

**STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION**

**STAFF REPORT FOR REGULAR MEETING OF MAY 4-5, 2011**

Prepared April 7, 2011

**ITEM NUMBER: 16**

**SUBJECT: Adopting Total Maximum Daily Loads for Chlorpyrifos and Diazinon in Lower Salinas River Watershed**

**STAFF CONTACT: Larry Harlan 805/594-6195 or lharlan@waterboards.ca.gov**

**SUMMARY**

Staff recommends adoption of the proposed Total Maximum Daily Loads (TMDLs) for chlorpyrifos and diazinon in the Lower Salinas River Watershed.

The Lower Salinas Watershed (the project area) is the watershed area beginning at the Salinas River crossing at Gonzales Road near Gonzales, downstream to the mouth of the Salinas River. The project area encompasses approximately 350 square miles. The impaired waterbodies addressed in this TMDL are Moss Landing Harbor, Old Salinas River Estuary, Old Salinas River, Salinas River Lagoon (North), Tembladero Slough, Alisal Slough, Blanco Drain, Salinas Reclamation Canal, lower Salinas River, Espinosa Slough, Espinosa Lake, Natividad Creek, Quail Creek, Chualar Creek, Merritt Ditch, and Gabilan Creek. These waterbodies are listed as impaired because the water quality objectives for toxicity and pesticides are not being met due to excessive concentration of chlorpyrifos and diazinon.

The proposed TMDLs, numeric targets, and load allocations for chlorpyrifos and diazinon will result in meeting narrative water quality objectives for toxicity and pesticides in the Lower Salinas River Watershed. Central Coast Water Board staff has identified sources of chlorpyrifos and diazinon that are causing or contributing to water quality impairment, has identified parties responsible for these sources, and has proposed load allocations necessary to achieve the TMDLs.

Staff has identified the *Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands in the Central Coast Region (Agricultural Order)* as the existing regulatory mechanism to achieve the TMDLs. No new regulatory mechanism is being proposed to implement and achieve the TMDLs.

Therefore, this TMDL is being adopted not through a basin plan amendment, but through the Central Coast Water Board's approval of the resolution associated with this agenda item, which includes findings that the Agricultural Order will implement the TMDL. According to state policy, staff is encouraged to take this approach of TMDL approval when the impairments can be addressed through a single action by the Board; the approach conserves valuable state resources and avoids regulatory redundancy.

The Lower Salinas River, Moss Landing Harbor, Old Salinas River, Tembladero Slough, Alisal Slough, Blanco Drain, Salinas Reclamation Canal, Espinosa Slough, Espinosa Lake, Natividad Creek, Quail Creek, Chualar Creek, Merritt Ditch, and Gabialan Creek are located in the Lower Salinas River Watershed and are on the 2010 Clean Water Act section 303(d) list of impaired waters due to the pesticides chlorpyrifos and/or diazinon and/or unknown toxicity. The water quality objectives for pesticides and toxicity are not being achieved because concentrations of chlorpyrifos and diazinon are present at levels toxic to the environment.

The Old Salinas River Estuary, Salinas River Lagoon (North), Alisal Slough, and Natividad Creek are located in the Lower Salinas River Watershed, are not on the Clean Water Act section 303(d) list of impaired waters for chlorpyrifos and/or diazinon, but are impaired due to chlorpyrifos and/or diazinon.

In this agenda item, staff recommends the Central Coast Water Board approve the resolution (Attachment 1 to this Staff Report) that establishes Total Maximum Daily Loads (TMDLs) for chlorpyrifos and diazinon in the Lower Salinas River Watershed.

Staff developed the technical basis for the TMDLs and associated allocations, which is provided in the Final Project Report (Attachment 2 to this staff report). The Final Project Report is provided at the website of the Central Coast Water Board at:

[http://www.waterboards.ca.gov/centralcoast/board\\_info/agendas/2011/2011\\_agendas.shtml](http://www.waterboards.ca.gov/centralcoast/board_info/agendas/2011/2011_agendas.shtml)

Click on “view agenda” for May 5, 2011, then scroll down and click on the agenda item for the TMDL for Lower Salinas River Chlorpyrifos and Diazinon TMDLs.

## **DICUSSION**

### **Project Development for TMDLs**

Staff developed the TMDLs using data and information from the Central Coast Ambient Monitoring Program, California Department of Pesticide Regulation, California Department of Fish and Game, Cooperative Monitoring Program for the Central Coast Agricultural Waiver Program, and California State University, Monterey Bay. Staff also used discharger data and reports, land use data, field reconnaissance work, USEPA-recommended or recognized empirical load assessment methods, and conversations with staff from other agencies.

