

# FACT SHEET

## DEVELOPMENT OF TOTAL MAXIMUM DAILY LOADS (TMDLS) FOR ELKHORN SLOUGH WATERSHED

### What is a Total Maximum Daily Load?

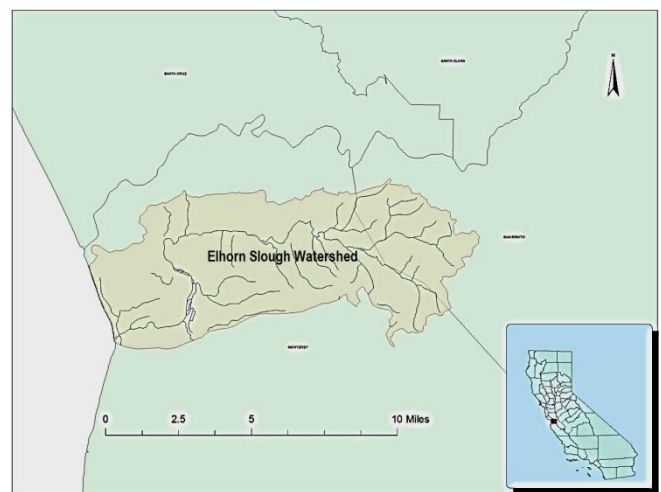
TMDLs are strategies to restore clean water. The federal Clean Water Act requires every state to evaluate its waterbodies and maintain a list of waters that are “impaired” either because the water exceeds water quality standards or does not achieve its designated uses. For each water on the Central Coast’s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

“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. A TMDL study 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 geographic scope of this TMDL encompasses approximately 70 square miles (45,000 acres) of the Elkhorn Slough watershed in northern Monterey and western San Benito Counties. This watershed is also known as the Bolsa Nueva hydrologic unit and is a westerly trending drainage that empties into the Pacific Ocean within the Monterey Bay National Marine Sanctuary waters.

Elkhorn Slough is one of the largest coastal wetlands in California and is a nationally recognized Estuarine Research Reserve. The watershed is characterized by intertidal mudflats, salt marsh, coastal dunes, oak woodlands, chaparral, and upland areas. Nearby land uses include agriculture, including strawberries and other row crops, cattle grazing, and housing.



Elkhorn Slough watershed

### Why Do We Need a Nutrient TMDL for the Elkhorn Slough 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 regulate and protect beneficial uses of waters of the state.

Central Coast Water Board staff has identified impairments of dissolved oxygen, pH, chlorophyll-a, and un-ionized ammonia in surface waters within the Elkhorn Slough watershed. These impairments are secondary indicators of increased nutrient loads. High inputs of organic matter and nutrients such as nitrogen and phosphorous can lead to eutrophication and excess growth of primary producers such as algae. In the absence of sunlight, algal respiration can deplete dissolved oxygen and cause wide fluctuations in pH and dissolved oxygen.

Elevated levels of un-ionized ammonia, nitrite, and nitrate can be toxic to both humans and aquatic life. Designated beneficial uses of surface waters for Elkhorn Slough which may be adversely effected by water quality impairments include cold fresh water habitat (COLD), warm fresh water habitat (WARM), contact and non-contact recreation (REC1 and REC2), and marine habitat (MAR).

Excessive nutrient levels (nitrate and phosphorus) may create adverse impacts on water quality causing biostimulation and low dissolved oxygen conditions. Biostimulation is the excessive and undesirable growth of algae and aquatic plants that are often caused by excessive nutrient levels. 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. Central Coast Water Board staff is in the initial phases of developing a biostimulatory substances TMDL for the Elkhorn Slough watershed.

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 faces<sup>1</sup>. Over half of the nation's streams 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 Water Quality Problems?

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

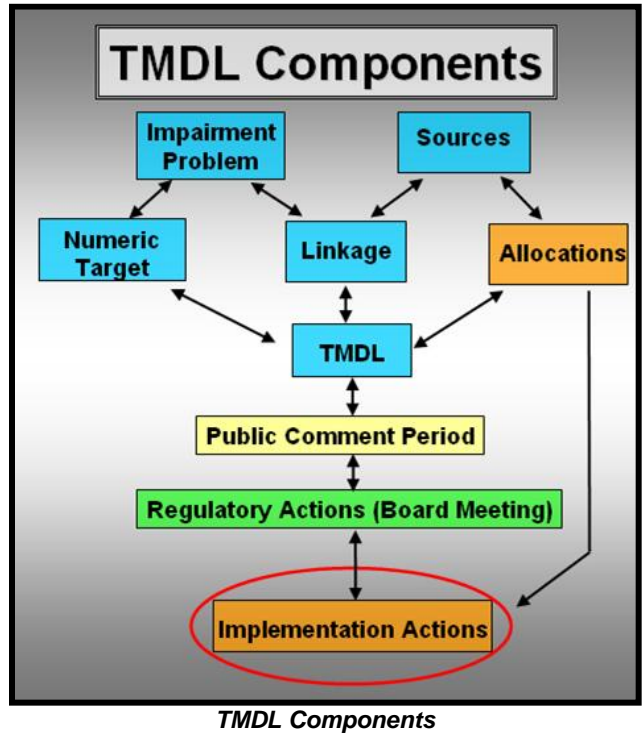
- Urban runoff
- Fertilizer application
- Manure (domestic animals)
- Natural background and atmospheric deposition
- Groundwater (baseflow into streams)

### The TMDL Process

A TMDL is developed by Central Coast Water Board staff and must go through an approval process before it can go into effect. At a minimum, TMDLs must be approved by the Central Coast Water Board and the U.S. Environmental Protection Agency. Public participation is an element of TMDL

development. Central Coast Water Board staff notify interested parties of opportunities for public participation through public meetings/workshops; we also solicit public comments and encourage other forms of public participation through correspondence, email, and other informal contacts.

We anticipate developing this TMDL in 2015.



### For More Information

The Central Coast Water Board encourages your participation in this TMDL project. To receive future project announcements please subscribe to the electronic email list by checking the box for the Elkhorn Slough Biostim TMDL at:

[http://www.waterboards.ca.gov/resources/email\\_subscriptions/reg3\\_subscribe.shtml](http://www.waterboards.ca.gov/resources/email_subscriptions/reg3_subscribe.shtml)

For more TMDL Program information, please refer to the Central Coast Water Board's TMDL webpage at:

[http://www.waterboards.ca.gov/centralcoast/water\\_issues/programs/tmdl](http://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl)

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<sup>1</sup> 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".