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## STATE WATER RESOURCES CONTROL BOARD BOARD MEETING SESSION - DIVISION OF WATER QUALITY [DATE - TBD]

### ITEM

#### SUBJECT

CONSIDERATION OF A RESOLUTION APPROVING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY BASIN (BASIN PLAN) TO ESTABLISH A TOTAL MAXIMUM DAILY LOAD (TMDL) FOR SEDIMENT AND RELATED HABITAT ENHANCEMENT GOALS IN THE NAPA RIVER WATERSHED

#### BACKGROUND

On September 9, 2009, the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) adopted Resolution R2-2009-0064 ([Attachment](#)) that establishes a TMDL to control excessive sediment and achieve related habitat enhancement goals in the Napa River Watershed. This Basin Plan amendment is necessary because the Napa River was identified in 1990 under federal Clean Water Act § 303(d)(1) because it did not fully meet narrative water quality objectives in the Basin Plan as a result of excessive sediment. Erosion and subsequent fine sediment deposition in the watershed have impaired the designated beneficial uses of the Napa River, including cold freshwater habitat (COLD), wildlife habitat (WILD), fish spawning (SPWN), recreation (REC1), and preservation of rare and endangered species (RARE). The Napa River drains a 426 square mile area watershed and empties into the San Pablo Bay. The Napa River and numerous tributaries support an exceptional diversity of native fish, including steelhead trout and Chinook salmon, which are listed as threatened species. U.S. Fish and Wildlife Service studies have shown that steelhead and salmon populations in the Napa River and its tributaries have declined substantially since the late 1940s.

Narrative water quality objectives for sediment, settleable material, and population and community ecology are not being met because human activities have increased the total supply of sediment delivered to the Napa River. More than half of fine sediment delivered to Napa River during the 1994–2004 period is associated with land use activities, including roads, human-caused channel incision, vineyards, intensive historical livestock grazing, and urban stormwater runoff. Rapid and active channel incision, or down-cutting, and associated erosion of stream terrace banks are also causing significant adverse changes to salmon habitat and are significant sources of fine sediment (sand, silt, and clay). Excess fine sediment in the streambed can cause poor incubation conditions for fish eggs, resulting in high mortality prior to emergence. When large amounts of fine sediment are deposited, the streambed is also more vulnerable to deep scour during storms, which can wash away eggs and thereby further reduce survival during incubation.

#### TMDL TARGETS AND ALLOCATIONS

Numeric targets were selected to interpret the narrative water quality objectives and to track the effectiveness of the TMDL. The sediment TMDL includes two targets: 1) spawning gravel permeability; and 2) streambed scour. This TMDL uses the same numeric targets as the

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Sonoma Creek Sediment TMDL, which was adopted by San Francisco Bay Water Board on December 10, 2008 and approved by the State Water Board on April 20, 2010.

The streambed permeability target is a median value of at least 7000 cm per hour at potential spawning sites for steelhead and salmon in the Napa River watershed. Streambed permeability is a function of the size distribution and packing of coarse sediment (gravels) and finer sediment contained in the streambed. When a large amount of fine sediment is deposited in the streambed, permeability can be reduced by a substantial amount, with consequent adverse impacts to the survival of incubating salmon and trout. The chosen target for gravel permeability corresponds to about 50 percent or greater survival of eggs to emergence.

The target for streambed scour is a mean depth not to exceed 15 centimeters below the level of the overlying streambed substrate at potential spawning sites. The scour depth target is a water quality and habitat indicator which relates rate and sizes of sediment delivered to the channel. When large amounts of fine sediment are deposited by anthropomorphic sources, the streambed is more vulnerable to deep scour during storms, which can wash away eggs and thereby further reduce survival during incubation. The streambed scour target is based on the depth at which Chinook salmon typically bury their eggs during spawning and on natural scour depth.

