



NONPOINT SOURCE SUCCESS STORY

Louisiana

Implementing Best Management Practices on Pasture Reduced Bacteria Levels in Little Silver Creek

Waterbody Improved

Bacteria loadings from pasture and livestock led to high bacteria counts in Louisiana's Little Silver Creek that violated water quality standards. As a result, the Louisiana Department of Environmental Quality (LDEQ) added Little Silver Creek to its 2008 Clean Water Act (CWA) section 303(d) list of impaired waters for failing to attain its primary and secondary contact recreation uses due to fecal coliform bacteria. Agricultural producers used pasture renovators, AerWays and grain drills to increase water infiltration and decrease the amount of fecal coliform runoff to the creek. As a result, fecal coliform levels decreased and Louisiana removed the fecal coliform impairment for Little Silver Creek from its 2014 list of impaired waters.

Problem

The 13-mile-long Little Silver Creek is a tributary to the Bogue Chitto River, which is in the Pearl River Basin in eastern Louisiana, close to the Mississippi border. The Pearl River Basin is bordered on the west and south by the Lake Pontchartrain Basin. Land use in the Little Silver Creek watershed is primarily pasture land, forest land and crop land (Figure 1). The watershed supports approximately three dairy farms and 30 beef and horse producers (with around 2,700 head of livestock spread across 10,832 acres).

Bacteria loadings from pasture land and livestock led to high bacteria counts in Louisiana's Little Silver Creek. Louisiana's water quality standards for primary contact recreation require that no more than 25 percent of the fecal coliform samples collected on a monthly or near-monthly basis from May to October may exceed a fecal coliform density of 400 colonies per 100 milliliters of water (col/100 mL). For secondary contact recreation, no more than 25 percent of the fecal coliform samples collected on a monthly or near-monthly basis may exceed a fecal coliform density of 2,000 col/100 mL year-round.

Monthly water quality sampling in 2006 (Figure 2) indicated that the fecal coliform standard was not being met due to an exceedance rate of 60 percent and 36 percent for primary and secondary contact recreation standards, respectively. As a result, LDEQ added Little Silver Creek to Louisiana's 2008 CWA section 303(d) list of impaired waters for failing to attain its primary/secondary recreation designated use due to high levels of fecal coliform bacteria.

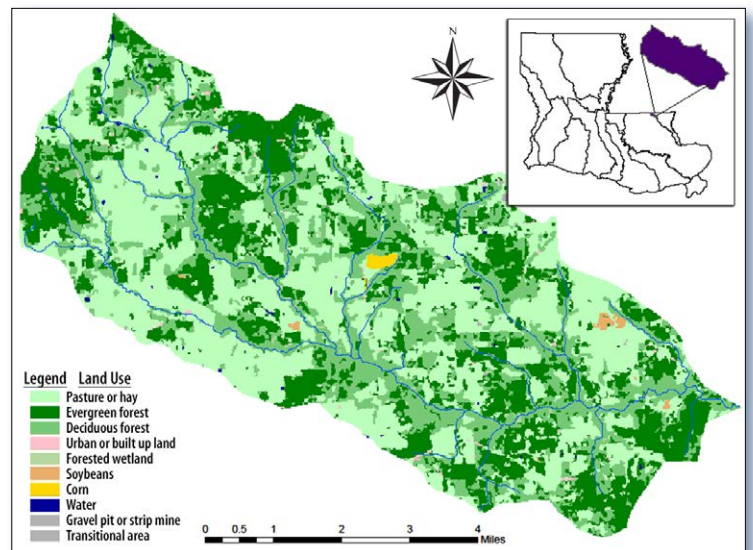


Figure 1 . The Little Silver Creek watershed is in eastern Louisiana.

A total maximum daily load (TMDL) was completed for fecal coliform bacteria in August 2010. To meet the state's water quality standards, the TMDL indicated that fecal coliform bacteria must be reduced by 68 percent during the winter months and 98 percent during the summer months.

Project Highlights

The Capital Resource Conservation and Development (RC&D) Council used CWA section 319 funds to purchase grain drills, pasture renovators and AerWay equipment, which were then provided to landowners through a low-cost rental program.

