

# Lake Wise Info Sheet



## Shoreland Best Management Practices for Lake-friendly Living.

### Benefits

- Water Quality
- Wildlife
- Prevents Erosion
- Slow, Spread, Sink Stormwater
- Visual Appeal
- Low Cost
- Low Maintenance
- Protection & Resiliency

Acceptable BMP under the Vermont Shoreland Protection Act

### Related Info Sheets:

- Bioengineering
- Restore Natural Plant Communities
- Lake-friendly Yard Maintenance

# LAKESHORE BUFFERS

## Renaturalize your shoreland



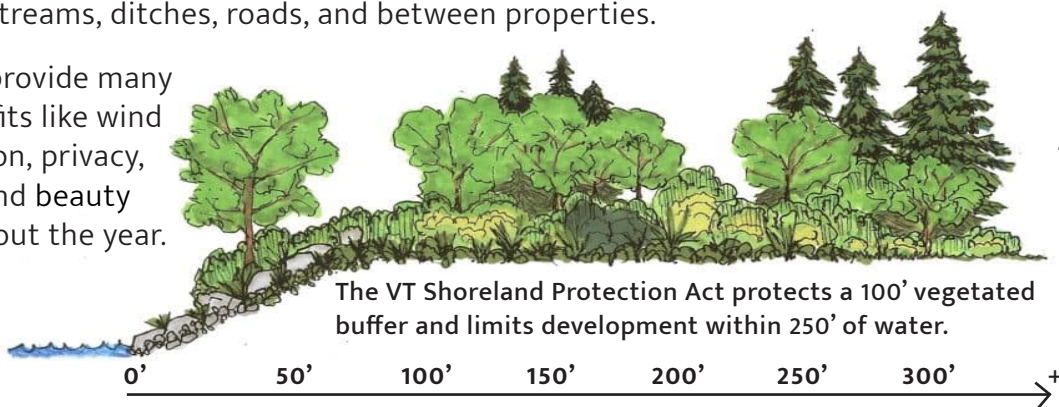
### Description.

A protected or restored area of multi-layered native vegetation, organic material, and noncompacted soils that provides a protective buffer for the lake from developed areas. The vegetated buffer protects water quality, stabilizes shorelands, and provides vital habitat.

### Applicability.

Lakeshore buffers act as a protective barrier for the lake from upland stormwater runoff, erosion, and impacts from storms, wave action, and ice push. A buffer area extending at least 15 feet from the top of the bank is recommended to stabilize a shoreland. A buffer of 30-50 feet can provide more effective water quality protection and a buffer of 100-300 feet or more can provide wildlife habitat. Buffers are also very beneficial around streams, ditches, roads, and between properties.

Buffers provide many co-benefits like wind protection, privacy, shade, and beauty throughout the year.

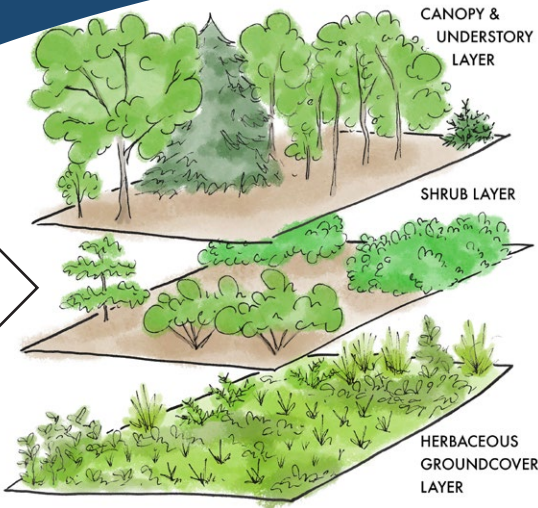


Trout Headwaters, Inc.

