[Attachment A to Resolution No. R4-2005-XXXX

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate the

Calleguas Creek Watershed Toxicity TMDL

Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on [Insert Date].

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Amendments

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Chapter 7. Total Maximum Daily Loads (TMDLs)
Calleguas Creek Watershed Toxicity TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on [Insert date].

This TMDL was approved by:

The State Water Resources Control Board on [Insert date].
The Office of Administrative Law on [Insert date].
The U.S. Environmental Protection Agency on [Insert date].

Table 7-16.1. Calleguas Creek Watershed Toxicity TMDL: Elements

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Problem Statement	Discharge of wastes containing chlorpyrifos, diazinon, other pesticides and/or other toxicants to Calleguas Creek, its tributaries and Mugu Lagoon cause exceedances of water quality objectives for toxicity established in the Basin Plan. Elevated levels of chlorpyrifos have been found in fish tissue samples collected from a segment of Calleguas Creek. Chlorpyrifos and diazinon are organophosphate pesticides used in both agricultural and urban settings. Excessive chlorpyrifos and diazinon can cause aquatic life toxicity in inland surface and estuarine waters such as Calleguas Creek and Mugu Lagoon.
Numeric Targets	This TMDL establishes a numeric toxicity target of 1.0 toxicity unit – chronic (1.0 TUc) to address toxicity in reaches where the toxicant has not been identified through a TIE (unknown toxicity). TU_C = Toxicity Unit Chronic = 100/NOEC (no observable effects concentration) If the Regional Board revises NPDES permits or the Basin Plan to use other methods of evaluating toxicity, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target. A sediment toxicity target was defined in the technical report for reaches where the sediment toxicant has not been identified through a TIE. The target is based on the definition of a toxic sediment sample as defined by the September 2004 Water Quality Control Policy For Developing California's Clean Water Act Section 303(d) List (SWRCB). In addition, the following water column targets are set for chlorpyrifos and diazinon based on water quality criteria developed by both USEPA and California Department of Fish and Game using USEPA guidelines for development. These targets were developed because there are no promulgated water quality objectives for chlorpyrifos or diazinon. Chlorpyrifos Numeric Targets (ug/L) Chronic (1 hour average) / Acute (4-day average) Freshwater: 0.014 / 0.025 Saltwater: 0.02 / 0.009

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<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td></td><td>Diazinon Numeric Targets (ug/L)

<table>
<tr><th></th><th>Chronic
(1 hour average)</th><th>Acute
(4-day average)</th></tr>
<tr><td>Freshwater</td><td>0.10</td><td>0.10</td></tr>
<tr><td>Saltwater</td><td>0.40</td><td>0.82</td></tr>
</table>

Additionally, the diazinon criteria selected as numeric targets are currently under review by the USEPA. If water quality objectives become available, the Regional Board may reconsider this TMDL and revise the water toxicity numeric target.</td></tr>
<tr><td>Source Analysis</td><td>The TMDL source analysis estimated total use of chlorpyrifos and diazinon in the Calleguas Creek Watershed according to agriculture and urban use. Additionally, the source analysis estimated contributions to the various reaches from agriculture, urban areas, publicly owned treatment works (POTW), and other sources. Other sources included open space, groundwater accretion and atmospheric deposition. Agricultural and urban uses are the largest sources of chlorpyrifos and diazinon in the watershed. Urban use of diazinon and chlorpyrifos is unlikely to be a long-term source to the CCW as both of these pesticides have been banned for sale for non-agricultural uses on December 31, 2005 by federal regulation. As a result, the proportion of the loading from urban sources will likely decrease after December 2005.

