Monitoring Plan Update

2025-26 Monitoring Season

NPDES Permit No. CAS00003

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    The Caltrans National Pollutant Discharge Elimination System (NPDES) Permit requires development of a plan for monitoring receiving waters, characterizing runoff, and determining BMP effectiveness. This Monitoring Plan Update describes updates to the proposed monitoring for the 2025-26 and 2026-27 fiscal years.

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SECTION 1

Introduction

1.1 Purpose

This document is an update to the 2024-25 Monitoring Plan Update which was conditionally approved by the State Water Board in January, 2025. This update fulfils the requirement in Section G3 of the Caltrans National Pollutant Discharge Elimination System Permit (Permit; State Water Board 2023). **Only sections that have been updated are included in this Monitoring Plan Update.** Also included is the proposed monitoring for the North Coast sediment TMDL watersheds that was requested in the State Water Board Executive Officer letter dated September 9, 2024 and email and attachment dated October 15, 2024.

The purpose of the Monitoring Plan is to present the California Department of Transportation (Caltrans) approach to comply with the monitoring requirements set forth in Attachment F of its Permit. The Monitoring Plan also complies with the State Water Resources Control Board (State Water Board) requirement in the Permit, cited below:

> ***Attachment F, Section F2***. The Monitoring Plan shall include the elements required by section F2 through F2.15 of this Attachment. The Monitoring Plan shall be submitted within 12 months of the Effective Date of this Order. Annual updates shall be submitted by November 30 of each year. The Department shall submit updates to the Monitoring Plan and annual updates for review and consideration of approval by State Water Board Executive Director.
>
> The Monitoring Plan shall address the requirements of this Attachment. The Monitoring Plan shall include all proposed monitoring and a monitoring schedule for the upcoming fiscal year and the following fiscal year, including monitoring of applicable water body reaches in total maximum daily load (TMDL) watersheds where the Department is named as a responsible party where required through region-specific monitoring requirements or, where there are no region-specific monitoring requirements, as needed to demonstrate compliance with TMDLs in accordance with the Department's TMDL Compliance Plan. The Monitoring Plan and annual updates shall be implemented upon approval by the State Water Board Executive Director.

SECTION 3

Receiving Water Monitoring

3.2 Regional Monitoring Programs (Permit Sections F2.11.2, F2.11.4)

Caltrans works with regional monitoring groups to maximize monitoring resources. Table 3-1 lists Caltrans participation in regional receiving water monitoring programs. Caltrans will no longer participate in the Klamath Basin regional monitoring program because it intends to implement a self-monitoring program.

Table 3-1
Caltrans Participation in Regional Monitoring Programs

Program	Regional Board	Purpose/TMDLs	Major Analyte Categories	Document Links
Phase I Methylmercury Delta Regional Monitoring Program	Central Valley	Trends Monitoring, TMDL compliance, characterization • Sacramento-San Joaquin Delta Methylmercury TMDL	TSS, methylmercury, nutrients, field tests, pesticides, constituents of emerging concern, toxicity, phytoplankton	Monitoring Workplan Fiscal Year, 2024-2025 Annual Regional Monitoring Report, 2023 - 2024
Central Valley Region Salts Monitoring Program	Central Valley	Trends monitoring, characterization • Central Valley Salts Monitoring TMDL	Salinity, nitrate, TDS	Surveillance and Monitoring Program, 2023 Final Baseline Characterization Report, 2024
Lake Tahoe Regional Stormwater Monitoring Program	Lahontan	Trends monitoring, TMDL compliance, characterization, BMP effectiveness • Lake Tahoe Sediment and Nutrients TMDL	TSS, turbidity, particle size distribution, nutrients, field tests	Monitoring Plan Update, 2023 Annual Stormwater Monitoring Report, Water Year 2024
Southern California Stormwater Monitoring Coalition	All Southern California	Trends monitoring, TMDL compliance, characterization, BMP effectiveness • Multiple TMDLs in the Los Angeles, Santa Ana, and San Diego Regions[1]	TSS, bacteria, nutrients, metals, organics, pesticides, field tests, sediment, biological indicators	Workplan, 2021 - 2025[1] Annual Report, 2023 - 2024
San Francisco Bay Regional Monitoring Program	San Francisco	Trends Monitoring, TMDL compliance, characterization • San Francisco Bay PCBs and Mercury TMDLs	TSS, PCBs, mercury, contaminants of emerging concern, field tests, sediment, turbidity	Water Year 2024 Near-Field Sampling and Analysis Plan Regional Monitoring Program Update, 2025

1 - Table 7 of *Bioassessment Survey of the Stormwater Monitoring Coalition, Workplan for Years 2021 through 2025*. SCCWRP Technical Report #1174.

3.3 Cooperative Monitoring Programs (Permit Sections F2.11.1, F2.11.2, F2.11.5)

Caltrans works with local agencies, stakeholders, and permittees to maximize receiving water monitoring resources. Tables 3-2 and 3-3 provide details on the cooperative receiving water monitoring programs, including coordinated integrated monitoring programs, that Caltrans is currently participating in the Los Angeles/Santa Ana region and San Diego region, respectively.

Table 3-2
Caltrans Participation in Los Angeles and Santa Ana Cooperative Monitoring Programs

Program	Regional Board	Group Name/Lead Agency	Purpose/TMDLs	Major Analyte Categories	Document Links
Calleguas Creek Watershed Total Maximum Daily Load Compliance Monitoring Program	Los Angeles	Stakeholders Implementing TMDLs in the Calleguas Creek Watershed	TMDL compliance • Calleguas Creek Watershed OC Pesticides and PCBs TMDL	Nutrients, metals, selenium, PCBs, pesticides, organics, field tests, sediment, toxicity	No online documents
Development of a Dominguez Channel Estuary Remediation Plan Phase I Work Plan[1]	Los Angeles	Dominguez Channel Watershed Management Area Group/ Los Angeles County Public Works	TMDL compliance • TMDL for Toxic Pollutants in Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters	Sediment, sediment toxicity, benthic community	No online documents
Ventura River Algae TMDL Monitoring	Los Angeles	Ventura County Watershed Protection District/ TMDL Responsible Parties	TMDL compliance • Ventura River and its Tributaries Algae, Eutrophic Conditions and Nutrients TMDL	Nutrients, field tests, phytoplankton	No online documents
Ventura River Estuary Trash TMDL Monitoring	Los Angeles	Ventura County	TMDL compliance • Ventura River Estuary Trash TMDL	Trash	No online documents
Revolon Slough/Beardsley Wash Trash Monitoring	Los Angeles	Ventura County	TMDL compliance • Revolon Slough and Beardsley Wash Trash TMDL	Trash	No online documents
Lake Elsinore and Canyon Lake TMDL Task Force	Santa Ana	Lake Elsinore & San Jacinto Watersheds Authority	TMDL compliance • Lake Elsinore and Canyon Lake Nutrient TMDL	TSS, nutrients, field tests	Comprehensive Monitoring Work Plan, 2016 2024-2025 Annual Report

1 - Requested by Regional Board to address lack of information on spatial variability of sediment contamination and location of hot spots.

Table 3-3
Caltrans Participation in San Diego Cooperative Monitoring Programs

Program	Regional Board	Group Name/Lead Agency	Purpose/TMDLs	Major Analyte Categories	Document Links
Chollas Creek Diazinon and Dissolved Metals TMDL Monitoring[1]	San Diego	San Diego Bay Responsible Parties	TMDL compliance • Chollas Creek Diazinon TMDL • Chollas Creek Dissolved Copper, Lead and Zinc TMDL	Diazinon, metals, toxicity	No online documents
Project I-Twenty Beaches and Creeks in the San Diego Region	San Diego	San Diego Bay Responsible Parties	TMDL compliance • Project I – Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek) Indicator Bacteria, Revised TMDL	Bacteria, field tests	No online documents
Los Peñasquitos Lagoon Sediment TMDL	San Diego	Los Peñasquitos Watershed Management Area Permittees	TMDL compliance • Los Peñasquitos Lagoon Sediment TMDL	TSS, field tests, sediment, vegetation	No online documents
San Diego River Human Fecal Material - Investigative Order	San Diego	County of San Diego	Investigative	Bacteria	No online documents

1 - Caltrans has continued participation in this program even though it has selected self-monitoring as the compliance option for this watershed

SECTION 4

Region-Specific TMDL Monitoring

4.2 Region-Specific TMDL Monitoring Options

4.2.1 North Coast Water Board Sediment TMDL (Permit Section F2.12.1)

Caltrans monitoring options for sediment in the North Coast Water Board region are:

1. *Cooperative Monitoring*. (a) Allocate a one-time funding contribution equivalent to ten percent of each TMDL sediment reduction project cost to maintain existing watershed-based status and trends monitoring programs or (b) contribute funding proportionate to its share of waste load allocation among stakeholders for each TMDL sediment reduction project, or
2. *Self-Monitoring*. Implement a watershed monitoring program associated with state highways within the North Coast region TMDL watersheds. State highways are broadly distributed and therefore the monitoring will be watershed-based to allow North Coast Water Board staff to assess water quality impacts from state highways and progress toward achieving TMDL targets from Caltrans implementation of TMDL sediment reduction projects. The watershed-based monitoring program will include a number of monitoring locations and frequency of monitoring proportional to Caltrans sediment load in excess of its load allocation for each TMDL watershed.

Table 4-1 describes the Caltrans monitoring strategy for the North Coast Sediment TMDLs.

Table 4-1
North Coast TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
North Coast Sediment TMDLs	Attachment F, Section F2.12.1 Attachment D, Section D5.7	Cooperative monitoring: (a) Provide 10% additional funding contribution for each Cooperative Implementation Agreement project in lieu of Caltrans monitoring (b) Contribute funding proportionate to its share of waste load allocation among stakeholders Self-monitoring: Monitor at a number of monitoring locations in each TMDL watershed	Caltrans has selected self-monitoring. Caltrans will develop and implement a monitoring program in the South Fork Eel River, Trinity River, and Redwood Creek watersheds.

Caltrans has selected self-monitoring because there are no existing watershed-based status and trends monitoring programs in the North Coast region. However, Caltrans has analyzed its share of waste load allocation among stakeholders to quantify its proportional responsibility for any

monitoring effort. Table 4-2 provides Caltrans responsibility for overall watershed health monitoring in each TMDL watershed based on its share of management waste load allocation. As can be seen in Table 4-2, the relative impact of Caltrans discharges and Caltrans proportional responsibility for monitoring are minor in all watersheds.