Compliance with the TMDL will be evaluated at Napa River below the confluence of Soda Creek. This station approximates the downstream limit of mainstem Napa River salmon habitat. A 1994-2004 study showed that an average of 272,000 metric tons of sediment per year was delivered to the Napa River at Soda Creek, of which about 147,000 metric tons per year were derived from natural erosional processes. Using the Noyo River as a reference watershed, San Francisco Bay Water Board staff has estimated that in order to achieve the TMDL targets, the mean annual sediment delivery to Napa River at Soda Creek must be reduced to less than 185,000 metric tons per year (125 percent of the average natural background load). Because the natural background load may vary significantly from year to year, the TMDL and load allocations are expressed not just in terms of mass but also as percentages of natural load, which applies throughout the watershed.

Over 400 dams are located on tributary channels that drain approximately 30 percent of the Napa River watershed. These dams trap the coarse sediment and much of the fine sediment generated upstream of the dams. As a result, overall sediment discharges from controllable anthropogenic sources of sediment need only be halved to accomplish the required sediment reduction. The TMDL requires that sediment stemming from nonpoint sources (such as land use activities associated with roads, vineyards, grazing, and human-caused channel incision) be reduced by 51 percent.

## **SEDIMENT REDUCTION AND HABITAT ENHANCEMENT PLAN**

Implementation of this TMDL also includes specified actions to address adverse impacts of channel incision on salmon habitat quantity and quality, and to accomplish habitat enhancement goals for flow, temperature, and fish passage for steelhead and salmon. Problems associated with channel incision, related rapid bank erosion and loss of essential habitat features, reflect historical and ongoing disturbances. Effectively addressing these issues will require cooperative and coordinated actions by landowners, working with public agencies, over significant distances along the river. The San Francisco Bay Water Board will work with stakeholders along the Napa River, through local stewardship groups, to implement channel restoration and habitat enhancement projects.

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## IMPLEMENTATION AND MONITORING

The only point sources of sediment are those associated with urban stormwater runoff (e.g., municipal stormwater, runoff from State highways, and industrial and construction discharges) and wastewater treatment plants. No reductions are required from these point source dischargers of sediment, which are relatively minor and are already regulated under National Pollutant Discharge Elimination System (NPDES) permits.

For all nonpoint sources dischargers, landowners and operators will be required to file a Report of Waste Discharge (RoWD) by October 2014. Vineyards may choose to participate in a farm plan certified under Fish Friendly Farming Environmental Certification Program or other farm plan certification program in lieu of an RoWD, approved as part of a waiver of Waste Discharge Requirements (WDRs). All dischargers applying for coverage under a waiver of WDRs also will be required to file a notice of intent (NOI) for coverage, and to comply with all conditions of the WDR waiver.

Dischargers will also be expected to comply with applicable WDRs or waivers of WDRs. Landowners and operators will also be required to report progress on implementation of site-specific erosion control measures and best management practices as specified in applicable WDRs or waivers of WDRs, and/or Storm Water Management Plans (SWMP).

Three types of monitoring are specified to assess progress toward achievement of numeric targets and load allocations for sediment: 1) Implementation monitoring to document that required sediment control and habitat enhancement actions are implemented; 2) Upslope effectiveness monitoring to evaluate effectiveness of sediment control actions in reducing rates of sediment delivery to channels; and 3) In-channel effectiveness monitoring (e.g., spawning gravel permeability and scour depth) to evaluate channel response to management actions and natural processes. Implementation monitoring will be conducted by landowners or designated agents.

Approximately every five years, the San Francisco Bay Water Board has committed to evaluate monitoring results and assess progress made towards attaining targets and load allocations. New and relevant information from monitoring, special studies and the scientific literature will be taken into account as it becomes available. The San Francisco Bay Water Board may revise the TMDL and implementation plan and schedule as necessary through its adaptive implementation process.

