

US EPA

REGION 4

# Nonpoint Source Program Success Story

## Kentucky

### **Strodes Creek Watershed**

### **Onsite Wastewater Treatment and Agricultural Best Management Practices Improve Water Quality**

#### **Waterbody Improved**

In the Strodes Creek watershed, failing septic systems and livestock grazing practices contributed to increased nutrient and sediment loads, as well as affected biochemical oxygen demand (BOD) levels. Onsite wastewater treatment and agricultural best management practices (BMPs) installed in the watershed significantly reduced nutrient and BOD load estimates in this ongoing project.

#### **OVERVIEW**

Strodes Creek, a main headwater stream of the South Fork of the Licking River, is a tributary of Stoner Creek. The stream is approximately 25 miles long and flows through 53,000 acres of the Inner Bluegrass landscape. The Strodes Creek watershed drains the northern side of Winchester in Clark County, and the lower third of the watershed is in a rural area of Bourbon County. The main stem of Strodes Creek, from Hoods Creek to Green Creek, was evaluated and did not meet water quality standards; impairments included pathogens, nutrients, siltation, and organic enrichment/low dissolved oxygen. The impairments were caused by non-point source pollution from agriculture, construction, urban runoff/storm sewers, and habitat modification other than hydromodification, as well as municipal point source pollution.

A primary goal of the project was to improve water quality in the watershed through implementation of BMPs for onsite wastewater and agriculture. The project also sought to educate the public concerning water quality issues in the watershed, as well as build public interest in working on solutions for these issues.