For the self-monitoring program, Regional Board staff have proposed monitoring of Caltrans discharges from outfalls and receiving water locations immediately upstream and downstream of outfalls. To satisfy these monitoring requirements, Caltrans is planning to identify and monitor 18 new locations in the South Fork Eel River, Trinity River, and Redwood Creek watersheds. Caltrans will install and collect data at a total of 54 new stations at these locations, with each location comprising of an upstream station, a downstream station, and a discharge station. Monitoring at these stations is expected to begin in the 2025-26 season.

In addition to self-monitoring in the South Fork Eel River, Trinity River, and Redwood Creek watersheds, Caltrans has commenced 6PPD-Q characterization monitoring at locations throughout the North Coast, including Redwood Creek, Garcia River, and South Fork Eel watershed. Locations for 6PPD-Q monitoring are shown in Table 4 in Appendix B.

Caltrans has also commenced monitoring BMP effectiveness at one low impact development BMP in the Redwood Creek watershed. Monitoring at site is expected to continue during the 2025-26 fiscal year. Details on this additional monitoring are provided in Section 6 and Appendix B.

Table 4-2
Caltrans Responsibility for North Coast Sediment TMDLs Watershed Monitoring

Watershed	Watershed Area (mi^2)	Caltrans Load Allocation[1] (t/y)	Total Management Load in Watershed[2] ($t/mi^2/y$)	Management Load Reduction Required[2] (%)	Management Load Allocation[2] ($t/mi^2/y$)	Management Load Allocation[3] (t/y)	Proportional Responsibility for Watershed Health Monitoring Programs[4] (%)
Albion River	43	1.9	435	69%	135	5799	0.03%
Big River	181	43.4	314	75%	79	14209	0.31%
Eel River, Upper Main	708	70.9	152	49%	78	54884	0.13%
Eel River, Middle Fork	753	105.7	82	65%	29	21611	0.49%
Eel River, Lower Main	300	73.7	775	77%	178	53475	0.14%
Eel River, South Fork	689	4848.2	845	71%	247	170376	2.85%
Garcia River	114	100.0	1380	60%	552	62928	0.16%
Gualala River	299	20.6	840	89%	96	28632	0.07%
Mad River	374	515.0	1580	89%	174	65001	0.79%
Navarro River	316	1362.6	775	62%	293	92572	1.47%
Noyo River	113	32.8	274	70%	82	9317	0.35%
Redwood Creek	282	855.6	4360	65%	1510	425820	0.20%
Scott River	814	66.7	299	63%	111	90053	0.07%
Ten Mile River	120	1.1	318	75%	80	9540	0.01%
Trinity River	1694	88.9	548	68%	178	301018	0.03%
Trinity River, South Fork	931	352.3	371	68%	119	110528	0.32%
Van Duzen River	428	67.8	586	72%	162	69368	0.10%

1 – Table A-3, State Water Board (2023)
2 – Derived from TMDL staff reports. Management Load Allocation ($t/m^2/y$) is the Total Management Load in Watershed (t/mi2/y) multiplied by [100 – Management Load Reduction Required (%)]
3 – Management Load Allocation (t/y) is the Management Load Allocation ($t/mi^2/y$) multiplied by the Watershed Area (mi^2)
4 – Proportional monitoring responsibility assumed to be same as share of management waste load allocation. The percent share of management waste load allocation is [Caltrans Load Allocation (t/y) divided by the Management Load Allocation (t/y)] multiplied by 100

4.2.2 San Francisco Bay Mercury & PCBs TMDLs (Permit Section F2.12.2)

San Francisco Bay Mercury TMDL (Permit Section F2.12.2.1)

Caltrans mercury monitoring options are as follows:

1. *Regional Monitoring*. Participate in mercury monitoring via the Regional Monitoring Program for Water Quality in San Francisco Bay; or
2. *Self-Monitoring*. Develop and implement a mercury monitoring plan to quantify the mercury loads or load reductions achieved through treatment, source control, and other management efforts. Sample bedded fine sediment for a minimum of four wet weather events per year over the term of the Order. Select sample locations at or near a point of discharge from the right-of-way and into the system that discharges stormwater into San Francisco Bay.

3. *Combination*. Implement a combination of monitoring requirements in options 1 or 2, above, provided that the combination provides equivalent monitoring.

Table 4-3 describes the Caltrans monitoring strategy for the San Francisco Bay Mercury TMDL.

Table 4-3
San Francisco Bay Mercury TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
San Francisco Bay Mercury TMDL	Attachment F, Section F2.12.2.1 Attachment D, Section D5.8	Regional monitoring: Participate in Regional Monitoring Program Self-monitoring: Monitor to quantify mercury loads or load reductions achieved through treatment, source control, and other management efforts. Include bedded fine sediment sampling Combination: Participate in Regional Monitoring Program and perform self-monitoring	Caltrans has selected combination monitoring. Caltrans will continue to contribute funding for the Regional Monitoring Program for Water Quality in San Francisco Bay and perform as needed self-monitoring. Monitoring for these projects may be performed by other stakeholders.

In addition to participating in the Regional Monitoring Program, Caltrans will characterize mercury in its runoff and monitor BMP effectiveness at 3 hydrodynamic separator (HDS) sites and one multi gross solids removal device (MGSRD) site in the TMDL watershed. Monitoring at the 3 HDS and one MGSRD sites is planned for the 2025-26 fiscal year. Additional details on this self-monitoring are provided in Sections 5 and 6, and Appendix B.

San Francisco Bay PCBs TMDL (Permit Section F2.12.2.2)

Caltrans PCBs monitoring options are as follows:

1. *Regional Monitoring*. Participate in PCBs monitoring via the Regional Monitoring Program for Water Quality in San Francisco Bay; or
2. *Self-Monitoring*. Develop, submit, and implement a Caltrans-specific monitoring plan to quantify PCBs stormwater runoff loads and the load reductions achieved through treatment, source control and other actions. Sample bedded fine sediment a minimum of four wet weather events per year over the term of the Order. Sample locations will be at/near a point of discharge from the right-of-way and into the conveyance system that discharges stormwater into San Francisco Bay. Monitoring will be representative of pollutant concentrations or loadings in discharges from Caltrans right-of-way or will be representative of the effects of discharges from Caltrans right-of-way on water qualities in the TMDL waterbodies.

3. *Combination*. Implement a combination of monitoring requirements in options 1 or 2, above, provided that the combination provides equivalent monitoring.

Table 4-4 describes the Caltrans monitoring strategy for the San Francisco Bay PCBs TMDL.

Table 4-4
San Francisco Bay PCBs TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
San Francisco Bay PCBs TMDL	Attachment F, Section F2.12.2.2 Attachment D, Section D5.8	Regional monitoring: Participate in Regional Monitoring Program Self-monitoring: Monitoring to quantify PCBs stormwater runoff loads and the load reductions achieved through treatment, source control and other actions. Include bedded fine sediment sampling Combination: Participate in Regional Monitoring Program and perform self-monitoring	Caltrans has selected combination monitoring. Caltrans will continue to contribute funding for the Regional Monitoring Program for Water Quality in San Francisco Bay and perform as needed self-monitoring. Monitoring for these projects may be performed by other stakeholders.

In addition to participating in the Regional Monitoring Program, Caltrans will characterize PCBs in its runoff and monitor BMP effectiveness at 3 hydrodynamic separator (HDS) sites and one multi gross solids removal device (MGSRD) site in the TMDL watershed. Monitoring at the 3 HDS and one MGSRD sites is planned for the 2025-26 fiscal year. Additional details on this self-monitoring are provided in Sections 5 and 6, and Appendix B.

4.2.3 Los Angeles Water Board TMDLs (Permit Section F2.12.3)

Caltrans monitoring options for TMDLs in the Los Angeles Water Board region (Los Angeles Region) are:

1. *Coordinated Integrated Monitoring*. Caltrans may continue to participate in Coordinated Integrated Monitoring Programs for individual TMDL watersheds or participate in other watershed cooperative monitoring programs in lieu of self- monitoring; or
2. *Self-Monitoring*. Caltrans will implement self-monitoring through development of a monitoring plan and schedule to monitor its rights-of-way. The monitoring plan will be equivalent in methods, precision, accuracy, and quality to the (1) relevant Coordinated Integrated Monitoring Programs or other watershed cooperative monitoring programs and (2) the monitoring requirements in this Attachment. The monitoring plan shall include a work plan and schedule to implement the monitoring. The watershed and TMDL shall be identified in the monitoring plan; or

3. *Combination*. Caltrans may implement a combination of requirements in options 1 or 2, above, provided that the combination is equivalent to the monitoring via watershed cooperative monitoring and right-of-way monitoring.

Table 4-5 describes the Caltrans monitoring strategy for the Los Angeles Region TMDLs.

Table 4-5
Los Angeles Region TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
Los Angeles Region TMDLs	Attachment F, Section F2.12.3 Attachment D, Section D5.10	Coordinated Integrated monitoring: Participate in Coordinated Integrated Monitoring Programs Self-monitoring: Monitoring shall be equivalent in methods, precision, accuracy, and quality to the relevant Coordinated Integrated Monitoring Programs or other watershed cooperative monitoring programs Combination: Participate in Coordinated Integrated Monitoring Programs and perform self-monitoring providing that it is equivalent to the monitoring via watershed cooperative monitoring and right-of-way monitoring	Caltrans has selected combination monitoring. Caltrans will continue to contribute funding or enter into new Coordinated Integrated Monitoring Programs for individual TMDL watersheds and perform additional self-monitoring. Monitoring for these projects may be performed by other stakeholders.

Caltrans is currently participating in a number of Coordinated Integrated Monitoring Programs in the Los Angeles Region and is planning to participate in new programs in the future. Current Coordinated Integrated Monitoring Programs are listed in Table 3-2. Caltrans anticipates participating in the new programs after management approval of terms and conditions of participation and upon acceptance from existing stakeholders.

As efforts continue to pursue participation in Coordinated Integrated Monitoring Programs, Caltrans will characterize its runoff at 7 sites in various Los Angeles Region TMDL watersheds and monitor BMP effectiveness at 1 site in the Peck Road Park watershed. Monitoring at these sites, which are either ongoing monitoring sites or are currently in the planning phase, is expected to continue or commence during the 2025-26 fiscal year. To characterize dry weather flows, monitoring will include field observations on the frequency of dry weather flows and dry weather

flow sampling at select locations during the dry season. Additional details on this self-monitoring are provided in Sections 5 and 6, and Appendix B.