### **Numeric Targets**

The Basin Plan contains general water quality objectives for all inland surface waters, enclosed bays, and estuaries. The narrative water quality objective for toxicity states, in part:

*“All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal, or aquatic life.”*

The narrative water quality objective for pesticides states, in part:

*“No individual pesticide or combination of pesticides shall reach concentrations that adversely affect beneficial uses.”*

The TMDL numeric targets are numeric interpretations of the narrative water quality objectives for toxicity and pesticides. The numeric targets for the proposed TMDLs are identical to

numeric targets derived by the California Department of Fish and Game in 2004 and the Central Valley Regional Water Quality Control Board for chlorpyrifos and diazinon. These targets were subsequently approved by USEPA through several TMDLs developed by the Central Valley Regional Water Quality Control Board. Additionally, USEPA has reviewed these proposed chlorpyrifos and diazinon TMDLs for the Lower Salinas River Watershed and supports Central Coast Water Board approval of the proposed TMDLs today. Achieving the proposed TMDL numeric targets will result in achieving the water quality objectives for pesticides and toxicity as they are impacted by chlorpyrifos and diazinon.

Numeric targets for the TMDLs include acute and chronic water column numeric targets for chlorpyrifos and diazinon when only one of the compounds is present. Additionally, the numeric targets include water column targets for additive toxicity of chlorpyrifos and diazinon when both compounds are present. The additive toxicity targets address additive toxic affects of chlorpyrifos and diazinon when both are present.

The water column numeric targets for chlorpyrifos and diazinon, when only one of the two compounds is present, are outlined in the table below:

Compound	CMC <sup>A</sup> (ppb)	CCC <sup>B</sup> (ppb)
Chlorpyrifos	0.025	0.015
Diazinon	0.16	0.10

<sup>A</sup> CMC – Criterion Maximum Concentration or acute (1- hour average). Not to be exceeded more than once in a three year period

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

The water column numeric targets for additive toxicity of chlorpyrifos and diazinon, when both compounds are present, are outlined in the table below:

<p>Numeric Target shall not exceed the sum (S) of one (1) as defined below</p> $S = \frac{C_D}{WQO_D} + \frac{C_C}{WQO_C} \leq 1.0$ <p>where:</p> <p><math>C_D</math> = diazinon concentration</p> <p><math>C_C</math> = chlorpyrifos concentration</p> <p><math>WQO_D</math> = Criterion Continuous Concentration (chronic) or Criterion Maximum Concentration (acute) diazinon specified above.</p> <p><math>WQO_C</math> = Criterion Continuous Concentration (chronic) or Criterion Maximum Concentration (acute) chlorpyrifos loading capacity specified above.</p>
--

**Source Analysis**

Discharges from irrigated agriculture in the project area are the single controllable source causing impairment due to chlorpyrifos and diazinon.

In 2001, USEPA began a phase-out of allowable chlorpyrifos and diazinon use. Retail sales of these pesticides ended in 2002. Phase-out of the pesticides used for management of structural pests, such as termites, was complete in 2005. Agricultural applications of chlorpyrifos and diazinon remain as the single significant use of these pesticides.

The half-life of chlorpyrifos and diazinon in the water column ranges from 30-138 days, depending on field conditions. Therefore, staff concludes that it is very unlikely that excursions of chlorpyrifos and diazinon targets seen today are a result of applications prior to the USEPA phase-out.

Impairments in the project area where exceedances of the chlorpyrifos and diazinon targets are present are consistently flanked by lands used for agricultural purposes and where these pesticides are commonly applied. Staff has described and geographically illustrated chlorpyrifos and diazinon applications in the project area in Chapter 4 of the Final Project Report. There is a strong relationship between agricultural application of chlorpyrifos and diazinon and the impairments addressed in the proposed TMDL.

**TMDLs and Allocations**

The TMDLs for chlorpyrifos and diazinon in the Lower Salinas River are concentration-based TMDLs, and are equal to the numeric targets, as described in the numeric targets section above.

Concentration-based TMDLs are an appropriate expression of TMDLs and meet USEPA requirements for TMDL approval. USEPA has approved concentration-based chlorpyrifos and diazinon TMDLs for the Central Valley Regional Water Quality Control Board.

Recall that the numeric targets, and therefore the TMDLs, were developed by California Department of Fish and Game in 2004 and the Central Valley Regional Water Quality Control Board, which were subsequently approved by USEPA.

USEPA has reviewed and supports staffs recommendation of approval for these proposed TMDLs.

Owners and operators of agricultural lands using chlorpyrifos and diazinon are assigned load allocations equal to the TMDLs and numeric targets.

**Implementation and Monitoring**

The TMDL will be implemented through the requirements established in the Agricultural Order; this includes the order currently in effect and renewals of it.

The Implementation and Monitoring chapter of the Final Project Report outlines recommendations that should be incorporated in the requirements of the Agricultural Order. Note that these are recommendations, and the actual requirements are established in the Agricultural Order. The recommendations in the Final Project Report include:

1. Prioritizing implementation and monitoring efforts in waterbodies impaired due to chlorpyrifos, diazinon, and toxicity.
2. Prioritizing implementation and monitoring efforts in areas where chlorpyrifos and diazinon are likely applied.
3. Prioritizing implementation and monitoring efforts toward eliminating or minimizing irrigation and stormwater runoff from areas where chlorpyrifos or diazinon are applied.
4. Monitoring requirements consistent with evaluation of the numeric targets, tracking TMDL progress in the impaired waterbodies, and further refinement of source analysis at the individual operation scale in the impaired waterbodies.
5. Monitoring requirements utilizing toxicity identification evaluation (TIE), or a similar analysis, in areas where toxicity is identified but the pollutant stressor is unknown.

