NONPOINT SOURCE SUCCESS STORY

Alabama

Restoring Water Quality Within the Fish River Watershed: Baker Branch

Waterbody Improved

Baker Branch is a tributary of Fish River and part of the Middle Fish River watershed in coastal Alabama. Based on intensive chemical, biological, and habitat monitoring data conducted by the Geological Survey of Alabama (GSA) in 1994–1998, the Alabama Department of Environmental Management (ADEM) placed Baker Branch on the 2006 Clean Water Act (CWA) section 303(d) list of impaired waters for not supporting its fish and wildlife (F&W) use classification due to low dissolved oxygen (DO) levels and a poor macroinvertebrate assessment. Multiagency coordination has prioritized the Fish River watershed for shoreline assessment, habitat mapping, habitat conservation and restoration plans, low impact development (LID) practices, and nonpoint source education and outreach. After 29 years of coordination, Baker Branch met the water quality standards for organic enrichment/low DO and was removed from the 303(d) list of impaired waters in 2020.

Problem

The Middle Fish River (HUC 031602050202) watershed (Figure 1) covers approximately 27,000 acres. The dominant land use/cover is agriculture (49%), including row crops and pasture. Forested land covers about 22% of the basin, and wetlands cover about 12%. Urban development makes up about 14% of the watershed. The eastern portion of the Middle Fish River watershed includes all or parts of Robertsdale, Summerdale, and Silverhill, and the western part of the basin contains a small portion of Fairhope. Baker Branch, a tributary to Fish River, is 6.15 miles long and is in the southeastern portion of the watershed just west of Summerdale in Baldwin County.

Baker Branch (assessment unit AL03160205-0202-510) was originally listed by ADEM on the 2006 CWA 303(d) list of impaired waters for not supporting the F&W use classification for organic enrichment and DO due to pasture grazing from its source to Polecat Creek. ADEM's water quality standards stipulate that the minimum DO concentration allowed in F&W classified streams is 5.0 milligrams/liter (mg/L).

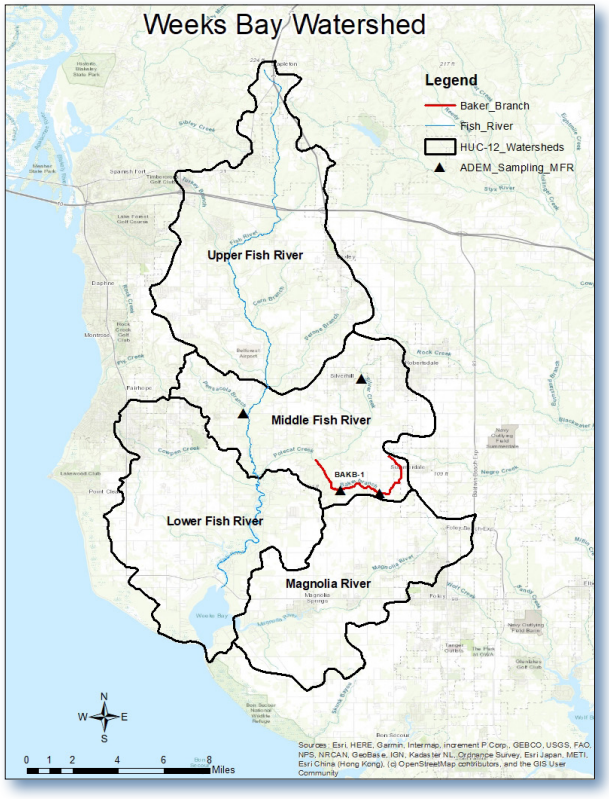

Figure 1. The Weeks Bay watershed is in southwestern Alabama.