4.2.4 Central Valley Water Board TMDLs (Permit Section F2.12.4)

In the Central Valley Water Board region (Central Valley Region), Caltrans will continue to participate in the Central Valley Water Board approved Delta Regional Monitoring Program. In the event the Delta Regional Monitoring Program is no longer approved by the Central Valley Water Board Executive Officer, Caltrans will submit a Methylmercury Monitoring Plan that assesses attainment with the TMDL allocations in its stormwater discharges and implement it within six months of the Central Valley Water Board Executive Officer approval. The Methylmercury Monitoring Plan and Quality Assurance Project Plan that is to be included will meet the requirement of Section F2.12.4 of the Permit.

Table 4-6 describes the Caltrans monitoring strategy for the Central Valley Region.

Table 4-6
Central Valley Region TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Requirement	Caltrans Strategy
Sacramento-San Joaquin Delta Methylmercury TMDL	Attachment F, Section F2.12.4 Attachment D, Section D5.11	Regional monitoring: Participate in Delta Regional Monitoring Program	Caltrans will continue to participate in Delta Regional Monitoring Program. Caltrans may perform as needed self-monitoring to quantify its loads and load reductions achieved through treatment, source control, and other management efforts.

As required in Section F2.12.4 of the Permit, Caltrans will continue to implement turbidity monitoring for construction projects in the Clear Lake Nutrients TMDL watershed and the Cache Creek, Bear Creek, Sulphur Creek, and Harley Gulch Mercury TMDL watershed. In addition to monitoring construction projects, Caltrans is monitoring 3 open-graded friction course (OGFC) sites together with one control (no OGFC) site in Merced County and has commenced 6PPD-Q characterization monitoring at 3 locations in the San Joaquin River watershed.

4.2.5 Lahontan Water Board TMDLs (Permit Section F2.12.5)

Caltrans monitoring options in the Lahontan Water Board region (Lahontan Region) are:

1. *Cooperative Monitoring*. Caltrans will participate in the Lake Tahoe Regional Stormwater Monitoring Program; or
2. *Self-Monitoring*. Caltrans will prepare and submit a Stormwater Monitoring Plan for review and consideration of approval to the State Water Board Executive Director in consultation with the Lahontan Water Board Executive Officer. Caltrans monitoring plan will have the

same monitoring parameters, locations, frequencies, and reporting as the Lake Tahoe Regional Stormwater Monitoring Program.

Table 4-7 describes the Caltrans monitoring strategy for the Lahontan Region.

Table 4-7
Lahontan Region TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
Lake Tahoe TMDL	Attachment F, Section F2.12.5 Attachment D, Section D5.12	Cooperative monitoring: Participate in Lake Tahoe Regional Stormwater Monitoring Program Self-monitoring: Prepare and submit a Stormwater Monitoring Plan for review and approval that has the same monitoring parameters, locations, frequencies, and reporting as the Lake Tahoe Regional Stormwater Monitoring Program	Caltrans has selected cooperative monitoring. Caltrans will continue to participate in the Lake Tahoe Regional Stormwater Monitoring Program.

4.2.6 Colorado River Basin Water Board TMDLs (Permit Section F2.12.6)

For the Coachella Valley Stormwater Channel Bacterial Indicators TMDL, Caltrans is monitoring for *Escherichia coli* during a minimum of two qualifying precipitation events per calendar year that result in a discharge and for a minimum of eight sampled events over four years, excluding years less than two qualifying precipitation events. Caltrans is sampling at the monitoring locations identified in the Caltrans document "Coachella Valley Stormwater Channel Bacterial Indicator Monitoring Quality Assurance Project Plan (QAPP), Document No. CTSW-PL-22-423.04.2, March 2022".

Table 4-8 describes the Caltrans monitoring strategy for the Colorado River Basin.

Table 4-8
Colorado River Basin TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Requirement	Caltrans Strategy
Coachella Valley Stormwater Channel Bacterial Indicators TMDL	Attachment F, Section F2.12.6	Sample at monitoring locations identified in Caltrans "Monitoring and Reporting Project Plan and Quality Assurance Project Plan for 2-Year Bacteria Indicator Monitoring in Conformance with Phase I Implementation for the Coachella Valley	Caltrans will monitor at Caltrans right-of-way sites stated in the Monitoring and Reporting Project Plan

TMDL(s)	Section in Permit	Monitoring Requirement	Caltrans Strategy
		Stormwater Channel Total Maximum Daily Load, Riverside County, California"	

Caltrans is performing monitoring at four locations in the Coachella Valley Stormwater Channel watershed: I-10 West of Jackson Street, I-10 East of Jackson Street, I-10 West of Monroe Street, and SR-86 near the interchange. Monitoring at these sites, which are existing monitoring sites, will continue during the 2025-26 fiscal year. Additional details on these monitoring sites are provided in Section 5 and Appendix B.

4.2.7 Santa Ana Water Board TMDLs (Permit Section D5.13)

The monitoring options for the Lake Elsinore and Canyon Lake Nutrient TMDL are:

1. *Cooperative Monitoring*. Caltrans will continue participation with the Lake Elsinore and Canyon Lake Nutrients TMDL Task Force for cooperative implementation actions, monitoring, and special studies; or
2. *Self-Monitoring*. Caltrans will develop and implement a program consistent with the Lake Elsinore and Canyon Lake TMDL Task force, which will include Canyon Lake in-lake monitoring consistent with the TMDL Task Force monitoring program and a monitoring program to evaluate the success of in-lake sediment reduction strategies that will be implemented.

Table 4-9 describes the Caltrans monitoring strategy for the Santa Ana Region.

Table 4-9
Santa Ana Region TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
Lake Elsinore and Canyon Lake Nutrient TMDL	Attachment D, Section D5.13	Cooperative monitoring: Participate in Lake Elsinore and Canyon Lake Nutrients TMDL Task Force Self-monitoring: Prepare and implement a monitoring program that is consistent with that conducted by the Lake Elsinore and Canyon Lake TMDL Task force	Caltrans has selected cooperative monitoring. Caltrans will continue to participate in the Lake Elsinore and Canyon Lake Nutrients TMDL Task Force

In addition to participating in the Lake Elsinore and Canyon Lake Nutrients TMDL Task Force, Caltrans is characterizing its runoff at 3 sites in the Big Bear Lake watershed. Monitoring at two existing sites will continue during the 2025-26 fiscal year, while monitoring at a third site is expected to commence during the 2025-26 fiscal year. Caltrans is also characterizing its runoff

at 4 sites in the Newport Bay watershed. Monitoring at the Newport Bay sites commenced during the 2024-25 fiscal year and is expected to continue during the 2025-26 fiscal year. Additional details on this self-monitoring are provided in Section 5 and Appendix B.

4.2.8 San Diego Water Board TMDLs (Permit Section F2.12.7)

Twenty Beaches & Creeks Bacteria TMDL (Permit Section F2.12.7.1)

Caltrans monitoring options in the Project I – Twenty Beaches and Creeks Bacteria TMDL watersheds are:

1. *Cooperative Monitoring*. Caltrans will participate in cooperative watershed monitoring with the other responsible municipalities, as approved by the State Water Board Executive Director in consultation with the San Diego Water Board Executive Officer. Caltrans participation shall be a proportional responsibility that is calculated in accordance with Caltrans land use coverage in the watershed; or
2. *Self-Monitoring*. Caltrans will conduct compliance monitoring to demonstrate the effectiveness of best management practices (BMPs) in controlling bacteria loads. Receiving water monitoring will be conducted in three representative watersheds annually for the Permit term. For each of the twenty beaches and creeks watersheds, outfalls shall be monitored weekly during the dry season and a minimum of three rain events during one wet season. This monitoring will be conducted in two different sampling years and at a minimum of twice per Permit term.

Table 4-10 describes the Caltrans monitoring strategy for the Twenty Beaches & Creeks Bacteria TMDL.

In addition, Caltrans will continue to self-monitor indicator bacteria in its runoff and discharge at 4 monitoring stations in the Chollas Creek watershed. Monitoring at these stations, which are existing monitoring stations, is expected to continue during the 2025-26 fiscal year. Additional details on this self-monitoring are provided in Sections 5 and 6, and Appendix B.

Table 4-10
Twenty Beaches & Creeks Bacteria TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
Twenty Beaches & Creeks Bacteria TMDL	Attachment F, Section F2.12.7.1 Attachment D, Section D5.14.1	Cooperative monitoring: Participate in an approved cooperative watershed monitoring program Self-monitoring: Conduct annual receiving water in three representative watersheds, and outfall monitoring in each of the twenty beaches and creeks watersheds. May conduct	Caltrans has selected cooperative monitoring. Caltrans will continue to participate in Project I-Twenty Beaches and Creeks/ Chollas Creek Bacteria TMDL Monitoring in cooperation with the County and City of San Diego and other responsible municipalities

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
		compliance monitoring to demonstrate BMP effectiveness for bacteria	

Chollas Creek Dissolved Metals TMDL (Permit Section F2.12.7.2)

Caltrans monitoring options in the Chollas Creek Dissolved Copper, Lead, and Zinc TMDL (Chollas Creek Metals TMDL) watershed are:

1. *Cooperative Monitoring*. Caltrans may participate in or contribute to a cooperative watershed monitoring program with the other responsible municipalities, as approved by the State Water Board Executive Director in consultation with the San Diego Water Board Executive Officer. Receiving water will be sampled monthly during the wet season; or
2. *Self-Monitoring*. Caltrans may develop and conduct compliance monitoring to demonstrate the effectiveness of best management practices (BMPs) at outfalls. Representative outfalls will be monitored for applicable metals for one rain event per year over three separate years during the wet season per the Permit term or per every five years, whichever is less.

Table 4-11 describes the Caltrans monitoring strategy for the Chollas Creek Metals TMDL.

