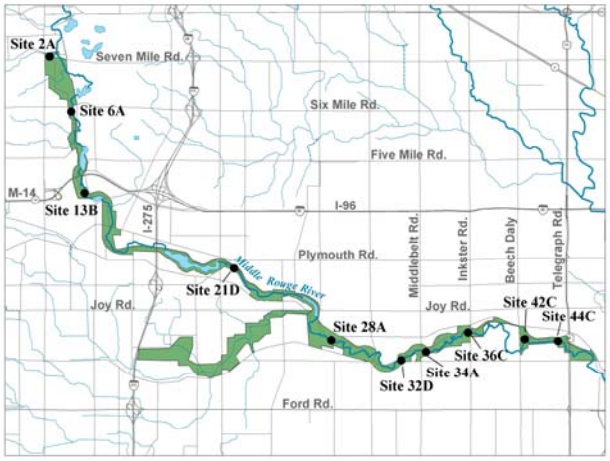
MIDDLE ROUGE STREAMBANK STABILIZATION
Wayne County, MI

THE ROUGE RIVER PROJECT
A WORLD CLASS EFFORT
BRINGING OUR RIVER BACK TO LIFE

A publication of the Wayne County Rouge River National Wet Weather Demonstration Project
Information Date: November 2004

Objective

The Wayne County Department of Environment and Department of Public Services Parks Division implemented measures to stabilize 10 seriously eroded streambanks at sites along the Middle Rouge River within Hines Park.



Map of Streambank Stabilization Sites on Middle Rouge

Owner

Wayne County, Michigan

Location

10 sites along the Middle Rouge River in Hines Park

Dates

October 2003 to September 2004

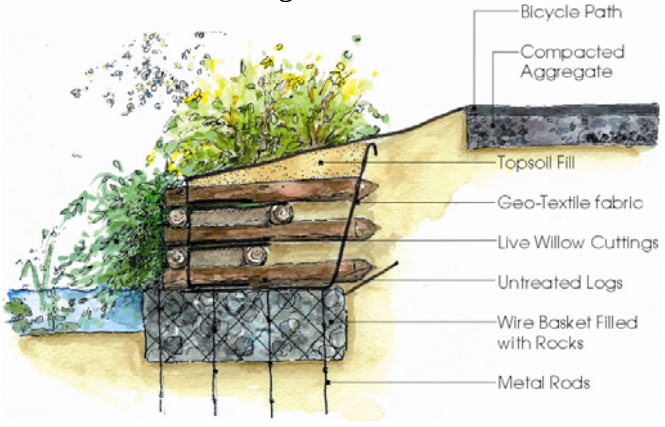
Total Project Cost

The construction cost for the 10 sites was $780,530 for an average cost of $78,000 a site.

Demonstration Aspects

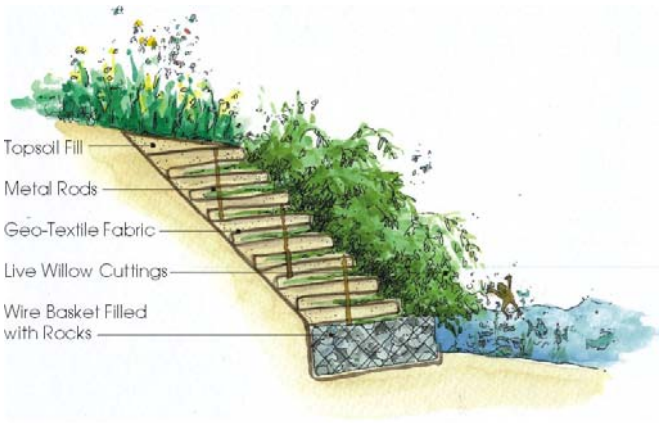
The goal of this project was to design and construct different streambank stabilization measures to determine what techniques are the most effective in different situations. The designs selected were based on the volume and speed of flow at the sites and the slope and stability of the stream banks. Techniques included live cribwalls, vegetated geogrid, log revetments, rock boulders with integral plantings, and vegetated geogrids with lunker structures. Interpretive signage was also placed at the three sites with greatest exposure to the public. The signs explain erosion, techniques to limit the amount of runoff, and the stabilization measures used at each site. Five stabilization techniques were used in this project.

A **Live Cribwall** is a box-like stacked arrangement of logs filled with topsoil and layers of live willow cuttings. These take root inside the structure and grow into the slope. Once the willow plants become established, their roots grow around the log foundation making it much stronger. The man-made structure will eventually disappear as the live plants multiply. This technique was employed at several sites including 21D, 28A, 36C and others.



