

Living Shorelines

Protecting Property the Natural Way

Blackbird Creek Reserve: Shoreline Restoration

Background

A “living shoreline” is a method of bank stabilization that reinforces the shoreline to protect coastal properties from erosion. This infrastructure enhances water quality, provides habitat for fish and wildlife, improves water quality, and restores wetland areas.

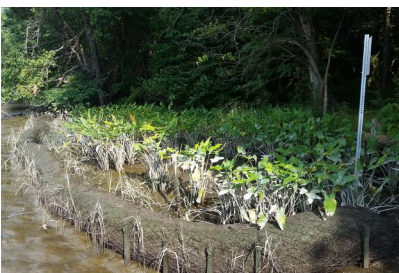
Unlike bulkheads and stone rip rap, living shorelines use natural materials to maintain existing connections between the shoreline and aquatic areas. A number of living shoreline materials and tactics are available, including coconut fiber coir logs, natural fiber matting, recycled shell, and native wetland vegetation.

Living shorelines have been built throughout Delaware’s coastal regions and are a popular option for bank stabilization because they protect property from erosion while attracting fish and shellfish, filtering polluted runoff, and absorbing wave energy during storms.

See the Site: Townsend, DE

Pre-installation winter 2014

Pre-installation, kayak ramp in center



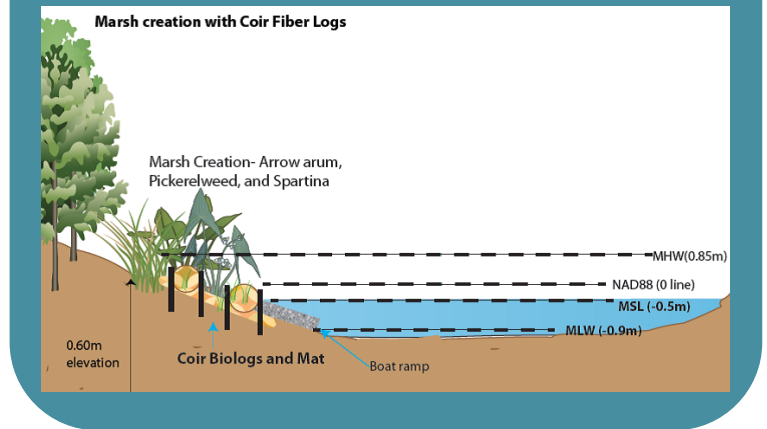
Summer 2015
Post-installation,
west side



Summer 2015
Post-installation,
east side



Conceptual Plan



Blackbird Creek Approach

The goal of this **traditional design** addressed erosion that was causing problems on the east and west side of the Reserve's boat ramp. Two trees had already fallen into the Blackbird Creek and more were at risk of falling over time. This site served as a demonstration to landowners and contractors when bank erosion control is needed in a tidal freshwater area.

The project began in early May 2015 through the installation of a series of coir logs, mats, sand, topsoil, and wooden stakes along the bank. The coir logs were placed on mats, and then secured into the mud with stakes to keep the logs from moving.

The west side location already contained the native wetland plant, arrow arum, but the east side location was empty so clean sand was trucked in and topped with a little soil to create a nice high base. Once the mats, logs, and sand were in place, a few weeks passed by to allow things to settle. In June of 2015, a variety of native plants (arrow arum, smooth cordgrass, pickerelweed, saltmarsh bulrush, yellow sneezeweed, swamp rose, marsh hibiscus, New York ironweed and pin oak) were planted in the cells. Once these plants fully grow, they will help further trap sediments, stabilize the bank and completely cover the coir log structures.

Material Costs

To the right is a comprehensive list of materials and their associated costs for the 160 linear foot living shoreline site at Blackbird Creek. Like all shoreline restoration projects, costs can vary greatly depending on the extent of the project, whether sand fill is needed, and if additional structures are installed to diminish stronger wave energy. Please note, the costs listed do not include expenses related to labor, surveys, field studies, modeling, design, permitting or special equipment.

This particular project did not use any Cost-Share Program assistance. To aid landowners installing living shorelines on their property, the Sussex Conservation District and DNREC may provide financial assistance. For additional information: <https://www.sussexconservation.org/services/agriculture/cost-share-programs.html>

Item	Price	Notes	Quantity	Costs	Per ft.
Coir Log 12"	\$76.36	12' x 12" log	5 logs	\$396.80	\$6.36
Coir Log 20"	\$201.50	12'x20" log	18 logs	\$3,627.00	\$16.79
Coir Mat	\$214.20	33 linear ft	2 roll	\$428.40	\$6.49
Twine	\$40.00	2 rolls	2 roll	\$80.00	\$0.50
Sand	varies	160 linear ft		\$1,200	\$7.50
48" stakes	\$1.98	2" x 2" x 48"	120 stakes	\$226.80	\$0.50
60" stakes	\$2.19	2" x 2" x 60"	135 stakes	\$295.65	\$0.44
Plants	varies	9 plant species	800	\$1,101.36	\$6.88
TOTAL=				\$7,356.01	\$45.46

Permitting

State and Federal Permits:

DNREC-State Level Permit Information: Available through the Wetlands and Subaqueous Lands Section at <https://dnrec.alpha.delaware.gov/water/wetlands-subaqueous/>

U.S. Army Corps of Engineers, Federal Level Permits Information: available through the Philadelphia District & Marine Design Center Website at <https://www.nap.usace.army.mil/Missions/Regulatory/Permits/>

Collaborative Partners

The Delaware Living Shoreline Committee is a voluntary group of state, private and non-profit professionals coordinating research, education, funding and opportunities for projects in Delaware.

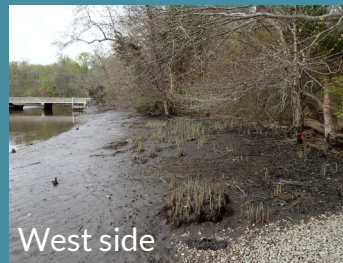


DELAWARE
LIVING
SHORELINES
COMMITTEE

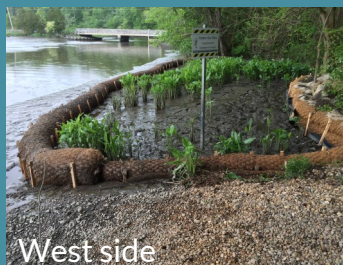
Find out more about the committee at delawarelivingshorelines.org

Project Photos

Pre-installation winter of 2014



Installation phase 1 spring 2015



3 years after
installation Fall 2018,
West side

