Attachment A to Resolution No. R4-2008-009

Revision of the Waste Load Allocation of the

Calleguas Creek Watershed Nitrogen Compounds and Related Effects TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on September 11, 2008.

Amendments

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List of Figures, Tables, and Inserts

Chapter 7. Total Maximum Daily Loads (TMDLs)
Calleguas Creek Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by: The Regional Water Quality Control Board on October 24, 2002.
This TMDL was approved by: The State Water Resources Control Board on March 19, 2003.
This TMDL was approved by: The Office of Administrative Law on June 5, 2003.
This TMDL was approved by: The U.S. Environmental Protection Agency on June 20, 2003.
This TMDL was revised and adopted by: The Regional Water Quality Control Board on September 11, 2008.
This TMDL was re-approved by: The State Water Resources Control Board on [Insert date].
This TMDL was re-approved by: The Office of Administrative Law on [Insert date].
This TMDL was re-approved by: The U.S. Environmental Protection Agency on [Insert date].
This TMDL is effective on July 16, 2003

The elements of the TMDL are presented in Table 7-7.1 and the Implementation Plan in Table 7-7.2

Table 7-7.1. Calleguas Creek Nitrogen Compounds and Related Effects TMDL: Elements

<table>
<tr><th>Element</th><th>Calleguas Creek Nitrogen Compound and Related Effects</th></tr>
<tr><td>Problem Statement</td><td>Elevated nitrogen concentrations (ammonia, nitrite and nitrate) are causing impairments of the warm water fish and wildlife habitat, and groundwater recharge beneficial uses of Calleguas Creek. Nitrite and nitrate contribute to eutrophic effects such as low dissolved oxygen and algae growth. Ammonia contributes to toxicity.</td></tr>
<tr><td>Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)</td><td>Numeric targets for this TMDL are listed as follows:

1. Total Ammonia as Nitrogen (NH_3-N)

<table>
<tr><th></th><th>Reach</th><th>NH_3-N concentration (mg/L) One-hour average</th><th>Thirty-day average</th></tr>
<tr><td>*</td><td>Mugu Lagoon</td><td>8.1</td><td>2.9</td></tr>
<tr><td>*</td><td>Calleguas Creek, South</td><td>5.5</td><td>2.4</td></tr>
<tr><td>*</td><td>Calleguas Creek, North</td><td>8.4</td><td>3.0</td></tr>
<tr><td>*</td><td>Revlon Slough</td><td>5.7</td><td>2.9</td></tr>
<tr><td>*</td><td>Beardsley Channel</td><td>5.7</td><td>2.9</td></tr>
<tr><td>*</td><td>Arroyo Las Posas</td><td>8.1</td><td>2.6</td></tr>
<tr><td>*</td><td>Arroyo Simi</td><td>4.7</td><td>2.4</td></tr>
<tr><td>*</td><td>Tapo Canyon</td><td>3.9</td><td>1.9</td></tr>
<tr><td>*</td><td>Conejo Creek (Confluence with Calleguas Creek to Santa Rosa Rd.)</td><td>9.5</td><td>3.5</td></tr>
<tr><td>*</td><td>Conejo Creek (Santa Rosa Road to Thousand Oaks City Limit)</td><td>8.4</td><td>3.4</td></tr>
<tr><td>*</td><td>Conejo Creek, Hill Canyon Reach</td><td>8.4</td><td>3.1</td></tr>
<tr><td>*</td><td>Conejo Creek, North Fork</td><td>3.2</td><td>1.7</td></tr>
<tr><td>*</td><td>Arroyo Conejo (South Fork Conejo Creek)</td><td>5.1</td><td>3.4</td></tr>
<tr><td>*</td><td>Arroyo Santa Rosa</td><td>5.7</td><td>2.4</td></tr>
</table>

2. Nitrate and nitrite as nitrogen (NO_3-N and NO_2-N)

<table>
<tr><th></th><th>Constituent</th><th>Concentration (mg/L)</th></tr>
<tr><td>*</td><td>NO_3-N</td><td>10</td></tr>
<tr><td>*</td><td>NO_2-N</td><td>1</td></tr>
<tr><td>*</td><td>NO_3-N + NO_2-N</td><td>10</td></tr>
</table>

Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitat are intended to implement the narrative objectives and may be revised based on the results of monitoring and special studies conducted pursuant to the implementation plan.</td></tr>
</table>

<table>
<tr><td>Source Analysis</td><td>The principal sources of nitrogen into Calleguas Creek are discharges from the POTWs in the watershed and runoff from agricultural activities in the watershed.</td></tr>
<tr><td>Linkage Analysis</td><td>Linkage between nitrogen sources and the in-stream water quality was established through a mass continuity model based on an evaluation of recent hydrodynamic and water quality data.</td></tr>
<tr><td>Waste Load Allocations (for point sources)</td><td>The waste load allocations (WLAs) are as follows:
<table>
<tr><th rowspan="2">POTWs</th><th colspan="3">NH_3-N</th><th rowspan="2">NO_3-N (mg/L)</th><th rowspan="2">NO_2-N (mg/L)</th><th rowspan="2">NO_3-N + NO_2-N (mg/L)</th></tr>
<tr><th>MDEL[1] (mg/L)</th><th>AMEL[2] (mg/L)</th><th>Daily WLA[3] (lbs/day)</th></tr>
<tr><td>Hill Canyon WTP[4]</td><td>5.6</td><td>3.1</td><td>5.1xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Simi Valley WQCF[5]</td><td>3.3</td><td>2.4</td><td>2.9xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Moorpark WTP</td><td>6.4</td><td>2.6</td><td>5.7xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Camarillo WRP[6]</td><td>7.8</td><td>3.5</td><td>7.0xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
<tr><td>Camrosa WRF[7]</td><td>7.2</td><td>3.0</td><td>6.5xQ</td><td>9.0</td><td>0.9</td><td>9.0</td></tr>
</table></td></tr>
<tr><td>Load Allocation (for non point sources)</td><td>The source analysis indicates that agricultural discharge is the major non-point source of oxidized nitrogen to Calleguas Creek and its tributaries. This source is particularly significant in Revolon Slough and other agricultural drains in the lower Calleguas watershed where there are no point sources of ammonia and oxidized nitrogen. Load allocations for non-point sources are:
<table>
<tr><th>Nonpoint Source</th><th>NO_3-N + NO_2-N (mg/L)</th></tr>
<tr><td>Agriculture</td><td>9.0</td></tr>
<tr><td>Other Nonpoint Source</td><td>9.0</td></tr>
</table></td></tr>
<tr><td>Implementation</td><td>1. Refer to Table 7-7.2
2. Several of the POTWs in the Calleguas Creek watershed will require additional time to meet the nitrogen (NO_3-N, NO_2-N, and NO_3-N + NO_2-N) waste load allocations. To allow time to meet the nitrogen waste load allocations, interim limits will be allowed for a period of four years from the effective date of the TMDL during which the POTWs will be required to meet the effluent limit for NO_3-N + NO_2-N only. Effluent limits for the individual compounds NO_3-N and NO_2-N are not required during the interim period.</td></tr>
</table>

[1] Maximum daily effluent limitation

[2] Average monthly effluent limitation

[3] Q represents the POTW effluent flow at the time the water quality measurement is collected and a conversion factor to lb/day based on the units of measurement for the effluent flow.

