

## North Branch Bennett Creek Stream Restoration

### Project Overview



**Site Location:**  
Frederick County, MD



**Client/Contact:**  
Center for Watershed Protection

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**Completion Date:**  
March 2020



**Design/Build Cost:**  
\$1,148,950.00

Ecotone, Inc., was the design-build contractor for the North Branch Bennett Creek Stream Restoration, located at the Bar-T Mountainside property near Frederick, MD. The Center for Watershed Protection (CWP) secured funding for this project from the Maryland Department of Natural Resources (DNR) and Frederick County. Project goals included improving water quality by addressing streambank erosion and reducing nutrient and sediment loads in the Lower Monocacy River watershed. Prior to construction, North Branch Bennett Creek and its tributaries, designated as Use-I streams, exhibited severe bank erosion and were disconnected from the floodplain. The causes of degradation likely originated from surrounding land use, which is primarily agricultural and includes a large golf course, increasing sheet runoff into the streams.

Restoration along the mainstem incorporated woody material to construct in-stream structures such as toewood, woody riffles, and log vanes. These features provide stabilization, slow velocities, and create habitat for aquatic species. Additionally, the newly-created wetlands mitigate flooding, retain and filter pollutants, and increase habitat diversity. Construction crews implemented a roughness approach to floodplain grading, which creates micro-topography that slows water and diversifies habitat. The restoration of Tributary 1 involved raising the streambed and stabilizing the banks by grading and using coir matting. Grade control measures for this steep reach included woody material, log vanes, and rock cascades. Finally, an innovative Stage Zero approach was utilized to restore Tributary 2. This innovative approach uses clay blocks to encourage water to move to the surface, creating a low flow, multi-channel stream corridor. Woody material installed in the stream bed encourages the creation of multiple flow paths and also slows water during high flows and provides grade control.

Not only did this project offer the opportunity for significant ecological uplift and water quality improvements, but it also now serves as a valuable educational resource for the hundreds of campers, students, and other visitors to the Bar-T Mountainside property.

### Project Highlights:

- Restored approximately 2,496 linear feet of perennial stream
- Restored approximately 1,215 linear feet of intermittent stream
- Created approximately 1.42 acres of wetlands



Prior to restoration, North Branch Bennett Creek and its tributaries were disconnected from the floodplain, with vertical banks showing vegetative overhang and exposed roots.



During construction, the crews incorporated woody material and a roughness approach to grading to add micro-topography and enhance habitat in the floodplain.



Post-construction, native vegetation is establishing in the floodplain, providing stabilization and diverse habitat.