



# Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# Tennessee

## Implementing Agricultural Best Management Practices Improves Water Quality

### Waterbody Improved

Livestock activity eroded pasture areas and stream banks along Tennessee’s Brush Creek, causing siltation problems in the creek. The Tennessee Department of Environment and Conservation (TDEC) added an 11.6-mile segment of Brush Creek to the state’s Clean Water Act (CWA) section 303(d) list of impaired waters in 2002. Landowners implemented agricultural best management practices (BMPs) to exclude livestock from creek areas and control erosion. Water quality improved, prompting TDEC to remove the creek from the state’s list of impaired waters in 2008.

### Problem

Tennessee’s Brush Creek watershed is south of Clarksville in Montgomery County. The 11.6-mile long creek flows into the Cumberland River at Barkley Reservoir. Land use along the stream is primarily agricultural. Poorly managed livestock grazing operations led to erosion of pasture areas and stream banks along Brush Creek. The eroded sediment washed into the creek, preventing it from supporting its designated use of fish and aquatic life because of high levels of siltation. In 2002 TDEC placed Brush Creek on Tennessee’s CWA section 303(d) list of impaired waters. TDEC identified poorly managed livestock grazing/pasture areas as the primary source of the creek’s siltation.

### Project Highlights

Local landowners installed agricultural BMPs along Brush Creek using money from CWA section 319 grants and Tennessee’s Agricultural Resources Conservation Fund (ARCF). In 2006 landowners used section 319 funds to help pay for installing 6,080 feet of fence for rotational grazing. From 2003 to 2008, landowners used ARCF grants to support other BMPs, including installing 396 feet of fencing, protecting seven heavy use areas (HUAs) from erosion, and converting 10 acres from cropland to grassland or forestland (Figure 1).

Protecting HUAs involves stabilizing areas frequently used by people, animals or vehicles. For instance, this practice is applied in streams where cattle or farm equipment frequently cross, around cattle

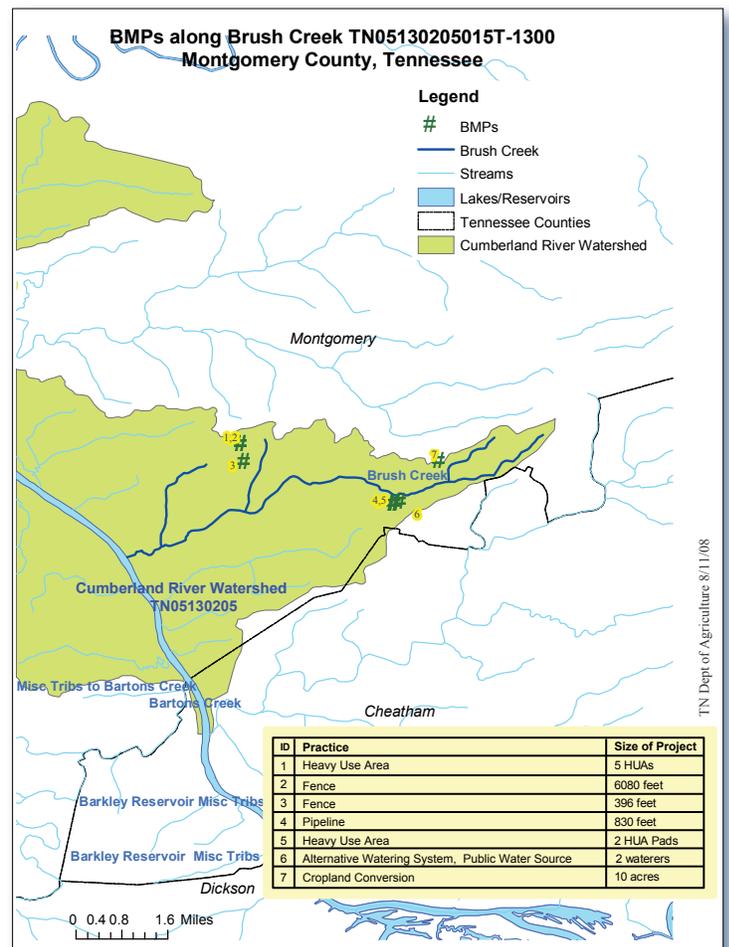


Figure 1. Map showing location of BMPs installed in the Brush Creek watershed.



Figures 2 and 3. Examples of alternative watering systems installed in the Brush Creek watershed.

watering or feeding facilities, or in cattle feedlots or walkways. Converting cropland to forestry and grassland is an important method to reduce soil erosion and improve the biophysical environment. In addition, landowners installed two alternative watering systems using public water as a source (Figures 2 and 3).

## Results

In 2006 TDEC performed a Semi-Quantitative Single Habitat Assessment (SQSH) survey at mile 1.9 near Beardon Ridge Road. The principal metrics used were the total macroinvertebrate families (or genera); the number of families of mayflies, stoneflies and caddisflies (collectively referred to as EPT—short for the order names Ephemeroptera, Plecoptera and Trichoptera); and the number of pollution-intolerant families found in a stream. The SQSH scored an almost perfect 40 out of 42 on the Tennessee Macroinvertebrate Index. The assessment documented 6 EPT families, 3 intolerant and 20 total families. The overall habitat score for this site was 120, suggesting that the stream's water quality has improved. On the basis of these data, TDEC removed Brush Creek from the CWA section 303(d) list of impaired waters in 2008.

## Partners and Funding

Brush Creek has benefited from \$6,355 of CWA section 319 funding (including additional matching funds of \$2,118). In addition, Tennessee's ARCF provided \$6,146 (plus an additional \$2,049 in matching funds). Key partners in this effort include the Montgomery County Soil Conservation District for implementing BMPs and the landowners who contributed the majority of the in-kind match.



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