Table 4-11
Chollas Creek Dissolved Copper, Lead, and Zinc TMDL Monitoring

TMDL(s)	Section in Permit	Monitoring Options	Caltrans Strategy
Chollas Creek Metals TMDL	Attachment F, Section F2.12.7.2 Attachment D, Section D5.14.2	Cooperative monitoring: Participate in an approved cooperative receiving water monitoring program Self-monitoring: Perform representative outfall monitoring for applicable metals for one rain event per year over three separate years during the wet season per the Permit term or per every five years, whichever is less. Caltrans may develop and conduct compliance monitoring to demonstrate the effectiveness of BMPs	Caltrans has selected self-monitoring. Caltrans will continue monitoring at representative BMP sites that have been approved by the Water Board. The approved sites are an Austin sand filter and a bioswale. Monitoring at these approved sites will target a minimum of one rain event per year over three separate years during the wet season and will include north and south fork receiving water sampling for hardness and pH. Although not required by the Permit since self-monitoring is selected, Caltrans will continue to participate in the Regional Monitoring Program with the City of San Diego to assess compliance in the receiving water

Since 2010, Caltrans has installed more than 20 structural BMPs within its right-of-way to treat stormwater runoff in the Chollas Creek watershed. Four monitoring stations, located at representative Caltrans BMP locations on the north and south forks of Chollas Creek, have been selected for Caltrans runoff characterization and BMP effectiveness monitoring. These locations include an Austin sand filter and one receiving water station on the north fork and a bioswale and one receiving water station on the south fork. The two receiving water monitoring stations located on the north and south fork of Chollas Creek are being monitored to improve assessments of the dissolved metals TMDL acute and chronic thresholds. Monitoring at these BMP and receiving water sites, which are existing monitoring sites approved as representative sites by the San Diego Water Board, is expected to continue during the 2025-26 fiscal year. Additional details on this self-monitoring are provided in Sections 5 and 6, and Appendix B.

SECTION 5

Runoff Characterization Monitoring

5.2 Characterization Monitoring Sites (Permit Section F2.13)

Table 4 in the QAPP (Appendix B) lists the current and proposed runoff characterization monitoring sites, together with information on the station codes, where the sites are located, and the type of monitoring (Receiving Water Monitoring, Region-Specific TMDL Monitoring, Runoff Characterization Monitoring, BMP Effectiveness Monitoring, Conditionally Exempt Non-Stormwater Discharge Monitoring). Caltrans intends to monitor 57 runoff characterization sites during the 2025-26 fiscal year.

Site selection for runoff characterization focused on TMDL watersheds. For each TMDL watershed, an analysis was performed during the 2023-24 season to determine the number of existing runoff monitoring sites and representative runoff sites that had at least five analytical results for the TMDL constituent. Representative sites are sites that are located outside the TMDL watershed but are considered representative of sites within the TMDL watershed based on important factors such as traffic. Traffic was the main factor found to govern Caltrans runoff quality in previous characterization studies (Section 4 in Caltrans 2003). Following this approach, new runoff monitoring sites were identified in the following TMDL watersheds: Big Bear Lake, Los Angeles River, Redwood Creek, Sacramento- San Joaquin River Delta Estuary, South Fork Eel River, San Francisco Bay, San Gabriel River, and some smaller watersheds.

In the North Coast sediment TMDL watersheds, Caltrans plans to monitor 18 new discharge sites in the South Fork Eel River, Trinity River, and Redwood Creek watersheds during the 2025-26 fiscal year. Each discharge site will be paired with upstream and downstream receiving water stations.

5.4 Characterization Monitoring Schedule (Permit Section F2.13)

Table 4 of the QAPP (Appendix B) provides the monitoring schedule for runoff characterization sites in each TMDL watershed. Table 4 specifies monitoring that will be conducted during the 2025-26 fiscal year and monitoring that is proposed for the 2026-27 fiscal year. The decision to continue monitoring these sites during the 2026-27 fiscal year will be made after the current season, when the total number of usable data points for the sites are known.

SECTION 6

BMP Effectiveness Monitoring

6.2 BMP Monitoring Sites (Permit Section F2.14)

Table 4 of the QAPP (Appendix B) lists the current and proposed BMP effectiveness monitoring sites, together with information on the influent and effluent station codes, where the sites are located, and key TMDL pollutants. Caltrans intends to monitor a total of 13 BMP sites during the 2025-26 fiscal year.

Site selection for BMP effectiveness assessment focused on ecoregions. For each ecoregion, an analysis was performed to determine the number of existing BMP monitoring sites of a given type that had at least five analytical results for the TMDL constituent. Representative sites outside the ecoregion were also identified. Representative sites outside an ecoregion are sites that are located outside the ecoregion but are considered representative of sites within the ecoregion based on traffic, the main factor found to govern Caltrans runoff quality in previous characterization studies (Section 4 in Caltrans 2003). Following this approach, new BMP effectiveness monitoring sites were identified in the following water board regions: North Coast, San Francisco Bay, Central Valley, Los Angeles, and San Diego.

6.2.1 North Coast Region (Permit Section F2.14)

Caltrans intends to monitor the effectiveness of one bioswale near Lord Ellis Summit that drains to Redwood Creek. Monitoring at this existing BMP site, which include influent and effluent stations, is expected to continue during the 2025-26 fiscal year. Details on stations at this BMP site are given in Table 4 of the QAPP.

6.2.2 San Francisco Bay Region (Permit Section F2.14)

In the San Francisco Bay region, Caltrans intends to commence BMP effectiveness monitoring at three HDS units during the 2025-26 fiscal year. The HDS units that will be monitored are in Contra Costa at Willow Pass (stations 4-470 and 4-471), Santa Clara at Coyote Creek (4-472 and 4-473), and San Mateo at Edgewood Road (4-474 and 4-475). In addition to HDS monitoring, Caltrans intends to monitor treatment by a multi gross solids removal device (MGSRD) in Santa Clara (stations 4-461 and 4-462).

6.2.3 Central Valley Region (Permit Section F2.14)

Caltrans is currently monitoring the effectiveness of three types of Open Graded Friction Course (OGFC) near Santa Nella in the Central Valley: Non-Rubberized, Rubberized, and Modified Rubberized. The Santa Nella OGFC study consists of four monitoring stations: three stations with OGFC overlays (10-307, 10-308, 10-309), while the remaining station (10-306) is a control station that collects runoff from standard dense-graded hot mix asphalt. Monitoring of these stations

will continue during the 2025-26 fiscal year. Details on these BMP sites are given in Table 4 of the QAPP.

6.2.4 Los Angeles Region (Permit Section F2.14)

Caltrans monitored the effectiveness of two Austin sand filters in the Los Angeles Region during the 2024-25 fiscal year, one in the Ballona Creek watershed and one in the Peck Road Park Lake (Los Angeles River) watershed. Monitoring at the Ballona Creek filter, located off I-10, is now complete. The Peck Road Park Lake filter, located off SR-210, will continue to be monitored during the 2025-26 fiscal year. This filter includes influent station 7-422 and effluent station 7-423. Details on this BMP are given in Table 4 of the QAPP.

Caltrans has collected sufficient monitoring data for pilot trash devices with biochar media at six locations in the Los Angeles Region, all in the Los Angeles River watershed. No further monitoring is anticipated at these sites.

6.2.5 San Diego Region (Permit Section F2.14)

Caltrans has constructed bioswales, modular infiltration trenches, and an Austin sand filter to address the Chollas Creek Diazinon TMDL, Dissolved Metals TMDL, and Twenty Beaches and Creeks Bacteria TMDL. Caltrans has selected and is performing BMP effectiveness monitoring of one bioswale and one Austin sand filter. The bioswale, located off SR-94, includes influent station 11-357 and effluent station 11-358. The Austin sand filter, also located off SR-94, includes influent station 11-359 and effluent station 11-360. In addition to BMP effectiveness monitoring, Caltrans is also conducting monitoring at two receiving water stations (11-355 and 11-356) to improve assessments of dissolved metals acute and chronic TMDL thresholds. These BMP and receiving water sites will be monitored during the 2025-26 fiscal year. Details on these sites are given in Table 4 of the QAPP.

During the 2024-25 fiscal year, Caltrans conducted a pilot pervious pavement BMP monitoring study at three sites near Encinitas in the Cottonwood Creek watershed. The Encinitas Pervious Pavement Pilot Monitoring Project (Encinitas Pilot Project) consisted of three stations that evaluate the performance of pervious highway shoulders for runoff treatment. One station (11-362) monitored untreated runoff while the other two monitored treated effluent (11-363 and 11-364). Caltrans does not intend to continue monitoring at these sites because of operational issues.

6.4 BMP Monitoring Schedule (Permit Section F2.14)

Table 4 of the QAPP (Appendix B) provides the monitoring schedule for BMP effectiveness sites in each TMDL watershed. Table 4 specifies monitoring that will be conducted during the 2025-26 fiscal year and monitoring that is proposed for the 2026-27 fiscal year. The decision to monitor

these sites during the 2026-27 fiscal year will be made after the current season, when the total number of usable data points for the sites are known.

SECTION 7

Conditionally Exempt Non-Stormwater Discharge Monitoring

Section F2.15 of the Caltrans Permit allows certain types of non-stormwater discharges that are not considered to be sources of pollutants. However, if the State Water Board Executive Director determines that any category of allowed non-stormwater discharge is a source of pollutants, the State Water Board Executive Director may require the Department to conduct additional monitoring and submit a report on such discharges. The State Water Board Executive Director may also order the Department to cease a non-stormwater discharge.

During the 2025-26 season, the State Water Board Executive Director has not identified any of the conditionally exempt non-stormwater discharges to be a source of pollutants.

Appendix A (Sampling and Analysis Plan)

Table SAP- 1.3 – Frequency of Field Quality Control Sample Collection

QA/QC Sample Type	Minimum Sampling Frequency
Field Duplicate	Once every 20 samples collected at a given site or once per sampling station per season, whichever is more frequent.
Field Blank	Once every 20 samples collected at a given site or once per sampling station per season, whichever is more frequent.
Matrix Spike/Matrix Spike Duplicate	Once every 20 samples collected at a given site or once per sampling station per season, whichever is more frequent.[1]

[1]MS/MSD for 6PPD-Quinone to be analyzed only when requested by the Task Order Manager.

