

# **Tips for Lake Living**

## **How to Take a Water Sample for Bacteriological Testing:**

Follow these steps carefully so that the water sample does not become contaminated:

1. Obtain a sample bottle from any office of the health unit or from the Public Health Laboratory. The bottle contains a preservative added by the manufacturer; *do not rinse the bottle out*. Keep the bottle clean, dry and sealed until ready to take the sample.
2. Remove the aerator or other attachment from the tap, preferably the kitchen tap. If necessary, the mouth of a metal (not plastic) tap can be disinfected with a match or a lighter. Flame the mouth of the tap for about as long as it takes a match to burn down. Do not wipe any soot off. Run cold water for two to three minutes. If the tap is made of plastic and flaming is not possible, then alcohol can be wiped around the tap opening using a clean tissue. Run cold water for 3 minutes before sampling.
3. Unscrew the cap from the bottle without touching the neck of the bottle or the inside of the cap. Don't put the cap down. Hold it facing down so airborne contaminants can't settle in the cap.
4. Fill the bottle to the line and replace the cap snugly. If *not* refrigerated, the bottle must be received by the lab within 6 hours. If refrigerated, it must be received within 48 hours.

## **HOW YOUR SEPTIC SYSTEM WORKS**

In simplified terms, your septic system consists of a tank, a network of pipes and billions of microscopic organisms. The tank treats sewage by letting the heavy solid materials settle and allowing time for lighter materials (called scum) to float to the top. The partially treated wastewater then flows into perforated pipes (the leaching bed) where it filters into the ground and is further treated. Bacteria and microorganisms in the soil digest and remove impurities such as suspended solids, organic chemicals, viruses and bacteria. The treated wastewater eventually finds its way to the groundwater.

Here are many simple things that you can do to ensure that your septic system functions properly:

- Ensure your tank is inspected every two to three years by a qualified person and is pumped out every three to five years depending on use. Summer or early fall is the best time for this.
- Conserve water and reduce waste flow into your system - too much water will overload your septic system and cause wastewater to be released untreated.
- Reduce your use of phosphate-based detergents and cleaners, which can impair water quality and fish habitat.
- Avoid construction and activities in the area over your leaching bed - extra weight can crush the pipes or compact the soil.
- Don't plant trees and shrubs on top of your leaching bed - the roots can damage your pipes. Instead, plant a wildflower meadow that can help filter wastewater and absorb excess nutrients.
- Minimize grass watering around the leaching bed area - extra water can reduce the bed's ability to absorb and treat wastewater from the buildings.
- Don't pour out or flush harmful chemicals and substances into your system as they can kill beneficial bacteria and render your system useless.

## **When things go wrong with your system**

There are several signs that you can look for that tell you your septic system may not be functioning properly. The ground over your leaching bed may be wet and spongy or the grass may be unnaturally lush and green. You may notice unpleasant odors in your house or

drinking water, or your toilets and drains run more slowly than usual. You may notice significant algae growth in or around nearby lakes and streams, or there may be high levels of nitrates, bacteria or other contaminants in your well water.

Any one of these signs is cause for concern. A malfunctioning septic system can result in harm to the natural environment or public health by polluting lakes or contaminating drinking water supplies.

If you would like to have your septic system inspected, contact you local town or township office for information about their septic system inspection program. If you need to upgrade or replace your system, look for a licensed installer in the yellow pages or ask your township to recommend some names.

## **ECO RESPONSIBLE SHORELINE DEVELOPMENT**

If you own a waterfront property, chances are you have a shoreline structure of some sort. Now, any changes to a natural shoreline will have some negative impacts; however, you can reduce these impacts by limiting your shoreline development to no more that 25% of your shoreline.

The first step in reducing the impact of your shoreline structures on the health of your lake or river is to pick an area no larger than 25% of the frontage where there is little or no vegetation and to set it aside for your dock, boathouse, swimming area, etc.

Before you begin altering the shoreline, it is important to remember to obtain all the necessary permits. At least six federal and provincial laws affect shore work in Ontario. According to the federal Fisheries Act, the responsibility is on the landowner to ensure that shoreline work does not "harmfully alter, disrupt, or destroy" fish habitat. Failure to obtain approval before beginning shoreline alterations can lead to hefty fines and even jail time. When developing your shoreline, there are a few environmentally friendly practices you can follow to help ensure that your activities do not affect fish or fish habitat.

The first is to select structures that minimize disturbance to the river or lake bottom.

