

**WASTE DISCHARGE REQUIREMENTS
FOR DISCHARGES FROM IRRIGATED AGRICULTURAL LANDS
ORDER NO. R4-2023-0353**

APPENDIX 5

WATER QUALITY BENCHMARKS BASED UPON TMDL LOAD ALLOCATIONS

Table of Contents

WATER QUALITY BENCHMARKS BASED UPON TMDL LOAD ALLOCATIONS.....	1
TMDL Constituents and Compliance Dates	2
Calleguas Creek Watershed and Mugu Lagoon OC Pesticides and PCBs TMDL.....	3
Calleguas Creek Watershed and Mugu Lagoon Siltation TMDL.....	3
Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL.....	3
Calleguas Creek Watershed Boron, Chloride, Sulfate and TDS (Salts) TMDL.....	4
Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL	4
Calleguas Creek Nitrogen Compounds and Related Effects TMDL	7
Revolon Slough and Beardsley Wash Trash TMDL	7
Upper Santa Clara River Chloride TMDL, Revisions	7
Santa Clara River Nitrogen Compounds TMDL	7
Malibu Creek Watershed Nutrients TMDL	8
Ventura River Estuary Trash TMDL	8
Santa Clara River Estuary Toxaphene TMDL.....	8
McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL	9
Oxnard Drain No. 3 Pesticides, PCBs, and Sediment Toxicity TMDL.....	9
Malibu Creek and Lagoon TMDLs for Sedimentation and Nutrients to Address Benthic Community Impairments	10
Ventura River Algae TMDL.....	10
Santa Clara River Bacteria TMDL	11

TMDL Constituents and Compliance Dates

The deadlines in Table 1 take into consideration the relative difficulty in achieving water quality benchmarks for different constituents and are based on TMDL compliance dates, where applicable.

Table 1: Water Quality Benchmark Compliance Deadlines

TMDL Constituents	Compliance Date
Malibu Creek Watershed Nutrients TMDL	October 14, 2022
Santa Clara River Nitrogen Compounds TMDL	March 23, 2004
Ventura River Estuary Trash TMDL	March 6, 2010
Calleguas Creek Nitrogen Compounds and Related Effects TMDL	July 16, 2010
Revolon Slough and Beardsley Wash Trash TMDL	March 6, 2010
Upper Santa Clara River Chloride TMDL	April 6, 2010
Calleguas Creek Watershed and Mugu Lagoon Siltation TMDL	March 24, 2015
Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL	March 24, 2016
Ventura River Algae TMDL	June 28, 2019
McGrath Lake OC Pesticides and PCBs TMDL	June 30, 2021
Malibu Creek Watershed Sedimentation and Nutrients TMDL	October 14, 2022
Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL	March 26, 2022
Calleguas Creek Watershed Boron, Chloride, Sulfate and TDS (Salts) TMDL	Dec. 23, 2023
Santa Clara River Estuary Toxaphene TMDL	October 7, 2025
Calleguas Creek Watershed and Mugu Lagoon OC Pesticides & PCBs TMDL	March 24, 2026
Oxnard Drain #3 Pesticides, PCBs, and Sediment Toxicity TMDL	April 14, 2026
Santa Clara River Bacteria TMDL	March 21, 2023 dry March 21, 2029 wet

Calleguas Creek Watershed and Mugu Lagoon OC Pesticides and PCBs TMDL

Compliance with final sediment-based Load Allocations (LAs) is measured as an in-stream annual average at the base of each subwatershed. The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2. The compliance date for the Final Sediment LAs is March 24, 2026.

Table 2: Calleguas Creek Watershed and Mugu Lagoon OC Pesticides & PCBs TMDL Final Sediment LAs (ng/g) based on subwatersheds

Constituent	Mugu Lagoon	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2	2	2	2	2	2
4,4-DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180	120	130	120	120	120
Toxaphene	360	0.6	1	0.6	0.6	0.6

Calleguas Creek Watershed and Mugu Lagoon Siltation TMDL

A 2,704 tons/yr reduction in sediment yield to Mugu Lagoon is required for agricultural dischargers. The compliance date is March 24, 2015; however a baseline for sedimentation load has not been determined.

Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL

A load allocation of 1.0 Toxic Units (TUc) applies watershed wide. The compliance date for the final Load Allocations for Chlorpyrifos and Diazinon is March 24, 2016.