## ECONOMIC CONSIDERATIONS

The implementation costs associated with required actions in the Basin Plan amendment have been estimated for all source categories as required by Public Resources Code §21159. It is difficult to accurately estimate the cost of implementing the TMDL because the specific priorities and control measures need to be determined by each individual discharger, and may be addressed by an array of alternatives. The San Francisco Bay Water Board has provided cost estimates for reasonably foreseeable means of compliance. An upper and lower range of cost estimates has been provided for all sources below.

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Road-related erosion is the largest sediment source associated with land-use activities in Napa River watershed. It is estimated there are 1,040 miles of upland roads in Napa River watershed that have the potential to discharge sand to Napa River; most are privately owned and unpaved. Estimated costs to reduce sediment discharges from road-related erosion by 50 percent are \$11.4-to-17.2 million over the 20-year implementation period.

Channel incision and associated rapid bank erosion is one of the largest sediment sources associated with land use activities and the primary agent for simplification of stream and riparian habitat in Napa River and lower reaches of its larger tributaries. Estimated costs to reduce sediment discharges from channel incision and bank erosion by 50 percent and to achieve related objectives for enhancement of habitat are \$30-to-\$49.1 million over the 20-year implementation period. The amendment will rely upon voluntary participation by landowners in reach-based stewardships that will work with public agencies to implement these projects.

Stormwater runoff sources are regulated by NPDES storm water permits including the Napa County municipal storm water program, California Department of Transportation's permit for storm water discharges, and Industrial and Construction General permits. Costs associated with implementation are estimated to be \$0.6-to-\$1.2 million over the 20-year period for TMDL implementation.

Vineyards and rangeland landowners and managers will be expected to comply with WDRs or waivers of WDRs. The Basin Plan amendment relies on landowner compliance with Napa County's Conservation Regulations to achieve sediment allocations for vineyard surface erosion. No new costs to vineyards are associated with the TMDL for surface erosion. The Basin Plan amendment anticipates that the San Francisco Bay Water Board will develop conditional waivers of Waste Discharge Requirements (WDRs) for grazing land operators. Current range management practices appear to be effective in controlling surface erosion at most ranches in the watershed, so very little will be required to implement performance measures in pastures, at an estimated cost of \$100,000 to \$200,000 over the 20-year implementation period.

Other costs for agricultural sources associated with actions to reduce sediment discharges and enhance habitat complexity as specified in the implementation plan are estimated to be a total \$1.9-to-\$3.4 million per year or \$38 -to-\$68 million over the 20-year implementation period. More than two-thirds of these potential costs are associated with reducing sediment discharges and enhancing habitat conditions in Napa River, and considering potential benefits to the public in terms of ecosystem functions, aesthetics, recreation, and water quality, and it is expected that at least 75 percent of the cost of these actions will be paid for with public funds. Therefore, it is estimated that total cost to agricultural businesses associated with efforts to reduce sediment supply and enhance habitat in Napa River is \$800,000 to \$1.7 million per year or \$16-to-\$34 million over the 20-year implementation period.

Intensive historical grazing, development of hillside vineyards, and/or other historical or current land use activities have caused or contributed to the erosion of gullies and/or shallow landslides many of which may continue to erode for several years into the future and deliver significant volumes of sediment to stream channels in Napa River watershed. The Basin Plan amendment has included possible implementation measures for these unstable areas. Estimated total cost for actions to accelerate natural recovery and avoid future sediment delivery from unstable areas is \$4.4-to-\$17.6 million over the 20-year period for implementation actions to achieve the TMDL.

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## POLICY ISSUE

Should the State Water Board approve the amendment to the Basin Plan to establish a TMDL for Sediment in the Napa River and its related habitat enhancement plan?

## FISCAL IMPACT

San Francisco Bay Water Board and State Water Board staff work associated with or resulting from this action will be addressed with existing and future budgeted resources.

## REGIONAL WATER BOARD IMPACT

Yes, approval of this resolution will amend the San Francisco Bay Water Board's Basin Plan.

