

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

**FILTER STRIP
(ACRES)**

CODE 393

DEFINITION

A strip or area of herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forestland) and environmentally sensitive areas.

vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function. This practice applies when planned as part of a conservation management system.

PURPOSE

- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff
- To reduce dissolved contaminant loadings in runoff
- To serve as Zone 3 of a Riparian Forest Buffer, (391)
- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater
- To restore, create or enhance herbaceous habitat for wildlife and beneficial insects
- To maintain or enhance watershed functions and values

CRITERIA

General Criteria Applicable to All Purposes

Filter strips shall be designated as vegetated areas to treat runoff and are not part of the adjacent cropland rotation.

Overland flow entering the filter strip shall be primarily sheet flow. Concentrated flow shall be dispersed prior to entering the filter strip.

The filter strip shall be established to permanent herbaceous vegetation consisting of a single species or mixture of grasses, legumes, and/or forbs adapted to the site and practices used in the management system. Annuals may be used in conjunction with surface irrigation tailwater.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies (1) in areas situated down gradient from cropland, grazing land, or disturbed land (including forest land) (2) where sediment, particulate organic matter and/or dissolved contaminants may leave these areas and are entering environmentally sensitive areas; (3) in areas where permanent

Vegetation in filter strips will have a high stem density near the soil surface. Ideally, stem density spacing should not exceed 1 inch. Where bunch grasses are planted for wildlife enhancement, stem density spacing may exceed 1 inch.

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

**NRCS, LA
OCTOBER 2004**

State listed noxious weeds will not be established in the filter strip and will be controlled if present.

Filter strip establishments shall comply with local, state and federal regulations.

The filter strip shall be located along the downslope edge of a field or disturbed area. To the extent practical it shall be placed on the approximate contour of the topography. At no point will the filter strip be less than the design width in the tables included in this standard. However, the width may need to be increased to account for topography, uneven field boundaries or equipment size. The width of the filter strip may be increased for the reasons above up to the following:

<u>Design Width</u>	<u>% Increase</u>
20 to 50 ft.	50%
51 to 100 ft.	25%
101 to 125 ft.	10%
126 ft. ⁺	0%

The above variance does not apply to filter strips enhanced for wildlife.

The contributing drainage area immediately upslope of the filter strip shall be no more than 10% slope.

The ratio of the drainage area to the filter strip area shall be less than 50:1.

The average annual sheet and rill erosion rate immediately upslope of the filter strip shall be less than 10 tons per acre per year.

Species suitable for use in filter strips along with planting rates and optimum

planting dates are contained in Table 1 of this standard.

Plant nutrients necessary for establishment and growth of selected species shall be applied according to specifications in Nutrient Management (590).

Lime shall be applied according to soil test analysis.

Tillage operations for seedbed preparation shall be sufficient to prepare a suitable seedbed to a minimum 3 inch depth. Seedbeds should be firmed with a roller or cultipacker after tillage operations are complete, but prior to seeding. Seed should be covered to the proper depth if seeded with a drill or cultipacker seeder. If seed are broadcast, cover seed immediately with a roller, cultipacker, spike-tooth harrow or similar implement no deeper than ¼ inch.

Legumes shall be inoculated with the proper strain of Rhizobia bacteria.

Drills used for seeding native species that are bearded or fluffy in nature should be equipped with an agitator and extra large seed delivery tubes. Native seeds, which have been debarbed or are smooth in nature, can be seeded in conventional drills. If legumes or forbs are included in a mixture, drills should be equipped with small seed attachments. Drilling shall accomplish a plant spacing of 4 inches. This may be accomplished by double drilling the area.

Additional Criteria to Reduce Sediment, Particulate Organics, and Sediment Adsorbed Contaminant Load in Runoff

The tables listed below shall be used to design filter strip widths for the following land uses:

Cropland, Grazing Land, and Disturbed Land

Filter strip widths used for this purpose and land use, shall be designed using the widths in Table 2.

Forestland

Filter strips used as part of a forestry operation will be placed upgradient from roads and waterbodies. Filter strip widths used for this purpose and land use, shall be designated using the widths in Table 3.

Additional Criteria to Reduce Dissolved Contaminant Load (Nitrogen, Phosphorus, Pesticides, and Pathogens) and Animal Waste or Other Organic By-products in Runoff

The tables listed below shall be used to design filter strips widths for the following contaminants:

Nitrogen and Pesticides

Filter strips where nitrogen or pesticides in runoff is a concern shall be designed using the widths in Table 5.

Phosphorus

Filter strips where phosphorus in runoff is a concern shall be designed using the widths in Table 6.

Pathogens

Filter strip where pathogens in runoff are a concern shall be designed using the widths in Table 7.

Animal Wastes and Other Organic By-products

Filter strips where animal wastes or other organic by-products are applied shall be designed, regardless of land use, using the widths in Table 8.

Additional Criteria To Serve as Zone 3 of a Riparian Forest Buffer (391)

Filter strips used in conjunction with Riparian Forest Buffers (391) shall be designed using the widths in Table 4.

