

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

FILTER STRIP

(Ac.)

CODE 393

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

Establish filter strips where environmentally sensitive areas need to be protected from sediment and other suspended solids and dissolved contaminants in runoff.

CRITERIA

General Criteria Applicable to All Purposes

Overland flow entering the filter strip shall be uniform sheet flow.

Disperse concentrated flow before it enters the filter strip.

The maximum gradient along the leading edge of the filter strip shall not exceed one-half of the up-and-down hill slope percent, immediately upslope from the filter strip, up to a maximum of 5%.

Do not establish State-listed noxious weeds or invasive plants in the filter strip.

Do not use Filter strips as travel lanes for equipment or livestock.

Additional Criteria to Reduce Suspended Solids and Associated Contaminants in Runoff

Design filter strips to have a 10-year life span following the procedure described in NRCS National Agronomy Technical Note No. 2 (Using RUSLE2 for the Design and Predicted Effectiveness of Vegetative Filter Strips for Sediment). The procedure includes calculating the RUSLE2 sediment delivery rate to the upper edge of the filter strip, and the ratio of the filter strip flow length to the length of the contributing area flow path.

Locate the filter strip immediately down slope from the source area of contaminants.

The drainage area above the filter strip shall have a slope of one percent or greater.

Vegetation

Establish filter strips to permanent herbaceous vegetation.

Species selected must have the following characteristics.

- Able to withstand partial burial from sediment deposition
- Tolerant of herbicides used on the area that contributes runoff to the filter strip
- Have stiff stems and a high stem density near the ground surface

Species selected for seeding or planting shall be 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 the species, rates of seeding or planting, minimum quality of planting stock, such as PLS or stem caliper, and the method of establishment, before application. Use only viable, high quality seed or planting stock.

Complete 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 rate and stem density shall be equivalent to high quality grass hay for the climate area, or the density of vegetation selected in RUSLE2 to determine trapping efficiency, whichever is the higher.

Additional Criteria to Reduce Dissolved Contaminants Loadings in Runoff

Additional criteria to reduce suspended solids and associated contaminants in runoff for location, drainage area and vegetation characteristics apply to this purpose.

The minimum flow length for this purpose shall be 30 feet.

Additional Criteria to Reduce Suspended Solids and Associated Contaminants in Irrigation Tailwater

Use small grains or other suitable annual plants for filter strip vegetation.

The seeding rate shall be sufficient to ensure that plant spacing does not exceed 4 inches.

Establish filter strips early enough prior to the irrigation season so the vegetation is mature enough to filter sediment from the first irrigation.

The minimum flow length for this purpose shall be 20 feet.

CONSIDERATIONS

General

Increase the filter strip width (flow length) as necessary to accommodate harvest and maintenance equipment.

Filter strips designed with the leading edge on the contour will function better than those that have 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 at trapping and treating contaminants.

Reducing suspended solids and associated contaminants in runoff

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

Creating, restoring or enhancing herbaceous habitat for wildlife and beneficial insects and pollinators

The following actions can enhance the wildlife and pollinator benefits of this practice.

- Increase the width beyond the minimum required and plant the additional area to species that can provide food and cover for wildlife. Add the additional width to the down slope side of the filter strip.
- Adding herbaceous plant species to the filter strip seeding mix that are beneficial to wildlife and pollinators and be compatible for one of the listed purposes can increase wildlife and pollinator benefits. Changing the seeding mix should not detract from the purpose for which the filter strip was established.

Maintain or enhance watershed functions and values

Filter strips can enhance the connectivity of corridors and non-cultivated patches of vegetation, enhance the aesthetics of a watershed, and reduce runoff and increase infiltration and ground water recharge throughout the watershed.

Air Quality

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

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each filter strip according to the criteria included in this standard. Specifications shall describe the requirements for applying this practice to meet the intended purpose.

Record practice specifications on the Colorado Filter Strip, 393 Conservation Practice Job Sheet.

As a minimum, include the following elements in Plans and Specifications for Filter Strips.

1. Length, width (flow path), and slope of the filter strip to accomplish the planned purpose (width refers to flow length through the filter strip).
2. Species selection and seeding or sprigging rates to accomplish the planned purpose
3. Planting dates, care and handling of the seed to ensure that planted materials have an acceptable rate of survival
4. A statement that only viable, high quality and regionally adapted seed will be used
5. Site preparation sufficient to establish and grow selected species

OPERATION AND MAINTENANCE

For filtering contaminants, harvest permanent filter strip vegetation 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.

Develop an approved burn plan in order to use prescribed burning to manage and maintain the filter strip.

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 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 filter strip vegetation in re-graded areas, if needed.

When grazing to harvest vegetation from the filter strip, the grazing plan must insure that the integrity and function of the filter strip is not adversely affected.

REFERENCES

Colorado Field Office Technical Guide, Section I. Plant Materials Technical Note No. 59, Plant suitability and seeding rates for conservation plantings in Colorado. 2002. USDA, NRCS. Denver, CO.

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