



A clean lake reflects well
on all of us.

RURAL NONPOINT SOURCE POLLUTION BEST MANAGEMENT PRACTICES (BMP) ROADBANK/STREAMBANK CONSTRUCTION

Project Description: The majority of sediment pollution in Onondaga Lake is attributed to Onondaga Creek and its tributaries, primarily due to streambank erosion and mudboils. The main focus of this project is to reduce stream bank and channel erosion, thereby reducing the amounts of sediment in the creek that would enter Onondaga Lake. This work is being completed by using several different stabilization techniques, including the following:

- **J-Hook** - A structure located in the stream channel, consisting of a line of rock that points upstream and slopes down in elevation towards the center of the stream channel. J-hooks are installed at the outside of stream bends and direct the main stream flow into the center of the stream.
- **Crossvane Weir** - Another in-stream structure, the weir is a "V" shaped rock configuration, with the point of the V facing upstream. Crossvanes are installed in straight stretches of the stream and are used for grade control.
- **Engineered Rock Riffle** - Structure installed in the stream where down-cutting of the streambed is occurring. This is used as a grade control structure made with large enough stone to be permanent and remain in the same location.
- **Boil-up Pool** - Occurs when the stream flows into the streambank at a tight corner. An engineered boil-up pool has a stone-lined outer bank and an underwater rock vane (kicker) that keeps the water spinning and boiling up. The boil-up pool dissipates much of the stream's energy.
- **Single-Stone Bendway Weir** - Large single stones installed in the stream channel at the outside of a bend angling approximately 20° upstream. The resistance and the energy used to move the water over the stones slows the velocity and reduces the energy of stream.
- **Soil Bioengineering** - The use of living plants and their roots to bind the soil together, providing a resistance to erosion. All disturbed areas were immediately seeded

and mulched; then in the following spring, planted with shrubs and trees. The techniques that were used are live stakes, brush layering and fascines plantings to stabilize the soil. Live stakes are shrub stems about 1-2 inches in diameter and 3 feet long. These are inserted into the soil and the entire stem develops roots which will stabilize the soil. Brush layering involves installation of many branches into a trench on the contours of steep slopes. Fascines are branches tied together in an 8-inch diameter bundles, which are then buried in the soil on contours. This creates a vegetated wall which reduces stream velocities. The plants used are quick growing, wet footed species that will hold the soil in place after one year's growth.

Location: The work completed on this project was located in the Towns of Lafayette and Tully. The stream work was encircled by Route 11A, Tully Farms Road, Solvay Road, and Nichois Road.

Project Sponsor: Onondaga County serves as the non-Federal sponsor of this Onondaga Lake Partnership project, and the U.S. Army Corps of Engineers serves as the Federal sponsor. Onondaga County Soil & Water Conservation District completed the implementation and oversight of the project.

Current Status: To date, 25 stream reaches have been completed involving 46 structures for a total of 3,755 linear feet of streambank and channel protection. SUNY College of Environmental Science and Forestry will complete the soil bioengineering in the spring of 2007. The in-stream-structures installed to date have already created scour pools, enhanced the fish habitat and reduced erosion. The various shrub willow species planted are growing and will stabilize the soil, and over time provide shade for the stream. The woody debris and leaves of the willows that fall into the stream are part of the food cycle that benefits the fish.



Before Construction - Severe Erosion, 24-foot Vertical Bank.



After Construction - In-stream Structures and Soil Bioengineering.