Additional Criteria to Reduce Sediment, Particulate Organics, and Sediment Adsorbed Contaminant Load in Surface Irrigation Tailwater

Filter strips established for this purpose shall be designed using the widths in Table 2.

Vegetation for the filter strip may be planted to either perennial grasses or a suitable annual. Plant spacing for annuals shall not exceed 4 inches.

Filter strips shall be established prior to irrigation season so that vegetation can withstand sediment deposition from the first irrigation.

Additional Criteria to Restore, Create, or Enhance Herbaceous Habitat for Wildlife and Beneficial Insects

Filter strips may be enhanced for wildlife but must meet one of the above intended purposes. Filter strips enhanced for wildlife shall be increased to at least 100 feet in width and shall not exceed 150 feet in width.

The filter strip shall not be mowed nor shall livestock or vehicular traffic be allowed on the filter strip from April 15 – July 15, which coincides with the primary nesting season for most ground nesting bird species in Louisiana.

At least 100 feet of the overall width shall be planted to a mixture of native grasses with legumes and/or forbs.

If strips of introduced grass species are to be used in conjunction with strips of native species, they shall be used on the upslope portion of the strip only and be no less than 15 feet and no more than 30 feet in width. See examples below:

Examples of Filter Strip Designs for Wildlife Enhancement

Example 1 – The design width of the filter strip is 100 feet.

Solution – The entire 100' shall be seeded to native species.

Example 2 – The design width is 20 feet.

Solution – The strip must be at least 100 feet wide. An additional 80 feet must be added to the filter strip and the entire strip planted to native species.

Example 3 – The design width is 150 feet.

Solution 1 – All 150 feet may be planted to a native mixture.

Solution 2 – The upslope 30 feet may be planted to an introduced species and the remaining 120 feet may be planted to native species.

Solution 3 – The upslope 15 feet may be planted to an introduced species and the remaining 135 feet may be planted to native species.

CONSIDERATIONS

Filter strips should be strategically located to reduce runoff, increase infiltration, and ground water recharge throughout the watershed.

To avoid damage to the filter strip, consider using species, which are tolerant to herbicides used in the upslope crop rotation.

Consider using this practice to enhance the conservation of declining species of wildlife, including threatened or endangered species.

Consider using filter strips to protect National Register listed or eligible (significant) archeological and traditional cultural properties from potentially damaging contaminants.

Filter strip size should be adjusted to a greater flow width to accommodate harvest and maintenance.

PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared for each specific field site where a filter strip will be installed according to the specifications contained in this standard. Information regarding the location, construction, sequence, vegetation establishment and management and maintenance requirements will be recorded in narrative statements and included in the conservation plan.

Specifications will include as a minimum:

- Length, width, and slope of the filter strip to accomplish the planned purpose (width refers to length across the filter strip).
- Species selected and seeding or sprigging rates to accomplish the planned purpose.
- Planting dates, care, and handling of the seed to ensure that planted materials have an acceptable rate of survival.
- Seedbed preparation sufficient for the establishment and growth of selected species.

OPERATION AND MAINTENANCE

Filter strips should be harvested at least once every three years to encourage dense growth, maintain an upright growth habit and remove nutrients and other contaminants that are contained in the vegetative tissue. Haying and/or prescribed burning are the preferred methods of removing vegetation from filter strips and shall be carried out in accordance with Forage Harvest Management (511) and Prescribed Burning (338). Hay bales should be removed from

the filter strip in a timely manner. An approved burn plan shall be prepared when using a prescribed burn for management/maintenance.

Grazing may be used to manage excess vegetation on filter strips where receiving waters are not listed as impaired due to livestock grazing according to the most recent Louisiana Department of Environmental Quality (LDEQ) Water Quality Management Plan, Water Quality Inventory, Section 305(b) report. It should be noted that up to 80% of the nutrients in the forage will be recycled on the site in the form of livestock feces and urine. Grazing shall be in accordance with Prescribed Grazing (528). Grazing heights will be maintained 1 inch higher than the heights listed in continuous use column (Table 1) of 528. Grazing shall be done only when the filter strip is dry and firm enough to support livestock traffic without excessive compaction.

Annuals may be left in place, moved, or harvested. Stubble or residue shall be left at least 4 inches in height until the next crop is planted.

Undesirable species shall be controlled or removed at least once every 3 years.

Vegetation shall be maintained in a vigorous condition. On sites where maintenance fertilizer is required, the Nutrient Management (590) practice standard shall be used as guidance for determining nutrient needs.

To maintain and restore the filter strips function (sheet flow), periodic regrading may be needed when sediment deposition at the filter strip-field interface jeopardizes

its function. Sediment accumulations of 6 inches in the filter strip area is criteria for removal and reestablishment of the filter area. If wildlife habitat enhancement is a purpose, disturbance of vegetation within the portion of the strip devoted to wildlife should be minimized by regrading only to the extent needed to remove sediment and redirect concentrated flow areas.

