Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the TMDL for Indicator Bacteria in the San Gabriel River, Estuary and Tributaries

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on XX X, 2015.

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Chapter 7. Total Maximum Daily Loads (TMDLs) San Gabriel River, Estuary and Tributaries Indicator Bacteria TMDL

This TMDL was adopted by the Regional Water Quality Control Board on XX X, 2015.

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].

This TMDL is effective on [Insert Date].

The following tables include the elements of this TMDL.

Table 7-41.1. San Gabriel River, Estuary and Tributaries Indicator Bacteria TMDL: Elements

Element	Key Findings and Regulatory Provisions	
Problem Statement	Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) and non-contact recreation (REC-2) beneficial uses in several reaches of the San Gabriel River, San Gabriel River Estuary, and its tributaries. Recreating in waters with elevated bacterial indicator densities has long been associated with adverse human health effects. Specifically, local and national epidemiological studies demonstrate that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.	
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the waste load and load allocations)	The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for fresh and marine water to protect the REC-1 and REC-2 beneficial uses. These targets are the most appropriate indicators of public health risk in recreational waters. These bacteriological objectives are set forth in Chapter 3 of the Basin Plan. The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are: In Marine Waters Designated for Water Contact Recreation (REC-1) 1. Geometric Mean Limits a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 35/100 ml. 2. Single Sample Limits a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1. In Fresh Waters Designated for Water Contact Recreation (REC-1) 1. Geometric Mean Limits a. E. coli density shall not exceed 126/100 ml. 2. Single Sample Limits a. E. coli density shall not exceed 235/100 ml.	

Element	Key Findings and Regulatory Provisions
	In this TMDL, implementation of the above bacteria objectives and the associated TMDL numeric targets is achieved using a "reference system/anti-degradation approach" rather than the alternative "natural sources exclusion approach" or strict application of the single sample objectives. As required by the federal Clean Water Act and California Water Code, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards.
	This TMDL uses a "reference system/anti-degradation approach" to implement the water quality objectives per the implementation provisions in Chapter 3. On the basis of the historical exceedance frequency in Southern California reference waterbodies, a certain number of daily exceedances of the single sample bacteria objectives are permitted.
	The geometric mean targets may not be exceeded at any time. For the purposes of this TMDL, the geometric means shall be calculated weekly as a rolling geometric mean using 5 or more samples, for six week periods starting all calculation weeks on Sunday.
	For the single sample targets, the San Gabriel River and its tributaries are assigned an allowable number of exceedance days for two time periods (1) dry-weather, and (2) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.) The San Gabriel River Estuary is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)
Source Analysis	The significant contributors of bacteria loading to the San Gabriel River, San Gabriel River Estuary, and its tributaries are dry- and wetweather discharges from municipal separate storm sewer systems (MS4s). Watershed-wide data show elevated levels of bacteria in the river. Data collected from natural landscapes in the upper watershed indicate that open space loading is not a significant source of bacteria. Data from storm drains and channels draining urban areas show elevated levels of bacteria, indicating that urban areas are a source. Data from throughout the Los Angeles Region further demonstrate that bacteria concentrations are significantly greater in developed areas. Based on this information, runoff from urban areas served by MS4s is a significant source of bacteria.
	Other point and nonpoint sources were analyzed but there were not sufficient data to quantify their contribution.

Element	Key Finding	s and Regulatory I	Provisions
Waste Load Allocations (for point sources)	Waste Load Allocations (W sewer system (MS4) dischar- weekly sample days that identified under "Numeric T geometric mean limits.	rges are expressed a	as the number of daily or single sample limits as
	The allowable days of exceeded depending on season, dry described in Table 7-41.2.		
	For the San Gabriel River ar are set on an annual basis (A		· ·
	dry-weather wet-weather (defined as days following the rain of the days)	-	f rain or more plus three
	For the San Gabriel River on an annual basis for the periods/conditions are:		
	 summer dry-weather (A) winter dry-weather (Nov wet-weather (defined as days following the rain of 	vember 1 to March days of 0.1 inch o	31)
	Certain reaches and tributar High Flow Suspension (H identified in Chapter 2. The defined in Chapter 2. Duri beneficial uses are suspende	FS) of the recreate HFS applies during these conditions	ional beneficial uses as as specified conditions as specified REC-1 and REC-2
	For the single sample obj		n Gabriel River and its
	Allowable Number of Exceedance Days	Daily Sampling	Weekly Sampling
	Dry Weather	5	1
	Non-HFS Waterbodies Wet Weather	17	3
	HFS Waterbodies Wet Weather	9 (not including HFS days)	2 (not including HFS days)

