

**NATURAL RESOURCES CONSERVATION SERVICE**  
**CONSERVATION PRACTICE STANDARD**  
**CRITICAL AREA PLANTING**

(Ac.) Code 342

**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**

Stabilize stream and channel banks, and shorelines.

Stabilize areas with existing or expected high rates of soil erosion by wind or water.

Rehabilitate and revegetate degraded sites that cannot be stabilized using normal establishment techniques.

Stabilize riparian areas.

**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;
- other areas degraded by human activities or natural events.

**CRITERIA**

**General Criteria Applicable To All Purposes**

**Site Preparation.** A site investigation shall be conducted to identify any physical, chemical,

or biological conditions that could affect the successful establishment of vegetation.

Areas to be planted will be cleared of unwanted materials and smoothed or shaped, if needed, to meet planting and landscaping purposes.

A suitable seedbed shall be prepared for all seeded species. Compacted layers will be ripped and the soil re-firmed prior to seedbed preparation.

**Species Selection.** Species selected for seeding or planting shall be suited to current site conditions and intended uses, and be resistant to diseases or insects 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.

No plants on the Federal or state noxious weeds list shall be planted.

**Establishment of Vegetation.** Seeds will be planted using the method or methods best suited to site and soil conditions.

Sod placement shall be limited to areas that can naturally supply needed moisture or sites that can be irrigated during the establishment period.

Sod will be placed and anchored using techniques to ensure that it remains in place until established.

Species, rates of seeding or planting, minimum quality of planting stock (e.g. pure live seed (PLS) or stem caliper), method of seedbed preparation, and method of establishment shall be specified before application.

Only viable, high quality seed or planting stock will be used.

Seeding or planting shall be done at a time and in a manner that best ensures establishment and growth of the selected species.

*Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the [Field Office Technical Guide](#).*

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What constitutes successful establishment (e.g. minimum percent ground/canopy cover, percent survival, stand density) shall be specified before application.

Planting shall be done during approved times for the species to be used.

Depending on timing and site conditions, the addition of a nurse crop may be desirable for establishment of the critical area. A small grain cover crop shall be utilized for this purpose in cropland areas at a minimum rate of 30lb./acre. Annual ryegrass can be utilized in non cropland situations at a rate of 15lbs./acre.

For areas without a prior soil test or where the normal soil profile is disturbed during construction, apply ag lime at a rate of 3 tons/ac and fertilizer at a rate of 1200lbs./ac of 10-10-10 or 650 lbs./ac of 19-19-19.

Plantings and disturbed areas shall be mulched as to ensure establishment. Mulch critical areas according to the 484 KY NRCS Mulch Standard.

Emergency work areas that require seeding outside of this window should be dormant seeded and mulched to prevent erosion of new construction. Follow up for these dormant seeded areas will be required to meet the practice lifespan.

#### **Additional Criteria to Stabilize Stream and Channel Banks and Shorelines**

When slopes are modified for seeding, topsoil will be stockpiled and spread over areas to be planted as needed to meet planting and landscaping needs.

**Bank and Channel Slopes.** Channel side slopes shall be shaped so that they are stable and allow establishment and maintenance of desired vegetation.

Slopes steeper than 2:1 shall not be stabilized using vegetation alone. A combination of vegetative and structural measures will be used on these slopes to ensure adequate stability.

**Species Selection.** Plant material used for this purpose shall:

- adapted to the hydrologic zone (see Fig. 1) into which they will be planted.
- be adapted and proven in the regions in which they will be used.
- when mature, produce plant communities that are compatible with those in the area.
- protect the channel banks but not restrict channel capacity.

See 342 Species Table on page 5 of this standard.

**Establishment of Vegetation.** The species used, planting rates, spacing, and methods and dates of planting shall be based on plant materials program trials or other technical guidance, such as local planting guides or technical notes.

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

A combination of vegetative and structural measures using living and inert material shall be used when flow velocities, soils, and bank stability preclude stabilization by vegetative establishment alone.

If the existing vegetation on a site will compete with species to be established (e.g. bare-root, containerized, ball-and-burlap, potted), it will be controlled in a manner that ensures the successful establishment of the planted species.

#### **Site Protection and Access Control.**

Grazing animal access to planted areas will be controlled for a minimum of two growing seasons during the establishment period.

All areas to be grazed will have a grazing plan that meets the criteria in the local Field Office Technical Guide.

Grazing shall be permanently excluded on high hazard sites, such as cut banks, areas of seepage or other potentially unstable areas.

