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Groundwater is not as plentiful and clean as it once was.

Why we must protect precious groundwater

By ANNA McCARTNEY
Contributing writer

Now well into its second decade, Groundwater Awareness Week, March 9-15, spotlights one of the world's most important resources — groundwater.

All life depends on this water buried beneath our feet. However, water tables are falling around the world as countries pump dry the aquifers that hold this water. Water that once could be brought to the surface with a bucket on a short rope is now a mile or more down. And we know for certain that we are polluting and depleting this limited resource at an unsustainable rate.

With growing political, economic and development pressures, it will take cooperation across political borders and better management policies to protect this elixir of life. And it will take you to get involved in protecting this vital resource. To learn more about groundwater and how you can get involved, go to www.ngwa.org/Events-Education/awareness/Pages/Get-involved.aspx.

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Fairview Middle School students conduct stream studies on Trout Run.

Students monitor Trout Run for pollution

By ANNA McCARTNEY
Contributing writer

Students at Fairview Middle School know more about Trout Run than most people, thanks to a Coastal Zone Management grant and the support of the Erie County Conservation District and Environmental Educator Kristen Currier.

The stream is located behind their school and led by teacher Lisa Bolla, students have conducted three testing sessions: in late September, mid-November and again in February. Students test the water for levels of phosphates, nitrates, pH, dissolved oxygen and turbidity. They also search for and tally macroinvertebrates and other living things within the stream.

The recent cold temperatures and time restraints have made it difficult to test more frequently. However, students go back to the classroom and discuss the results, noting the changes they record.

The early fall tests have shown that the stream was at its worst then with high numbers, low oxygen levels and a positive coliform bacteria test. Students have also taken note of the extensive erosion on the far bank. They will be conducting more tests in late March, and then again in May to see if there are any effects on the stream's health from fertilization in the fields that surround Trout Run.

Students are now talking about an action plan to improve the quality of Trout Run and will summarize their data and share their conclusions with their school district and municipalities. You can view their data and the data of other schools participating in area stream studies at the ECCD website, www.erieconservation.com/education/middle-school-stream-study-data/.

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CONTRIBUTED PHOTO

Trout Run, a state-listed impaired waterway that empties into Lake Erie (above), and Godfrey Run need help from private citizens and communities throughout their watersheds to improve water quality and wildlife habitat. Collaboration is needed to control runoff and implement streambank protection and restoration efforts to help control erosion and to reduce the amount of sedimentation and nutrients from fertilizers in the stream and ultimately Lake Erie.

IN THE LONG RUN

Local streams are vital to health of Lake Erie

By ANNA McCARTNEY
Contributing writer

What are you doing to ensure that the water that drains from the building and property where you live, work or go to school, is not polluting the source of your drinking water?

Whether you use groundwater from a well or surface water from a river or lake, it's all connected. So learning more about human activities that harm or protect entire watersheds should be your first course of action.

This week's Lake Erie connections are Trout Run and Godfrey Run. Combined, these two subwatersheds drain approximately 9.24 square miles of land in Fairview Township, Girard Township, Girard Borough and McKean Township. They drain directly into Lake Erie and play an important role for the millions of people who use the lake as their source for drinking water, swimming and recreation.

Because Godfrey Run and Trout Run serve an important role in the region's fishery, they also play an important economic role for Erie County. Both are nursery waters for the Pennsylvania Fish and Boat Commission, and while fishing in the creeks is prohibited, there is excellent steelhead and walleye fishing at the mouths of these two very popular streams when lake conditions are favorable.

Thanks to the Erie County Conservation District and three property owners that partnered with them, more than 1,300 feet of streambank have been protected and/or stabilized, and greater than an acre of riparian buffer was reestablished along the Godfrey Run corridor. This will keep more than 85 tons of sediment from entering the stream annually.

But it will take more citizens willing to make more corrections just like these as well other actions to improve the water quality throughout these watersheds — and ultimately for Lake Erie. For example, it will take measures to protect still undisturbed natural areas, which in the long run is one of the best and least costly solutions for protecting water quality.

PA FISH AND BOAT COMMISSION

Because Trout Run and Godfrey Run serve an important role in the region's fishery, they also play an important economic role for Erie County. Anglers flock to the excellent fishing opportunities where these tributaries empty into Lake Erie.

GENE CLEMENTE/Contributed photo

Lack of a riparian area on this section of Godfrey Run increased the amount of streambank erosion, and the amount of sediment and other pollutants in the stream. Take simple measures to protect natural streambanks by not mowing to edge of the stream.

GENE CLEMENTE/Contributed photo

Streambank stabilization in the photo above included adding plants and trees in the restored vegetative buffer, which will act as a filter to slow down the entry of the stormwater and help to keep chemicals from entering the stream.

The results and observation from past sampling efforts for these two tributaries show biological and habitat degradation and temperature issues. Bacteriologic samples taken at Trout Run showed E.coli from human waste is making its way to the stream and entering the lake. This could possibly be raising E.coli counts that close Presque Isle State Park beaches.

Other research is finding chemicals used in pharmaceuticals and personal care products in area waterways (visit www.paseagrant.org/topics/toxins/ for more information). While more research is needed, likely culprits are septic systems and wastewater treatment plants, neither of which removes these chemicals before they reach waterways.

The water quality in the Trout Run and Godfrey Run watersheds is not what it should be. But you can make a difference by learning more about these problems. Your involvement is needed to fix and avoid serious problems that affect groundwater, streams and Lake Erie. Reducing and eliminating the sources of human pathogens and other pollution will require cooperative efforts among municipal, county, state and federal agencies, as well as developers and residents.

Smart growth development, streambank restoration, installation and protection of existing riparian buffer strips along the streams, stormwater retrofits, septic and sewer system maintenance, regular testing and education are the most cost-effective ways to reduce the sources of pollution and flooding. Water use must be evaluated for its impact on entire watersheds, not just the immediate area.

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Share your ideas about the need to protect valuable water resources for possible publication in the "Your space" feature. Support your ideas with facts. Send them to axm40@psu.edu.