Element	Key Finding	s and Regulatory P	rovisions
	For the single sample objectives in San Gabriel Estuary, the WLAs are listed below.		
	Allowable Number of Exceedance Days	Daily Sampling	Weekly Sampling
	Summer Dry-Weather	0	0
	Winter Dry-Weather	9	2
	Wet Weather	20	3
	In the instances where more than one single sample objective applies, exceedance of any one of the limits constitutes an exceedance day. The waste load allocation for the geometric mean for the responsible agencies and jurisdictions is zero (0) allowable exceedances. The responsible jurisdictions and responsible agencies include the permittees and co-permittees of the MS4 permits in Los Angeles County, Orange County and San Bernardino County ¹ , the California Department of Transportation (Caltrans), and any permittees that may be enrolled under a Phase II MS4 permit within the San Gabriel River watershed. The Phase II MS4 permittees include California State Polytechnic University Pomona and Lanterman Development Center. The responsible jurisdictions and responsible agencies within the watershed are jointly responsible for complying with the waste load allocations. Other non-MS4 dischargers, including individual NPDES permits, general NPDES permits, general industrial storm water permits, and general construction storm water permits are not expected to be a significant source of bacteria. Additionally, these discharges are not eligible for the reference system approach set forth in the implementation provisions for the bacteriological objectives in Chapter 3. WLAs for non-MS4 dischargers currently subject to permits with effluent limits for bacteria are equal to the existing effluent limits for bacteria. Non-MS4 dischargers that do not have existing effluent limits		

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¹ County of Los Angeles, Los Angeles County Flood Control District, the cities of Arcadia, Artesia, Azusa, Baldwin Park, Bellflower, Bradbury, Cerritos, Claremont, Covina, Diamond Bar, Downey, Duarte, El Monte, Glendora, Hawaiian Gardens, Industry, Irwindale, Lakewood, La Mirada, La Habra Heights, La Puente, La Verne, Long Beach, Monrovia, Norwalk, Paramount, Pico Rivera, Pomona, San Dimas, Santa Fe Springs, South El Monte, Walnut, West Covina, Whittier, Orange County, Orange County Flood Control District, Anaheim, Brea, Buena Park, Cypress, Fullerton, Garden Grove, La Habra, La Palma, Los Alamitos, Placentia, Seal Beach, and Yorba Linda, San Bernardino County, San Bernardino County Flood Control District, and Chino Hills.

Element	Key Finding	s and Regulatory I	Provisions
	the discharge to be a source an exceedance of the applic potential analysis (RPA) d reasonable potential then ef the permit.	cable water quality uring permitting p	standards. If reasonable rocess does not indicate
Load Allocations (for nonpoint sources)	U.S. Forest Service land Recreation Lands, or Nation number of daily or weekly sample limits or geometric Target." No exceedances a The allowable days of exceedances are allowable days of exceedances are set on an annual basis for the San Gabriel River are set on an annual basis for 1. dry-weather (defined as days following the rain experience). Wet-weather (defined as days following the rain experience). San Gabriel River on an annual basis for the periods/conditions are: 1. summer dry-weather (A 2. winter dry-weather (Nov. 3. wet weather (defined as weather (define	For the San Gabriel River and its tributaries, allowable exceedance days are set on an annual basis for two conditions. These two conditions are: 1. dry-weather 2. wet-weather (defined as days of 0.1 inch of rain or more plus three days following the rain event). For in the San Gabriel River Estuary, allowable exceedance days are set on an annual basis for three time periods/conditions. These three periods/conditions are: 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31)	
	Allowable Number of Exceedance Days	Daily Sampling	Weekly Sampling
	Dry Weather	5	1
	Non-HFS Waterbodies Wet Weather	17	3
	HFS Waterbodies Wet Weather	9 (not including HFS days)	2 (not including HFS days)

