

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**RIPARIAN FOREST BUFFER**

(Acre)  
CODE 391

**DEFINITION**

An area of predominantly trees and/or shrubs located adjacent to and up-gradient from watercourses or water bodies.

**PURPOSE**

This practice may be applied in a conservation management system as a component to support one or more of the following:

- Create shade to lower water temperatures to improve habitat for aquatic organisms.
- Provides a source of detritus and large woody debris for aquatic and terrestrial organisms.
- Create wildlife habitat and establish wildlife corridors.
- Reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow.
- Provide a harvestable crop of timber, fiber, forage, fruit, or other crops consistent with other intended purposes.
- Provide protection against scour erosion within the floodplain.
- Restore natural riparian plant communities.
- Moderate winter temperatures to reduce freezing of aquatic over-wintering habitats.
- To increase carbon storage.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies on cropland, hayland, rangeland, forestland, and pastureland areas adjacent to permanent or intermittent streams, lakes, ponds, wetlands and areas with ground water recharge where climate and soils support woody vegetation and water quality is impaired, or there is high potential of water quality impairment.

**CRITERIA**

General Criteria Applicable to All Purposes

The location, layout, width, length and woody plant density of the riparian forest buffer will accomplish the intended purpose and function.

Zone 1

All buffers will consist of a Zone 1 that begins at the normal waterline or at the top bank of the active channel and extends a minimum distance of 15 feet, measured horizontally on a line perpendicular to the watercourse or waterbody.

Dominant vegetation will consist of existing or planted trees and shrubs suited to the site and meets the intended purpose. Plant those species suited to the site on soils best suited to bottomland hardwood trees/shrubs. (See Tree/Shrub Establishment, Code 612), (Wetland Restoration, Code 657). On upland soils, plant a mixed stand of southern pine (loblolly, slash) and hardwood species. Planting of slash pine should be limited to the southern half of Louisiana. Plantings will consist of species suited to the seasonal soil moisture status of the site. Species shall be selected based on their compatibility in growth rates and shade tolerance. Future management of established, planted and naturally regenerated buffers should ensure that a diverse species composition is maintained. Occasional removal of some tree and shrub products such as high value trees is permitted in Zone 1 provided the intended purpose is not compromised by the loss of vegetation or harvesting disturbance. Felling and skidding of trees shall be directed away from the watercourse or waterbody. Skidding within the zone should be minimal and done in a manner to prevent the creation of ephemeral channels perpendicular to the stream.

Conservation practice standards are reviewed periodically, and updated as needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

**NRCS, LA  
APRIL 2002**

An adequate upstream or adjacent seed source must be present when using natural regeneration to establish a buffer. (See Tree/Shrub Establishment, Code 612.) Necessary site preparation and planting shall be done at a time and manner to ensure survival and growth of selected species. (See Forest Site Preparation, Code 490), (Tree/Shrub Establishment, Code 612.)

The method of planting for buffers shall include hand or machine planting techniques, be suited to achieving proper depths and placement of planted rootstocks, and not impair the intended purpose and function of the buffer. Machine planting will be done on the contour. Livestock shall be controlled or excluded from Zone 1 as necessary to achieve and maintain the intended purpose. Watercourse crossings and livestock watering shall be located and sized to minimize the impact on vegetation and function. On established buffers included within grazed areas, utilization rates of key woody browse should be set to allow woody vegetation to regrow sufficiently for its intended function. Impairment of buffer functions by over use of livestock (trampling, compaction or over utilization of woody plants) shall require immediate removal of livestock from the riparian area. (See Use Exclusion, Code 472.) Harmful pests present on the site will be controlled or eliminated as necessary to achieve and maintain the intended purpose.

Select plant species that are adapted to the site and plant the full stocking rate for optimal carbon storage.

Follow all local, state and federal laws and regulations during the installation, operation and maintenance of this practice. All forest harvesting operations shall be in compliance with recognized Best Management Practices (BMP's) developed for Louisiana.