Chlorpyrifos – Sources by Use

<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>66%</td><td>80%</td></tr>
<tr><td>Urban</td><td>23%</td><td>20%</td></tr>
<tr><td>POTW</td><td>11%</td><td><1%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table>

Diazinon – Sources by Use

<table>
<tr><th></th><th>Dry Weather</th><th>Wet Weather</th></tr>
<tr><td>Agriculture</td><td>30%</td><td>1%</td></tr>
<tr><td>Urban</td><td>13%</td><td>62%</td></tr>
<tr><td>POTW</td><td>57%</td><td>37%</td></tr>
<tr><td>Other</td><td><1%</td><td><1%</td></tr>
</table></td></tr>
<tr><td></td><td></td></tr>
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TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Linkage Analysis	Water quality modeling established the linkage of sources of chlorpyrifos and diazinon in the CCW to observed water quality data. The framework for the CCW Toxicity TMDL modeling effort is a spreadsheet-based mass balance water quality model, the Toxicity TMDL Mass Balance Model (TTMBM). The model utilizes the flowrate calculations and precipitation data processing of a spreadsheet model, the Dynamic Calleguas Creek Modeling System (DCCMS), developed in support of the Calleguas Creek Salts TMDL Work Plan. The linkage analysis qualitatively describes the connection between water column concentrations and sediment and fish tissue concentrations. The qualitative analysis demonstrates that the water column analysis conducted by laboratories implicitly includes sediment associated diazinon and chlorpyrifos loads transported to receiving waters as almost all water quality data do not differentiate between dissolved and particulate fractions. The linkage analysis assumes a reduction in water column concentrations will result in a reduction in fish tissue as chlorpyrifos in freshwater fish tissue rapidly depurate within several days of removal from exposure. Additionally, as chlorpyrifos preferentially binds to sediment the linkage analysis suggests that sediment concentrations of chlorpyrifos will need to decrease to achieve water quality numeric targets. The modeling approach reflects the uncertainty in current conditions and the potential impacts of watershed planning actions that may affect those conditions. A detailed description of the model is provided in an Attachment to the TMDL Technical Report.
Wasteload Allocations	Wasteload allocations are assigned to the Hill Canyon Wastewater Treatment Facility, Camarillo Wastewater Treatment Plant, Camrosa Wastewater Reclamation Facility, Simi Valley Water Quality Control Plant, Ventura County Wastewater Treatment Plant, NPDES stormwater permittees (including MS4, Caltrans, industrial stormwater, and construction stormwater permittees), and other NPDES permittees. The toxicity WLAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit issuance or renewal. Currently, these WLAs would be implemented as a trigger for initiation of the TRE/TIE process as outlined in USEPA's "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program" (2000) and current NPDES permits held by dischargers to the CCW.

TMDL Element	Calleguas Creek Watershed Toxicity TMDL

Major point sources:

A wasteload of 1.0 TU_c is allocated to the POTWs discharging to the Calleguas Creek Watershed.

Additionally, the following wasteloads for chlorpyrifos and diazinon are established for POTWs. A margin of safety of 5% was included in the targets for chlorpyrifos for discharges to the Calleguas and Revolon subwatersheds.

Interim wasteload allocations were developed based on POTW performance data as reported by the POTW NPDES monitoring programs. The acute interim allocation was based on the 99th percentile of data and the chronic interim allocation was based on the 95th percentile of available data from POTW NPDES monitoring. For chlorpyrifos, there were an insufficient number of detected values in the POTW NPDES data sets for statistical analysis; consequently, interim allocations were based on the maximum detected concentration for each constituent in the POTW data set.

Chlorpyrifos Wasteload Allocations, ug/L

POTW	Interim WLA	Final WLA
Hill Canyon WWTP	0.030	0.014
Simi Valley WQCP	0.030	0.014
Moorpark WTP	0.030	0.014
Camarillo WRP	0.030	0.0133
Camrosa WRP	0.030	0.0133

Diazinon Wasteload Allocations, ug/L

POTW	Interim Acute WLA	Interim Chronic WLA	Final A&C WLA
Hill Canyon WWTP	0.567	0.312	0.10
Simi Valley WQCP	0.567	0.312	0.10
Ventura County WTP	0.567	0.312	0.10
Camarillo WRP	0.567	0.312	0.10
Camrosa WRP	0.567	0.312	0.10

