Rule F – Shoreline and Streambank Stabilization

1 Policy

It is the policy of the Board of Managers to prevent erosion of shorelines and streambanks, and to foster the use of natural materials and bioengineering for the maintenance and restoration of shorelines.

2 Regulation

A permit from the District is required to install an improvement to stabilize a shoreline or streambank, including but not limited to riprap, a bioengineered installation, a sand blanket or a retaining wall, on any watercourse or a public water.

2.1 No District permit under this rule is required for activities conducted pursuant to a project-specific permit from the state Department of Natural Resources, but the District buffer requirements apply to activity that would otherwise require a District permit.

2.2 No permit under this rule is required for maintenance of an existing shoreline or streambank improvement that involves in-kind replacement or restoration of the improvement in compliance with the criteria in this rule without addition of new material or structural change to the improvement.

3 Criteria

3.1 An applicant for a permit under this rule must demonstrate a need to prevent erosion or restore an eroded shoreline,[2] unless the proposed improvement is part of a public project designed to restore natural shoreline.

3.2 **Sequencing.** Stabilization practices must be consistent with the erosion intensity and/or sheer stress calculated for the property proposed to be stabilized. The District will approve proposed stabilization practices in accordance with the following sequencing priority:

a An applicant must first assess whether maintenance or restoration of shoreline can be accomplished using bioengineering.

---

[2] All references to "shoreline" in these rules should be read to refer to both shoreline and streambank, except where context clearly requires distinction between the two.

b If the erosion intensity or shear stress calculation demonstrates that bioengineering cannot provide a stable shoreline, a combination of riprap and bioengineering may be used to restore or maintain shoreline.

c If the erosion intensity or shear stress calculation demonstrates that a combination of riprap and bioengineering cannot provide a stable shoreline, riprap may be used to restore or maintain shoreline.

3.3 **Design**

a Live plantings incorporated in shoreline bioengineering must be native aquatic vegetation and/or native upland plants.

b Riprap to be used in shoreline erosion protection must be sized appropriately in relation to the erosion potential of the wave or current action of the particular waterbody, but in no case will the riprap rock average less than six inches in diameter or more than 30 inches in diameter. Riprap will be durable, natural stone and of a gradation that will result in a stable shoreline embankment. Stone, granular filter and geotextile material will conform to standard Minnesota Department of Transportation specifications, except that neither limestone nor dolomite will be used for shoreline riprap, but may be used at stormwater outfalls. All materials used must be free from organic material, soil, clay, debris, trash or any other material that may cause siltation or pollution.

c Riprap will be placed to conform to the natural alignment of the shoreline.

d A transitional layer consisting of graded gravel, at least six inches deep, and an appropriate geotextile filter fabric will be placed between the existing shoreline and any riprap. The thickness of riprap layers should be at least 1.25 times the maximum stone diameter. Toe boulders, if used, must be at least 50 percent buried.

e Riprap must not cover emergent vegetation, unless authorized by a Department of Natural Resources permit.

f Riprap will extend no higher than the top of bank or two feet above the 100-year high water elevation, whichever is lower.

g The finished, stabilized slope of any shoreline will not be steeper than 3:1 (horizontal to vertical).

h Horizontal encroachment from a shoreline will be the minimal amount necessary to permanently stabilize the shoreline and will not unduly interfere with water flow or navigation. No riprap or filter material will

be placed more than 6 feet waterward of the OHW. Streambank riprap will not reduce the cross-sectional area of the channel or result in a stage increase at or upstream of the installation.

i The design of any shoreline erosion protection will reflect the engineering properties of the underlying soils and any soil corrections or reinforcements necessary. The design will conform to engineering principles for dispersion of wave energy and resistance to deformation from ice pressures and movement, considering prevailing winds, fetch and other factors that induce wave energy.

j Placement of riprap for cosmetic purposes alone is prohibited.

3.4 **Retaining Walls.** Retaining walls extending below the OHW of a waterbody are prohibited, except where:

a there is a demonstrable need for a retaining wall in a public improvement project, and

b the design of the retaining wall has been certified by a registered engineer.

3.5 **Criteria – Sand Blankets**. The following standards apply to sand blanketing:

a The sand or gravel used must be clean prior to being spread. The sand must contain no toxins or heavy metals and must contain no weed infestations such as, but not limited to, water hyacinth, alligator weed, and Eurasian watermilfoil, or animal infestations such as, but not limited to, zebra mussels or their larva.

b The sand layer must not exceed six inches in thickness, 50 feet in width along the shoreline, or one-half the width of the lot, whichever is less, and may not extend more than 10 feet waterward of the ordinary high water level.

c Only one installation of sand or gravel to the same location may be made during a four-year period. After the four years have passed since the last blanketing, the location may receive another sand blanket. No more than two applications may be made at an individual project site.

i Exception. Beaches operated by public entities and available to the public shall be maintained in a manner that represents the minimal impact to the environment, relative to other reasonable alternatives, but otherwise are exempt from the criteria in paragraphs (b) and (c) of this section.

3.6 In constructing or maintaining a shoreline stabilization, the potential

transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) must be minimized to the maximum extent possible.

4 Required information and exhibits.

The following exhibits will accompany the permit application, including but not limited to one full-size plan set (22 inches by 34 inches), one plan set reduced to a maximum size of 11 inches by 17 inches, and electronic files in a format acceptable to the District:

4.1 A site plan, including:

a Documentation, including at a minimum photographs, of existing erosion or the potential for erosion;

b a survey locating the existing OHW contour, existing shoreline, floodplain elevation and location of property lines;

c elevation contours of the upland within 15 feet of the OHW and referenced to accepted datum; and

d plan view of locations and lineal footage of the proposed riprap.

The plan must show the location of an upland baseline parallel to the shoreline with stationing. The baseline will be staked in the field by the applicant and maintained in place until project completion. Baseline origin and terminus each must be referenced to three fixed features, with measurements shown and described on the plan. Perpendicular offsets from the baseline to the OHW must be measured and distances shown on the plan at 20-foot stations. The plan will be certified by a registered engineer or surveyor.

4.2 A construction plan and specifications, showing:

a A sequencing analysis in compliance with section 3.2;

b materials to be used, including the size(s) of any riprap to be used;

c cross section detailing the proposed riprap, if any, drawn to scale, with the horizontal and vertical scales noted on the drawing. The detail should show the finished riprap slope, transitional layer design and placement, distance waterward of the riprap placement and OWH.

d Description of the underlying soil materials.

e Material specifications for stone, filter material and geotextile fabric.

4.3 For sites involving aquatic plantings, a separate Aquatic Plant Management permit will be obtained from the Department of Natural Resources.

a This provision does not apply to slope protection projects using woody species such as willow and dogwood.

4.4 An erosion control and site restoration plan.

4.5 For an application for a sand blanket, the following exhibits are required:

a Site plan showing property lines, delineation of the work area, existing elevation contours of the adjacent upland area, ordinary high water elevation, and 100-year high water elevation (if available). All elevations must be reduced to NGVD (1929 datum).

b Profile, cross sections and/or topographic contours showing existing and proposed elevations in the work area. (Topographic contours should be at intervals not greater than 1.0 foot).

c A completed Sand Blanket Permit Application form.