Table 7.8.5-1. Numeric Targets[a,b] for Fecal Indicator Bacteria in the Petaluma River Watershed to Protect Water Contact Recreation		
Indicator/Applicable Waters	**Geometric Mean (cfu/100 mL)[c]**	**Statistical Threshold Value (cfu/100 mL)**
Enterococcus (for estuarine portions where the salinity is greater than 1 ppth more than 5 percent of the time)	30	110
E. coli (for fresh water portions where the salinity is equal to or less than 1 ppth 95 percent or more of the time)	100	320

cfu/100 mL Colony forming unit per 100 milliliters of sample

ppth Parts per thousand

a. Frequency and duration: The water body geometric mean shall not be greater than the applicable geometric mean magnitude in any six-week interval, calculated weekly. The applicable STV shall not be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.

b. Attainment: To determine the attainment of the bacteria water quality standards, the geometric mean values shall be applied based on a statistically sufficient number of samples, which is generally not less than five samples equally spaced over a six-week period. However, if a statistically sufficient number of samples is not available to calculate the geometric mean, then attainment of the water quality standard shall be determined based only on the STV.

c. cfu/100mL is equivalent to Most Probable Number (MPN) per 100 milliliters of sample.

Table 7.8.5-2. Load and Wasteload Allocations[a] of Fecal Indicator Bacteria for Petaluma River			
Pollutant Source Category	**Allocation Type**	**Estuarine waters** ***Enterococcus*** **(cfu/100 mL)**	**Fresh waters** ***E. coli*** **(cfu/100 mL)**
City of Petaluma Wastewater Treatment Facility	WLA	Geometric mean[b] < 30 STV[c] = 110	Not Applicable
Sanitary Sewer Collection Systems-City of Petaluma collection system; Penngrove Sanitation Zone (Sonoma County Water Agency)	WLA	0	0
Onsite Wastewater Treatment Systems (e.g., septic systems)	LA	0	0
Vessel Marinas	LA	0	0
Confined Animal Facilities (e.g., dairy, horse facilities)	LA	Geometric mean < 30 STV = 110	Geometric mean < 100 STV = 320
Grazing Lands/Operations (e.g., cattle, sheep ranches)	LA	Geometric mean < 30 STV = 110	Geometric mean < 100 STV = 320
Wildlife[d]	LA	Geometric mean < 30 STV = 110	Geometric mean < 100 STV = 320
Municipal Stormwater Runoff[e]	WLA	Geometric mean < 30 STV = 110	Geometric mean < 100 STV = 320
Caltrans Stormwater Runoff	WLA	Geometric mean < 30 STV = 110	Geometric mean < 100 STV = 320

cfu/100 mL Colony forming unit per 100 milliliters of sample, which is equivalent to Most Probable Number (MPN) per 100 milliliters of sample

LA Load allocation

STV Statistical threshold value

WLA Wasteload allocation

a. All allocations apply year-round and will be measured in the ambient water (e.g., Petaluma River and its tributaries), except for WLA for the City of Petaluma Wastewater Treatment Plant, which shall be measured at any point in the outfall pipe between the point of discharge to the Petaluma River (Discharge Point No. 001) and the point at which all flow contributing to the outfall is present.

b. The water body geometric mean shall not be greater than the applicable geometric mean magnitude in any six-week interval, calculated weekly.
c. If a statistically sufficient number of samples is not available to calculate the geometric mean, then attainment of the water quality standard shall be determined based only on the STV. The applicable STV shall not be exceeded by more than 10 percent of the samples collected in a calendar month, calculated in a static manner.
d. Wildlife is an uncontrollable source of bacteria and its contribution is considered natural background. No management measures will be required for wildlife sources.
e. WLA for discharges from municipal stormwater runoff via the municipal separate storm sewer system includes contributions from pet waste.

