NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATION

RIPARIAN FOREST BUFFER
(Ac.)
CODE 391

GENERAL SPECIFICATIONS

Procedures, technical details, and other information listed below provide additional guidance for carrying out selected components of the named practice. This material is referenced from the conservation practice standard for the named practice and supplements the requirements and considerations listed therein.

Some components of this practice may adversely affect significant cultural resources and should be submitted to a cultural resource specialist for a determination of impacts before the practice commences.

BUFFER STRUCTURE

All buffers will consist of a Zone 1 that begins at the normal water line, or at the top of the bank, and extends a minimum distance of **15 feet**, measured horizontally on a line perpendicular to the water body. **Zone 1 will consist entirely of tree species.**

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. **Do not cut below a basal area of 70 sq. ft. per acre.**

An additional strip or area 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 water body. The maximum combined width of Zones 1 and 2 will be **100 feet or 30 percent of the active flood plain** (whichever is less). The combined width of Zones 1 and 2 should never be less than 35 feet.

Waterbodies without an active floodplain, such as lakes or ponds, require a minimum width of 35 feet.

Length of the riparian forest buffer must be at least two times the minimum width for the buffer to be effective.

Criteria for Zone 1 shall apply to Zone 2 except that removal of products such as timber, fiber, nuts, fruit and forbs is permitted and encouraged on a periodic and regular basis provided the intended purpose is not compromised by loss of vegetation or harvesting disturbance. **A minimum basal area of 50 sq. ft. per acre** will be maintained within Zone 2.

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 desired.

Zone 2 may be widened to include areas of overland out-of-bank flow that show evidence of scour erosion or sediment deposition.

Width of Zone 2 may be expanded to meet the minimum requirements of the wildlife or aquatic species and associated communities of concern.

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the electronic Field Office Technical Guide.

The following can be used as a guide for minimum riparian forest buffer widths for selected wildlife species:

SPECIES	WIDTH
Bald eagle	600 Feet
Turkey	300 Feet
Deer	300 Feet
Squirrels	300 Feet

A **Zone 3** shall be added to the riparian buffer when adjacent to cropland or other sparsely vegetated or highly erosive areas to filter sediment, address concentrated flow erosion, and maintain sheet flow. The Filter Strip standard (practice code 393) shall be used to design Zone 3.

TREE/SHRUB PLANTING

See Table 1 for suggested woody species for establishment of riparian forest buffers. At least two tree species suited to the site will be planted.

Initial tree and/or shrub planting density will depend on the potential height and growth characteristics of individual woody species at age 20:

PLANT HEIGHTS	SPACING (Ft.)
Shrubs <10 feet	3 to 6
Shrubs and trees 10 to 20 feet or columnar trees	5 to 8
Trees > 20 feet	8 to 12

Trees planted within Zone 1 will be fast-growing with good shade potential and large debris characteristics. Tree planting will begin within 3 feet of the high bank of the waterbody. The rows of trees planted in Zone 1 may be staggered to provide increased streambank stabilization capability.

Woody species planted in Zone 2 may be entirely trees, a mixture of trees and shrubs, or all shrubs. Consider the purpose of the buffer and landowner objectives when selecting species combinations.

Do not leave openings in the planted trees or shrubs in Zones 1 and 2.

Natural regeneration may be used to establish woody vegetation if at least 150 hardwood trees per acre will become established after three growing seasons.

Refer to Tree/Shrub Establishment (Code 612) and Tree/Shrub Site Preparation (Code 490) for further guidance on planting woody species.

LIVESTOCK CONTROL

Livestock shall be totally excluded from the riparian area during tree and shrub establishment (until the trees reach a total height of six feet). Thereafter, livestock shall be controlled or excluded as necessary to maintain the intended purpose.

Livestock control planning must address grazing prescriptions that include duration, intensity, season/frequency of use, and alternative water sources. Impairment of riparian buffer function by livestock overuse (trampling, compaction, over utilization of woody cover, loafing in streambeds, etc.) shall require immediate removal of livestock from the riparian area. Readjust livestock access to keep the riparian area fully functional.

