

Landowner \_\_\_\_\_



## Definition

A riparian forest buffer is an area of trees and shrubs located adjacent to streams, lakes, ponds, and wetlands.

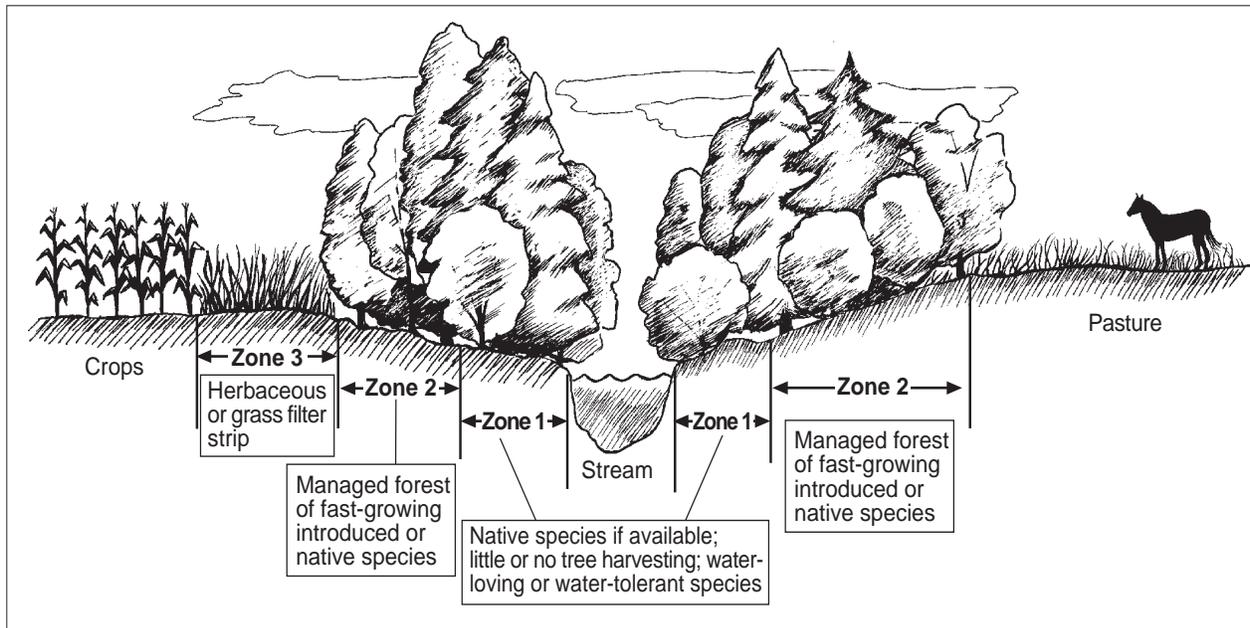
## Purpose

Riparian forest buffers of sufficient width intercept sediment, nutrients, pesticides, and other materials in surface runoff and reduce nutrients and other pollutants in shallow subsurface water flow. Woody vegetation in buffers provides food and cover for wildlife, helps lower water temperatures by shading the stream or waterbody, and slows out-of-bank flood flows. In addition, the vegetation closest to the stream or waterbody provides litter fall and large wood important to fish and other aquatic organisms as a nutrient source and structural components to increase channel roughness and habitat complexity. Also, the

woody roots increase the resistance of streambanks and shorelines to erosion caused by high water flows or waves. Some tree and shrub species in a riparian forest buffer can be managed for timber, wood fiber, and horticultural products.

## Where used

Buffers are located along or around permanent or intermittent streams, lakes, ponds, wetlands, and seeps. Many of these areas feature year-round or seasonal moisture, which allows woody species to establish quickly. A new riparian forest buffer can rapidly benefit a variety of settings, such as cropland, rangeland, forest land, and urban areas.



