



NONPOINT SOURCE SUCCESS STORY

Texas

Implementing Conservation Practices and Conducting Watershed Outreach Improved Water Quality in Sulphur Creek

Waterbodies Improved

Sulphur Creek, a tributary of the Lampasas River, was listed as impaired on the 2016 *Texas Integrated Report and 303(D) List* due to high levels of *Escherichia coli* (*E. coli*) bacteria. The Texas State Soil and Water Conservation Board (TSSWCB) used Clean Water Act (CWA) section 319(h) funding from the U.S. Environmental Protection Agency (EPA) and partnered with Texas A&M AgriLife Research and local Soil and Water Conservation Districts (SWCD) to develop a watershed protection plan (WPP) for the Lampasas River. During the WPP development process, stakeholders learned about their local water quality issues and developed management measures to address them. Water quality was improved due to the implementation of management measures identified in the WPP and one assessment unit (AU) of Sulphur Creek (1217B_02) was removed from the state's list of impaired waters in 2020.

Problem

Sulphur Creek (Figure 1) is a tributary of the Lampasas River in the Brazos River Basin. The watershed is in central Texas and lies in the eastern Texas Hill Country, which is dominated by rangeland and dotted with small communities that serve the local agriculture-based economies. Outside of these small towns, the landscape is most suitable for grazing by cattle, goats, and sheep and for engaging in outdoor recreation, such as hunting and camping.

Water quality data collected in Sulphur Creek in 2007–2014 showed that *E. coli* levels exceeded the bacteria water quality standard for contact recreation. As a result, the Texas Commission on Environmental Quality (TCEQ) added the creek to the 303(d) list in the 2016 *Texas Integrated Report* for not supporting its primary contact recreation use.

Story Highlights

TSSWCB partnered with Texas A&M AgriLife Research in 2009 to develop a WPP for the Lampasas River. Throughout the planning process, stakeholders worked together to holistically address the sources and causes of impairments and threats to surface water resources within the watershed. The Lampasas River WPP was accepted by EPA in 2013.

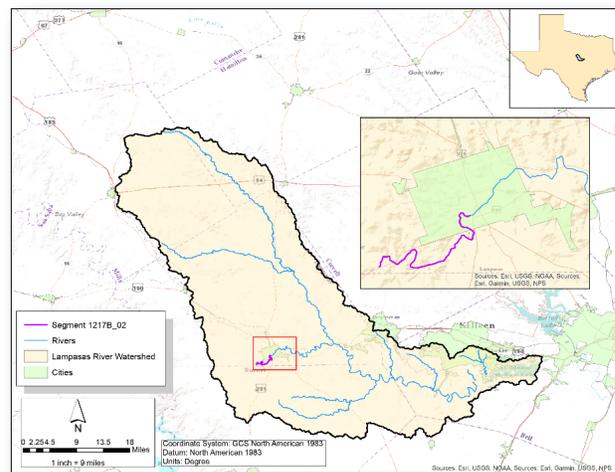


Figure 1. Sulphur Creek is in the Lampasas River watershed in central Texas.

The Agriculture Nonpoint Source Work Group focused their efforts on addressing contributions from livestock, whitetail deer and feral hogs. They recommended that individual agriculture operations implement voluntary water quality management plans (WQMPs), and they recommended that the Texas Parks and Wildlife Department adopt habitat management programs, such as wildlife management plans and managed land deer programs to mitigate the bacteria contribution from whitetail deer. The work group believed that feral hogs also needed to be

addressed, and they recommended creating a watershed-specific feral hog specialist position to provide technical assistance to landowners.

The Urban Nonpoint Source Work Group addressed concerns about wastewater, stormwater and domestic dogs. The Wastewater Work Group recommended that a detailed database and inventory of all on-site sewage facilities within the watershed be developed and that aging systems in particular subwatersheds be repaired or replaced.

The TSSWCB and the Hill Country SWCD partnered to develop and implement eight WQMPs in the impaired watershed between 2013 and 2018. Most of the WQMPs were on grazing operations, covering 1,929 acres. These plans included alternative water sources, prescribed grazing, pasture and range planting, cross-fencing, nutrient management and brush management. In addition, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) worked with landowners to implement conservation practices on over 3,000 acres using Environmental Quality Incentives Program funding. The conservation practices implemented included prescribed grazing, pasture and range planting, prescribed burning, cover crops and brush management.

Results

Water quality monitoring data show that the long-term *E. coli* geometric means in the upper portion of Sulphur Creek (AU 1217B_02) are meeting the state water quality standard of 126 colony-forming units (cfu) per 100 milliliters (mL) of water for contact recreation. Data collected from 2011 to 2018 show a geometric mean of 45.51 cfu/100 mL for the 2020 reporting period. As a result, TCEQ removed Sulphur Creek AU 1217B_02 from the 303(d) list in the 2020 *Texas Integrated Report*. The success of this effort can be attributed to increased stakeholder awareness and knowledge of water quality issues following the



Figure 2. Watershed restoration efforts have improved Sulphur Creek.

watershed planning process and the implementation of conservation practices in the watershed. Water quality monitoring continues to track and measure interim progress to implement the WPP and ensure the restoration effort of Sulphur Creek remains a success (Figure 2).

Partners and Funding

Over \$498,422 in EPA CWA section 319(h) funds (provided by the TSSWCB), combined with more than \$332,281 in nonfederal matching funds from Texas AgriLife Research, supported the development and implementation of the Lampasas River WPP. The TSSWCB also provided \$167,140 in 319(h) funding to the Hill Country SWCD for the development and implementation of WQMPs in the watershed.

The TSSWCB, Hill Country SWCD and NRCS worked with landowners to voluntarily implement conservation practices to reduce the impact of agricultural operations in the watershed. Approximately \$43,300 in state funding and \$234,875 in federal Farm Bill funding was provided to landowners as financial incentives to implement best management practices in the Sulphur Creek watershed.



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