



# The Lake CONNECTION

## How do our shoreland decisions affect property values, water quality, fisheries and wildlife?

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Extensive research exists describing how land use along lakes and streams affects water quality, fisheries, and wildlife. Here is a very brief summary of the research. This article is excerpted from the 2006 edition of the Zoning Board Handbook, available online at [www.uwsp.edu/cnr/landcenter/pubs-handbooks.html](http://www.uwsp.edu/cnr/landcenter/pubs-handbooks.html).

The quality of our lakes and streams is ultimately a reflection of how we take care of our land. Specifically, how our communities develop and redevelop the land around lakes and streams plays a large role in whether those lakes and streams remain healthy for generations to come or are degraded and become a detriment to the community.

### Protecting water quality protects property values

A recent study of over 1,000 waterfront properties found that, when all other factors were equal, properties on lakes with clearer water commanded significantly higher property prices. In other words, people prefer clean water and will pay more to live on lakes with better water quality.

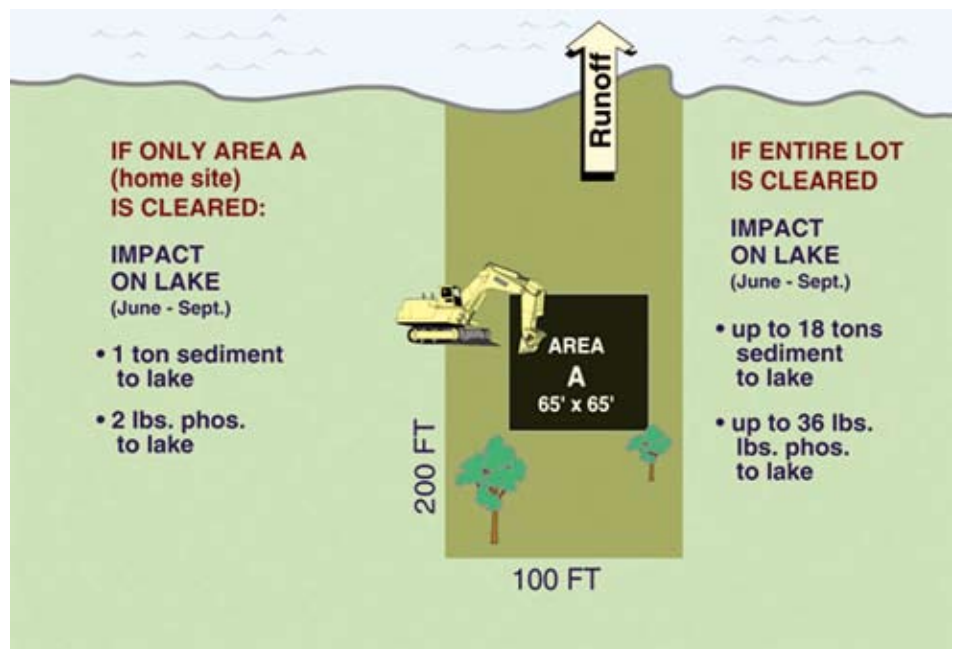


Figure 1: Less land clearing limits the amount of phosphorus entering a lake or stream.

### 3 steps to protect water quality, fisheries and wildlife

Maintaining good water quality, fisheries and wildlife in lakes and streams depends on three steps:

1. Curb pollutants at their source—fertilizers, household toxins, eroding soils, malfunctioning septic systems.
2. Cut the amount of runoff that picks up pollutants and carries them to the

waterway by minimizing the hard surfaces that create runoff.

3. Capture and cleanse pollutant carrying runoff before it reaches the waterway with shoreland buffers, rain barrels or rain gardens.

### Curb pollutants

Curb pollutants at their source—fertilizers, eroding soils, malfunctioning septic systems, household toxins and agricultural runoff.

Phosphorus is an essential nutrient for plants. However, when too much phosphorus makes its way into our lakes and streams, it promotes the rapid growth of weeds and algae and decreases water clarity, often turning lakes green. Decaying algae also deplete oxygen in the water, so that fish can no longer thrive. Human activities contribute a great deal to the amount of phosphorus that enters a lake or stream.

Consider this—one pound of phosphorus in runoff can result in up to 500 pounds of algae growth! Phosphorus comes from soils and fertilizers, which are easily washed into lakes.

Since phosphorus is often bound to soil particles, one key to keeping phosphorus out of lakes and streams is to minimize the amount of land that is cleared or otherwise disturbed, so that soil erosion is minimized. Another approach is to attempt to capture the eroded soil before it enters the waterbody. As Figure 1 illustrates, completely clearing a half-acre lot can add up to 36 pounds of phosphorus to a lake or stream.

In addition to phosphorus, many other chemicals—from antifreeze to zylene—can pollute lakes and streams.

## Cut Runoff

Runoff is excess water that comes from hard surfaces like rooftops, driveways, parking areas, sidewalks, decks, and compacted soils. Gravel areas quickly become compacted and create nearly as much runoff as paved surfaces. Runoff water washes soil, fertilizer, car fluids and other pollutants into our lakes and streams. To reduce runoff, let water soak into the ground.

Lawns absorb little rainfall. In fact, a recent Wisconsin study found that lawns created much more runoff than wooded areas. As a consequence, the runoff from fertilized lawns carried eight times more phosphorus to the lake than the runoff from similar sized wooded areas.

Runoff also affects fisheries. Researchers studied 47 Wisconsin streams and found that fish and insect populations decline dramatically when more than 8-10% of the watershed is covered with hard surfaces such as rooftops, roads, and driveway. Streams that have more than 12% of their watershed covered by hard surfaces have consistently poor fish communities.

Not surprisingly, impervious surfaces closer to the water have a greater impact because there is less opportunity for the runoff from these areas to soak into the ground or be filtered before reaching the lake

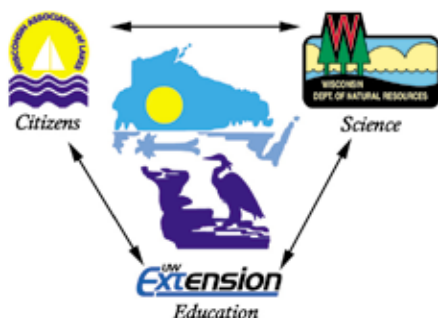


*Maintaining a shoreline buffer of native plants can slow down and/or prevent runoff from reaching the lake.*

or stream. Hard surfaces harm fisheries because:

- Warm runoff from roads and other hard surfaces raises water temperatures and decreases oxygen levels, eliminating some fish species;
- Sediment carried in the runoff creates cloudy water, so fish that hunt by sight have a hard time finding dinner;
- Sediment covers spawning areas and clogs the gills of some fish; and
- Streams become ‘flashy’, meaning runoff occurs more quickly after a storm, peak flows become larger, and critical dry season flows decrease because less groundwater recharge is available.

## Wisconsin Lakes Partnership



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Wisconsin Department of  
Natural Resources

<http://dnr.wi.gov>

UW-Extension Lakes  
Program

[www.uwsp.edu/cnr/uwexlakes/](http://www.uwsp.edu/cnr/uwexlakes/)

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