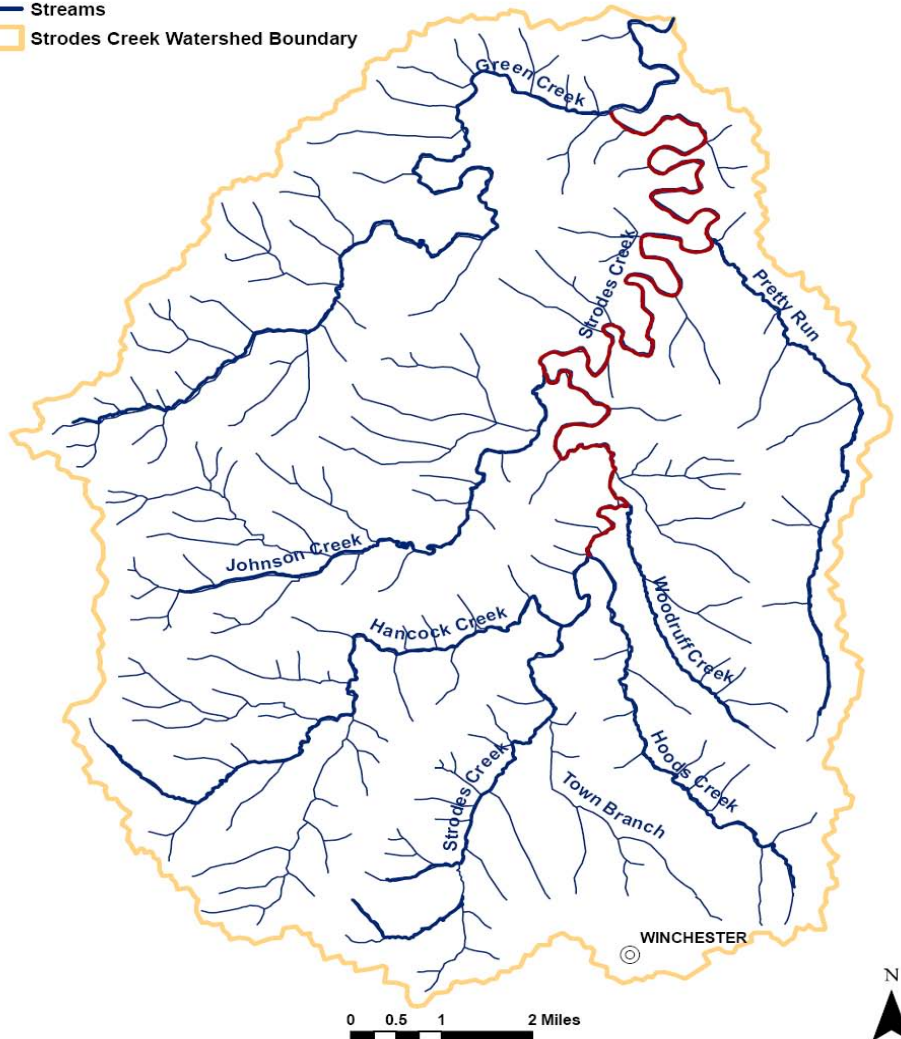
**Strodes Creek**

## HIGHLIGHTS

To improve water quality in the Strodes Creek watershed, the project focused on home owner wastewater treatment systems (failing septic tanks) and agricultural BMPs. Wastewater treatment systems in need of repairs were evaluated for system functionality, existing system components, amount of discharge, location of discharge, watershed impact, available repair area, and feasibility of wastewater collection line installation. A portion of the agricultural component of the project thus far has included the purchase and removal of livestock from 60 acres of land along Strodes Creek. Future efforts will provide fencing and alternative water sources to exclude cattle from selected streams. A number of riparian tree plantings have been conducted throughout the watershed. Approximately 60 balled and burlaped trees have been planted along Strodes and Hoods Creeks and will show benefits to the stream for years to come. In addition, several hundred saplings have been planted along stream banks in the watershed. The project also hired a Director for the Strodes Creek Conservancy and established the Conservancy as a 501(c)(3). The Strodes Creek Conservancy has worked to engage local citizens and educate the community throughout the watershed. The Conservancy has also collected pathogen data throughout the watershed during the recreational season for the past 5 years to measure progress and direct future implementation efforts.

### Strodes Creek Watershed

- 303(d) Listed Impairment
- Streams
- Strodes Creek Watershed Boundary



## RESULTS

Home owners in the Strodes Creek watershed were offered wastewater maintenance assistance to clean out septic systems and make minor repairs on a limited number of systems. Systems in need of repairs were upgraded according to selected criteria including existing system components, discharge amounts and locations, as well as potential impact to the watershed. The agricultural portion has included the purchase and protection of 60 acres of pastureland. This land comprises riparian area from Town Branch, a tributary to Strodes Creek. All cattle were removed from this area ultimately protecting over 3700 feet of stream. Future efforts on this property will include the establishment of native vegetation and stream restoration.

Summary table of BMPs installed in the watershed:

BMPs Installed in Strodes Creek		
Drainage Area	BMP	Size/Unit
Strodes Creek	Land Acquisition and Livestock Exclusion	60 acres
Pretty Run - Strodes Creek	Onsite Wastewater Treatment System Projects	4 units
Johnson Creek- Strodes Creek	Onsite Wastewater Treatment System Projects	6 units
Strodes Creek	Onsite Wastewater Treatment System Projects	35 units
Hancock Creek - Strodes Creek	Onsite Wastewater Treatment System Projects	41 units

The Table below summarizes estimated BOD, nutrient and sediment load reductions as a result of the Strodes Creek Watershed Restoration project:

Strodes Creek Watershed Restoration: Load Reduction Data*		
Pollutant Type	Load Reduction Estimate	Units
Biochemical Oxygen Demand (BOD)	11205.01	LBS/YR
Nitrogen	2953.05	LBS/YR
Phosphorus	1094.29	LBS/YR
Sedimentation-Siltation	8	TONS/YR

\* FY2004 319 Project 14 - Strodes Creek Conservancy: Watershed Improvement Initiative; includes data from drainage areas Hancock Creek, Johnson Creek and Pretty Run.



**Farm in Strodes Creek Watershed**

As follow-up to the project, the local Health Department or County Government was requested to establish a management plan to insure continued maintenance of the upgraded wastewater systems. Farmers and septic system owners within the project area were kept up-to-date concerning water quality issues and the use of BMPs. They were also provided with information on methods to improve and protect water resources in the watershed. Farmers and septic system owners outside the project areas were also provided information on water quality issues and the use of BMPs to address these issues.

### ***PARTNERS AND FUNDING***

The project was funded by \$680,034 in US Environmental Protection Agency Section 319 funding. State match of \$453,335 was provided by The City of Winchester and in-kind contributions. Participating partners included the Kentucky Division of Water; Kentucky Division of Conservation; Strodes Creek Conservancy; Clark County Fiscal Court; Winchester Municipal Utilities; EPA.

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#### ***Additional Resources***

**Strodes Creek Conservancy:** <http://www.strodescreek.org/>