Table 7.8.5-3. Implementation Actions and Schedule for Ellis Creek Wastewater Treatment Plant			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Comply with the NPDES permit for wastewater discharge	City of Petaluma	Ongoing

NPDES National Pollutant Discharge Elimination System

Table 7.8.5-4. Implementation Actions and Schedule for Sanitary Sewer Collection Systems			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Comply with Statewide General Waste Discharge Requirements for sanitary sewer systems	City of Petaluma; Penngrove Sanitation Zone	Ongoing
2	Phase I-Submit an updated Sewer System Management Plan, acceptable to the Executive Officer, that prioritizes sewer system inspections and repairs in areas within 1000 feet of the river and its major[1] tributaries. Include a diagram of prioritized infrastructure, a time schedule for implementing short- and long-term actions, and, as necessary, a schedule for developing the funds needed for the capital improvement plan	City of Petaluma; Penngrove Sanitation Zone	Within one year of the effective date of the TMDL
3	Complete inspections and repairs identified in Phase I	City of Petaluma; Penngrove Sanitation Zone	Within five years of the effective date of the TMDL
4	Phase II-If load allocations are not met, submit an updated Sewer System Management Plan, acceptable to the Executive Officer, that prioritizes sewer system inspections and repairs in areas within 2000 feet of the river and its major tributaries. Include a diagram of prioritized infrastructure, a time schedule for implementing short- and long-term actions, and, as necessary, a schedule for developing the funds needed for the capital improvement plan	City of Petaluma; Penngrove Sanitation Zone	Within six years of the effective date of the TMDL
5	Complete inspections and repairs identified in Phase II	City of Petaluma; Penngrove Sanitation Zone	Within 10 years of the effective date of the TMDL

Table 7.8.5-4. Implementation Actions and Schedule for Sanitary Sewer Collection Systems			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
6	Report results of implementation activities to the Water Board	City of Petaluma; Penngrove Sanitation Zone	Annually, beginning on the second year after the effective date of the TMDL

TMDL Total maximum daily load

1. “Major tributaries” are defined as any National Hydrography Dataset medium resolution (1:100,000 scale) mapped stream in the Petaluma River watershed.

Table 7.8.5-5. Implementation Actions and Schedule for Existing, New, And Replacement Onsite Wastewater Treatment Systems			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Comply with local codes and ordinances pertaining to OWTS	Owners and operators of Existing, New, and Replacement OWTS within the Advanced Protection Management Plan boundary	Upon effective date of the TMDL
2	Maintain OWTS in good working condition, including inspecting the OWTS and pumping of solids as necessary, or as required by local ordinances, to maintain proper functioning and assure adequate wastewater treatment and disposal	Owners and operators of Existing, New, and Replacement OWTS within the Advanced Protection Management Plan boundary	Ongoing
3	Obtain the required basic operational inspection report and submit results and any other required information to the Water Board and local agency	Owners and operators of Existing, New, and Replacement OWTS within the Advanced Protection Management Plan boundary	Within three years of the TMDL effective date, and every ten years, thereafter
4	Notify the local agency if OWTS has pooling effluent, discharges wastewater to the ground surface, or has wastewater backed up into plumbing fixtures	Owners and operators of Existing, New, and Replacement OWTS within the Advanced Protection Management Plan boundary	Immediately upon discovery
5	Notify the local agency if OWTS septic tank has failed such that wastewater is leaking from the tank or groundwater is infiltrating the tank	Owners and operators of Existing, New, and Replacement OWTS within the Advanced Protection Management Plan boundary	Immediately upon discovery

Table 7.8.5-5. Implementation Actions and Schedule for Existing, New, And Replacement Onsite Wastewater Treatment Systems			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
6	Obtain an appropriate local agency permit for the repair or replacement of an OWTS deemed by the Water Board or local agency to be in need of corrective action, and complete all appropriate OWTS repairs or replacement	Owners and operators of Existing, New, and Replacement OWTS within the Advanced Protection Management Plan boundary	Timeline to complete repairs or replacement will be specified by the local agency or the Water Board, at a duration not greater than 12 years from the effective date of the TMDL
7	Comply with the OWTS Policy and any approved Local Agency Management Program	County of Sonoma; County of Marin	Ongoing
8	Provide all available records pertaining to OWTS located within the APMP boundary to the Water Board, including permitting, maintenance, complaint, or enforcement records	County of Sonoma; County of Marin	Within three months after the effective date of the TMDL
9	Consistent with the OWTS Policy requirements, incorporate the APMP requirements of this TMDL Implementation Plan into the Local Agency Management Program, including the APMP boundary. Include a map and list of included OWTS	County of Sonoma; County of Marin	Within one year of the effective date of the TMDL
10	If notified by the Water Board, OWTS owners, or any other entities of failing OWTS in Category 3 (in need of major repairs), initiate corrective action process as required by the local agency codes and regulations, use local enforcement authorities, if necessary	County of Sonoma; County of Marin	Ongoing

