Environmental Connection Newsletter

Fall 2013

Contents

Sponsored by the Utah Department of Environmental Quality

Donna Kemp Spangler, Editor

Cub River Success Story

Changes in Land Use Practices Improve Water Quality

A little less than 20 years ago, phosphorous runoff into the Cub River and its tributaries had seriously impaired the water quality of the river. Thanks to the cooperative efforts of landowners, producers, the Division of Water Quality (DWQ), and the local conservation district, phosphorous levels in the Cub River drainage have been steadily decreasing.

Adoption of new land use management practices by landowners has reduced pollution, improved water quality, and revived riparian areas. Over 20 agricultural producers in the Cub River Watershed have made changes to their land use practices to promote sound stewardship of the area's water resources.

A River in Trouble

High phosphorous levels in the Little Bear River led DWQ to designate the river and its drainages as impaired in 1995. This designation made the Cub River subject to Total Maximum Daily Load (TMDL) requirements. A TMDL is the maximum amount of a pollutant, in this case phosphorous, that a waterbody can receive and still meet water quality standards. The application of TMDL requirements returns waters to their designated beneficial use by reducing pollutant loading. Beneficial use designations on the Cub River protect recreational water activities, warm water game fish and aquatic life, and agricultural uses. High phosphorous loads caused serious impairments to the water quality necessary to protect these uses.

A water quality study found that nonpoint source pollution from agricultural practices was a major source of the phosphorous loading responsible for the impaired water quality. A number of land use practices contributed to the problem.

- Unmanaged livestock grazing in river and creek bottoms damaged riparian areas.
- Improper manure management released pollutants into the river, particularly during spring rains.
- Return flows from flood irrigation discharged excess nutrients from runoff into the Cub River and its tributaries.

DWQ, the North Cache Conservation District, Utah State University, the Natural Resources Conservation Service (NRCS), local landowners, and others teamed up in 1999 to launch the Cub River Water Quality Improvement Project. Partners in this water quality project championed the adoption of best management practices (BMPs) by producers to reduce nonpoint source pollution and the development and implementation of riparian projects to restore the streamside environment. Projects included:

- revegetating riparian areas and rebuilding stream banks,
- relocating animal feeding operations (AFOs),
- shifting from flood irrigation to pressurized sprinkler irrigation, and
- installing fencing to keep livestock out of riparian areas.

This collaborative approach has improved the condition of riparian areas and significantly reduced phosphorous loading in the Cub River.

Restoration of Riparian Areas

Historical livestock use of the Cub River had eroded stream banks, leaving riparian areas with little or no vegetative buffer. The lack of riparian vegetation contributed to sediment loading into the river from runoff. Without the filtration provided by streamside plants, pollutants readily entered the water.

Riparian restoration projects focused on two key areas for improvement to land use practices:

- reducing livestock use of riparian areas
- restoring the stream corridors

Livestock producers installed multiple offsite watering facilities to reduce reliance on riparian areas for water. Producers installed over four miles of fencing to prevent livestock from accessing the river and creeks, with several more fencing projects currently in the design phases. Fencing has allowed riparian areas to rest and regenerate. Producers have also installed 3,100 feet of pipeline to supply water for livestock troughs away from the river and its tributaries. Improved grazing management has reduced the erosion of grazing areas, reducing sediment loading from runoff from rangeland and pastures.

Stream restoration and rehabilitation projects concentrated on stream bank stabilization and revegetation. Riparian projects recontoured stream banks to reduce soil erosion. Willow planting stabilized stream banks and promoted the regrowth and reestablishment of riparian vegetation.

Manure Management

Better management of manure from Animal Feeding Operations (AFOs) significantly reduced phosphorous loading into the Cub River. Since 2001, producers have installed ten solid waste facilities and six liquid waste storage ponds on dairies and feedlots and constructed over 600 feet of berms and diversions in areas where livestock are close to water. In two instances, producers relocated operations off the river. Containing runoff from manure bunkers and wastewater lagoons limits the nutrient loading into waterways.

Producers are also utilizing nutrient management plans to refine nutrient applications on cropland. These plans help farmers determine the appropriate manure application rate for their fields. Soil testing as part of these plans includes estimates of on-farm manure production, crop yield and nutrient uptake, and manure application rates. Farmers apply supplemental commercial nitrogen and phosphorous if nutrients from manure will not satisfy crop needs, reducing unnecessary treatments and excess nutrients in the soil. Limiting or eliminating manure applications on frozen or saturated ground also reduces the potential for nutrient-heavy runoff into the river.

Improved Irrigation Practices

A growing number of agricultural operators in the Cub River drainage are switching from flood irrigation to pressurized sprinkler irrigation. Flood irrigation creates runoff that washes phosphorous in manure and commercial fertilizers into waterways. Center-pivot spray irrigation systems allow operators to set the timing and amount of irrigation water applied across their fields. Irrigation scheduling prevents the overapplication of water. This reduces the runoff of sediments and excess nutrients into waterways from irrigation.

Partners and Funding

Collaborative efforts to improve the water quality on the Cub River have yielded impressive results. Local conservation districts have worked with producers to make water quality a high priority and educate landowners on the ways they can improve their operations to protect the waterways. DWQ supplied monitoring equipment and lab analysis support for water sampling. The NRCS entered into contracts with individual landowners to install BMPs. The NRCS also provided planning and engineering support. Utah State University Extension worked side by side with the local conservation districts and NRCS to provide technical support and outreach and educational efforts to raise awareness of water quality issues in the Bear and Cub River watersheds.

Since 2001, NRCS contracts have totaled over $1,092,000. The Clean Water Act Section 319 program provided an addition $330,100. Producers provided in-kind matching funds of $212,400. Together, water quality improvement projects on the Cub River have totaled approximately $1.9 million to date.

These restoration efforts, combined with increased outreach and education for landowners and operators, have resulted in better land use practices and reduced pollutant loading to the Cub River. The sustained application of these management practices and ongoing restoration efforts will improve water quality in and around the Cub River. The cooperative efforts of landowners and operators, the conservation district, DWQ, and their partners demonstrate the options available to agricultural producers in the state to protect water quality and successfully reduce nutrient pollution from nonpoint sources.