

TUOLUMNE COUNTY WATER QUALITY PLAN

PROJECT ASSESSMENT AND EVALUATION PLAN – STATE WATER RESOURCES CONTROL BOARD AGREEMENT NO. 03-240-555-0

A. PURPOSE

The purpose of this Project Assessment and Evaluation Plan (PAEP) is to assist County staff, its consultants, and State Water Resources Control Board (SWRCB) Contract Managers in preparing and reviewing documents related to the preparation of a Water Quality Plan (WQP) for Tuolumne County. More specifically, the PAEP outlines how the project will satisfy requirements for projects funded under the Costa-Machado Water Act of 2000 (Proposition 13) and CALFED. Specific project performance objectives are included in the PAEP in support of these requirements; and the effectiveness evaluation will be presented in the final project report. The purpose for requiring measurement of project performance are (1) to provide improved documentation of project success; (2) to encourage projects to focus more on achieving measurable water quality improvements; and (3) to develop more information concerning control practice effectiveness.

The contents of the PAEP are specified in the regulatory requirements, which vary by grant program; however, for the purposes of this project, the PAEP will include those elements required in SWRCB Agreement No. 03-240-555-0. These elements include the following:

- 1) Identification of one (1) or more sources of non-point sources of surface water pollution;
- 2) Description of baseline water quality conditions for surface water bodies of interest;
- 3) Approach to implementing project-proposed management practices;
- 4) Approach to determining the effectiveness of project-proposed management practices in terms of preventing or reducing pollution;
- 5) Discussion of how the project promotes the goals of CalFED and Proposition 13-funded projects, specifically in relation to the protection of beneficial uses;
- 6) Methods used to track the success of management practices in relation to water quality improvements;
- 7) Outline of program for the collection of data consistent with SWRCB requirements to enable evaluation for Total Maximum Daily Loads (TMDLs); and
- 8) Description of project outreach, coordination, and information exchange.

B. ELEMENTS OF THE PAEP

B.1 SOURCES OF NON-POINT SOURCES OF SURFACE WATER POLLUTION

The Upper Tuolumne (Cataloging Unit No. 18040009) and Stanislaus River (Cataloging Unit No. 18040010) hydrologic units have been designated as Category I watersheds by the California Unified Watershed Assessment (CUWA). Category 1 watersheds must satisfy several criteria to qualify for funding in response to impaired water quality or aquatic systems. The Upper Tuolumne and Stanislaus River Hydrologic Units both meet one or more of the specified criteria, including the following:

- I. Contain water bodies with impaired beneficial use (e.g. drinking water, recreation, fisheries);
- II. Community-identified goals for water quality,
- III. Threat of wildfire from high fuels loading;
- IV. Impaired aquatic and/or wetland habitat according to the professional judgment assessment (PJA);
- V. Streams and riparian areas identified as not functioning or functioning at risk using the Proper Functioning Condition (PFC) Assessment method developed by USDA, Forest Service and NRCS; and
- VI. Aquatic and wetland species proposed or listed under state or federal endangered species laws.

The SWRCB further prioritizes each of the Category 1 watersheds based on examined values, risks, and opportunities within each hydrologic unit. Watersheds with high values (e.g. water quality), high risks to maintaining those values (e.g., stresses from human population growth, wildfire hazards, and loss of habitat), and high opportunity for achieving improvements (e.g. the presence of local working groups) are considered the highest priority of the Category 1 watersheds. The Upper Tuolumne and Stanislaus hydrologic units generally meet the first two criteria, but are lacking in the third in terms of a working group that can manage issues at a watershed scale. For this reason, both watersheds are not identified as priority watersheds in the 1997 CUWA; however, the County is optimistic that the program developed as part of the WQP will increase public involvement and agency coordination. This would likely increase one or both of the watershed's prioritization in the future.

