



Improving Water Quality in the Guadalupe River Above Canyon Lake A Project to Protect Recreational Uses

In the Guadalupe River Above Canyon Lake, bacteria concentrations have sometimes been elevated, indicating a possible health risk to people who swim or wade in the water body—activities called “contact recreation” in the state’s standards for water quality. Bacteria are commonly found in the intestines of humans, livestock, wildlife, and pets. High concentrations of these bacteria in water may indicate the presence of disease-causing microorganisms.

TCEQ completed a TMDL for bacteria and assisted stakeholders in developing a plan to implement the TMDL and improve water quality in the river. The goal of a TMDL is to determine the amount (or load) of a pollutant that a body of water can receive and still support its designated uses. The allowable load is then allocated among categories of sources within the watershed. Stakeholders develop an implementation plan (I-Plan) with measures that reduce pollutant loads.

Learn more about water quality standards, monitoring, and TMDLs by reading [Preserving and Improving Water Quality](#)¹, available on our website or in print.

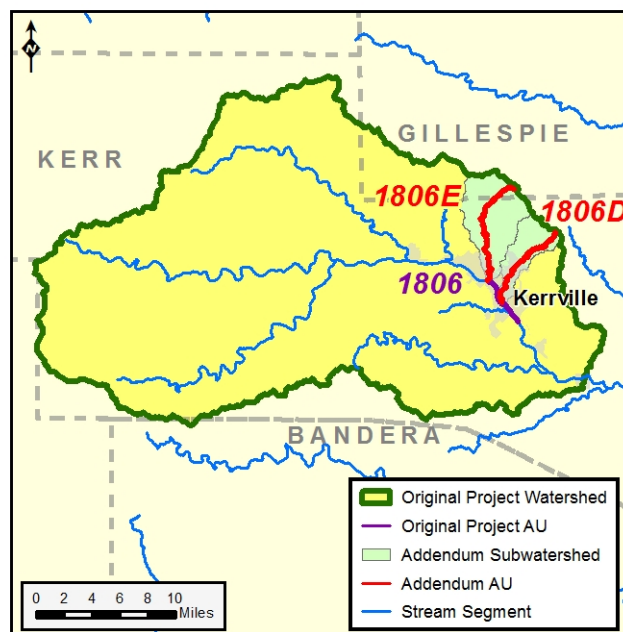
Watershed Description

This river segment is in south-central Texas. Its upstream end is the confluence of the North and South Forks of the Guadalupe River in Kerr County. Its downstream end is Canyon Reservoir in Comal County. Only a small part of Segment 1806, located within the City of Kerrville, is impaired for contact recreation—the Guadalupe River from its confluence with Town Creek downstream to Flat Rock Lake.

The watershed of the Guadalupe River Above Canyon Lake’s is principally a rocky, moderately dissected terrain fed by springs issuing from beds of limestone. The land is used for recreation, raising livestock, and small grain crops. During the drier months of summer, pumps are used to divert water for irrigation and domestic purposes. Base flow of the Upper Guadalupe River is sustained entirely by groundwater discharge, the main source of which is Edwards-Trinity aquifer.

TMDL Development

The project was initiated in September 2004. The TCEQ contracted with James Miertschin & Associates, Inc. to assist in TMDL activities. Project personnel conducted an investigation that identified possible point and nonpoint sources of bacteria and quantified



the appropriate reductions necessary to comply with established water quality standards.

The possible bacteria sources include urban storm-water runoff, failing septic systems, leaking collection lines in sanitary sewer infrastructure, swimmers, nesting birds at bridge crossings, domestic waterfowl, livestock, and wild animals.

In 2014, the tributaries Quinlan Creek (Segment 1806D) and Town Creek (Segment 1806E) were added to the 303(d) list for nonsupport of contact recreation. Since the adopted TMDL was for the entire watershed, the TMDLs for these two tributaries were added through an addendum in the state’s Water Quality Management Plan Update for January 2018.

Implementation Plan

The stakeholders developed an I-Plan, which TCEQ approved in August 2011. The ultimate goal of their I-Plan is to reduce bacteria concentrations to within levels that protect the safety of swimmers.

The Upper Guadalupe River Authority (UGRA) manages the implementation of the plan and encourages continued stakeholder involvement.

¹ <https://www.tceq.texas.gov/publications/gi/gi-351>

In 2018, stakeholders and UGRA revised the I-Plan to be effective through state fiscal year 2022.

Implementation Activities

UGRA coordinated with personnel from the City of Kerrville, Kerr County, and the Texas Department of Transportation to install structures that deter birds on bridges, manage waterfowl along the river, and develop a “Homeowners Septic System Guide.” UGRA is also collecting routine water samples to measure the impact of these measures on bacteria levels in the river.

Through June 2017, the Upper Guadalupe River Authority’s Bacteria Reduction Plan has funded the installation of twenty-two pet waste stations in the community. In 2014, the Flat Rock Park pet waste stations alone collected over 1,900 pounds of waste, which prevented this waste from washing into the river.

Public Participation

In all its projects, TCEQ seeks opinions and information from people who represent government, permitted facilities, agriculture, business, environmental, and community and private interests in the watershed. TCEQ solicited advice and comment from the public working in partnership with UGRA. Several public meetings were held to engage stakeholders in the development of the TMDL and I-Plan.

For More Information

E-mail us at tmdl@tceq.texas.gov, call us at 512-239-6682, or visit the project website at:

www.tceq.texas.gov/waterquality/tmdl/65-guadalupeabovecanyon.html

Learn more about the TMDL Program on our website at www.tceq.texas.gov/goto/tmdl/.

TMDL and I-Plan Approval

TCEQ Adoption: July 25, 2007

EPA Region 6 Approval: September 25, 2007

TCEQ Approval of I-Plan: August 31, 2011

Highlights

- Installation of bird deterrent structures began in December 2012.
- The City of Kerrville has spent more than \$14.9 million to improve wastewater collection systems since 2011.
- The UGRA’s two-pronged “Trash Free” initiative promotes both public awareness and community involvement in the watershed. The UGRA and its partners collect trash year-round from river crossings throughout the watershed.
- The second prong of the Trash Free initiative is the annual UGRA-sponsored River Cleanup. Each July, volunteers collect and sort trash from different reaches along the river. In 2018, 505 volunteers collected 10,480 pounds of trash in Kerr County.
- Assessment in 2014 indicated that the impaired portions of Segment 1806 are fully supporting the contact recreation use. However, the tributaries Quinlan Creek (Segment 1806D) and Town Creek (Segment 1806E) were added for nonsupport of contact recreation in 2014. Since the adopted TMDL was for the entire watershed, the TMDLs for these two tributaries were added through an addendum in the state’s January 2018 Update to the Water Quality Management Plan. The EPA approved the addendum on May 8, 2018.
- In 2018, stakeholders and the Upper Guadalupe River Authority revised the I-Plan to be effective through state fiscal year 2022.