[4] Wastewater Treatment Plant

[5] Water Quality Control Facility

[6] Water Reclamation Plant

[7] Water Reclamation Facility

	Interim Limits for NO_3-N + NO_2-N* *POTWs* — *Monthly Average (mg/L)* — *Daily Maximum (mg/L)* • Hill Canyon WTP — 36.03 — 38.32 • Simi Valley WQCF — 31.60 — 32.17 • Moorpark WTP — 31.5 — 32.01 • Camarillo WRP — 36.23 — 37.75 *The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported in the Calleguas Creek Characterization Study 3. The waste load allocations for ammonia will be applicable on the effective date of the TMDL. Interim limits for ammonia will be applicable for no more than 2 years starting from October 24, 2002 for POTWs that are not able to achieve immediate compliance with the assigned waste load allocations. The interim limits for ammonia may be established at the discretion of the Regional Board when a POTW's NPDES permit is reissued.
Margin of Safety	An implicit margin of safety is incorporated through conservative model assumptions and statistical analysis. In addition, an explicit margin of safety is incorporated by reserving 10% of the load, calculated on a concentration basis, from allocation to POTW effluent sources.
Seasonal Variations and Critical Conditions	A low flow critical condition is identified for this TMDL based on a review of flow data for the past twenty years. This flow condition was identified because less assimilative capacity is available to dilute effluent discharge.

Table 7-7.2. Implementation Schedule

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
1. 2. 3.	WLA for ammonia apply to POTWs. Interim Limits for NO_3-N + NO_2-N apply to POTWs. Formation of Nonpoint Source BMP Evaluation Committee.	Effective Date of TMDL
4.	Submittal of Non point Source Monitoring Workplan by Calleguas Creek Watershed Management Plan – Water Resources/Water Quality (CCWMP) Subcommittee. This monitoring is to evaluate nutrient loadings associated with agricultural drainage and other nonpoint sources. The monitoring program will include both dry and wet weather discharges from agricultural, urban and open space sources. In addition, groundwater discharge to Calleguas Creek will also be analyzed for nutrients to determine the magnitude of these loading and the need for load allocations. A key objective of these special studies will be to determine the effectiveness of agricultural BMPs in reducing nutrient loadings. Consequently, flow and analytical data for nutrients will be required to estimate loadings from nonpoint sources.	1 year after Effective Date of TMDL
5.	Submittal of Watershed Monitoring Workplan by CCWMP Subcommittee. In addition to the analytical parameters and flow data requirements, the watershed monitoring program will establish sampling locations from which representative samples can be obtained, including all listed tributaries. Monitoring results will be compared to the numeric instream targets identified in this TMDL to determine the effectiveness of the TMDL. Data on the extent and distribution of algal mats, scum and odors will be included in the watershed monitoring program. The data will be	

* The CCWMP Subcommittee has offered to complete tasks 4 through 9 and 11. In the event the CCWMP Subcommittee fails to timely complete these tasks, the Regional Board will consider whether to amend this Implementation Plan to assign tasks to responsible dischargers in the regulatory approach. The Regional Board also reserves its right to take any other appropriate actions including, but not limited to, exercising its authorities under Water Code section 13267.

	IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*	COMPLETION DATE
	used to provide further verification of the model and refine the TMDL to address nutrient effects as appropriate.	
6.	Submittal of Special Studies Workplan by CCWMP Subcommittee. These special studies include: Monitoring of minor point sources for nutrients to confirm assumptions that the loadings from these sources are minor; Monitoring of greenhouse discharges and runoff to assess loadings from these sources; Monitoring of groundwater extraction and discharges in the Arroyo Santa Rosa subwatershed and other areas that may add significant nutrient loadings to Calleguas Creek; and Additional studies of the type and extent of algae impairment in Calleguas Creek and Mugu Lagoon.	
7.	Complete Special Studies for minor sources, greenhouses, and groundwater loadings.	3 years after Effective Date of TMDL
8.	Completion of ammonia Water Effect Ratio (WER) studies.	
9.	Complete planning and preparation for construction of TMDL remedies to reduce non-point source nitrogen loads.	
10.	Interim Limits for NO_3-N + NO_2-N expire and WLAs for NO_3-N, NO_2-N, NO_3-N + NO_2-N apply to POTWs.	4 years after Effective Date of TMDL
11.	Complete Special Studies for algae impairments of Calleguas Creek, its tributaries and Mugu Lagoon.	5 years after Effective Date of TMDL
12.	Regional Board consideration of revised water quality objectives for nitrogen compounds based on monitoring data, special studies, and ammonia WER, if appropriate.	6 years after Effective Date of TMDL
13.	Final achievement of ammonia and oxidized nitrogen standards.	7 years after Effective Date of TMDL