The value of the two watersheds is monumental in terms of domestic water supplies, biodiversity, recreational opportunities, power generation, and so on. The risks to the two systems are equally as great and contribute to the "impaired" watershed designation. First and foremost is the rapid urbanization occurring in several foothill communities. Developed portions of Tuolumne County are mainly centralized along the Table Mountain Ridgeline that divides the Stanislaus and Tuolumne River basins in the lower foothill region of the Sierra Nevada. These urban and rural centers drain into several water supply reservoirs that provide water supplies to the County and various locations throughout the State. In the upper foothill reaches, reservoirs such as Phoenix Lake in the Phoenix basin near Sonora, have experienced heavy sediment loading. Similar observations have been documented in waterways that drain into either New Don Pedro Lake or New Melones Reservoir (e.g. Sullivan and Mormon Creeks).

In addition to sedimentation issues, Tuolumne County is traversed from north to south by the Mother Lode ore belt. Mining activities, although generally inactive within the County, have potentially left a legacy of heavy metals near former mining sites. Don Pedro Lake is listed on the 303(d) list and TMDL Priority Schedule for mercury contamination associated with historic resource extraction (mining) activities. It is anticipated that in addition to mercury other heavy metals, such as arsenic, may also be currently discharged in storm water runoff from some of these old mine sites; thereby leading to water quality degradation.

Aside from Don Pedro Lake, no waterbodies within the Upper Stanislaus and Tuolumne River Watersheds are identified as impaired in the 2002 California Section 303(d) List and TMDL (SWRCB, 2003). However, the County grant applicant notes other issues concerning septic system failures, urban and agricultural runoff, land management practices, and hydromodification and their potential effects on local surface water quality. Lower reaches of the Stanislaus and Tuolumne Rivers are listed as impaired water bodies on EPA's 2002 303(d) list for diazinon, Group A Pesticides, and unknown toxicity (SWRCB, 2003); the lower Stanislaus River is also listed as impaired for mercury. However, diazinon and Group A Pesticides are generally associated with irrigated agricultural activities in the Central Valley; and are therefore not a focus of this project.

B.2 BASELINE WATER QUALITY CONDITIONS

Watershed baseline studies are needed for watershed tributaries most impacted by development, mining, and/or other County land uses. Local officials and the public have suggested that Sullivan Creek, Woods Creek, Turnback Creek, Curtis Creek, Garrotte Creek, all tributaries of the Tuolumne River, as well as Mormon Creek, a tributary of the Stanislaus River, may be the most impacted or affected tributaries in the two watersheds. However, to date, little water quality data has been collected for these tributaries to determine if a problem exists.

Most of the water quality data available for the two watersheds comes in the form of watershed sanitary surveys completed by local water agencies to comply with the California Department of Health Service's (DHS) Drinking Water Source Assessment and Protection (DWSAP) Program. Water quality data provided in these assessments is limited to water supply conveyance and storage facilities; and not natural surface water features, unless they are part of the supply system. For this reason, much of the data available does not provide an indication of the water quality within local waterways and associated tributaries that feed some of the larger water supply reservoirs located down-gradient (e.g. Don Pedro Lake). This data; however, will be useful in providing a cumulative understanding of water quality within each hydrologic unit and will be presented, to the degree necessary, in the watershed assessment document to present an indication of overall watershed health.

By virtue of the lack of surface water data for local foothill creeks, the need to collect baseline water quality data is necessary to identify whether water quality degradation is actually occurring; and more importantly, to determine the extent and degree to which it's occurring. The County has prepared a monitoring and reporting plan (MRP) in efforts to acquire baseline data for local

creeks. Data will be acquired consistent with the methodologies outlined in the project's Quality Assurance Project Plan (QAPP).

B.3 IMPLEMENTING PROJECT-PROPOSED MANAGEMENT PRACTICES

The WQP will include guidance for implementing management practices to treat those constituents identified as a concern and to track the success of preferred best management practices (or: BMPs). BMP evaluation will be focused to hydrologic sub-areas draining unincorporated urban and rural centers. Initially, emphasis will be placed on sediment production and associated transport mechanisms; however, as funding becomes available, the evaluation will be expanded to other constituents.