Protected entry points, water course crossings, and livestock watering points shall be located and sized to minimize impact to the buffer.

Table 1. Woody Species List for Riparian Forest Buffer Establishment

SPECIES (Common Name)	FLOODING TOLERANCE	LARGE DEBRIS	SHADE VALUE	WILDLIFE VALUE	HEIGHT (at maturity)	GROWTH RATE
Arrowwood	L	L	L	M	15	L
Ash, green	M	M	H	M	60	H
Baldcypress	VH	M	M	M	120	M
Birch, river	M	H	M	M	90	M
Blackgum	L	M	M	M	100	L
Buttonbush	VH	L	L	L	15	M-H
Cherry, black	L	L	M	M	100	M
Cottonwood	H (after 1st yr.)	H	M	H	100	H
Dogwood, gray	L	L	L	M	25	M
Dogwood, flowering	L	L	M	M	40	M
Dogwood, silky	H	L	L	H	15	M-H
Elderberry	L	L	L	M	15	M
Gum, tupelo	H	M	M	M	100	M
Hackberry	M-L	M	M	M	90	M
Hawthorn, green	M-L	L	L	M	15	L
Hickories	M-L	M	H	H	100	M
Honeylocust	M-L	M	L	L	90	L
Maple, boxelder	M	H	M	M	70	H
Maple, silver	M-H	H	H	M	100	H
Maple, red	M	M	H	M	100	M
Mulberry, French	L	L	L	H	8	L
Mulberry, red	M-L	M	H	H	60	L
Oak, bur	H	M	H	H	80	M
Oak, cherrybark	M	M	H	H	120	M
Oak, Northern red	L	M	H	H	100	M
Oak, Nuttall	VH	M	H	H	100	M
Oak, overcup	VH	M	H	H	100	M
Oak, pin	M-L	H	M	H	80	M-H
Oak, swamp chestnut	M	M	H	H	100	M
Oak, water	M	M	H	H	100	M
Oak, white	l	M	H	H	100	M
Oak, willow	M	M	H	H	100	M
Pecan	M	M	H	H	130	L-M
Persimmon	M	M	M	H	70	M
Plum, American	L	L	L	M	20	L
Plum, Chickasaw	L	L	L	M	20	L
Poplar, yellow	L	M	M	L	150	H
Redbud	L	L	L	L	50	L
Sassafras	L	M	M	L	80	M
Serviceberry	L	L	L	M	50	L
Sugarberry	M	H	M	M	80	M
Sumac, smooth or winged	L	L	L	M	8	L
Walnut, black	M-L	M	M	H	100	M

VH = very high; H = high; M = medium; L = low

Flooding Tolerance. General capacity of the plant to withstand standing water. VH = able to survive deep, prolonged flooding for more than one year; H = able to survive deep flooding for one growing season, with mortality occurring if flooding is repeated the following year; M = able to survive flooding or saturated soils for 30 consecutive days during the growing season; L = unable to survive more than a few days of flooding during the growing season without mortality.

Large Debris. Potential for the plant to produce debris larger than ten inches in diameter before senescence. H = large debris likely within life span of the plant; M = large debris possible within life span of the plant: L = large = large debris unlikely within life span of the plant.

Shade Value. The density or fullness of shade provided by an individual plant's crown in full leaf-out condition. H = large crown providing full shade; M = partially open or medium sized crown that provides patchy or incomplete shade; L = very open or small crown that provides minimal shade.

Wildlife Merit. The potential for the plant to provide useful cavity sites and/or quality fruit production for wildlife. H = excellent large cavity potential and/or high quality fleshy fruit or nut production; M = moderate cavity potential or fruit production; L = low cavity potential and dry, non-nut fruit production.

Height. Typical potential height at physical maturity.

Growth Rate. The rate at which the plant grows in height during its development period (after seedling stage and before final maturity stage). H = Rapid growth of 3 or more feet per year; M = Medium growth of 1 to 3 feet per year; L = Low growth rates of generally less than 1 foot per year.