EROSION CONTROL

STREAM BANK STABILIZATION UTILIZING COMPOST

An area with heavy pedestrian and pet traffic was restored with a combination of native vegetation, composted biosolids and yard trimmings.

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AS compost continues its emergence in environmental and storm water management applications, perhaps one of the most promising is its use in stream bank stabilization projects. While the application is fairly similar to controlling erosion and sediment runoff on construction sites, the challenges can be much greater. Vegetative requirements, storm surges that can effectively put the project site under water, and maintaining or creating a site that enhances fish and wildlife habitat are among the important considerations that arise during stream bank stabilization projects — ones that are not an issue with many land disturbing activities.

The Upper Oconee Watershed Network (UOWN) received a grant from the National Fish and Wildlife Foundation to complete a stream improvement project for the Middle Oconee River at Ben Burton Park in Athens, Georgia. The purpose of this project was to restore a 100-foot severely eroded section of stream bank on the north side of the Middle Oconee River. Historic flooding events, the lack of woody vegetation and tree canopy, and frequent pedestrian and pet traffic all contributed to the erosion problem. The project provided an opportunity not only to restore this highly valuable riparian corridor, but also to demonstrate ecologically effective stream bank stabilization techniques.

Following use of compost blankets, filter berms and sometimes "sock" containers, the stream bank and buffer have been completely stabilized.

RESTORING THE BANK

The site was mostly level, with the exception of the gullied portions of the stream bank, which was a 1:1 slope in places. Soils at the site leading up to the bank are deep, well drained, and classified as Madison-Louisa complex (MmE2) extending to a depth of 40 to 56 inches from the surface. The soils on the stream bank are alluvial and erodible. Permeability is moderate to moderately rapid. Soil textures range from loamy sands to clay loams. There are no wetlands or surface water on the area of the site to be disturbed. However, the project site is immediately adjacent to the Middle Oconee River.

Screened (half-inch minus) compost made from biosolids and yard trimmings was provided by Athens Clarke County Composting. It was blended with some unscreened compost (six-inch minus). A two-inch compost blanket was applied to the slope (by volunteers) and seeded with rye, switchgrass and false sea oat. Geotextile erosion control mats were placed directly on top of the compost blanket and staked in. A compost filter berm — 3-feet wide by 1.5-feet high — made of the unscreened material was placed at the shoulder of the slope. Sediment filters filled with hay were used at the base of the slope next to the river's edge. Steps were built adjacent to the project for public access to the river, diverting pedestrian and pet traffic from the remediated stream bank.

The stream buffer had to be stabilized as well to protect the stream bank. To restore natural woody vegetation to the buffer area, approximately 20 horizontal feet from the top of the bank was disturbed along a 150-foot reach (3,000 sq. ft.). A compost blanket was applied. Willow was planted on the bank slope and the top of the bank was planted with a mix of bottomland hardwood species. About 100 cubic yards of compost were used for the whole project.

STEADY AFTER SUBMERSION

Although several flood events completely submerged the compost blankets and much of the staked vegetation, the compost blanket held in place while some of the woody vegetation was destabilized and/or washed down stream. This project was a particular challenge as concentrated storm runoff flowed from a hill above and over the stream bank in addition to rising river conditions that submerged the bank at its lower portions. Some reseeding of grass was done after severe storm events. Today, the stream bank and buffer have been completely vegetated, stabilized and open to the public, due in part to the use of compost blankets and filter berms.

Experience with this project showed that it may be advantageous to have the compost contained (e.g., in a sock), because rising stream levels submerge the compost, which happened several times on this project. The compost did not wash (as we thought it would) but the matting probably helped it. The "sediment stops" installed served a similar function as an unseeded compost filter sock, but some of those were lost in the flooding. Overall, the key is to get thick vegetation established as soon as possible and to make sure it is permanent. In this case, keeping people and dogs off of the stream bank also were essential to successful stabilization. ■

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