ATTACHMENT

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESOLUTION R2-2006-0042

AMENDING THE WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY REGION TO ESTABLISH A TOTAL MAXIMUM DAILY LOAD AND IMPLEMENTATION PLAN FOR PATHOGENS IN THE SONOMA CREEK WATERSHED

WHEREAS an updated Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) was adopted by the San Francisco Bay Regional Water Quality Control Board (Water Board) on June 21, 1995, approved by the State Water Resources Control Board on July 20, 1995, and approved by the Office of Administrative Law (OAL) on November 13, 1995, and has since been revised; and

WHEREAS the Basin Plan may be amended in accordance with California Water Code § 13240, et seq.; and

WHEREAS Sonoma Creek has been identified under federal Clean Water Act § 303(d) as an impaired waterbody due to pathogens; and

WHEREAS Sonoma Creek is not meeting the Basin Plan's numeric bacteriological water quality objectives; and

WHEREAS the Water Board finds that elevated water quality coliform bacteria levels in Sonoma Creek and tributary waters indicate the presence of human and animal waste and associated pathogens. The discharge of human and animal waste poses a threat to humans who recreate in Sonoma Creek and tributary waters.

WHEREAS under Clean Water Act § 303(d) the Water Board is required and authorized to establish the total maximum daily load (TMDL) for those pollutants identified as causing impairment of waters on the § 303(d) list. Additionally, the Water Board is authorized to develop a implementation program for achieving water quality objectives, such as the numeric bacteriological water quality objectives; and

WHEREAS a Basin Plan Amendment has been prepared in accordance with California Water Code § 13240 that will establish the TMDL and Implementation Plan to reduce pathogens related risks to humans and restore and protect water quality beneficial uses; and

WHEREAS nonpoint source runoff containing coliform bacteria of animal and wildlife origin, at levels that do not result in exceedances of water objectives, does not constitute wastewater with particular characteristics of concern to beneficial uses. Therefore, animal- and wildlife-associated discharges, in compliance with the conditions of the

TMDL and implementation plan do not constitute a violation of discharge prohibitions; and

WHEREAS the Basin Plan Amendment, including specifications on its physical placement in the Basin Plan, is set forth in Exhibit A hereto; and

WHEREAS the scientific basis of regulatory elements of the Basin Plan Amendment were reviewed by external peer reviewer Professor Saeid Mostaghimi, Virginia Tech. The Water Board staff revised the proposed Basin Plan amendment in response to the comments provided by the reviewer, or provided a written response which explained the basis for not incorporating his comments; and

WHEREAS a draft Basin Plan Amendment, Staff Report, and Environmental Checklist were prepared and distributed for public review and comment on February 10, 2006 in accordance with applicable state and federal laws and regulations; and

WHEREAS the Water Board held public hearings on April 12, 2006 and on June 14, 2006, to consider the Basin Plan Amendment and supporting documents, and the changes made thereto in response to public comments. A Notice of Public Hearing was given to interested persons and was published in accordance with applicable state and federal laws and regulations; and

WHEREAS the process of basin planning has been certified by the Secretary for Resources as exempt from the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code § 21000 et seq.) to prepare an Environmental Impact Report or Negative Declaration; and

WHEREAS the Water Board has duly considered the Environmental Checklist, Staff Report, and supporting documentation with respect to environmental impacts and finds that the Basin Plan Amendment will not have a significant impact on the environment. The Basin Plan Amendment will result in no potential for adverse effects on wildlife. The Water Board has also considered the environmental analysis contained in the Staff Report of the reasonably foreseeable methods of compliance with the Basin Plan Amendment, including economics; and

WHEREAS the Water Board has carefully considered all comments and testimony received, including responses thereto, on the Basin Plan Amendment, as well as all of the evidence in the administrative record; and

WHEREAS the Basin Plan Amendment must be submitted for review and approval by the State Water Resources Control Board, OAL, and the United States Environmental Protection Agency (USEPA). Once approved by the State Water Resources Control Board, the amendment will be submitted to OAL and USEPA. The Basin Plan Amendment will become effective upon approval by OAL and USEPA; and

WHEREAS the regulatory components of the Basin Plan Amendment meet the "Necessity" standard of the Administrative Act, Government Code § 11353, Subdivision (b).

