NONPOINT SOURCE SUCCESS STORY

Mississippi

Implementing Conservation Practices Reduced Polluted Runoff and Restored the Biological Integrity of Fannegusha Creek

Waterbody Improved

Sediment and nutrient inputs from agriculture and silviculture activities in Mississippi's Long Creek-Fannegusha Creek watershed contributed to a biological impairment in Fannegusha Creek. As a result, the Mississippi Department of Environmental Quality (MDEQ) placed Fannegusha Creek on the state's 2002 Clean Water Act (CWA) section 303(d) list for aquatic life use impairment. Implementing best management practices (BMPs) through the U.S. Department of Agriculture Natural Resource Conservation Service's (USDA NRCS's) Environmental Quality Incentives Program (EQIP) helped to abate sediment and nutrients entering the streams in the watershed from agriculture, silviculture and cattle activities. As a result of the conservation practices implemented in the watershed, impacts from sediment and nutrients were reduced and the water quality in Fannegusha Creek improved. In 2018, Fannegusha Creek was assessed as attaining the aquatic life use in the state's CWA section 305(b) report and was removed from the impaired waters list.

Problem

Fannegusha Creek is in the Long Creek-Fannegusha Creek watershed in Mississippi's Holmes County. The watershed spans approximately 29,084 acres, and is comprised of 70.5% forest, 13% pasture/grassland, 7% cropland, 3.4% urban, 3.3% wetland, 2.2% scrub-barren, and 0.6% water (Figure 1). Fannegusha Creek represents the mainstem drainage of the watershed, and is on the border between the steeper slopes found in the Bluff Hills region and the flatter landscape of the Mississippi Alluvial Plain. Sediment and nutrient enrichment from agriculture, silviculture and cattle activities in the watershed all impact water quality in Fannegusha Creek.

Biological community data are routinely used by MDEQ to determine if streams are healthy enough to support a balanced aquatic community. Fannegusha Creek was monitored in 2001 as part of Mississippi's biological monitoring program. Using MDEQ's index of biological integrity, the Mississippi Benthic Index of Stream Quality (M-BISQ), Fannegusha Creek scored 47.37, which was approximately 10 points below the state attainment threshold used to assess aquatic life use support for this region of the state (East Bioregion).

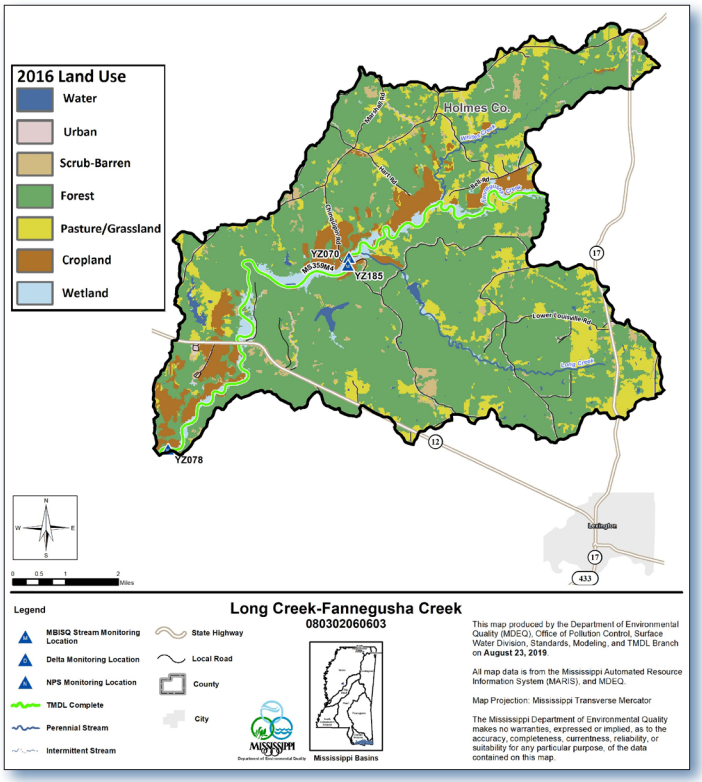

Figure 1. Long Creek-Fannegusha Creek is in Mississippi's Yazoo River basin.

Story Highlights

EQIP, a voluntary conservation program offered by the USDA NRCS, provides financial and technical assistance to agricultural and forestry producers to address natural resource concerns and deliver environmental benefits. From 2008 through 2018, NRCS partnered with the Holmes County soil and water conservation district and local producers to implement BMPs in the Long Creek-Fannegusha Creek watershed using EQIP funds (Table 1). BMPs addressed pollution sources from livestock, cropland, and eroding streambanks (Figures 2 and 3). The implementation of these BMPs are estimated to save 1,627 tons of soil per year, with additional load reductions of 2,689 pounds per year of phosphorus and 12,425 pounds per year of nitrogen.

Results

In 2014 MDEQ returned to Fannegusha Creek to collect biological community data. The score was 30 points above the attainment threshold used to assess aquatic life use support for this region. Using this 2014 biological community data, a 14.07-mile segment of Fannegusha Creek was assessed as attaining the aquatic life use in the 2016 CWA section 305(b) report and was removed from the state's impaired waters list.

Table 1. Best management practices installed in the Long Creek-Fannegusha Creek watershed

BMP type installed	Amount installed
Subsurface drain	2,500 ft
Watering facility	3
Prescribed grazing	224.5 ac
Pasture/hayland management	90 ac
Pond	21
Irrigation water management	156 ac
Irrigation pipeline	1,320 ft
Structure for water control	1
Terrace	3,500 ft
Heavy use area protection	13,640 ft^2
Grade stabilization structure	24
Pasture/hayland planting	29.4 ac
Fence	82,439 ft
Diversion	700 ft
Dike	100 ft
Critical area planting	192.3 ac

Notes: ac = acres, ft = feet, ft^2 = square feet.

Partners and Funding

The restoration of Fannegusha Creek was a collective effort between USDA NRCS, the Holmes County soil and water conservation district, and local producers. From 2008 through 2018, a total of $645,516.66 in EQIP funds were used in the Long Creek-Fannegusha Creek watershed.

Figure 2. Grade stabilization structures were used to prevent erosion of streambanks.

Figure 3. Fencing was used to provide a barrier to control livestock and manage sensitive riparian areas.

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