

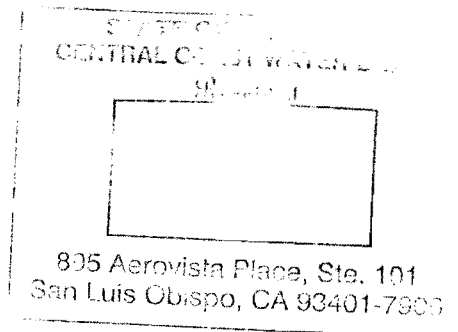


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

MAY 03 2007



File: Pajaro River - Sediment
TMDL

Ms. Dorothy Rice
Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Dear Ms. Rice:

Thank you for submitting the total maximum daily loads (TMDLs) to address sediment in the Pajaro River. The submission was dated December 28, 2006 and was received on January 4, 2007. The State of California adopted the TMDLs to address suspended sediment in the following water quality limited segments as identified on the State's 2002 Clean Water Act Section 303(d) list: Pajaro River, Llagas Creek, Rider Creek Gulch and San Benito River.

Based on EPA's review, I have concluded the TMDLs adequately address the pollutant of concern, and will, upon implementation, result in attainment of applicable water quality standards. The TMDLs include allocations as needed, take into consideration seasonal variations and critical conditions, and provide an adequate margin of safety. The State provided adequate opportunities for the public to review and comment on these TMDLs. All required elements are adequately addressed; therefore, the TMDLs are hereby approved pursuant to Clean Water Act Section 303(d)(2).

The State's submittal also contains a detailed plan for implementing the TMDLs. Current federal regulations do not define TMDLs as containing implementation plans; therefore, EPA is not taking action on the implementation plan or compliance schedules provided with the TMDLs. EPA generally concurs with the State's proposed implementation approaches. If the Regional Board contemplates including schedules of compliance in NPDES permits, it can only do so if they are consistent with a compliance schedule-authorizing provision that has been submitted to EPA under Clean Water Act Section 303(c) and approved by EPA.

The enclosed review discusses the basis for this approval decision. We appreciate the State and Regional Boards' work to complete and adopt the TMDLs and we look forward to our continuing partnership in TMDL development. If you have questions concerning this approval, please call me at (415) 972-3572 or Janet Parrish at (415) 972-3456.

Sincerely yours,

Janet Hashimoto
for Alexis Strauss, Director
Water Division

Enclosure
cc: Robert Briggs, Central Coast RWQCB

TMDL Review Checklist

State: California

Waterbodies: Pajaro River, Llagas Creek, Rider Creek, and San Benito River

Pollutant(s): Sediment/Siltation

Date of Initial Submission: December 28, 2006

Date Received By EPA: January 4, 2007

Dates of Supplemental Submission(s) and Receipt by EPA: N/A

EPA Reviewer: Janet Parrish

1. Submittal Letter:

State submittal letter indicates final TMDL(s) for specific water(s)/pollutant(s) were adopted by state and submitted to EPA for approval under 303(d). Acknowledge if any supplemental material was provided and receipt date.

Submittal letter dated December 28, 2006 and received January 4, 2007.

The Central Coast RWQCB adopted the sediment TMDL for Pajaro River on December 2, 2005 (RWQCB Resolution # R3-2005-0132). The California State Board (SWRCB) approved the sediment TMDL on November 16, 2005 (SWRCB Resolution # 2005-0086). The Basin Plan amendment was approved by the SWRCB on September 21, 2006 under Resolution No. 2006-0068. The State Office of Administrative Law approved the TMDL on November 27, 2006 (OAL file # 06-1102-01 S). The submittal addresses four waterbodies: the Pajaro River, including Llagas Creek, Rider Creek and the San Benito River (TMDL Final Project Report, p. 1), all of which were identified on the State's 2002 CWA Section 303(d) list for sedimentation/siltation (TMDL Final Project Report, p. 3)

The submittal contained the TMDL Final Project Report (TMDL Report) dated November 2005, and the Central Coast RWQCB Resolution, including the Basin Plan Amendment dated September 8, 2006.

