

Walnut Brook Riparian Restoration

A model approach to restoring stream corridors in urbanizing areas

The Walnut Brook Riparian Restoration Project is an excellent example of an effort that incorporated innovative stream channel stabilization measures, a large riparian buffer restoration and enhancement component, and floodplain management through wetland creation. A project of this magnitude could only be accomplished through the dedication and cooperation of an extensive network of private and public entities, as well as, volunteers committed to the health of the local ecosystem.

Planning for the project began in 2004 when the North Jersey RC&D, a regional nonprofit which has completed numerous stream restoration projects, saw an opportunity to address the impaired water quality of the Neshanic River. Partners were brought on board early in the process including the Natural Resources Conservation Service, Princeton Hydro, Raritan Township, Hunterdon Land Trust Alliance, Hunterdon County Soil Conservation District, NJ Water Supply Authority and South Branch Watershed Association. Significant funding (\$692,260) was obtained from the New Jersey Wetland Mitigation Council and the NJ Department of Environmental Protection.

The initial goals and objectives of the project were to restore the floodplain from its current agricultural setting to a diversified wetland habitat and wildlife sanctuary. However, the scope of the project expanded as the group realized the interconnection between the stream, the floodplain, the tributaries, the history of the property, and the current needs of the system. With an additional \$100,000 of volunteer services and in-kind donations, the partnership was able to accomplish the following:

- (1) Stabilize over 800 feet of severely eroding streambank in Mine Brook Park and on the Hunterdon Land Trust owned Dvoor Farm property. With the innovative use of minimal rock and maximum vegetation, the excessive energy of the stream is dissipated in the new riffle-pool sequences, and the stream is re-connected to its floodplain.

Extensive hand labor was required during installation of the in-stream practices to move logs, hand-place rock, and place hundreds of dormant pole plantings in the rock keys and in live siltation trenches. Through the extensive use of volunteers, the educational value of the project is far-reaching.

We estimate an annual reduction of approximately 1,000 cubic yards of sediment into the Walnut Brook and eventually the Neshanic River downstream. Non-point source pollution has been identified as the primary water quality problem in the Neshanic Watershed.

- (2) Plant 1,505 native trees and shrubs on both sides of the Walnut Brook to further stabilize the stream corridor and shade the open waters of the Walnut Brook. The restoration process started with the eradication of three acres of invasive plants, primarily multi-flora rose. Most of the plant material was obtained from local nurseries specializing in native plants. Some of the planting was performed under

contract; however, the majority of the planting was done by volunteers during nine events. At least 300 volunteer hours went into planting the riparian corridor.

- (3) Create three acres of wetland habitat in the floodplain of Walnut Brook. The wetlands created will help to reduce excess nutrient and sediment input into the stream system and will also reduce flooding downstream. The floodplain enhancement element of the project focused on the creation of riparian wetland communities that would enhance the site's functions relative to flood storage, nutrient and sediment removal and nutrient transformation. The constructed wetlands will increase the ecological diversity of the area and offer additional passive recreation opportunities. This phase included earthmoving activities consisting of the removal of fill from the floodplain in order to re-connect the stream to its natural floodplain. These areas were planted with native riverine wetland herbaceous and woody vegetation. Approximately 9,500 cubic yards of material were excavated and 11,169 native wetland herbaceous, shrubs and trees were planted.

Meander #1:



June 2009 prior to construction



August 2009 (2 months after construction)



Meander #2: During active construction



Riparian Buffer: volunteers planting