Where wildlife habitat enhancement, maintenance activities shall not be performed from April 15 – July 15 which coincides with the primary nesting season for most ground nesting bird species in Louisiana.

TABLE 1 – RECOMMENDED SPECIES, SEEDING DATES, AND SEEDING/SPRIGGING RATES FOR FILTER STRIPS

SPECIES	SEEDING DATE^{1/}	RATES PER ACRE
Pensacola Bahiagrass	March 1 – August 31	40 lbs
Common Bermudagrass (Hulled)	March 1 – August 31	7 lbs
Common Bermudagrass (Unhulled)	January 1 – February 28	12 lbs
Alicia Bermudagrass	March 1 – August 31	40 bu (Sprigs) or 3,000 lbs green hay
Coastal Bermudagrass	March 1 – August 31	40 bu (Sprigs)
Tifton 44 Bermudagrass	March 1 – August 31	35 bu (Sprigs)
Black-Eyed Susan ^{2/}	September 1 – December 31	3.0 lbs PLS
Eastern Gammagrass	March 1 – May 31	15.0 lbs PLS
Indiangrass	March 1 – May 31	7.5 lbs PLS
Illinois Bundleflower ^{2/}	February 15 – May 15	20.0 lbs PLS
Lanceleaf Coreopsis ^{2/}	September 1 – December 31	15.0 lbs PLS
Maximillian Sunflower ^{2/}	January 1 – March 31	4.5 lbs PLS
Partridge Pea ^{2/}	January 1 – February 15	15.0 lbs PLS
Plains Coreopsis ^{2/}	September 1 – December 31	3.0 lbs PLS
Tall Fescue	September 1 – December 31	40 lbs
Ryegrass	September 1 – February 28	40 lbs
Rye	September 1 – December 31	70 lbs
Switchgrass	March 1 – May 31	4.5 lbs PLS
Oats	September 1 – December 31	100 lbs
Virginia Wild Rye	March 1 – May 31	30 lbs PLS
Wheat	September 1 – December 31	80 lbs
Browntop Millet	March 1 – August 31	40 lbs

^{1/} The seeding dates listed in Table 1 are for optimum conditions. It is preferable to seed certain species during late winter/early spring to avoid drought and/or competition from introduced weed species. However, due to unfavorable weather conditions normal for this time of year, seedbed preparation and planting are often delayed until late spring/early summer when drought and/or weed competition are more severe. To avoid these conditions, native species can be seeded from September to December in Louisiana with satisfactory results. Planting this time of year ensures good seedbed preparation and planting conditions. Freshly prepared seedbeds settle and are recharged by winter rains. Many species germinate before spring and survive better due to high soil moisture. The cold and damp conditions (6 – 8 weeks) also satisfies the dormancy requirement of many species.

^{2/} These native forb species may be included in filter strip plantings with native grasses, but shall not be seeded alone and shall not make up more than 10% (by weight) of the native species seeding mixture.

TABLE 2
(Filter Width to Reduce Sediment From Runoff)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)			
	Hydrologic Soil Group of Filter Area			
	A	B	C	D
0 – 1	20	20	22	24
1 – 3	20	25	28	30
3 – 5	24	30	33	36
5 – 8	28	35	40	42
8 – 10	32	40	44	48

TABLE 3
(Filter Width for Undisturbed Forest Floor)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)
0 – 3	25
3 – 5	35
5 – 8	45
8 – 10	55

TABLE 4
(Width for Filter Used as Zone 3 of a Riparian Forest Buffer)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)
0 – 8	20
9 – 10	30

TABLE 5
(Filter Width to Reduce Nitrogen and Pesticides)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)			
	Hydrologic Soil Group of Filter Area			
	A	B	C	D
0 – 1	30	32	34	36
1 – 3	32	40	44	48
3 – 5	40	50	55	60
5 – 8	48	60	66	72
8 – 10	56	70	77	84

TABLE 6
(Filter Width to Reduce Phosphorous)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)			
	Hydrologic Soil Group of Filter Area			
	A	B	C	D
0 – 1	30	32	34	36
1 – 3	40	50	55	60
3 – 5	56	70	77	84
5 – 8	72	90	100	108
8 – 10	96	120	132	144

TABLE 7
(Filter Width to Reduce Pathogens)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)			
	Hydrologic Soil Group of Filter Area			
	A	B	C	D
0 – 1	30	30	30	30
1 – 3	30	30	33	36
3 – 5	32	40	44	48
5 – 8	48	60	66	72
8 – 10	100	125	137	150

TABLE 8
(Filter Width Where Animal Waste or Other Organics are Applied)

Percent Slope of Land in Contributing Area	Width of Filter (Feet)			
	Hydrologic Soil Group of Filter Area			
	A	B	C	D
0 – 1	35	35	35	35
1 – 3	35	40	44	48
3 – 5	43	53	59	64
5 – 8	56	70	77	84
8 – 10	84	105	115	126