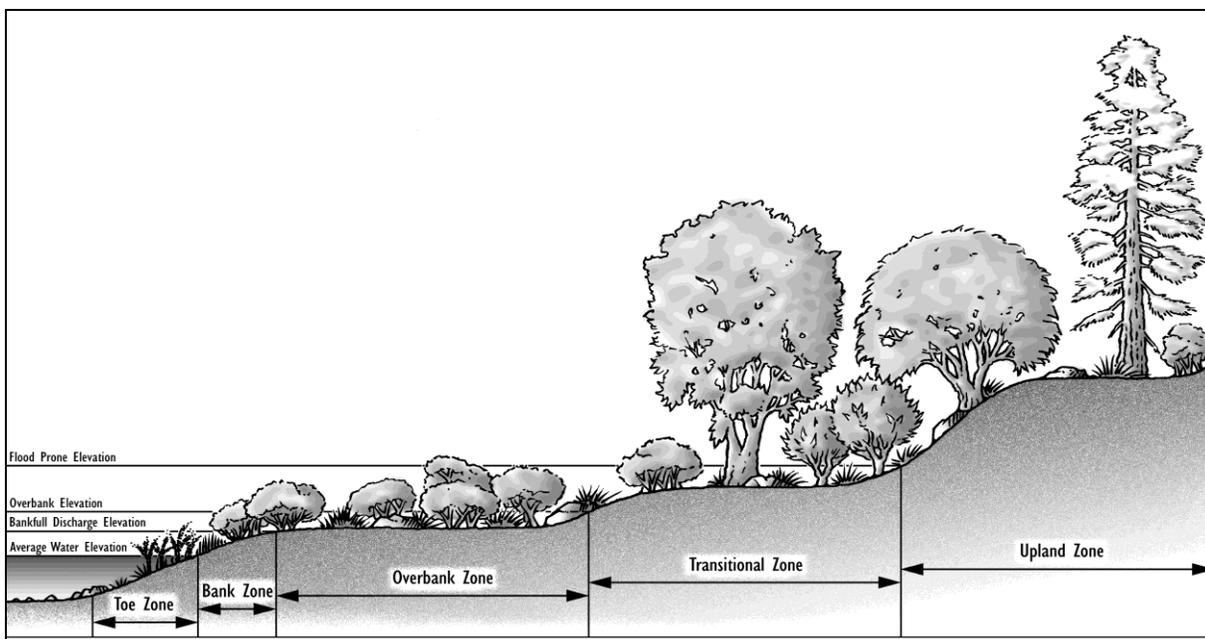


Figure 1. Location of hydrologic zones along a channel or shoreline.

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.

**Additional Criteria to Rehabilitate and Revegetate Degraded Sites that Cannot Be Stabilized through Normal Farming Practices.**

If gullies or deep rills are present, they will be filled and leveled as necessary to allow equipment operation and ensure proper site and seedbed preparation.

Based on a soil test and other appropriate site evaluations, soil amendments will be added as necessary to ameliorate or eliminate physical

or chemical conditions that inhibit plant establishment and growth.

(See 342 Species Table on page 5 of this standard.)

Critical Area Plantings for mine lands will follow guidelines found in University of Kentucky Extension publication, AGR-40, Lime and Fertilizer Recommendations for Reclamation of Surface-Mined Coal Spoils.

### **Additional Criteria to Restore Riparian Areas**

Local plant lists including appropriate species shall be developed and utilized. (See 342 Species Table on page 5 of this standard.)

### **CONSIDERATIONS**

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

To benefit pollinators and other wildlife, flowering shrubs and wildflowers with tough 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 legumes and forbs to support pollinator habitat.

Avoid species that may harbor pests. Species diversity should be considered to avoid loss of function due to species-specific pests.

Planning and installation of other conservation practices such as Cover Crop (340), Diversion (code 362), Obstruction Removal (500), Subsurface Drain (606), or Underground Outlet (620) 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 specification sheets, job sheets or other acceptable documentation.

The following elements shall be addressed in the plan, as applicable, to meet the intended purpose.

- 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
- Supplemental water needed for establishment
- Protection of plantings

### **OPERATION AND MAINTENANCE**

Use of the area shall be managed as long as necessary to ensure the site remains stabilized. This may require site specific use or grazing restrictions.

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. Observation of establishment progress and success should be performed at regular intervals until the practice has met the criteria for successful establishment and implementation.

### **REFERENCES**

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

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

USDA-NRCS. 2010. The PLANTS Database (<http://plants.usda.gov>, checked September 2010). National Plant Data Center.

342 Critical Area PLANT SPECIES	Ditch, Channel, Spoil, Streambank	Levee, Dike, Embankment, Spillway, Borrow Areas, Diversions, Grassed Waterways	Steep Bank, Cut/Fill Areas, Severely Gullied Areas	Acid Mine Refuse, Slurry Pit Areas, Acid Overburden Material	Firebreak, Forest Trails & Landings, Road/Trail/Landing Closure and Treatment	SEEDING RATE (lbs./Ac) *	ph SUITABILITY
Tall Fescue	✓	✓	✓		✓	50	5.5 – 8.3
Tall Fescue			✓	✓	✓	50	5.8 – 7.5
Birdsfoot trefoil						10	
Tall Fescue 'Lathco' Flatpea		✓	✓	✓	✓	50 30	5.5 – 7.5
KY Bluegrass			✓			35	5.5 – 7.0
Tall Fescue		✓	✓	✓	✓	50	6.0 – 7.0
Redtop or Timothy						3	
Alsike or Red Clover						8	
Orchardgrass	✓	✓	✓	✓	✓	50	6.0 – 7.0
Redtop						5	
Alsike or Red Clover						8	
Tall Fescue Crownvetch			✓	✓		25 10	5.5 – 8.3
Tall Fescue			✓			20	6.0 – 7.5
Perennial Ryegrass						10	
Alfalfa						10	
Tall Fescue 'Lathco' Flatpea Deertongue 'Tioga'			✓	✓		20 20 10	4.5 – 8.0
Switchgrass	✓	✓	✓			10*	5.5 – 7.0
Switchgrass	✓	✓	✓			2*	5.5 – 7.0
Big Bluestem						4*	
Indiangrass						4*	

The Kentucky spring seeding window for cool season (342) Critical Areas will be March 1st to May 1st<sup>th</sup>.  
The fall seeding window will be August 15th to October 15th. If warm season grasses are chosen the  
seeding window will be April 15<sup>th</sup> to June 30th.

\* Native warm season grass seeding rate is in pounds pure live seed (PLS)/acre