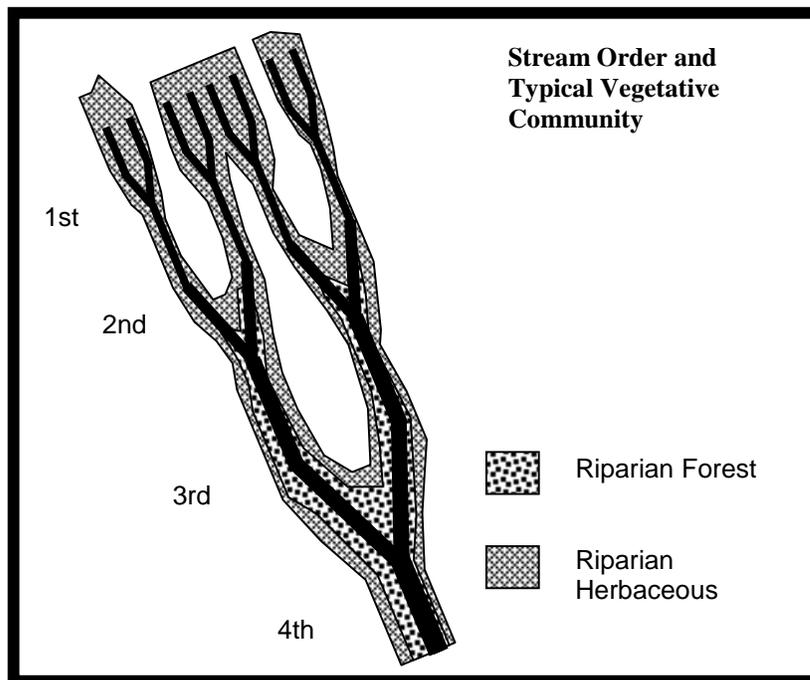


Riparian Herbaceous Cover - 390 DESIGN AND INSTALLATION GUIDE

Procedures, technical details, and other information listed below provides guidance for carrying out selected components of the named practice. **Material in bold font is required to meet the 390 Riparian Herbaceous Cover Standard.** This material is referenced from the conservation practice standard for the named practice and supplements the requirements and considerations listed therein.

General Design Parameters

The intended application of riparian herbaceous cover is adjacent to depressional, slope, and riverine wetland systems, lakes and streams. The historic vegetative community (i.e. prairie or forest) surrounding these areas may determine the use of this specification. If the area was historically forested the Riparian Forest Buffer (391) Standard and Specification may be preferred.



For riverine systems, this specification should be applied to upper reaches of watersheds (1st, 2nd, 3rd order streams). However application of this specification to 4th and 5th order streams (primarily forested) is not prohibited. This standard and specification may be installed in historically forested river corridors and managed to achieve natural regeneration of the forest plant community if desired.

The location, layout, width, length and species selection of riparian herbaceous buffer will accomplish the intended purpose and function. The

riparian herbaceous buffer will begin at the normal waterline or at the upper edge of the active channel and is measured horizontally on a line perpendicular to the water course or water body. **The minimum width will be 100 feet or 30 percent of the geomorphic floodplain whichever is less, but not less than 35 feet.**

Dominant vegetation will consist of existing natural or planted herbaceous cover suited to the site and the intended purpose. Selection of local native species will be a priority when feasible. **Plantings will consist of three or more native grass or sedge species and one or more forb species suited to the site. At least 50% of each planting mix (seed or propagule count) shall be rhizomatous or moderately rhizomatous grass or sedge species.** Plant

Natural Resources Conservation Service - North Dakota

species shall be selected based on their compatibility in growth characteristics and applicability to specific riparian functions.

Design Purpose

Wildlife Habitat and Corridors

The three design parameters that will have the most influence on wildlife utilization are location of the riparian herbaceous cover (connectivity to existing forest and grassland habitats), species selection, and width. Management objectives will dictate variations in design parameters.

When feasible, riparian herbaceous cover should be installed to provide corridors or linkages between existing forest and/or herbaceous habitats. Corridor connectivity will minimize travel distance between existing habitats providing food, cover, and shelter. Linking existing herbaceous habitats creates larger contiguous habitat blocks that reduce predator efficiency on ground-nesting birds.

Species selection, species composition (ex. grass/forb ratio) and management will determine the vertical cover of the stand (i.e. height and density). Each wildlife species has its own requirements. For example, the dickcissel and ring-necked pheasant prefer grass-legume/forb mix whereas the bobolink prefer stands with a reduced forb component.

Design width where wildlife is a primary concern will be no less than 100 ft. This design width is a minimum; it will not meet all wildlife species requirements. Specifically, grassland passerines (songbirds) may have much greater width requirements.

Riparian herbaceous buffers designed to minimal widths will often function as "sinks". They may provide suitable habitat to initiate nesting but the narrow width can increase mammalian predator efficiency, to the detriment of ground nesting birds.

A general rule when planning riparian herbaceous cover for wildlife is that increasing cover width will have positive or neutral effects on all wildlife species.

Intercepting Direct Solar Radiation (reducing stream temperature)

In first and second order streams, temperature reduction can occur through direct stream shading. Select tall rhizomatous species such as big bluestem, prairie cordgrass and switchgrass to maximize shading.

