

NATURAL RESOURCES CONSERVATION SERVICE

VIRGINIA CONSERVATION PRACTICE STANDARD

FILTER STRIP

(Acre)

Code 393

DEFINITION

A strip or area of vegetation for removing sediment, organic matter, nutrients, and other pollutants from runoff. Filter strips are located between cropland, grazing land, loafing lots, or disturbed land (including forestland) and environmentally sensitive areas (i.e., water bodies and streams).

PURPOSES

- To filter sediment, particulate organics, and other pollutants in runoff
- To serve as Zone 3 of a *Riparian Forest Buffer (Code 391)*, Virginia Conservation Practice Standard
- To restore, create or enhance herbaceous habitat for wildlife and beneficial insects.
- To maintain or enhance watershed functions and values

CONDITIONS WHERE PRACTICE APPLIES

This practice applies:

- In areas situated down slope of cropland, grazing land, livestock loafing lots, or disturbed land (including forest land) adjacent to environmentally sensitive areas
- In areas where permanent vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function

- Adjacent to a *Riparian Forest Buffer (Code 391)* Virginia Conservation Practice Standard
- In areas requiring a filter strip as part of a loafing lot management system to treat runoff
- When planned as part of a conservation management system
- State regulations require a “vegetative buffer” between agricultural fields and certain environmentally sensitive areas. (See FOTG Reference Section I, CBLAD Regulations). A defined level of treatment is also indicated within these regulations. Not all of these “vegetative buffers” serve as filter strips due to topographic features, channelized flows, etc. The use of Virginia Conservation Practice Standard *Filter Strip (Code 393)* is not interchangeable with state regulations.

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.

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

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

Filter strip establishment shall comply with the *Plant Establishment Guide for Virginia*.

Filter strip location requirements:

- 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. Variation in placement on the contour should not exceed a 0.5% longitudinal (perpendicular to the flow length) gradient.
- The drainage area above the filter strip shall have greater than 1% but less than 10% slopes.
- The average annual sheet and rill erosion rate above the filter strip shall be less than 10 tons per acre per year.

CRITERIA FOR REMOVAL OF SEDIMENT AND RELATED POLLUTANTS

These criteria apply to filter strips on cropland adjacent to water courses, at the lower edge of crop fields, on pastures, or in manure spreading areas adjacent to streams, ponds, and lakes, where a resource management system is in place. These criteria also apply to areas above conservation practices such as terraces or diversions.

In fields with slopes of 1 – 4 percent and an erosion rate at or below the annual tolerance rate for the field's soil, the minimum filter strip width shall be 35 feet.

In fields with erosion rates above soil loss tolerance and slopes are 1-8 percent, the minimum width shall be 35 feet when farming operations adjacent to the strip are parallel to the length of the strip or when farming operations adjacent to the strip are not parallel to the length of the strip.

In fields with 8 percent or greater slopes, regardless of the erosion rate, the minimum strip width shall be 35 feet plus 3 feet for each one percent increase in field slope.

Filter strips may be grass, shrubs, trees, or other perennial vegetation. Grasses, trees, and shrubs may be selected from the *Plant Establishment*

Guide for Virginia. Care shall be taken to ensure runoff flows perpendicularly across the filter in a uniform manner. The filter width shall be measured in a direction perpendicular to the edge of the pollution source.

Filter Strips For Runoff From Loafing Livestock Areas

For loafing areas normally void of vegetation during the winter months, establish a filter strip at least 100 feet wide between the loafing area and water bodies. Level spreaders or similar devices will be installed to ensure uniform flow across the filter strip. Grass filter strips can be designed as a component of an animal loafing lot management system.

Filter strips shall be protected by fencing. No grazing is permitted.

If a 100-foot filter strip cannot be installed, *Sediment Basin (Code 350)* Virginia Conservation Practice Standard will be considered. A *Diversion (Code 362)* Virginia Conservation Practice Standard can also be installed to safely convey pollutants to an area better suited for a filter strip or sediment basin.

ADDITIONAL CRITERIA TO SERVE AS ZONE 3 OF A RIPARIAN FOREST BUFFER (CODE 391)

If concentrated flows entering Zone 3 are greater than the filter strip's ability to disperse them, other means of dispersal, such as spreading devices, must be incorporated.

ADDITIONAL CRITERIA TO RESTORE, CREATE, OR ENHANCE HERBACEOUS HABITAT FOR WILDLIFE AND BENEFICIAL INSECTS

If this purpose is intended in combination with one or more of the previous purposes, then the minimum criteria for the previous purpose(s) must be met. Additional filter strip flow length devoted to this purpose must be added to the length required for the other purpose(s). Any addition to the flow length for wildlife or beneficial insects shall be added to the downhill slope of the filter strip. Vegetation to enhance wildlife may be added to that portion

of the filter strip devoted to other purposes to the extent they do not detract from its primary functions.

