Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

CRITICAL AREA PLANTING

CODE 342

(ac)

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 seeding/planting methods.

PURPOSE

This practice is used to accomplish one or more of the following purposes–

- Stabilize areas with existing or expected high rates of soil erosion by wind or water (SOIL EROSION)
- Stabilize stream and channel banks, pond and other shorelines, earthen features of structural conservation practices (SOIL EROSION, WATER QUALITY DEGRADATION)
- Stabilize areas such as sand dunes and riparian areas (SOIL EROSION)

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to highly disturbed areas such as—

- Urban restoration sites.
- 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.
- Other areas degraded by human activities or natural events.

CRITERIA

General Criteria Applicable to All Purposes

Site preparation

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 achieve planting purpose(s).

Prepare a suitable seedbed for all seeded species. Rip compacted layers and re-firm the soil prior to seedbed preparation, as needed. When herbicide application is planned to achieve level of target species control for suitable seedbed needed for vegetation establishment specifications to be implemented and

protected, the NRCS WIN-PST tool must be utilized to assess and provide information on potential risks to water resources.

As site conditions dictate, when grading slopes, stockpile topsoil to be redistributed over area to be planted.

Species selection
Select species for seeding or planting that are suited to local site conditions and intended uses, and are adapted and common to the site or location.

Selected species will have the capacity to achieve adequate density and vigor to stabilize the site within an appropriate period.

See Table 1—Perennial Grass & Legume Seeding Specifications for Critical Areas—plus the additional Specifications Guides included with this standard to develop vegetation establishment specifications that are site specific and designed to achieve the identified practice standard purpose.

Establishment of vegetation
Plant seeds using the method or methods best suited to site and soil conditions.

Limit sod placement to areas that can naturally supply needed moisture or sites that can be irrigated during the establishment period. Place and anchor sod using techniques to ensure that it remains in place until established.

Specify species, rates of seeding or planting, legume inoculation, minimum quality of planting stock (e.g., pure live seed (PLS) or stem caliper), method of seedbed preparation, and method of establishment before application. Use only viable, high-quality seed or planting stock.

Seed or plant at a time and in a manner that best ensures establishment and growth of the selected species. Plant during approved times for the species to be used.

Apply soil amendments (e.g., lime, fertilizer, compost) according to Specifications Guides included with this standard or other guidance relevant to vegetative establishment on sites susceptible to high erosion rates.

Mulch or otherwise stabilize (e.g., polyacrylamide (PAM)) plantings as necessary to ensure successful establishment. Utilize the conservation practice standard (CPS) Mulching (Code 484) to develop specifications when mulching is selected as method to help stabilize plantings.

See Table 1—Perennial Grass & Legume Seeding Specifications for Critical Areas—plus the additional Specifications Guides included with this standard to develop vegetation establishment specifications that are site specific and designed to achieve the identified practice standard purpose.

Additional Criteria to Stabilize Stream and Channel Banks, Pond and Other Shorelines, Earthen Features of Structural Conservation Practices

Bank and channel slopes
Shape channel side slopes so that they are stable and allow establishment and maintenance of desired vegetation.

A combination of vegetative and structural measures may be necessary on slopes steeper than 3:1 to ensure adequate stability.

Species selection
Plant material used for this purpose must—

- Be adapted to the hydrologic zone into which they will be planted. (See Figure 1)
- Be adapted and proven in the regions in which they will be used.

- Be compatible with existing vegetation in the area.
- Protect the channel banks but not restrict channel capacity.

