



# NONPOINT SOURCE SUCCESS STORY

# Texas

## Conservation Practices on Poultry and Grazing Operations and Forestry Outreach Leads to Water Quality Improvement in Toledo Bend Reservoir

### Waterbody Improved

Low dissolved oxygen (DO) levels in Toledo Bend Reservoir prompted the Texas Commission on Environmental Quality (TCEQ) to add it to the state's Clean Water Act (CWA) section 303(d) list of impaired waters in 2000 for not supporting its aquatic life use. The Texas State Soil and Water Conservation Board (TSSWCB) partnered with the Shelby County Soil and Water Conservation District (SWCD), U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) and the Texas A&M Forest Service to initiate an effort to provide technical and financial assistance for the implementation of best management practices (BMPs) in the watershed. As a result of these efforts DO levels increased and TCEQ removed Toledo Bend Reservoir, Tenaha Creek Arm, from the state's list of impaired waters in 2010.

### Problem

Toledo Bend Reservoir is on the Texas–Louisiana border and was created by impounding the Sabine River. The Tenaha Creek Arm of the Toledo Bend Reservoir (Figure 1) is fed by Tenaha Creek, which extends northwest into Shelby County, Texas. The watershed is dominated by mixed hardwood and softwood forests, known as the Pineywoods of Texas. Agriculture (mostly poultry operations) and silviculture are the main land uses in the watershed. Low DO levels can be caused by elevated nutrient levels that result in algal blooms and other oxygen-demanding materials decomposing in water. The watershed contains agricultural and forestry operations, which have the potential to be a source of nutrient loading if they are not properly managed.

Toledo Bend Reservoir is designated for *high aquatic life use* in freshwater. To meet the state's water quality standards for this designated use, Toledo Bend Reservoir must maintain a 24-hour average DO concentration above 5.0 milligrams per liter (mg/L), and a 24-hour minimum sample concentration above 3.0 mg/L. The Tenaha Creek Arm of Toledo Bend Reservoir (segment 0504 \_ 06) first appeared on the state's CWA section 303(d) list of impaired waters in 2000 for not meeting the standard for DO.



The Tenaha Creek Arm of the Toledo Bend Reservoir is in Shelby County, Texas.

### Project Highlights

Beginning in 2001, the TSSWCB partnered with the Shelby County SWCD and local landowners to voluntarily implement BMPs such as waste utilization, nutrient management and grazing management on agriculture lands in the Toledo Bend Reservoir watershed.

Specifically, in the Tenaha Creek watershed, a total of 26 water quality management plans (WQMPs) were developed on agricultural operations covering 4,155 acres. The USDA NRCS developed conservation plans on 31,142 acres, with practices consisting of nutrient management, poultry mortality management, forestry practices and grazing management on agricultural and silvicultural operations in the watershed.

In addition, from 2002 to 2009, the TSSWCB partnered with the Texas A&M Forest Service (formerly Texas Forest Service) to administer the Texas Silviculture Nonpoint Source Abatement project. This effort included forestry BMP education and technical assistance for foresters, landowners and loggers, in coordination with local, state and federal agencies, as well as forestry BMP effectiveness monitoring.

## Results

Water quality monitoring data from the assessment period of 2007–2009 showed the 24-hour average and the 24-hour minimum sample for DO levels was above 5.0 mg/L and 3.0 mg/L, respectively, indicating that the Toledo Bend Reservoir complied with the state’s water quality standards (Figure 2). As a result, TCEQ removed Toledo Bend Reservoir, Tenaha Creek Arm (segment 0504 \_ 06) from the state’s CWA section 303(d) list of impaired waters in 2010 for DO.

The success of this effort is attributed to the voluntary implementation of BMPs by landowners and the use of education and outreach paired with technical assistance. Landowners have continued to implement agricultural BMPs with assistance from TSSWCB, Shelby County SWCD and NRCS after the assessment period. This, along with continued

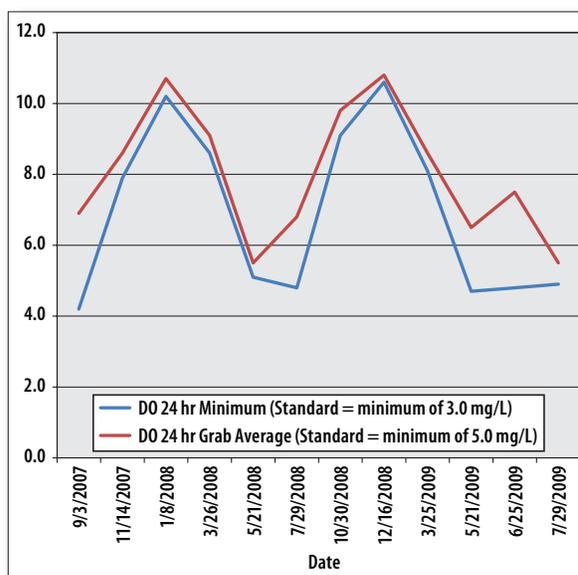


Figure 2. Dissolved oxygen data for Toledo Bend Reservoir Tenaha Creek Arm (station 20283), 24-hour average and 24-hour minimum.

forestry BMP education and implementation, will ensure the success of this restoration effort.

## Partners and Funding

The TSSWCB provided \$1,060,565 in CWA section 319(h) funds and \$73,448 in state funds paired with \$180,000 in nonfederal funds from Texas A&M Forest Service and \$567,756 from local landowners to support implementation efforts in the Toledo Bend watershed. USDA NRCS provided more than \$209,000 in federal Farm Bill funding to producers in the watershed.



U.S. Environmental Protection Agency  
Office of Water  
Washington, DC

EPA 841-F-15-001GG  
July 2015

### For additional information contact:

**T.J. Helton**  
Texas State Soil & Water Conservation Board  
254-773-2250 • thelton@tsswcb.texas.gov