2. TMDLs Included:

The submittal clearly identifies the water segments and pollutants or stressors for which TMDLs were developed. The submittal should include the water segment identifier (e.g., NHD code) for each segment addressed. The submittal should clearly identify the TMDLs adopted for currently 303(d) listed waterbody-pollutant combinations. It should also clarify if TMDLs were adopted for new impairment findings (by waterbody-pollutant combinations) that do not exist on the current 303(d) list. If appropriate, the submittal should describe any assessment decisions that may have resulted in non-impairment status for water/pollutant combinations that exist on State's most current 303(d) list.

The submittal addresses the Pajaro River (32 mi), including Llagas Creek (15 mi), Rider Creek (1.8 mi) and the San Benito River (86 mi) (TMDL Final Project Report, pp. 1,3).

3. Water Quality Standards Attainment: *TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.*

(TMDL report, pp. 6-21)

Narrative water quality objectives exist for sediment in the Central Coast RWQCB Basin Plan. Two

categories of numeric targets have been developed for the Pajaro River TMDLs: suspended sediment concentration/durations and streambed characteristics. Together, these are designed to protect the most sensitive beneficial uses of the watershed, which are those related to cold and warm water habitat. The State relied on well-known literature sources to supporting the values selected; those values are protective of the most sensitive beneficial uses.

The State reasonably concluded that attainment of the numeric targets and associated TMDLs, waste load allocations, and load allocations will result in attainment of the applicable numeric water-quality objective.

4. Numeric Target(s): *Submission describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. Numeric water quality target(s) for TMDL identified, and adequate basis for target(s) as interpretation of water quality standards is provided.*

(TMDL report, pp.8-13)

The numeric targets were developed from narrative water quality objectives to protect the most sensitive beneficial uses in the Pajaro River watershed, which are those related to cold and warm water habitat, including spawning, migration, and rearing. Data on steelhead trout and local warm water fish communities (e.g., threespine stickleback, pikeminnow, prickly sculpin, sucker, California roach, speckled dace, carp, and Sacramento blackfish) in the Pajaro River were assembled to identify sediment characteristics protective of those species.

The suspended sediment targets were based on a "Severity of Ill Effects" (SEV) framework (Newcombe & Jensen, 1996, in TMDL Report p. 9) combined with a watershed model developed to evaluate current suspended sediment loading a scenario of sediment reductions (based on a model run from 1986-2000). The sediment reduction scenario, identified as the TMDL conditions, evaluated reductions of 100% in road erosion in three subbasins; an 80% decrease of sediment from cropland, fallow fields and mines; a 60 % decrease from orchards and pastureland; and a 20% decrease from rangeland. The results of the model under these conditions were used as the numeric targets for suspended sediment concentration. Targets for each of seven subwatersheds were developed (TMDL report, p. 16).

Streambed characteristic targets for residual pool volume, median diameter of spawning gravels, and distribution of sediments in spawning gravels from two size fractions were identified based on targets established for other Central Coast sediment TMDLs. These characteristics were identified to ensure that sediment accumulation in streambed habitat does not degrade the spectrum of beneficial uses.

This TMDL submittal adequately defines the beneficial uses and the numeric water quality objectives to be achieved.

5. Source Analysis: *Point, non-point, and background sources of pollutants of concern are described, including the magnitude and location of sources. Submittal demonstrates all significant sources have been considered. Point, nonpoint, and background sources of pollutants of concern are described, including the magnitude and location of sources. The submittal demonstrates all significant sources have been considered.*

(TMDL report, pp. 22-25)

The TMDL report summarizes the sediment sources contributing to the impairment. They are primarily nonpoint, and include agricultural operations, silviculture, urban land use, rangeland and grazing activities, sand and gravel mining operations, streambank erosion, roads, and natural erosion processes. There are no large MS4s (Municipal Separate Storm Sewer Systems) covered by Phase I of the NPDES stormwater program, but the cities of Watsonville, Hollister, Gilroy and Morgan Hill are designated as small MS4s, and are required to develop and implement stormwater management plans.

