NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CRITICAL AREA PLANTING

(Acre)
Code 342

Dune front at Ft. Walton Beach, Florida, damaged by Hurricane Ivan in 2004. Structures behind foredune were not damaged.

DEFINITION

Establishing permanent vegetation on sites that have, or are expected to have, high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

PURPOSE

This practice supports one or more of the following purposes:

- Stabilize stream and channel banks, pond and other shorelines – Resource concern (SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels).
- Stabilize areas with existing or expected high rates of soil erosion by wind or water – Resource concern (SOIL EROSION – Concentrated flow erosion and/or SOIL EROSION - Sheet, rill, & wind erosion and/or SOIL QUALITY DEGRADATION – Concentration of salts or other chemicals).
- Stabilize areas, such as sand dunes and riparian areas – Resource concern (SOIL EROSION – Concentrated flow erosion and/or SOIL EROSION - Sheet, rill, & wind erosion).

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to highly disturbed areas such as:

- active or abandoned mined lands;
- urban conservation sites;
- road construction areas;
- conservation practice construction sites;
- areas needing stabilization before or after natural disasters such as floods, hurricanes, tornados and wildfires;
- eroded banks of natural channels, banks of newly constructed channels, and lake shorelines; and
- other areas degraded by human activities or natural events.

CRITERIA

General Criteria Applicable To All Purposes

Site Preparation. Prior to planting, conduct a site investigation to identify any physical, chemical or biological conditions that could affect the successful establishment of vegetation.

Clear areas to be planted of unwanted materials and smooth or shape, if needed, to meet planting and landscaping purposes.

Prepare a seedbed that is suitable for the species to be seeded. Rip compacted layers and re-firm soil prior to seedbed preparation.

As site conditions allow, stockpile topsoil when grading slopes for later redistribution over the area to be planted.

Species Selection. Species selected for seeding or planting need to be suited to local site conditions and intended uses, and be common to the site or location. Select species that have the capacity to reach desired density and vigor to stabilize the site with in an appropriate period.

Use only perennial plant species. Plantings can consist of pure stands of perennial grasses, legumes, trees, shrubs, vines or mixtures of these classes of vegetations. Although Florida NRCS Conservation Practice Standard Critical Area Planting, Code 342, is not completed until perennial vegetation is established, a short term temporary cover (nurse crop) may be necessary. Suggested nurse crops suitable for the different areas of the state can be found in the Florida NRCS Critical Area Planting Guidance.

Perennial warm season herbaceous species approved for use on critical areas are listed in Florida NRCS Critical Area Planting Guidance. **At this time, there are no cool season perennial grasses recommended for Florida.** Recommended trees, shrubs and vines can be found on the Florida NRCS Plant List for Conservation Alternatives (FOTG Sect. II [g] [1]).

Consult Florida NRCS Conservation Practice Standards Forage and Biomass Planting, Code 512, and Upland Wildlife Habitat Management, Code 645, as well as Florida NRCS Critical Area Planting Guidance for additional information regarding species, planting methods, and dates.

Do not plant any species found on the Florida Department of Agriculture and Consumer Services or the Florida Department of Environmental Protection noxious or prohibited weed lists (see link below for this information). Additionally, do not plant any species listed as a Category 1 invasive species by the Florida Exotic Pest Plant Council (http://www.fleppc.org/list/list.htm).

Establishment of Vegetation. Use the planting method(s) best suited for the site and soil conditions.

Use sod only in those areas where natural rainfall or soil moisture is adequate for establishment or to sites that can be irrigated during establishment.

To ensure that sod remains in place until establish, use proper sod placement and anchoring techniques. See Critical Area Planting Guidance for more information.

Prior to planting, seeding or planting rate; minimum quality of planting stock, such as Pure Live Seed (PLS) or stem caliper; method of seedbed preparation; and method of establishment need to be specified. Use only viable, high quality seed or planting stock.

Planting or seeding needs to be done during the approved planting dates for the species to be used.

Base time and manner of planting on what best ensures establishment and growth of the selected species.

Apply soil amendments (e.g., lime, fertilizer, compost) according to Florida NRCS Conservation Practice Standard Nutrient Management, Code 590. If practical, a current soil test (< 3 yr old) processed by the IFAS Extension Soil Testing Laboratory (ESTL) or equivalent laboratory should be used to determine the need for liming materials and plant nutrients. When a current soil test is not available, follow minimal fertilization recommendations outlined in Florida NRCS Critical Area Planting Guidance.

Mulch plantings as necessary to ensure establishment and other disturbed areas as needed to prevent erosion.

Avoid or minimize to the extent practical impact to cultural resources, wetlands, and Federal and State protected species during planning, design and implementation of this conservation practice. For more information, see National and Florida NRCS policy, General Manual (GM) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26; National Planning Procedures Handbook (NPPH, Handbooks Title 180 Part 600) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH, Handbooks Title 190 Part 601); and The National Environmental Compliance Handbook (NECH, Handbooks Title 180 Part 610).