Cantilever, floating and post-supported docks and boathouses are recommended because they only disturb river or lake bottoms minimally, and they do not restrict the movement of water near the shore.

If you need to use cribs in your structures, it is best if you use an open-faced design. Open-faced cribs without solid planking provide fish and aquatic organisms with spaces to hide from predators. Cribs should be placed at least six feet out from the high-water mark. Vertical planking should not be used along the sides of your dock because it can restrict the movement of water. Instead, you should use bridging between cribs or poles that allows the water to circulate.

The safest materials to use in shoreline structures are untreated woods such as cedar, fir, hemlock and tamarack. When submerged, these timbers will not decompose. Plastic wood can also last a long time if it is installed properly.

You want to avoid projects that require in-water dredging. Dredging may be harmful to fish and their habitat, and permits will be needed to carry out this work.

You need to ensure that your in-water activities do not occur during local fish spawning and nursery periods as the work can disturb spawning behavior, smother eggs and kill young fish.

Even within the 25% of shoreline that you have set aside for development, you should still minimize the amount of shoreline vegetation removed. This vegetation will prevent the shoreline from eroding and causing sedimentation problems in your lake or river. Building a small walkway from your cottage to the dock or boathouse will help maintain the shoreline vegetation by keeping people from trampling it.

Do you want to have a boat launch on your property? Avoid constructing it out of cement as this destroys the fish habitat it is placed on. Alternatives such as gravel or a marine railway will have less impact.

By incorporating these environmentally friendly practices into your shoreline developments, your projects will more likely be approved and you will be reducing your impact on your watershed.

Leave the remaining 75% or more of my shoreline in its natural state

Natural shorelines have long been recognized as an important component of healthy and productive water bodies. Unfortunately, it is still all too common to see landowners clear away the "messy" vegetation in their shoreline area and replace it with lawns and retaining walls.

You can still enjoy your waterfront property while preserving water quality and wildlife habitat by limiting your shoreline development to a small area and leaving the remaining 75% or more of your shoreline in its natural state.

It is important to maintain the scenic beauty and natural character of our lakes and rivers, not only for aesthetic reasons, but for practical ones as well.

Shoreline vegetation benefits water quality by reducing the amount of sediment, nutrients, organic matter and pesticides that enter our rivers and lakes.

There is no better way to prevent soil erosion than to leave your shoreline in its natural state. Plant roots anchor the soil, preventing it from being washed away by currents, waves and rain. This preserves fish spawning beds, which can become destroyed by sediment accumulation due to erosion.

Overhanging branches from trees and shrubs shade the waters to prevent overheating and provide cover for small fish and other aquatic organisms. Debris such as logs and boulders also provide cover for many species, spawning areas for fish, and will serve to reduce the impact of waves on your shoreline.

There are several ways to go about protecting or restoring your shoreline.

- Preservation - a natural shoreline is retained and access to the lake is designed in such a way as to avoid shoreline damage.
- Naturalization - degraded shorelines are left alone to return to their natural state.
- Enhancement - native species are planted and non-native species are removed.
- Restoration - cleared areas are planted with native species.

The simplest way to get your altered shoreline back on the right track is through naturalization. Simply mark out an area reaching at least 10 feet back from your shoreline and stop mowing it. Native grasses, shrubs and trees will colonize the area.

The process is an interesting one, with wildflowers and grasses moving in the first year, and trees and shrubs following a year or two later. Non-desirable species can be selectively cut or hand pulled. You can gradually increase the naturalized area each year.

Many native plant species are extremely attractive. You can create an aesthetically pleasing property while providing food and habitat for wildlife, preventing erosion, and maintaining water quality. Take the time to enjoy the view, instead of mowing the lawn.

## **BOAT WAKE AND SHORELINE HEALTH**

Many people don't think that boat wake has a harmful effect on shorelines. After all, haven't waves been around since before people came to the area? Waves are a part of nature and so shorelines should be adapted to them, shouldn't they?

Yes, they should be, but when waves (and wake) are coupled with extensively altered shorelines, degradation results. And in many cases, wakes caused by boats are much higher than waves naturally caused by wind.

The law in Ontario states that power-boaters must slow down to 10 kilometers an hour within 30 meters of a shoreline, and ignoring this law can result in fines of up to \$500.00.

There is good reason for this law being in place. Not only are large wakes harmful to the environment, but to people and property as well.

## **Environmental Impacts**

Large waves and wakes can impact the environment in several ways. The most obvious result is erosion. Sediment from riverbanks and shorelines are washed into the water, along with trees and other plants whose roots have lost their support.