Table 3: Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL Final Chlorpyrifos Load Allocations (ug/L)

Subwatershed	Acute (1 hour)	Chronic (4 day)
Arroyo Simi	0.025	0.014
Las Posas	0.025	0.014
Conejo	0.025	0.014
Calleguas	0.024	0.0133
Revolon	0.024	0.0133
Mugu Lagoon	0.025	0.014

Table 4: Calleguas Creek Watershed and Mugu Lagoon Toxicity, Chlorpyrifos, and Diazinon TMDL Final Diazinon Load Allocations (ug/L), apply watershed-wide

Acute and Chronic
0.1

Calleguas Creek Watershed Boron, Chloride, Sulfate and TDS (Salts) TMDL

Compliance with Load Allocations (LAs) is measured at the base of each subwatershed. Dry weather Load Allocations apply when flow rates are below the 86th percentile and there was no measurable precipitation in the previous 24-hour period. The 86th percentile flow rate shall be calculated based on flow in the hydrologic year (October 1st – September 30th) that the sample was collected.

Dry weather Load Allocations apply in the receiving water at the base of each subwatershed when flow rates are below the 86th percentile and there was no measurable precipitation in the previous 24-hour period. The 86th percentile flow rate shall be calculated based on flow in the hydrologic year (October 1st – September 30th) that the sample was collected.

The compliance date for the Final dry weather Load Allocations is December 23, 2023.

Table 5: Calleguas Creek Watershed Boron, Chloride, Sulfate and TDS (Salts) TMDL Final Load Allocations (lb/day)

Subwatershed	Chloride	TDS	Sulfate	Boron
Simi	641	3,631	1,068	4
Las Posas	2,109	11,952	3,515	N/A
Conejo	743	4,212	1,239	N/A
Camarillo	59	336	99	N/A
Pleasant Valley	305	1,730	509	N/A
Revolon	7,238	41,015	12,063	48

Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL

Compliance with Load Allocations (LAs) is measured in-stream at the base of each subwatershed.

Dry weather Load Allocations apply to days when flows in the stream are less than the 86th percentile flow rate for each subwatershed. Wet weather Load Allocations apply to days when flows in the stream exceed the 86th percentile flow rate for each

subwatershed. The 86th percentile flow rate shall be calculated based on flow in the hydrologic year (October 1st – September 30th) that the sample was collected.

The compliance date for the Final Load Allocations is March 26, 2022.

Table 6: Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL Dry Weather - Final Load Allocations in pounds per day (lbs/day) for total recoverable metals for Calleguas and Conejo Creek

Constituent	Low Flow	Average Flow	Elevated Flow
Copper ^a	0.07 x WER – 0.03	0.12 x WER – 0.02	0.31 x WER – 0.05
Nickel	0.42	0.26	0.97
Selenium	-- ^b	-- ^b	-- ^b

Table 7: Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL Calleguas Creek flow category and flow rate in cubic feet per second (cfs)

Flow Category	Flow Rate (cfs)
Low	0 - 5
Average	5 - 21
Elevated	21 - 30

Table 8: Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL Dry Weather - Final Load Allocations in pounds per day (lbs/day) for total recoverable metals for Revolon Slough

Constituent	Low Flow	Average Flow	Elevated Flow
Copper ^a	0.07 x WER – 0.03	0.14 x WER – 0.07	0.35 x WER – 0.07
Nickel	0.39	0.69	1.6

^a The approved site-specific WER of 1.51 for Mugu Lagoon is used to calculate the assigned LAs for discharges to Calleguas and Conejo Creek to ensure the downstream standard is achieved. Agricultural dischargers may apply a WER of up to 3.69 for discharges to upstream reaches, with the exception of Reaches 4 and 5, to calculate the assigned WLAs. If a WER of greater than 1.51 is applied, the agricultural dischargers shall be required to provide detailed quantitative analysis to demonstrate that the WLAs as modified by the WER are protective of downstream reaches. No site specific WER for Revolon Slough was approved so default WER value of 1 is applied. Regardless of the final WERs, total copper loading shall not exceed current loading.