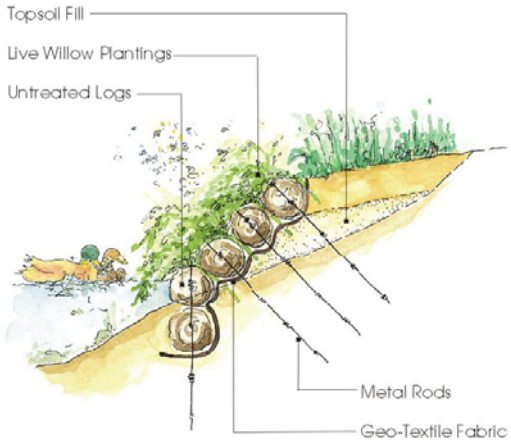
Live Cribwall

A **Vegetated Geogrid** is made by wrapping soil layers with geo-textile fabric (plastic fibers woven into cloth). Root massing from willow plantings will add stability by stitching the layers together. The willow foliage will provide food and shelter for many animals. A gabion (wire basket filled with rocks) is used below the water level as a foundation. This technique was employed at several sites including 21D, 42C, and 44C.



Vegetated Geogrid

Log Revetments are made of untreated logs and live willow cuttings. They are used where the river bank has a gentle slope and water flows slowly. Logs are tiered up the slope and live willow cuttings are inserted between the logs in to the exposed bank. The logs are then anchored with metal rods. This technique was employed at site 2A.



Log Revetment

Rock Boulders with Integral Plantings are located at a bend in the river where the flow is directed against the bank. Boulders are used for long-term stability. The geo-textile fabric will prevent washout of tine soil particles and the plant roots will anchor the stone to the bank. This technique was employed at several sites including 2A, 6A, 34A, 42C, and 44C.

Rock Boulders with Integral Plantings

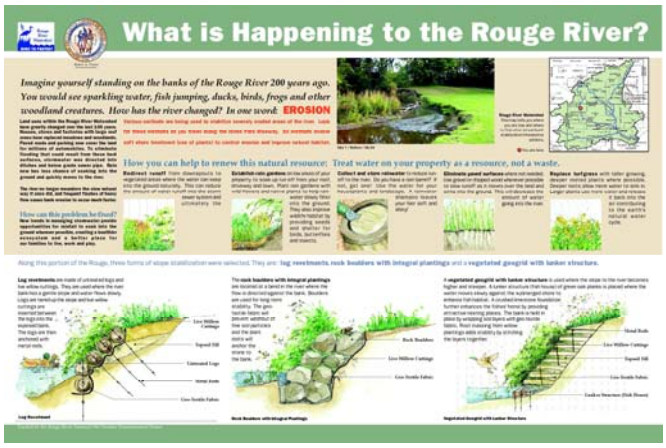
Vegetated Geogrid with Lunker structures are used where the slope to the river becomes higher and steeper. A lunker structure (fish house) of green oak planks is placed where the water moves slowly against the submerged shore to enhance fish habitat. A crushed limestone foundation further enhances the fishes' home by providing attractive nesting places. The bank is held in place by wrapping soil layers with geo-textile fabric. Root massing from willow plantings adds stability by stitching the layers together. This technique was employed at several sites including 2A and 13B.

Vegetated Geogrid with Lunker

Major Elements

The Wayne County team reviewed several sites and determined a priority listing of those sites. Of the original 22 sites, the list was narrowed to identify a priority list of 10 sites. Sites receiving high priority generally involved the potential loss of structures such as road rights-of-ways, bike paths, and other high use areas/facilities of Hines Park.

Design solutions and construction was completed for 10 sites. Various methods of streambank stabilization were evaluated including both soil bioengineering and engineered structural techniques. Interpretive signage at 3 sites was also completed.



Interpretive Signage for Middle Rouge Streambank Stabilization Sites

Project Results

Streambank stabilization was successfully completed at ten sites on the Middle Rouge River. These ten locations were determined to the highest priority sites by Wayne County Parks and Department of Environment. The completion of streambank stabilization at these sites will provide a number of benefits including increased habitat, reduced pollutants, increased aesthetics, and increased recreational desirability.

Construction Photo of Rock Boulders with Integral Plantings. Note the plantings are not yet established.

Construction Photo of Live Cribwall. Note the vegetation is not yet established.

To obtain further information about this project or on the Rouge Project, including documents, maps and general information, visit us at

http://www.rougeriver.com

ACKNOWLEDGEMENT

The Rouge River National Wet Weather Demonstration Project is funded, in part, by the United States Environmental Protection Agency Grants #XP995743-01, 02, 03, 04, 05, 06, 08 and #C264000-01.