



news

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A healthy river – free of chemicals and raw sewerage, metals, toxins, bacteria, and of course garbage and the occasional automobile – provides for a robust ecosystem that promotes and fosters healthy lives for plants, animals, and people. The universal need for healthy living makes clean, safe, water a natural resource worth protecting.

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Monitoring Water Quality in the Merrimack River

How More (water) Becomes Less (clean water)

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The Merrimack River proves to be unhealthy in wet weather, according to 2008 results of season-long monitoring and testing of its waters which found high bacteria counts on rainy days. Between May and October 2008, during the most popular time for outdoor and water-related activities, almost half the days contained wet weather events – meaning that nearly half the time, the primary natural resource of the region was unhealthy for swimming.

The Merrimack River Watershed Council (MRWC) conducts river water monitoring as part of its Merrimack River Water Quality Monitoring, Analyzing, Protecting and Promoting Program (MAPP). For the last two years, the MRWC has been monitoring the 50-mile length of the Merrimack River in Massachusetts during the spring, summer, and fall seasons. Last year, 50 monitoring trips took place on the river by an army of volunteers. They monitor and take samples, riding on the river with volunteer boat owners, and generously give their time, resources, and efforts to learn of the quality of the river water. The data collected include water temperature, pH, dissolved oxygen, conductivity, total dissolved solids, salinity and clarity. Samples are also run through analysis at EPA laboratories for bacteria count levels.

The Merrimack River enters Massachusetts at Tyngsborough, and exits to the Atlantic Ocean at Newburyport. The waters cross boundaries and dams through 16 different communities, where residents are found to enjoy river-recreation through swimming, boating, fishing, and hiking along its shores. Over 300,000 people in Massachusetts alone rely on the river for their primary source of drinking water.

The data analysis results of bacteria counts and other indicators, based on accepted watershed association standards, showed the Merrimack River is unsafe for swimming on wet weather days almost half the time (47%) in 2008. On dry weather days, it was unsafe to swim 10% of the time. In addition, the river was found to be unsafe for boating almost 20% of the time on wet weather days, where the standards for boating are five times more lenient than for swimming.

“The unsafe days quickly add up,” notes MRWC Executive Director Christine Tabak, “And point to a growing concern about the health of the river. When it rains more than $\frac{1}{4}$ inch over 3 days, it results in potential hazards for swimmers, not to mention the fish and plants.” Alarmingly, in the spring-summer-autumn of 2008, almost half the days were rainy.

Results are revealing. “Even boaters are at risk,” Tabak says. “Unsafe boating and jet-skiing also occurs during those same rainy periods. It’s not hard to imagine the level of pollution when in almost 1 of 5 rainy days it could be hazardous to even venture out on the river in a boat!”

The increase in bacteria counts and chemical levels is a result of several factors. Some of it comes from storm water runoff or from Combined Sewer Overflows (CSOs), which are common to old mill towns. “In old cities like in the Boston area, Cambridge, Lowell, Lawrence, Haverhill, Manchester and Nashua, NH, the storm water combines with the wastewater of the community,” relates MRWC Water Resource Manager Tracie Sales who heads up the MAPP Program. “During a minor storm event, storm water and wastewater are treated at the wastewater treatment facility with little problem. On a very wet day, however, the wastewater treatment facility cannot handle both the typical household and business waste load and the storm water load. In these cases, untreated or partially treated sewage is released into the river when demand on the wastewater treatment system is exceeded,” she explains.

What usually happens is this: A rainy weather day occurs and the water accumulates as run-off. It soon fills the storm drains and winds its way toward the treatment plants, which have overflow valves into our local rivers, joining, in older cities with combined sewer systems, with raw sewerage along the way. Inevitably, it overwhelms the wastewater treatment facility which is not designed to handle the volume. Undetermined amounts of run-off and raw, untreated or partially treated sewerage pours into the river. This “plume of pollution” hits the river like a drop of dye in a bowl of clear water - it has an immediate impact, spreads out like a cloud and begins to flow downstream. It touches everything in its path to greater and lesser degrees. Along the way it combines with other “plumes of pollution” pouring into the river from other outlets from the same rainy weather.

Sales further explains that, “The evidence points toward these ‘plumes’ as having significant impact on the river water, and of course on the ecosystem depending on that same water.”

Tabak offers an illustration of the impact. “Imagine it’s late afternoon following a major rainstorm as the clouds finally break up and the sun returns. It’s bright and beautiful and people venture out to enjoy the fresh air and sunshine after a day of dark clouds. Families go to the riverbanks to walk and play. Kids and adults grab their fishing poles and head to a bridge to cast their lines. All the while, in the midst of the fresh air, sunshine, and fun of outdoor recreation at the river, an almost invisible plume of pollution is flowing in the waters right below them. That pollution affects all who come in contact with it – plants, animals, and kids fishing off the bridge. One has to wonder just what those kids will do with any fish they catch.”

A new season of water monitoring and testing began last week as volunteers have been mobilized to again seek out the level of water quality in the Merrimack River. This year, parts of southern New Hampshire will be added to the sampling areas.

The MRWC provides its annual “State of the Merrimack River” address, a summary of the MAPP Program, as well as complete technical data and analysis in the full report on its web site: www.merrimack.org

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The MRWC is a non-profit 501(c)(3) organization formed in 1976 by citizens and regional planning commissions to involve citizens in cleaning up the Merrimack River. As “The Voice of the Merrimack,” its mission is *to protect the Merrimack River and promote the wise use of its watershed*. It fulfills this mission through water quality monitoring, watershed education and outreach, advocacy and recreation. The organization seeks knowledge about the Merrimack River water quality, pollution sources, and options for polluter accountability and education.

It is the first volunteer group in over two decades to regularly monitor the Merrimack River main stem in Massachusetts, and is the only advocate of the Merrimack River in Massachusetts independent of commercial or regulatory interests. The MRWC monitors the river’s water quality with support from the EPA, the Massachusetts Environmental Trust, the Stevens Foundations, the Davis Conservation Foundation, the EnTrust Fund, and the Cabot Family Charitable Trust.