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Comment

Current source water protection does not protect Moraines. It is designed to protect wellheads but not well fields which could be miles from the actual pump. We must protect Primary Recharge zones to protect water supplies economic systems, biodiversity and fisheries.

Jurisdictional protections of shared water resources vary depending on municipal laws and boundaries. The Grand River's protective policies should be consistent to the highest standards of protection from source to Lake to protect Lake Erie.

Since the probability of Lake Erie as a future potable water supply is unlikely due to increasing issues with algae, nitrate issues, zebra mussels and climate change,. it is vital that we protect locally sourced water by prohibiting development and aggregate activities in primary recharge areas to assure a renewable potable water supply for the generations to come.

Biodiversity of vernal ponds and headwaters relies upon the protection of source water to maintain water quality, water temperatures, water flow, flow rates. When we protect Moraines and associated wetlands and vernal ponds, it is protecting vital ecological systems that supports soil health and water quality.

With Waterloo Region being the second largest food belt in Ontario, this is a vital economic system to protect. Canada will be one of only 6 nations in the future capable of shipping food in the future so we must take action today to secure the long term health and renew ability of our water resources.

Biota in soil serves to remove toxins from surface water to groundwater. It is essential that we maintain salt free environments for water to infiltrate to protect the function of these microorganisms and encourage organic farming where possible to secure long term soil fertility and health.

The protection of salt free wetlands is vital. These natural systems serve to remove phosphates and nitrates but if we use these systems as storm water ponds, we risk introducing salt into our water supplies, killing beneficial bacteria while stimulating the growth of algae.

To better protect moraines we must keep water in the ground not above it. Above ground storm water ponds gathers high volumes of phosphates and nitrates from geese, residential pesticide use and other sources but if we introduce natural infiltration zones, soak away gardens and other salt free natural features, it helps to offset dependency on man made storm management systems. There is less maintenance and less risk of erosion for creeks and tributaries. It is an investment in healthier water quality.

In the age of climate change, heavy rain events risk widening creeks and river

beds. This creates a flood and drought like situation because wider channels drain water away faster over time. Bumping up riparian buffer zones and infiltration zones can secure water volumes get to the wells instead of washing away.

The hills and valleys of primary recharge zones have been exploited by developers for the sake of extracting sediment to offset building costs. One needs an MNR permit to dig a pit but not to remove a hill from a housing site. This double standard has to stop. The removal of sediment in Moraine systems is an economic loss of potable water in perpetuity. We must do the math to find out the true economic impacts.

The Arkell research centre in Guelph shows how hill slopes can gather water supplies. The slope of the hill at that location provides 7% of Guelph's potable water. When tested with bore holes it looks impervious. When tested with Ground Penetrating radar it shows clay distributed like shingles of a house with spaces inbetween. In order to protect water volumes we must use radar on hill slopes to protect these systems.

Often times engineering firms use too few bore holes to determine risks. They avoid the low points of a property, avoid spring that testing and avoid 12 month creek studies. Sometimes they will measure biota with a Simpsons index while using a different method of study to downplay the true results. Ontario needs to implement standardized test times and methods and units of measurement for the sake of clarity. Modflow models needs to be supported with sediment studies and actual data that can be traced. Sometimes firms pick and choose from drought years to hide delta levels so it is important to review and compare results.

Engineering firms create work for approvals sake and they sign off but if their work does not live up to the promises of no net loss, we need mechanisms to hold them accountable. If a roof runoff system is put in to replace lost water volumes hold a check worth the value of their system so if it fails to function as designed, they can be held responsible.

I want to see the Greenbelt expanded to protect Ontario Moraines. It is a life giving gift to pass on for generations to come and we must protect it. Food and water security in the age of climate change is paramount.

Waterloo must absolutely be protected. We are a global think tank on water issues. The world absolutely needs us to do the job right. Lake Erie needs us to step up in the headwaters areas so we can save it. We did it before and we can do it again but if we don't get it right, we could lose it for good. No more brinkmanship. Now is the time to put Greenbelt protection in place and start saying a firm "No" to unsustainable development.

Thank you.

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