



Protecting the Riparian Corridor

Low-cost solutions

A low cost solution to riparian buffer management is to utilize volunteer labor.

In many communities, volunteers assist community staff in trash and invasive species removal, and plant native species in the riparian buffer. Partnering with local watershed or land conservancy groups is a good way to connect with eager volunteers.

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What's the Problem?

A riparian buffer is a swath of natural vegetation along a lake or river corridor. The purpose of a riparian buffer is to “clothe” the stream with protective vegetation. Without a buffer, a stream is exposed to degradation. A serious problem caused by lack of a riparian buffer is streambank erosion. Eroding streambanks destroy property and degrade water quality and stream habitats. Removing riparian buffers also causes increased flooding, increased water temperature, and reduction in fish and wildlife diversity.

Streambank Stabilization Methods

Local communities can take an active role in stabilizing eroding streambanks on municipal property. There are two general types of streambank stabilizations methods: “hard” engineering which stabilize banks with hard structures such as rock, concrete, and metal, and “soft” engineering which involves the use of natural materials and plants to reinforce the streambanks. Many situations utilize a combination of these two approaches.

Erosion is a natural geological process- all streams erode and deposit sediment to some degree in response to the amount of water and sediment they are delivered from their watershed. When watersheds become developed, they deliver more water and sediment to the stream as a result of increased stormwater runoff and soil erosion. The stream responds by widening and deepening to accommodate the extra inputs, eroding it banks in the process until it achieves a new equilibrium with its watershed. Not all eroding streambanks should be stabilized. For example, applying a stabilization treatment to a highly unstable stream corridor may result in waste of effort and money. If you are thinking of acting to stabilize a streambank, consider the following:

- Consult with an engineer or geomorphologist to determine whether the stream reach is a good candidate for stabilization.
- Try to utilize soft engineering approaches wherever possible. These approaches are beneficial from a habitat standpoint and are often more aesthetically pleasing.
- Include vegetative buffer restoration as part of the project whether the approach is “hard” or “soft”. Try to create as much buffer vegetation area as possible; the wider, the better is a good rule of thumb.



Source: City of Troy

Streambank Stabilization Methods (continued)

- Consider enhancing in-stream habitat as part of your project. Utilize best practices for woody debris management (see Woody Debris Management Fact Sheet). Consider adding habitat structures (such as lunker structures) to provide spawning habitat, refuge, and migration pathways for fish.
- If using the soft engineering approach, consider utilizing native plants. Native plants contain highly developed root systems that will aid in your stabilization efforts.

Protecting Riparian Areas During Construction

Riparian corridors perform a number of significant functions including reducing water temperature; filtering sediments and other contaminants from stormwater; reducing nutrient loads to lakes; stabilizing stream banks with strong root systems; providing wildlife habitat; maintaining and protecting the quality of fish habitats; providing a visually appealing greenbelt; and allowing for passive recreational opportunities.

Construction projects along the riparian corridor have the potential of impacting both the buffer and the stream. Consider the following when construction occurs near a riparian buffer:

- Conduct on-site monitoring during construction to ensure that the floodplains are protected as planned.
- Material should not be stockpiled within the floodplain. Erosion control techniques should be employed on all stockpiled materials.
- If the project is located near or in the floodplain, maintain as much of the riparian vegetation as possible. If the riparian vegetation is damaged or removed during construction, replace the vegetation with native species as soon as possible.
- Utilize bioengineering techniques, where possible, to stabilize soil and streambanks.
- Minimize the extent and duration of bare ground to prevent erosion. Establish permanent vegetative cover immediately after grading is complete.
- Before site disturbance occurs, implement erosion control best management practices to capture sediments and control runoff.
- Where possible, keep construction activities away from wildlife crossings and corridors.
- Confine construction and staging areas to the smallest areas necessary. These boundaries should be clearly marked. All construction activity and storage of materials should occur within these marked areas.
- Properly dispose of solid waste and trash to prevent it from ending up in our lakes and streams.



Source: City of Troy



Before and after a riparian planting project.

The Role of Community Planning

Riparian corridors represent a natural resource that offers communities an opportunity to balance growth and environmental protection. Local governments that plan for their riparian corridors as community assets can create many benefits for their community. These include passive uses such as open space preservation and scenic views as well as protection of health, safety, and welfare through reducing the impacts of stormwater runoff and flooding. When integrating riparian corridors in the planning process, consider:

- Inventory and map riparian corridors in the community. Riparian corridors may include the entire valley associated with a river or a more narrow definition as desired by the community.
- Integrate riparian management into the master plan and recreation plan by adding goals and objectives for protecting the riparian corridor.
- Integrate recreation specific recommendations for riparian corridor management into the recreation plan.
- Adopt regulations to protect the riparian corridor (see below section on ordinances).
- Consider ways to connect development and community affairs to the rich natural and cultural history and amenities provided by riparian corridors.

Setback or Riparian Buffer Ordinances

Local governments have the authority to implement a setback/buffer ordinance within their own jurisdictions. These requirements typically appear as standards that are integrated into another ordinance (e.g., zoning ordinance, floodplains, stormwater), during site plan review process, or as a separate ordinance. Typically a setback/riparian buffer ordinance include:

- Purpose,
- Prohibited uses,
- Setback/buffer width,
- Permitted uses, and
- Appeals process.



Consider utilizing native plants when revegetating a site.

Source: Oakland County Planning and Economic Development Services



Source: Wayne County Department of Environment

Cover photo: Courtesy of City of Troy. Volunteer labor can be an important component of a riparian management program.

Top left photo: A combination of hard and soft engineering approaches is often the best method for stabilizing streambanks.

Top right photo: Signage is one technique for educating the public about the community's riparian corridor protection efforts.

Back page photo: Riparian buffers provide numerous environmental benefits, but they also provide a visually appealing area for residents.

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Resources

AASHTO Center for Environmental Excellence.
Environmental Stewardship Practices, Procedures, and Policies for Highway Construction and Maintenance. environment.transportation.org and go to “Construction and Maintenance Practices”.

Greater Detroit American Heritage River Initiative.
Best Management Practices for Soft Engineering of Shorelines. 2000.

Michigan Department of Environmental Quality.
Floodplain Management in Michigan: Quick Guide. 2004.

Michigan Department of Natural Resources.
Riparian Zone Management and Trout Streams: 21st Century and Beyond.

Oakland County Planning and Economic Development Services.
Riparian Planning Guidelines: A Resource Guide for Decision Makers. 2006.

Schueler, Thomas R., H. K. Holland. 2000.
The Architecture of Urban Stream Buffers in The Practice of Watershed Protection.
Center for Watershed Protection. Ellicott City, Maryland.

SEMCOG. *Land Use Tools and Techniques.* 2003.



Source: Wayne County Department of Environment

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