Table SAP- 4.1 - Methods and Reporting Limits

Constituent	Analytical Method(s)[1]	Units	Reporting Limit
Conventionals			
Hardness as $CaCO_3$	SM 2340 B or C	mg/L	1
pH	Calibrated Field Instrument	pH Units	Field
Temperature	Calibrated Field Instrument	° Celsius	Field
Flow Rate	Calibrated Field Instrument	ft^3/s	Field
Salinity	SM 2520 A	ppt	1
Total Dissolved Solids	EPA 160.1	mg/L	1
Total Suspended Solids	EPA 160.2	mg/L	1
Settleable Solids	SM 2540 F	mL/L	0.1
Turbidity	Calibrated Field Instrument	NTU	Field
Total Organic Carbon	EPA 5310B or C	mg/L	0.6
Dissolved Organic Carbon	EPA 5310B or C	mg/L	0.6
Dissolved Oxygen	Calibrated Field Instrument	mg/L	Field
Alkalinity as $CaCO_3$	EPA 310.1	mg/L	1
Conductivity	EPA 120.1	uS/cm	1
Nutrients			
Total Kjeldahl Nitrogen	EPA 351.3	mg/L	0.1
Nitrate as N	EPA 300.0/EPA 300.1	mg/L	0.1
Nitrite as N	EPA 300.0/EPA 300.1	mg/L	0.1
Phosphorous as P	EPA 365.2	mg/L	0.03
Orthophosphate (Total)	SM 4500-P, E	mg/L	0.03
Ammonia as N	EPA 350.1/SM 4500-NH3 D	mg/L	0.1
Metals (Total and Dissolved)			
Aluminum	EPA 200.8/EPA 1640	µg/L	25
Arsenic	EPA 200.8/EPA 1640	µg/L	0.01
Cadmium	EPA 200.8/EPA 1640	µg/L	0.005
Chromium	EPA 200.8/EPA 1640	µg/L	0.025
Copper	EPA 200.8/EPA 1640	µg/L	0.01
Iron	EPA 200.8/EPA 1640	µg/L	1
Lead	EPA 200.8/EPA 1640	µg/L	0.05
Manganese	EPA 200.8/EPA 1640	µg/L	0.01
Mercury	EPA 1631E/EPA 1640	µg/L	0.0002
Nickel	EPA 200.8/EPA 1640	µg/L	0.02
Selenium	EPA 200.8/EPA 1640	µg/L	0.3
Silver	EPA 200.8/EPA 1640	µg/L	0.02
Zinc	EPA 200.8/EPA 1640	µg/L	5
Hydrocarbons			
Oil & Grease	EPA 1664B	mg/L	1.4
Organics			
6PPD-Quinone	EPA 1634	ng/L	2.0
Polynuclear Aromatic Hydrocarbons (PAHs)	EPA 8310	ng/L	See Note[2]
Chlorinated Phenolics	EPA 625/EPA 8270	µg/L	1
Phenolic Compounds (non-chlorinated)	EPA 625/EPA 8270	µg/L	30

Constituent	Analytical Method(s)[1]	Units	Reporting Limit
Organochlorine Pesticides	EPA 8081/EPA 625	µg/L	See Note[2]
Organochlorine Pesticides (low level)	EPA 1699	pg/L	See Note[2]
Organophosphorus Pesticides	EPA 8141/EPA 625	ng/L	See Note[2]
Pyrethroid Pesticides	EPA 625/EPA 8270	ng/L	See Note[2]
PCBs	EPA 8081/EPA 8082	µg/L	See Note[2]
PCB (low level)	EPA 1668C	pg/L	See Note[3]
Microbiologicals			
Total Coliform	SM 9221 C	MPN/100 mL	2
Fecal Coliform	SM 9221 C	MPN/100 mL	2
Enterococcus	EPA 1600/Enterolert	CFU/100 mL	1
E. Coli	SM 9221 C	MPN/100 mL	2
Other			
Cyanide	EPA 335.2	mg/L	0.05
Total Chlorine Residual	EPA 330.1/EPA 330.5	mg/L	0.2
Toxicity			
Acute Toxicity	EPA-821-R-02-012	Pass/Fail	Not Applicable
Chronic Toxicity	EPA 821-R-02-013/ EPA-821-R-02-014	Pass Fail	Not Applicable

[1] Alternate analytical methods may be used, but the use of any method not listed on this table must be approved in advance and in writing by the Caltrans Task Order Manager.

[2] See Tables SAP-4.2 through SAP-4.6 for the individual compounds and their associated reporting limits.

[3] PCBs are analyzed on a per-congener basis. MDLs are determined by the laboratory for each congener during each analysis.

Table SAP- 4.4 - Compound List/RLs for Organochlorine Pesticides

Constituent Name	Units	Reporting Limit
DDTs	ug/L	0.005
Toxaphene	ug/L	0.005
Dieldrin	ug/L	0.005
Chlordane	ug/L	0.005
DDTs (low level)	pg/L	5
Toxaphene (low level)	pg/L	50
Dieldrin (low level)	pg/L	5
Chlordane (low level)	pg/L	5
HCHs	µg/L	0.002
Endosulfan	µg/L	0.002
Endrin	µg/L	0.002

Appendix B (Quality Assurance Project Plan)

A6.3 Geographical Locations

This section describes the physical locations (sites) at which monitoring will be conducted. All monitoring samples and measurements shall be representative of the monitored volume and characteristics of the monitored discharge at each monitoring site. At select monitoring locations, effluent from BMPs will be used as representative of the water quality of stormwater discharges from BMPs of the same type at other locations. Selection of representative BMP effectiveness monitoring sites are based on existing and proposed BMPs.

Table 4 lists all project monitoring sites, their geographical locations, and the type of monitoring (Receiving Water Monitoring, Region-Specific TMDL Monitoring, Runoff Characterization Monitoring, BMP Effectiveness Monitoring, Conditionally Exempt Non-Stormwater Discharge Monitoring) that will be conducted at each site. Table 4 summarizes the geographical information for all project monitoring sites.

Table 4 - Project Station Information

Station Code	Station Name	Latitude	Longitude	RWQCB	County	Route	Postmile	Catchment (ha)	Position	Monitoring Type	Watershed Name	TMDL Pollutant List	Monitored 2025-26*	Monitored 2026-27*
1-351	Lord Ellis Summit	40.9303	-123.855	1	Humboldt	299	18.42	0.54	Influent	6PPD-Q Characterization	Redwood Creek	Sediment	Yes	Planned
1-352	Lord Ellis Summit	40.9305	-126.855	1	Humboldt	299	18.42	0.54	Effluent	6PPD-Q Effectiveness (Bioswale)	Redwood Creek	Sediment	Yes	Planned
1-362	Mello Creek	41.8986	-124.1365	1	Humboldt	101	37.46	0.028	Effluent	6PPD-Q Effectiveness (Bioswale)	Smith River	None	Yes	No
1-366	Mello Creek	41.8986	-124.1365	1	Humboldt	101	37.46	0.028	EOP	6PPD-Q Characterization	Smith River	None	Yes	No
1-344	Circle Point Curve	40.9231	-123.8105	1	Humboldt	299	25.324	0.62	Influent	6PPD-Q Characterization	Redwood Creek	Sediment	Yes	Yes
1-345	Circle Point Curve	40.9231	-123.8105	1	Humboldt	299	25.324	0.62	Effluent	6PPD-Q Effectiveness (Bioswale)	Redwood Creek	Sediment	Yes	No
1-321	Wilson Creek	41.6053	-124.1020	1	Del Norte	101	12.74	0.47	EOP	6PPD-Q Characterization	Wilson Creek	Sediment	Yes	Yes
1-364	Chad Creek	40.4068	-123.9525	1	Humboldt	254	40.32	0.115	EOP	6PPD-Q Characterization	S. Eel River	Sediment	Yes	Yes
1-353	Fish Rock Gulch	38.8056	-123.5791	1	Mendocino	1	4.64	0.369	Culvert from EOP	6PPD-Q Characterization	Fish Rock Gulch	None	Yes	Yes
1-354	Fish Rock Gulch	38.8056	-123.5791	1	Mendocino	1	4.64	298	RW Upstream	6PPD-Q Receiving Water	Fish Rock Gulch	None	Yes	Yes
1-355	Fish Rock Gulch	38.8056	-123.5791	1	Mendocino	1	4.64	298	RW Downstream	6PPD-Q Receiving Water	Fish Rock Gulch	None	Yes	Yes
1-356	Creek 58.78	39.4056	-123.8088	1	Mendocino	1	58.78	0.369	Culvert from EOP	6PPD-Q Effectiveness	Creek 58.78	None	Yes	Yes
1-357	Creek 58.78	39.4056	-123.8088	1	Mendocino	1	58.78	306	RW Upstream	6PPD-Q Runoff Characterization	Creek 58.78	None	Yes	Yes
1-358	Creek 58.78	39.4056	-123.8088	1	Mendocino	1	58.78	306	RW Downstream	6PPD-Q Runoff Characterization	Creek 58.78	None	Yes	Yes
1-367	Little River	39.270820	-123.788615	1	Mendocino	1	47.72	TBD	EOP	6PPD-Q Runoff Characterization – rubberized	Little River	None	Yes	Yes
1-###	Van Dam	39.273976	-123.790541	1	Mendocino	1	47.99	TBD	EOP	6PPD-Q Runoff Characterization - rubberized	Little River	None	Yes	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes

1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	Redwood Creek	Sediment	Planned	Yes
1-400	North Coast	40.35437	-123.92622	1	Humboldt	101	35.94	0.51	RW Upstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Yes	Yes
1-401	North Coast	40.35437	-123.92622	1	Humboldt	101	35.94	0.51	RW Downstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Yes	Yes
1-402	North Coast	40.35437	-123.92622	1	Humboldt	101	35.94	0.51	EOP	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Yes	Yes
1-403	North Coast	40.26628	-123.86755	1	Humboldt	101	27.91	0.75	RW Upstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Yes	Yes
1-404	North Coast	40.26628	-123.86755	1	Humboldt	101	27.91	0.75	RW Downstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Yes	Yes
1-405	North Coast	40.26628	-123.86755	1	Humboldt	101	27.91	0.75	EOP	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Yes	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes

1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
1-###	North Coast	TBD	TBD	1	Humboldt/ Del Norte	TBD	TBD	TBD	EOP	Receiving Water Impact	South Eel Fork River	Temperature and Sediment	Planned	Yes
2-406	North Coast	40.88931	-123.59966	1	Trinity	299	0.13	0.11	RW Upstream	Receiving Water Impact	Trinity River	Sediment	Yes	Yes
2-407	North Coast	40.88931	-123.59966	1	Trinity	299	0.13	0.11	RW Downstream	Receiving Water Impact	Trinity River	Sediment	Yes	Yes
2-408	North Coast	40.88931	-123.59966	1	Trinity	299	0.13	0.11	EOP	Receiving Water Impact	Trinity River	Sediment	Yes	Yes
2-409	North Coast	40.65125	-122.93997	1	Trinity	299	58.1	0.05	RW Upstream	Receiving Water Impact	Trinity River	Sediment	Yes	Yes
2-410	North Coast	40.65125	-122.93997	1	Trinity	299	58.1	0.05	RW Downstream	Receiving Water Impact	Trinity River	Sediment	Yes	Yes
2-411	North Coast	40.65125	-122.93997	1	Trinity	299	58.1	0.05	EOP	Receiving Water Impact	Trinity River	Sediment	Yes	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	EOP	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	EOP	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	EOP	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Upstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	RW Downstream	Receiving Water Impact	Trinity River	Sediment	Planned	Yes

