



# NONPOINT SOURCE SUCCESS STORY

## Oklahoma

### Otter Creek Achieves Full Attainment of Designated Use After Agricultural Best Management Practice Implementation

#### Waterbody Improved

High turbidity, due in part to practices associated with cattle and wheat production, resulted in impairment of Otter Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list in 2004. Implementation of best management practices (BMPs) to promote better quality grazing land and cropland decreased sediment loading into the creek. As a result, the entire 30-mile length of Otter Creek was removed from Oklahoma's 2010 CWA section 303(d) list for turbidity impairment. Otter Creek is now in full attainment of its fish and wildlife propagation designated use.

#### Problem

Otter Creek is in Garfield and Logan counties in central Oklahoma. Land use in the 75,106-acre watershed is primarily wheat cropland and rangeland and pasture for cattle production, with a small amount of corn production as well. Poor grazing land management and a large amount of cropland contributed to excess sedimentation in the watershed. In the 2004 water quality assessment, monitoring showed that 15 percent of Otter Creek's seasonal base flow water samples exceeded 50 nephelometric turbidity units (NTU). A stream is considered impaired by turbidity if more than 10 percent of the seasonal base flow water samples exceed 50 NTU (based on five years of data before the assessment year). On the basis of these assessment results, Oklahoma added the entire 30-mile-long Otter Creek (OK620910030040\_00) to the 2004 CWA section 303(d) list for nonattainment of the fish and wildlife propagation designated use due to turbidity impairment.

#### Project Highlights

Landowners implemented BMPs with assistance from Oklahoma's locally led cost-share program and through the local U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) General Conservation Technical Assistance Program, Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP) and Conservation Stewardship Program (CSP). From 2005 to 2009, landowners improved pasture and

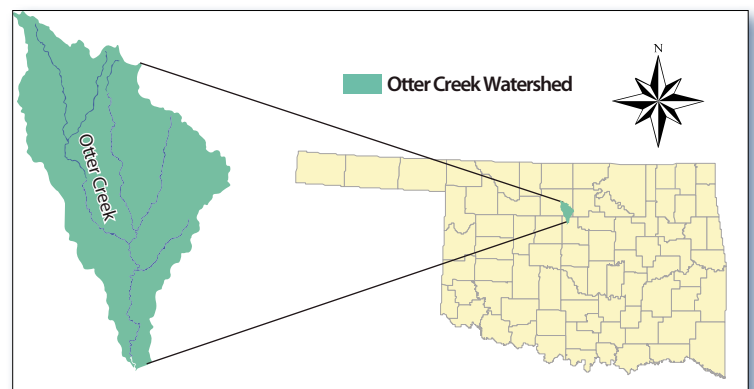


Figure 1. The Otter Creek watershed is in central Oklahoma.

range condition with 1,200 acres of prescribed grazing, installation of eight ponds for alternative water sources, three grade stabilization structures, 813 acres of integrated pest management, 128 acres of nutrient management, 328 acres of supplemental vegetation planting and 1,010 acres of upland wildlife habitat management. One hundred and four acres of forested riparian buffer was established to reduce streambank erosion. Cropland erosion was reduced through 3,176 acres of residue management, reduced tillage, and no-till methods, 577 acres of conservation cover, cover crops and conservation crop rotation. In addition, 288 acres of contour farming, 11 acres of grassed waterways and 1,580 feet of terraces lessened erosion from sloped cropland. Over 100 acres of riparian forest buffer further protected the stream from excess sediment running off the land.

From 2010 to 2012, additional BMP implementation further improved grazing and croplands and kept erosion potential low. Supplemental planting on 14 acres and prescribed grazing on approximately 1,300 acres, along with installation of five grade stabilization structures and one pond allowed optimal usage of rangeland and reduced bare soil. Reduced tillage, no-till and conservation crop rotations on approximately 2,000 acres and 480 acres of contour farming, 1,652 feet of terraces and seven acres of grassed waterways protected cropland from excessive soil loss.

## Results

The Oklahoma Conservation Commission's Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in Otter Creek due to landowners implementing BMPs. In the 2004 assessment, 15 percent of seasonal base flow water samples exceeded the turbidity criteria of 50 NTU. This exceedance was reduced to zero percent in 2010, and Otter Creek was removed from Oklahoma's CWA section 303(d) list for turbidity impairment. Otter Creek is now in full attainment of the fish and wildlife propagation designated use.

## Partners and Funding

The Rotating Basin Monitoring Program is supported by the U.S. Environmental Protection Agency's CWA section 319 program at an average annual cost of \$1 million. Monitoring costs include personnel, supplies and lab analyses for 18 parameters from samples collected every 5 weeks at about 100 sites. In-stream habitat, fish

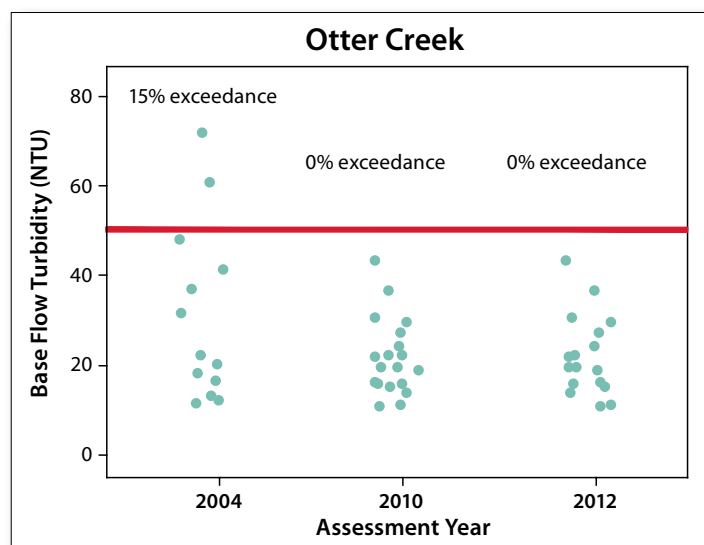


Figure 2. Monitoring data indicate that base flow turbidity levels in Otter Creek have declined.

and macroinvertebrate samples are also collected. Approximately \$600,000 in CWA section 319 funding supports statewide education, outreach and monitoring efforts through the Blue Thumb program. The Oklahoma cost-share program provided approximately \$14,000 in state funding for BMPs in this watershed through the Logan and Garfield county conservation districts. NRCS spent approximately \$620,000 for implementation of BMPs in this area from 2005 to 2009. An additional \$600,000 was spent from 2010 to 2012 to maintain these practices and continue to promote good grazing land and cropland management. Landowners provided a significant percentage of funding toward BMP implementation in these programs as well.



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