

# Riparian Buffers

## DEFINITION

Riparian buffers are vegetated areas adjacent to water bodies that protect these water resources from nonpoint source pollution and provide bank stabilization and aquatic and wildlife habitat. Riparian buffers commonly do not have definitive boundaries and may include stream banks, floodplains, wetlands, and grassland buffers as well as sub-irrigated sites forming a transitional zone between upland and aquatic habitat.

## FUNCTIONS OF RIPARIAN BUFFER

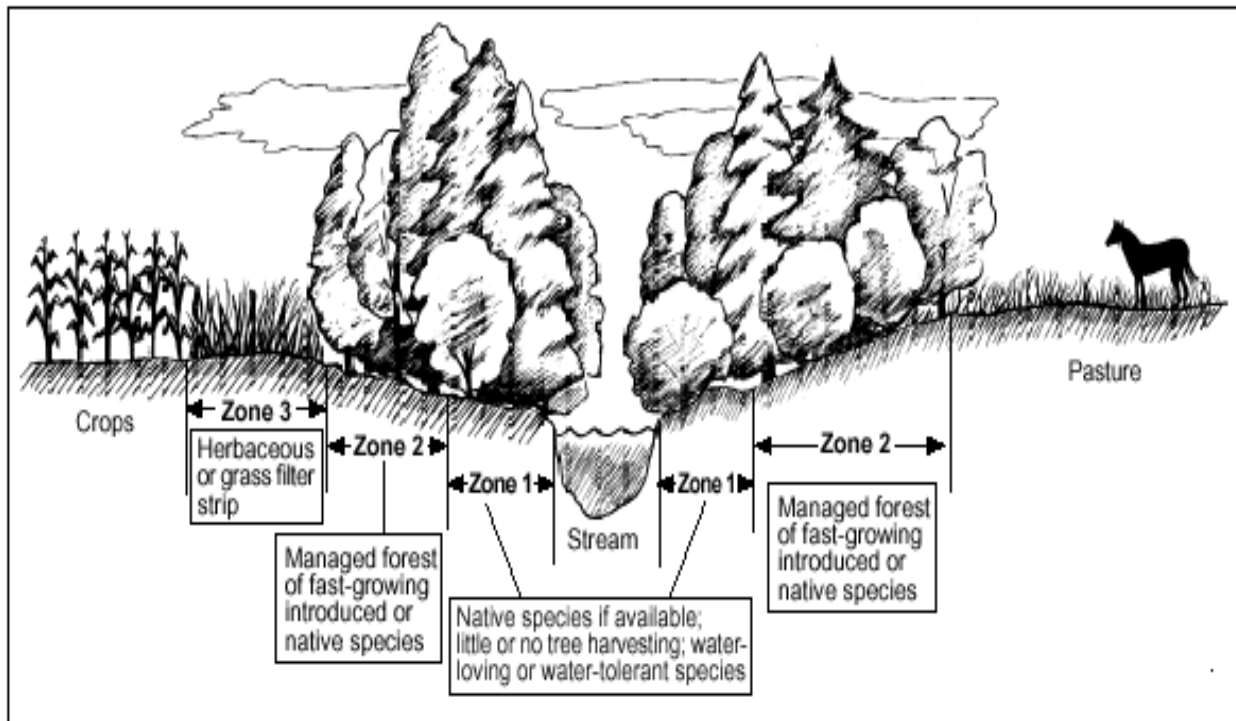
Riparian buffers assist in maintaining clean water by intercepting sediment, nutrients (fertilizers) and other pollutants in surface runoff and shallow subsurface water flow. They reduce erosion by strengthening stream banks, and by reducing runoff velocity they aid infiltration and groundwater recharge and mitigate flooding. Riparian buffers provide shade to cool waters and reduce evaporation, and they create wildlife habitat and corridors.

## DESIGN

Buffer design is important in optimizing the effectiveness of the buffer. Buffers shall be constructed to be a minimum width of twice the width of the waterway. Width of the buffer will be as approved by the PPO/PRT Engineer. Wherever possible native species shall be planted in the buffers. All species to be planted require the approval of the PPO/PRT engineer prior to planting.

Buffers are segregated into 3 zones, each with a specific purpose:

- Zone 1: This zone functions to shade the water source and reduce erosion. The zone should include large native tree species that grow fast and can quickly act to perform these tasks.
- Zone 2: Usually made up of native shrubs and managed forestland including fruit trees and other harvestable tree species. This zone provides habitat and nesting areas for wildlife, and also acts to slow and absorb contaminants that Zone 3 has missed.
- Zone 3: This zone consists mostly of native grasses serves primarily to slow water runoff and absorb contaminants before they reach the other zones.



## **PLANS AND SPECIFICATIONS**

Specifications for this practice shall be prepared by the contractor for each site. A Planting Plan shall be developed and presented to the PPO/PRT Engineer for approval prior to start of work. The plan will include species and planting zones marked on maps, species per measurement unit (i.e. square meters), and timing and manner of plantings (planting dates, depth, soil enhancements, etc.).

## **MEASUREMENT AND PAYMENT**

The Contractor will prepare maps showing square footage of plantings and detailed lists of plantings. Payment will be based on actual quantities installed. Payment as described above shall be considered full compensation for all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the riparian buffer, complete in place, including removal of materials, cleanup and disposal of waste construction debris, and backfilling and repairing holes, depressions and other ground disturbance, and as directed by the PPO/PRT Engineer.

## **OPERATION AND MAINTENANCE**

The riparian zone shall be protected to maintain the intended purpose from adverse impacts such as excessive vehicular and pedestrian traffic, pest infestations, pesticide use on adjacent lands, livestock damage and fire. An Operation and Maintenance plan shall be prepared for use by the landowner or operator. The plan should include provisions to address the following, at a minimum:

- Zone 1: No tree harvesting. Shall be inspected regularly and after each major storm. Check for signs of stream bank erosion and tree damage and re-plant trees as necessary adjacent to the water body.
- Zone 2: Limited tree harvesting. Periodically check to insure trees and shrubs remain healthy. Re-plant damaged areas.
- Zone 3: Periodically inspect grasslands for signs of erosion and over-grazing. Exclude grazing until the desired plant community is well established. Re-plant as necessary. Properly manage rangelands.

## **REFERENCES:**

Natural Resources Conservation Service, Conservation Practice Standard Code 390, Riparian Herbaceous Cover, August, 2005.

Other NRCS conservation practices that may facilitate the establishment of Riparian Herbaceous Cover or enhance its performance include:

- Streambank and Shoreline Protection – (580)
- Stream Channel Stabilization – (584)
- Fence – (382)
- Riparian Forest Buffer – (391)
- Pasture and Hayland Planting – (512)
- Range Planting – (550)
- Filter Strip – (393)
- Use Exclusion – (472)
- Prescribed Grazing – (528A)
- Brush Management – (314)