Additional Criteria to Stabilize Stream and Channel Banks and Shorelines

Bank and Channel Slopes. Shape channel side slopes so they are stable and facilitate establishment and maintenance of the vegetation.

Do not stabilize slopes steeper than 2:1 using vegetation alone. Use a combination of vegetation and structure to ensure adequate stability.

Species Selection. Plant materials used for this purpose need to:

- be adapted to the hydrological zone (see Fig. 1) where they are planted;
- be adapted and proven in the region(s) where they will be used;
- when mature, produce plant communities compatible to those in the area; and
- protect the channel banks and not restrict channel capacity.

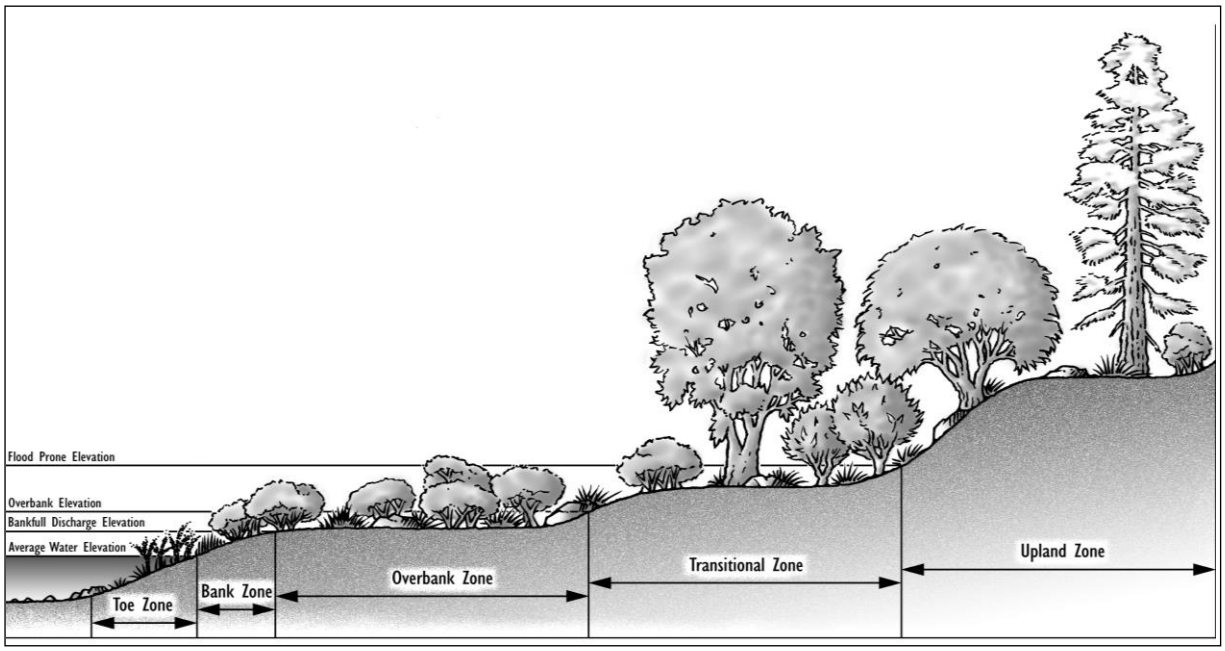

Figure 1. Location of hydrologic zones along a channel or shoreline.

Definitions and descriptions of hydrologic zones used for channels and shorelines:

Bankfull Discharge Elevation - In natural streams, it is the elevation at which water fills the channel without overflowing onto the flood plain.

Bank Zone - The area above the Toe Zone located between the average water level and the bankfull discharge elevation. Vegetation may be herbaceous or woody, and is characterized by flexible stems and rhizomatous root systems.

Overbank Zone - The area located above the bankfull discharge elevation continuing upslope to an elevation equal to two thirds of the flood prone depth. Vegetation is generally small to medium shrub species.

Toe Zone - The portion of the bank that is between the average water level and the bottom of the channel, at the toe of the bank. Vegetation is generally herbaceous emergent aquatic species, tolerant of long periods of inundation.

Transitional Zone - The area located between the overbank zone, and the flood prone width elevation. Vegetation is usually larger shrub and tree species.

Upland Zone – The area above the Transitional Zone; this area is seldom if ever saturated.

Note: some channels or shorelines have fewer than four hydrologic zones because of differences in soils, topography, entrenchment and/or moisture regime

Establishment of Vegetation. Select species to be used, planting rates, spacing , and methods and dates of planting based on plant materials program trials or other technical guidance, such as extension planting guides or technical information.

Identify, mark, and protect desirable existing vegetation during practice installation.

When flow velocities, soils, and bank stability preclude stabilization by vegetation alone, use a combination of vegetative and structural measures.

Control existing vegetation as needed to ensure establishment of vegetatively (e.g., bare-root, containerized, ball-and-burlap, potted) planted material.

Follow NRCS Engineering Field Handbook Part 650, Chapter 16 (Streambank and Shoreline Protection) and Chapter 18 (Soil bioengineering for Upland Slope & Erosion Reduction) when making streambank stabilization plantings

Site Protection and Access Control. Control grazing animal access to planted areas for a minimum of two growing seasons during the establishment period. All areas to be grazed need to have a grazing plan the meets the criteria in Florida Conservation Practice Standard Prescribed Grazing, Code 528.