NOW, THEREFORE BE IT RESOLVED that the Water Board adopts the Basin Plan Amendment, as set forth in Exhibit A hereto, that establishes the TMDL and Implementation Plan for pathogens in Sonoma Creek Watershed; and

BE IT FURTHER RESOLVED that the Executive Officer is directed to forward copies of the Basin Plan Amendment to the State Water Resources Control Board in accordance with the requirement of California Water Code § 13245; and

BE IT FURTHER RESOLVED that the Water Board requests that the State Water Resources Control Board approve the Basin Plan Amendment in accordance with the requirements of California Water Code § 13245 and § 13246 and forward it to the OAL and USEPA for approval; and

BE IT FURTHER RESOLVED that if, during the approval process, Water Board staff, the State Water Resources Control Board or OAL determines that minor, non-substantive corrections to the language of the amendment and supporting documentation are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Water Board of any such changes; and

BE IT FURTHER RESOLVED that since the Basin Plan Amendment will involve no potential for adverse effect, either individually or cumulatively, on wildlife, the Executive Officer is directed to sign a Certificate of Fee Exemption for a "De Minimis" Impact Finding and to submit the exemption in lieu of payment of the Department of Fish and Game CEQA filing fee.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 14, 2006.

Bruce H. Wolfe

BRUCE H. WOLFE
Executive Officer

Attachment

Exhibit A - Basin Plan Amendment to Establish a Total Maximum Daily Load and Implementation Plan for pathogens in the Sonoma Creek Watershed

Exhibit A

Proposed
Basin Plan Amendment

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Proposed Basin Plan Amendment

The following text is to be inserted into Chapter 7:

Sonoma Creek Pathogen Total Maximum Daily Load (TMDL)

Sonoma Creek and its tributaries are impaired by pathogens. The overall goal of this TMDL is to minimize human exposure to waterborne disease-causing pathogens and to protect uses of water for recreational activities such as wading, swimming, fishing, and rafting.

The most common sources of pathogens are wastes from warm-blooded animals, including humans, livestock, domestic pets, and wildlife. The following sections establish a density-based pathogen TMDL for Sonoma Creek and its tributaries, and identify actions and monitoring necessary to implement the TMDL. The TMDL defines allowable density-based bacteria concentrations and prohibits discharge of raw or inadequately treated human waste. The implementation plan specifies actions necessary to protect and restore water contact recreation beneficial uses.

This TMDL strives to achieve a balance that allows ongoing human activities including agriculture and recreation to continue, while restoring and protecting water quality. As outlined in the adaptive implementation section, the effectiveness of implementation actions, results of monitoring to track progress toward targets, and the scientific understanding of pathogens will be reviewed periodically, and the TMDL may be adapted to future conditions as warranted.

In addition to pathogens, both animal and human wastes contain nutrients that in excess pose a threat to aquatic ecosystem beneficial uses; Sonoma Creek is also listed as impaired by excess nutrients. By eliminating the discharge of human waste and controlling the discharge of animal waste, this TMDL will also protect the beneficial uses of the Sonoma Creek watershed's aquatic ecosystem, such as cold and warm freshwater habitat, and wildlife habitat. Controlling human and animal wastes discharges will also reduce risks from other harmful constituents such as steroids and pharmaceuticals.

Problem Statement

Due to the presence of pathogens in Sonoma Creek and its tributaries, the beneficial uses of water contact and noncontact recreation are impaired. Waterborne pathogens pose a risk to human health. In ambient waters, the presence of human and animal fecal waste and associated pathogens is inferred from high concentrations of fecal coliform and *E. coli* bacteria. Bacteria levels in Sonoma Creek and its tributaries are higher than the bacteria water quality objectives established to protect people who swim, wade, and fish in these waters (Tables 3-1 and 3-2). Consequently, humans who recreate in Sonoma Creek and its tributaries are at risk of contracting waterborne disease.

