

SHORELAND VEGETATIVE BUFFER RESTORATION

GENERAL

The shoreland vegetative buffer is an area adjacent to a water body in a non-agricultural setting intended to protect water quality, habitat and aesthetic functions. The Dane County Shoreland Zoning Ordinance (Chapter 11, Dane County Code) establishes a Vegetative Buffer Zone, within 35 feet of the ordinary highwater mark of a navigable water, where removal of vegetation is restricted. The ordinance also requires Vegetative Buffer Zone restoration, as a mitigation practice, for certain types of shoreland development.

See also: Grassed Swales, Native Plants, Rain Garden, Seeding-Permanent, Seeding-Temporary, Tree Planting and Vegetated Buffer Strips in this appendix.

DESIGN

LENGTH AND WIDTH

Each vegetative buffer restoration should be sized according to the individual characteristics of the site, taking into account the topography, hydrology, soils and any existing wetlands or native vegetation.

Except for permitted “viewing and access corridors,” vegetative buffer zone restorations should maintain a minimum depth of at least 35 feet from the ordinary high water mark of any waterway, and should extend across the entire waterfront width of the lot or site. For assistance in identifying ordinary high water marks, contact the Dane County Zoning Division or the regional office of the Wisconsin Department of Natural Resources.

ADVANTAGES

- ▶ Relatively low cost
- ▶ Easy to construct and maintain
- ▶ Provide habitat for aquatic and terrestrial fauna
- ▶ Enhance adjacent shallow water habitat by providing shade and overhanging vegetation and promoting natural recovery of emergent species
- ▶ Promote shoreland corridors
- ▶ Increase the presence and diversity of native species
- ▶ Reduce the environmental and visual impact of nearby human activities
- ▶ Improve water quality
- ▶ Enhance bank stability

DISADVANTAGES

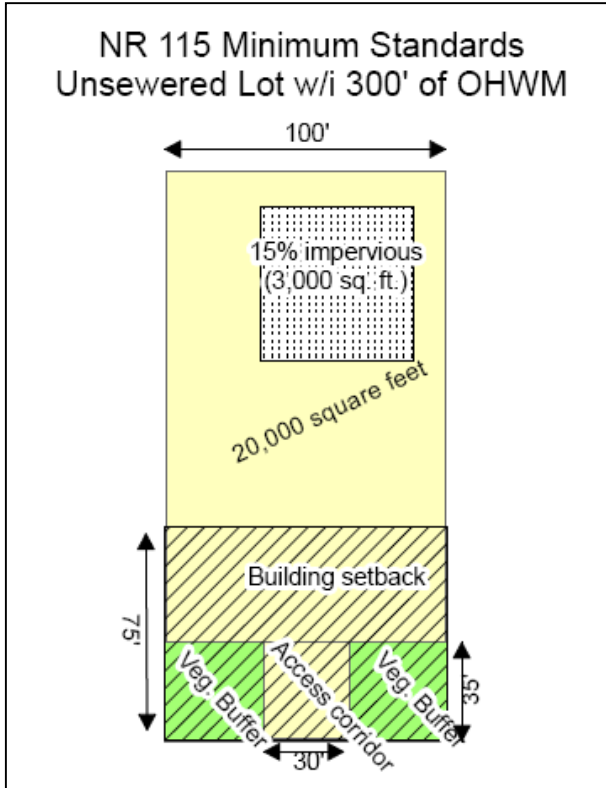
- ▶ Must meet additional design standards to receive credit for sediment or infiltration targets.
- ▶ Ineffective in areas with high velocity runoff
- ▶ Require a large amount of land area
- ▶ Ineffective for large drainage areas
- ▶ Reduced effectiveness with large storm events
- ▶ Best used in conjunction with other management practices

VIEWING AND ACCESS CORRIDORS

Viewing and access corridors should be no wider than 30 feet, or 30% of the lot width, whichever is less. Corridors should be designed to avoid channelized flow. To the extent possible, minimize impervious surfaces. Within viewing and access corridors, plant non-invasive species that:

- ▶ form a dense turf;

- ▶ tolerate both dry and inundated conditions, and;
- ▶ resist foot traffic.



