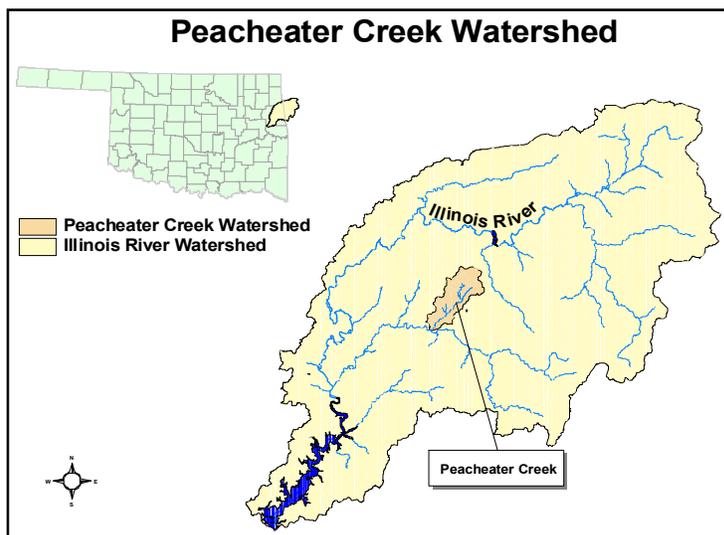


# Peacheater Creek Watershed Implementation Project

*The Peacheater Creek Watershed Implementation Project demonstrates a successful and continuing partnership between landowners, conservation districts, the Oklahoma Conservation Commission (OCC), the NRCS, and the USEPA to improve water quality in the northeastern part of the State. Spanning 16,209 acres, the Peacheater Creek watershed is located within the Illinois River watershed, an area where excessive nutrients, particularly phosphorus, have degraded water quality. Installation of Best Management Practices (BMPs) has resulted in a 71% decrease in expected total phosphorus loading and a significant reduction in nitrogen loading to Peacheater Creek. This project is part of USEPA's National Nonpoint Source (NPS) Monitoring Program and has been recognized for significantly improving water quality.*

## Background:

- The Illinois River and Lake Tenkiller have experienced **water quality degradation**, notably decreased water clarity resulting from **frequent algae blooms**. Initial research concluded that the cause of impairment was **excess nutrients, particularly phosphorus**.
- **1992:** The OCC began the **Peacheater Creek Watershed Implementation Project** as part of EPA's National NPS Monitoring Program.
- **1995-1998:** OCC collected **baseline water quality data** in Peacheater Creek and in an adjacent watershed of similar size used as a control, Tyner Creek.
- **1998-2002:** **BMPs were implemented in Peacheater Creek.**
- **2003-2005:** **Post-implementation water quality data** was collected from both Peacheater Creek (treatment watershed) and Tyner Creek (control watershed). Data were analyzed using a nationally endorsed paired watershed method.



## Project Planning:

**Objective:** To demonstrate the types of BMPs necessary to reduce NPS pollution and the water quality monitoring design required to assess any water quality improvements.

**Funded** through an EPA Clean Water Act, Section 319 grant with matching funds from the state and participating landowners. Project funding totaled **\$878,281**.

**Partnered** primarily with the Adair County and Cherokee County Conservation Districts and the local USDA-NRCS. Other partners included the Oklahoma Scenic Rivers Commission (OSRC), OSU Cooperative Extension Service, and the US Geologic Survey (USGS).

**Locally-led** effort: Hired local staff to coordinate project. Based practices and cost-share rates on the advice and direction of a "watershed advisory group" comprised of local landowners and district board members.

