NONPOINT SOURCE SUCCESS STORY

Oklahoma

Turbidity Levels in Salt Creek (Osage County) are Reduced Through Voluntary Agricultural Conservation Programs

Waterbody Improved

Elevated turbidity levels, contributed by grazing and hay production, resulted in the impairment of Salt Creek and placement on Oklahoma's Clean Water Act (CWA) section 303(d) list of impaired waters in 2006. Implementation of conservation practice systems (CPs) promoted better quality grazing lands and decreased turbidity levels in the creek. As a result, Salt Creek was removed from Oklahoma's 2010 CWA section 303(d) list for turbidity. Salt Creek now fully supports its fish and wildlife protection (FWP) designated use.

Problem

Salt Creek is a 61-mile stream that flows through Osage County before discharging to the Arkansas River (Figure 1). Salt Creek flows through the Flint Hills Ecoregion and is comprised of tallgrass prairie on rolling hills with relatively steep, narrow valleys composed of shale and cherty limestone with rocky soils. Land use in the 185,000-acre watershed is primarily grasslands (85 percent) for beef cattle and hay production. About 6 percent of the watershed is developed land (primarily for highways and roads), 2 percent is forested, and less than 4 percent is cropland.

Grazing and hayland management contributed to excess turbidity in Salt Creek. The lower segment of Salt Creek (17.29 miles) was listed as impaired for turbidity in 2006 when 22 percent of assessed baseflow turbidity samples violated Oklahoma's water quality standards. An Oklahoma stream is considered to violate the turbidity standard when more than 10 percent of baseflow samples are higher than 50 Nephelometric Turbidity Units (NTU). On the basis of these assessment results, Oklahoma added the lower segment of Salt Creek (OK621200040010_00) to the 2004 CWA section 303(d) list for nonattainment of the FWP designated beneficial use.

Story Highlights

Landowners in the watershed worked with the Osage County Conservation District, the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), and the Oklahoma Conservation Commission (OCC) to implement CPs through Oklahoma NRCS's

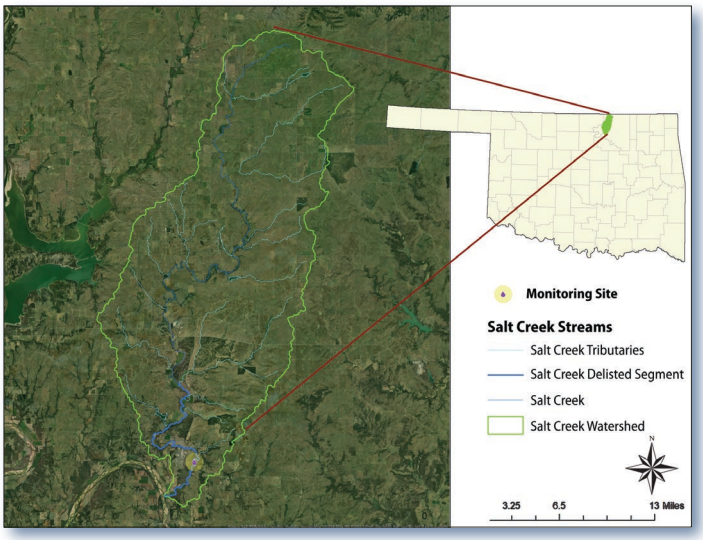

Figure 1. Salt Creek is in Osage County, Oklahoma.

Environmental Quality Incentives Program (EQIP) and general conservation technical assistance program, and through the OCC's Locally Led Cost Share Program (LLCP). From 2002 to 2015, landowners improved many acres of pasture and hay meadows, which reduced runoff of sediment and other pollutants by decreasing erosion and better utilizing available grazing lands (Table 1).

Results

The OCC documented improved water quality in Salt Creek through its statewide nonpoint source Rotating Basin Ambient Monitoring Program. Improvements were due to landowners implementing CPs. The installed practices worked to decrease erosion and

Table 1. CPs installed in the Salt Creek watershed.

Practice name	Amount installed
Upland wildlife habitat management	2,589 acres
Use exclusion	89 acres
Prescribed burning	24,525 acres
Pest management	26,799 acres
Forage harvest management	81 acres
Conservation crop rotation	641 acres
Prescribed grazing	43,047 acres
Conservation tillage	1,731 acres
Pond	22
Pasture and hayland planting	644 acres

reduce turbidity. Monitoring data compiled for the 2006 integrated report had showed excessive turbidity in Salt Creek (22 percent of baseflow samples had exceeded the state standard of 50 NTU). By 2010, turbidity values had decreased such that fewer than 10 percent of samples exceeded 50 NTU. This decreasing trend continues through the 2018 assessment (Figure 2). On the basis of these data, Salt Creek was removed from the Oklahoma CWA section 303(d) list for turbidity in 2010. Salt Creek is now in full support of its FWP beneficial use (Figure 3).

Partners and Funding

The OCC monitoring program is supported by U.S. Environmental Protection Agency's (EPA) CWA section 319 funding at an average annual statewide cost of $1 million. Approximately $500,000 in EPA 319 funds support statewide water quality educational efforts through Blue Thumb. Approximately $130,000 of these federal and state matching funds have been devoted to Salt Creek. Working in partnership with local conservation districts, NRCS supplied approximately $385,000 for implementation of CPs in the watershed through NRCS EQIP. The LLCP provided $16,084 matched by $30,436 from landowners. Many practices were funded by landowners based on recommendations through NRCS general technical assistance and conservation planning.

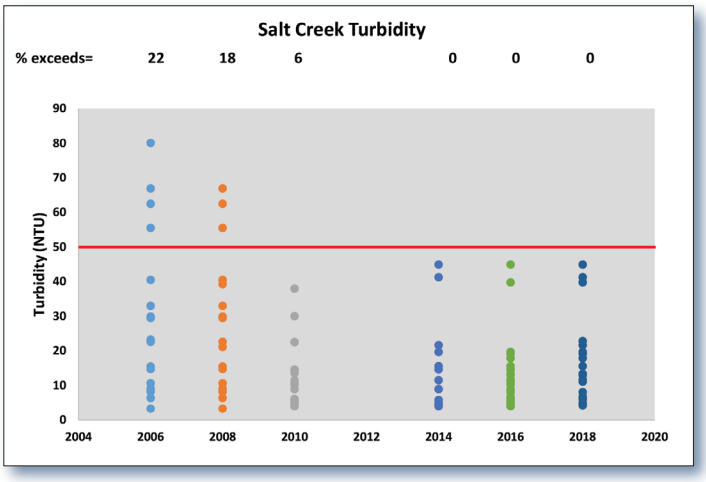

Figure 2. Turbidity decreased in Salt Creek as producers improved pasture management.

Figure 3. Salt Creek water quality has improved.

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