Sediment washed into the water can cloud it, affecting swimming, boating, and fishing, while trees that have fallen into the water can be pushed up against docks or other structures and damage them.

Creating wake in shallow areas causes water to drag along the bottom and disturb plants, animals and eggs in the area. Churned up mud can cause silting of fish spawning habitat and will stick to fish, insect and frog eggs, depleting them of oxygen and causing them to die. Large wakes also affect the environment by swamping the nests of loons and other waterfowl.

## **Personal Impacts**

Wake can also have a negative impact on people. A large wave can cause an undertow where the water is very shallow. Young swimmers can be pulled under by the undertow, or be forced underwater by a large wave crashing over them.

Wakes can rock, swamp or capsizes other boats. Passengers can be thrown off balance or overboard when another boat passes too fast and too close. Wakes may also damage docked boats by thrusting them against their moorings.

### **Reducing Your Wake**

The size of a boat's wake depends on the hull size, boat speed, distance from shore, and depth of water the boat is operating in. Being aware of these factors while boating is the first step in reducing your wake. Other steps to reduce your wake include:

- Always being aware of your wake, especially when changing speeds or boating in shallow waters.
- Slowing down enough to eliminate your wake when required.
- Installing trim tabs to get up on a plane quickly and keep your boat level.
- Boating in deeper waters and not getting too close to other boats or the shore.
- Positioning your passengers throughout the boat, instead of just at the stern.
- Slowing down well before you come across another boat or structure, as your wake will move out at right angles from your boat.

By being aware of the wake you create, and minimizing it whenever possible, you will be ensuring that the natural environment you enjoy while out boating is sustained for the years to come.

## **ENVIRONMENTALLY RESPONSIBLE BOATING**

Automobiles and other on-highway vehicles have long been subject to strict regulations concerning the amount of emissions they are allowed to produce. Increased fuel efficiency and technological advances such as the development of the catalytic converter have greatly reduced the amount of pollution that these vehicles produce.

As emission controls for on-highway vehicles have become more effective, the relative contribution of small engine emissions to overall environmental pollution has increased. It has only been in the last few years that governments in both Canada and the United States have turned their attention to developing regulations for reducing the amount of pollution created by non-road sources such as snowmobiles, ATV's and PWC's.

As usual, the United States is ahead of Canada and already has legislation in place to ensure that, by 2006, all new outboard engines and PWC's sold in the U.S. will use low-pollution technology. Canada is in the process of aligning its requirements with those of the EPA in the United States.

## **The Two-Stroke Engine: Advantages and Disadvantages**

The two-stroke engine has several advantages that make it an ideal choice for use in tools and recreational vehicles in which the motor is not used very often and a good power-to-weight ratio is important.

Two-stroke engines do not have valves, making their construction fairly simple. They also fire once every revolution giving them a significant power boost. These advantages make two-stroke engines lighter, simpler and less expensive to manufacture than other engines. They also have a great power-to weight ratio.

Yet despite these advantages, the use of the two-stroke engine is under fire. It is easy to understand why when you take a look at the disadvantages of these engines.

In order to keep your two-stroke engine working, it is necessary to mix special oil in with the gasoline. Because there is no dedicated lubrication system, engine parts wear much faster. Oil consumption in these engines is high, and gas efficiency is extremely low.

Two-stroke engines are notorious polluters. The pollution from these engines originates from two sources. Great clouds of black smoke can be emitted when oil is burned along with the gasoline, and the inefficiency of these engines leads to 20-30% of unburned fuel and oil being discharged directly into the environment. This contributes to the formation of smog and contamination of our drinking water sources.

There are over 360,000 two-stroke outboards in Ontario and many more two-stroke engines in snowmobiles, ATV's and PWC's. It is estimated that marine engines discharge up to one billion liters of unburned oil and gas into North American waters each year - a figure more than 15 times greater than the Exxon Valdez oil spill.

### **Low-Pollution Technology**

The call for more stringent regulations on non-road engine emissions has resulted in more and more new engines being produced with low-pollution technologies, including four-stroke engines and DFI (Direct Fuel Injection) two-stroke engines.

Four-stroke engines are the cleanest outboards available. Unlike two-stroke engines, the exhaust port in four-stroke engines remains closed until the gas has combusted, preventing raw gas from escaping into the environment unburned. Manufacturers have been working at making these engines smaller and lighter so they can be used in more applications.