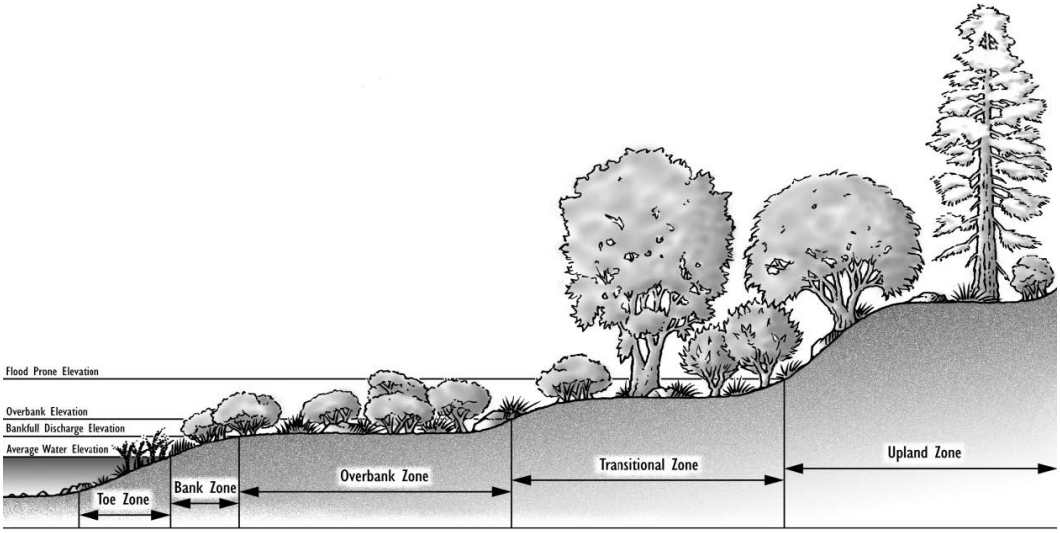

Figure 1. Location of hydrologic zones along a channel or shoreline.

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
Specify species, planting rates, spacing, methods and dates of planting based on examples of locally successful planting projects, local planting guides or relevant and current technical guidance.

Identify and protect desirable existing vegetation during practice installation.

Until vegetation is well established, do not mow within 15 feet of the stream bank in order to not inhibit or prevent establishment of desired species. After establishment, maintenance within vegetative establishment zones should consist only of monitoring invasive and undesirable species, with control measures taken where undesirable and/or invasives may inhibit establishment of specified vegetation.

Use a combination of vegetative and structural practices with living and inert material when flow velocities, soils, and bank stability preclude stabilization by vegetative establishment alone. Use Conservation Practice Standard (CPS) Streambank Stabilization (Code 580) for the structural measures.

Control existing vegetation on a site that will compete with species to be established vegetatively (e.g.. bare-root, containerized, ball-and-burlap, potted) to ensure successful establishment of the planted species. Plant streambank stabilization vegetation in accordance with the NRCS Engineering Field Handbook Part 650, Chapter 16, “Streambank and Shoreline Protection,” and Chapter 18, “Soil Bioengineering for Upland Slope Protection & Erosion Reduction.”

Site protection and access control
Restrict access to planted areas until fully established.

Additional Criteria to Stabilize 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. See Specification Guide 342-E included with this standard for additional information to develop specifications appropriate for NC Coastal Dunes.

Include sand trapping devices such as sand fences or brush matting in the revegetation/stabilization plans where applicable.

CONSIDERATIONS

Species or diverse mixes that are adapted to the site and have multiple benefits should be considered. Native species may be used when appropriate for the site.

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

Planning and installation of other CPSs such as Diversion (Code 362), Obstruction Removal (Code 500), Subsurface Drain (Code 606), Underground Outlet (Code 620), or Anionic Polyacrylamide Application (Code 450) may be necessary to prepare the area or ensure vegetative establishment.

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

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 Requirements document.

Address the following elements in the plan, as applicable, to achieve the planner-identified purpose(s):

- Site preparation
- WIN-PST Soil/Pesticide Interaction Report, if necessary
- Topsoil requirements
- Fertilizer application
- Seedbed/planting area preparation
- Timing and method of seeding/planting
- Selection of species

- Seed/plant source
- Seed analysis/pure live seed (PLS)
- Seeding rate/plant spacing
- Mulching, PAM, or other stabilizing materials
- Supplemental water needed for establishment
- Protection of plantings
- Describe thresholds for successful establishment (e.g., minimum percent ground/canopy cover, percent survival, stand density, visual observation that stand adequacy has stabilized area with acceptable erosion levels)

OPERATION AND MAINTENANCE

- Control access to the area to ensure the site remains stable.
- Protect plantings shall be protected from pests (e.g., weeds, insects, diseases, livestock, or wildlife) as necessary to ensure long-term survival.
- Inspections, reseeding or replanting, and fertilization may be needed to ensure that this practice functions as intended throughout its expected life.
- Observe establishment progress and success at regular intervals until the practice has met the criteria for successful establishment and implementation.
- Description of successful establishment (e.g., minimum percent ground/canopy cover, percent survival, stand density).

REFERENCES

Federal Interagency Stream Restoration Working Group. 1998. Stream corridor restoration: principles, processes, and practices. USDA NRCS National Engineering Handbook, Part 653.

USDA NRCS. 2007. National Engineering Handbook, Part 654. Stream restoration guide.

USDA NRCS. 2015. The PLANTS Database (http://plants.usda.gov, 8 December 2015). National Plant Data Team, Greensboro, NC.