6. Loading Capacity Linkage Analysis: *Submittal describes relationship between numeric target(s) and identified pollutant sources. Submittal clearly identifies loading capacity. For each pollutant, describes analytical basis for conclusion that sum of allocations and margin of safety does not exceed the loading capacity of the receiving water(s).*

(TMDL report, pp. 26-36)

The TMDL is the sediment loading that would be expected if all the land uses were similar to more natural conditions as a result of optimal reductions in anthropogenic sources (TMDL report, p. 34). The load analysis was used to determine time-variable nonpoint source contributions from subwatersheds using the Soil and Water Assessment Tool (SWAT) model. Establishing the relationship between the in-stream water quality targets and source loading is a critical component of the TMDL development. The SWAT model was applied to the Pajaro River watershed to determine existing sediment loads and evaluate optimal TMDL load reductions. The targets and loading capacity are closely linked, as the numeric targets for suspended sediment concentration were developed by running the watershed model using existing conditions, and sediment reduction conditions as follows (TMDL report p. 14): 100% reductions in road erosion in three subbasins where roads are known to contribute significantly to sediment loading (TMDL Report p. 26); an 80% decrease of sediment from cropland, fallow fields and mines; a 60 % decrease from orchards and pastureland; and a 20% decrease from rangeland. This was considered to be the "controllable anthropogenic sources." This determined the loading capacity. After these reductions, loading rates from the anthropogenic sources are comparable to loading rates from shrubland and grassland areas (TMDL report pp. 14, 33). These reductions translated to numeric targets for suspended sediment concentration in each of seven watersheds (TMDL report, p. 16).

The linkage analysis for this TMDL (TMDL report, p. 38-39) is intended to demonstrate that waste load allocations and load allocations will result in attainment of the water quality objectives. The SWAT model was used to analyze the total and land use specific sediment loads. Available monitoring data was used to calibrate the model, and then used to estimate existing conditions and conditions following sediment reductions; conditions under reductions were set as targets. A direct, numeric linkage between sediment loadings and streambed characteristics targets cannot be established, but previous studies of northern California streams has demonstrated that a linkage exists.

The submittal adequately describes the relationship between the numeric targets, pollutant sources and the total assimilative capacity (loading capacity) of the waterbody.

7. TMDL and Allocations:

TMDL—Submittal identifies the total allowable load, which is set equal to or less than the loading capacity. TMDL is expressed in terms of mass-based, concentration-based or other equivalent approaches that are consistent with federal requirements. If TMDL has seasonal features then please describe. TMDLs and allocations should be expressed in terms of daily time steps. If the TMDL and/or allocations are also expressed in terms other than mass loads per day, the submittal explains why it is reasonable and appropriate to express the TMDL in those terms.

Allocations—Submittal identifies appropriate waste load allocations for all point sources and load allocations for all non-point sources. Allocations are expressed in terms of mass-based, concentration-based or other equivalent approaches, the submittal explains why it is reasonable and appropriate to express in those terms. If point sources are present, submittal identifies existing NPDES permits by name and number. More discussion of point sources in watershed. If no point sources are present, waste load allocations are zero. More discussion of non-point sources. If no non-point sources are present, then load allocations are zero.

Loading Capacity

By setting the TMDL to the sediment load that would be expected if all the land uses were similar to more natural conditions as a result of optimal reductions in anthropogenic sources (TMDL report, p. 34), the TMDL is set equal to loading capacity.

Waste Load Allocations for Point Sources and Load Allocations for Nonpoint Sources

Load allocations and waste load allocations are identified by land use for each of seven subwatersheds, and they are expressed in metric tonnes (TMDL report, p. 36). Land use categories are crop, fallow and orchard; forest; pasture and range; urban lands; roads; barren; and sand and gravel mining. The time period is expressed on an annual basis (TMDL report, p. 36). It is implied that the expression of allocations on an annual basis is appropriate based on the statements about the natural fluctuations of sediment loading throughout the year and from year-to-year.

The TMDLs were set by determining sediment source and load reduction categories based on land use. Urban/residential areas are included as both point source (NPDES stormwater) and nonpoint source (TMDL report, p. 34). For urban lands, the allocations are waste load allocations if the area falls within NPDES Phase 2 urban boundaries (TMDL report, p. 36). There are small MS4s that fall within these boundaries in Watsonville, Hollister, Gilroy and Morgan Hill (TMDL report, pp. 24-25). These cities are required to develop an implement stormwater management plans that address water quality related issues.