Story Highlights

In 1993, the Fish River Watershed Project was initiated by the Natural Resources Conservation Service (NRCS) and the Environmental Protection Agency (EPA) Gulf of Mexico Program to assess water quality conditions in the Weeks Bay watershed and provide a holistic

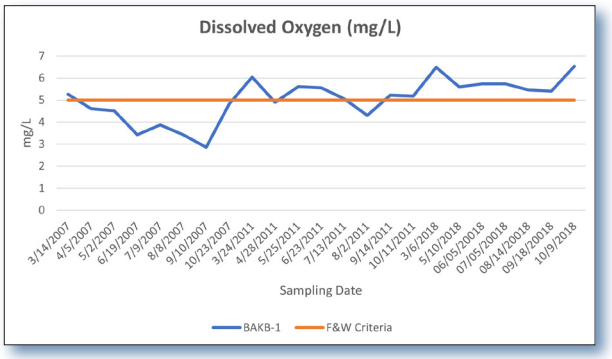

Figure 2. ADEM sampling data for Baker Branch (site BAKB-1).

approach to the management of the Fish River watershed. In 1994, the Fish River Watershed Project was expanded to include the Magnolia River watershed and was renamed the Weeks Bay Watershed Project. The 2002 Weeks Bay Watershed Management Plan (WMP) was developed through multiagency cooperation as a result of these efforts and eight years of technical investigation.

Restoration projects (2007–2010) included funding of LID best management practices. The Baldwin County Soil and Water Conservation District (BCSWCD) used Fiscal Year (FY) 2004 CWA section 319 funding to implement bioretention areas, a rain garden, and rainwater harvesting devices. This project also helped to propel the development of a draft LID guidebook in partnership with the Alabama Cooperative Extension System (ACES) Water Program.

Results

Post-restoration monitoring of Baker Branch at ADEM sampling site BAKB-1 in 2018 revealed that DO samples were above the required 5 mg/L for the F&W use classification (Figure 2). In most samples, nitrogen levels were also very low or below the detection limit. Carbonaceous biochemical oxygen demand (CBOD5) was also below the detection limit in all samples. Based on available data, ADEM's Water Quality Branch determined that an impairment for organic enrichment does not currently exist and removed the Bakers Branch DO impairment in the 2020 integrated report cycle.

Partners and Funding

In 2002, the Weeks Bay WMP was developed through combined efforts of the BCSWCD, ADEM, the Alabama Department of Conservation and Natural Resources State Lands Division, GSA, NRCS, ACES, the U.S. Fish and Wildlife Service, the Alabama Department of Public Health, the Dauphin Island Sea Lab, and the Weeks Bay National Estuarine Research Reserve (WBNERR). In 2006, the Mobile Bay National Estuary Program (MBNEP), in partnership with The Nature Conservancy, developed the coastal habitat atlas *Conserving Alabama's Coastal Habitats: Acquisition and Restoration Priorities of Mobile and Baldwin Counties*. The Baker Branch Restoration Project (2007–2010) used $41,450 of FY2004 CWA section 319(h) funding, with $34,283 contributed by the BCSWCD and ACES in local in-kind matching funds.

The Baldwin County Commission and the Baldwin County Highway Department developed the Fish River and Magnolia River Watershed Study in October 2011. In 2016, the MBNEP funded the assessment report, *Pre-Restoration Analysis of Discharge, Sediment Transport Rates, Water Quality, and Land-Use Impacts in the Fish River Watershed, Baldwin County, Alabama*, and the Uplands/Wetlands Habitat Mapping Project. The Weeks Bay WMP was updated in 2017 by MBNEP, in partnership with BCSWCD, WBNERR, the Weeks Bay Foundation, and the Weeks Bay WMP stakeholders working group, with funding by the National Fish and Wildlife Foundation's Gulf Environmental Benefit Fund.

Leveraged funding continues to support the assessment, education, and development of restoration plans by state and federal agencies, local organizations, and nonprofit groups. The ACES Water Program developed the LID guidebook, which is now used as the go-to LID manual for the state of Alabama.

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For additional information contact:

Baldwin County Soil and Water Conservation District
251-937-3297 • baldwin@alconservationdistricts.org

ADEM, Nonpoint Source Management Program
334-260-4501 • adem.nps.program@adem.alabama.gov