

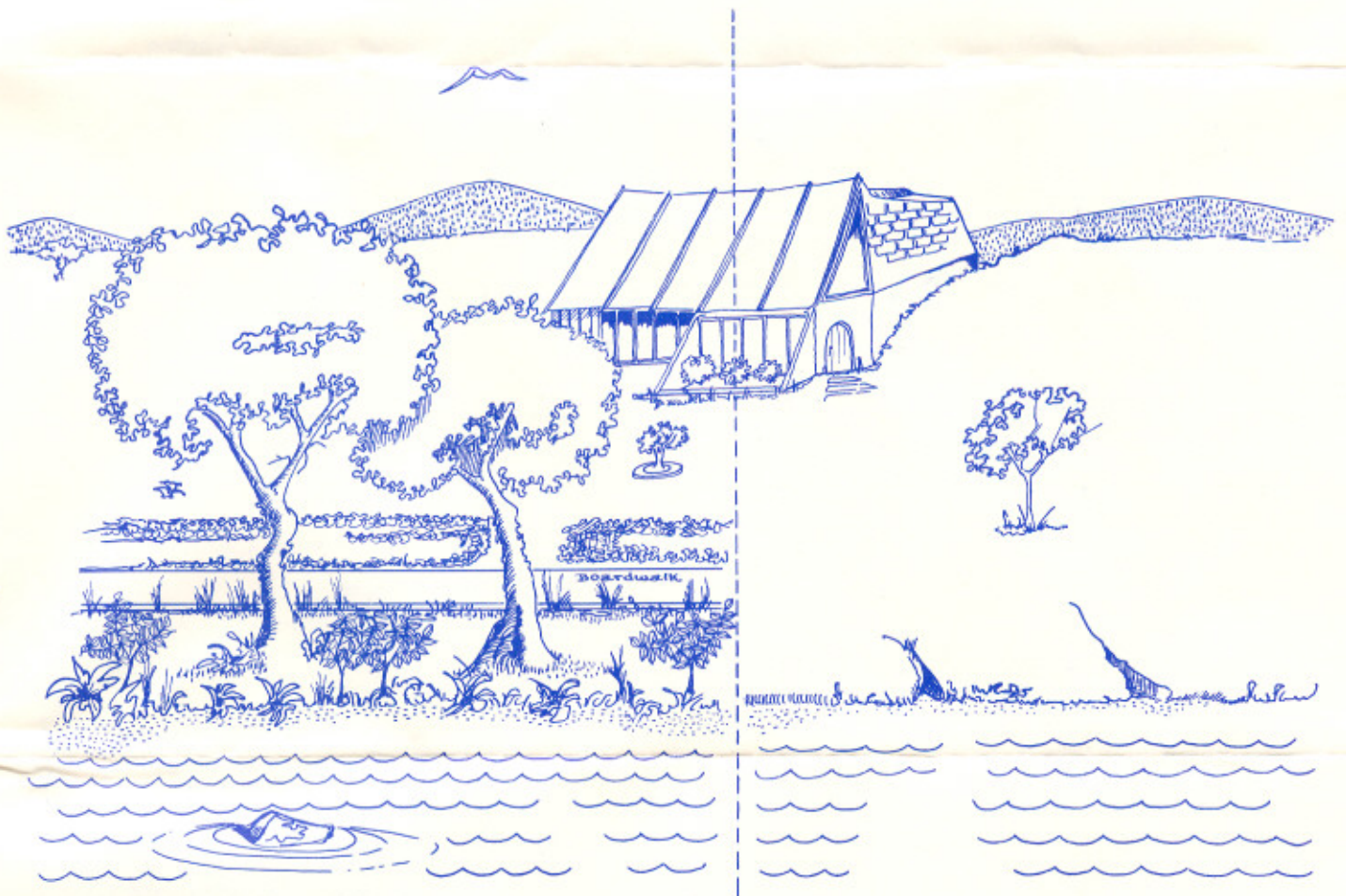


LAKELAND REPORT

NUMBER 12

Prepared for Michigan residents by the University of Michigan Biological Station, Douglas Lake. sponsored by the National Science Foundation and the Cooperative Extension Services of Emmet and Cheboygan Counties.

