



# NONPOINT SOURCE SUCCESS STORY

## Tennessee

### Agricultural and Urban Best Management Practices Aid in the Recovery of College Creek

#### Waterbody Improved

College Creek was first added to Tennessee's Clean Water Act (CWA) section 303(d) list of impaired waters in 2002 for sedimentation/siltation, riparian alteration, and substrate alteration after the creek failed a bioassessment survey in 2000. Committed partnerships between multiple soil and water conservation districts (SWCDs), nongovernmental groups, and the State of Tennessee, supported by funding from CWA section 319, the Tennessee Department of Agriculture's (TDA's) Agricultural Resources Conservation Fund (ARCF) and the Tennessee Wildlife Resources Agency (TWRA), resulted in improved habitat and biological diversity during a 2015 assessment. The entirety of College Creek (9.3 miles) was delisted for siltation/sedimentation and habitat alterations on Tennessee's 2020 CWA section 303(d) list.

#### Problem

College Creek (TN06010108010-0300) drains a portion of the city of Greeneville and Tusculum University in the Sinking Creek–Nolichucky River watershed (060101080703) in Greene County, Tennessee (Figure 1). Most of the land use is pasture and livestock grazing. College Creek is a tributary of the Nolichucky River, which (as of 2020) is impaired. The designated uses for College Creek include fish and aquatic life, recreation, livestock watering and wildlife, and irrigation.

In July 2000, the Tennessee Department of Environment and Conservation (TDEC) performed a bioassessment survey (biocon or BR) for College Creek. A biocon is a screening tool used by TDEC to provide a quick evaluation of the relative health of the biological community. The biocon yielded a habitat score of 113, which was less than the passing score of 128 that was required for College Creek. As a result, College Creek was placed on Tennessee's CWA section 303(d) list of impaired waters in 2002 for siltation and other habitat alterations due to pasture grazing and development. In 2008, "other anthropogenic habitat alterations" was added as a cause of pollution. College Creek was re-evaluated in 2005 and 2010, with resulting habitat scores of 128 and 140, respectively. Although the creek's habitat was showing signs of improvement, it remained listed as impaired due to poorly performing macroinvertebrate communities. The Tennessee Macroinvertebrate Index (TMI) for

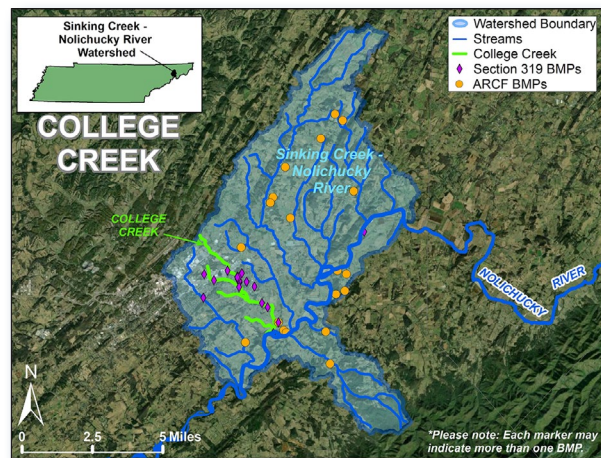


Figure 1. College Creek is in Greene County.

College Creek, evaluated through the use of Semi-Quantitative Single Habitat Sample (SQSH) method, remained at or below the target score of 32 in 2005 and 2010, with TMI scores of 26 and 32, respectively.

#### Story Highlights

To begin restoring College Creek, a CWA section 319 grant was awarded in 2005 to the Greene County SWCD to develop a restoration plan. Partnerships were developed between many interested parties from the private sector (Niswonger Foundation), SWCDs, nonprofits (Middle Nolichucky Watershed Alliance), Tusculum University, local municipalities and landowners. Both urban and agricultural sources of pollution were tackled, with best management

practices constructed along College Creek and throughout the watershed. Urban sources of siltation and habitat alterations were mitigated with catch basins, constructed wetlands and streambank stabilization projects (Figures 2 and 3). Shoreline grazing impacts were minimized with fencing, alternative watering facilities and heavy use areas. Over \$320,000 in CWA section 319 funds and more than \$190,000 in ARCF monies were invested in practices in the Sinking Creek–Nolichucky River watershed. In total, 106 practices were installed between 2003 and 2021.

## Results

A reassessment was performed on College Creek in July 2015 (Figure 4). At the time of the assessment, the habitat score was 138, which exceeded the goal of 128. In addition, SQSH was performed, and the biology had recovered sufficiently to earn a score of 36, which exceeded the passing score of 32. In Tennessee, the criteria for siltation/sedimentation, habitat alteration, and alteration to stream-side or littoral vegetative cover is quantitative. As the habitat and biology had recovered, the criteria for these parameters were no longer being violated. College Creek was removed from Tennessee's 2020 CWA section 303(d) list for siltation/sedimentation, habitat alteration, and alteration to stream-side or littoral vegetative cover from grazing in riparian or shoreline zones and site clearance (land development or redevelopment). College Creek was recently found to be impaired due to *Escherichia coli* from livestock grazing, and it remains on Tennessee's 2020 CWA section 303(d) list. Work will continue in the watershed to tackle the new challenge.

## Partners and Funding

Many community partners helped to improve College Creek. Grants through CWA section 319 have exceeded \$850,000, with over a third of the total being used to support practices in the Sinking Creek–Nolichucky River watershed. (Note: some contracts included work elsewhere in the Nolichucky River basin.) State support from the ARCF program exceeded \$190,000. In addition, the multiple partners provided over \$580,000 in cash and in-kind match contributions. Key partners included the Niswonger Foundation, TWRA, City of Greeneville, Town of Tusculum, Tusculum University, Middle Nolichucky Watershed Alliance, multiple SWCDs and local landowners.



Figure 2. Partners installed a constructed urban wetland pond along College Creek.



Figure 3. Partners installed a rain garden along College Creek.

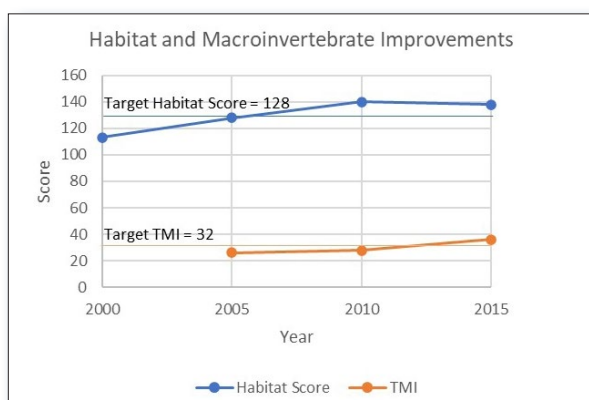


Figure 4. Habitat and macroinvertebrate improvements in College Creek (2000–2015).



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