

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FILTER STRIP

(Ac.)
Code 393



DEFINITION

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

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, conservation practice standard Code 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.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies:

- (a) In areas situated below cropland, grazing land, or disturbed land (including forest land);
- (b) Where sediment, particulate matter and/or dissolved contaminants may leave these areas and are entering environmentally sensitive areas;
- (c) In areas where permanent 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.

CRITERIA

General Criteria Applicable to All Purposes

Filter strip establishment shall comply with local, state and Federal regulations.

Impacts to cultural resources and Federal and state protected species shall be evaluated during planning, design and implementation of this conservation practice in accord with established National and Florida NRCS policies (General Manual, Title 420-Part401 and Title 190-Par410.22; National Planning Procedures Handbook, FL Supplements to Parts 600.1 and 600.5).

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.

Grazing shall not be permitted in the filter strip unless a controlled grazing system is being implemented in accordance with Florida NRCS conservation practice standard Prescribed Grazing, Code 528A.

Additional Criteria Applicable to Reduce Sediment, Particulate Organics and Sediment-Adsorbed Contaminant Loadings in Runoff

Filter strip flow length shall be determined based on field slope percent and length, and filter strip slope percent, erosion rate, amount and particle size distribution of sediment delivered to the filter strip, density and height of the filter strip vegetation, and runoff volume associated with erosion producing events. The minimum flow length for this purpose shall be 20 feet.

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 ratio of the drainage area to the filter strip area shall be less than 50:1.
- The average annual sheet and rill erosion rate above the filter strip shall be less than 10 tons per acre per year.

The filter strip shall be established to permanent herbaceous vegetation consisting of a single species or a mixture of grasses, legumes and/or other forbs adapted to the soil, climate, and nutrients, chemicals, and practices used in the current management system. Species selected shall have stiff stems and a high stem density near the ground surface. Stem density shall be such that the stem spacing does not exceed 1 inch.

Guidance for planning vegetated filter strips for agricultural waste treatment is contained in the NRCS National Engineering Handbook, Part 561, Agricultural Waste Management Field Handbook (AWMFH).

Additional Criteria to Reduce Dissolved Contaminants in Runoff

The criteria given in "Additional criteria to reduce sediment, particulate organics and sediment adsorbed contaminant loadings in runoff" also apply to this purpose.

Filter strip flow length required to reduce dissolved contaminants in runoff shall be based on management objectives, contaminants of concern, and the volume of runoff from the filter strip's drainage area compared with the filter strip's area and infiltration capacity.

The flow length determined for this purpose shall be in addition to the flow length determined for reducing sediment, particulate organics and sediment-adsorbed contaminant loadings in runoff.

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

Additional Criteria to Serve as Zone 3 of a Riparian Forest Buffer, Conservation Practice Standard Code 391

Except for the location requirements, the criteria given in "Additional criteria to reduce sediment, particulate organics and sediment adsorbed contaminant loadings in runoff" also apply to this purpose.

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 Reduce Sediment, Particulate Organics and Sediment-adsorbed Contaminant Loadings in Surface Irrigation Tailwater

Filter strip vegetation may be a small grain or other suitable annual with a plant spacing that does not exceed 4 inches.

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

The flow length shall be based on management objectives, however the minimum flow length shall be 20 feet.

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 beneficial insect population(s) targeted.

If this is the only purpose, filter strip width and length shall be based on requirements of the targeted wildlife or insects. If this is the sole purpose of this practice, the minimum flow length shall be 20 feet. 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.

Livestock and vehicular traffic in the filter strip shall be excluded during the nesting season of the target species.

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 shall 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 ground water recharge throughout the watershed.

Filter strips for the single purposes of wildlife/beneficial insect habitat or to enhance watershed function should be strategically located to intercept contaminants thereby enhancing air and water quality.

To avoid damage to the filter strip consider using vegetation that is somewhat tolerant to herbicides used in the up-slope crop rotation.

Increasing the width of the filter strip will increase the potential for capturing particulates.

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 should be adjusted to a greater flow length to accommodate harvest and maintenance equipment.

Select grass species that sequester more carbon.

Increasing the width of filter strip will increase the potential for carbon sequestration.

Consider the list of adapted plant species in the Plant Materials Technical Notes, Management for Wildlife, A Supplement to the FOTG, and Florida NRCS conservation practice standard Pasture and Hayland Management, Code 512.

PLANS AND SPECIFICATIONS

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.

Specifications shall include:

- (a) Length, width, and slope of the filter strip to accomplish the planned purpose (length refers to flow length across the filter strip)
- (b) Species selection and seeding or sprigging rates to accomplish the planned purpose

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

OPERATION AND MAINTENANCE

For the purposes of filtering contaminants, permanent 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 in accordance with Florida NRCS conservation practice standard Prescribe Burning, Code 338.

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. Nutrients shall be applied in accordance with Florida NRCS

conservation practice standard Nutrient Management, Code 590.

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 will be permitted under a controlled grazing system only when soil moisture conditions support livestock traffic without excessive compaction.

REFERENCES

Florida NRCS conservation practice standards
 Pasture and Hayland Planting, Code 512
 Prescribed Burning, Code 338
 Prescribed Grazing, Code 528A
 Nutrient Management, Code 590
 Riparian Forest Buffer, Code 391
 Plant Materials Technical Note
 Management for Wildlife, A Supplement to the
 FOTG
 National Engineering Handbook, Part 561,
 Agricultural Waste Management Field
 Handbook