



Shoreland Restoration / Rain Garden Projects -- Technical Specifications --

General

- The landowner is responsible for obtaining all required local and state permits, including the Department of Natural Resources permit for planting native plants in shoreland areas (see <http://www.dnr.state.mn.us/shorelandmgmt/apg/permits.html> for permit application form)
- Only plants native to Minnesota may be used for shoreland and streambank restoration plantings.
- Rain garden plantings may include nursery cultivars selected for the site conditions, provided that no plants identified as invasive or prohibited species by the Department of Natural Resources or University of Minnesota Extension Service may be used.
- Keep a record of the species planted, number of plants, and source of the plants or seed.

Installation/Planting

- Locate any utilities in the area before you dig (Gopher One-Call: 651-454-0002).
- Seedlings can be planted from mid-May to mid-September. The ideal time frame for seeding is between April 15 and July 20 or September 20 to October 20. Summer plantings may require frequent watering.
- Remove the existing vegetation by smothering with heavy black plastic for several months, or applying a herbicide containing glyphosate, such as Round-Up®. If herbicide is used, follow all manufacturers' directions. If working near a water body, be sure to use a herbicide formulation specifically designated for use near water, such as Rodeo®. Also note that a Department of Natural Resources (DNR) permit is required for applying herbicide below the ordinary high water level (OHW) of a lake, stream or DNR-protected wetland.
- Do not till the soil once the vegetation has been killed. The dead roots will help prevent erosion.
- If herbicides have been used during site preparation, wait two weeks before planting/seeding. Additional treatments may be necessary if eradicating persistent species such as reed canary grass.
- Follow the approved planting plan with respect to plant spacing and planting/seeding methods.
- If exposing bare soil on a slope, install an erosion blanket or use another sediment control method to prevent soil from moving off site or into the adjacent water body.
- Do not fertilize the planting area.
- Plantings must be protected from erosion with mulch or erosion control blanket.
 - Place erosion control blanket on any areas with bare soils or that are below the OHW.
 - Spread 2" of shredded hardwood mulch over the upland planting areas down to the ordinary high water level. Wood chips tend to float and should be avoided.
- If necessary, protect the new plants from disturbance by carp or geese by fencing off the planting area for one growing season (wire mesh or other temporary fencing works well).

- Water the plants immediately after planting.

Maintenance (see also summary table below)

- Do not fertilize.
- Ensure that your planting receives at least one inch of water per week for the first 2 months. If watering is needed, give your plants one good soaking per week. After establishment, watering should not be needed except in periods of extreme drought.
- Hand weed the planting area once a month, paying special attention to any invasive species such as purple loosestrife and reed canary grass. Leaving plant tags next to your plugs or purchasing a plant ID book may help in determining which plants are undesirable. After the first growing season, weeding once or twice each year should be sufficient.
- If invasive species, such as reed canary grass, present a problem, plants can be kept in check through hand removal or by carefully sponging/painting herbicide on the individual plants. Avoid spraying herbicide in the planting area to prevent damage to adjacent native plants.
- Dead plant material can be left standing at the end of the growing season, to provide wildlife habitat and visual interest during the winter. Dead plant material can be removed in the spring to allow more room for new growth.
- Once the restoration is well established, you may mow (spring) or burn (spring or fall, but first check local and state ordinances) to prevent encroachment by invasive weeds and woody shrubs/trees.

Table 1: General maintenance requirements for shoreland/rain garden plantings (Adapted from Rice Creek Watershed District publication)

Maintenance Item	Year 1	Year 2	Year 3 and beyond
Watering (transitional and upland plants)	Daily-weekly	Only if drought	Only if drought
Fertilizing (this only encourages problem plants)	None	None	None
Weed control	Weekly-monthly	Monthly	Biannually to annually; also mow or burn every 3 to 5 years.
Plant replacement (Replant or anchor uprooted aquatic plants. Once established, aquatics require little or no long-term maintenance)	None	Spring or fall as necessary	Spring or fall as necessary.
Erosion control structure repair	Ongoing inspection, repair as necessary	Inspect after storm, repair as necessary	Inspect after storm, repair as necessary
Wavebreak repair and removal	Ongoing inspection, repair as necessary, remove wave breaks prior to freeze-up.	Ongoing inspection, repair as necessary. Install wavebreaks only if plants are not established.	Remove structures?
Fencing/exclosure	Critical if geese or carp are a problem	Use as necessary	Use as necessary
Tree & shrub pruning	None	Remove dead/ diseased branches in late winter	Remove dead/ diseased branches in late winter, prune to shape