NONPOINT SOURCE SUCCESS STORY

Oklahoma

Crooked Creek Attains Designated Use after Agricultural Best Management Practice Implementation

Waterbody Improved

High turbidity, due in part to practices associated with wheat and cattle production, resulted in impairment of Crooked Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list in 2006. Implementation of best management practices (BMPs) to reduce erosion from cropland and to promote better quality grazing land decreased sediment loading into the creek. As a result, the entire length of Crooked Creek (33 miles) was removed from Oklahoma's 2010 CWA section 303(d) list for turbidity impairment. Crooked Creek is now in full attainment of its fish and wildlife propagation designated use.

Problem

Crooked Creek is in Grant County in northern Oklahoma, with its headwaters located just across the border in Kansas. Land use in the 130,000-acre watershed is primarily wheat production and grazing lands for cattle, with a small amount of corn production as well. Large tracts of cropland, coupled with poor grazing land management, contributed to excess sedimentation in the watershed. In the 2006 water quality assessment, monitoring showed that 20 percent of Crooked Creek's seasonal baseflow 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 33-mile-long Oklahoma segment of Crooked Creek (OK621000060010 _ 00) to the 2006 and subsequent CWA section 303(d) lists for nonattainment of the fish and wildlife propagation designated use due to turbidity impairment.

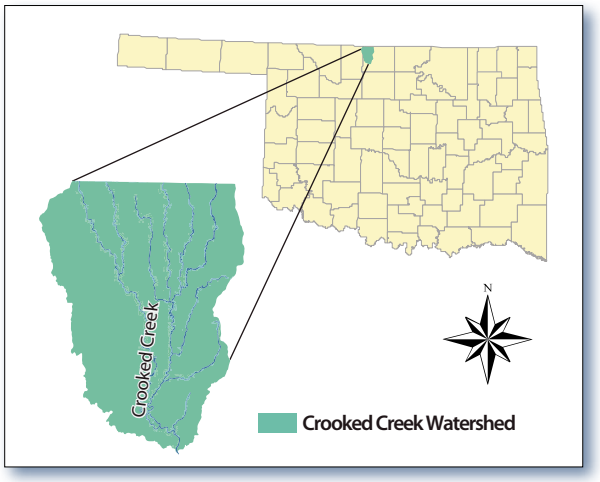

Figure 1. The Crooked Creek watershed is in northern Oklahoma.

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, Conservation Reserve Program (CRP) and Environmental Quality Incentives Program (EQIP). From 2006 to 2009, landowners reduced erosion potential from cropland with conservation tillage methods: nearly 6,000 acres of no-till, strip-till, and mulch-till, in addition to 1,856 acres of conservation crop rotations, 475 acres of residue management and more than 1,000 acres of cover crops. To slow erosion on sloped cropland, 35 acres of contour farming, 63 acres of grassed waterways, 73,661 feet of terraces and one grade stabilization structure were installed. Proper nutrient management was implemented on 2,125 acres of cropland. Project participants improved pasture and range conditions with 2,944 acres of prescribed grazing, installation of two ponds for alternative water sources, 9,680 linear feet of fencing, 3,243 acres

of supplemental range planting and 4,200 acres of upland wildlife habitat management.

BMP implementation continues in the watershed. From 2010 to 2012, 6,421 acres of no-till and reduced-till crop production occurred, along with 41 acres of cover crops, 1,282 acres of conservation crop rotations, and 169 acres of forage planting and harvest management. Two more grade stabilization structures were installed, along with two diversions, 15 acres of grassed waterways and 9,168 feet of terraces. To optimize grazing conditions, landowners practiced prescribed grazing on 7,786 acres, planted supplemental vegetation on 46 acres, installed 12 watering facilities and two additional ponds, and managed 1,530 acres of upland wildlife habitat.

Results

The Oklahoma Conservation Commission's Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in Crooked Creek due to landowners implementing BMPs. In the 2006 assessment, 20 percent of seasonal base flow water samples exceeded the turbidity criteria of 50 NTU. This exceedance was reduced to zero percent in 2010, and Crooked Creek was removed from Oklahoma's CWA section 303(d) list for turbidity impairment. Crooked 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

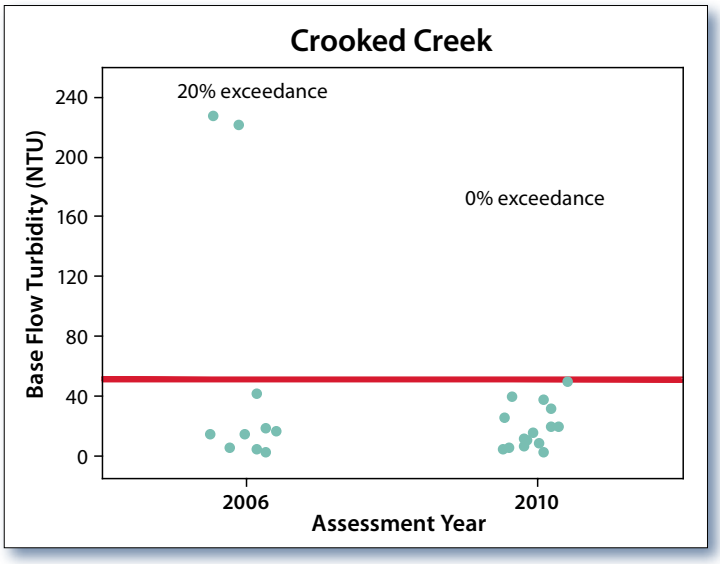

Figure 2. Monitoring data indicate that base flow turbidity levels in Crooked Creek have declined.

samples collected every 5 weeks at about 100 sites. In-stream habitat, fish 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 $3,249 in state funding for BMPs in this watershed through the Grant County Conservation District. The NRCS spent approximately $1.8 million for implementation of BMPs in Grant County from 2006 to 2009. An additional $1 million was spent from 2010 to 2012 to maintain these practices and continue to promote conservation tillage and good grazing land management in Grant County. Landowners provided a significant percentage of funding toward BMP implementation in these programs as well.

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