Dam Safety- Fact Sheet

Montana Watercourse and Montana Department of Natural Resources and Conservation
Water Resources Division

Groundcover

Fact Sheet: 10

The establishment and control of proper vegetation are an important part of dam maintenance. Properly maintained vegetation can help prevent erosion of embankment and earth channel surfaces, and aid in the control of burrowing rodents.

Grass vegetation is an effective and inexpensive way to prevent erosion of embankment surfaces. If properly maintained, it also enhances the appearance of the dam and provides a surface that can be easily inspected. Roots and stems tend to trap fine sand and soil particles, forming an erosion-resistant layer once the plants are well established. Grass vegetation may not be effective in areas of concentrated runoff, such as at the contact of the embankment and abutments, or in areas subjected to wave action.

Suggested Native Montana Grassland Seeding Mixtures (Provided by the Natural Resources Conservation Service)

Mountain/Foothills

- Bluebunch Wheatgrass - 4 lbs. per acre
- Idaho Fescue - 2 lbs. per acre
- Big Bluegrass - 1 lb. per acre
- Mountain Brome - 9 lbs. per acre

Tallgrass Prairie

- Big Bluestem - 4 lbs. per acre
- Little Bluestem - 3 lbs. per acre
- Switchgrass - 2 lbs. per acre
- Sideoats Grama - 3 lbs. per acre

Mixed Prairie (upland)

- Bluebunch Wheatgrass - 4 lbs. per acre
- Sandberg Bluegrass - 1 lb. per acre
- Needle & Thread - 3 lbs. per acre
- Indian Ricegrass - 3 lbs. per acre

Mixed Prairie (lowland)

- Western Wheatgrass - 4 lbs. per acre
- Green Needlegrass - 3 lbs. per acre
- Thickspike Wheatgrass - 3 lbs. per acre
- Blue Grama - 1 lb. per acre

Erosion

Embankment slopes are normally designed and constructed so that the surface drainage/runoff will be spread out in a thin layer as "sheet flow" over the grass cover. When the sod is in poor condition or flow is concentrated at one or more locations, the resulting erosion will leave rills and gullies in the embankment slope. The erosion will cause loss of material and make maintenance of the embankment difficult. Prompt repair of the erosion is required to prevent more serious damage to the embankment. If erosion gullies are extensive, a registered professional engineer may be required to design a more extensive repair such as riprap or concrete or various synthetic or natural erosion control products. Minor rills and gullies can be repaired by filling them with compacted cohesive material. Topsoil should be a minimum of 4 inches deep. The area should then be seeded and mulched. Not only should the eroded areas be repaired, but the cause of the erosion should be addressed to prevent a continued maintenance problem.

Footpaths

Paths from animal and pedestrian traffic are problems common to many embankments. If a path has become established, vegetation in this area will not provide adequate protection and a more durable cover will be required unless the traffic is eliminated. Gravel, asphalt, and concrete have been used effectively to cover footpaths. Embedding

railroad ties or other treated wood beams into an embankment slope to form steps is one of the most successful and inexpensive methods used to provide a protected pathway.

Vehicle Ruts

Vehicle ruts can also be a problem on the embankment. Vehicular traffic on the dam should be discouraged especially during wet conditions except when necessary. Water collected in ruts may cause localized saturation, thereby weakening the embankment. Vehicles can also severely damage the vegetation on embankments. Worn areas could lead to erosion and more serious problems. Ruts that develop in the crest should be repaired by grading to direct all surface drainage into the impoundment. Bare and eroded areas should be repaired using the methods mentioned in the above sections. Constructed barriers such as fences and gates are effective ways to limit access of vehicles.

Unwanted Vegetation

While groundcover by short grasses and plants is essential to maintaining an earthen dam, other vegetation can be detrimental (See Fact Sheet #5). Large bushes or high brush make dam inspection and maintenance difficult. They also provide habitat for wildlife that can create burrows and erosion.

Maintenance

Embankments, areas adjacent to spillway structures, vegetated channels, and other areas associated with a dam require continual maintenance of the vegetal cover. Removal of improper vegetation is necessary for the proper maintenance of a dam, dike or levee. All embankment slopes and vegetated earth spillways should be mowed at least twice a year.

Reasons for proper maintenance of the vegetal cover include:

- unobstructed viewing during inspection
- maintenance of a non erodible surface
- discouragement of burrowing animal habitation
- aesthetics

Common methods for control of vegetation include the use of weed trimmers or power brush-cutters and mowers. Chemical spraying to kill small trees and brush is acceptable if precautions are taken to protect the local environment. Some chemical spraying may require proper training prior to application.

Common Name:
Bluebunch Wheatgrass

Scientific Name:
Pseudoroegneria spicata

Native Grazing Grass

For more questions, comments, additional fact sheets, and area specific information you can contact DNRC or Montana Watercourse at the addresses below or on the web.

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