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TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	A wasteload of 1.0 TU_c is allocated to Urban Stormwater Co-Permittees (MS4) discharges to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established for MS4 discharges. Interim wasteload allocations were developed based on urban land use site water discharge data. The acute interim allocation was based on the 99th percentile of data and the chronic interim data was based on the 95th percentile of data. For chlorpyrifos, there were an insufficient number of detected values for statistical analysis; consequently, interim allocations were based on the maximum detected concentration. **Chlorpyrifos Wasteload Allocations, ug/L** Interim WLA: 0.45 — Final WLA: 0.014 **Diazinon Wasteload Allocations, ug/L** Interim Acute WLA: 1.73 — Interim Chronic WLA: 0.556 — Final Acute and Chronic WLA: 0.10 **Minor point sources:** Minor sources include NPDES permittees other than POTWs and MS4s, discharging to the Calleguas Creek Watershed. A wasteload of 1.0 TU_c is allocated to the minor point sources discharging to the Calleguas Creek Watershed. Additionally, the following wasteloads for chlorpyrifos and diazinon are established. Interim wasteload allocations were based on the urban stormwater limits. **Chlorpyrifos Wasteload Allocations, ug/L** Interim WLA: 0.45 — Final WLA: 0.014

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<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed Toxicity TMDL</th></tr>
<tr><td></td><td><u>Diazinon Wasteload Allocations, ug/L</u>

Interim Acute WLA 1.73 | Interim Chronic WLA 0.556 | Final WLA 0.10</td></tr>
<tr><td>Load Allocations</td><td><u>Non Point Source Dischargers:</u>

A load of 1.0 TU_c is allocated to nonpoint sources discharging to the Calleguas Creek Watershed. The toxicity LAs will be implemented in accordance with US EPA, State Board and Regional Board resolutions, guidance and policy at the time of permit issuance or renewal. Currently, these LAs would be implemented as a trigger for initiation of the TRE/TIE process as outlined in USEPA's "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program" (2000) and current NPDES permits held by dischargers to the CCW.

Additionally, the following loads for chlorpyrifos and diazinon are established. These loads apply to dischargers in accordance with the subwatershed into which the dischargers discharge. A margin of safety of 5% was included for chlorpyrifos for discharges to the Calleguas and Revolon subwatersheds.

Interim load allocations were developed based on agricultural land use water discharge data. The acute interim allocation was based on the 99th percentile of data and the chronic interim data was based on the 95th percentile of data.

<u>Chlorpyrifos Load Allocations, ug/L</u>

<table>
<tr><th>Subwatershed</th><th>Interim Acute</th><th>Interim Chronic</th><th>Final Chronic LA</th></tr>
<tr><td>Arroyo Simi</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
<tr><td>Las Posas</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
<tr><td>Conejo</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
<tr><td>Calleguas</td><td>2.57</td><td>0.810</td><td>0.0133</td></tr>
<tr><td>Revolon</td><td>2.57</td><td>0.810</td><td>0.0133</td></tr>
<tr><td>Mugu Lagoon</td><td>2.57</td><td>0.810</td><td>0.014</td></tr>
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TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	Diazinon Load Allocations, ug/L Interim Acute LA 0.278 Interim Chronic LA 0.138 Final LA 0.10
Margin of Safety	This TMDL analysis includes an implicit margin of safety by relying on a conservative approach in the assignment of wasteload and load allocations. The following is a list of major conservative assumptions ▪ WLAs for urban stormwater and POTWs are set to the numeric target, but use of both constituents is recently banned in urban areas so the concentrations will likely drop below target levels. ▪ The WLAs and LAs are set to the numeric water column target. Because the contributions to receiving water are dependent on the environmental conditions and behave differently, maximum contribution is a blend of all sources, none of which are likely discharging at the target concentration simultaneously. ▪ An implicit margin of safety to ensure protection from toxicity due to chlorpyrifos concentrations in sediments exists. As shown in the linkage analysis of the Technical Report, attainment of proposed water column target will ensure attainment of lowest no-effect level of chlorpyrifos in sediments identified in the literature. In addition to the implicit margin of safety, an explicit margin of safety of 5% has been added to the targets for chlorpyrifos in the Calleguas and Revolon subwatersheds. Since there remains uncertainty in the linkages between the water column criteria and fish tissue and sediment concentrations, the TMDL needs to provide a means to address the uncertainty to insure that allocations are protective of all beneficial uses. The Calleguas and Revolon subwatersheds include those reaches listed for sediment toxicity and chlorpyrifos in fish tissue. The implementation plan describes an adaptive management strategy to incorporate new information, including the State's upcoming sediment quality objectives guidance. When sufficient information exists to establish sediment targets for chlorpyrifos and/or other toxic compounds, the Regional Board may revise the TMDL to include the MOS, if appropriate.