For every other land use category not within the NPDES Phase 2 urban boundaries, the allocations are load allocations. These land use categories include crop, fallow, orchard, forest, pasture, range, roads, barren land, sand and gravel mining, and urban lands outside of NPDES Phase 2 boundaries.

EPA concludes that the State's approach of defining the TMDLs and allocations in terms of tonnes of sediment per day and allocating by land use type is appropriate for the pollutant of concern and is consistent with the provisions of CWA and federal regulations. See 40 CFR 130.2(j)

8. Margin of Safety: *Submission describes explicit and/or implicit margin of safety for each pollutant.*

(TMDL report, p.37)

The submittal incorporates an implicit margin of safety by: 1) using a multiple-year simulation period to consider varied hydrologic conditions, seasonality and critical conditions; 2) exposure category methodology incorporating a range of suspended sediment concentrations and durations of exposure associated with a given response level; applying the exposure category methodology separately to each subwatershed, incorporating differences among them; calibrating the model to minimize the uncertainty of loading relationships; and applying more protective numeric targets to the San Benito River to account for the uncertainty of whether suspended sediment from the San Benito River is transported directly to the Pajaro River

EPA considers this an appropriate approach for dealing with uncertainty concerning the relationship between TMDL, wasteload allocations, load allocations, and water quality conditions.

9. Seasonal Variations and Critical Conditions: *Submission describes method for accounting for seasonal variations and critical conditions in the TMDL(s).*

(TMDL report, p. 40)

Sediment concentration data for the Pajaro River watershed show that the largest loading of sediment to the watershed typically occurs during the winter months at high-flow periods. Sediment loading generally can also be sporadic over long periods; for example, 80 percent of the total loading over a 10-year period could be delivered in one wet year. This TMDLs account for seasonal variations and critical

conditions by modeling a long-term simulation period covering a variety of hydrologic and rainfall conditions, and calibrating the model to observations over long periods to capture the variability.

10. Public Participation: *Submission documents provision of public notice and public comment opportunity; and explains how public comments were considered in the final TMDL(s).*

(TMDL report, p. 53, RWQCB Administrative Record pp. 00734 ff., pp. 1342 ff.)

During the course of TMDL development, staff from the Central Coast RWQCB initiated a public participation process that included forming, in 2001, a Pajaro River TDL Advisory Committee comprised of staff and watershed stakeholders. The committee met several times in 2003 and 2004. Staff presented highlights of the sediment TMDL report in August 2004. A public comment period on the draft TMDL was open from August 26, 2005 to October 10, 2005, and the public notice was published August 26, 2005. A public hearing was held December 2, 2005, and the notification of that meeting was published on August 27, 2005. An additional public comment period occurred from October 15, 2005 to December 1, 2005; Notice was published on October 15, 18, and 19, 2005. Staff adequately responded to comments (RWQCB Administrative Record pp. 1342 ff.). The SWRCB also provided an opportunity for public comment (notice dated August 4, 2006, according to SWRCB Administrative Record).

The State demonstrated how it provided sufficient opportunities for public comment and adequately responded to public comments.

11. Technical Analysis: *Submission provides appropriate level of technical analysis supporting TMDL elements.*

The TMDL analysis provides an acceptable review and summary of available information about sediment in the watershed, and a sufficiently clear discussion of analytical methods used to calculate this TMDL.

EPA concludes the State was reasonably diligent in its technical analysis of the sediment loading in the watershed to set the TMDL at a level that will achieve water quality standards.

12. Reasonable Assurances: *If waste load allocations are made less stringent based on inclusion of load allocations that reflect nonpoint source reductions, submission describes how there are reasonable assurances that necessary nonpoint source reductions will occur.*

not applicable

13. Other: *Table for clarifying submittal for TMDL waterbody-combinations for corresponding 303(d) listing, new impairment findings or non-impairment findings.*

not applicable