



## Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# Massachusetts

## Stormwater Best Management Practices Reduce the Abundance of Noxious Aquatic Plants

### Waterbody Improved

The presence of an excessive number of noxious aquatic plants impaired the aesthetics designated use of Massachusetts' Fuller Brook, prompting the Massachusetts Department of Environmental Protection (DEP) to add the waterbody to the Clean Water Act (CWA) section 303(d) list of impaired waters in 2002. Watershed stakeholders conducted educational outreach and implemented best management practices (BMPs) that reduced stormwater discharges from the town of Wellesley. Conditions improved, and the spread of noxious aquatic plants in Fuller Brook declined. As a result, DEP removed Fuller Brook from Massachusetts' 2008 CWA section 303(d) list for noxious plant impairment.

### Problem

Fuller Brook is a 4.3-mile-long brook in the Charles River Basin in eastern Massachusetts. The brook flows southwest from its headwaters in Needham through extensive wetlands before heading north toward Wellesley Center. Fuller Brook continues southwest through downtown Wellesley, where it joins Waban Brook just upstream from the Charles River. A portion of the brook has been channelized, and the watershed is densely populated, with approximately 55 percent of the development being residential. Development in the region has increased the amount of impervious surface, resulting in increased volumes of stormwater runoff entering the brook. In addition, Duck Pond, a small impoundment in a highly developed subwatershed of Fuller Brook, was identified as a major contributor of pathogens, nutrients and sediment to Fuller Brook (Figure 1).

Nutrients and sediment coming from Duck Pond likely have negative effects downstream, including altering habitat and contributing to the growth of noxious aquatic plants. In 1997 water quality monitoring documented excessive in-stream amounts of noxious plants in the lower 0.3 mile of the brook, impairing the aesthetics designated use of that portion of the brook. As a result, DEP added the 4.3-mile-long Fuller Brook to the Massachusetts CWA section 303(d) list of impaired waters in 2002.

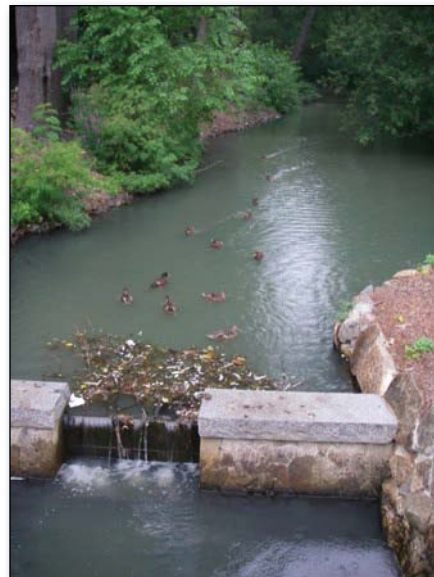


Figure 1. Duck Pond is in the Fuller Brook watershed near the town of Wellesley.

On the basis of the DEP assessment team's best professional judgment, noxious aquatic plants—mainly green algae (*Spirogyra*) and brown algae (*Melosira varians*)—were formally added as a cause of impairment of Fuller Brook. That portion of the brook also did not support primary and secondary contact recreational uses because of pathogens, organic enrichment/low dissolved oxygen levels, and habitat alterations.

## Project Highlights

Many efforts have been ongoing to reduce noxious aquatic plants, pathogens, nutrients and sedimentation in the brook. The town of Wellesley implemented multiple stormwater management techniques with the goal of reducing nonpoint source pollution in Fuller Brook and the Charles River. In 2004 Wellesley applied for, and received funding from, Massachusetts' CWA section 319 Nonpoint Source Grant program to remediate Duck Pond. The town implemented several structural and nonstructural BMPs, including 24 deep-sump catch basins with hoods, 5 Stormceptor units, and 30 feet of flow distribution pipes to separate and remove pollutants (e.g., sediment and nutrients) from stormwater runoff. The stormwater structures are estimated to reduce the annual load of sediment by 1,250 tons. Signs discouraging the feeding of waterfowl were also installed within the watershed (Figure 2).



Figure 2. A sign discourages people from feeding waterfowl.

The town coupled the project with one that emphasized educating the public about the causes of water pollution. Brochures and pamphlets were developed and distributed to homeowners highlighting actions that they can take to lessen their contribution to polluted stormwater runoff, including caring for pets, maintaining automobiles and properly disposing of household waste.

In 2007 the DEP completed a total maximum daily load (TMDL) for pathogens in the Charles River watershed. DEP's bacteria source-tracking team has been working with the town of Wellesley since then to inspect and sample storm drain outfalls in the section of the brook that had elevated bacteria concentrations. Wellesley also performed dye testing of sewer siphons and targeted sampling and dye testing in subwatersheds of two drainage outfalls. Those efforts will help the partners identify and remediate bacteria sources and other polluted discharges.

## Results

Visual monitoring conducted in 2006 noted a decline in the presence of noxious plant coverage. On the basis of those observations and the assessment team's best professional judgment, DEP removed the noxious plant impairment of Fuller Brook from the commonwealth's 2008 CWA section 303(d) list. Ongoing restoration work continues to address Fuller Brook's other sources of impairment.

## Partners and Funding

Partners responsible for stormwater management programs, nutrient management programs and Duck Pond's restoration consist of the town of Wellesley, the Natural Resources Conservation Service (NRCS), Massachusetts DEP and the U.S. Environmental Protection Agency.

The Duck Pond project cost \$123,854, with contributions from Massachusetts DEP's CWA section 319 Nonpoint Control Program (\$74,312) and the town of Wellesley (\$49,541). DEP also provided staff time to help develop the TMDL, oversee the Duck Pond restoration and assist with bacteria source-tracking activities.

The NRCS also supported projects to improve water quality in the Fuller Brook watershed. NRCS helped a farmer with land along Fuller Brook to develop a nutrient and pesticide management plan, and it provided \$1,700 through the Environmental Quality Incentives Program to support implementing the plan. NRCS also provided \$3,500 to develop a new irrigation system.



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