Shoreland stability	min. 15'
Shoreland habitat	min. 30'
Stormwater treatment & water quality protection	min. 50'
Aquatic habitat	min. 100'
Wildlife habitat	min. 20' small mammals, 160' birds, 300' amphibians, 330' large mammals

Adapted from VT DEC Lake Wise Program 'Widths of Lakeshore Vegetation for Lake Protection'





**Woody shrubs** like red twig dogwood and viburnums provide visual interest throughout the seasons with berries, bark, foliage, and flowers.

### Layers of a buffer.

**Canopy.** mature deciduous and evergreen trees that create forest structure and canopy cover, regulate temperature and moisture.

**Understory.** tree saplings (replacement trees) and small shade-tolerant trees.

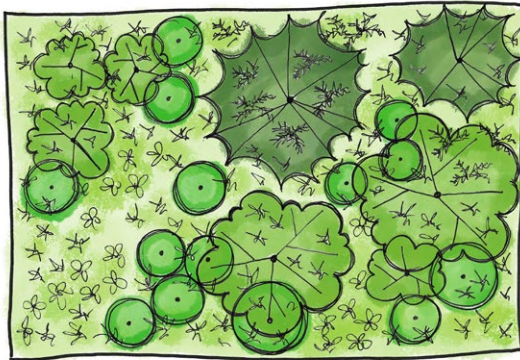
**Shrubs.** deciduous and evergreen woody shrubs create structure and stabilize.

**Groundcover.** herbaceous perennial, annual, and biennial flowers/forbs, grasses, sedges, rushes, ferns, mosses, and more cover soil.

**Duff.** the spongy layer of decomposing organic matter on the ground including leaf litter, woody debris, and dead plant material.

These layers hold soil in place, prevent erosion, and intercept and absorb rainwater and water runoff from upland areas, filtering out pollutants. They also create more biodiverse and resilient ecosystems that cycle nutrients and support wildlife.

VT Bioengineering Manual



MULTI-LAYERED BUFFER PLANTING - PLAN VIEW



### Perspective & plan view of a multi-layered planting.

#### Stabilize the shore.

If there is significant erosion and instability on the shoreland, erosion control techniques may need to be employed prior to establishing a lakeshore buffer, such as regrading the bank to create a more gentle slope, installing erosion control blankets and fiber coir rolls, or installing a rock toe. Soils should be non-compacted and stable. Protect the natural, uneven ground. You may need to scarify soil or till subsoil for newly graded banks and add topsoil. See [The Vermont Bioengineering Manual](#).



Preserve natural, uneven ground



Scarify/till subsoil for newly graded banks



#### Lake Access.

Plan pathways that are stable and infiltrate or shed water runoff to stable vegetated areas or treatment areas (e.g., rain garden, vegetated swale, rock apron). A meandering or switchback path naturally does not channel runoff to the lake and is more interesting to walk. Limit the width of the path to 6 feet to comply with the [Shoreland Protection Act](#).



**VERMONT**

DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
WATERSHED MANAGEMENT DIVISION





This multi-layered planting protects the shoreland from eroding and provides a beautiful view.

### How to: Plant a buffer.

Planting a buffer can speed up the successional revegetation of a lakeshore, allow you to choose the species and locations, and select for characteristics like color, texture, edible berries and herbs, bird habitat, and pollinator support.

1. Select plant species that are native to Vermont lakeshores. Native plants require less maintenance, are more adapted to the environment and hardier, and provide significantly more benefits to wildlife, including food and shelter.

Avoid planting non-native species, especially aggressive or invasive species that can escape cultivation and threaten native species and ecosystems. See the Lake Wise **Native Plant List** and **Restore Natural Plant Communities**.

2. Select a diversity of native plant types and species to increase biodiversity and ecological benefits. Plan for a multi-layered planting: include trees, shrubs, and herbaceous species.

Based on your site conditions, select plants for their soil moisture and light requirements. Put water-loving plants on the shore and upland species that like well-drained soils farther up the bank. Plant shade-tolerant species in the understory and sun-lovers in open areas.

### How to: No-mow.

1. Stop mowing a zone adjacent to the shoreline as wide as possible for your property. Mark the area and let it grow wild.