A riparian forest buffer includes zone 1, the area closest to the stream or waterbody, and zone 2, the area adjacent to and up gradient of zone 1. Trees and shrubs in zone 1 provide important wildlife habitat, litter fall for aquatic organisms, large wood that can fall into the stream or waterbody, and shading to lower water temperature. This zone helps stabilize streambanks and shorelines. Trees and shrubs in zone 2 (along with zone 1) intercept sediment, nutrients, pesticides, and other pollutants in surface and subsurface water flows. Zone 2 can be managed to provide timber, wood fiber, and horticultural products. A third zone, zone 3, is established if periodic and excessive water flows, erosion, and sediment from upslope fields or tracts are anticipated. Zone 3 generally consists of herbaceous plants or grass and a diversion or terrace, if needed. This zone provides a “first line of defense” to assure proper functioning of zones 1 and 2.

## Resource management system

Riparian forest buffers are normally established concurrently with other practices as part of a resource management system for a conservation management unit. For example, adjoining streambanks or shorelines must be stabilized before or in conjunction with the establishment of the buffer (streambank and shoreline protection). To maintain proper functioning of a planting, excessive water flows and erosion must be controlled upslope of the riparian forest buffer (filter strip, diversion, critical area planting, residue management). New plantings must be protected from grazing during establishment (prescribed grazing, use exclusion).

## Wildlife

Connecting a riparian forest buffer with existing perennial vegetation, such as woodlots and woody draws (tree/shrub establishment) or other woody habitat (windbreak/shelterbelt establishment), benefits wildlife including fish and other aquatic organisms. Select tree and shrub species and a planting pattern that benefit the wildlife species of interest and enhance local landscape aesthetics.

## Operation and maintenance

Trees in riparian forest buffer, as well as adjacent forested areas, must be periodically maintained and harvested (forest stand improvement and forest harvest trails and landings). As the buffer matures, periodic harvesting of some of the trees becomes an important activity for maintaining plant health and buffer function.

## Specifications

Site-specific requirements are listed on the specifications sheet. Additional provisions are entered on the job sketch sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See practice standard Riparian Forest Buffer, code 391.

# Riparian Forest Buffer – Job Sheet

Landowner \_\_\_\_\_ Field number \_\_\_\_\_

Purpose (check all that apply)	
<input type="checkbox"/> Create shade to lower water temps/improve aquatic habitat	<input type="checkbox"/> Provide a harvestable crop of timber, fiber, forage, fruit, or other wood-tree related crops consistent with other purposes
<input type="checkbox"/> Provide detritus/large woody debris for aquatic/terrestrial organisms	<input type="checkbox"/> Provide protection against scour erosion within the floodplain
<input type="checkbox"/> Create wildlife habitat and establish wildlife corridors	<input type="checkbox"/> Restore natural riparian plant communities
<input type="checkbox"/> Reduce excess sediment, organic material, nutrients, pesticides in surface runoff and excess nutrients/chemicals in shallow ground water flow	<input type="checkbox"/> Moderate winter temperatures to reduce freezing of aquatic over-wintering habitats
	<input type="checkbox"/> Increase carbon storage

Purpose (check all that apply)	
<input type="checkbox"/> Intercept sediment, nutrients, pesticides, other contaminants	<input type="checkbox"/> Wildlife habitat
<input type="checkbox"/> Lower water temperature	<input type="checkbox"/> Other (specify)

Design, Location, and Layout			
<input type="checkbox"/> Water body/course type: <input type="checkbox"/> Stream order 1 or 2 <input type="checkbox"/> Stream order 3 or 4 <input type="checkbox"/> Pond, wetland, other			
Minimum buffer zone widths (ft) - Indicate planned width for each zone. Specify left and right of stream (facing upstream) for a buffer on both sides of stream; use left only for water bodies such as ponds; include herbaceous species in zone 3 and design according to Filter Strip standard (complete and provide Filter Strip job sheet). <i>If width wider than minimum design width indicate reason in Notes section.</i> Common reasons are: 1. Evidence of scour 2. Evidence of overland flow 3. Evidence of frequent, long duration out of bank flow			
Zone 1		Zone 2	
Total tree/shrub planting width		Zone 3 (Herbaceous)	
Left:    Right:	Left:    Right:	Left:    Right:	Left:    Right:
Notes:		Notes:	
Notes:		Notes (refer to filter strip job sheets):	
Buffer length (ft) Left:    Right:		Buffer area (ac) Left:    Right:    Total:	
Additional location and layout requirements:			

Woody Plant Materials Information				
Species/cultivars	Plants/Acre	Kind of stock <sup>1</sup>	Planting dates:	Average spacing <sup>2</sup>
<b>Zone 1</b>				
1.				
2.				
3.				
4.				
<b>Zone 2</b>				
1.				
2.				
3.				
4.				