The WQP will address a wide variety of activities conducted within the County that may be potential sources of pollutants in stormwater. This document will also identify opportunities for riparian improvement projects. In this context, the WQP will differentiate between those measures needed to control and minimize non-point sources of pollution (NPS) and those actions necessary to improve riparian habitat (e.g. bioengineering methods¹). At minimum, the WQP will provide the framework to address the six program elements necessary to comply with Phase Two of the National Pollution Discharge Elimination System (NPDES) program. These six elements include:

- Public Outreach
- Community Involvement
- Illicit Discharges
- Construction Activities
- Planning
- Municipal Operations

In terms of sediment control, the WQP will emphasize the need to have a clear understanding of what type of control is needed in certain instances, regardless of cost, and the corresponding BMPs available. In general, there are three categories of control measures, 1) erosion control, 2) runoff control, and 3) sediment removal, each of which includes treatment methodologies designed for specific site conditions (e.g. slope gradient). The WQP will outline the applicability of these control strategies, the types of BMPs available for each approach, and the anticipated efficiency rates based on EPA data. This will provide more options to the County, in terms of cost-effective BMPs, and improve the data available to managers for decision making.

¹ Bioengineering is a practice that brings together biological, ecological, and engineering concepts to produce living, functioning systems to prevent erosion, to stabilize slopes and to enhance wildlife habitat.

B.4 APPROACH TO DETERMINING THE EFFECTIVENESS OF PROJECT-PROPOSED MANAGEMENT PRACTICES IN TERMS OF WATER QUALITY IMPROVEMENTS AND PROTECTION OF BENEFICIAL USES

Existing beneficial uses applied to the Upper Stanislaus and Tuolumne Rivers include agricultural supply, cold freshwater habitat, municipal and domestic supply, hydropower generation, water contact recreation, non-water contact recreation, warm freshwater habitat, and wildlife habitat (RWQCB, 1998). In the context of the WQP project, those beneficial uses with the lowest numerical limits, based on Basin Plan objectives include:

Cold Freshwater Habitat. Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Municipal and Domestic Supply. Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Water Contact Recreation. Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, white water activities, or fishing.

Warm Freshwater Habitat. Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

The WQP will be developed with the overall goal of assisting CALFED in achieving its primary mission by protecting major sources of water for the San Joaquin/Sacramento River Delta and San Francisco Bay. To this end, the primary objectives of this project are two-fold, with the initial objective focused on assessing localized watershed conditions; in particular characterizing surface water quality, general riparian condition, and sediment production. Based on information gathered during the assessment portion of the project, the WQP will be developed in way that responds to the findings of the watershed assessment in conjunction with public and agency input as to the content of the WQP.

The highest priority tributaries in the County's watersheds will be those under development pressure that supply drinking water to local reservoirs. The Sullivan Creek hydrologic area (HA), tributary to the Don Pedro Lake, has been identified as one such priority watershed. The Sullivan Creek HA represents a variety of residential and commercial land uses and is almost entirely within County land use jurisdiction. For these reasons, the hillslope and channel geomorphic assessments for the project will be focused to the Sullivan Creek HA to allow for a more detailed characterization of sediment production and transport through the watershed. Fluvial geomorphologic measurements generated under this task will provide insight on sediment loading to Phoenix Reservoir and Don Pedro Lake from the Sullivan Creek HA. The findings and information obtained from this task may also be applied to other hydrologic areas as additional funding becomes available.