Observe for invasive species that may introduce themselves, making sure to remove them as soon as you notice them to prevent colonization and competition with native species.

2. You can selectively prune out undesirable species and encourage desirable plants. However, a diversity of plant types is encouraged to create a multi-layered native plant community that maximizes water quality and wildlife benefits.

3. You can maintain your views by cutting the lower third of tree branches rather than cutting down trees. As your vegetation grows up, under the **VT Shoreland Protection Act**, it must be managed according to the **Vegetation Protection Standards**, which sets minimal requirements for maintaining shoreland vegetation.

**Native flowers, grasses, and ferns** provide colorful blooms and lush groundcover in the summer and seed and shelter for birds and other wildlife in the winter.

**Deciduous trees** like oaks, maples, and birches can frame views and provide fall foliage and shade.

**Evergreens** like hemlock and white cedar can provide visual screening and wind protection.

### Materials.

- ☀ Native plants
- ☀ Mulch, wood chips, straw/hay, or leaves
- ☀ Shovel, trowel, clippers
- ☀ Watering source

### Optional:

- ☀ Low-phosphorus compost (leaf litter/yard waste-based)
- ☀ Screened topsoil





### Plant cost comparison.

Cost	Buffer Plant Material
-\$	No-mow zone - save money*!
\$	Seeding
\$\$	Plugs, live stakes, bare root
\$\$\$	Container plants
\$\$\$\$	Lawn - erosion & land loss

\*less time and cost for lawn maintenance and need for costly retaining walls and erosion repairs.

### Source plants.

Check out your NRCDC plant sale, conservation nursery, or local nursery for native seed, plugs, live stakes, bare root, or container plants. See the [Lake Wise list of Native Plant Suppliers](#).

### Maintenance.

Water at planting time. Continue to water often so that the soil remains moist for at least six to eight weeks.

Mowing, raking, and removal of dead plant material is not recommended. Selective weeding around newly planted trees and shrubs may be beneficial for aeration and sunlight. Maintain the duff layer of leaves and detritus. Leave dead trees on land and in the water for wildlife benefits unless they threaten structures. If a tree needs to be removed, leave the roots and stump in place. Monitor and remove invasive species.

Wait to prune for air flow and desired growth until the second or third growing season beyond removing broken and dead branches.

### How to plant.

**Timing.** Spring (April – June) or fall (September – October) are the optimum times to plant. Native woody trees and shrubs can be planted earlier and later in the season if the ground is not frozen. Herbaceous species are optimally planted after tree leaf out and before the leaves fall.

**Soil prep & amendments.** Minimize disturbance to soil - plant among existing vegetation. Let lawn grow or replace with dense planting using suppression, solarization, sheet mulching, or tilling to prep for seeding or planting. Make sure to cover bare soil with mulch, straw, leaves, or erosion control blankets. Compost is a sufficient fertilizer to add nutrients to soil; native plants are well adapted and do not need a lot of extra nutrients. Compost can help to boost initial plant growth, add organic matter, and increase water retention.

**Seeds.** Spread seed evenly according to the specified seeding rate. Lay hay or straw mulch to protect from wind, add organic matter, and retain moisture to increase survival rate.

**Plugs.** Gently break apart root if bound up. Dig a small hole with trowel or dibble and plant plug so that the top of the root is level with the ground surface. Water plugs often.

**Bare root and containers.** Dig a hole twice as wide and to the depth of the root ball so that the crown (where roots meet stem) is level or slightly lower than the surrounding ground level (sometimes slightly higher for saturated clay soils).

Rough up the roots if they are rootbound. For bare root plants, you may want to make a cone of soil in the base of the hole to spread the roots around.

Fill soil in and tamp down with your fingers (poke soil around the roots) to remove air pockets. Create a soil or mulch ring to help hold water. Adding a 3 inch layer of mulch or wood chips can suppress weeds, increase water retention, and add organic matter. Do not pile up mulch near stem to prevent rot.