2-###	North Coast	TBD	TBD	1	Trinity	TBD	TBD	TBD	EOP	Receiving Water Impact	Trinity River	Sediment	Planned	Yes
4-470	Willow Pass HDS Influent	38.01308	-121.99736	2	Contra Costa	4	R16.83	46.9	Influent	HDS influent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-471	Willow Pass HDS Effluent	38.01306	-121.99745	2	Contra Costa	4	R16.83	46.9	Effluent	HDS effluent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-472	Coyote Creek HDS Influent	37.18977	-121.69456	2	Santa Clara	101	R21.26	32.46	Influent	HDS influent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-473	Coyote Creek HDS Effluent	37.18971	-121.69449	2	Santa Clara	101	R21.26	32.46	Effluent	HDS effluent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-474	Edgewood Rd HDS Influent	37.47124	-122.29536	2	San Mateo	280	6.98	41.04	Influent	HDS influent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-475	Edgewood Rd HDS Effluent	37.47123	-122.29533	2	San Mateo	280	6.98	41.04	Effluent	HDS effluent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-461	SFBAY (MGSRD Influent)	37.31523	-121.91115	4	Santa Clara	280	R3.8 EB	34.9	Influent	MGSRD influent	San Francisco Bay	PCBs, Mercury	Planned	Yes
4-462	SFBAY (MGSRD Effluent)	37.31523	-121.91140	4	Santa Clara	280	R3.8 EB	34.9	Effluent	MGSRD effluent	San Francisco Bay	PCBs, Mercury	Planned	Yes
6-314	North Fork Road Bridge	36.99214	-119.71379	5	Madera	North Fork Road	700 feet NW of Fraint Cove Park and Ride	0.161874	Pipe	6PPD-Q Characterization	San Joaquin River	6PPD-Q	Yes	Planned
6-315	SR-41 Bridge	36.87460	-119.79230	5	Fresno	41	33.102	0.1011714	Inlet	6PPD-Q Characterization	San Joaquin River	6PPD-Q	Yes	Planned
6-316	SR-99 Bridge	36.84200	-119.93159	5	Fresno	99	31.52	8.1503	Pipe	6PPD-Q Characterization	San Joaquin River	6PPD-Q	Yes	Planned
7-127	Site 2, Interstate 210 mile post 40.8	34.12	-117.89	4	Los Angeles	210	40.8	0.4	EOP	Characterization	San Gabriel River	Nitrogen, Phosphorus, Copper, Lead, Zinc, Chlordane, DDT, PCBs, Mercury, Dieldrin, PAHs	Yes	No
7-380	SAD1060	34.0156	-118.823	4	Los Angeles	1	55.2	3.181	EOP	Characterization	Santa Monica Bay	Mercury, Bacterial Indicators	Yes	Yes
7-421	Legg Lake Characterization	34.03978	-118.06391	4	Los Angeles	164	3.24	0.6	Pipe outlet	Characterization	Part B-Los Angeles Area North, Center & Legg Lake	Nitrogen, Phosphorus	Yes	Unknown
7-422	Peck Road Park Lake SF Influent	34.13572	-117.98787	4	Los Angeles	210	34.66	2.35	Influent	Austin Sand Filter	Los Angeles Area Peck Road Park Lake	Nitrogen, Phosphorus, Chlordane, DDT, Dieldrin, and PCBs	Yes	Yes
7-423	Peck Road Park Lake SF Effluent	34.13572	-117.98787	4	Los Angeles	210	34.66	2.35	Effluent	Austin Sand Filter	Los Angeles Area Peck Road Park Lake	Nitrogen, Phosphorus, Chlordane, DDT, Dieldrin, and PCBs	Yes	Yes

7-425	Machado Lake Characterization	33.79089	-118.29129	4	Los Angeles	1	12.15	0.55	EOP	Characterization	Machado Lake	Nutrients /Pesticides and PCBs	Yes	Yes
7-427	Maxella Ave Characterization	33.98649	-118.44431	4	Los Angeles	90	31.45	0.84	EOP	Characterization	Marina Del Rey Harbor	Toxic Pollutants (Cu, Pb, Zn, Chlordane and Total PCBs)	Yes	Unknown
7-401	Potrero Valley	34.108493	-118.855422	4	Los Angeles	23	7.14	0.1	EOP	Characterization	Lake Sherwood, Santa Monica Bay	DDT, PCBs, Bacterial Indicators, Mercury	No	Planned
7-470	Route 33	34.349710	-119.299330	4	Ventura	33	5.191	0.25	Inlet	Characterization	Ventura River and its Tributaries	Nutrients	No	Planned
8-313	I-10 West of Jackson St, FES	33.73723	-116.21556	7	Riverside	Inter	55.812	3.5	Flared End Section Outlet	Characterization	Coachella Valley Storm Water Channel	Bacterial Indicators	Yes	Yes
8-314	I-10 East of Jackson St, Inlet	33.73828	-116.2185	7	Riverside	Inter	55.629	1	Drop Inlet in Median	Characterization	Coachella Valley Storm Water Channel	Bacterial Indicators	Yes	Yes
8-315	I-10 West of Monroe St, Inlet	33.73882	-116.22513	7	Riverside	Inter	55.25	1.1	Drop Inlet in Median	Characterization	Coachella Valley Storm Water Channel	Bacterial Indicators	Yes	Yes
8-316	SR-86 near interchange, Inlet	33.71645	-116.1924	7	Riverside	State	R23.051	1	Drop Inlet	Characterization	Coachella Valley Storm Water Channel	Bacterial Indicators	Yes	Yes
8-317	Windy Point / Grout Bay	34.259648	-116.942638	8	San Bernardino	SR 18	56.848	0.0404686	Pipe	Characterization	Summit Creek	Nutrients for Dry Hydrological Conditions	Yes	Yes
8-321	Summit Creek	34.243495	-116.891312	8	San Bernardino	SR 18	50.262	0.3520765	Pipe	Characterization	Big Bear Lake	Nutrients for Dry Hydrological Conditions	Yes	Yes
8-322	Rathbun Creek	34.24895	-116.88298	8	San Bernardino	SR 18	51.025	0.0404686	Catch Basin Inlet	Characterization	Big Bear Lake	Nutrients for Dry Hydrological Conditions	Yes	Yes
10-306	SR 33-13.45-NB	37.0598	-121.01632	5	Merced	SR 33	13.45	0.0526	Edge of Pavement	Characterization	No TMDL	None	Yes	Planned
10-307	SR 33-14.33-NB	37.07254	-121.01615	5	Merced	SR 33	14.33	0.0567	Edge of Pavement	Porous Pavement (HMA-O)	No TMDL	None	Yes	Planned
10-308	SR 33-14.75-SB	37.07877	-121.01619	5	Merced	SR 33	14.75	0.142	Edge of Pavement	Porous Pavement (RHMA-O)	No TMDL	None	Yes	Planned
10-309	SR 33-14.75-NB	37.07877	-121.01610	5	Merced	SR 33	14-48 NB	0.028	Edge of Pavement	Porous Pavement (RHMA-O-MG)	No TMDL	None	Yes	Planned
11-355	RW-NF	32.71747	-117.11505	9	San Diego	94	3.3	2286	RW	Receiving Water	Chollas Creek	Hardness, TSS, Field Parameters	Yes	Unknown
11-356	RW-SF	32.72306	-117.07598	9	San Diego	94	5.78	567	RW	Receiving Water	Chollas Creek	Hardness, TSS, Field Parameters	Yes	Unknown
11-357	94E/College-INF	32.7404	-117.05211	9	San Diego	94	7.5	1.2626	Influent	Biofiltration Swale	Chollas Creek	Dissolved Copper, Dissolved Lead, Dissolved Zinc, Total Diazinon	Yes	Unknown
11-358	94E/College-EFF	32.73943	-117.05318	9	San Diego	94	7.5	1.2626	Effluent	Biofiltration Swale	Chollas Creek	Dissolved Copper, Dissolved Lead,	Yes	Unknown

												Dissolved Zinc, Total Diazinon		
11-359	94E/Median ASF-INF	32.71663	-117.11878	9	San Diego	94	3	0.855	Influent	Austin Sand Filter	Chollas Creek	Dissolved Copper, Dissolved Lead, Dissolved Zinc, Total Diazinon	Yes	Unknown
11-360	94E/Median ASF-EFF	32.71677	-117.11844	9	San Diego	94	3	0.855	Effluent	Austin Sand Filter	Chollas Creek	Dissolved Copper, Dissolved Lead, Dissolved Zinc, Total Diazinon	Yes	Unknown
12-366	Site 02 - NB SR55 and Baker Street offramp, north of SR73	33.686624	-117.86939	8	Orange	SR 405	8.49	4	Runoff	Characterization	San Diego Creek/ Newport Bay	Cadmium, DDT, Chlordane, PCB, Copper, Lead, Zinc	Yes	Planned
12-367	Site 07 - NB SR55 Hospital Rd to first upstream shoulder inlet	33.625867	-117.927797	8	Orange	SR 55	0.48	1	Runoff	Characterization	San Diego Creek/ Newport Bay	Cadmium, DDT, Chlordane, PCB, Copper, Lead, Zinc	Yes	Planned
12-369	Site 09 - NB SR405 Between Bristol St and South Coast Drive	33.688011	-117.884574	8	Orange	SR 405	9.46	7.5	Runoff	Characterization	San Diego Creek/ Newport Bay	Cadmium, DDT, Chlordane, PCB, Copper, Lead, Zinc	Yes	Planned
12-370	Site 09 Alt- NB SR405 Between Bristol St and South Coast Drive (alt to station 12-369)	33.688011	-117.884574	8	Orange	SR 405	9.46	1.6	Runoff	Characterization	San Diego Creek/ Newport Bay	Cadmium, DDT, Chlordane, PCB, Copper, Lead, Zinc	Yes	Planned
12-371	Site 09 Control Point - South Coast Plaza Parking Lot	33.688222	-117.886944	8	Orange	SR 405	9.46	3	Runoff	Characterization	San Diego Creek/ Newport Bay	Cadmium, DDT, Chlordane, PCB, Copper, Lead, Zinc	Yes	Planned

Planned - Monitoring at these sites will depend on a review of monitoring data collected to date.
Unknown - The decision to monitor these sites during the 2025-26 storm season will be made after the current season, when the total number of usable data points for the site are known.
HDS – Hydrodynamic Separator
MGSRD – Multiple Gross Solids Removal Device
HMA-O – Hot Mix Asphalt Open-Graded
PCP – Pervious Concrete Pavement
PAB – Permeable Aggregate Base

B1.3 Sample Count and Types

Table 5 lists the sample counts, sample types, and required analyses for each project site. For samples collected in the San Francisco Bay PCBs TMDL area, Caltrans has selected a list of 40 PCB congeners that will be analyzed for all samples; similarly, Caltrans has selected the 55 PCB congeners listed in the Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality Provisions to be analyzed for all samples collected in the Los Angeles Region. The respective lists of congeners are included as footnotes to Table 5.