The WQP project includes multiple activities that will require measurement of several parameters to evaluate the project's performance and whether project goals are ultimately obtained. The ultimate success of this project will be judged by the actual adoption of a WQP in conjunction with amendments to the County Ordinance Code to better address NPS concerns. Other measurable objectives will include increased community awareness, availability of baseline water quality data, community-based water quality monitoring, and increased understanding of watershed function. The ultimate success of best management practices (BMPs) included within the WQP for reducing nonpoint source pollution over the long-term cannot be fully recognized over the contract period; however, to the extent this information is available from citizen monitoring activities it will be documented in the final project report. It is anticipated that additional funding will be necessary to track improvements in other water quality parameters, such as heavy metals, and develop a sediment budget that responds to BMPs in place after the adoption of the WQP.

B.5 DISCUSSION OF HOW THE PROJECT PROMOTES THE GOALS OF CALFED AND PROPOSITION 13-FUNDED PROJECTS

CALFED

The project will support the CALFED drinking water quality objective by assessing source water quality and developing a planning framework that responds to the assessed conditions. The constituents of most concern in Delta waters with respect to production of drinking water include microbial pathogens, bromide, organic carbon, salinity, turbidity, and nutrients. In addition, the objectionable taste and odor characteristics of Delta drinking water are also a concern. The project includes a water quality monitoring component and sediment characterization task that will yield data useful for assessing source water quality in addition to an indication of potential NPS pollutant sources. **Table 1** provides a brief outline of the how the project will benefit source water supplies in term of the priority constituents (e.g. turbidity).

Costa-Machado Water Act of 2000 (*PROPOSITION 13*)

In March 2000 California voters approved Proposition 13, the Costa-Machado Water Act of 2000 (2000 Water Bond), authorizing the state to sell \$1.97 billion in general obligation bonds to support safe drinking water, flood protection, and water reliability projects throughout the state. Funding allocated from 2000 Water Bond requires that projects include a broad-based nonpoint source component; capable of sustaining water quality benefits for a period of 20 years. In response to this requirement, the WQP will be developed to not only implement best management practices, but to monitor there effectiveness over the next 20-years. Categories of nonpoint source pollution addressed in the WQP will include urban runoff, mining, hydromodification, grazing, on-site disposal systems, and marinas. The WQP will specifically identify how these sources affect applied, beneficial uses of most concern include cold and warm freshwater habitat, municipal and domestic supply, and water contact recreation.

TABLE 1 – WATER QUALITY BENEFITS OF THE PROJECT

Constituents	Problem	Source	Project Benefits
Microbial Pathogens	Public Health Concern	Urban stormwater runoff; livestock operations; recreation; storage reservoirs; and, failing septic systems	-Acquire Baseline Data -Identify Sources -Amend County Ordinance Code to address pathogens -Adopt County-wide WQP - Long-term data tracking
Organic Carbon	React with disinfectants during the treatment process to form disinfection by-products (DBPs) that are a public health concern and will be more stringently regulated in the near future.	Soils, agricultural drainage, urban stormwater, natural plant decay, algae, and WWTP discharges.	-Increase Public Awareness of Issue -Identify sources -Adopt County-wide WQP
Total Dissolved Solids (TDS or salinity)	Reduces the ability to implement local water management programs, such as water recycling, groundwater replenishment, and reduces options for blending with other supplies.	Natural leaching of soils, WWTP(s), and stormwater runoff.	-Acquire Baseline Data -Identify sources -Adopt County-wide WQP -Long-term data tracking
Turbidity	High levels of turbidity adversely affect consumer acceptance and treatment plant operations.	All types of runoff (storm and non-storm), resuspended sediments, erosion, and phytoplankton populations.	-Acquire Baseline Data -Adopt County-wide WQP -Long-term data tracking -Sediment Characterization -Identify sources BMP Evaluation
Nutrients (e.g. Nitrate)	Excess growth of algae in storage reservoirs and in aqueducts, which can result in treatment difficulties and production of unpleasant flavors and odors	Erosion; agricultural runoff, including livestock operations; and urban stormwater runoff	-Acquire Baseline Data -Identify sources -Adopt County-wide WQP

B.6 METHODS USED TO TRACK THE SUCCESS OF MANAGEMENT PRACTICES IN RELATION TO WATER QUALITY IMPROVEMENTS

The WQP will provide guidance on adapting the MRP to evaluate BMPs as they are implemented, expanding the MRP into other hydrologic areas, and responding to data as it's generated. The overall approach emphasizes obtaining pre-BMP implementation data and

conducting an adequate monitoring program to overcome the inherent variability in the chemical composition of urban and rural stormwater runoff, especially from a mass loadings perspective.