<sup>1</sup> Bareroot, Container, Cutting, Rootpruned; include size, caliper, height, and age as applicable.

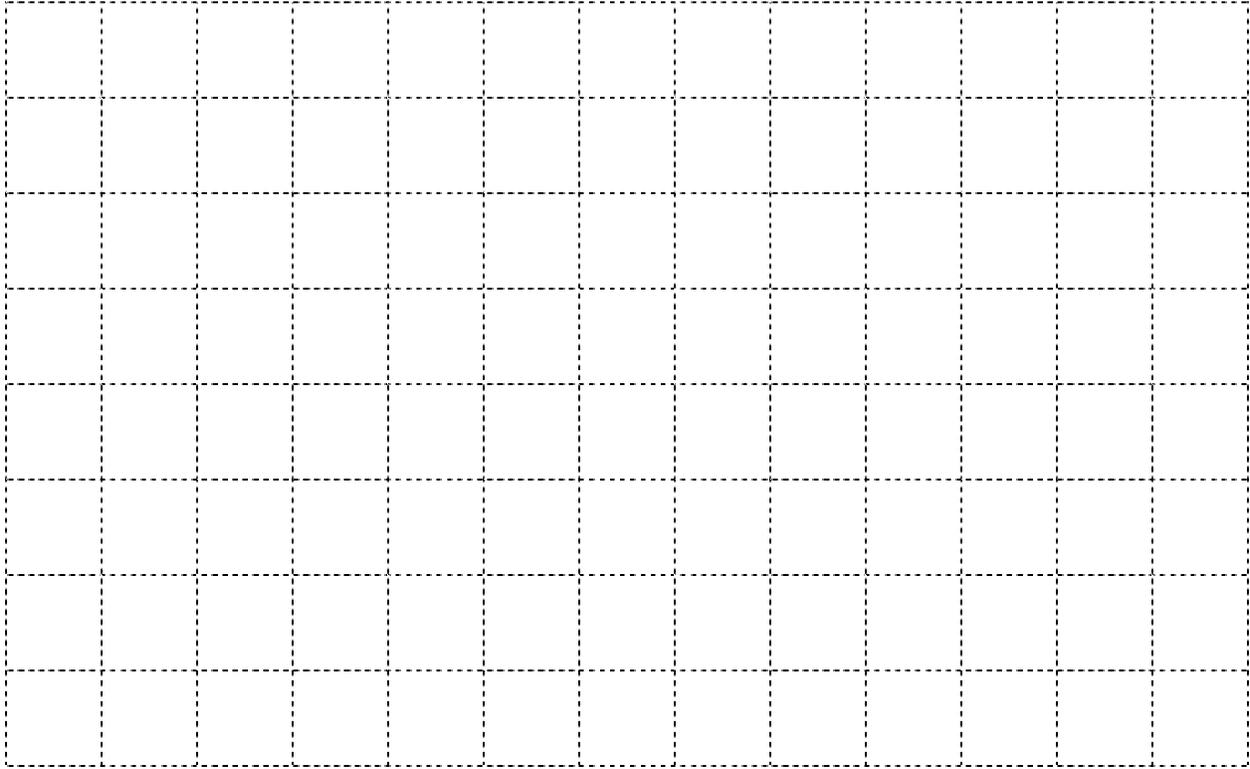
<sup>2</sup> Average spacing between plants to achieve plants/acre.

For further information on site preparation, storage of plantings stock, planting methods and buffer maintenance see conservation practice standards Tree/Shrub Establishment (6112) and Riparian Forest Buffer (391).

## Riparian Forest Buffer – Job Sheet

If needed, an aerial view or a side view of the vegetation types, widths of zones 1, 2, and 3 (as applicable to this site), a direction arrow, and the type of water body or water course are shown below. Other relevant information, such as shoreline or bank shape, upslope field conditions including crop types, and complementary practices, and additional buffer specifications may also be included.

Scale 1"= \_\_\_\_\_ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")



Additional Specifications and Notes:

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