

Merrick Brook Habitat Restoration Project

Location: Scotland, public property
Talbot Wildlife Management Area

Completed: September 1998

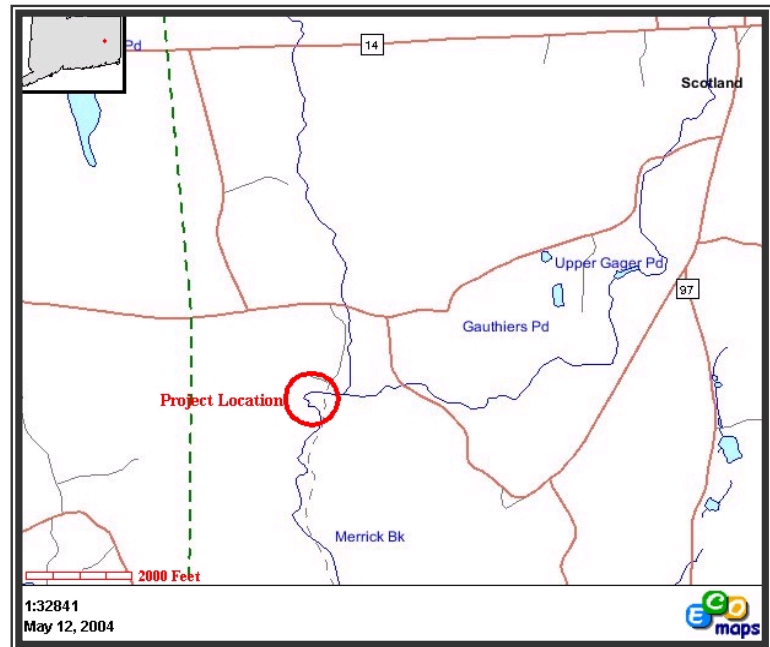
Partners:

Department of Environmental Protection
Inland Fisheries Division
Inland Water Resources Division
Fish America Foundation
Trout Unlimited, Thames Valley Chapter

Cost: \$89,000

Engineering and Design:

The Bioengineering Group, Inc.
GZA GeoEnvironmental, Inc.



Project Manager/Contact Information:

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Problem/Need

Approximately 350 linear feet of streambank along a channel meander of Merrick Brook was severely eroded causing a collapse of the streambank and degradation of instream and riparian resources. Irregular stream geometry was the suspected cause of channel instability (low radius of curvature) which resulted in an estimated loss of 400-600 tons of sediment from between 1982 and 1998. Primary objectives were to: (1) restore and stabilize streambanks and channel to correct local erosion problems, (2) decrease downstream sediment loading, and (3) restore instream fish and riparian habitats.

Restoration Actions

Restoration design focused on increasing the radius of curvature and bankfull width ratio. These design parameters were consistent with stable meanders studied at unimpacted reference sites within Merrick Brook. To achieve the higher radius of curvature, 60 ft. of existing channel was realigned, 150 ft. of new channel was created through a forested floodplain, and a total of 140 ft. of channel was abandoned and converted to floodplain and vernal pool habitat. Bank and instream structures were installed which included vortex rock weirs, rock vanes, and root wads. These structures provided for grade control, energy dissipation and flow deflection in the restored channel as well as restored wild brown and native brook trout habitats through the creation of scour pools and a deep narrow thalweg adjacent to overhead and instream cover. Soil bioengineering techniques were used for bank protection and for the creation of a stable riparian area featuring indigenous plant materials.



Meander bend bank erosion and instability in 1996 prior to restoration efforts.



Meander bend and bank stabilization fall 1998, 2 months post restoration.



Meander bend and bank stabilization in 2002, 4 years post restoration.



Construction of vortex rock weir designed to create pool mesohabitats and redirect water toward centerline of stream and away from streambanks.



Vortex rock weir during low flow conditions providing critical deep pool habitat, 1 year post restoration.



Vortex weir functioning to redirect high flows away from streambanks and towards centerline of stream.