## STAFF RECOMMENDATION

That the State Water Board:

1. Approves the amendment to the Basin Plan adopted under San Francisco Bay Water Board Resolution R2-2009-0064.
2. Authorizes the Executive Director, or designee, to transmit the amendment adopted under San Francisco Bay Water Board Resolution R2-2009-0064 to the Office of Administrative Law and the TMDL to the U.S. Environmental Protection Agency for approval.

State Water Board action on this item will assist the Water Boards in reaching Goal 1 of the Strategic Plan Update: 2008-2012 to implement strategies to fully support the beneficial uses for all 2006-listed water bodies by 2030. In particular, approval of this item will assist in fulfilling Action 1 to prepare, adopt, and take steps to carry out Total Maximum Daily Loads (TMDLs), designed to meet water quality standards, for all impaired water bodies on the 2006 list.

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## STATE WATER RESOURCES CONTROL BOARD RESOLUTION NO. 2010-

APPROVING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY BASIN (BASIN PLAN) TO ESTABLISH A TOTAL MAXIMUM DAILY LOAD (TMDL) FOR SEDIMENT AND RELATED HABITAT ENHANCEMENT GOALS IN THE NAPA RIVER WATERSHED

### WHEREAS:

1. On September 9, 2009, the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) adopted Resolution R2-2009-0064 ([Attachment](#)) amending the Basin Plan to establish a TMDL for excessive sediment and related habitat enhancement goals in the Napa River Watershed.
2. San Francisco Bay Water Board found that the adoption of this amendment would be consistent with the State Antidegradation Policy ([State Water Board Resolution No. 68-16](#)) and federal antidegradation requirements (40 Code of Federal Regulations 131.6).
3. The San Francisco Bay Water Board found that the analysis contained in the TMDL staff report, the California Environmental Quality Act (CEQA) Checklist, and the responses to public and peer review comments comply with the requirements of the State Water Resources Control Board's (State Water Board's) certified regulatory CEQA process, as set forth in California Code of Regulations, Title 23, section 3775 et seq.
4. The scientific basis for the TMDL was subjected to an independent, external peer review, pursuant to the requirements of Health and Safety Code section 57004. San Francisco Bay Water Board staff revised the proposed Basin Plan amendment in response to the comments provided by the reviewers, or provided a written response that explained the basis for not incorporating other proposed changes. The peer reviewers' responses confirmed that the rulemaking portions of the TMDL and implementation plan are based on sound scientific knowledge, methods, and practices.
5. The State Water Resources Control Board (State Water Board) finds that, in amending the Basin Plan, the San Francisco Bay Water Board complied with the requirements set forth in sections 13141, 13240, 13242, 13245, and 13246 of the Water Code. The State Water Board also finds that the regulatory action meets the "necessity" standard of the Administrative Procedures Act, Government Code section 11353, Subdivision (b).
6. The Basin Plan amendment establishes the following: a) a sediment TMDL for the Napa River at 125 percent of natural background (185,000 metric tons/year); b) numeric targets for spawning gravel permeability and the depth of streambed scour; c) allocations for all significant sediment sources; and d) an implementation plan to achieve the TMDL and related habitat enhancement goals.
7. The Basin Plan amendment does not become effective until approved by the State Water Board and until the regulatory provisions are approved by the Office of Administrative Law (OAL). The TMDL must also be approved by the U.S. Environmental Protection Agency (U.S. EPA).

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THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. Approves the amendment to the Basin Plan as adopted under San Francisco Bay Board Resolution No. R2-2009-0064.
2. Authorizes the Executive Director or designee to submit the amendment adopted under San Francisco Bay Water Board Resolution No. R2-2009-0064 to OAL for approval of the regulatory provisions and to U.S. EPA for approval of the TMDL.

## CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on (TBD).

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Jeanine Townsend  
Clerk to the Board