

# Shoreline Protection

## Ice Ridges Fact Sheet

Winter can result in substantial changes to the shoreline of the lakes in our watershed. Ice can push mud, clay, soil, and rock from the bottom of the lake and from along the shoreline up onto the land, often resulting in large ridges or mounds. This process is often referred to as “ice heaving” or “ice jacking”. The mounds or ridges are referred to as “ice ridges”, “ice pushes”, or “ramparts”.



### Examples of ice ridges along Lake Scugog



## How does it happen?

- Ice on the lake expands naturally when temperatures increase, pushing outwards.
- Cracks form in the ice when there are different temperatures at the top and bottom of the ice and different expansion rates. This occurs more often when there is not a lot of snow cover to provide insulation and the top of the ice warms up more quickly. When water rises into these cracks and freezes, it causes the ice to expand and push out.
- Warming and cooling of the ice sheets with changing temperatures pushes the ice towards the shore and can scrape and push material from the lake bed and shoreline into mounds (Minnesota Department of Natural Resources, 2012).
- If ice ridges have occurred on your property, this means your shoreline is prone to ice heaving and you will probably continue to get more ice ridges over time.

# What You Can Do

All shoreline works require a permit from Kawartha Conservation per Ontario Regulation 182/06: Kawartha Region Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses and may also require a permit from Parks Canada (Trent-Severn Waterway). It is your responsibility to obtain all necessary permits before you start any shoreline work. (Contact information on back.)

## ACTIONS THAT DO NOT REQUIRE A PERMIT

1. Do nothing - Let nature take its course. Ice ridges protect shorelines from ice and wave damage. They often create a barrier that prevents sediment and other nutrients from entering into the lake and at the same time they create fertile soil where plants can grow. The roots of the plants help to further stabilize the shoreline and take up nutrients as well as provide shade and habitat for birds, fish, and other wildlife.

2. Return your property to its original grade by following these steps:

- PROPERLY install a silt fence between the water and the disturbed area before any grading to ensure no sediment/soil enters into the water.

Note: Sediment particles contain nutrients and other water pollutants and can also adversely impact fish and smother fish eggs. Visit the Permits and Planning section of the Library on our Kawartha Conservation website ([kawarthaconservation.com](http://kawarthaconservation.com)) to obtain a fact sheet or contact us to obtain more information on the proper installation of a silt fence.

- Grade your lawn by leveling out the material pushed up on the property to return it to the original grade.

Note: Land lost to erosion cannot be reclaimed. You cannot use the material to create new land or extend your existing shoreline after it has been eroded.

- Keep the silt fence in place until the disturbed area is stabilized (i.e. vegetation has become established and there are no more bare soils).

Note: As ice heaving is a natural process, you may have to re-grade again in the future.



An example of an older ice ridge that has become vegetated and now provides some protection against future ice heaving.

3. Create a ramp through the ice ridge for water access. Consider keeping a portion of the ice ridge for shoreline protection and creating a ramp through the ice ridge to allow access the water. Any material you remove from the ice ridge should be placed elsewhere on your property. Please follow the steps identified in the points above.

## ACTIONS THAT REQUIRE A PERMIT

Do not proceed with any of the actions listed below (1-6) without first obtaining a permit from Kawartha Conservation and/or Parks Canada (Trent-Severn Waterway).

1. Pushing material that is on land back into the water and disturbing any material in the water or below the summer high-water mark.

Note: Material that is in or below the summer high-water mark of the lake (which would be in the water during the summer months) will naturally erode away and be re-deposited on the lake bottom as water levels increase. There are fish timing windows in place to protect spawning fish along the shoreline of the lakes. The timing window is March 31st to July 1st for most lakes. Do not complete any in-water work during this time to avoid impacts to spawning beds.

2. Changing the original drainage of your property or creating a new swale or ditch to drain water that is trapped on your property due to an ice ridge.
3. Completing any excavation work (i.e. digging into the bank or bed of the lake).
4. Placing any material (soil, gravel, etc.) from an off-site location on your property to change the grade or improve drainage.
5. Installing any shoreline treatment such as rip-rap, river rock, retaining walls (including armour stone), or other erosion protection measures.
6. Disturbing emergent aquatic vegetation (i.e., vegetation that is partially in the water and partially above it such as cattails) or shoreline vegetation. This vegetation provides important erosion protection and habitat for wildlife species.

Permit applications may be obtained by contacting Kawartha Conservation and Parks Canada (Trent-Severn Waterway). Contact information can be found on the back of this fact sheet.

## What you can do to protect your property from future ice damage:

**Mature Vegetation:** Mature woody vegetation (trees and shrubs) provides the best protection from ice damage and shoreline erosion. When this vegetation is removed from the shoreline, ice and wave erosion occurs more rapidly.

**Sloped Rock:** If you do not have mature woody vegetation, another successful shoreline treatment for protection against ice damage involves installing river rock in varying sizes at a 3:1 (horizontal:vertical) slope ratio (i.e., 33% slope) along the natural contour of the shoreline. The slope allows the ice to roll up onto the rocks and recede without pushing up ridges of earth or pulling earth back into the water. This maintains the natural functions of the lake, provides fish habitat, and offers erosion protection from ice.

Planting larger mature trees and shrubs within the spaces of the rocks adds additional protection from ice, stabilizes the underlying bank and the rocks, and provides habitat for wildlife. This may require annual maintenance to replace damaged vegetation or adjust any rocks that are moved by the ice.

**We do not recommend “hardened shorelines”.** Hardened shorelines such as retaining walls, sheet piles, armour stone, etc. create a vertical barrier. The force of the expanding ice can easily damage or destroy these vertical walls and cause more property damage. In addition, these walls eliminate fish habitat and can adversely affect the natural functions of the lake.

You must obtain a permit from Kawartha Conservation and Parks Canada (Trent-Severn Waterway) before installing any type of shoreline treatment, including sloped rock.

Remember: It is your responsibility to obtain all necessary permits before you start any shoreline work.

If you would like to learn more about shoreline treatments, or if you have any questions about obtaining a Kawartha Conservation, or Parks Canada permit, please contact our offices.

For Kawartha Conservation Permit information or for information about Natural Shoreline Treatments:

Kawartha Conservation

Call: 705.328.2271

Email: [geninfo@kawarthaconservation.com](mailto:geninfo@kawarthaconservation.com)

Web: [kawarthaconservation.com/stewardship/on-the-shore](http://kawarthaconservation.com/stewardship/on-the-shore)

For Parks Canada/Trent-Severn Waterway In-Water and Shoreline Work Permit information:

Parks Canada Agency

Call: 705.750.4923

Email: [information@pc.gc.ca](mailto:information@pc.gc.ca)

Web: [pc.gc.ca](http://pc.gc.ca)

Shoreline Policies: [pc.gc.ca/eng/docs/r/poli/page01.aspx](http://pc.gc.ca/eng/docs/r/poli/page01.aspx)



Above and below are examples of naturalized shoreline treatments that minimize ice damage. These include river rock of various sizes placed at a 3:1 (horizontal:vertical) slope ratio (i.e., 33% slope) along the contour of the shoreline. Above, the ice is free to roll up onto the rocks and recede without pushing up ridges of earth or pulling earth back into the water. This is highly recommended because it maintains the natural functions of the lake, is fish-friendly, and offers protection from ice. You must obtain a permit from Kawartha Conservation and Parks Canada (Trent-Severn Waterway) before installing any type of shoreline treatment, including sloped rock (as shown below).



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Trent Severn Waterway  
National Historic Site  
[parkscanada.gc.ca](http://parkscanada.gc.ca)

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Trent-Severn