EROSION MATTING

To avoid lethal impacts to snakes and other herpetiles, any erosion matting used in the shoreland vegetative buffer zone should have no fixed joints in the netting.

Examples of acceptable matting include:

- ▶ WisDOT Class I, Type A Urban or;
- ▶ WisDOT Class I, Type B Urban.

VEGETATION

GENERAL GUIDANCE

Refer to NRCS *Interim Standard 643a, Shoreland Habitat* and *Wisconsin Biology Technical Note #1* for primary guidance on vegetation establishment technique, plant materials selection, density, site preparation and maintenance. Additional guidance for applications in Dane County is provided below.

SPECIES SELECTION

Except within viewing and access corridors, only native plant species approved by the Dane County Land Conservation Division should be used in shoreland vegetative buffer restorations. See “Acceptable Native Species for Use in Shoreland Areas” at the end of this document for a list of acceptable species. Plant species selected for shoreland vegetative buffer zone restorations should also meet the following criteria:

- ▶ Species should be tolerant to frequent inundation as well as extended dry periods
- ▶ Species should be resistant to matting
- ▶ Species should form a dense cover.

PLANTING DENSITIES

Designers should select a planting density from the range in *Wisconsin Biology Technical Note 1* that best meets the objectives of protecting water quality, habitat and natural scenic beauty, given the soils, slope, hydrology and other environmental conditions on the site.

MINIMUM SHRUB SIZE

Shrubs should be a minimum of 15” in height.

THREATENED & ENDANGERED SPECIES

Prior to engaging in any restoration activity, the vegetative buffer zone should be surveyed for state or federal threatened or endangered species. Identified species should be flagged and protected during restoration activities. Transplanting, removal or destruction of threatened or endangered species may violate state or federal law. For assistance with rare species identification, contact the Endangered Resources Bureau of the Wisconsin Department of Natural Resources.

CONSTRUCTION

Shoreland vegetative buffer restorations must be complete and permanent vegetation established within 3 years of the issuance of a shoreland mitigation permit.

MAINTENANCE

- ▶ Refer to Native Plants in this Appendix for general maintenance guidelines.
- ▶ Each shoreland vegetative buffer restoration should have a site-specific management plan, that includes clear steps landowners must take to maintain the site in its design condition.

Management requirements should be recorded as a deed notice on affected properties.

- ▶ Management and maintenance recommendations should be appropriate to the setting of the site and should take into account neighboring properties. For example, controlled burning might be more appropriate to a rural setting, while seasonal mowing might be more appropriate to a densely settled urban or suburban area.

METHOD TO DETERMINE PRACTICE EFFICIENCY

Shoreland vegetative buffer restorations are designed primarily as a mitigation practice under the Dane County Shoreland Zoning ordinance. Native plants reduce erosion by providing cover and stabilizing the surface, but no sediment efficiency is given (See Native Plants in this Appendix). If simultaneously designed to meet additional criteria (see Vegetated Buffer Strips, Grassed Swales, Permanent Seeding, or Rain Gardens in this Appendix), dual-function shoreland vegetative buffers can be designed to also serve as sediment or infiltration practices. Refer to applicable practice descriptions for details on calculating practice efficiency.

SOURCES

1. *A Fresh Look at Shoreland Restoration*. University of Wisconsin Extension. 2003. *Shoreland Stewardship Series #1* UWEX PUB-GWQ027
2. *Lakescaping for Wildlife and Water Quality*. 1999. Carrol L. Henderson, Carolyn J. Dindorf, and Fred J. Rozumalski. Minnesota Department of Natural Resources. ISBN 0964745127.
3. *Minnesota Urban Small Sites BMP Manual*. Metropolitan Council. Minneapolis. 2000.
4. *Protecting our Living Shores*. University of Wisconsin Extension. 2003. *Shoreland Stewardship Series #3*. UWEX PUB-GWQ039
5. *Protecting and Restoring Shorelands*. University of Wisconsin Extension. 2003 *Shoreland Stewardship Series #2* UWEX PUB-GWQ038
6. *Vegetative Buffer*. Conservation Practice Standard. Wisconsin Department of Natural Resources. November 2006.
7. *Wisconsin Field Office Technical Guide*. U.S. Department of Agriculture, Natural Resources Conservation Service. Washington D.C. 1993.