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TMDL Element	Calleguas Creek Watershed Toxicity TMDL
Future Growth	Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. The phase-out of chlorpyrifos and diazinon is expected to reduce loads from urban and POTWs significantly by 2007. Use of diazinon in agriculture has declined considerably between 1998 and 2003. Conversely, chlorpyrifos use in agriculture has remained relatively stable over the same period. The phase out of chlorpyrifos and diazinon as well as population growth will cause an increase in the use of replacement pesticides (e.g. pyrethroids) in the urban environment and may have an impact on water and/or sediment toxicity. Additionally, population growth may affect an increase in the levels of chlorpyrifos and diazinon loading in the CCW from imported products which contain residues of these pesticides.
Critical Conditions	The critical condition in this TMDL is defined as the flowrate at which the model calculated the greatest in-stream diazinon or chlorpyrifos concentration in comparison to the appropriate criterion. The critical condition for chlorpyrifos was in dry weather based on a chronic numeric target; the critical condition for diazinon was in wet weather based on an acute numeric target except in Mugu Lagoon where it was in dry weather, chronic numeric target. Acute criteria were compared to the calculated daily concentrations from the Toxicity TMDL Mass Balance Model (TTMBM), and chronic criteria were compared to a rolling 4-day arithmetic average of the calculated concentrations.
Implementation Plan	WLAs established for the major points sources, including POTWs in the CCW will be implemented through NPDES permit effluent limits. The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided. The Regional Board may revise these WLAs based on additional information as described in the Special Studies and Monitoring Section of the Technical Report. A group concentration-based WLA for toxicity has been developed for MS4s. The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured in-stream at the base of each

TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	subwatershed and will be achieved through the implementation of BMPs as outlined in the implementation plan. Evaluation of progress of the TMDL will be determined through the measurement of in-stream water quality and sediment at the base of each of the CCW subwatersheds. The Regional Board may revise these LAs based on additional information developed through special studies and/or monitoring conducted as part of the TMDL. As shown in the attached table the following implementation actions will be taken by the MS4s discharging to the Calleguas Creek Watershed and POTWs located in the CCW: ▪ Plan, develop, and implement an urban pesticides public education program; ▪ Plan, develop, and implement urban pesticide education and chlorpyrifos and diazinon- collection program; ▪ Study diazinon and chlorpyrifos replacement pesticides for use in the urban environment; and, ▪ Conduct environmental monitoring as outlined in the Monitoring Plan and NPDES Permits. LAs for chlorpyrifos and diazinon will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP), nonpoint source pollution (i.e. Load Allocations). The LARWQCB is currently developing a Conditional Waiver for Irrigated Lands. Once adopted, the Conditional Waiver Program will implement allocations and attain numeric targets of this TMDL. Compliance with LAs will be measured at the monitoring sites approved by the Executive Officer of the Regional Board through the monitoring program developed as part of the Conditional Waiver, or through a monitoring program that is required by this TMDL. As shown in the attached table, the following implementation actions will be taken by agriculture dischargers located in the CCW: ▪ Enroll for coverage under a waiver of waste discharge requirements for irrigated lands; ▪ Implement monitoring required by this TMDL and the Conditional Waiver program; ▪ Complete studies to determine the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs; and, ▪ Implement appropriate BMPs and monitor to evaluate effectivness on in-stream water and sediment quality.

