

CHESAPEAKE MONITORING COOPERATIVE

CMC
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CASE STUDY: TAYLOR RUN LOCAL DATA GUIDES STREAM RESTORATION DECISIONS



By Maria Burke

Taylor Run is a stream located in Alexandria, Virginia that flows into the Potomac River. In 2019, the City of Alexandria determined that stream restorations of three local streams (Lucky Run, Strawberry Run, and Taylor Run) should be conducted in order to earn nutrient reduction credits through the [Chesapeake Bay Program](#) in order to meet the [TMDL 40% plan](#). The City applied for a grant through the Virginia Department of Environmental Quality Stormwater Local Assistance Fund, and calculated their nutrient reduction credits using the [CBP Expert Panel Removal Rates](#). However, those removal rates are based on [soil samples](#) which were collected from eleven streams in Pennsylvania and not samples specific to Alexandria. The differences in topography, environment, soil, and land use of these samples prompted a [response](#) from the community, the city advisory board, and the Environmental Policy Commission (EPC) for the necessity of a local study. The City Council made the [decision](#) to pause the restoration on Taylor Run and Strawberry Run until further studies had been completed.

Taylor Run was chosen as one of the stream restoration sites due to severe erosion in some areas and evidence of downcutting and widening in other areas, however, evidence of poor local water quality was not determined. The [proposed stream restoration project](#) included excavating an area 1900 ft x 75 ft, cutting down over 250 trees, and raising the stream bed 3-7 ft, and according to experts, would destroy existing plant and animal communities and threaten 25 rare species in the wetland area. The North Ridge Citizens' Association (NRCA) received a \$5,000 grant from the Virginia Department of Environmental Quality



*Russ Bailey and Chuck Kent collecting water samples at the downstream monitoring site during a high-water event.
Photo by Bill Gillespie.*

to conduct a stream study for Taylor Run analyzing nutrients (TN, TP, TSS) and sediment flows in order to determine the water quality impact from Taylor Run into the Potomac River and the Bay. These data were coupled with support from the Alliance for the Chesapeake Bay's [RiverTrends](#), which provided the monitoring equipment, analysis, and training for additional stream indicators. Several of these indicators contribute to the CMC and are [Tier 2](#) level data.



Chuck Kent and Rita Leffers collecting water samples.
Photo by Bill Gillespie.



The Taylor Run Monitoring Team. Left to Right: Patricia Gruesen, Russ Bailey, Rita Leffers, John Fehrenbach, Bill Gillespie, and Amy Krafft. Team members Don Bobby, Chuck Kent, and John Winstead not pictured. Photo by Chuck Kent.

The study undertaken by the NRCA consisted of water quality measurements and samples taken at the upstream and downstream sites of the 1900 ft stream twice a month between March and October 2021. According to Bill Gillespie, the monitoring team took the measurements a step further. “You can have a load of nitrogen or phosphorus in the stream banks, but if it never (or only rarely) gets in the water, you won’t get the nutrient reduction credits based on stream bank sampling and erosion estimates.” The samples were taken at both high and low water and consisted of the following measurements: air and water [temperature](#), [pH](#), conductivity, [turbidity](#), [dissolved oxygen](#), and lab grab samples. The grab samples were then taken to a certified lab to determine Total [Nitrogen](#) (TN), Total [Phosphorus](#) (TP), and [Total Suspended Sediment](#) (TSS) measurements, which were found to be 20-30% of the levels of the Pennsylvania stream data.

The NRCA presented their data to the City Council. In addition to the graphs of the measurements taken for TN, TP, and TSS during their study, recommendations for alternatives for nutrient reduction credits for the city were presented. By restoring Lucky Run and through RiverRenew Nutrient Reduction Credits and tree planting projects, Alexandria can more than satisfy their nutrient credits. As for [next steps](#), the community, EPC, and the City Council are currently in mediation to develop plans for Taylor Run and Strawberry Run. Best management practices such as stormwater retention ponds, bioswales, and rain gardens as well as implementing erosion control measures in Chinquapin Park (upstream from Taylor Run) would reduce stormwater volume and velocity, as well as improve water quality in Taylor Run.



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