Acceptable Native Species for use in the Shoreland Zone in Dane County

The following is a list of native species suited to the shoreland zone in Dane County. The list is provided by the County Conservationist per Chapter 11, Dane County Code of Ordinances. All species are listed as native to Dane County by the Wisconsin State Herbarium, University of Wisconsin. Many species also appear in the WI-NRCS Agronomy Technical Note 5 or in the WI-NRCS Forestry Technical Note 1, 2, or 3 as native species suited to wet-mesic and wet sites. Some species are also suitable for mesic sites. Many of the species listed are also found in *Wetland Plants and Plant Communities of Minnesota and Wisconsin* published by the US Army Corps of Engineers, St. Paul District.

Photos and additional information for each species can be found on the *Wisconsin State Herbarium* website: <http://www.botany.wisc.edu/wisflora/>

Only those species shown on the approved list will be allowed. (SEE APPROVED LIST BELOW)

For guidance on seed selection, seed mixes, seeding rates, and seedbed preparation refer to:
Natural Resource Conservation Service (NRCS) Critical Area Planting Standard 342
Natural Resource Conservation Service (NRCS) Agronomy Technical Note 5
Natural Resource Conservation Service (NRCS) Agronomy Technical Note 1, 2, 3

Wisconsin NRCS

- Technical Note No. WI-5: Prairie Restoration Seeding
- Technical Note WI-1: Native Tree and Shrub Planting Recommendations for Wisconsin
- Technical Note WI-2: Tree and Shrub Establishment
- Technical Note WI-3: Tree Spacing for Riparian Forest Buffers
- County-Specific Native Tree and Shrub Guides

Acceptable Native Plant Species for use in the Shoreland Zone in Dane County

<u>COMMON NAME</u>	<u>GENUS & SPECIES</u>	<u>PLANT TYPE</u>
Big Bluestem	Andropogon gerardii Vitman	Grass
Bluejoint Grass	Calamagrostis canadensis	Grass
Indiangrass	Sorghastrum nutans (L.) Nash	Grass
Prairie Cordgrass	Spartina pectinata Link	Grass
Switchgrass	Panicum virgatum L. var. virgatum	Grass
Canada Wild Rye	Elymus canadensis L.	Grass
Rice Cutgrass	Leersia oryzoides (L.) Sw.	Grass
Bristly Sedge	Carex comosa	Sedge
Bottlebrush Sedge, Porcupine Sedge	Carex hystericina Muhl. ex Willd.	Sedge
Fox Sedge	Carex vulpinoidea Michx.	Sedge
Lake Sedge	Carex lacustris	Sedge
Green Bulrush, Black Bulrush	Scirpus atrovirens Willd.	Rush
Woolgrass	Scirpus cyperinus (L.) Kunth	Rush
Hardstem Bulrush	Scirpus acutus	Rush
River Bulrush	Scirpus fluviatilis	Rush
Jewelweed	Impatiens capensis Meerb.	Forb
Blue flag, Shreve's iris, Southern blue flag, Virginia iris	Iris virginica L. var. shrevei (Small) E.S.Anderson	Forb
Great blue lobelia	Lobelia siphilitica L.	Forb

