cultivators shall not mix, prepare, over apply, or dispose of agricultural chemicals/products (e.g., fertilizers, pesticides, and other chemicals as defined in the applicable water quality control plan) in any location where they could enter the riparian setback or waters of the state. The use of agricultural chemicals inconsistently with product labeling, storage instructions, or CDPR requirements for pesticide applications is prohibited. Disposal of unused product and containers shall be consistent with labels. (Cannabis General Order, Attachment A, section 2, requirement 103.)
- Cannabis cultivators shall establish and use a separate storage area for pesticides and fertilizers, and another storage area for petroleum or other liquid chemicals (including diesel, gasoline, oils, etc.). All such storage areas shall comply with the riparian setback Requirements, be in a secured location in

compliance with label instructions, outside areas of known slope instability, and be protected from accidental ignition, weather, and wildlife. All storage areas shall have appropriate secondary containment structures, as necessary, to protect water quality and prevent spillage, mixing, discharge, or seepage. Storage tanks and containers must be of suitable material and construction to be compatible with the substances stored and conditions of storage, such as pressure and temperature. (Cannabis General Order, Attachment A, section 2, requirement 105.)

- Cannabis cultivators shall not apply agricultural chemicals within 48 hours of any weather pattern that is forecast to have a 50 percent or greater chance of precipitation of 0.25 inches or greater per 24 hours. (Cannabis General Order, Attachment A, section 2, requirement 110.)
- Cannabis cultivators shall not apply restricted materials, including restricted pesticides, or allow restricted materials to be stored at the cannabis cultivation site. (Cannabis General Order, Attachment A, section 2, requirement 114).
- Cannabis cultivators shall implement integrated pest management strategies where possible to reduce the need and use of pesticides and the potential for discharges to waters of the state.[2] (Cannabis General Order, Attachment A, section 2, requirement 115).

Fertilizer and Pesticide Handling Facilities

General Waste Discharge Requirements for Fertilizer and Pesticide Handling Facilities in the Central Coast Region (Order R3-2005-0001; the "Fertilizer/Pesticide General Order") and individual waste discharge requirements issued to owners, operators, and landowners of fertilizer and pesticide handling facilities will also implement the TMDLs.

The Fertilizer/Pesticide General Order specifically requires enrolled owners, operators, and landowners of fertilizer and pesticide handling facilities (dischargers) to comply with the following general prohibitions and requirements:

- Discharge, overflow, bypass, leakage, seepage, and over-spray of any waste, rinse water, or contaminated site runoff water to drainageways and adjacent properties are prohibited. (Fertilizer/Pesticide General Order, section B.2.)
- Discharge of wastes, dry or liquid fertilizer, pesticides, or other chemicals to unpaved surfaces or paved surfaces with cracks or holes that may adversely affect surface or groundwater quality is prohibited. (Fertilizer/Pesticide General Order, section B.4.)
- Empty pesticide containers shall be disposed of only at a disposal site approved by the Regional Board to receive these wastes. Opened and non-waterproof containers shall be properly stored and protected to prevent spillage, overtopping, and leakage which could impact surface or ground water quality. Fertilizer/Pesticide General Order, section C.1.)

[2] U.S. EPA integrated pest management principles: https://www.epa.gov/safepestcontrol/integrated-pest-management-ipm-principles

- Fertilizer and pesticide waste shall be discharged to a regulated waste disposal site approved by the Board to receive hazardous or toxic waste, or recycled or treated onsite provided the Discharger demonstrates by analysis that the waste is non-hazardous and non-toxic. Fertilizer/Pesticide General Order, section C.2.)
- Surface drainage shall be intercepted and diverted away from areas where the water may be contaminated by wastes or spilled fertilizer or pesticides. Fertilizer/Pesticide General Order, section C.5.)
- All storm drainage contaminated as a result of operations at this facility shall be contained and properly disposed. Fertilizer/Pesticide General Order, section C.6.)
- Collected and stored rinsewater containing pesticide or fertilizer residues shall be disposed of in accordance with the law and in a manner approved by the Executive Officer. Fertilizer/Pesticide General Order, section C.7.)

Compliance Schedule and Milestones for Allocations

Waterbodies in the lower Salinas River watershed are highly impaired due to organophosphate pesticides and conditions of toxicity. As such, implementation should occur at an accelerated pace to achieve allocations in the shortest time-frame feasible to ensure protection of beneficial uses.

The TMDL attainment date to achieve TMDL allocations for chlorpyrifos and diazinon and the additive toxicity of chlorpyrifos and diazinon is December 31, 2032. This date is consistent with the compliance dates in TMDL areas currently established in the General Waste Discharge Requirements for Discharges from Irrigated Lands, Order R3-2021-0040 (Agricultural Order) for chlorpyrifos and diazinon (see Agricultural Order,[3] Table C.3-4).

Water quality trends for malathion indicate a significant increase in concentrations in the lower Salinas River watershed from 2006 to 2018, and crop application of malathion has been persistent within the TMDL Project area. In addition, all waterbodies within the lower Salinas River watershed exhibit significant toxicity to the survival of one or more test species. **The TMDL attainment date to achieve TMDL allocations for malathion and the additive toxicity of malathion in the presence of chlorpyrifos and/or diazinon is December 31, 2032.** This 2032 TMDL attainment date is consistent with the receiving water limit compliance date set forth in the current Agricultural Order for malathion in non-TMDL areas (see Agricultural Order, Table C-3.5).

Attainment of the toxicity testing numeric target will be sufficient to demonstrate attainment of the individual and additive toxicity organophosphate pesticide allocations.

[3]Agricultural Order: https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ilp/docs/ag_order4/2021/ao4_order.pdf

Tracking and Evaluation

After the TMDLs are approved by OAL, the Central Coast Water Board will periodically review implementation actions, monitoring results, and responsible parties' evaluations of their progress toward achieving their allocations. The Central Coast Water Board will use updates to the federal Clean Water Act section 303(d) List of impaired waters (303(d) List), annual reports from dischargers required to submit such reports, nonpoint source program monitoring data and reports, evaluations submitted by responsible parties, and other available information to determine progress toward implementing required actions and achieving the allocations and numeric targets.

Central Coast Water Board staff may conclude in future reviews that ongoing implementation efforts are insufficient to ultimately achieve the allocations and numeric targets. If this occurs, Central Coast Water Board staff will recommend revisions to the TMDL Implementation Plan. Alternatively, Central Coast Water Board staff may conclude and articulate in the reviews that implementation efforts are likely to result in achieving the allocations and numeric targets, in which case existing and anticipated implementation efforts should continue. When allocations and/or numeric targets are met, Central Coast Water Board staff will recommend the waterbody be removed from the 303(d) List.