Table 7.8.5-5. Implementation Actions and Schedule for Existing, New, And Replacement Onsite Wastewater Treatment Systems			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
11	Track and report the compliance status of identified failing systems and results of any/all other implementation activities to the Water Board	County of Sonoma; County of Marin	Quarterly, for Category 1 systems, on March 31, June 30, September 30, and December 31; and annually, for Category 2 systems, on February 1, beginning the year after the effective date of the TMDL

APMP Advanced protection management program
OWTS Onsite wastewater treatment systems
TMDL Total maximum daily load

Table 7.8.5-6. Implementation Actions and Schedule for Vessel Marinas			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Begin or boost “no dumping” education efforts to vessel owners	Marina owners or operators	Within six months of the effective date of the TMDL
2	Submit a plan and implementation schedule, acceptable to the Executive Officer, for: 1) Evaluating and ensuring adequacy and proper performance of sewage collection systems (sewage dump stations, sewage pumpout stations, sewer lines, etc.) for vessel marinas; and 2) Installing, as needed, an adequate number of sewage pumpout and dump stations. If no new sewage pumpout and dump stations are needed, provide justification as to why they are not needed	Marina owners or operators	Within one year of the effective date of the TMDL
3	Complete implementation of the above plan	Marina owners or operators	Within five years of the effective date of the TMDL
4	Report results of implementation activities to the Water Board	Marina owners or operators	Annually, beginning on the second year after the effective date of the TMDL

TMDL Total maximum daily load

Table 7.8.5-7. Implementation Actions and Schedule for Confined Animal Facilities			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Obtain coverage and comply with the Water Board's General Waste Discharge Requirements Order No. R2-2016-0031 for Confined Animal Facilities (CAF), as may be amended (CAF Order)	Owners or operators of CAFs	As soon as possible; Comply with Order requirements per timeline specified in the CAF Order
2	Implement BMPs and other actions specified in the CAF Order's ranch water quality control plan	Owners or operators of CAFs	According to schedule in the ranch water quality control plan and monitoring plans

CAF Confined animal facility
CAFs Confined animal facilities

Table 7.8.5-8. Implementation Actions and Schedule for Grazing Lands/ Operations			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Obtain coverage and comply with applicable general waste discharge requirements order (Grazing Order) or waiver thereof for grazing lands/operations in the Petaluma River watershed	Owners or operators of grazing lands/operations	Obtain coverage no later than 120 days from Grazing Order or waiver adoption by the Regional Water Board; Comply with Order or waiver requirements per timelines specified therein
2	Produce a ranch or other plan required by the Grazing Order or waiver	Owners or operators of grazing lands/operations	Per timeline specified in applicable Grazing Order or waiver
3	Implement BMPs and management actions specified in the ranch or other plan, if required	Owners or operators of grazing lands/operations	Per timeline specified in applicable Grazing Order or waiver

Table 7.8.5-9. Implementation Actions and Schedule for Municipal Stormwater Runoff			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Submit an Initial Report to the Water Board describing current actions being implemented to prevent or reduce discharges of bacteria to storm sewer systems. The report shall also include schedule, timeline, or frequency of implementation activities for all actions, as appropriate	City of Petaluma, County of Sonoma, County of Marin, City of Novato	Within three months of the effective date of the TMDL

2	**Category I Actions:**
	• Effectively prohibit and prevent potential illicit discharges into the storm sewer system from:
	  ○ Human waste from homeless encampments. Develop an effective approach based on the size of the homeless population; and
	  ○ Sanitary sewer collection system. Ensure at least 20% of the stormwater system is evaluated and addressed for illicit connections each year. If this work has already been performed under past permits, submit results of that evaluation, and corresponding repairs, in the Initial Report
	• Address potential pet waste discharges into the storm sewer system through the following actions:
	  ○ Develop and implement a visual inspection program to identify high pet waste accumulation areas and develop a cleanup plan for these areas, including specific actions before winter rains;
	  ○ Install new or additional dog waste cleanup signs, waste bag dispensers, and trash bins in high dog waste accumulation areas;
	  ○ Evaluate and improve the service frequency of dog waste bins, as needed; and
	  ○ Develop and implement a comprehensive pet waste public outreach and education campaign
		City of Petaluma, County of Sonoma, County of Marin, City of Novato	Within five years of the effective date of the TMDL