In addition to the analyses listed in Table 5, field tests will be conducted at every monitoring site during every event. Field testing shall include temperature, pH, conductivity, turbidity, and dissolved oxygen.

Table 5 - Sample Counts, Types, and Analyses

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)
North Coast 6PPD-Q Characterization/ Receiving Water (8 stations); see Table 4	TSS, SSC, Turbidity, 6PPD-Q	Grab	3
North Coast 6PPD-Q BMP Influent/Effluent (6 stations); see Table 4	TSS, SSC, Turbidity, 6PPD-Q	Composite/Grab	3
North Coast Receiving Water Impact (54 stations); see Table 4	TSS, SSC, Turbidity	Grab	3
SF BAY HDS (6 stations); see Table 4	PCB[3], Hg, SSC, TSS, PAH, Nutrients, Metals, organochlorine pesticides	Composite/Grab	3
SF BAY MGSRD (2 Stations); see Table 4	Sediment test only: PCB[3], Hg, TOC, % fines	Grab	4
District 6 6PPD-Q Characterization (3 stations); see Table 4	TSS, SSC, Turbidity, 6PPD-Q	Grab	3

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)
7-127	Nitrate as N	Composite	2
	Nitrite as N	Composite	2
	TKN	Composite	2
	Phosphorus as P	Composite	2
	Copper	Composite	2
	Lead	Composite	2
	Mercury	Grab	2
	Zinc	Composite	2
	Chlordane	Composite	2
	DDTs, DDDs, DDEs (all forms)	Composite	2
	PCBs[2]	Composite	2
	PAHs	Composite	2
	Dieldrin	Composite	2
	TSS	Composite	2
	SSC	Grab	2
	Total Organic Carbon	Composite	2
	Dissolved Organic Carbon	Composite	2
7-380	Mercury	Grab	2
	Bacterial Indicators (total coliform, fecal coliform, enterococcus)	Grab	2
7-421	Nitrate as N	Composite	2
	Nitrite as N	Composite	2
	TKN	Composite	2
	Phosphorus as P	Composite	2
	Bacterial Indicators (*E.coli*)	Grab	2
7-422			
	Chlordane	Composite	2
	Dieldrin	Composite	2
	PCBs[2]	Composite	2
	TSS	Composite	2
	Bacterial Indicators (*E.coli*)	Grab	2

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)
7-423			
	Chlordane	Composite	2
	Dieldrin	Composite	2
	PCBs[2]	Composite	2
	TSS	Composite	2
	Bacterial Indicators (*E.coli*)	Grab	2
7-425			
	Chlordane (low level)	Composite	2
	Dieldrin (low level)	Composite	2
	DDTs, DDDs, DDEs (all forms low level)	Composite	2
	PCBs[2]	Composite	2
	TSS	Composite	2
7-427			
	Chlordane	Composite	2
	PCBs[2]	Composite	2
	TSS	Composite	2
	Bacterial Indicators (total coliform, fecal coliform, enterococcus)	Grab	2
7-401	Mercury Constituents representative of other watersheds (to be determined)	Composite/Grab	2

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)
7-470	Nitrate as N	Composite	2
	Nitrite as N	Composite	2
	TKN	Composite	2
	Phosphorus as P	Composite	2
	Constituents representative of other watersheds (to be determined)	Composite/Grab	2
8-313	Total Coliform	Grab	2
	Fecal Coliform	Grab	2
	E. Coli	Grab	2
	Enterococcus	Grab	2
8-314	Total Coliform	Grab	2
	Fecal Coliform	Grab	2
	E. Coli	Grab	2
	Enterococcus	Grab	2
8-315	Total Coliform	Grab	2
	Fecal Coliform	Grab	2
	E. Coli	Grab	2
	Enterococcus	Grab	2
8-316	Total Coliform	Grab	2
	Fecal Coliform	Grab	2
	E. Coli	Grab	2
	Enterococcus	Grab	2
8-317	Nitrate as N	Composite	2
	Nitrite as N	Composite	2
	TKN	Composite	2
	Phosphorus as P	Composite	2
	TSS	Composite	2
8-321	Nitrate as N	Composite	2
	Nitrite as N	Composite	2
	TKN	Composite	2
	Phosphorus as P	Composite	2
	TSS	Composite	2
8-322	Nitrate as N	Composite	2
	Nitrite as N	Composite	2
	TKN	Composite	2
	Phosphorus as P	Composite	2
	TSS	Composite	2

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)

10-306	Cadmium	Composite	3
	Chromium	Composite	3
	Copper	Composite	3
	Lead	Composite	3
	Mercury	Composite	3
	Zinc	Composite	3
	Hardness as CaCO3	Composite	3
	Nitrate as N	Composite	3
	Nitrite as N	Composite	3
	TKN	Composite	3
	Phosphorus as P	Composite	3
	PCBs[1]	Composite	3
	TSS	Composite	3
	SSC	Grab	3
	Total Organic Carbon	Composite	3
	Dissolved Organic Carbon	Composite	3
10-307	Cadmium	Composite	3
	Chromium	Composite	3
	Copper	Composite	3
	Lead	Composite	3
	Mercury	Composite	3
	Zinc	Composite	3
	Hardness as CaCO3	Composite	3
	Nitrate as N	Composite	3
	Nitrite as N	Composite	3
	TKN	Composite	3
	Phosphorus as P	Composite	3
	PCBs[1]	Composite	3
	TSS	Composite	3
	SSC	Grab	3
	Total Organic Carbon	Composite	3
	Dissolved Organic Carbon	Composite	3

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)
10-308	Cadmium	Composite	3
	Chromium	Composite	3
	Copper	Composite	3
	Lead	Composite	3
	Mercury	Composite	3
	Zinc	Composite	3
	Hardness as CaCO3	Composite	3
	Nitrate as N	Composite	3
	Nitrite as N	Composite	3
	TKN	Composite	3
	Phosphorus as P	Composite	3
	PCBs[1]	Composite	3
	TSS	Composite	3
	SSC	Grab	3
	Total Organic Carbon	Composite	3
	Dissolved Organic Carbon	Composite	3
10-309	Cadmium	Composite	3
	Chromium	Composite	3
	Copper	Composite	3
	Lead	Composite	3
	Mercury	Composite	3
	Zinc	Composite	3
	Hardness as CaCO3	Composite	3
	Nitrate as N	Composite	3
	Nitrite as N	Composite	3
	TKN	Composite	3
	Phosphorus as P	Composite	3
	PCBs[1]	Composite	3
	TSS	Composite	3
	SSC	Grab	3
	Total Organic Carbon	Composite	3
	Dissolved Organic Carbon	Composite	3
11-355	TSS	Composite	1
	Hardness	Composite	1
11-356	TSS	Composite	1
	Hardness	Composite	1

Station Code/Name	Analytical Constituent	Sample Type	Sample Frequency (per Year)
11-357	Dissolved Copper	Composite	1
	Dissolved Lead	Composite	1
	Dissolved Zinc	Composite	1
	Diazinon	Composite	1
11-358	Dissolved Copper	Composite	1
	Dissolved Lead	Composite	1
	Dissolved Zinc	Composite	1
	Diazinon	Composite	1
11-359	Dissolved Copper	Composite	1
	Dissolved Lead	Composite	1
	Dissolved Zinc	Composite	1
	Diazinon	Composite	1
11-360	Dissolved Copper	Composite	1
	Dissolved Lead	Composite	1
	Dissolved Zinc	Composite	1
	Diazinon	Composite	1
12-366	Cadmium, DDT, Chlordane, PCBs[2], Copper, Lead, Zinc	Composite	3
12-367	Cadmium, DDT, Chlordane, PCBs[2], Copper, Lead, Zinc	Composite	3
12-369	Cadmium, DDT, Chlordane, PCBs[2], Copper, Lead, Zinc	Composite	3
12-370	Cadmium, DDT, Chlordane, PCBs[2], Copper, Lead, Zinc	Composite	3
12-371	Cadmium, DDT, Chlordane, PCBs[2], Copper, Lead, Zinc	Composite	3

[1]Standard PCBs: Aroclors 1016 ,1221 ,1232 ,1242 ,1248, 1254, 1260

[2]55 PCB congeners: 8, 18, 27, 28, 29, 31, 33, 44, 49, 52, 56, 60, 64, 66, 70, 74, 77, 87, 95, 97, 99, 101, 105, 110, 114, 118, 126, 128, 137, 138, 141, 146, 149, 151, 153, 156, 157, 158, 169, 170, 174, 177, 180, 183, 187, 189, 194, 195, 198, 199, 200, 201, 203, 206, and 209.

[3]PCBs 40 Congeners SF Bay List: PCB 004, 087, 153, 008, 095, 156, 018, 097, 158, 028, 099, 170, 031, 101, 174, 033, 105, 177, 044, 110, 180, 049, 118, 183, 052, 128, 187, 056, 132, 194, 060, 138, 195, 066, 141, 201, 070, 149, 203, 074, 151

PAHs: Acenaphthene, Chrysene, Acenaphthylene, Dibenzo(a,h)anthracene, Anthracene, Fluoranthene, Benzo(a)anthracene, Fluorene,Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Benzo(b)fluoranthene, Naphthalene, Benzo(ghi)perylene, Phenanthrene, Benzo(k)fluoranthene, Pyrene

B2.1 Collection Methods

Sample collection will be performed using the methods provided in the project SAP (Appendix A). Methods in the SAP were developed in accordance with the guidelines in Chapters 4, 8, and 11 of the Stormwater Monitoring Guidance Manual (Caltrans 2020).

In general, composite samples will be collected using the methods provided in Section SAP-1.2 of Appendix A. Grab samples will be collected using the methods provided in Section SAP-1.3 of Appendix A.

Time-Weighted Sample Collection and Compositing at TMDL Sites

Time-weighted composite samples for TMDL sites may be collected using the following procedures.

Grab samples are collected manually and combined into a single composite sample in accordance with the procedure outlined in Section SAP-1.3 of Appendix A. Grab samples will be collected according to the following strategy:

1. Storms with a duration greater than three hours: Samples shall be collected manually by taking at least three discrete grab samples during each of the first three hours of discharge.
2. Storms with a duration of three hours or less: at least three discrete grab samples shall be collected during each hour of discharge for the entire duration of the storm event.