The sampling network envisioned in the MRP will provide an indication of whether nonpoint source pollution from various land uses within the County are actually contributing to mass loadings in receiving waters. The MRP will involve sampling for a number of water quality parameters including levels of fecal coliform bacteria, nitrate, heavy metals, oil/grease, herbicides, volatile organic compounds, dissolved oxygen, and sediment. These parameters cover potential sources of containments from a wide range of land uses and will be used as an initial screening tool to verify if and where a problem exists. In addition to water column testing, visual observations will also be documented to generally characterize riparian and aquatic habitat conditions.

The second phase of the MRP will consist of a tracking program for those parameters identified as “constituents of concern” according to the baseline data collection phase and other standard water quality field parameters (e.g. turbidity). This phase of monitoring will be conducted by a volunteer monitoring group under County oversight. Data will be recorded and input into a master database to track improvements. Additionally, the WQP will include criteria for assessing upstream conditions and expanding the MRP to sample smaller, more discrete drainage units determined to be problematic.

ESA’s work elements will also focus on broadly quantifying volume and extent of hillslope and streamside erosion and sediment delivery occurring in the Sullivan Creek watershed, by erosion. This information will be used in estimating the relative proportion of sediment delivery from erosion which is potentially controllable or preventable. The WQP will include criteria for evaluating BMP effectiveness to determine which BMPs, in combination with one another, provide the highest degree of sediment reduction in relation to cost sensitivity.

B.7 OUTLINE OF PROGRAM FOR THE COLLECTION OF DATA CONSISTENT WITH SWRCB REQUIREMENTS TO ENABLE EVALUATION FOR TOTAL MAXIMUM DAILY LOADS (TMDLS)

Water quality data collected as part of the project will be collected consistent with the Final Quality Assurance Project Plan (QAPP). The QAPP documents the requirements and criteria for field and laboratory procedures used during planning and implementation phases of the County’s surface water monitoring program. These requirements and criteria are designed to assure that the data collected during the monitoring program represents, as closely as possible, *in situ* conditions of the monitored watersheds. This objective will be achieved by using standard accepted methodologies to collect and analyze water, sediment, and biota samples. The ability to meet this objective will be assessed by evaluating the laboratory results in terms of detection limits, precision, accuracy, comparability, representativeness, and completeness. No monitoring will be performed until the QAPP is approved.

B.8 DESCRIPTION OF PROJECT OUTREACH, COORDINATION, AND INFORMATION EXCHANGE

Public outreach and informational exchange for the WQP project will be accomplished in several ways. Three public scoping sessions will be held to solicit public input on current water quality problems within the County, their respective locations, and the constituents of concerns (e.g. sediment). Informational exchange will be accomplished primarily through staff coordination and a web link located on the County's web-site. All project deliverables, once finalized, will be available for review at the web address. Project coordination will be achieved through the Water Quality Committee (WQC), which consists of County staff from individual departments. The WQC will be involved throughout the project and will be the primary mechanism for relaying project information to County departments and the community at large.

REFERENCES

- California Rivers Assessment. Information Center for the Environment (ICE). Davis, CA, 1997.
- RWQCB, 1998. Central Valley Regional Water Quality Control Board - Water Quality Control Plan (Basin Plan). Fourth Edition. September 1, 1998.
- SWRCB, 2003. Revision of the Clean Water Act Section 303(d) List of Water Quality Limited Segments, Draft Staff Report. State Water Resources Control Board Division of Water Quality. April 2, 2002