Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
New Jersey

Stream Restoration Project Improves Water Quality of Wallkill River

Waterbody Improved

Stormwater runoff from residential, agricultural and steep-slope forested areas led to the impairment of two segments of the Wallkill River and their addition to New Jersey's Clean Water Act (CWA) section 303(d) list of impaired waters. The "Wallkill River at Route 15" segment was listed as impaired for aquatic life (benthic macroinvertebrates) in 2000, and "Wallkill River at Sparta" was listed as impaired for total phosphorus (TP), fecal coliform (FC), and temperature in 2002. To address the problem, local, state and federal partners restored the shape of stream banks and floodplain areas and replanted the riparian buffer and upland fringe areas using native plant species. As a result of these efforts, the combined Wallkill River listing (including both the "Wallkill River at Route 15" and the "Wallkill River at Sparta" stream segments) was removed from the 2006 impaired waters list for its temperature and aquatic life impairments.

Problem

Northwestern New Jersey's Sparta Glen Brook is a tributary of the Wallkill River in Sparta Township in Sussex County. This section of the Wallkill River watershed is a scenic area encompassing Sparta Glen Park, a highly used recreation area. The brook receives stormwater runoff from residential, agricultural and steep-slope forested areas. This section of the watershed includes the "Wallkill River at Route 15" and "Wallkill River at Sparta" segments (Figure 1), which were combined into one watershed-based, CWA section 303(d)-listed segment in 2006 as part of New Jersey's watershed management restructuring efforts.

U.S. Environmental Protection Agency Rapid Bioassessment Protocol sampling data collected between 1996 and 2000 indicated that the "Wallkill River at Route 15" segment had a habitat value below 60 (considered impaired) and a High Gradient Macrobiotic Index (HGMI) value of less than 10 (considered severely impaired)—both indications of waterbody impairment. On the basis of these data, the New Jersey Department of Environmental Protection (NJDEP) added this segment to the impaired waters list for aquatic life (benthic macroinvertebrates) in 2000.

In addition, water quality monitoring data collected during the same period indicated that the "Wallkill River at Sparta" segment did not comply with the state's surface water quality standard for temperature (31°C daily maximum and a rolling 7-day maximum average of 28°C). This segment also violated

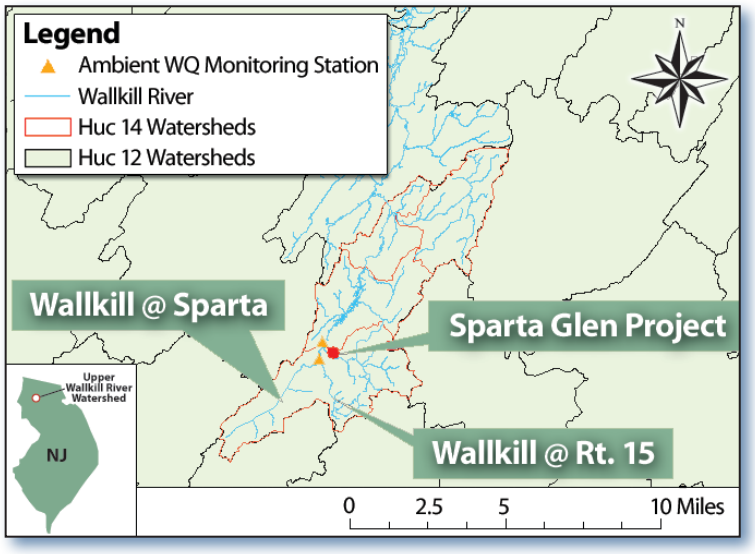

Figure 1. The impaired segments are in the headwaters of the Wallkill River watershed in northern New Jersey.

TP and FC standards. As a result, NJDEP added the "Wallkill River at Sparta" segment to the 2002 impaired waters list for temperature, TP and FC.

Adding to the watershed's challenges, severe flooding struck the area in 2000 when more than 14 inches of rain fell within 24 hours (Figure 2). Because the county was declared a federal disaster area, funding became available to support debris cleanup and emergency work to restore the stream's hydraulic carrying capacity. Nevertheless, significant stretches of the stream bank remained unstable.

Figure 2. Sparta Glen Brook, three months after 2000 flooding event and before stream restoration. In this picture the brook is flowing in a small channel next to the road at the base of the cliff.

Figure 3. Sparta Glen Brook, after restoration (July 2010). Partners restored and replanted stream banks, the riparian zone and the transitional upland fringe areas.

Project Highlights

Federal, state, county and municipal government officials joined forces with interested watershed residents, as well as representatives from the agricultural, lake and educational communities, to form the Wallkill River Watershed Management Group (WRWMG). In 2000 the WRWMG developed a characterization and assessment plan for a large watershed management area that included the Wallkill River watershed. Restoration of Sparta Glen Brook was designated as an "action now" project shortly after the 2000 flooding event.

In 2002 the Township of Sparta was awarded a CWA section 319 grant to restore approximately 5,700 feet of Sparta Glen Brook in Sparta Glen Park (Figure 3). The CWA section 319 funds supported efforts to restore and stabilize the stream banks using bioengineering techniques and to revegetate the riparian buffers and transitional upland fringe areas using native plant species. Township staff from the Parks and Recreation Department and the Department of Public Works planted more than 1,500 native trees, shrubs and saplings along the stream banks and slopes of Sparta Glen Brook. Large boulders were placed along the stream corridor to stabilize the stream banks.

Results

Stream bank armoring has significantly reduced stream bank erosion, and the increased organic groundcover has substantially eliminated sediment loading into Sparta Glen Brook. The revegetated areas provide shade and have reduced water temperature to the point that the previously impaired waters now comply with the state's surface water quality temperature standard. Restoration efforts have improved the stream's visual aesthetics, thereby improving the social benefit to the local community.

Fish habitat has improved, thanks to decreased water temperatures and sedimentation levels. In the most recent Rapid Bioassessment Protocol sampling, the "Wallkill River at Sparta" and "Wallkill River at Route 15" segments received an HGMI rating of 43.05 (considered good) and a habitat rating of 166 (considered optimal). On the basis of these data, NJDEP removed the combined segment (including both the original "Wallkill River at Sparta" and "Wallkill River at Route 15" segments) from the impaired waters list for temperature and aquatic life use in 2006. The combined segment remains listed as impaired for FC and TP.

Partners and Funding

Following the federally declared flooding disaster in 2000, approximately $700,000 in federal Emergency Watershed Protection Funds became available to support debris cleanup and emergency stream restoration work. NJDEP has been actively involved in watershed management in the Wallkill River watershed since March 2000. Approximately $300,000 in state Corporate Business tax funds supported the development of a Wallkill River watershed plan. Total CWA section 319 funding for this project was $62,440.

The Township of Sparta provided in-kind services through project design assistance and construction inspections. Staff from the U.S. Department of Agriculture's Natural Resources Conservation Service and the Sussex County Soils Conservation District provided technical support to Sparta Township for the design and implementation of restoration projects. Township staff from the Parks and Recreation Department and the Department of Public Works led the revegetation of stream banks and slopes along Sparta Glen Brook.

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