The Final Project Report also recommends monitoring sites for evaluating progress towards achieving the TMDLs. Most of the recommended monitoring sites are existing monitoring sites used in the cooperative monitoring program.

#### **Time Schedule for Tracking Progress and Achieving the TMDLs**

The target date to achieve the allocations, numeric targets, and TMDLs in the impaired waterbodies addressed in this TMDL is 2025; this date coincides with the measurable goals established by the Central Coast Water Board. The Agricultural Order should establish timeframes for individual dischargers to achieve water quality standards; achieving water quality standards will result in achieving TMDL allocations. Highest priority dischargers should have the shortest timeframe, such as those dischargers who pose the greatest risk to water quality due to toxicity from chlorpyrifos or diazinon. Lower prioritized dischargers that are also contributing to the impairments could have a longer timeframe, with the ultimate goal of verifiable progress towards achieving water quality objectives, and therefore the TMDL, no later than the year 2025.

Water Board staff will reevaluate impairments caused by chlorpyrifos and diazinon when monitoring data is submitted and during renewals of the Agricultural Order. Water Board staff will propose modifications of the Agricultural Order or other regulatory mechanisms, if necessary, to address remaining impairments.

#### **ANTI-DEGRADATION**

The proposed TMDLs are consistent with the provisions of the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" and 40 CFR 131.12. The TMDLs require actions that will result in improved water quality throughout the watershed and maintenance of the level of water quality necessary to protect existing and anticipated beneficial uses. The TMDL is implemented through the Agricultural Order, which is adopted in compliance with Water Code section 13269. The Order includes conditions and prohibitions requiring compliance with water quality standards, implementation of management practices to attain water quality objectives, and monitoring and reporting programs. The Order is enforceable and subject to review at least every five years.

#### **PUBLIC INVOLVEMENT**

Staff conducted stakeholder outreach efforts during TMDL development. Staff worked with county, state, and federal agencies during the data collection and data analysis phases.

Staff made several presentations and engaged with stakeholders during the development of the TMDL. Attendees of the presentations included representatives of the following:

- Monterey County Water Resources Agency
- Monterey County Resource Conservation District
- Monterey County Farm Bureau
- Monterey County Agricultural Commissioner's Office
- Central Coast Water Quality Preservation, Inc.
- Elkhorn Slough Foundation
- Elkhorn Slough National Estuarine Research Reserve
- City of Salinas
- Central Coast Agricultural Water Quality Coalition
- Commercial Ranches
- Commercial Farms

Staff conducted a stakeholder meeting on January 7, 2009. Staff addressed questions and comments from attendees.

Staff held another stakeholder meeting on January 13, 2010, where stakeholders agreed with staff that the TMDL approval should be paused until the Agricultural Order renewal had evolved further. Stakeholders recommended changes to the draft Project Report, e.g. inclusion of loading analysis in the report; staff incorporated these recommended changes in the Final Project Report.

This Staff Report, Resolution, and Project Report were made available for a 45-day public comment period beginning February 1, 2011.

Written public comments were received from:

1. U.S. Environmental Protection Agency ( USEPA)
2. National Marine Fisheries Service (NMFS)

No other written public comments were received during the public comment period.

The USEPA comments state that the proposed TMDLs meet federal requirements under the Clean Water Act, will address impairments related to chlorpyrifos, diazinon and unknown toxicity, and support Water Board approval of the proposed TMDLs.

The NMFS comments generally state that the March 2011 draft Agricultural Order is unlikely to result in achieving water quality standards impacted by chlorpyrifos and diazinon. The NMFS comments are partly based on their interpretation of the March 2011 draft Agricultural Order that tile-drain areas and nurseries are exempt from the highest regulatory oversight (Tier 3). Staff responded to NMFS comments, in part, by clarifying what the criteria for Tier 3 dischargers are, which can include tile-drained areas and nurseries. Staff further responded that the current Agricultural Order is intended to achieve water quality standards and does not exempt dischargers in tile-drain areas or nurseries from doing so.

Public comments and staff's response are incorporated in more detail in Attachment 4 to this staff report.

**RECOMMENDATION**

Adopt Resolution No. R3-2011-0005 as proposed to approve the Total Maximum Daily Loads for Chlorpyrifos and Diazinon in Lower Salinas River Watershed.

**ATTACHMENTS:**

The attachments are available at:

[http://www.waterboards.ca.gov/centralcoast/board\\_info/agendas/2011/2011\\_agendas.shtml](http://www.waterboards.ca.gov/centralcoast/board_info/agendas/2011/2011_agendas.shtml)

Click on “view agenda” for May 5, 2011, then scroll down and click on the agenda item for the TMDL for Lower Salinas River Chlorpyrifos and Diazinon TMDLs.

1. Resolution No. R3-2011-0005
2. Final Project Report: “Total Maximum Daily Loads for Chlorpyrifos and Diazinon in Lower Salinas River Watershed”
3. Notice of Public Hearing
4. Public Comment and Staff Response