



COMING SOON:

A Hydrological Model for the Muskoka River Watershed

This article is part of the Ripple Article Series. Every other week, an article will be posted on the Engage Muskoka website that dives deeper into one of the twelve technical projects in the Making Waves: Integrated Watershed Management initiative.

Residents and cottagers of Muskoka are no strangers to flooding, with the spring flood in 2019 still fresh in many minds. Muskokans also recall previous major flooding events in 2008, 2013, and 2016, which caused significant damage to private property and municipal infrastructure. Summer 2021 was the wettest in ten years; 347 millimeters of rain fell in June and July, prompting a Watershed Conditions Statement by the Ministry of Northern Development, Mines, Natural Resources and Forestry. With overall annual precipitation expected to increase over the coming years, along with a notable increase in the frequency and intensity of extreme rain events, it does not appear to be a matter of if, but when another flood will happen.

The District of Muskoka (District) is completing a series of technical projects. Coined "Making Waves," the purpose of these projects is to collect information on the Muskoka River Watershed to increase resiliency to future flood events while informing long-term management actions through Integrated Watershed Management.

What is Integrated Watershed Management? Integrated Watershed Management is an approach to managing natural resources and human activities within an entire watershed, regardless of governmental boundaries. This approach brings a scientific perspective to environmental and land-use management through the development of watershed-scale targets.

To advance this approach, the District is developing a hydrological model for the Muskoka River Watershed. This computer model will help us better understand how water moves through the watershed, including where and how flood flows originate. Wide-ranging data collection, including soil types, lake and river depth, topography, and forest cover is required for the model to be effective. This data is currently being gathered, and the model is expected to be completed by Fall 2022.

Once this model is developed, it will be able to identify water levels and flows under various circumstances. For example, the model could predict what would happen if Bracebridge received 100 millimeters of rain in one week. Impacts resulting from this kind of rainfall event would be initially seen in the areas around Bracebridge, and the model would identify where and how the water could move downstream. With this knowledge, property and infrastructure damage may be mitigated in advance of heavy rainfall. The information generated by the hydrological model may also inform development policy and land-use planning across the watershed. It may reveal future climate scenarios and the effects of wetland loss, additional development, and forest loss on the watershed. It will also identify potential nature-based solutions to flooding, such as expanding wetland areas and supporting the maintenance of forest blocks.

Developing a hydrological model is one of the 12 technical projects in the Making Waves initiative. Learn more about Integrated Watershed Management and the other projects at the [Engage Muskoka Webpage](#).