Element	Key Findings and Regulatory Provisions		
	For the single sample objectives in the San Gabriel Estuary, the LAs are listed below.		
	Allowable Number of Exceedance Days	Daily Sampling	Weekly Sampling
	Summer Dry-Weather	0	0
	Winter Dry-Weather	9	2
	Wet Weather	20	3
	LAs equal to zero days of a and geometric mean targets systems, horse and livestoc within the watershed.	are assigned to ons	ite wastewater treatment
Margin of Safety	An implicit margin of safety was assumed by directly applying the water quality standards and implementation procedures as WLAs and LAs. This ensures that there is little uncertainty about whether meeting the TMDLs will result in meeting the water quality standards.		
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for two conditions (dry weather and wet weather) in the San Gabriel River and its tributaries, and three time periods/conditions (summer dry-weather, winter dry-weather, and wet weather) in the San Gabriel River Estuary based on public health concerns and observed natural background levels of exceedance of bacterial indicators.		
	The critical condition for bacteria discharges to the San Gabriel River Estuary, the San Gabriel River, and its tributaries is during wet weather when monitoring data indicate a higher probability of exceedance of the single sample bacteria objectives than during dry weather.		
	The critical condition within wet weather more specifically, in order to set the allowable number of exceedances of the single sample limit days, is the 90th percentile storm year in terms of wet days. The 1994 storm year is the reference year for purposes of identifying the wet weather critical condition. The number of wet-weather days in the 1994 reference year was 87 days, and the number of dry-weather days was 278 days (199 summer dry-weather days and 79 winter dry-weather days).		
Implementation	The regulatory mechanisms the Los Angeles County Mermit, the Orange County MS4 permit (under the juri Board), the Caltrans Storm	AS4 permit, the Ci MS4 permit and the isdiction of the Sar	ty of Long Beach MS4 e San Bernardino County nta Ana Regional Water

Element	Key Findings and Regulatory Provisions
	permit and any regional Phase II MS4 permits, minor and major NPDES permits, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263, 13267, 13269, and 13383 of the California Water Code, and other appropriate regulatory mechanisms. NPDES permits for each discharge assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate effluent limitations consistent with the assumptions and requirements of the WLAs herein.
	WLAs shall be incorporated into MS4 permits as water quality-based effluent limitations (WQBELs). MS4 Permittees may be deemed in compliance with WQBELs if they demonstrate that: (1) there are no violations of the WQBEL at the Permittee's applicable MS4 outfall(s); (2) there are no exceedances of the receiving water limitations in the receiving water at, or downstream of, the Permittee's outfalls; or (3) there is no direct or indirect discharge from the Permittee's MS4 to the receiving water during the time period subject to the WQBEL. If permittees provide a quantitative demonstration as part of a watershed management program that control measures and best management practices (BMPs) will achieve WQBELs consistent with the schedule in Table 7-41.3, then compliance with WQBELs may be demonstrated by implementation of those control measures and BMPs, subject to Executive Officer approval.
	LAs for nonpoint sources will be implemented through the Conditional Waiver for Irrigated Lands (Order No. R4-2010-0186 or other successor order), Waste Discharge Requirements, Waivers of Waste Discharge Requirements, Memoranda of Understanding or other appropriate mechanisms consistent with the State's Nonpoint Source Implementation and Enforcement Policy.
	This TMDL will be implemented in two phases over a twenty-year period (see Table 7-41.3). By ten years from effective date of TMDL, compliance with the allowable number of dry-weather exceedance days must be achieved. By twenty years from effective date of TMDL, compliance with the allowable number of wet-weather exceedance days and the geometric mean targets must be achieved.
Monitoring	MS4 Permittees
	Responsible jurisdictions and agencies for the MS4 WLAs are responsible for developing and implementing a comprehensive instream monitoring plan. The monitoring plan should include all applicable bacteria water quality objectives and the sampling frequency must be adequate to assess compliance with the geometric mean objectives. The Integrated Monitoring Program (IMP) or Coordinated Integrated Monitoring Program (CIMP) approved by the Executive Officer may partially or fully be deemed equivalent to a compliance

