Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Connecticut

Watershed Approach Improves Norwalk River

Waterbodies Improved

Connecticut's Norwalk River was degraded by urban runoff from residential and commercial sources, prompting the state to add the river to the state's Clean Water Act (CWA) section 303(d) list of impaired waters in 1998, including the following two segments: (1) Norwalk River segment CT7300-00 _ 03a (segment 03a), for failure to support its recreation and aquatic life designated uses, and (2) Norwalk River segment CT 7300-00 _ 05 (segment 05), for failure to support its contact recreation designated use. Since 1998 Norwalk River Watershed Initiative (NRWI) activities have catalyzed changes in septic system maintenance, lawn care, pet waste, and municipal stormwater management requirements. These activities have reduced bacteria levels and improved water quality. As a result, the two river segments were removed from Connecticut's CWA section 303(d) list of impaired waters in 2012.

Problem

The 25-mile-long Norwalk River (Figure 1) drains a 64-square-mile watershed in southwestern Connecticut and empties into Long Island Sound. A small portion of the watershed drains the town of Lewisboro in southeastern New York. Land uses in the upper watershed are mixed forest and suburban and urban. Pollution sources include permitted municipal wastewater and stormwater discharges, runoff from impervious surfaces, failing septic systems, pet and domestic animal waste, and wildlife. Some areas of the river are affected by excess nutrients and reduced dissolved oxygen, leading to low aquatic species diversity.

Data collected from 1998 to 2011 showed that two Norwalk River monitoring sites, Stonehenge Road and Old Mill Road, often failed to meet water quality standards for recreation use (which require that the *Escherichia coli* geometric mean not exceed 126 colonies [col] per 100 milliliters [mL]). As a result, the Connecticut Department of Energy and Environmental Protection (DEEP) added two Norwalk River segments to the state's 1998 CWA section 303(d) list of impaired waters: (1) segment 03a, for recreation and aquatic life support use impairment, and (2) segment 05, for recreation use impairment. Stonehenge Road had mean *E. coli* levels as high as 540 col/mL in 2004, far exceeding Connecticut's state criterion for recreation. In 2006 DEEP completed a total maximum daily load (TMDL) for *E. coli* in the Norwalk River. The TMDL stated that bacteria in segments 03a and 05 must be reduced by 5 and 39 percent, respectively, to meet water quality standards for recreation.

Figure 1. Volunteers remove trash from southeastern Connecticut's Norwalk River.

Project Highlights

In the mid-1990s DEEP joined with the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) to bring together various organizations to work on the NRWI, a voluntary and locally based watershed planning effort. The NRWI partners developed a watershed action plan in 1998 and updated it in 2004. DEEP conducted a 2-year Stressor Identification Study for the watershed in 2008 and finalized a watershed-based plan in 2011. The NRWI Advisory Committee has garnered strong municipal support and led effective collaboration among municipal, state, federal, and private partners over a 15-year period. Over time, best management practices became more stringently required and monitored by state and municipal

permitting and zoning authorities in residential and commercial development, which has resulted in improved stormwater quality. Towns have updated their local regulations, budgets, and management systems to support low impact development (LID) and the use of better septic system management practices. Implementation of NRWI's Action Plan is ongoing; the goal is to maintain high water quality in these segments, as well as to delist the remaining impaired waters within the watershed.

A watershed coordinator position was established and funded using CWA section 319 and other funding sources. The coordinator led inter-municipal implementation of the Action Plan and helped to educate schoolchildren, garden club members, and the public about household pollution prevention, domestic animal waste management, management of nonmigratory Canada geese, organic land care, and the use of LID practices such as rain barrels and rain gardens. The funding also supported a LID coordinator. DEEP provided technical oversight for projects. Countless volunteers have participated in efforts to monitor water quality, identify pollution problems on the river, restore streamside buffers, and enhance trails and access points (see Figure 1).

For 16 years Harbor Watch at EarthPlace conducted water quality monitoring and track-down surveys, which helped local health and public works departments identify and significantly reduce bacteria loads from stormwater sources. The Mianus Chapter of Trout Unlimited worked with NRCS and Save the Sound on large-scale riparian habitat, invasive plant, fish passage, and water quality enhancement projects, resulting in over a mile of intensive riparian restoration at 10 major and many other smaller sites. Since 1996 the nonprofit Norwalk River Watershed Association (NRWA) has mobilized citizens through annual river cleanups and outdoor classroom activities. NRWA conducted a septic system study that led to an increased municipal focus on septic problems. The Maritime Museum at Norwalk produced a pollution prevention video, "Life in a Watershed," which has been shown to patrons and school students continually since 2003. The South West Conservation District offered site consultations, helped improve lawn care practices, and implemented streamside buffer, animal waste, and nutrient management.

Results

Harbor Watch collected water quality monitoring data in 2012 that showed mean *E. coli* levels of 107 col/100 mL in segment 03a (near Stonehenge Road in Ridgefield) and 90 col/100 mL in segment 05 (near Old Mill Road in Wilton) (Figure 2). Both segments now meet the state's water quality criteria for *E. coli* and aquatic species abundance and diversity, supporting designated uses for contact recreation and aquatic life. On the basis of these data, the two segments were removed from Connecticut's CWA section 303(d) list of impaired waters in 2012.

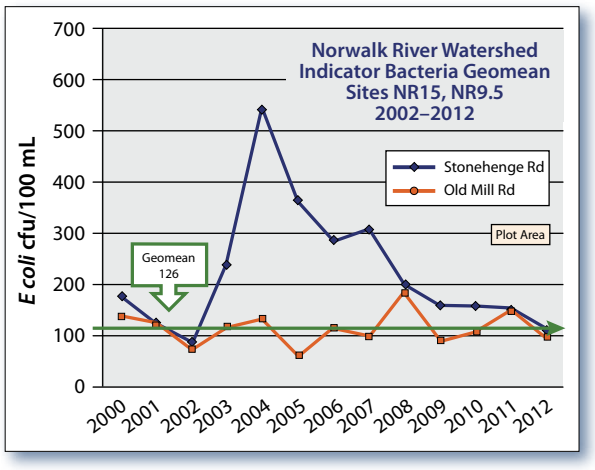

Figure 2. Bacteria levels at two monitoring sites—Stonehenge Road (segment 03a) and Old Mill Road (segment 05), 2000–2012.

Partners and Funding

CWA section 319 funds supported Harbor Watch's water quality monitoring and track-down surveys ($30,000), the Norwalk River watershed coordinator position ($125,000 over 5 years), the NRWA's septic system study ($7,500), and the Maritime Museum's "Life in a Watershed" video ($15,000). The New York town of Lewisboro and the Connecticut towns of Norwalk, Wilton, Westport, Ridgefield, New Canaan, Redding, and Weston provided additional funding for the watershed coordinator and student interns to assist with monitoring and surveys. A local seafood business, Norm Bloom and Son Oysters and Clams, contributed funding for lab work, as did Harbor Watch. The Fairfield County Community Foundation, the National Fish and Wildlife Foundation, and the Dibner Fund provided over $150,000 in financial support. NRCS provided Wildlife Habitat Incentive Program funding for riparian restoration work. Many of the projects initially funded by EPA grants have been continued with municipal and private funding sources.

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