Samples shall be collected between 15 and 20 minutes apart. The actual time that it takes to collect an individual grab sample will not exceed 15 minutes. The first flow measurement will be taken approximately 10 minutes after the discharge has stabilized and the first sample will be collected approximately 15 minutes after the discharge has stabilized. The discharge will be considered to have stabilized when flow rate and turbidity appear to be reasonably constant and/or sheet flow is well established.

Field crews will take instantaneous flow measurements at the sample collection point prior to the collection of each grab sample. Flow measurements will be made using the measurement methods described in Section SAP-1.3.3 of Appendix A. One flow measurement will be made approximately 5 to 10 minutes prior to the collection of each grab sample, so that each grab sample is associated with a corresponding flow measurement.

At the end of the monitoring event, field technicians will use the flow measurements to prepare a compositing scheme, as shown in Figure 2. Field technicians or office staff will prepare this compositing scheme using the tool that has been provided by Caltrans for this purpose. Each grab sample must be associated with a corresponding flow measurement in order to us this tool correctly.

The field crew will then send all discrete grab samples to the laboratory along with the compositing scheme. The laboratory will use this flow compositing scheme to combine all discrete grab samples into a single composite sample for analysis.

Samples such as coliform bacteria and oil & grease must be collected as single discrete samples. These samples will be collected sometime during 45 to 90 minutes after start of sampling, or if the event lasts more than 3 hours, approximately in the middle of the sampling event. These tests will be performed on individual grab samples, not on the composite sample.

Table 6 - Example of a Sample Compositing Scheme for a Standard 3-Hour Event

				TOTAL SAMPLE VOLUME REQUIRED (Vc)	**20000**	**mL**		
				DISCREET GRAB SIZE (Vgrab)	**4000**	**mL**		
Aliquot #	Time of Flow Measurement	Time of Grab Sample	Measured Flow Rate (L/min)	Time Interval Between Flow Measurements (min)	Averaged Flow Rate (L/min)	Flow Volume (L)	Unadjusted Aliquot Volume	**Final Aliquot Volume**
--	00:00	--	92	--	--	--	--	--
1	00:18	00:20	100	18	96	1728	840	**818**
2	00:36	00:41	115	18	108	1935	941	**916**
3	00:57	00:59	201	21	158	3318	1613	**1571**
4	01:16	01:20	330	19	266	5045	2453	**2388**
5	01:30	01:33	401	14	366	5117	2488	**2423**
6	01:52	01:57	367	22	384	8448	4108	**4000**
7	02:08	02:10	209	16	288	4608	2241	**2182**
8	02:25	02:30	301	17	255	4335	2108	**2053**
9	02:47	02:54	299	22	300	6600	3209	**3125**
						Final Composite Volume:		**19476**

Note: The start time of 00:00 reflects the time approximately 10 minutes after the flow appears to have stabilized, based on visual observation. During a storm event, actual times of day will be placed in these cells.

The volume of each grab sample that should be used to make the final composite (shown in Column 8 of Figure 2) is calculated as follows. These equations assume that the volume of the final composite will be 20 liters (20,000 ml) and that the target volume for each individual grab sample is 4 liters (4,000 ml).

First, for each discrete grab sample collected, determine the volume of discharge that it represents.

Equation B2.1

$$\text{Flow Volume (L)} = \Delta\text{Time} * ((dQ_{i\,t2} - dQ_{i\,t1}) / 2)$$

Where: Flow Volume = Volume of flow represented by the discrete grab sample

ΔTime = Interval in minutes between the current and the previous instantaneous flow measurements

$dQ_{i\,t2}$ = Instantaneous flow measurement (L/min) associated with this grab sample

$dQ_{i\,t1}$ = Previous instantaneous flow measurement (L/min)

Next, determine the volume of each discrete grab sample to be used as an aliquot in the final composite sample. This is an unadjusted volume based on the assumption that all discrete grabs will have sufficient volume.

Equation B2.2

$$\text{Unadjusted Aliquot Volume (mL)} = \text{Flow Volume} * \text{Final Composite Volume} / \sum dQi$$

Where: Initial Aliquot Volume = Volume of the discrete grab used in the composite (mL)

Flow Volume = Flow volume for this sample, from Equation B2.1

Final Composite Volume = Target volume of the final composite (ml)

∑dQi = Sum of all flow volumes (L)

If all individual grab samples have sufficient volume, then these volumes will be used to make the final composite However, if some grab samples do not have sufficient volume, then adjusted volumes must be calculated so that a flow-proportioned composite can be made accurately. The tool provided by Caltrans does this job automatically using the following formula:

Equation B2.3

$$\text{Final Aliquot Volume (ml)} = \text{Initial Aliquot Volume} * \text{Grab Volume}_{target} / \text{Grab Volume}_{max}$$

Where: Final Aliquot Volume = Volume of the discrete grab that will be used in the composite
Initial Aliquot Volume = Volume of the aliquot calculated in Equation B2.2
$\text{Grab Volume}_{target}$ = Target volume for discrete grab samples
Grab Volume_{max} = Volume of largest discrete grab sample or $\text{Grab Volume}_{target}$, whichever is greater.

In the example shown in Figure 2, the final required volumes are shown in Column 9. These are the final volumes of each discrete grab sample that will be used to make the composite sample.

Receiving Water Sample Collection

Receiving water samples will be collected using the grab sample methods provided in Section SAP-1.3 of Appendix A. Time-weighted grab samples will be collected at three monitoring points at each location:

- From the receiving waterbody, upstream
- From the receiving waterbody, downstream
- From an edge-of-pavement (EOP) discharge location prior to the point at which it enters the receiving waterbody

In addition to sample collection, an onsite rain gauge will be installed at each location where receiving water monitoring will be conducted. Rainfall data will be recorded by the field technicians in their field logs.

Samples will be collected at the upstream and downstream sampling points directly into sample bottles provided by the laboratory. Each discrete sample will consist of two one-liter wide mouth HDPE sample bottles filled completely.

Samples will be collected as close as possible to the bottom of the water column to represent the bedload as accurately as possible. In wadable streams, field crews may opt to wade into the waterbody and immerse the bottles by hand. Where the waterbody is too deep or difficult to wade, or where the field team believes that this procedure may not be safe, sample bottles will be affixed to a pole and lowered into the stream.

The downstream receiving water samples must be collected at a point at or beyond the full mixing point. When monitoring turbulent waterbodies, these samples must be collected at about five stream widths downstream from where the discharge enters the stream. If the field technicians note any pooling of water in this area, samples must be collected from a point downstream of where the pooling occurs.

EOP samples will be collected manually by holding the uncapped sample container in the runoff stream and direct-filling.

The intent of receiving water monitoring is to characterize the impact on the waterbody of the rising and peak discharge portions of the hydrograph. Because storms vary widely in their duration, it may be necessary to modify the timing of sample collection based on the anticipated time span of the storm.

For storms anticipated to last three hours or more:

- Field crews will attempt to represent the “first flush” of discharge at both the receiving water and the EOP sites.
- Samples will be collected over the first three hours of the storm.
- One set of samples will be collected approximately every 15 minutes. The target is a total of 12 sets of samples collected.
- At each 15-minute interval, all three monitoring points (receiving water and EOP) will be collected as close together as possible, so that each set of samples represents a single point in time.

For storms with an anticipated duration of less than three hours:

- Field crews will attempt to represent the “first flush” of discharge at both the receiving water and the EOP sites.
- Samples will be collected over the entire duration of the storm.
- As with longer storms, the target is a total of 12 sets of samples collected. When planning the storm event, field technicians will use best professional judgement to anticipate what sample collection frequency will be required to reach this target.

As with longer storms, all three monitoring points (receiving water and EOP) will be collected as close together as possible, so that each set of samples represents a single point in time.

B5.1 Quality Control

The quality of laboratory data is evaluated using the MQOs discussed in Section A7. Several kinds of samples, called QC samples are analyzed by the laboratory, and the results of these analyses are compared to the appropriate MQOs to verify that the data are of acceptable quality.

Some types of QC samples are produced in the field and submitted to the laboratory along with the normal field samples. Other types of QC samples are generated by the laboratory. The following sections discuss the various types of QC samples, their uses, and where they originate.

Section B5.1 of this document describes the various kinds of QC samples used for Caltrans stormwater monitoring projects. Table 9 shows the frequencies with which field QC samples will be collected. Laboratory QC samples shall be analyzed per laboratory SOP.

Table 9 - QC Sample Schedule

	Field Blanks	Field Duplicates	Matrix Spikes	Equipment Blanks
Field				
pH	None	1 per event	None	None
Temperature	None	1 per event	None	None
Dissolved Oxygen	None	1 per event	None	None
Flow	None	None	None	None
Conventionals				
Turbidity	1 per 20 samples	1 per 20 samples	None	None
Hardness as CaCO3	1 per 20 samples	1 per 20 samples	1 per 20 samples	None
Total Dissolved Solids	1 per 20 samples	1 per 20 samples	None	None
Total Suspended Solids	1 per 20 samples	1 per 20 samples	None	None
Nutrients				
Kjeldahl Nitrogen	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Nitrate as N	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Nitrite	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Ammonia as N	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Phosphorus, Total	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Metals				
Aluminum	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Chromium	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Copper	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Iron	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Lead	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Mercury	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Selenium	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Zinc	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Organics				

	Field Blanks	Field Duplicates	Matrix Spikes	Equipment Blanks
6PPD-Quinone	1 per 20 samples	1 per 20 samples	Note 1	1 per cleaning batch
PAHs	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Pesticides				
DDT	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Chlordane	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Dieldrin	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Toxaphene	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
PCBs				
Aroclors	1 per 20 samples	1 per 20 samples	1 per 20 samples	1 per cleaning batch
Microbiologicals				
Fecal Coliform	1 per 20 samples	1 per 20 samples	None	None
Enterococcus	1 per 20 samples	1 per 20 samples	None	None
Toxicity				
Toxicity	None	None	None	None

1 per 20 samples – Each monitoring consultant shall collect 1 sample per every 20 field samples collected on a monitoring project each season. A minimum of 1 set of QC samples per season will be collected by each monitoring consultant.

1 per cleaning batch - Each time a laboratory cleans a batch of monitoring equipment, such as tubing, strainers, and bailers, the lab will select one piece of cleaned equipment and blank-test it.

[1]MS/MSD for 6PPD-Quinone to be analyzed only when requested by the Task Order Manager