Sources

The following source categories have the potential to discharge pathogens to surface waters in the Sonoma Creek watershed:

- On-site sewage disposal systems (septic systems)
- Sanitary sewer systems
- Municipal runoff
- Grazing lands
- Dairies
- Municipal wastewater treatment facility
- Wildlife

Water quality monitoring data indicate that on-site sewage disposal systems are potentially a significant pathogen source to Sonoma Creek downstream of the community of Kenwood. Municipal runoff and sanitary sewer lines are the primary pathogen sources in the urban areas. Livestock grazing and dairies are potentially significant pathogen sources in the more rural portions of the watershed.

Discharger monitoring reports from 2001-2005 indicate that the one municipal wastewater treatment facility is not a significant pathogen source. This facility is considered a potential source due to the possibility of spills or treatment system malfunction.

Wildlife are not a significant, widespread pathogen source, as evidenced by low indicator bacteria levels at sites that contain wildlife but are minimally impacted by human activities. Wildlife may be a significant source on a limited, localized basis.

Numeric Targets

The numeric water quality targets listed in Table 7-h are derived from water quality objectives for coliform bacteria in contact recreational waters, and from U.S. EPA's bacteriological criteria (Tables 3-1 and 3-2). The last target, "zero discharge of untreated or inadequately treated human waste," is consistent with Discharge Prohibition 15 (Table 4-1). The zero human waste discharge target is necessary because human waste is a significant source of pathogenic organisms including viruses; and attainment of fecal coliform targets alone may not be sufficient to protect human health. These bacteria targets, in combination with the human waste discharge prohibitions, are the basis for the TMDL and load allocations, and fully protect beneficial uses.

Table 7-h **Water Quality Targets[a] for Sonoma Creek**
E. coli density: Geometric mean < 126 CFU/100 mL[b] ; 90th percentile < 409 CFU/100 mL[c]
Fecal coliform density[d]: Geometric mean < 200 CFU/100 mL[b] ; 90th percentile < 400 CFU/100 mL[c]
Total coliform density[d]: Median < 240 CFU/100 mL[b] ; no sample to exceed 10,000 CFU/100 mL
Zero discharge of untreated or inadequately treated human waste
[a]These targets are applicable year-round. [b]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period [c]No more than 10 percent of total samples during any 30-day period may exceed this number. [d]The water quality targets for total and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal water quality objectives in the Basin Plan with *E.coli* based water quality objectives for contact recreation.

Total Maximum Daily Load

The TMDL, as indicated in Table 7-i, is expressed as density-based total coliform, fecal coliform, and *E. coli* bacteria limits.

Table 7-i
Total Maximum Daily Loads of Pathogen Indicators for Sonoma Creek

Indicator	TMDL (CFU/100 mL)
E. coli	Geometric mean < 126 [a] 90th percentile < 409 [b]
Fecal coliform[c]	Geometric mean < 200 [a] 90th percentile < 400 [b]
Total coliform[c]	Median < 240 [a] No sample to exceed 10,000

[a]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.
[b]No more than 10 percent of total samples during any 30-day period may exceed this number.
[c]The Total Maximum Daily Loads for total and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal water quality objectives in the Basin Plan with *E.coli*-based water quality objectives for contact recreation.

Load Allocations

Density-based pollutant allocations for pathogen source categories are presented in Table 7-j. This table also presents the wasteload allocation for the single municipal wastewater discharger in the watershed, Sonoma Valley County Sanitation District, and for municipal runoff. Due to the inherent uncertainty in estimating pathogen loading

from nonpoint sources and municipal runoff, allocations for these source categories incorporate a 10 percent margin of safety. Each entity in the watershed is responsible for meeting its source category allocation. All facilities are also responsible for meeting the requirements of applicable waste discharge requirements, waivers, or prohibitions.