Constituent	Low Flow	Average Flow	Elevated Flow
Selenium	0.008	0.007	0.018

Table 9: Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL Revolon Slough flow category and flow rate in cubic feet per second (cfs)

Flow Category	Flow Rate (cfs)
Low	0 - 10
Average	10 - 17
Elevated	17 - 22

Table 10: Calleguas Creek Watershed and Mugu Lagoon Metals and Selenium TMDL Wet weather final Load Allocations (lbs/day) for total recoverable metals, where “Q” is the daily storm volume (cfs)

Constituent	Calleguas and Conejo Creek	Revolon Slough
Copper ^d	$(0.00017 \times Q^2 \times 0.01 \times Q - 0.05) \times \text{WER} - 0.02$	$(0.00123 \times Q^2 + 0.0034 \times Q) \times \text{WER}$
Nickel ^b	$0.014 \times Q^2 + 0.82 \times Q$	$0.027 \times Q^2 + 0.47 \times Q$
Selenium ^e	-- ^b	$0.1 \times Q^2 + 1.8 \times Q$

Table 11: Final Load Allocations for Agriculture for mercury in suspended sediment (lbs/year)

Flow Range MGY	Calleguas Creek	Revolon Slough
0-15,000	0.5	0.2
15,000-25,000	1.9	0.8
Above 25,000	11.2	2.2

^b Current loads do not exceed loading capacity during wet weather. Sum of all loads cannot exceed loads presented in table.

Calleguas Creek Nitrogen Compounds and Related Effects TMDL

The compliance date for the Calleguas Creek Nitrogen Compounds and Related Effects TMDL is July 16, 2010.

Table 12: Load Allocations for Nitrate-N + Nitrite-N

Nitrate-N + Nitrite-N (mg/L)
9

Revolon Slough and Beardsley Wash Trash TMDL

Load Allocations are zero trash. Dischargers may achieve compliance with the Load Allocations by implementing a minimum frequency of assessment and collection/best management practice (MFAC/BMP) program. By March 6, 2010, agricultural dischargers must demonstrate full compliance and attainment of the zero-trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. The compliance date is March 6, 2010.

Upper Santa Clara River Chloride TMDL, Revisions

The compliance date for the Upper Santa Clara River Chloride TMDL is April 6, 2010.

Table 13: Chloride Load Allocations

Reach	Chloride LA (mg/L) ^c
4B, 5, and 6	100

Santa Clara River Nitrogen Compounds TMDL

The compliance date for the Santa Clara River Nitrogen Compounds TMDL is March 23, 2004.

Table 14: Santa Clara River Nitrogen Compounds Load Allocations

Reach	NH ₃ -N + NO ₂ -N + NO ₃ -N (mg-N/L)
7	8.5
Mint Canyon Reach 1 Wheeler Canyon/Todd Barranca Brown Barranca/Long Canyon Other Santa Clara River Reaches	10

^c As a three-month rolling average

Malibu Creek Watershed Nutrients TMDL

The compliance date for the Malibu Creek Watershed Nutrients TMDL is October 14, 2022.

Table 15: Load Allocations for Total Nitrogen and Total Phosphorus

Season	Total Nitrogen (lbs/day)	Total Phosphorus (lbs/day)
Summer (April 15 – November 15)	3	0.2

Table 16: Load Allocations for Nitrogen (nitrate-N + nitrite-N)

Season	Nitrogen (mg/L) (nitrate-N + nitrite-N)
Winter (November 16 – April 14)	8

Ventura River Estuary Trash TMDL

Load Allocations are zero trash. Dischargers may achieve compliance with the Load Allocations by implementing a minimum frequency of assessment and collection/best management practice (MFAC/BMP) program. By March 6, 2010, agricultural dischargers must demonstrate full compliance and attainment of the zero-trash target's requirement that trash is not accumulating in deleterious amounts between the required trash assessment and collection events. The compliance date for the Ventura River Estuary Trash TMDL is March 6, 2010.

Santa Clara River Estuary Toxaphene TMDL

Within ten years of the compliance date, toxaphene concentrations in fish tissue shall be attenuating such that it appears that numeric targets will be achieved within 15 years. The compliance date of the Santa Clara River Estuary Toxaphene TMDL is October 7, 2025.

Table 17: Toxaphene fish tissue target and toxaphene allocation for concentration in suspended sediment

Reach	Toxaphene Fish Tissue Target	Toxaphene Allocation for Concentration in Suspended Sediment
Santa Clara River Estuary	6.1 (µg/kg)	0.1 (µg/kg)

McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL

The compliance date for McGrath Lake PCBs, Pesticides and Sediment Toxicity TMDL is June 30, 2021.

Table 18: Water Column Load Allocations and Load Allocations for Concentration in Suspended Sediment

Pollutant	Water Column Load Allocation (µg/L)	Load Allocation for Concentration in Suspended Sediment (µg/dry kg)
Chlordane	0.00059	0.5
Dieldrin	0.00014	0.02
4,4'-DDT	0.00059	1
4,4'-DDE	0.00059	2.2
4,4'-DDD	0.00084	2
Total DDT	--	1.58
Total PCBs	0.00017	22.7

Oxnard Drain No. 3 Pesticides, PCBs, and Sediment Toxicity TMDL

The compliance date for the Oxnard Drain No. 3 Pesticides, PCBs, and Sediment Toxicity TMDL is April 14, 2026.