GREENBELTS: A CIRCLE OF PROTECTION FOR INLAND LAKES



What differences do you see between the two sides of this lakeside home? You might notice that the left side of the home has more shrubbery, trees, and plants growing around it than the right side. Also, the gullies on the waterfront on the right side indicate that shoreline erosion may be occurring.

The left side of the home is more pleasing to look at, and it also illustrates the valuable ecological concept of a greenbelt buffer zone.

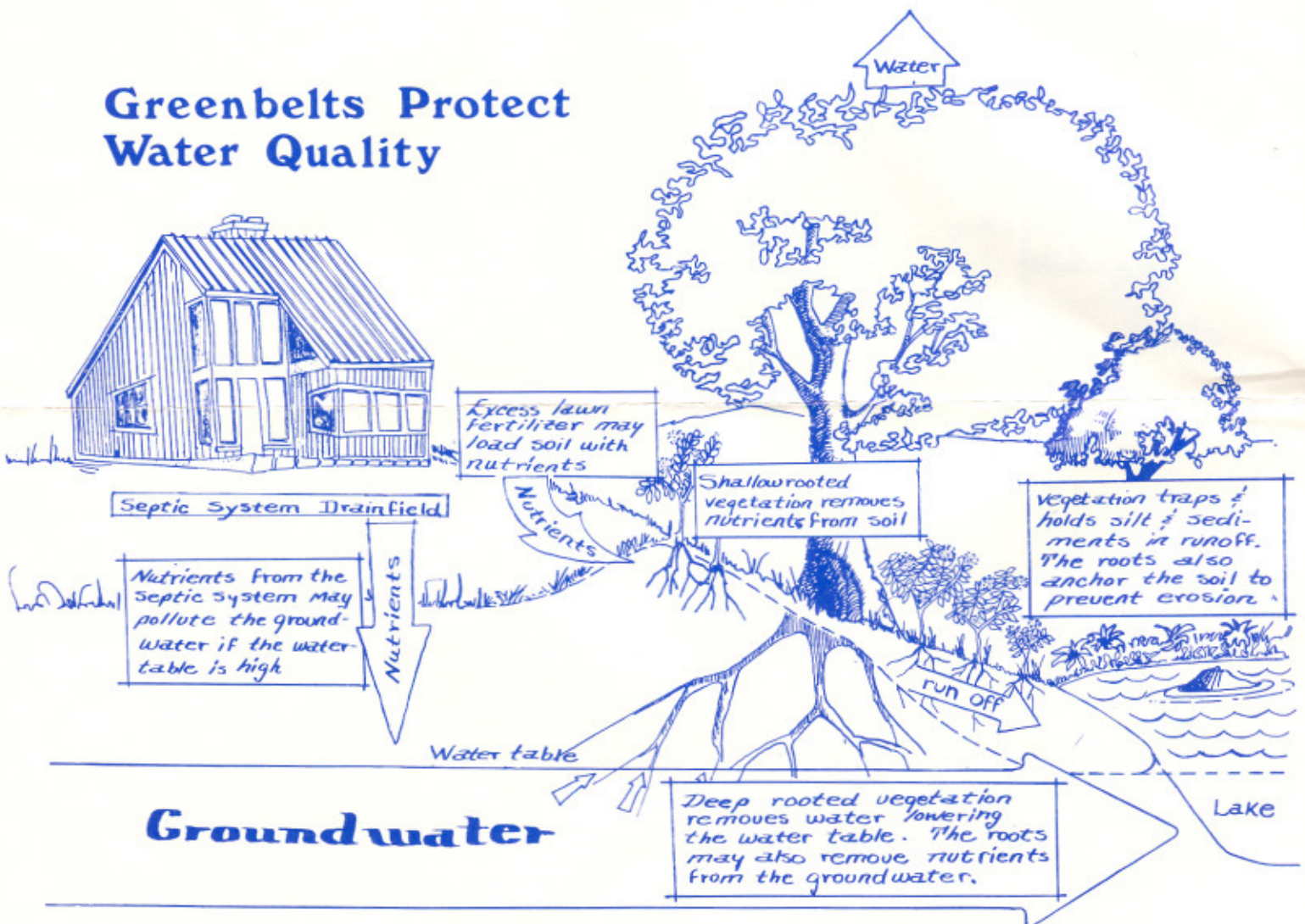
A greenbelt is a strip of vegetation, either naturally growing or planted, along the shore of a lake between the water, land, and any home or development that might occur.