Use of the equipment improves soil conditions and reduces polluted runoff. In 2009, landowners used grain drills on 2,248 acres, allowing for direct seeding of pasture sod without tilling the landscape. According to an analysis using the U.S. Department of Agriculture's Revised Universal Soil Loss Equation (RUSLE), using this equipment lowered the estimated annual sediment loss from 10 tons per acre per year to 1 ton per acre per year. In addition, because less fertilizer is needed on land prepared with grain drills, less polluted runoff leaves the pasture areas.

From 2010 to 2011, landowners used pasture renovators on 275 acres. Pasture renovators use blades to slice through dense pasture sod and fracture the pasture soil, allowing water to penetrate to the plant root zone. This process reduces runoff by allowing for better plant growth in the pasture and decreased erosion. Farmers noted healthier grasslands when this practice was applied.

In 2011, 42 producers used AerWay aerators on 2,003 acres. AerWay equipment has metal tines that break and lift the soil, allowing direct broadcast of pasture sod seeds without tilling. According to the RUSLE analysis, the use of AerWay equipment reduced soil erosion by 15,623 tons per acre per year in the Little Silver Creek watershed. Other best management practices (BMPs) implemented in the watershed included conservation cover, prescribed grazing, waste recycling and nutrient management.

Results

The rapid improvement in water quality following BMP implementation indicates that the major source of bacteria impairment was addressed by restoration efforts. Monthly bacteria data from 2012 and 2013 (see Figure 2) indicated that in May–October, zero of six values exceeded 400 col/100 mL (0 percent exceedance rate); year-round, one of 12 values exceeded 2,000 col/100 mL (8 percent exceedance rate). These data show that fecal coliform bacteria concentrations are below the 25 percent exceedance rate maximum identified in the applicable water quality standards. As a result, LDEQ removed the fecal coliform impairment for Little Silver Creek from its 2014 list of impaired waters. The farmers continue to use the equipment on the pasture lands to maintain these improvements.

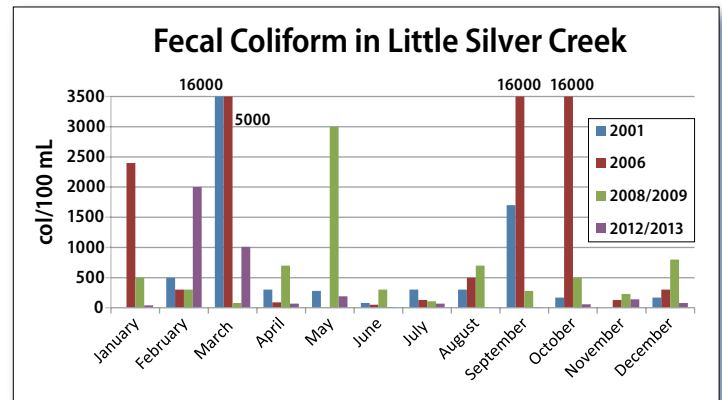


Figure 2. Monthly fecal coliform data collected in Little Silver Creek show violations of the water quality standard in 2006. Three of five values collected during May–October 2006 exceeded 400 col/100 mL (a 60 percent exceedance rate) and four of eleven values collected year-round in 2006 exceeded 2,000 col/100 mL (a 36 percent exceedance rate). By 2012/2013, data showed that the creek met water quality standards.

Partners and Funding

Numerous federal, state and local partners contributed to the water quality improvement in the Little Silver Creek watershed. The pasture renovator project received \$9,500 in CWA section 319 funds with an in-kind match of \$22,911 provided by the Capital RC&D Council and participating landowners. The grain drill project received \$74,000 in CWA section 319 funds with a match of \$94,164 provided by the local soil and water conservation districts (including the East Baton Rouge, East Feliciana, West Feliciana, St. Helena, Tangipahoa and Bogue Chitto soil and water conservation districts); the Louisiana Cattlemen's Association; and the Kentwood, Spring Creek and Tri-Parish farmers' co-ops. The AerWay project received \$34,500 in CWA section 319 funds with an in-kind match of \$116,889 provided by partnering producers and the Kentwood and Spring Creek co-ops.

Additional funding sources used to support watershed improvement projects within the Silver Creek watershed include the U.S. Department of Agriculture's Environmental Quality Incentives Program, Wildlife Habitat Incentives Program, Conservation Reserve Program and Conservation Technical Assistance Program.



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