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TMDL Element	Calleguas Creek Watershed Toxicity TMDL
	The Regional Board may revise this TMDL based on monitoring data and special studies of this TMDL. Additionally, the development of sediment quality guidelines or criteria and other water quality criteria revisions may call for the reevaluation of the TMDL. The Implementation Plan includes this provision for reevaluating the TMDL to consider sediment quality guidelines or criteria and revised water quality objectives and the results of implementation studies, if appropriate.

Table 7-16.2. Overall Implementation Schedule for Calleguas Creek Watershed Toxicity TMDL

Implementation Action		Responsible Party	Tentative Date
1	Interim chlorpyrifos and diazinon waste-load allocations.[1]	POTWs and MS4 Copermittees	Effective date[2]
2	Interim chlorpyrifos and diazinon load allocations.[1]	Agricultural Dischargers	Effective date[2]
3	Finalize and submit workplan and initiate integrated Calleguas Creek Watershed Monitoring Program for approval by the Executive Officer. [3]	POTWs, MS4 Copermittees, and Agricultural Dischargers	Within 1 year of effective date[2]
4	Special Study #1 - Investigate the pesticides that will replace diazinon and chlorpyrifos in the urban environment, their potential impact on receiving waters, and potential control measures.	POTWs and MS4 Copermittees	Within 2 years of effective date[2]
5	Special Study #2 – Complete monitoring of sediment concentrations by source/land use type through special study required in the OC Pesticide, PCB and siltation TMDL Implementation Plan. [3]	Agricultural Dischargers[3] and MS4 Copermittees	Within 2 years of effective date[2]
6	Develop and implement collection program for diazinon and chlorpyrifos and an educational program. Collection and education could occur through existing programs such as household hazardous waste collection events	POTWs and MS4 Copermittees	Within 3 years of effective date[2]
7	Development of an Agricultural Water Quality Management Plan in conjunction with the Conditional Waiver for Irrigated Lands, or (if the Conditional Waiver is not adopted in a timely manner) the development of an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP.	Agricultural Dischargers[3]	Within a 3 years of effective date[2]
8	Identify the most appropriate BMPs given crop type, pesticide, site specific conditions, as well as the critical condition defined in the development of the LAs.	Agricultural Dischargers[3]	Within 2 years of effective date[2]
9	Implement educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	Within 3 years of effective date[2]
10	Special Study #3 Calculation of sediment transport rates in CCW. Consider findings of transport rates developed through the OC Pesticide, PCB and siltation TMDL Implementation Plan [3]	Agricultural Dischargers[3] and MS4 Copermittees	Within 5 years of effective date[2]
11	Begin implementation of BMPs.	Agricultural Dischargers[3]	Within 3 years of effective date[2]
12	Evaluate effectiveness of BMPs.	Agricultural Dischargers[3]	Within 5 years of effective date[2]
13	Based on the results of Implementation Actions 1-12 and	Stakeholders and	Within 2 years of the

[1] Interim WLAs and LAs are effective immediately upon TMDL adoption. WLAs will be placed in POTW NPDES permits as effluent limits. WLAs will be placed in stormwater NPDES permits as in-stream limits. LAs will be implemented using applicable regulatory mechanisms.

[2] Effective date of CCW Toxicity TMDL.

[3] Regional Board regulatory programs addressing agricultural discharges that are in effect at the time this implementation task is due may contain requirements that are substantially similar to the requirements of this implementation task. If such requirements are in place in another regulatory program, the Executive Officer may revise or eliminate this implementation task to coordinate this TMDL implementation plan with other regulatory programs.

Implementation Action		Responsible Party	Tentative Date
	if sediment guidelines are promulgated, reevaluate the TMDLs and WLAs and LAs, if necessary.	Regional Board	submittal of information necessary to reevaluate the TMDL
14	Achievement of Final WLAs	POTWs and MS4 Copermittees	Within two years of the effective date of the TMDL[2]
15	Achievement of Final LAs	Agricultural Dischargers	Within ten years of the effective date of the TMDL[2]