



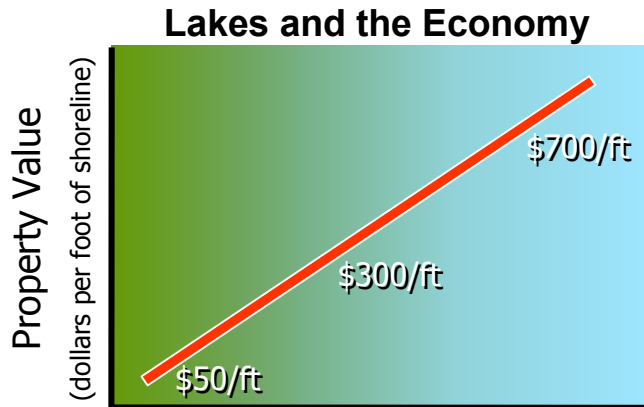
Effects of Development on Lakes...and What You can Do!



The Problems...

Studies have shown that there is a significant relationship between water clarity in a lake and the value of the land on that lake.

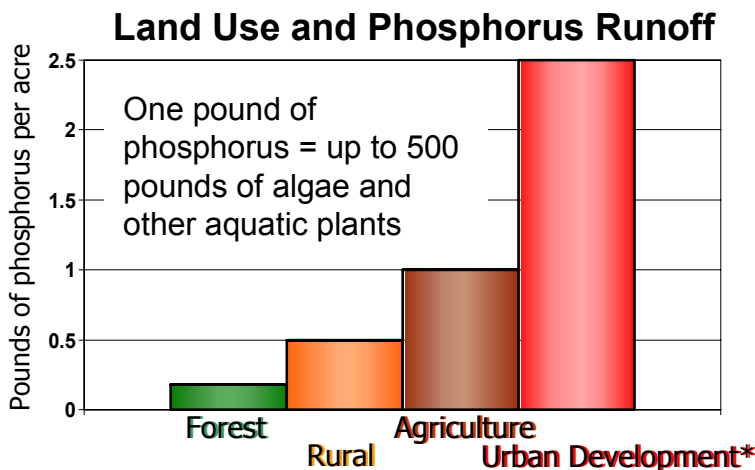
In Itasca County, the estimated market value of the land (not including buildings) averaged \$700 per foot of shoreline on the clearest lakes, while the murkiest lakes had much lower property values.



Water Clarity

Sources: Mississippi Headwaters Board (2003), University of Maine (1996), and Itasca County Assessor's Office (2003)

In general, declines in water clarity are caused by a process called eutrophication (excessive plant and algae growth due to increased nutrient levels in the lake). In Minnesota, most lakes undergo eutrophication because of increased phosphorus runoff. Different types of land use contribute different amounts of phosphorus in the runoff into lakes. Many other types of pollution can also come from developed areas, including other nutrients such as nitrogen, excess sediment, pathogens,



Source: Center For Watershed Protection.

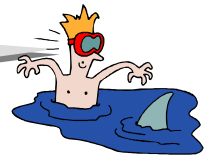
*Phosphorus loading in urban areas varies with intensity and amount of impervious surface – loading can be up to 2.5 pounds per acre.

toxic contaminants, debris, and thermal stress. Poorly planned development can lead to increases of these pollutants in lakes, resulting in a decrease in water quality.

In addition, intense development may bring other unintended consequences, such as loss of habitat for fish, waterfowl, and other creatures, increased noise levels, contaminated drinking water, lakeshore erosion, and more.

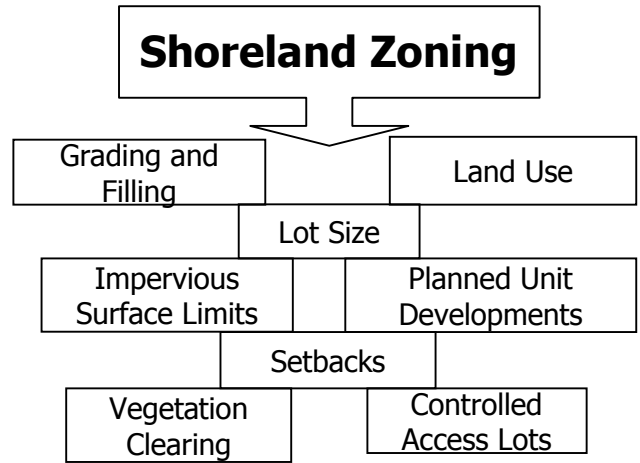
The Solutions...

So what should we do?

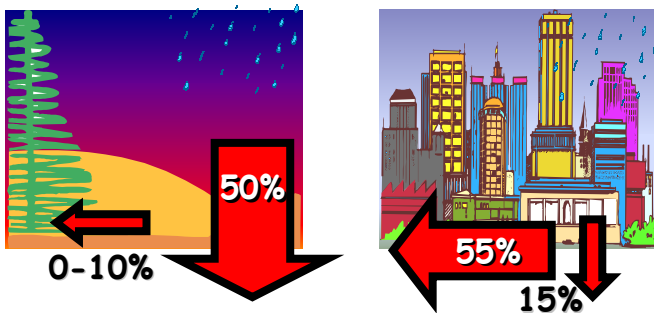


1st: Planning, zoning, and enforcement

Zoning is one of the most important tools available to a community prevent lake degradation. The state of Minnesota sets minimum standards for shoreland zoning, including the activities shown to the right (among others). These minimum standards should not be applied in a 'one size fits all' fashion because they cannot prevent degradation in all lakes. Therefore, the *state encourages local governments to adopt zoning standards that are more restrictive, especially for their highest quality resources.*



2nd Site design/low impact development



The good news is that development can be done in a way that's friendly to the environment. Your community's policies should encourage development that:

- retains and restores the natural landscape
- promotes infiltration and reduces runoff
- maintains or restores natural buffer areas around lakes and streams

3rd Best Management Practices (BMPs) and maintenance

While the best BMP is Better and More Planning, other BMPs such as rain gardens, erosion control, street sweeping, and public education can be effective at reducing pollution if properly executed and maintained. In addition, maintaining septic systems, especially in shoreland areas, is key to preventing system failure, which releases nutrients and pathogens into our waters.



NEMO (Nonpoint Education for Municipal Officials) is an educational program for land use decision makers addressing the relationship between land use and natural resource protection.

For more information, contact:

Northland NEMO is a member of the National NEMO Network (www.nemo.uconn.edu). Project affiliates include Minnesota Sea Grant, University of Wisconsin-Superior, Minnesota Erosion Control Association, and a network of local and state agencies, organizations, and institutions.