



LOW IMPACT DEVELOPMENT (LID) FACT SHEET

LID PRINCIPLE #5

Protect Riparian Buffers

WHAT IS IT?

Riparian buffers are vegetated ecosystems that grow along the banks of rivers, lakes and streams and serve to buffer a water body from the effects of runoff by providing filtration, bank stability, recharge, attenuation, volume reduction, and shading. In the process, buffers reduce pollution, minimize erosion, control flooding, enhance aesthetic quality, and provide aquatic and terrestrial habitat. For these reasons, riparian buffers are extremely important and any effort to protect them, whether through zoning bylaws, permitting or better site design, should be encouraged.



A WELL BUFFERED STREAM



AN UNBUFFERED STREAM

WHAT ARE THE ADVANTAGES?

Riparian buffers are critical to protecting the quality of surface water resources. When runoff enters a buffer as sheet flow, native grasses, shrubs, and trees filter out sediment, nitrogen, phosphorus, pesticides and other pollutants.

The vegetative overhang of buffers keeps water cool in the summer and provides a source of food for aquatic organisms. Long expanses of riparian buffers act as habitat corridors providing land creatures an area to travel and safely reach water.

Deep-rooted trees and shrubs are a large source of energy and nutrients for stream communities, particularly in small headwater streams. They also maintain stream bank stability, reducing erosion and excessive channel movement.

For a property owner, a riparian buffer means less maintenance (due to decreased mowing and landscaping), improved aesthetics, improved wildlife habitat, higher land values, shoreland protection, and potential protection from property loss due to channel erosion.

WHAT ARE THE BARRIERS?

The value and function of riparian buffers is often not taken into consideration during traditional development which seeks to maximize the amount of developable land. The same is true for many farming operations hoping to maximize land productivity. As a result, riparian buffers in both rural and urban environments suffer encroachment. Changing this pattern of land use is a difficult task but can be assisted by bylaws that protect buffers, funding, and leadership in the design/development community.

Efforts to enhance or establish riparian buffers on existing sites can also be difficult as landowners must be willing to change their current land management practices.

Factsheet prepared by the Vermont Green Infrastructure Initiative, a program of the Watershed Management Division of the VT Department of Environmental Conservation (<http://watershedmanagement.vt.gov/>).



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LID PRINCIPLE #5: PROTECT RIPARIAN BUFFERS



► PUTTING THE CONCEPT TO WORK

Vegetated and undisturbed riparian buffers are a natural form of green infrastructure and play a critical role in protecting the quality of surface waters. The benefits provided by buffers are directly related to their width and length so it's important to keep them intact. A well functioning buffer will have three distinct zones that each serve a unique function:

> Zone 1

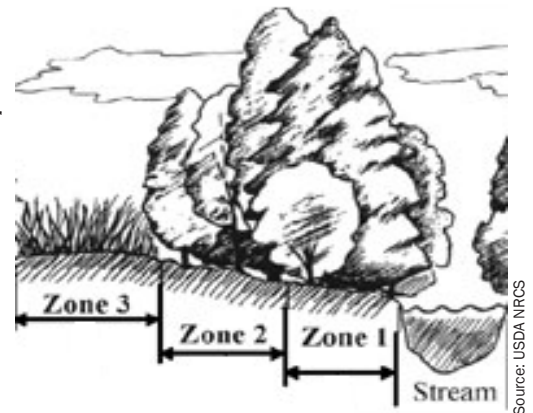
Provides stream bank and channel stabilization, soil loss and sedimentation reduction, quality habitat, and shade to cool the water surface.

> Zone 2

Removes, transforms, and stores nutrients, sediments, and other pollutants flowing as sheet or sub-surface flow. Healthy vegetation slows surface runoff while filtering sediment and particulate bound phosphorus.

> Zone 3

Provides the first stage in managing upslope runoff so that runoff flows are slowed and evenly dispersed into Zone 2. Some physical filtering of pollutants may be accomplished as well as a limited amount of infiltration.



THE THREE BUFFER ZONES

Disturbance within 50-100' of a buffer or waterbody should be avoided. The easiest way to avoid damage is by denoting limits of disturbance on designs and site plans. Buffers along rivers, lakes, ponds and wetlands should be clearly marked and understood by site workers.

Riparian buffers will continue to function when long-term protections and stewardship plans are put into place.

Homeowners can reduce their impact by planting more trees and shrubs in their yard to reduce grass area, and keeping lawn maintenance activities away from buffers and waterbodies. Commercial property owners with large amounts of impervious area near stream buffers can replace underutilized parking or driving areas with permeable pavement or even woody vegetation. Surface flows to the area can be managed with vegetated swales and level spreaders.

Visit http://www.watershedmanagement.vt.gov/stormwater/htm/sw_green_infrastructure.htm for more information about LID.

► REFERENCES

"6.8 Protection of Water Quality Buffers." Knox County Tennessee Stormwater Management Manual. <http://knowcounty.org/>. Knox County, n.d. Web. 27 Nov. 2013.

"Riparian Buffers." Stream Notes Fact Sheet. <http://www.bae.ncsu.edu/>. North Carolina Cooperative Extension, n.d. Web. 27 Nov. 2013.

"Harris Township Riparian Buffers." <http://www.harristownship.org/>. Harris Township, n.d. Web. 27 Nov. 2013.

 **VERMONT**
AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation

Vermont Green Infrastructure Initiative, VT DEC
Watershed Management Division, One National
Life Drive, Main 2, Montpelier, VT 05620-3522;
802-490-6118