Table 7.8.5-9. Implementation Actions and Schedule for Municipal Stormwater Runoff			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
3	**Category II Actions:** • If the implementation of the above Category I actions are insufficient to meet the wasteload allocations five years after the TMDL effective date, implement the actions listed below or justify why they are not appropriate: • Inspect existing or future local parks, dog parks, and outdoor pet kennel facilities to ensure compliance with applicable codes and ordinances, and take corrective or enforcement actions as needed • Divert runoff to the sanitary sewer system • Develop and implement a coordination and spill response plan to prevent sanitary sewer overflows from reaching the storm sewer system • Regulatory controls such as: o Develop and enforce pet or domestic animals waste disposal ordinances; o Better enforcement of existing litter ordinances; o Enforce ordinances for commercial, industrial, and multi-family garbage control, including requirements to cover trash enclosures; o Develop and enforce guidelines for portable toilets and recreational vehicle dumping	City of Petaluma, County of Sonoma, County of Marin, City of Novato	Five years after the effective date of the TMDL
4	If wasteload allocations are not met, submit an enhanced plan, acceptable to the Executive Officer, describing actions being implemented and additional actions that will be implemented to reduce discharges of bacteria to the river and its tributaries. The plan shall include an implementation schedule and milestones for compliance.	City of Petaluma, County of Sonoma, County of Marin, City of Novato	Within six years of the effective date of the TMDL
5	Complete implementation of the enhanced stormwater actions	City of Petaluma, County of Sonoma, County of Marin, City of Novato	Within 10 years of the effective date of the TMDL

Table 7.8.5-9. Implementation Actions and Schedule for Municipal Stormwater Runoff			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
6	Provide a report on the status of the implementation activities. The report shall cover all the actions implemented in the previous year as well as a listing, timeline, and discussion of the actions scheduled for implementation during the upcoming year	City of Petaluma, County of Sonoma, County of Marin, City of Novato	Annually, beginning on the second year after the effective date of the TMDL

BMPs Best management practices
TMDL Total maximum daily load

Table 7.8.5-10. Implementation Actions and Schedule for Homeless Encampments			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Submit a plan and schedule, acceptable to the Executive Officer, that includes appropriate measures to prevent human waste discharges into storm sewer systems from homeless encampments on City of Petaluma and Caltrans properties within the Petaluma River watershed	City of Petaluma; Caltrans	Within one year of the effective date of the TMDL
2	Implement the plan for addressing human waste discharges from the homeless encampment areas	City of Petaluma; Caltrans	Commence activities within 18 months of the effective date of the TMDL
3	Report results of implementation activities to the Water Board	City of Petaluma; Caltrans	Annually, beginning on the second year after the effective date of the TMDL

TMDL Total maximum daily load

Table 7.8.5-11. Implementation Actions and Schedule for Water Quality Monitoring			
Task No.	**Implementation Actions**	**Implementing Parties**	**Schedule**
1	Pursuant to the provisions of California Water Code Section 13225 or 13267, submit a representative bacteria water quality monitoring plan for the Petaluma River and its tributaries, acceptable to the Executive officer, to: 1) better characterize FIB contributions from respective sources/jurisdictions, 2) assess BMP effectiveness, and 3) assess progress towards attainment of respective load and wasteload allocations. To the extent possible, the implementing parties within each County (e.g., City of Petaluma and County of Sonoma; City of Novato and County of Marin) should collaborate on a single cooperative plan. The monitoring plan shall be designed to demonstrate implementing parties are not causing or contributing to the impairment of the river and its tributaries, and it shall be acceptable to the Executive Officer	City of Petaluma, County of Sonoma, City of Novato, County of Marin	Within one year of the effective date of the TMDL
2	Implement the water quality monitoring plan	City of Petaluma, County of Sonoma, City of Novato, County of Marin	Within two years of the effective date of the TMDL, and every other year, thereafter
3	Submit a report on the status of all water quality monitoring activities Include an assessment of water quality monitoring data and any newly developed, enhanced, or implemented water quality monitoring actions	City of Petaluma, County of Sonoma, City of Novato, County of Marin	Every other year, starting one year after the commencement of the water quality monitoring program

BMP Best management practice

FIB	Fecal indicator bacteria
TMDL	Total maximum daily load