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Blue vervain	<i>Verbena hastata</i> L.	Forb
New England aster	<i>Aster novae-angliae</i> L.	Forb
Marsh aster, Panicked aster, Eastern lined aster	<i>Aster lanceolatus</i> Willd. var. <i>lanceolatus</i>	Forb
Nodding beggar-ticks, Nodding bur-marigold	<i>Bidens cernuus</i> L.	Forb
Spotted Joe-Pye-weed	<i>Eupatorium maculatum</i> L.	Forb
Boneset, Common boneset	<i>Eupatorium perfoliatum</i> L. var. <i>perfoliatum</i>	Forb
Common sneezeweed	<i>Helenium autumnale</i> L. var. <i>autumnale</i>	Forb
Marsh milkweed, Swamp milkweed	<i>Asclepias incarnata</i> L. subsp. <i>incarnata</i>	Forb
Common great angelica, Great angelica, Purple-stem angelica	<i>Angelica atropurpurea</i> L.	Forb
Prairie-dock, Prairie rosinweed	<i>Silphium terebinthinaceum</i> Jacq. var.	Forb
Black-eyed Susan	<i>Rudbeckia hirta</i> L. var. <i>pulcherrima</i> Farw.	Forb
Yellow coneflower	<i>Ratibida pinnata</i> (Vent.) Barnhart	Forb
Prairie blazing-star, Thick-spike blazing- star, Thick-spike gay- feather	<i>Liatris pycnostachya</i> Michx.	Forb
Cup-plant	<i>Silphium perfoliatum</i> L. var. <i>perfoliatum</i>	Forb
Common mountain mint, Virginia mountain mint	<i>Pycnanthemum virginianum</i> (L.) T.Durand & B.D.Jacks. ex B.L.Rob. & Fernald	Forb
Bee balm, Wild bergamot	<i>Monarda fistulosa</i> L. subsp. <i>fistulosa</i>	Forb
Culver's-root, Culver's-physic	<i>Veronicastrum virginicum</i> (L.) Farw.	Forb
Golden alexanders, Golden zizia	<i>Zizia aurea</i> (L.) W.D.J.Koch	Forb

Purple meadow-rue, Tall meadow-rue	<i>Thalictrum dasycarpum</i> Fisch. & Avé-Lall.	Forb
Alternate-leaved Dogwood	<i>Cornus alternifolia</i> L.f.	Shrub
Downy Arrow-wood	<i>Viburnum rafinesquianum</i> Schult.	Shrub
Elderberry	<i>Sambucus canadensis</i> L. var. <i>canadensis</i>	Shrub
Hazelnut	<i>Corylus americana</i> Walter	Shrub
Ninebark	<i>Physocarpus opulifolius</i> (L.) Maxim.	Shrub
Prairie Crabapple	<i>Malus ioensis</i> (A.W.Wood) Britton	Shrub
Serviceberry	<i>Amelanchier laevis</i> Wiegand	Shrub
Silky Dogwood	<i>Cornus amomum</i> Mill.	Shrub
Wild Plum	<i>Prunus americana</i> Marshall	Shrub
Winterberry	<i>Ilex verticillata</i> (L.) A.Gray	Shrub
American Basswood	<i>Tilia americana</i> L. var. <i>americana</i>	Tree (Deciduous)
Black Oak	<i>Quercus velutina</i> Lam.	Tree (Deciduous)
Black Walnut	<i>Juglans nigra</i> L.	Tree (Deciduous)
Bur Oak	<i>Quercus macrocarpa</i> Michx.	Tree (Deciduous)
Green Ash	<i>Fraxinus pennsylvanica</i> Marshall	Tree (Deciduous)
Northern Red Oak	<i>Quercus rubra</i> L.	Tree (Deciduous)
Paper Birch	<i>Betula papyrifera</i> Marshall	Tree (Deciduous)
River Birch	<i>Betula nigra</i> L.	Tree (Deciduous)
Silver Maple	<i>Acer saccharinum</i> L.	Tree (Deciduous)
Sugar Maple	<i>Acer saccharum</i> Marshall	Tree (Deciduous)
Swamp White Oak	<i>Quercus bicolor</i> Willd.	Tree (Deciduous)

White Oak	<i>Quercus alba</i> L.	Tree (Deciduous)
White Ash	<i>Fraxinus americana</i> L.	Tree (Deciduous)
Eastern White Pine	<i>Pinus strobus</i> L.	Tree (Conifer)
Tamarack	<i>Larix laricina</i> (Du Roi) K.Koch	Tree (Conifer)