The Process of Restoring a Stream Corridor

The Before, During, and After…

Pre-Restoration

Brandywine Red Clay Alliance and its conservation partners have been working to restore the natural stream ecosystem on Plum Run since 2007. Over 2 miles of streambanks have been restored to date. The section of Plum Run that you see in the valley before you was restored in 2019. Prior to restoration, the stream banks were steeply eroded, as can be seen in the photographs below.

Pre-Restoration Sediment Deposits and Eroded Streambank

Pre-Restoration Sediment Deposits and Eroded Streambank

Streambank Regrading and Stabilization

Most of the work involved using machinery to pull back the steeply eroded vertical streambanks to a more natural, gradual 4 to 1 slope. Much of the soil removed was rich in organic material and was able to be regraded into the upland meadow that extends alongside the Plum Run Trail. Native grass and wildflower seed, along with hundreds of live stakes (dormant native willow cuttings), were immediately applied to the reformed streambanks to stabilize them and prevent erosion.

Streambank Stabilization with Root Wad

Streambank Regrading and Restoration Process

Streambank Stabilization with Single Log Vane Deflector

Stream Restoration Process

The process to restore the streambanks properly requires a specialized knowledge of hydrology and engineering. Once ready for construction to begin, the work was confined to certain times of the year to avoid impacts to sensitive animal species. To minimize water quality issues downstream, the water flowing through Plum Run had to be temporarily piped around the work site on a day-to-day basis, section by section as the stream banks were restored.

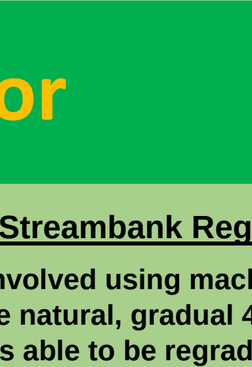
Temporary Stream Diversion

Temporary Stream Diversion

Stream Habitat Improvements

In addition to reshaping the stream banks, the restoration process included inserting in-stream structures made of rocks and logs into the creek to further oxygenate the water, reduce erosion and improve fish and aquatic habitats. Several of the large tree root systems that needed to be removed along the banks of the creek were incorporated into this work.

Large Stone Deflector



Single Log Vane Deflector

Riparian Zone Restoration

Riparian Zone Restoration

Finally, with the help and support of the Stroud Water Research Center, the riparian zones alongside the restored stream were planted with 1,200 native trees and shrubs to re-establish a healthy vegetated buffer. The many trees planted include river birch, sycamore, silver maple, swamp white oak, dogwood, cherry, and tulip poplar, among others.

Riparian Zone Restoration

Volunteer Effort

Plum Run Restoration Legacy

While Plum Run cannot be restored to exactly match its pre-colonial conditions, the stream restoration projects help to reduce pollution from sediment and stormwater run-off and provide a healthier stream with improved water quality. If you are interested in volunteering or donating to the continued restoration of Plum Run and other local stream restoration projects, please contact the Brandywine Red Clay Alliance!