

Johnston Run Waterway Assessment – a fascinating process

By Elizabeth George MD

Last fall, National Fish and Wildlife Foundation (NFWF) awarded a capacity building grant to Mercersburg Borough and Montgomery and Peters Township to work in collaboration with MPMC on the revitalization of Johnston Run.

The Department of Environmental Protection (DEP) lists Johnston Run as an “impaired” stream due to nutrient and sediment content compromising the aquatic wildlife habitat.

To assess the condition of Johnston Run, an approach is used that incorporates a Stream Corridor Assessment (SCA), and more site specific measures of the aquatic insects, fish, and water quality.

Last week a small team of environmental scientists from KCI Technologies did an initial walk and sample collection of various points along the run; these locations are limited to portions where landowners have given permission. Johnston Run Revitaliza-

tion Council member Laura Puckett (project manager) and I joined the team at the VFW parking lot for a highly educational experience about the very specific techniques used for stream sampling. (Very different from things I learned in medical school!)

The scientists handed us a 6-page document entitled “Benthic Macro-invertebrates” which describes in

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**Information at the tip
of your finger...**

Photo courtesy Elizabeth George MD

This water beetle doesn't tolerate pollution well. The number of these found in samples can tell us about the quality of our stream water. KCI scientist Colin Hill collected numerous samples from the sediment of the streambed.



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minute detail how specimens are to be collected, identified and processed. (I'm glad we weren't going to be tested on the material!) They waded into the water in their totally waterproof and warm garments from toe to chest, while Laura and I watched, fascinated and shivering, on the stream bank.

Behind the team in the photo, an intact "riparian buffer" in this section of Johnston Run can be seen. It consists of deep-rooted grasses and trees that hold the soil, stabilize the stream bank and help prevent erosion. Fine silt covers much of the streambed - which indicates that some erosion is occurring upstream. The scientists explained that silt from eroding stream banks can fill in and smother the rocky habitat needed by fish (such as trout) and the insects they feed on. As well as preventing erosion, the riparian buffer of grass, trees and undergrowth provides a habitat inviting to songbirds (which also enjoy the insects found in a healthy stream) and a variety of wildlife. A riparian buffer along the stream helps conserve the soil, nutrients and minerals in the land next to it. Storm water run off from our roads, parking lots and lawns also can unintentionally add minerals, chemicals and other pollutants, such as lawn fertilizer, weed killer and pesticides, to a streambed - making the ducks' and fishes' "drinking and bathing" water not so healthy.

Towns, neighborhoods and rural areas can also utilize riparian buffers to help prevent flooding. During floods, a strip of trees, shrubs, and deep-rooted grasses surrounding waterways acts like a sponge, absorbing rising and falling water. Native plants in these areas help slow flood velocity, store water for future use, and slowly release water over a long period of time.

During the SCA, the team will document stream bank and corridor conditions, noting location and severity, and including



A "riparian buffer", which is important for preventing erosion, can be seen in this section of Johnston Run where the KCI Technology started the waterway assessment last week.

Photo courtesy Elizabeth George MD

photographs for further study. Additional monitoring will include assessment of benthic macroinvertebrates, fish, and water quality.

Benthic macroinvertebrates include aquatic insects, worms, snails and other organisms that live in the stream bottom. They are captured using a "handheld D-frame sampler" which Laura and I learned is much more than just a net. A specific technique of "kicking" the channel bottom is used to dislodge the organisms. Standardization is important in collecting and comparing samples, so a very specific "kicking" technique and amount of time is used. The numbers and types of macroinvertebrates found tell scientists what condition the stream is in. Some types are tolerant of pollution, and others are more sensitive

and need healthier waters to survive. The same is true for fish that will be sampled in the summer along Johnston Run.

Lastly, the scientists will take water quality samples that will be tested for dissolved oxygen, pH, water clarity and the presence of nutrients, metals, and bacteria. These paragraphs barely touch the surface of the complexity of the stream ecosystem and its balance. But one can begin to sense how everything is intricately related, including our own health.

The results of the assessment will be used to not only describe the existing condition of the stream, but also help identify areas where solutions can be put in place to restore Johnston Run as both a healthy waterway and an enhancement

to our community.

Tammy Piper, watershed specialist for the Franklin County Conservation District, plays an important part on the Johnson Run Revitalization Council, connecting us with local watershed and conservation consultants, informative materials, and educational programs. The County Conservation District is also able to provide information on funding sources as recommendations for waterway revitalization are put into action. The Conservation District website is an excellent source of information at www.franklinccd.org/ Also, *PA Stormwater Best Management Practice Manual* "BMP 6.7.1 Riparian Buffer Restoration" can be found at <http://www.elibrary.dep.state.pa.us>

In addition to the support provided by the National Fish and Wildlife Grant, the work being done toward revitalizing Johnston Run is made possible by consultative support through the National Park Services Rails, Trails & Conservation Assistance Program (RTCA). The NFWF and RTCA grants also provide expertise to develop a conceptual plan for a streamside trail as it passes through borough property. The trail would fit into recommendations of the MPMC walkability/bikeability study completed for our area last summer.