Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
New York

Restoration and Protection Activities in the Upper Branch of the Delaware River Protects New York City's Drinking Water Supply

Waterbody Improved

The Upper West Branch of the Delaware River is a significant source of drinking water for New York City (NYC). It directly feeds the Cannonsville Reservoir, the third largest reservoir serving NYC. Historically, the Cannonsville Reservoir experienced summertime eutrophic (low oxygen) conditions because of high phosphorus loads predominantly from nonpoint sources. New York State (NYS) placed the Upper West Branch of the Delaware River (UWBDR) on its 1998 303(d) list due to concerns about the vulnerability of the reservoir to additional sources of phosphorus. Because efforts by the local community and numerous other partners successfully reduced phosphorus loads, the state removed the UWBDR from its 2004 impaired water list.

Problem

The UWBDR is in Delaware County in south-central New York. The UWBDR and its tributaries encompass a watershed area of 450 square miles with approximately 662 linear miles of rivers and streams that are the source waters for the Cannonsville Reservoir. The 37.1-mile listed segment of the UWBDR begins near the Village of Stamford and runs to Chambers Hollow Brook. NYS listed this segment on its 1998 303(d) list of impaired waters for not meeting criteria to support its designated use—aquatic life support—due to excess phosphorus levels. The state's narrative standard states that phosphorus may not exist "in amounts that will result in growth of algae, weeds, and/or slimes that will impair the waters and their best usages."

NYC's Department of Environmental Protection completed a TMDL for phosphorus, which EPA approved in 2000. Forestry and agriculture represent 95 percent of the UWBDR's land use, and impacts from forestry, agricultural areas, and septic systems contribute to nutrient enrichment. NYC identified dairy farming and failing onsite septic systems as the most significant watershed sources of impairment to the UWBDR. Runoff from these sources carried excess phosphorus to the UWBDR, threatening to alter the natural aquatic community and compromise the reservoir as a source of high-quality drinking water.

Prior to the restoration work in the watershed, the UWBDR's tributaries frequently suffered from algae blooms caused by phosphorus inputs from agricultural runoff. This image shows a 1981 algae bloom that occurred on Trout Creek (Photo credit: Patricia Bishop, NY Dept. of Environmental Conservation).

Project Highlights

Delaware County worked with watershed partners to develop the Delaware County Action Plan (DCAP), a comprehensive watershed management program that provided a framework for protecting water resources through local decision making—within the context of state and federal laws. Through the DCAP, Delaware County has achieved many of the initiatives highlighted below. The accomplishments of the DCAP demonstrate the importance of managing land uses and nonpoint pollution sources at the local level.

The New York-based nonprofit Watershed Agricultural Council championed a voluntary, incentive-based program through which farmers implemented numerous best management practices (BMPs). The Watershed Agricultural Council encourages farmers to adopt and implement Whole Farm Plans (WFP) on dairy farms to successfully integrate traditional and innovative farm management approaches. These holistic farm plans (along with other nonpoint and point source reduction activities) helped reduce dissolved phosphorus loads in the UWBDR by 53 percent and particulate phosphorus loads by approximately 36 percent. The agricultural BMPs implemented through the WFPs included riparian buffers; alternate water sources for dairy cows; barnyard management improvements (waste removal, collection of polluted runoff); precision feeding (controlling nutrient excretions through diet management); and stream relocation.

A septic system repair and replacement program, overseen by the Catskill Watershed Corporation, also served as a key element of the UWBDR watershed protection and restoration program.

To ensure continued success, the Delaware County Soil and Water Conservation District worked with watershed stakeholders and cooperating agencies to develop a *West Branch of the Delaware River Stream Corridor Management Plan.* This plan provides a foundation for local residents, municipalities, interested organizations, and cooperating agencies to enhance stewardship of the UWBDR and its tributaries.

Results

Project partners conducted several monitoring activities in the UWBDR Basin, including a paired watershed study to evaluate water quality impacts of agricultural BMPs, biological assessment surveys, and ambient monitoring in the UWBDR and in the Cannonsville Reservoir. These monitoring activities showed a reduction in phosphorus enrichment in the UWBDR and the achievement of the state guidance limit of 20 micrograms per liter (μg/L) for reservoirs. These findings ensured that the drinking water supply was safe from eutrophic conditions and that the waterbody provided a healthy ecosystem for aquatic life. After the Cannonsville Reservoir met the state's guidance limit, NYC removed it from the *phosphorus restricted list* in 2002. This list, established by NYS regulations, limits the amount of phosphorus released in designated reservoir basins. In addition, survey data collected on the UWBDR indicated that the waterbody fully supported its designated uses and had no water quality impairments associated with the state's narrative standard for phosphorus. Therefore, NYS removed the UWBDR from the 303(d) list of impaired waters in 2004.

Partners and Funding

Many agencies participated in the restoration of UWBDR including the NYC Department of Environmental Protection, Soil and Water Conservation Districts, Delaware County Planning Department and Department of Public Works, Catskill Watershed Corporation, Watershed Agricultural Council, Upper Susquehanna Coalition, NYS Department of Environmental Conservation, NYS Department of Health, NYS Department of State, NYS Department of Transportation, NYS Department of Agriculture and Markets, NYS Soil and Water Conservation Committee, Cornell University, U.S. Environmental Protection Agency, U.S. Department of Agriculture, and U.S. Army Corps of Engineers. Funding for the phosphorus load reduction efforts came from many sources, including more than $420,000 from Clean Water Act section 319 funds.

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

EPA 841-F-07-001Z
October 2007

For additional information contact:

Donna Somboonlakana, EPA Region 2
212-637-3700
Somboonlakana.Donna@epa.gov

Michael Shaw, EPA Region 2
212-637-3785
Shaw.Michael@epa.gov