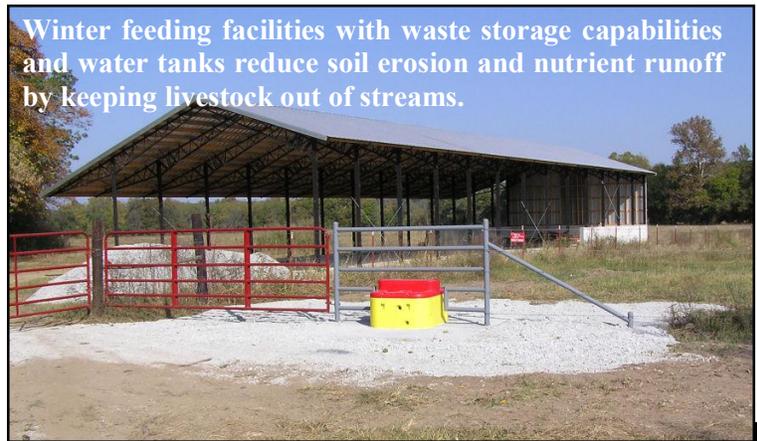
**Practices focused on reduction of animal waste and phosphorus loading** and included: Riparian Management, Buffer/Filter Strip, Composters/Animal Waste Storage Facilities, Pasture Management, Proper Waste Utilization, Heavy Use Areas, and Septic Systems.

## Project Implementation:

**11 Cooperators** installed a total of **\$201,330** of practices. Funding by source:  
 \$159,780 State/Federal Funds  
 \$41,550 Landowner Funds

### Implementation highlights:

- Protected 58 acres of **riparian area** and installed 7 acres of **field buffer**.
- Installed 13 off-site **watering facilities** and 3.59 miles **fencing**.
- Installed 3 **heavy use areas** and 2 **winter feeding facilities**.
- Installed 1 **litter cakeout/cleanout house**.
- **Improved** 375 acres of **pasture** through prescribed grazing (including cross-fencing), nutrient management, and alternative water supply.
- **Cleaned out** 1 **dairy lagoon** and constructed two new lagoons.
- Constructed 2 **travel/feeding lanes** for dairy cattle.
- Moved 22,921 lbs of phosphorus out of watershed through **litter transport**.



Winter feeding facilities with waste storage capabilities and water tanks reduce soil erosion and nutrient runoff by keeping livestock out of streams.



A litter cakeout house protects stored poultry litter from weather until proper application or transport out of the watershed is possible.

## Project Monitoring and Results:

- **Paired Watershed Design:** Monitored sites on Peacheater Creek, where BMPs were installed, and on Tyner Creek, the “control” watershed where no BMPs were implemented. This method allows estimation of the effect of BMPs on water quality while accounting for the effects of weather on monitoring results.
- **Monitored water chemistry** with weekly samples from February through June, then monthly samples from July through January. Used automated samplers to collect water data during storm events.
- **Conducted habitat, biological (fish and macroinvertebrate), and stream bank erosion monitoring.**
- Used an EPA-developed paired watershed method for analysis of data.
- **Observed decrease in nutrient concentrations and loading in Peacheater Creek** over what was expected based on pre-implementation conditions:
  - ◊ **Total phosphorus loading decreased approximately 71% and phosphorus concentrations decreased approximately 9%**
  - ◊ **Total nitrogen loading decreased approximately 58% and nitrogen concentrations decreased between 21% and 53% (depending on the parameter)**
- Additional improvements in the Peacheater Creek watershed include:
  - ◊ an **increase in bank stability and bank stabilizing vegetation.**
  - ◊ a **significant decrease in bank erosion:**  
 4.1 ft<sup>2</sup>/yr erosion pre-implementation versus 1.7 ft<sup>2</sup>/yr erosion post-implementation.
  - ◊ a **decrease in nutrient loading rates from streambank erosion.**
  - ◊ an **increased number of fish and significantly healthier benthic macroinvertebrate communities.**

**Continuing efforts in the Illinois River Watershed:** OCC is continuing BMP implementation in the Illinois River watershed as part of a **2008 319 demonstration project**. In addition, a **Conservation Reserve Enhancement Program (CREP)** is providing over \$20 million to protect riparian areas in the Illinois River and Eucha/Spavinaw watersheds for at least 15 years.



For additional information, contact:  
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Visit our website at: [www.conservation.ok.gov](http://www.conservation.ok.gov)

†Oklahoma's nationally recognized water quality successes can be viewed at <http://www.epa.gov/nps/success/>