All discharges of raw or inadequately treated human waste are prohibited. All sources of untreated or inadequately treated human waste have an allocation of zero.

Discharging entities will not be held responsible for uncontrollable discharges originating from wildlife. If wildlife contributions are found to be the cause of exceedances, the TMDL targets and allocation scheme will be revisited as part of the adaptive implementation program.

Table 7-j
Density-Based Pollutant Load and Wasteload Allocations[a] for Dischargers of Pathogens in the Sonoma Creek Watershed

Load Allocations[a]

Categorical Pollutant Source	E. coli		Fecal coliform[b]		Total coliform[b]	
	Geometric mean[c]	90th percent-ile[d]	Geometric mean[c]	90th percent-ile[d]	Median[c]	Single sample maximum
On-site sewage disposal systems	0	0	0	0	0	0
Sanitary sewer systems	0	0	0	0	0	0
Grazing lands	< 113	< 368	< 180	< 360	< 216	9,000
Dairies	<113	<368	<180	<360	<216	9,000
Wildlife[e]	< 113	< 368	< 180	< 360	< 216	9,000

Wasteload Allocations[a]

Categorical Pollutant Source	E. coli		Fecal coliform[b]		Total coliform[b]	
	Geometric mean[c]	90th percent-ile[d]	Geometric mean[c]	90th percent-ile[d]	Median[c]	Single sample maximum
Sonoma Valley County Sanitation District NPDES Permit No. CA0037800	<126	<409	<200	<400	<240	10,000
Municipal runoff (NPDES Permit No. CAS00004)[f]	<113	<368	<180	<360	<216	9,000

[a]These allocations are applicable year-round. Wasteload allocations apply to any sources (existing or future) subject to regulation by a NPDES permit. Load allocations and the wasteload allocation for municipal runoff reflect a 10 percent Margin of Safety.
[b] The allocations for total and fecal coliform shall sunset and shall no longer be effective upon the replacement of the total and fecal water quality objectives in the Basin Plan with E.coli based water quality objectives for contact recreation.
[c]Based on a minimum of five consecutive samples collected at approximately equal intervals over a 30-day period.
[d] No more than 10 percent of total samples during any 30-day period may exceed this number.
[e] Wildlife are not believed to be a significant source of pathogens and their contribution is considered natural background; therefore, no management measures are required.
[f] Municipal runoff permitees are: Sonoma County Water Agency, County of Sonoma, City of Sonoma, Sonoma Developmental Center, and any other designated entities.

Implementation Plan

This implementation plan builds upon previous and ongoing successful efforts to reduce pathogen loads in Sonoma Creek and its tributaries, and requires actions consistent

with the California Water Code (CWC Section 13000 et seq.); the state's Nonpoint Source Pollution Control Program Plan (CWC Section 13369) and its Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program; and the human waste discharge prohibition.

Table 7-k contains the required implementation measures for each of the source categories listed in Table 7-j. These measures include evaluation of operating practices: development of comprehensive, site-specific pathogen control measures and a corresponding implementation schedule: and submittal of progress reports documenting actions undertaken. Progress reports may be submitted directly to the Water Board or to third parties if designated. These progress reports will serve as documentation that source reduction measures are being implemented.

It is important to note that the numeric targets and load allocations in the TMDL are not directly enforceable. To demonstrate attainment of applicable allocations, responsible parties must demonstrate that they are in compliance with specified implementation measures and any applicable waste discharge requirements (WDRs) or waiver conditions.

The state's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program requires that current and proposed nonpoint source discharges be regulated under (WDRs), waiver of WDRs, Basin Plan prohibitions, or some combination of these tools. Table 7-m specifies the regulatory framework for each discharger source category. The Water Board intends to work with stakeholders to develop conditions for waiving WDRs for grazing lands by 2009.

