NONPOINT SOURCE SUCCESS STORY

Oklahoma

Conservation Practices Result in Clearer Waters in Rainy Mountain Creek

Waterbody Improved

High turbidity levels resulted in impairment of Rainy Mountain Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list of impaired waters in 2008. Pollution from cropland and grazing lands contributed to this impairment. Implementing conservation practice systems (CPs) to promote better land management decreased pollutant runoff and reduced turbidity in the stream. As a result, Oklahoma removed the turbidity impairment in 2012 from its CWA section 303(d) lists. Rainy Mountain Creek now partially supports its warm water aquatic community (WWAC) designated beneficial use.

Problem

The Rainy Mountain Creek watershed covers approximately 200,637 acres in Kiowa, Comanche and Washita counties in southwestern Oklahoma (Figure 1). Land use in the watershed is about 67 percent crop and pasture lands and 31 percent rangeland. Primary agricultural products from the watershed are wheat, cotton and cattle.

Rainy Mountain Creek is a sandy/silty bottom stream with generally excellent fish communities and moderate water quality for its ecoregion. Water quality monitoring in the early 2000s determined that challenges with grazing land and cropland management contributed to a 2008 listing of a 32.33-mile segment of the stream as impaired by turbidity, when at least 33 percent of turbidity readings exceeded acceptable limits. A stream is considered impaired for turbidity if more than 10 percent of base flow samples exceed 50 nephelometric turbidity units. Based on these results, Oklahoma added segment OK310830020060_10 to the CWA section 303(d) lists in 2008 for nonattainment of the WWAC designated beneficial use.

Story Highlights

More than 110 landowners in the watershed worked with the Kiowa, Washita and Comanche county conservation districts; the U.S Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS); the USDA Farm Service Agency (FSA) and the Oklahoma Conservation Commission (OCC) to implement CPs through many programs, including Oklahoma NRCS's Environmental Quality Incentives Program

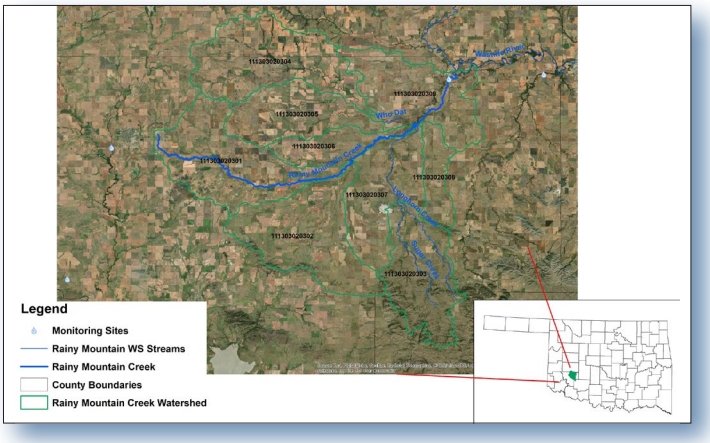

Figure 1. Rainy Mountain Creek is in southwestern Oklahoma.

(EQIP) and general conservation technical assistance program, FSA's Conservation Reserve Program (CRP), and OCC's Locally Led Cost Share Program (LLCP).

From 2008 to 2018, landowners improved croplands and grazing management, which reduced runoff of sediment and other pollutants by increasing vegetative cover and reducing bare soil.

Landowners implemented access control (176 acres [ac]), brush management (16,093 ac), conservation cover (183 ac), conservation crop rotation (510 ac), contour farming (27 ac), cover crop (941 ac), critical area planting (54 ac), diversion (2,955 feet [ft]), fence (18,376 ft), grade stabilization structures (5), grassed waterways (62 ac), groundwater testing (4 tests), heavy use protection areas (0.3 ac), land smoothing (868 ac), lined waterways (11.1 ft), livestock pipeline (13,106 ft), nutrient management (2,306 ac), pasture

and hayland planting (3,714 ac), pest management (6,486 ac), ponds (67), prescribed grazing (28,555 ac), three pumping plants, range planting (262 ac), no-till (3,534 ac), reduced tillage (27 ac), seasonal residue management (5,558 ac), terraces (90,443 ft), upland wildlife habitat management (421 ac), water wells (4) and watering facilities (5).

Results

The OCC documented improved water quality in Rainy Mountain Creek due to installation of CPs through its statewide nonpoint source Rotating Basin Ambient Monitoring Program. By 2012, turbidity exceedances had dropped to 7 percent and remained at similar or lower levels through the 2020 assessment period (Figure 2). Based on these data, Oklahoma removed Rainy Mountain Creek from the CWA section 303(d) list for turbidity in 2012. Rainy Mountain Creek now partially supports its WWAC beneficial use.

Partners and Funding

The OCC monitoring program is supported by the U.S. Environmental Protection Agency's (EPA's) CWA section 319 funding at an average annual statewide cost of $1 million. Approximately $500,000 in EPA section 319 funds support statewide water quality educational efforts through Blue Thumb. Approximately $230,857 of these federal and state matching funds have been devoted to Rainy Mountain Creek. From 2000 to 2018, NRCS supplied more than $1.5 million for CP implementation in Oklahoma through EQIP. In addition, many practices were funded by landowners based on recommendations through NRCS general technical assistance. Additional funds were provided through CRP. Finally, the OCC; Kiowa, Washita, and Comanche county conservation districts; and landowners funded more than $72,201 worth of CPs (at least $42,468 of which was funded by landowners through the LLCP).

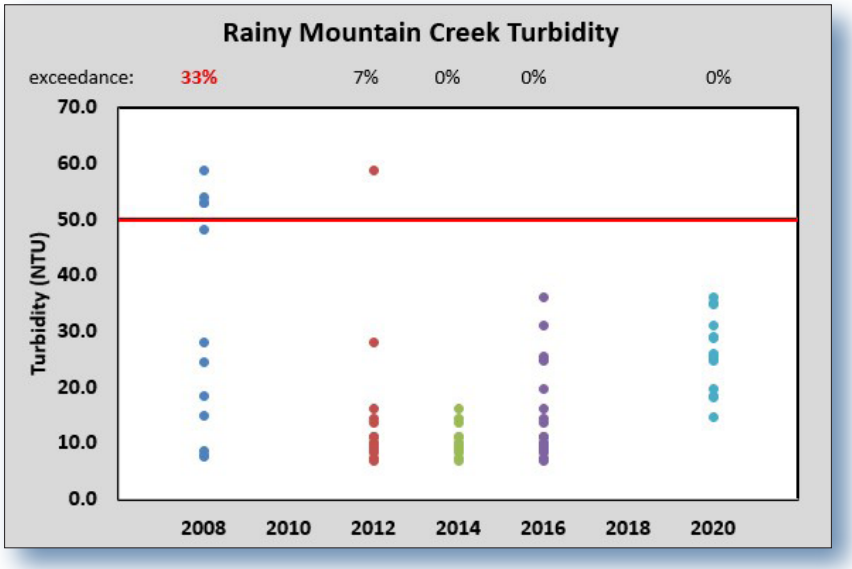

Figure 2. Turbidity in Rainy Mountain Creek decreased with installation of CPs.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-20-001RR
December 2020

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