## Q/As About Shanes Creek and Royal Lake

By Greg Sykes (greg@grsykes.com)

Q: What are all of those ribbons around Shanes Creek?
A: Many people asked this question. To first clarify the question, Shanes Creek is a major Royal Lake tributary that originates at Robinson Secondary School, flows under Commonwealth Boulevard, and bends to run under Roberts Road. It is named after John McAnaw's Irish setter, Shane, (details are in The Naming of Shanes Creek) and local residents have used this name for decades. The first steps to formally register this stream as "Shanes Creek" were recently initiated since it is currently listed as "a tributary to Rabbit Branch." The branch junction was flooded and lost when Royal Lake was created. The Royal Lake dredge that occurred in 2016-2017 removed deposit but did nothing to stop more sediment from entering the lake—it is akin to treating the symptoms without addressing the problem's root cause.

Fast-forward to 2018. The Department of Public Works and Environmental Services (DPWES) began addressing the erosion along Shanes Creek to improve water quality flowing into Royal Lake and further downstream. To bolster riparian shorelines, the usual approach is to restore the stream throughout the length of a given waterway, much like the streambed raising, path redirection, and bank reinforcement conducted at Crooked Creek Park in 2013 and 2014. For Shanes Creek, DPWES' strategy will be to shore up or otherwise correct specific, high-priority areas and leave the rest of the stream natural. Before any restoration begins, Shanes Creek's length, parkland, and property lines from Roberts Road to the lake were surveyed and mapped. Those ribbons and flags mark different features, such as delineating wetlands, stream courses (including any tributaries from storm drain outfalls), underground utilities, and soil sample locations. Archeological teams dug test pits, searching for significant sites needing further excavation; some flakes from making stone tools (a common find) were unearthed. A core-borer took soil samples for substrate analysis. Any tree, live or dead, having at least a 12-inch-diameter received a uniquely numbered medallion. DPWES and its contractors, primarily Wetland Studies and Solutions, Inc., did much of this work.

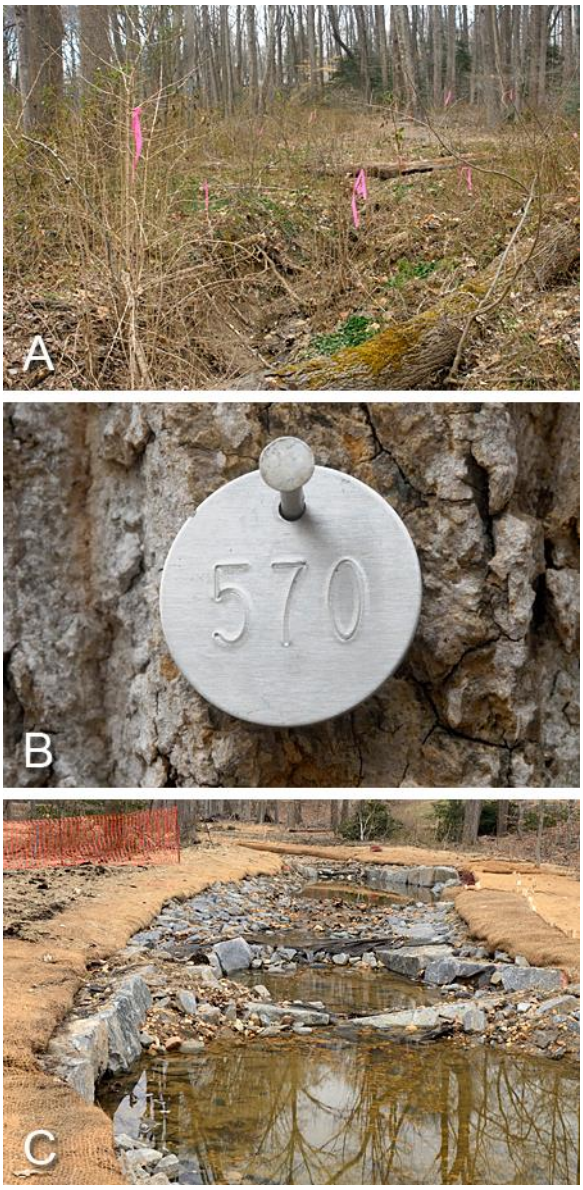


**Figure 1. Indications of the surveys include (A) ribbons lining a ditch and (B) a tree tag. Stream restoration sites will look much like sections of Crooked Creek Park (C). This image of the final stages, with cooling pools and water-oxygenating cascades, shows the foundation before adding native woody plants and partial concealment by foliage.**

The resulting pre-design plans were released in March for 30-day review. The plans contain items such as technical, topographic diagrams akin to a building's blueprints, tree listings, and proposed restoration sites. The project is still in the early stages, so exact plans are subject to change. DPWES will post concept plans on its website in June. The targeted year to begin on-site restoration work is 2021.

Q: How much sediment builds up in the lake each year?
A: That depends on various upstream factors. Increased impervious surfaces (e.g., roads, parking lots, decks, and rooftops), tree loss, and rainfall amounts in the year all mean more streambed and bank erosion, resulting in more sediment deposited into Royal Lake. Prior to the last dredge, DPWES estimated that 80 percent of the sediment comes from waterway erosion; the rest originate from actions like topsoil washing off, especially after a disturbance. The forebays installed during the last dredge are supposed to help capture sediment and make future dredges more efficient.

**Figure 2. Before Royal Lake's 2016 dredge, silt shoals and islands formed where Shanes Creek and Rabbit Branch emptied into the lake. This cut-away profile of an island offers an estimated sediment accumulation rate by noting the amassed autumn leaf deposit layers. The silt and anoxic conditions preserved the leaves.**

Q: There was a lot of tree loss, mess, and noise during the Crooked Creek restoration. Besides, I prefer natural streams. Isn't there a better way to address Shanes Creek's water quality problems?
A: Unfortunately, Shanes Creek is terribly impaired. Correcting upstream problems is more efficient than downstream reparations. The targeted restoration approach should cause less of an environmental disturbance and save taxpayer money, as stream restorations cost around $1,000 per linear foot. Ideally, developers would have the foresight to apply measures such as cisterns and absorption beds to disperse storm water evenly in more but smaller points than through the few but forceful outfalls. Landowners can offset precipitation shed from decks, expanded driveways, and other impermeable features by building rain gardens, installing rain barrels, planting native trees, and dedicating at least half of the property to native habitat to sponge up excess water before it reaches the streams. More on storm drain discharge and remediation is in the Eco-Article, Applying the Beavers' Blueprints (January 2009). Additional resources are:

- https://www.fairfaxcounty.gov/soil-water-conservation/drainage-problem - a handy webpage on soil and water conservation, including steps to stem erosion and help with drainage problems.
- https://www.fairfaxcounty.gov/soil-water-conservation/conservation-assistance-programs - homepage of the Conservation Assistance Program and the Virginia Conservation Assistance Program (CAP/VCAP). In some cases, representatives visit onsite and discuss options for your particular land and water management problems. Improvements might be eligible for the state grant program.
- https://www.fairfaxcounty.gov/soil-water-conservation/cap-vcap-faq - FAQs about CAP/VCAP.

Further CAP/VCAP-related questions may be sent to conservationdistrict@fairfaxcounty.gov.

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