Table 7-K
Trackable Implementation Measures for the Sonoma Creek Pathogen Total Maximum Daily Load

Source Category	Action	Implementing Party	Completion Dates
On-Site Sewage Disposal Systems (Septic Systems)	Submit to the Water Board Executive Officer for approval a plan and implementation schedule to evaluate septic system performance and correct deficiencies in septic systems identified as potentially discharging to surface waters. Priority should be given to systems identified as posing water quality risks	Sonoma County Permit and Resource Management Department	January 2008
	Report progress on implementation of septic system evaluation and repair program, as related to pathogen reduction		January 2011 and biennially thereafter
	Comply with applicable County, Water Board, or State Board requirements	Septic system owners	As specified in applicable requirement
	Apply for coverage under the State Water Board's general WDRs for sanitary sewer systems. Comply with provisions of WDRs.	Sonoma Valley County Sanitation District	As specified in general WDRs
	Report progress on inspection and evaluation of sewer systems[a]. Priority should be given to areas identified as posing water quality risks.		Annually
Grazing Lands	Submit a Report of Waste Discharge[b] to the Water Board that provides the following: a description of the facility; identification of necessary site-specific grazing management measures to reduce animal waste runoff; and an implementation schedule for identified management measures	Ranchers (landowners and lessees). These Reports may be submitted individually or jointly or through a third party[c].	January 2010
	Comply with applicable WDRs, waiver conditions, or prohibitions	Ranchers (landowners and lessees).	As specified in applicable WDRs or waiver conditions
	Report progress on implementation of grazing-management measures that reduce animal waste runoff.	Ranchers (landowners and leasees). These reports may be submitted individually or jointly through a third party[c].	As specified in applicable WDRs or waiver of WDRs
Dairies	Comply with applicable WDRs or waiver of WDRs.	Dairy Facility Owners	As specified in applicable WDRs or waiver of WDRs.

Source Category	Action	Implementing Party	Completion Dates
	Report progress on implementation of management measures that reduce animal waste runoff		As specified in applicable WDRs or waiver of WDRs
Municipal Runoff	Comply with approved stormwater management plans and update/amend stormwater management plans as needed to include specific measures to reduce discharge of human and animal wastes	Sonoma County Water Agency, County of Sonoma, City of Sonoma, Sonoma Developmental Center, and any other designated entities	As specified in approved stormwater management plan and in applicable NPDES permit
	Report progress on implementation of human and animal waste runoff reduction measures		
Municipal Wastewater Discharges	Comply with applicable NPDES permit.	Sonoma Valley County Sanitation District Facility	As specified in applicable NPDES permit

[a]Reports may be incorporated into annual SSMP audit reports.
[b]WDRs waiver conditions may allow for other submittals in lieu of a Report of Waste Discharge.
[c]While third parties may provide valuable assistance in TMDL implementation, the discharger is the entity responsible for compliance with the specified regulations and regulatory controls

Table 7-m Regulatory Framework for Discharges by Source Category	
Source Category	**Regulatory Tool**
On-site sewage disposal systems (septic systems)	General waste discharge requirements (WDRs), individual WDRs, or waiver WDRs, as appropriate[a] Prohibition of human waste discharge
Sanitary sewer systems	General WDRs or individual WDRs, as appropriate Prohibition of human waste discharge
Grazing lands	Waiver of WDRs[b]
Dairies	Waiver of WDRs or individual WDRs, as appropriate
Municipal runoff	NPDES permit
Municipal wastewater discharges	NPDES permit

[a]Regulatory tool(s) employed will be consistent with State Board regulatory actions.
[b]The Water Board retains the option of requiring general or individual waste discharge requirements or compliance with a discharge prohibition, as appropriate.

Cost estimate: Agricultural Water Quality Control Program

Because the implementation measures for grazing lands constitute an agricultural water quality control plan, the cost of that program is estimated below, consistent with California Water Code requirements (Section 13141).