Greenbelts offer waterside residents an easy, economical, and attractive way to do something to protect the water quality of their lakes and streams.

HOW DO GREENBELTS PROTECT WATER QUALITY?

- *The roots of shoreline vegetation trap and hold silt and sediments that are carried by rain, snow-melt and flood runoff waters. Silt and sediment adversely affect water quality by: changing lake bottom characteristics; by disturbing or eliminating fish breeding grounds; and by reducing water clarity.
- *Roots of plants also hold the soil particles in place to prevent erosion of the soil into the water.
- *Shallow-rooted vegetation can remove nutrients from the soil, and is particularly effective in drawing up by-products of septic system wastes. Deep-rooted plants and trees can also absorb nutrients from the groundwater supply and so prevent these growth stimulants from reaching a lake or stream to fertilize aquatic plants (algae).
- *Other benefits of greenbelts are that they provide excellent wind and sound breaks, and that, they create a habitat that attracts birds and wildlife. Greenbelts can also make property more attractive.

Greenbelts Protect Water Quality



HOW WIDE SHOULD A GREENBELT BE?

The wider the greenbelt, the more thoroughly the vegetation can capture nutrients and sediments from runoff water. The exact extent of a greenbelt should depend on the characteristics of the piece of property in question; an average figure might be 20 feet.

WHAT IF SHORELINE VEGETATION HAS BEEN CLEARED?

If shoreline vegetation has already been removed, consider replanting along the water's edge. A newly planted greenbelt can be landscaped with ornamental groundcover, shrubs, and trees to enhance waterfront property both visually and ecologically.

If a more natural setting is desired, native vegetation can be transplanted or replanted. Native plants have the added attraction of low maintenance requirements.



Lakeshore greenbelts can be visually pleasing as well as environmentally wise.

WHAT PLANTS MAKE THE BEST GREENBELTS?

Any plant which will grow and prosper in the existing soil and light conditions will serve as an effective greenbelt. Ultimately, the choice of plants should depend on what you find most attractive. Planting methods and recommendations can be obtained through local nurseries, from your County Cooperative Extension Service Office, and from the Soil Conservation Service.

IS A LAWN A GREENBELT?

Because most lawn grasses are short and because they don't provide an actual buffer zone at the water's edge, lawns should not be considered greenbelts.

In fact, greenbelts are often needed to counteract the effects of lawns that extend right to the water. Grass that does extend to the shoreline is often a source of water pollution because of over-fertilization.

When soil is saturated with phosphorus and nitrogen from lawn fertilizer it cannot absorb these nutrients from septic system wastes and may allow unfiltered wastewater to enter a lake. Fertilizer not immediately taken up by the grass can also run off into the water directly (i.e. after a rain) to stimulate aquatic plant growth. This, in turn, causes algae blooms and deterioration of the water's quality.

To curtail pollution from lawns:

Use fertilizer sparingly, if at all.

Have the soil tested through the County Cooperative Extension Service to determine if your lawn does need fertilizer.

Do not use fertilizers with phosphorus near the water.

Avoid application of fertilizer during spring or prior to a rainy period.

Plant fescue grass seed mixtures instead of bluegrass. Fescue requires less than half the nutrients of bluegrass and will grow under a variety of light/shade conditions.

Rake the fall leaves from the lawn away from the lake. Leaves contribute to bottom sedimentation and nutrient enrichment of a lake.

Leave a buffer zone of vegetation between the lawn and the water's edge to absorb nutrients from lawn runoff.

BUILT-IN LAKE PROTECTION

Many counties and townships have written greenbelt provisions into their zoning ordinances. A typical greenbelt ordinance might require that:

A strip of natural vegetation is maintained if shoreline property is developed.

Already developed property is replanted with a greenbelt buffer zone.

Building, farming, cutting, filling, or dredging within an established greenbelt is prohibited (docks, picnic tables, outdoor fireplaces, or other activities or structures may be included as acceptable).

