NONPOINT SOURCE SUCCESS STORY

Maine

New Septic System Restores Water Quality in Webster Brook

Waterbody Improved

Located in the northeastern-most corner of Maine's Aroostook County, Webster Brook flows through a patchwork of cropland and scattered rural development. Although several neighboring waters experience water quality impacts associated with agricultural runoff, in Webster Brook the impacts from untreated residential wastewater were the long-held concern. In 1996, the Maine Department of Environmental Protection (DEP) placed Webster Brook on its Clean Water Act (CWA) section 303(d) list of impaired waters for high *Escherichia coli (E. coli)* bacteria. In 2004, Maine DEP partnered with the town of Limestone and a resident to replace a failing cesspool next to the stream with a new onsite subsurface wastewater treatment and disposal system (septic system). This action reduced bacteria levels in the stream. After DEP monitoring data confirmed that Class B water quality standards for bacteria were met, DEP removed Webster Brook from its section 303(d) impaired waters list in 2010.

Problem

Webster Brook is a small Class B stream (as defined under Maine's Water Classification Program) in Limestone and Fort Fairfield, Maine, near the Canadian border. The brook, which includes Trafton Lake (a 103-acre impoundment), flows easterly into Limestone Stream and then into the Aroostook River in Canada. The stream extends 4.9 miles and has a watershed area of 6.5 square miles (Figure 1). The watershed is mostly agricultural cropland, and the stream corridor includes forested areas, wetlands and limited residential development. There is a small settlement with a cluster of 12 homes downstream of Trafton Lake.

In 1996, Webster Brook (segment ME0101000413_146R01) was included in Maine's 305(b) report because past monitoring showed that *E. coli* bacteria levels exceeded the Maine Class B geometric mean water quality standard of 64 most probable number per 100 milliliters (mpn/100 mL). *E. coli* bacteria are used as indicators of the presence of pathogens in water. Direct ingestion of water contaminated by pathogens (e.g., bacteria, viruses) can cause gastrointestinal illness, skin, ear, respiratory, eye, neurologic, and wound infections. The most commonly reported symptoms are stomach cramps, diarrhea, nausea, vomiting, and low-grade fever. Humans are exposed to waterborne pathogens during contact with and ingestion of recreational waters, ingestion of drinking water, and consumption of filter-feeding shellfish such as clams and mussels.

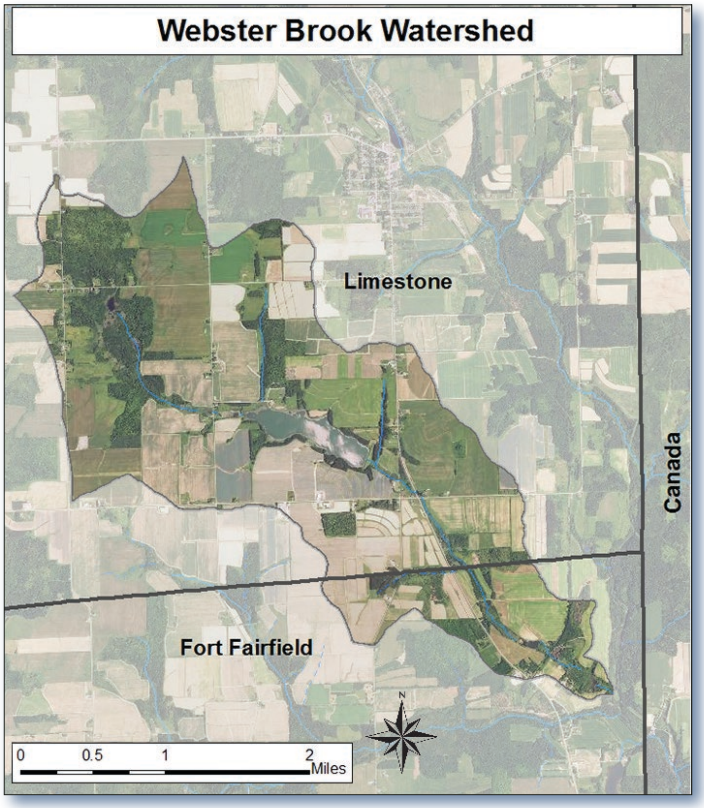

Figure 1. The Webster Brook watershed.

Waterborne pathogens enter surface waters from a variety of sources, including human sewage and the feces of warm-blooded wildlife. In Webster Brook,

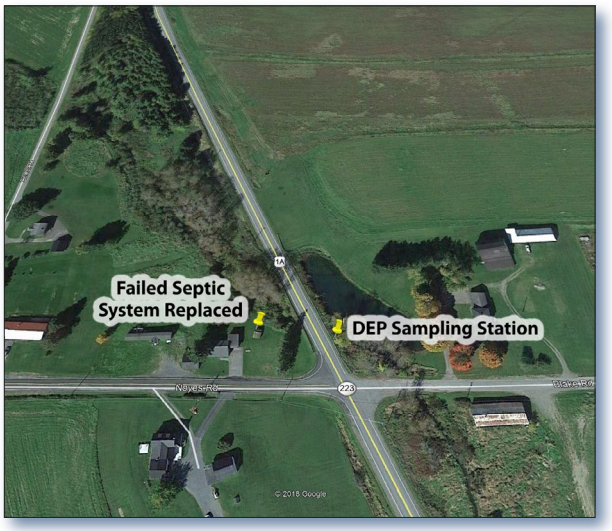

Figure 2. The failed septic system was directly upstream of a DEP sampling station.

the excessive bacteria counts were primarily due to malfunctioning residential wastewater system(s).

Story Highlights

In 2004, a landowner living next to Webster Brook approached the town of Limestone and Maine DEP about their cesspool system, originally installed in the 1940s, which had failed and was flowing untreated to the stream. Cesspools built before 1974 are allowed in Maine for wastewater disposal.

The landowner replaced the cesspool with a new septic tank and wastewater disposal system with concrete chambers. Maine DEP provided technical assistance and a $10,000 grant to the town of Limestone through its Small Community Grant (SCG) program. The SCG program provides grants to towns to help individuals replace malfunctioning septic systems that are polluting a waterbody or causing a public nuisance. An actual pollution problem, such as the one identified in Webster Brook, must be documented to qualify for SCG funding.

Results

In 2007, as part of the DEP's 2009 *Maine Statewide Bacteria TMDL (Total Maximum Daily Load)*, nine water samples were collected in Webster Brook just downstream of the location of the septic system replacement (Figure 2). Analysis showed that the *E. coli*

Figure 3. Webster Brook, seen here in 2018, now meets water quality standards.

geometric mean for Webster Brook was 61.8 mpn/100 mL, below the Class B geometric mean standard of 64 mpn/100 mL. Also, seven of the nine samples were well below the instantaneous (single sample) standard of 236 mpn/100 mL. As a result, Maine DEP removed Webster Brook from its CWA section 303(d) list in 2010 because it attained bacteria standards (Figure 3).

Partners and Funding

The town of Limestone and a landowner partnered with Maine DEP's Division of Water Quality Management and Division of Environmental Assessment to identify the problem, oversee system replacement and conduct water quality monitoring. Maine DEP provided technical assistance and a $10,000 grant through its SCG program to fund the new septic system. The SCG program is funded by state of Maine voter-approved bonds and serves as a source of nonfederal match to the funding Maine DEP receives through EPA's CWA section 319 program.

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

EPA 841-F-19-001D
January 2019

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