The average annual program implementation cost to agricultural dischargers is estimated to range from $35,000 to $134,000 for the next ten years. These costs will be shared by Sonoma Creek watershed grazing land operators (approximately 10). This estimate includes the cost of implementing animal waste control and grazing management measures, and is based on costs associated with technical assistance and evaluation, installation of water troughs, and livestock control fencing along up to 25 percent of streams in grazing lands. Besides fencing, other acceptable methods of managing livestock access to streams are not included in this cost estimate due to variability in costs and site-specific applicability. In addition to private funding, potential sources of financing include federal and state water quality grants and federal agricultural grants.

Evaluation and Monitoring

Beginning In 2011 and approximately every five years thereafter, the Water Board will evaluate site specific, subwatershed-specific, and watershed-wide compliance with the trackable implementation measures specified in Table 7-k. In evaluating compliance with the trackable implementation measures, the Water Board will consider levels of

participation for each source category as well as for individual dischargers (as documented by Water Board staff or third parties).

In addition to the programmatic monitoring described above, Water Board staff, in collaboration with stakeholders, will conduct water quality monitoring to evaluate *E. coli* concentration trends in Sonoma Creek and its tributaries. Five years after TMDL adoption, the Water Board will evaluate monitoring results and assess progress made toward attaining TMDL targets (Table 7-h) and load allocations (Table 7-j). The main objectives of the Monitoring Program are to:

- Assess attainment of TMDL targets
- Evaluate spatial and temporal water quality trends
- Further identify significant pathogen source areas
- Collect sufficient data to prioritize implementation efforts and assess the effectiveness of source control actions.
- Collect sufficient data to evaluate the costs of pathogen source control measures and the existence of other pollutant reduction benefits (e.g., nutrients or sediments), if any.

Table 7-n presents locations for baseline water quality monitoring. Each site will be sampled for *E. coli* ten times each year. Five samples will be collected weekly during one 30-day period in each wet season (November through March) and one 30-day period in each dry season (May through September). All water quality monitoring (including quality assurance and quality control procedures) will be performed pursuant to the State Water Board's Quality Assurance Management Plan for the Surface Water Ambient Monitoring Program. Additional monitoring will be conducted as needed if funds are available.

Table 7-n **Baseline Monitoring Sites**
Sonoma Creek at Highway 12
Sonoma Creek Below Kenwood
Sonoma Creek at Sonoma Developmental Center
Sonoma Creek at Maxwell Park
Sonoma Creek at Watmaugh Road
Nathanson Creek at Nathanson Park
Nathanson Creek at Watmaugh Road
Schell Creek at Highway 121

If source control actions are fully implemented throughout the watershed and the TMDL targets are not met, the Water Board may consider whether the TMDL targets are attainable, and re-evaluate or revise the TMDL and allocations as appropriate.

Alternatively, if the required actions are not implemented or are only partially implemented, the Water Board may consider regulatory or enforcement action against dischargers not in compliance.

Adaptive Implementation

Approximately every five years, the Water Board will review the Sonoma Creek Pathogen TMDL and evaluate new and relevant information from monitoring, special studies, and the scientific literature. At a minimum, the following questions will be used to conduct the reviews. Additional questions will be developed in collaboration with stakeholders during each review cycle.

1. Are the Creek and the tributaries progressing toward TMDL targets as expected? If progress is unclear, how should monitoring efforts be modified to detect trends? If there has not been adequate progress, how might the implementation actions or allocations be modified?
2. What are the pollutant loads for the various source categories (including naturally occurring background pathogen contributions and the contribution from open space lands), how have these loads changed over time, how do they vary seasonally, and how might source control measures be modified to improve load reduction?
3. Is there new, reliable, and widely accepted scientific information that suggests modifications to targets, allocations, or implementation actions? If so, how should the TMDL be modified?

Reviews will be coordinated through the Water Board's continuing planning program, with stakeholder participation. Any necessary modifications to the targets, allocations, or implementation plan will be incorporated into the Basin Plan via an amendment process. In evaluating necessary modifications, the Water Board will favor actions that reduce sediment and nutrient loads, pollutants for which the Sonoma Creek watershed is also impaired.