



# NONPOINT SOURCE SUCCESS STORY

# California

## Implementing Management Practices Reduces Ammonia and Nitrite in San Antonio Creek

### Waterbody Improved

San Antonio Creek was included on the California 2006 Clean Water Act (CWA) section 303(d) list of impaired waters due to excessive un-ionized ammonia and nitrite and low levels of dissolved oxygen. A total maximum daily load (TMDL) report addressing nitrate, un-ionized ammonia and nitrite was developed in 2015. Actions to reduce agricultural discharges resulted in San Antonio Creek meeting water quality objectives for un-ionized ammonia and nitrite; these two impairments were removed from the 2014/2016 CWA section 303(d) list.

### Problem

The 97,651-acre San Antonio Creek watershed is in Santa Barbara County, just south of the Santa Maria watershed (Figure 1). Land use is comprised primarily of cattle grazing (68 percent) and crop cultivation (15 percent). It has a low level of urban development and the landscape is composed of shrubs, grassland and some forestlands. San Antonio Creek (from Railroad Bridge near the coast to Rancho del las Flores Bridge at Hwy 135) was listed as impaired in 2006 due to excessive amounts of un-ionized ammonia and nitrite. Beneficial uses that were impacted include Municipal and Domestic Water Supply, Safe to Swim (water contact recreation), aquatic life uses, Safe to Eat Fish (commercial and sport fishing), and agricultural uses. Discharges from irrigated agricultural uses in the area were identified as the cause of the impairment. Prior to the listing, 16 of 86 samples exceeded the water quality objective of 0.025 milligrams per liter (mg/L) for un-ionized ammonia. For nitrite, 5 of 52 samples taken in 2001–2006 exceeded the California Office of Environmental Health Hazard Assessment (OEHHA) nitrite public health goal of 1 mg/L.

### Story Highlights

The San Antonio Creek Coordinated Management Plan was developed in 2003 to help tackle many of the complex and interrelated issues affecting the watershed. The management plan provides landowners with planning information to support and ensure that the natural resource issues of concern are addressed while providing full utility of the land. The project was funded through a grant provided by the State Water



Figure 1. San Antonio Creek is a coastal watershed between San Francisco and Los Angeles.

Resources Control Board under the state Costa-Machado Water Act of 2000 (Prop 13).

In 2006 the California Central Coast Regional Water Quality Control Board (CCRWQCB) issued a new Agricultural Order that required producers in the region to enroll in a program and implement actions to achieve TMDL load allocations, including conducting surface and ground water monitoring, developing nitrogen management plans, submitting reports on the total nitrogen applied for any crop with a high potential of loading nitrogen into groundwater, and implementing management practices to reduce nutrient loading. Carrying out the Agricultural Order has reduced nitrogen in San Antonio Creek.

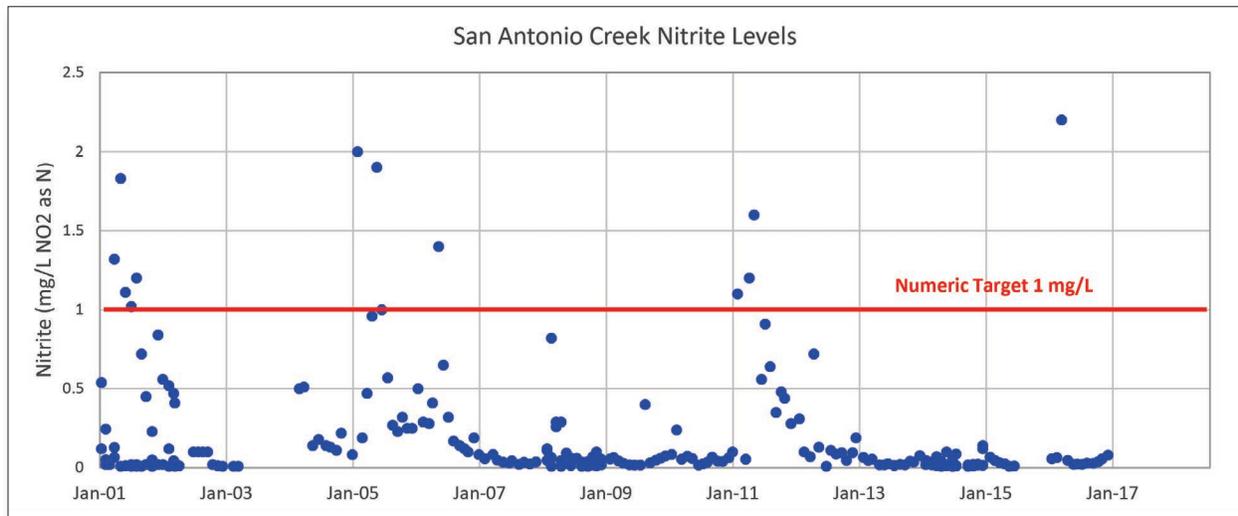


Figure 2. Central Coast Ambient Monitoring Program data (2001–2017) show nitrite levels in San Antonio Creek now meet the numeric target.

A TMDL report addressing nitrate, un-ionized ammonia and nitrite was completed in 2015. While developing the San Antonio Creek watershed TMDL for nitrate, an illicit discharge into upper San Antonio Creek was identified. The end-of-pipe discharge originated from an agricultural tile drain system. This discharge of nitrogen was eliminated in 2014 by working with the landowner to intercept the discharge within the agricultural operation property, pump the intercepted water into an impoundment located one-quarter of a mile away, and disconnect the tile drain system from the creek. After elimination of the discharge, monitoring in upper San Antonio Creek has shown only very low concentration of nutrients.

## Results

San Antonio Creek currently meets water quality standards for un-ionized ammonia and nitrite. The OEHAA set a public health goal (PHG) numeric target of 1 mg/L nitrite for municipal drinking water. This PHG is applied to surface water monitoring samples as well. That goal has been met in the creek since 2007, with few very exceptions (Figure 2). Therefore, CCRWQCB delisted San Antonio Creek for un-ionized ammonia and nitrite from the CWA section 303(d) list in the 2014/2016 California Integrated Report. A TMDL for dissolved oxygen and other nitrate threats is scheduled to be completed by 2020 to address continuing impairments.

## Partners and Funding

CCRWQCB develops and enforces water quality objectives. It also implements the Agricultural Order through outreach; technical assistance; and compliance evaluations, inspections, and enforcement to assess implementation of practices. The Agricultural Regulatory Program for the Central Coast Region is primarily funded by the state, with support from CWA section 319 funding (average of \$232,000 annually). OEHAA is the lead state agency assessing health risks posed by hazardous substances; it also provides scientific expertise to help state and local agencies make regulatory and public health decisions.

The Cachuma Resource Conservation District (RCD) works in partnership with the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) and many other agencies, organizations, businesses and landowners. They support and promote economically viable and environmentally sustainable farming and ranching operations. NRCS provides support for implementing Conservation Practices in the watershed through NRCS EQIP. In addition, landowners funded many practices recommended through NRCS and RCD general technical assistance and conservation planning, and for Agricultural Regulatory Program compliance.



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