NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

DUNE STABILIZATION

(acre)
CODE 200 CA INTERIM

DEFINITION

Controlling movement of sand dunes or shifting sand by vegetative and/or mechanical means.

PURPOSES

To control soil erosion and protect valuable property from invasion by active dunes; to restore wildlife, aesthetic, and other environmental values.

CONDITIONS WHERE PRACTICE APPLIES

On areas along the coast and in interior areas where winds cause the formation and movement of sand dunes.

CRITERIA

The foredune to be created or stabilized must be a sufficient distance upwind to avoid having the base encroach on the area to be protected as the dune forms or increases in height. Proper distance can be best estimated by observing mature dune dimensions adjacent to the area receiving treatment. Ordinarily 300 to 500 feet of base width will be required.

Interior Sand Dunes

Use both woody and herbaceous types of plantings for permanent vegetative stabilization. Use plants listed in the Vegetative Guide in Section II of the Field Office Technical Guide for species recommendations for Critical Area Plantings.

Initial stabilization of active dunes or sand blow areas:

1. Use wind controlling fences or artificial windbreaks as necessary to still sand on the area to be treated. Fence should be of uniform height placed across the prevailing wind direction. Three to five fences at approximately 50-foot intervals may be required.

2. Use a mulch to help stabilize the sand until vegetation is established.

3. Install and test the irrigation system to be used prior to planting.

4. Make plantings of the woody materials selected at the upwind edge of the area or dunes.0

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5. Extend plantings down wind over the dune as new dune area forms.

6. Establish a solid windbreak of plants at the down wind edge of dunes as soon as possible. See practice 380 - Windbreak / Shelterbelt Establishment.

Maintaining and Improving the Vegetative Planting:

1. Introduce long-lived, low maintenance plant species as needed to assure permanent stabilization of the treated area.

2. Limit human and livestock use of the area as needed to protect the plant cover.

Coastal Sand Dunes

Initial Stabilization of active dunes:

1. If sand fences or artificial windbreaks will be required to still sand movement while establishing beachgrass, select locations for one or more fences beyond the high tidewater mark. Fences to create the foredune will be placed perpendicular to the prevailing wind at uniform height and about 30 feet apart. The fences may require lifting to keep from being buried as the foredune takes shape.

2. During December, January, or February plant culms of European beachgrass, Ammophilia arenaria or another suitable species to create a foredune or add height to an existing foredune. Where space permits, planting should be extensive enough to provide a dune base width of 400 to 500 feet. The grass culms should be from vigorous young plants harvested to provide at least one

underground node per culm or stem. Tops of the culms should be cut back to 20 inch length for easy handling. The culms will be planted on approximate 18-inch centers, 3 per hill. Planting depth should be about 12 inches with about 8 inches of top protruding above the soil surface. The bundles of plant material must be maintained in live, moist conditions until planted.

3. Plant from windward to leeward, continuing in annual increments until the total unstable area is under control.

4. Apply nitrogen fertilizer (preferably 16-20-0) over the planted area at the rate of 20 pounds of nitrogen per acre. Fertilizer applied during gentle rain or irrigated in immediately will prove most effective. Fertilize again at the same rate about three months later. Do not use ammonium sulfate (21-0-0).

5. Make provision for excluding people, livestock, and vehicular traffic from the planted area.

Supplemental planting on beachgrass stabilized dunes:

1. During the fall months, introduce adapted and enduring species of trees, shrubs, and other plants into the beachgrass cover using methods that will not damage the cover.

2. Provide protection from rabbits, insects, and disease as necessary during establishment of the supplemental planting.

3. Control human and livestock use of the dune area as necessary to maintain dense vegetative cover.

CONSIDERATIONS

Careful evaluation is needed to avoid disturbing Ecologically Significant Areas. Dunes often support threatened and/or endangered plants and animals.

Selection of vegetative species should consider local opinion on use of introduced species.

In most areas, irrigation water will be necessary for establishing and maintaining vegetative cover.

Where rainfall is adequate or irrigation water available, barley or sudangrass can be used successfully to grow mulch in place where sand blow areas need such treatment to keep sand from being removed. Also asphalt emulsions and certain other chemicals have been used successfully as spray on materials for temporary sand blow control to permit establishment.

Initial stabilization may require use of board or slat fencing to trap sand while vegetative cover is being established.

Water Quantity

This practice may have a minor effect on the quantity of surface and ground water. If there are large areas involved, there may be a reduction of surface runoff and increased infiltration and percolation.

Water Quality

This practice may reduce wind blown soil delivery to surface waters. Plants may take up more of the nutrients in the soil, reducing the amount that can be washed into surface waters or leached into ground water.

Excessive fertilizer applications can increase the amount of nutrients leached into ground water.

PLANS AND SPECIFICATIONS

Plans and specifications are to be prepared for specific fields and include conditions of optimum soil moisture, and spacing and direction of fences and windbreaks.

List the dates when work is to be performed.

Identify the water source, method of irrigation, and irrigation water management.

Show the type of fence to use and spacing between fences on one of the drawings.

Identify the kind of mulch that will be used, plus the amount and method of anchoring.

List plant materials, planting rates, and planting periods. Mark areas to be planted on the drawings.

Identify the fertilizer to use, application rate, method of applying fertilizer, and timing.

Provide for crowd control, including animals and vehicles.

OPERATION AND MAINTENANCE

Equipment will be operated in a safe manner and underground utilities marked before work begins.

Plans must include provisions for excluding people, livestock, and vehicular traffic during and following establishment of vegetative plantings. Recreational use of the planted area must be controlled as necessary to avoid damaging the vegetation.

Long-term provision for maintenance will be needed following the initial planting. Blowouts that require replanting commonly occur during initial establishment. Also, more enduring plants will need to be added after initial stabilization. Occasional applications of nitrogen fertilizer will be required to maintain dense vigorous grass cover.