DFI two-stroke engines use a computer to inject fuel into the cylinder as soon as the piston covers the exhaust port. This prevents raw gas from escaping through the exhaust port unburned.

Both of these types of engines cost a little more to buy than conventional two-stroke engines, but the extra money you spend up front is quickly saved in reduced fuel costs. These engines will actually save you money in the long run.

The Clean Air Foundation ([www.cleanairfoundation.org](http://www.cleanairfoundation.org)) is currently examining options to address the pollution emitted by two-stroke outboard marine engines. Over the next year, they will be looking at programs to encourage the adoption of cleaner four-stroke technology in the recreational boat market. Who knows, in the coming years they may have a program in place similar to their lawnmower exchange program, where replacing your two-stroke lawnmower with an electric or rotary one entitles you to rebates at participating Home Depots.

#### **Benefits of Low-Pollution Marine Engines**

- Burn 40-80% less gasoline.
- Use up to 50% less lubricating oil.
- Reduce air emissions by up to 90%.
- Reduce water pollution by reducing the amount of gasoline released into surface waters.
- Are significantly quieter, and reduce smoke and fumes.
- Provide easier starting, faster acceleration and quicker throttle response.
- Are less disruptive to wildlife and are better for the watersheds.

### Did You Know?

- Two-stroke marine engines emit an estimated 100,000 tons of hydrocarbons, nitrous oxides and carbon monoxide into Ontario's environment each year.
- The EPA estimates that using a two-stroke 70 horsepower motor for one hour emits the same amount of hydrocarbons as driving over 8,000 kilometers in a new automobile.
- Conventional two-stroke engines exhaust 25-30% of unburned fuel and oil directly into the environment.
- Four-stroke engines use 40-80% less fuel, consume up to 50% less lubricating oil and reduce hydrocarbon emissions by up to 90%!

### **What is a Shore Road Allowance?**

During the initial layout of road allowances in Ontario, sixty-six foot road allowances were established adjacent to navigable rivers and shores of lakes. Such roads, although infrequently opened, were originally intended to provide access for public and commercial passage. The fact that most allowances have never been opened for use, in no way limits the original conveyance nor obstructs the right of use by the public. To establish whether a shore road allowance exists, review the property deed and search for the following wording; save and except that portion of land consisting of a sixty-six foot shore road allowance.

### **Can I close a Shore Road Allowance?**

Under the Municipal Act, municipalities have been empowered to affect closure and resolve title issues. The Ontario Ministry of Natural Resources has established certain guidelines to encourage municipalities to retain these allowances where the lands contribute to the preservation of fish or wildlife habitat. Any person contemplating an application to close a shore road allowance will be required to make certain applications and bear associated costs as determined by the local municipality. Policy, procedures and costs concerning shore road allowances change from time to time, and we recommend strongly that persons considering an application seek professional assistance.

### **Cautions Regarding Shore Road Allowances**

When contemplating the closure of a shore road allowance, owners should be aware of certain situations that may arise

- Non Conforming Status; some cottages may fall under non conforming status due usually to age of the structure. The acquisition of the shore road allowance may disrupt this status, and require other changes to the property, such as set back requirements, site plan agreement, environmental regulations, etc...
- Cost of Individual Application; Cost may be substantial, depending on the property in question. Owners may expect to cover costs such as survey, purchase price of shore road allowance and costs associated with negotiations with the municipality
- Diminished Frontage Acquired; In some circumstances, the frontage being acquired could effectively be less than existing frontage measurement, as in the case of a wedge shaped lot with lesser measurement on the lakeside of the property. In future, this may effect compliance with zoning and regulations affecting concerning alterations.
- Fish Habitat Considerations; Ministry of Natural resources has a mandate to protect the fish habitat, and thus complicated negotiations may ensue and effect the costs, timing and amount of land which may be conveyed.

### **What is a Right of Way?**

The right to pass over another's land, more or less frequently, according to the nature of the easement.

An easement may be created whenever a landowner decides to grant a privilege, called a right of way, to an adjoining landowner. An easement is defined as the right enjoyed by one

landowner over the land of another, and is obtained for a special purpose rather than for general use or and occupation of the land. The dominant tenement enjoys the right of way over the servient tenement to which the easement applies.

Easements can be expressly granted for a period of time, or it may be granted forever. If granted forever, the right of way runs with the land, and will pass from owner to owner.

Many cottage transactions involve rights of way. We recommend consulting with an experienced lawyer to address any questions or concerns you may have with a particular situation, prior to establishing a firm agreement of purchase and sale.