

Central Coast Regional Water Quality Control Board

FACT SHEET

DEVELOPMENT OF TOTAL MAXIMUM DAILY LOADS FOR NUTRIENTS: PAJARO RIVER WATERSHED

What is a Total Maximum Daily Load (TMDL)?

TMDLs are strategies to restore clean water. The federal Clean Water Act requires every state to evaluate its waterbodies and maintain a list of waters that are considered “impaired” either because the water exceeds water quality standards or does not achieve its designated use. For each water on the Central Coast’s “303(d) Impaired Waters List,” the California Central Coast Water Board must develop and implement a plan to reduce pollutants so that the waterbody is no longer impaired and can be de-listed.

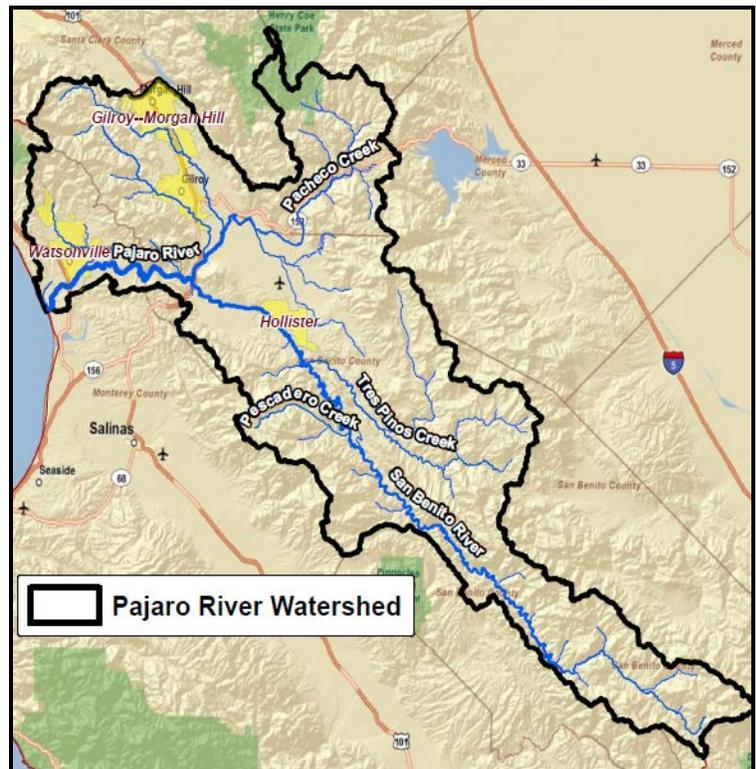
“Total Maximum Daily Load” (TMDL) is a term used to describe the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. More broadly, a TMDL project is an informational tool to assist the State in creating its plan to implement its water quality standards. The TMDL project identifies the probable sources of pollution, establishes the maximum amount of pollution a waterbody can receive and still meet water quality standards, and allocates that amount to all probable contributing sources.

Location and Watershed Description

The Pajaro River Watershed encompasses approximately 1,300 square miles of Santa Clara, San Benito, Santa Cruz, and Monterey counties. Agriculture, including cropland and grazing lands, is the current dominant land use in the valley floor and lower reaches of the watershed, with increasing transition to urban use. Upland reaches of the watershed are characterized by blue oak and coast oak woodland, grasslands, and locally montane hardwood.

Why Do We Need a Nutrients TMDL for the Pajaro River Watershed?

California’s water quality standards designate beneficial uses for each waterbody (e.g., drinking water supply, aquatic life support, recreation, etc.) and the scientific criteria to support those uses. The Central Coast Water Board is required under both state and federal law to protect and regulate beneficial uses of waters of the state.



Pajaro River Watershed

Water Board staff are in the initial phases of developing a nutrients TMDL for the Pajaro River Watershed intended to address aquatic habitat impairments. While nutrients - specifically nitrogen and phosphorus - are essential for plant growth, and are ubiquitous in the environment, they are considered pollutants when they occur at levels which have adverse impacts on water quality; for example when they cause toxicity or eutrophication. This watershed has multiple waterbodies that are impaired on the basis of high nutrients, low dissolved oxygen, and high algal biomass.

Collectively, these impairments suggest these waterbodies are expressing eutrophication. Eutrophication is the excessive and undesirable growth of algae and aquatic plants that may be caused by excessive levels of nutrients. This mode of water quality impairment can affect the entire aquatic food web, from algae and other microscopic organisms, through benthic macroinvertebrates (principally aquatic insect larvae), through fish, to the mammals and birds at the top of the food web.

