WHITE LAKE Property Owners Association
Environment Volunteers

ENVIRONMENT BULLETIN

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It's Our Fault!

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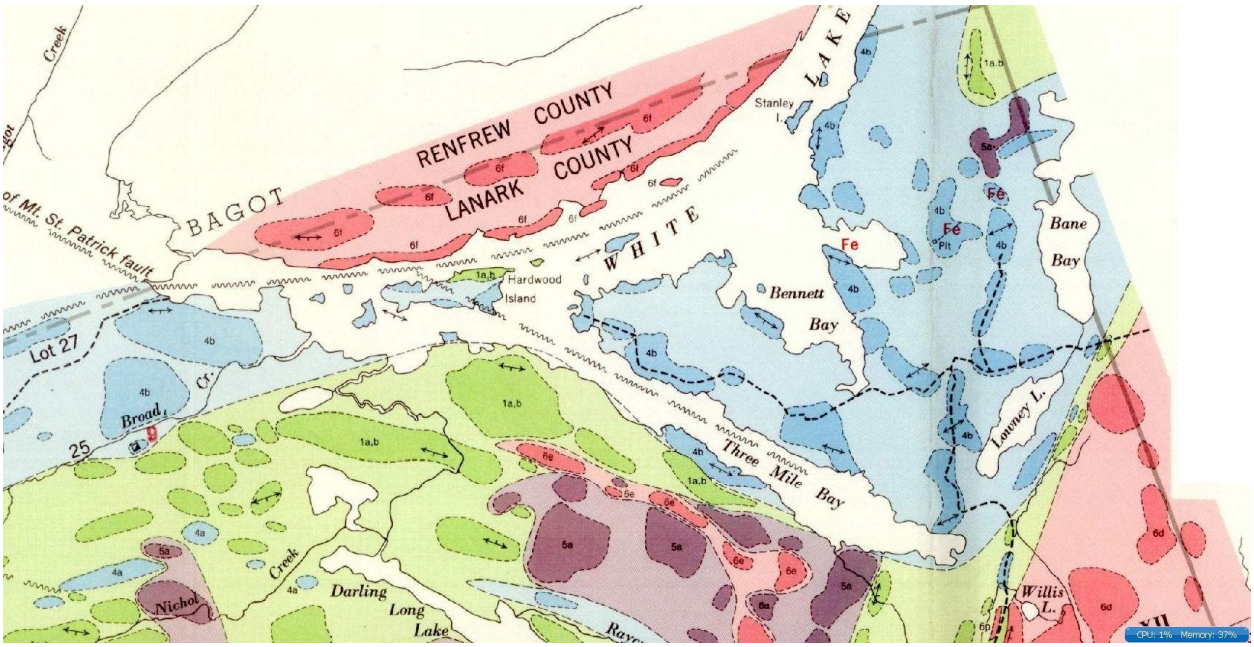
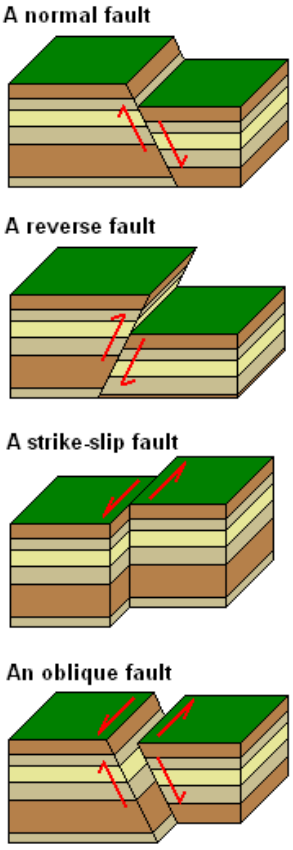
As we stroll out of our cottage or residence towards the lake, how often do we think about the very rocks beneath our feet? What are they? How old are they? How did they get there?

Although the story of Lanark Highlands starts about 4.5 billion years ago when the earth was formed, it's perhaps better to focus on the more recent geological events which led to the formation of what we see today.

Fast forward to a mere 150 million years ago. By then there was still a lot of geological activity in our region, and Ontario was being stretched and uplifted leading to the formation of the Ottawa Valley. At that time, many cracks formed in the earth's crust including some in the White Lake area.



The above map reveals the nature of the surface rocks under and around White Lake today. Geologists refer to these maps as surficial geology maps because they describe the types of rocks anyone can see by just taking a walk.



In this map, the pink and red show Precambrian rocks low in calcium and the blue shows rocks high in calcium. We know that the rocks under the lake are also high in calcium. This is what gives White Lake waters a very low acidity and high calcium concentrations. These conditions are perfect for zebra mussels looking for a home.

If you look closely at the map, you will notice a squiggly line running along the western side of White Lake and another squiggly line running down Three Mile Bay and across Hardwood Island. These lines show the course of the Mount St. Patrick fault; our fault on White Lake!

A fault is nothing more than a very large crack in an otherwise solid piece of rock. When nature applies stresses on these cracks, several things can happen. Rock on either side of the crack can uplift or depress or, alternatively, both sides can get further apart.

During the last ice age, the sheer weight of the ice pushed the earth's crust down by about 400 meters. Since the ice sheet has disappeared, the crust is still slowly rebounding. The continent under our feet is rising while at the same time moving westwards at the rate of about 1 centimetre per year. As it moves, stresses are built up between rocks on either side of a fault and at some point, these stresses seek relief in the form of an earthquake.

There is no evidence in the scientific literature to suggest that the fault running down Three Mile Bay has ever shifted, but it is entirely possible that it has widened (oblique fault) over the millennia. More likely though, a normal fault (see diagram above) occurred along the other fault line running north south, resulting in the cliffs we see especially on the west side of McLaughlin's and Hardwood Islands (right).

The geological faults running under White Lake may be responsible for the actual shape of the lake we see today.

We may think we are on solid ground, but at any moment Mother Nature may decide that your cottage lot belongs somewhere else.