Plant species selected for this purpose shall be for permanent vegetation adapted to the wildlife or the beneficial insect population(s) targeted. See *Plant Establishment Guide for Virginia*.

If wildlife is the only purpose, filter strip width and length shall be based on requirements of the targeted wildlife or insects. Density of the vegetative stand established for this purpose shall consider targeted wildlife habitat requirements and encourage plant diversity. Dispersed woody vegetation may be used to the extent it does not interfere with herbaceous vegetative growth, or operation and maintenance of the filter strip.

The filter strip shall not be mowed during the nesting season of the target wildlife.

To benefit pollinators and other wildlife insect food sources for grassland nesting birds, spraying or other weed control will be done only in the infested areas.

ADDITIONAL CRITERIA TO MAINTAIN OR ENHANCE WATERSHED FUNCTIONS AND VALUES

Filter strips shall be strategically located to enhance connectivity of corridors and non-cultivated patches of vegetation within the watershed.

Filter strips should be strategically located to enhance aesthetics of the watershed.

Plant species selected for this purpose shall be for establishment of permanent vegetation.

CONSIDERATIONS

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

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

Consider using this practice to protect National Register listed or eligible (significant)

archaeological and traditional cultural properties from potential damaging contaminants.

Filter strip size may be adjusted to a greater flow length to accommodate harvest and maintenance equipment.

PLANS AND SPECIFICATIONS

Based on this standard, plans and specifications shall be prepared for each specific field site where a filter strip will be installed. A plan includes information about the location, construction sequence, vegetation establishment, and management and maintenance requirements.

To realize the greatest functional benefit of the filter strip, the following application conditions shall be respected:

- Applied where there is a potential for sheet and uniform shallow flow.
- Applied as close as possible to the contour of the land.
- Applied to slopes with less than 10 percent grade.
- Applied to land with soil loss > 10 tons

Specifications will include:

- Length, width, and slope of the filter strip to accomplish the planned purpose (length refers to flow length across the filter strip)
- Species selection and seeding or sprigging rates to accomplish the planned purpose
- Planting dates, care, and handling of the plant materials, soil amendments and seed according to the *Plant Establishment Guide for Virginia*
- Site preparation sufficient to establish and grow selected species

OPERATION AND MAINTENANCE

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Filter strip vegetative plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue.

Control undesired weed species, especially state-listed noxious weeds.

Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed.

Inspect the filter strip after storm events and repair any damages.

Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.

To maintain or restore the filter strip's function, periodically regrade the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function, and then reestablish the filter strip vegetation, if needed. If wildlife habitat is a purpose, destruction of vegetation within the portion of the strip devoted to that purpose should be minimized by regrading only to the extent needed to remove sediment and fill concentrated flow areas.

Grazing shall not be permitted in the filter strip.

REFERENCES

1. *Plant Establishment Guide for Virginia*, NRCS.
2. Engineering Field Manual, NRCS.
3. Virginia Ag BMP Manual, DCR.
4. Virginia Field Office Technical Guide, Sections I and IV, NRCS.

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FILTER STRIP

Approved Practice Narratives

(Acre)

CODE 393

393 D1 Filter Strip: A grass area will be planted and maintained to filter surface runoff. The location of this filter strip is shown on the planning map. Size, seeding rates, and maintenance requirements are listed on the attached Practice Job Sheet.

(PLANNERS NOTE: FOR USE IN CROPLAND SITUATIONS)

393 D2 Filter Strip: A grass area will be planted and maintained to serve as part of a loafing lot management system. Size, seeding rates, maintenance requirements, and effluent loading rates are listed on the attached Practice Job Sheet.

(PLANNERS NOTE: FOR USE IN LOAFING LOT MANAGEMENT)

393 D3 Filter Strip: A grass or shrub area will be established adjacent to the existing natural vegetation. The combined widths of these areas will establish the required vegetative buffer zone for certain local/state regulations. The width to be seeded, seeding rate, maintenance requirements are listed on the attached Practice Job Sheet.

(PLANNERS NOTE: FOR USE WITH EXISTING NATURAL VEGETATION FOR PROGRAM GUIDELINES)

393 D4 Filter Strip: The existing grass or shrub area will be maintained to serve as part of a loafing lot management system. Width and maintenance requirements are listed on the attached Practice Job Sheet.

393 D5 Filter Strip: A grass area will be planted and maintained to improve wildlife habitat and filter surface runoff. The location of the filter strip(s) is indicated on the plan map. See Practice Job Sheet for establishment and management guidance.

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