In addition to detrimental impacts to aquatic habitat, algal blooms resulting from eutrophication may also constitute a potential health risk and public nuisance to humans, their pets, and to livestock. The majority of freshwater harmful algal blooms reported in the United States and worldwide is due to one group of algae, cyanobacteria, although other groups of algae can be harmful. Possible health effects of exposure to blue-green algae blooms and algal toxins can include rashes, skin and eye irritation, allergic reactions, gastrointestinal upset, and other effects. At high levels, exposure can result serious illness or death. These effects are not theoretical; worldwide animal poisonings and adverse human health effects have been reported by the World Health Organization. The California Department of Public Health has documented cases of dog die-offs throughout the state due to blue-green algae. Dogs can die when their owners allow them to swim or wade in waterbodies with algal blooms; the dogs reportedly die due to ingestion associated with licking algae and associated toxins from their coats. Additionally, algal toxins have been implicated in the deaths of central California southern sea otters according to recent findings. Currently, there reportedly have been no confirmations of human deaths in the U.S. from exposure to algal toxins, however many people have become ill from exposure, and acute human poisoning is reported to be a distinct risk

The U.S. Environmental Protection Agency recently reported that nitrogen and phosphorus pollution, and the associated degradation of drinking and environmental water quality, has the potential to become one of the costliest and most challenging environmental problems the nation faces¹. Over half of the nation's streams, including many streams in the lower Pajaro River Watershed, have medium to high levels of nitrogen and phosphorus. Nitrate drinking water standard violations have doubled nationwide in eight years. Algal blooms, resulting from the biostimulatory effects of nutrients, are steadily on the rise nationwide and the related toxins have potentially serious health and ecological effects.

What are the Sources of Nutrient Pollution?

Source analysis is a key component of TMDL development. There are many possible nutrient sources within any given watershed; in general the following can potentially be significant sources of nutrient loads:

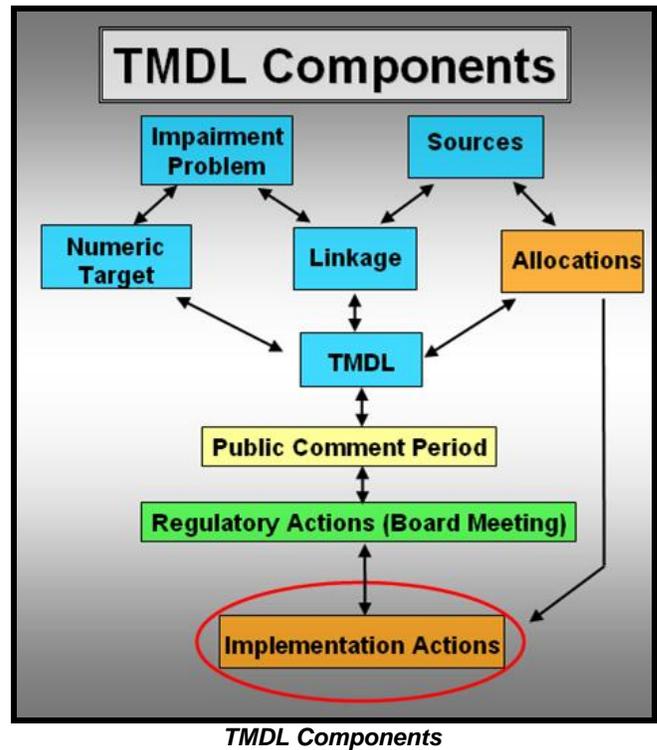
- Urban runoff
- Fertilizer application
- Manure (domestic animals)
- Natural background and atmospheric deposition
- Groundwater (baseflow into streams)

¹ U.S. Environmental Protection Agency: Memorandum from Acting Assistant Administrator Nancy K. Stoner. March 16, 2011. Subject: "Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions".

The TMDL Process

A TMDL is developed by Central Coast Water Board staff and must go through a hierarchy of approvals before it can go into effect. Public participation is an element of TMDL development. Water Board staff notify interested parties of opportunities for public participation through public meetings/workshops, we solicit public comments, and we encourage other forms of public participation through correspondence, email, and other informal contacts.

A TMDL must be approved by the Central Coast Water Board and the U.S. Environmental Protection Agency. Should nutrient TMDL development be merited for the Pajaro Watershed, we anticipate developing this TMDL over the next 12 months and having a draft TMDL report ready for public review by May 2013.



For More Information

The Central Coast Water Board encourages interest and involvement in TMDL projects from stakeholders, interested parties, and the general public. Please refer to the Water Board's TMDL webpage at:

http://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl

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