Permanently exclude grazing on high hazard sites such as cut banks, areas of seepage, or other potentially unstable areas.

Additional Criteria to Restore Coastal Areas, such as Sand Dunes and Riparian Areas

Plants for sand dunes and coastal sites must be able to survive being buried by blowing sand, sand blasting, salt spray, salt water flooding, drought, heat, and low nutrient supply.

Species appropriate to Florida, general information on coastal dune restoration, and sources for planting material can be found in Florida NRCS Critical Area Planting Guidance and the Florida NRCS "Native Plants for Coastal Dune Restoration: What, When, and How for Florida" (http://www.fl.nrcs.usda.gov /programs/pmc/flplantmaterials.html).

Sand trapping devices such as sand fences or brush matting shall be included in the revegetation/ stabilization plans where applicable. Information on sand fence construction and alignment for Florida can be found in the sources listed in the previous paragraph.

CONSIDERATIONS

When practical, use native species or mixes that are adapted to the site and have multiple values. Native species may be used when appropriate for the site.

To benefit pollinators and other wildlife, flowering shrubs and wildflowers with tough root system and good soil holding capacity should be considered for inclusion as a small percentage of a larger grass-dominated planting. Where appropriate, consider a diverse mixture of legumes and forbs to support pollinator habitat.

Select plants that will provide food and cover where wildlife is a prime concern. See "Management for wildlife: a supplement to wildlife standard and specifications for Florida" (NRCS, 1979) for recommended plants for wildlife. Establishment activities need to be scheduled to avoid critical periods (e.g., mating, nesting, denning, rearing of young, etc.) when sensitive or protected species are present. Plans need to be in compliance with the Migratory Bird Treaty Act.

Areas of vegetation established with this practice can create habitat for various types of wildlife. Maintenance activities such as mowing or spraying can have a detrimental effect on certain species. Perform management activities at times and in a manner that causes the least disruption to wildlife.

Avoid species that may harbor pests. Planting multiple species will help to avoid loss of function due to species-specific pests.

Vegetative cover on critical areas will reduce sediments and sediment related pollutants in surface water and nutrients leaching into groundwater. Operations necessary to prepare site for vegetation establishment (i.e., grading, shaping, seedbed preparation) may result in large quantities of sediments and associated chemicals being washed into surface waters prior to vegetation establishment. Planning and installation of other Florida NRCS Conservation Practices such as

Diversions, Code 362; Land Smoothing, Code 466; Obstruction Removal, Code 500; Surface Drains, Code 607; Subsurface Drains, Code 606; or Underground Outlets, Code 620, may be necessary to prepare a critical area for planting.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or management unit according to the criteria and operation and maintenance sections of this standard. Record practice specifications using approved Implementation Requirement document.

The following elements need to be addressed in the plan, as applicable, to meet the intended purpose:

- Site location and extent of treatment
- Site Preparation
- Topsoil requirements
- Fertilizer application
- Seedbed/planting area preparation
- Methods of seeding/planting
- Time of seeding/planting
- Selection of species
- Seed/plant source
- Seed analysis
- Seeding rate/plant spacing
- Mulching
- Planting Trees, Shrubs and Vines
- Supplemental water needed establishment
- Protection of plantings
- Specify what constitutes successful establishment, e.g., minimum percent ground/canopy cover, percent survival, stand density, etc.

OPERATION AND MAINTENANCE

Manage the area as long as necessary to stabilize the site.

Control or exclude pests that will interfere with the timely establishment of vegetation. Mowing may be necessary to control the competition of weeds and/or nurse crop during the establishment period of the perennial plants. If herbicides are needed, refer to Florida NRCS Conservation Practice Standard Herbaceous Weed Control, Code 315, and Brush Management, Code 314; follow current University Florida, IFAS recommendations (http://edis.ifas.ufl.edu/WG006); and adhere to label instructions.

Protect plantings from pests (e.g., weeds, insects, diseases, livestock, or wildfire) as necessary to ensure long-term survival.

Inspections, reseeding or replanting, fertilization, and pest control may be needed to ensure that this practice functions as intended throughout its expected life. Observation of establishment progress and success should be performed at regular intervals until the practice has met the criteria for successful establishment and implementation.

Maintenance should include a regular lime and fertilization program based on soil test recommendations. In the absence of soil tests, follow general lime and fertilization recommendations listed for establishment.

Where establishment of vegetation creates potential habitat for grass-nesting birds, the impacts of vegetative disturbance upon these birds and their nests should be considered and included in operation and maintenance plans. Do not conduct maintenance activities that result in disturbance of vegetation during the primary nesting season for grass-nesting birds where occupied habitat for these species exists.

REFERENCES

USDA-NRCS. 52007. National Engineering Practices Handbook. Part 653 and 654..

USDA, NRCS. 2006. The PLANTS Database (http://plants.usda.gov, 19 October 2006). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

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