Element	Key Findings and Regulatory Provisions
	monitoring plan at the Regional Water Board's discretion. Responsible jurisdictions and agencies may build upon existing monitoring programs, IMPs, or CIMPs in the San Gabriel River watershed when developing the bacteria water quality monitoring plan. At a minimum, at least one sampling station shall be located in each impaired reach.
	Responsible jurisdictions and agencies for the MS4 WLAs shall also submit an outfall monitoring plan. The outfall monitoring plan shall propose an adequate number of representative outfalls to be sampled, a sampling frequency, and protocol for enhanced outfall monitoring as a result of an in-stream exceedance. Responsible jurisdictions and agencies may use existing outfall monitoring stations in their IMPs or CIMPs to satisfy the monitoring requirements for the MS4 permits and the TMDL.
	Responsible jurisdictions and agencies must assess compliance at instream monitoring sites. If the number of exceedance days is greater than the allowable number of exceedance days the water body segment shall be considered not attaining the TMDL. Responsible jurisdictions or agencies shall not be deemed non-attaining if the outfall monitoring described in the paragraph above demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance.
	Non-MS4 Permittees
	NPDES Permittees other than MS4 dischargers shall conduct monitoring as part of their permit requirements for all applicable bacteria water quality objectives to ensure that they are attaining WLAs and that water quality objectives are being met.
	Nonpoint Sources
	The Conditional Waiver for Irrigated Lands or other regulatory mechanism shall require bacteria monitoring for discharges from irrigated agricultural lands. Monitoring shall be implemented as part of WDR and waiver requirements, and through implementation of the Nonpoint Source Implementation and Enforcement Policy, for other nonpoint sources.

Table 7-41.2 San Gabriel River, Estuary and Tributaries Indicator Bacteria TMDL: Allowable

Time Period/Condition	San Gabriel River and its Tributaries	San Gabriel River Estuary
Dry Weather	Five (5) exceedance days (daily sampling) or one (1) exceedance day (weekly sampling) of single sample objectives	Not Applicable
	Zero (0) exceedances of geometric mean objectives	
Non-HFS Waterbodies ⁴	17 exceedance days (daily sampling) or three (3) exceedance days (weekly sampling) of single sample objectives	20 exceedance days (daily sampling) or three (3) exceedance days (weekly sampling) of single sample objectives
Wet Weather	Zero (0) exceedances of geometric mean objectives	Zero (0) exceedances of geometric mean objectives
HFS Waterbodies ⁵ Wet Weather (not including HFS days)	Nine (9) exceedance days (daily sampling) or two (2) exceedance days (weekly sampling) of single sample objectives Zero (0) exceedances of geometric mean objectives	Not Applicable
Summer Dry Weather (April 1 – October 31)	Not Applicable	Zero (0) exceedance days of single sample objectives Zero (0) exceedances of geometric
Winter Dry Weather (November 1 – March 31)	Not Applicable	mean objectives Nine (9) exceedance days (daily sampling) or two (2) exceedance days (weekly sampling) of single sample objectives Zero (0) exceedances of geometric
Evandana Days ^{1,2,3}		mean objectives

Exceedance Days^{1,2,3}.

¹ Allowable exceedance days calculated by the following equation: Allowable Exceedance Days = WQO Exceedance Probability in Reference System(s) x Number of Days during 1994.

² Where the fractional remainder for the calculated allowable exceedance days exceeds 1/10th then the number of days are rounded up (e.g., 4.12 is rounded up to 5). In instances where the tenth decimal place for the allowable exceedance days (or weeks or months) is lower than 1/10th then the number of days are rounded down (e.g., 4.02 is rounded down to 4).

³ 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.

⁴ Non-HFS waterbodies include Puente Creek, Walnut Creek Wash, and San Gabriel River Estuary.

⁵ HFS waterbodies include Big Dalton Wash, Coyote Creek, Coyote Creek North Fork, San Gabriel River Reaches 1, 2, and 3, and San Jose Creek Reaches 1 and 2.

Table 7-41.3 San Gabriel River, Estuary and Tributaries Indicator Bacteria TMDL: Implementation Schedule

Deadline	Task
Effective date of the TMDL	WLAs assigned to non-MS4 point sources must be attained.
1 year after the effective date of the TMDL	Responsible jurisdictions and agencies for the MS4 WLAs must submit a comprehensive monitoring plan, including in-stream and outfall monitoring, for the San Gabriel River Watershed for approval by the Executive Officer. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months.
10 years after effective date of this TMDL	For San Gabriel River Estuary: Achieve compliance with the applicable LAs and MS4 WLAs, expressed in terms of allowable exceedance days of the single sample objectives for summer dry weather (April 1 to October 31) and winter dry weather (November 1 to March 31).
	For San Gabriel River and its Tributaries: Achieve compliance with the applicable LAs and MS4 WLAs, expressed in terms of allowable exceedance days of the single sample objectives and for dry weather.
20 years after the effective date of this TMDL	Achieve compliance with the allowable exceedance days during wet weather as set forth in Table 7-41.2 and geometric mean targets for all seasonal periods specified as identified under "Numeric Target."