Riparian herbaceous buffers also reduce stream temperature indirectly by reducing ground temperature adjacent to streams, which in turn lowers runoff temperature. Ground temperatures are minimized most when there is complete groundcover with ½" to 1" of litter and live vegetative material.

Additionally, healthy riparian herbaceous corridors help to stabilize stream temperature by the increased infiltration rate of water into the soil profile. The soil profile acts as a "sponge" that slowly releases groundwater laterally into the stream. This slow release of relatively constant-temperature water helps regulate stream temperature throughout the year.

Management of the riparian herbaceous buffer is critical in providing optimum groundcover and plant health. Excessive removal through grazing, burning, or haying will result in minimal

Natural Resources Conservation Service - North Dakota

ground cover. Prolonged lack of removal will result in excessive litter accumulations that reduces grass vigor.

Improving Water Quality

Riparian herbaceous cover adjacent to first and second order streams will have greater influence on the overall water quality of a watershed than buffers occurring on higher order streams. Riparian herbaceous cover will also limit tillage encroachment into wetlands and lakeshores from tillage equipment and reduce sediment entering these systems. If sediment and contaminant removal is the primary purpose refer to the Filter Strip Standard and Specification (393) found in FOTG - Section IV. The filtering efficiency of riparian herbaceous cover is dependent upon the run-on volume and sediment load, and the buffer width, slope, species character and vegetation condition.

The filtering function occurs during sheet flow from the uplands; filtering efficiency is negligible when concentrated flow from the uplands or out-of-bank flow from the stream occurs. Filtering efficiency is reduced during high flows due to vegetation lying flat. This characteristic will have a positive impact on water quality by reducing scour erosion and the corresponding sediment load during out-of-bank flow events, but will filter little sediment from the water flowing over the grass.

Stability to Channel Bed and Stream Bank (erosion control)

Riparian herbaceous cover will reduce sedimentation to wetlands and lakes during runoff events and scour erosion along streams during out-of-bank flood events. For maximum protection select tall, rhizomatous grasses like switchgrass and prairie cordgrass. During flood events (out-of-bank flow) these grasses will lay over and effectively "shingle" the soil surface. During runoff events these grasses will stand erect, slowing water and filtering sediments. Riparian herbaceous cover can often be utilized to stabilize wetland boundaries, stream banks and channel beds on first and second order streams. Select deep-rooted species that can tolerate long periods of inundation. Good species for this purpose are the various wet meadow sedges (seed availability may be a problem. Transplanting of plugs is an effective alternative). Prairie cordgrass and switchgrass would be the primary grass species to withstand repeated inundation and provide bank stability. Depending upon the situation, bank shaping may be necessary. Refer to Streambank and Shoreline Protection (580) Standard and Specification for design criteria. Refer to "Tree Care and Management" found in Section 1 of ND-NRCS Field Office Technical Guide (FOTG) for details on stock, handling, storage, planting, and maintenance of trees.

In some situations bank erosion is a symptom of channel evolution. Channel evolution is the result of a combination of factors such as: contributing watershed, increased inflows due to drainage, reduced infiltration in the watershed or increased velocities due to reduction in flood plain area, channel straightening, or "hard" shoreline protection efforts. Depending on the stage of channel evolution (i.e. an active channel) bank stabilization practices may be ineffective and wasteful. In these situations Riparian Herbaceous Cover can provide an area within which watercourses can evolve toward geomorphic stability (i.e. giving the stream space to establish a relatively stable channel with an appropriate gradient and sinuosity).

Installation

Selecting Species and Varieties

- a. Determine the Ecological (Range) Site based on soils, from Section II of the Field Office Technical Guide.
- b. Refer to Table 1 of the Range Planting (550) specification for ecological (range) site recommended species and percent minimums and maximums.
- c. Refer to Perennial Vegetation Establishment Guide - ND - Plant Materials Technical Note 14 for approved named varieties and full seeding rates of native grasses, forbs and sedges. Use named varieties when available.

Follow recommendations in Perennial Vegetation Establishment Guide (ND Plant Materials Technical Note 14) for:

- Seeding dates (Part 1)
- Seedbed preparation (Part 2)
- Seeding equipment (Part 3)
- Drill Calibration (Part 4)
- Seed requirements (Part 5)
- Seeding depth (Part 6)
- Cover and companion crops (Part 7)
- Management and protection during establishment (Part 8)
- Guidelines for stand evaluation (Part 9)

Management Considerations

If the area is used for livestock or hay production, Prescribed Grazing – 528A or Forage Harvest Management will be planned to protect and enhance established and emerging vegetation. Other practices essential to the success of Riparian Herbaceous Cover shall be planned and applied according to the needs of the site. Such practices include, but are not limited to:

Streambank and Shoreline Protection – 580

Stream Channel Stabilization – 584

Vegetative Bioengineering – NCS

Riparian Forest Buffer – 391

Wildlife Upland Habitat Management - 645

Wildlife Wetland Habitat Management – 644

Mulching - 484

Use Exclusion - 472

Pest Management - 595

Filter strip – 393