

**NATURAL RESOURCES CONSERVATION SERVICE
VIRGINIA CONSERVATION PRACTICE STANDARD**

FILTER STRIP

(Ac.)

CODE 393

DEFINITION

A strip or area of herbaceous vegetation that removes contaminants from overland flow.

PURPOSE

This practice supports one or more of the following purposes:

- Reduce suspended solids and associated contaminants in runoff.
- Reduce dissolved contaminant loadings in runoff.

CONDITIONS WHERE PRACTICE APPLIES

Filter strips are established where environmentally-sensitive areas need to be protected from sediment, other suspended solids, and dissolved contaminants in runoff.

This includes areas situated downslope of cropland, grazing land, livestock loafing lots, or disturbed land (including forest land).

CRITERIA

General Criteria Applicable to All Purposes

Filter Strip Layout

Locate the filter strip immediately along the downslope edge of the crop field, disturbed area, or other potential source of runoff and contaminants.

Ensure overland flow entering the filter strip is a uniform sheet flow.

Concentrated flow shall be dispersed before it enters the filter strip.

Place the upslope or receiving edge of the filter strip on the contour to the maximum extent possible.

The maximum gradient along the upslope or receiving edge of the filter strip shall not exceed the lesser of the following:

- a. One-half of the slope steepness (measured in percent) of the drainage or contributing area immediately uphill from the filter strip. This slope is measured roughly perpendicular to the edge of the filter strip.
- b. 5%

The drainage or contributing area immediately uphill from the filter strip shall have a slope steepness of at least 1% (this slope is measured roughly perpendicular to the edge of the filter strip).

The filter strip shall have a slope steepness equal to or less than the slope of the drainage area, but in no case shall the slope within the filter strip exceed 5% (this slope is measured roughly perpendicular to the edge of the filter strip).

The filter strip must be a minimum of 35 feet in width.

The filter strip will be designed to have a 10-year life span, following the procedure in the Agronomy Technical Note No. 2 (Using RUSLE2 for the Design and Predicted Effectiveness of Vegetative Filter Strips (VFS) for Sediment), based on the sediment delivery in RUSLE2 to the upper edge of the filter strip and ratio of the filter strip flow length to the length of the flow path from the contributing area.

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Filter Strip Vegetation

Grazing of the filter strip is not allowed.

State-listed noxious plants will not be established in the filter strip. Filter strips shall not be used as a travel lane for equipment or livestock.

The filter strip shall be established to permanent herbaceous vegetation

Select species that are:

- able to withstand partial burial from sediment deposition and
- tolerant of herbicides used on the area that contributes runoff to the filter strip.

Refer to the Virginia Plant Establishment Guide (PEG) for the recommended seeding or planting rates, dates, depths and methods that best ensure establishment and growth of the selected species.

Select species with stiff stems and a high stem density near the ground surface.

Ensure that selected species for seeding or planting are suited to current site conditions and intended uses. Selected species will have the capacity to achieve adequate density and vigor within an appropriate period to stabilize the site sufficiently to permit suited uses with ordinary management activities.

Specify species, rates of seeding or planting, minimum quality of planting stock, such as PLS or stem caliper, and method of establishment before application. Only use viable, high quality seed or planting stock.

Perform site preparation and seeding or planting at a time and in a manner that best ensures survival and growth of the selected species. Specify what constitutes successful establishment, e.g. minimum percent ground/canopy cover, percent survival, stand density, etc. before application.

Schedule planting dates during periods when soil moisture is adequate for germination and/or establishment.

The minimum seeding and stem density shall be equivalent to a high quality grass hay seeding rate for the climate area or the predicted density of vegetation used to

estimate trapping efficiency, whichever is the higher seeding rate.

CONSIDERATIONS

Filter strip width (flow length) can be increased as necessary to accommodate harvest and maintenance equipment.

Filters strips with the leading edge on the contour will function better than those with a gradient along the leading edge.

Seeding rates that establish a higher stem density than the normal density for a high quality grass hay crop will be more effective in trapping and treating contaminants.

If needed, invasive plant species may be controlled through mowing, herbicides and hand weeding based on the land users situation.

Take steps to improve infiltration in compacted soils.

Increasing the width of the filter strip beyond the minimum required will increase the potential for capturing contaminants in runoff.

Filter strips are often the only break in the monotony of intensively-cropped areas. The wildlife and pollinator benefits of this herbaceous cover can be enhanced by:

- Increasing the width beyond the minimum required, and planting this additional area to species that can provide food and cover for wildlife. This additional width should be added on the downslope side of the filter strip.
- Adding herbaceous plant species including native forbs and grasses to the filter strip seeding mix that are beneficial to wildlife and pollinators and be compatible for one of the listed purposes. Changing the seeding mix should not detract from the purpose for which the filter strip was established.
- Management activities on filter strips, such as mowing, burning, or light disking, should not be done more often than every other year with frequency dependent on geographical location to maintain the purposes of the practice.

- Management activities on the filter strip should be completed outside of the primary nesting (April 15 to August 15), fawning, and calving seasons. Activities should be timed to allow for regrowth before the growing season.
- Organic producers may have to submit plans and specifications to their certifying agent for approval prior to installation, as part of the organic producer's Organic System Plan.
- Organic producers may have to maintain records for five years, as part of their Organic System Plan.

Filter strips can:

- enhance connectivity of corridors and non-cultivated patches of vegetation within the watershed.
- enhance the aesthetics of a watershed
- be strategically located to reduce runoff, and increase infiltration and ground water recharge throughout the watershed.

Increasing the width of a filter strip beyond the minimum required will increase the potential for carbon sequestration.

PLANS AND SPECIFICATIONS

Applicable to All

Plans and specifications shall be prepared for each 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.

As a minimum, the plans shall include:

- a) A map or sketch showing the planned filter strip system, with all relevant measurements and design values noted.
- b) Length, width (flow path), and slope of the filter strip to accomplish the planned purpose.
- c) Species selection and seeding or sprigging rates to accomplish the planned purpose.

- d) Planting dates, planting depth, care and handling of the seed to ensure that planted materials have an acceptable rate of survival.
- e) A statement that only viable, high quality and regionally adapted seed will be used.
- f) Site preparation sufficient to establish and grow selected species.

Use the practice job sheet to plan and certify this practice.

OPERATION AND MAINTENANCE

For the purposes of filtering contaminants, permanent filter strip vegetative plantings shall be managed 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.

If prescribed burning is used to manage and maintain the filter strip, an approved burn plan must be developed by a VA Certified Prescribed Burn Manager.

Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas and take other measures to prevent concentrated flow through the filter strip.

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

Periodically re-grade and re-establish the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function. Reestablish the filter strip vegetation in these regraded areas, if needed.

If haying is used to harvest vegetation from the filter strip, ensure the integrity and function of the filter strip is not adversely affected.

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USDA-AMS National Organic Program National List of Allowed and Prohibited Substances.
<http://www.ams.usda.gov/AMSV1.0/nop>

USDA-AMS National Organic Program Regulations, 7 CFR Part 205.
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