Additional Criteria to Reduce Excess Amounts of Sediment, Organic Material, Nutrients, Pesticides, and Other Pollutants in Surface Runoff and Reduce Excess Nutrients and Other Chemicals in Shallow Water Flow

### Zone 2

An additional strip of land, Zone 2, will begin at the edge and up-gradient of Zone 1 and extend a minimum distance of 20 feet, measured horizontally on a line perpendicular to the watercourse or waterbody. The minimum combined width of zones 1 and 2 will be 100 feet or 30 percent of the

geomorphic flood plain, whichever is less, but not less than 35 feet. (See Figure 1.)

Criteria for Zone 1 Shall Apply to Zone 2 except the removal of tree and shrub products such as timber, nuts and fruit is permitted on a periodic and regular basis provided the intended purpose is not compromised by loss of vegetation or harvesting disturbance. The width of Zone 2 will be expanded in high nutrient, sediment, and animal waste application areas, where the contributing area is not adequately treated or where an additional level of protection is needed or desired.

### Zone 3

This zone will be added to the riparian buffer when it is located adjacent to cropland or other sparsely vegetated or highly erosive areas. This zone will begin up-gradient of Zone 2 and have a minimum width of 20 feet. (See Filter Strip, Code 393.) Zone 3 provides sediment filtering, nutrient uptake, and the space to convert concentrated flow to uniform sheet flow using techniques, such as, grading and shaping. (See Figure 2.) Vegetation will be comprised of dense perennial grasses and forbs for stabilization, sediment control, and nutrient uptake. Maintain vegetation in a vigorous condition. Mow and remove clippings as necessary to recycle sequestered nutrients, promote vigorous sod and control weeds. (See Figure 3.) The Filter Strip Practice Standard (Code 393) will be used in the design of Zone 3.

### Additional Criteria To Provide Habitat for Aquatic Organisms and Terrestrial Wildlife

The width of Zones 1 and 2 will be expanded to meet the minimum requirements of wildlife or aquatic species and associated communities of concern. (See Figure 4.) Plant communities will be established that address the targeted wildlife needs and existing resources of the watershed. Management for wildlife habitat, aesthetics, and timber are compatible secondary objectives as long as this management does not jeopardize the primary function of the buffer. (See Upland Wildlife Habitat Management, Code 645.) Where the creation of wildlife habitat is a stated objective of the landowner, riparian buffers may be established along natural levees (high banks) of permanent or intermittent streams, lakes, ponds, wetlands or other watercourses to serve as wildlife corridors. Targeted wildlife species (whitetail deer and bear) will determine the width of the riparian buffer. (See Figure 1 example.)

## CONSIDERATIONS

- The severity of bank erosion and its influence on existing or potential riparian trees and shrubs should be assessed. Watershed-level treatment or bank stability activities may be needed before establishing a riparian forest buffer. Complex ownership patterns of riparian areas may require group planning for proper buffer design, function and management.
- When concentrated flow or excessive sheet and rill erosion cannot be controlled vegetatively, consider structural or mechanical treatments.
- Joining of existing and new buffers increase the continuity of cover and will further moderate water temperatures. A mix of species with growth forms that are tall and wide-crowned will increase moderation efforts. Buffers established on both sides of watercourses will enhance multiple values.
- Favor tree and shrub species that are native and have multiple values such as those suited for timber, biomass, nuts, fruits, etc. Consider species that resprout.
- Avoid tree and shrub species, which may be alternate hosts to undesirable pests or may be considered noxious or undesirable.
- Consider the positive and negative impacts beaver, muskrat, deer, rabbits, and other local species may have on the successful management of the riparian and stream system.
- Select species to improve aesthetics.

### Plans and Specifications

Specifications for applying this practice shall be prepared for each site and recorded. Use job sheets, technical notes and narrative statements in the conservation plan.

### Operation and Maintenance

Buffers must be inspected periodically to ensure that this practice functions as planned throughout its entire life.

The buffer will be protected from adverse impacts such as excessive vehicular and pedestrian traffic, pest infestations, pesticides, livestock or wildlife damage and fire.

Any use of fertilizers, pesticides or other chemicals to assure buffer function shall not compromise the intended purpose.