Table 19: Load Allocations for water and sediments

Constituents	Water Allocations, chronic (ug/L)	Sediment ^d	Alternate Sediment ^e
Bifenthrin ^f	0.0006	-	-
Chlordane, total	0.00059	0.5	3.3
Chlorpyrifos ^g	0.0056	-	-
4,4'-DDT	0.00059	1	0.3
4,4'-DDE	0.00059	2.2	2.2

^d Sediment concentrations associated with suspended sediment and Oxnard Drain 3 bottom sediment. Sediment allocations apply if there are fish tissue or sediment toxicity exceedances. All sediment allocations are Effects Range Low (ERL), except toxaphene. Toxaphene does not have an ERL, so the Threshold Effects Level (TEL) concentration was selected.

^e Sediment concentrations associated with suspended sediment and Oxnard Drain 3 bottom sediment. The alternate sediment allocation applies when the fish tissue target and the sediment toxicity allocation are achieved in Oxnard Drain 3. The alternate sediment allocation concentrations match the Mugu Lagoon TMDL allocations.

^f Bifenthrin allocations included to address the sediment toxicity impairment.

^g Chlorpyrifos allocations included to address the sediment toxicity impairment.

Constituents	Water Allocations, chronic (ug/L)	Sediment ^d	Alternate Sediment ^e
4,4'-DDD	0.00084	2	2
Dieldrin	0.00014	0.02	4.3
PCBs, total	0.00017	22.7	180
Sediment Toxicity	-	No significant chronic sediment toxicity	-
Toxaphene	0.0002	0.1	360

Malibu Creek and Lagoon TMDLs for Sedimentation and Nutrients to Address Benthic Community Impairments

The compliance date for the Malibu Creek and Lagoon TMDL is October 14, 2022.

Table 20: Load Allocations for Total Nitrogen and Total Phosphorus in Malibu Creek and main tributaries (Cold Creek, Stokes Creek and Las Virgenes Creek)

Total Nitrogen (mg/L) Summer	Total Nitrogen (mg/L) Winter	Total Phosphorus (mg/L) Summer	Total Phosphorus (mg/L) Winter
0.65	1	0.1	0.1

Ventura River Algae TMDL

Dry-weather Load Allocations for Agriculture are expressed as daily loads based on an estimated 331 dry-weather days per year.

To assist in implementation of Load Allocations, area-weighted benchmarks can be applied; if used, they shall be 0.008 lb/acre/day TN and 6.3x10⁻⁵ lb/acre/day TP.

The compliance date is June 28, 2019.

Table 21: Dry-weather Load Allocations

Reach	Total Nitrogen (lb/day)	Total Phosphorus (lb/day)
All Reaches	16	0.12

Table 22: Wet-weather Load Allocations

Reach	Nitrate-N + Nitrite-N (mg/L)
Estuary	10
Reach 1	10
Reach 2	10
Cañada Larga	10
Reach 3	5
San Antonio Creek	5
Reach 4	5
Reach 5	5

Santa Clara River Bacteria TMDL

The calculated number of exceedance days assumes that daily sampling is conducted. To determine the number of allowable exceedances for less frequent sampling, a ratio is used.

The final compliance dates for dry weather and wet weather are March 21, 2023 and March 21, 2029, respectfully.

Table 23: Final Allowable exceedance days

Time Period	Santa Clara River Reaches 3, 5, 6, & 7	Santa Clara River Estuary
Dry Weather	5 allowable exceedance days of single sample objectives	Not Applicable
	0 allowable exceedances of geometric mean objectives	
Wet Weather	16 allowable exceedance days of single sample objectives	25 allowable exceedance days of single sample objectives
	0 allowable exceedances of geometric mean objectives	0 allowable exceedances of geometric mean objectives
Summer Dry Weather	Not Applicable	10 allowable exceedance days of single sample objectives
		0 allowable exceedances of geometric mean objectives
Winter Dry Weather	Not Applicable	12 allowable exceedance days of single sample objectives

Time Period	Santa Clara River Reaches 3, 5, 6, & 7	Santa Clara River Estuary
(November 1 – March 31)		0 allowable exceedances of geometric mean objectives