Pruning of greenbelt vegetation be allowed only to improve a view (within reason) or to remove dying and unhealthy vegetation.

More detailed samples of greenbelt ordinances and advice on writing one for your township or county is available from your regional planning agencies. Contact: NEMCOG, P.O. Box 457, Gaylord, MI. 49735, (517) 732-3551; or the Northwest Michigan Regional Planning and Development Commission, 2334 Aero-Park Ct., Traverse City, MI. 49684, (616) 942-5922.

* * * * *

This publication was written by Marion Secrest and Jan Nagel. Illustrations are by Scott Ewen. Document preparation was supported by grants from the National Science Foundation (AEN72-03483 and ISP76 84559).



Periwinkle
Vinca minor

WHAT TYPE OF PLANTS CAN BE USED IN A GREENBELT?

Almost any kind of vegetation would protect the quality of your lake or stream. If native vegetation already exists along your shoreline, leave it. These plants are ideally suited for the conditions on your property. If you can, try to transplant native wild plants from similar lands to your lakeshore site.

Ground Covers

These are the plants to use when you want low lying vegetation. You can plant them in large amounts to cover a broad area, or intersperse them among taller vegetation to create a well balanced site.

PLANT	SOIL MOISTURE	SOIL TYPE	SUN	PARTIAL SHADE	SHADE	DESCRIPTION
Bearberry	Dry	Stony Sandy	X	X	X	Evergreen, 6-10" high. Good for stony, sandy banks. Hard to transplant; buy as sod or plant.
Bracken Fern	Dry	Sandy Loam	X	X	X	Fern 12-36" high, native to N. MI. Grows as dense cover in sun or sparsely in shade.
Crown Vetch	Dry	Sandy Loam	X	X		Used often to cover dry, steep slopes. Grows 1-2' tall. Propagate by cuttings or seeding. (20 lb/acre).
Goldmoss Stonecrop	Dry	Sandy Stony	X	X		Grows 4" tall. Ideal for between stepping stones and rocky places. Propagate by dividing or cuttings.
Japanese Spurge (Pachysandra)	Moist	Fertile Loam		X	X	Evergreen, grows to 6" tall. Spreads by underground stems; covers area quickly. Good under trees.
Juniper	Dry	Sandy Loam	X	X		Evergreen, usually 1-2' tall. Grows well on slopes, banks, sunny areas. Propagate by cuttings.
Lily of the Valley	Moist	Fertile Loam		X	X	Broad leaved wildflower, grows to 8" high with white bell-like flowers
Ostrich Fern	Moist to Wet	Fertile Loam		X	X	Beautiful native fern often used in gardens. Forms full tussocks about 3' high.
Periwinkle or Myrtle	Moist	Sandy Loam	X	X	X	Trailing evergreen, 8" tall. Grows well on rocky banks, slopes, propagates easily.
Wintergreen	Dry to Moist	Sandy Loam		X	X	Creeping evergreen, 4" tall. Grows well in acid soils. Propagate by dividing.



Black Alder
Alnus spp.

TREES AND SHRUBS

The following is a list of trees and shrubs with soil conditions best suited for them.*

SITE DESCRIPTION	TREES	SHRUBS
Well drained, dry Sand and loam Course textured soil	Black Locust Jack Pine Red Oak Red Maple Red Pine White Pine	Autumn Olive Crabapple Honeysuckle Staghorn Sumac Serviceberry Wild Rose
Well drained, moist Sandy, silt or clay loam Medium to fine textured soils	Black Locust Cottonwood Norway Spruce Red Pine Sugar Maple White Pine	Autumn Olive Common Privet Crabapple Gray Dogwood Mountain Ash Service Berry
Partially drained, moist Clay or silt loam Fine textured soil	Black Locust Cottonwood Norway Spruce Sugar Maple White Pine White Spruce	Autumn Olive Crabapple Honeysuckle Lilac Silky Dogwood Yew
Medium to poorly drained, wet Organic loam Coarse to fine textured soil	Black Ash Cottonwood Red Maple Silver Maple Weeping Willow White Cedar	Alder Arrowwood Ninebark Siberian Crabapple Silky Dogwood Willow

*For further information contact your local County Cooperative Extension Office.