



Section 319

NONPOINT SOURCE PROGRAM SUCCESS STORY

Georgia

Implementing Agricultural Best Management Practices Increases Dissolved Oxygen Levels in Williamson Swamp Creek

Waterbody Improved

Polluted runoff from pasture-grazing cattle and cropland activities contributed sediment to Georgia's Williamson Swamp Creek. The additional sediment increased the sediment oxygen demand, leading to dissolved oxygen (DO) levels too low to meet the criteria that support the creek's fishing designated use. As a result, in 2002 the Georgia Environmental Protection Division (GEPD) added a 9-mile segment of the creek to its Clean Water Act (CWA) section 303(d) list of impaired waters for DO impairment. Farmers installed a number of agricultural best management practices (BMPs) to reduce sediment and nutrient runoff from pasturelands adjoining the creek's impaired segments. Water quality improved, prompting GEPD to remove the 9-mile segment from the state's list of impaired waters in 2010 for DO impairment.

Problem

Williamson Swamp Creek is a 52.4-mile-long tributary to the Ogeechee River in the Coastal Plain Red Uplands ecoregion of Georgia, an area that includes mostly well-drained soils with a brown or reddish brown loamy or sandy surface layer and red subsoils (Figure 1). The 165,624-acre Williamson Swamp Creek watershed includes primarily pastureland, cropland, and hay fields (40 percent), as well as forest and woodland on the steeper slopes (38 percent).

Monitoring conducted in 2002 showed that a 9-mile segment of the creek, flowing through Washington and Jefferson counties (north of the confluence with the Ogeechee River in south central Georgia), sometimes failed to meet the DO criteria to support the fishing designated use for warm-water fish species. The DO criteria require that a waterbody maintain a minimum daily average of 5.0 milligrams per liter (mg/L) and no less than 4.0 mg/L DO at all times (Figure 2). On the basis of these data, the state added the 9-mile segment of the creek to its 2002 CWA section 303(d) list of impaired waters for DO impairment.

A total maximum daily load (TMDL) study for DO levels in the Ogeechee River Basin, which includes Williamson Swamp Creek, was developed by the GEPD and approved by EPA in 2007. The TMDL identified the primary contributors to DO impairment as land-disturbing activities (specifically

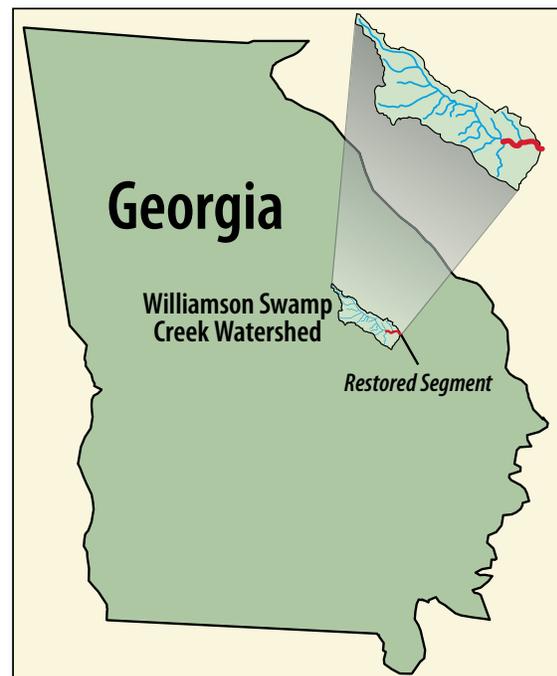


Figure 1. The 165,624-acre Williamson Swamp Creek watershed is in eastern Georgia.

polluted runoff from pasture-grazing cattle and cropland activities), natural contributions of oxygen-demanding organic materials (wetland and swamps with organically rich bottom sediments, and direct leaf litter fall onto water surfaces and adjacent floodplains from overhanging trees and vegetation).

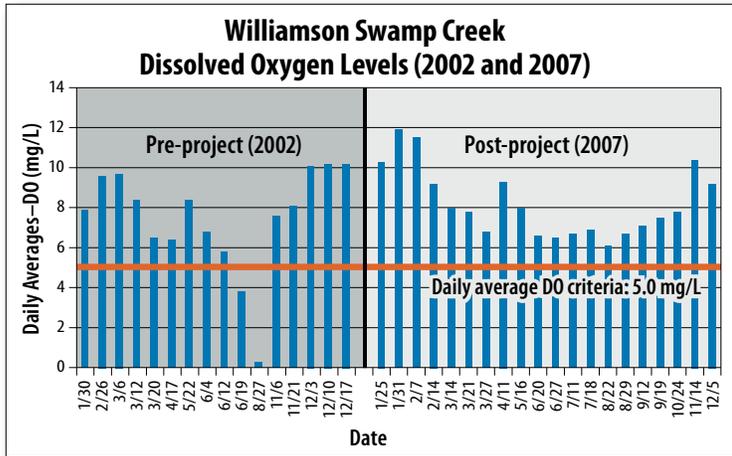


Figure 2. Data recorded in 2002 showed that DO levels failed to meet the water quality standard twice. Data recorded after project implementation showed no violations.

Project Highlights

Using a combination of funding support from CWA section 319 and the U.S. Department of Agriculture's (USDA) Environmental Quality Incentive Program (EQIP), the Pine Country Resource Conservation & Development Council (RC&D) worked with local landowners to promote and install agricultural BMPs not only to reduce sediment and nutrient runoff into Williamson Swamp Creek but also to improve the landowners' operations.

Between 2004 and 2006, partners installed the following BMPs to reduce runoff from agricultural areas: 10 projects to install heavy-use area protection foundations and support structures in livestock areas where a large number of cattle gather for watering and feeding; 18 pasture and hayland planting projects (Figure 3); and one project to install alternative livestock watering sources (including wells and ponds) and water pipelines and livestock exclusion fencing to limit livestock's access to streams (Figure 4). In addition, partners implemented critical streambank area protection measures to reduce sediment loading into the creek. These water quality control measures provided livestock health benefits and improved area aesthetics.

Local agriculture agency partners, including the local USDA Natural Resources Conservation Service (NRCS) office in Washington and Jefferson counties, advised landowners on the technical design



Figure 3. Landowners installed pasture and hayland planting projects to reduce soil erosion, filter runoff and increase infiltration.



Figure 4. Project partners installed livestock exclusion fences to prevent cattle from accessing the creek.

and specifications of BMPs and provided oversight and expertise during the installation process. Landowners participated voluntarily, providing some of the labor and funds for the BMPs.

Results

Water quality monitoring conducted in 2007 showed that all 20 DO samples collected from the 9-mile segment of Williamson Swamp Creek met the applicable state DO criteria—a minimum daily average of 5.0 mg/L and no less than 4.0 mg/L at all times for waters supporting warm-water fish species (see Figure 2). Based on these data, in 2010 the state removed the 9-mile segment of the creek from its list of impaired waters for DO impairment.

Partners and Funding

Williamson Swamp Creek restoration efforts were supported by more than \$159,000 in CWA section 319 funding, as well as approximately \$107,500 from local producers to fulfill the 40 percent required match for CWA section 319 grants. EQIP funds in Washington County (through which a portion of Williamson Swamp Creek flows) totaled more than \$837,400 between 2002 and 2007. Key partners in this effort included the Washington and Jefferson County Soil Conservation District, Pine Country RC&D, and USDA NRCS agents, all of which provided technical expertise and labor assistance. Landowners in the Ogeechee River Basin contributed in-kind labor hours and some matching funds.



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