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Maitland Conservation
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Re: Gorrie Dam Failure, North Maitland River

Dear Chair & Board Members:

Ontario Rivers Alliance (ORA) is a Not-for-Profit grassroots organization acting as a voice for several stewardships, associations, citizens and First Nation peoples who have come together to protect, conserve and restore riverine ecosystems.

It has come to ORA's attention that the Gorrie Dam on the North Maitland River failed as a result of flooding during an extreme rain event on 23 - 24 June 2017, and that Maitland Conservation is considering its options. We understand that no one is more aware of the extremes of a volatile and changing climate than Conservation Authorities, and yours in particular; and we understand the pressure that Conservation Authorities and municipalities are under when communities rally to maintain their coveted mill ponds. However, it is up to all authorities to take a leadership role that places public safety and landscape scale ecological integrity above local individual or group interests.

Our rapidly changing climate is a compelling reason to remove dams to increase the resiliency of our freshwater systems and the protection and safety of our communities. It is important to mitigate and adapt to the extremes of climate change as Paul Beckwith, who works on climatology in the Department of Geography at the University of Ottawa said, *"We're getting a lot more extreme weather events around the planet, whether that be torrential rains leading to flooding, or really hot and dry temperatures leading to drought. These extreme weather events*

are much more severe, much more intense, they last longer, they're happening more frequently, and they're happening in areas where they didn't happen before."[1]

Dams are not benign, they alter connectivity and can significantly change a river's physical and biological processes; and large and small dam structures can fragment and isolate biological communities by reducing or eliminating connectivity between reaches.[2] All water in a watershed shares the same fate and flows to the same destination; therefore, any upstream development will impact on all downstream waters. The lessons learned over the past century in Ontario and elsewhere, tell us that what we do in our waterways can ultimately affect species, ecosystems and communities hundreds of kilometers downstream.

According to a recent NASA and National Science Foundation funded study of more than half of the world's freshwater supply, climate change is rapidly warming lakes and rivers around the world and threatening freshwater supplies and ecosystems.[3]

Drought conditions could place additional stress on riverine ecosystems, while more extreme rainfall will heighten the risk of dam failure with the rapid release of high volumes of water. Of course, no one knows better than your Authority, because your own Gorrie Dam failed last year when 175 mm of rain fell in just 7 hours, placing more than 150 property owners at risk and resulted in an estimated $11-million in damages in the Town of Harriston – fortunately no one was killed. However, it can get worse – in October of 2015, a South Carolina flood breached 18 dams, resulting in 16 deaths.[4]

It is crucial that we recognize the hazards of infrastructure that would put citizens at risk, degrade water quality, threaten our fisheries, or that jeopardize the ecosystem services that healthy rivers provide.

"Climate will interact with overexploitation, dams and diversions, habitat destruction, non-native species and pollution to destroy native freshwater fisheries."[5] *"Climate warming will adversely affect water quality and water quantity, as well as the magnitude and timing of river flows, lake levels and water renewal times."* [6]

Reservoirs interrupt sediment transport and encourage deposition behind the dam, effectively starving the downstream of its sediment supply. As water impounded by a reservoir is necessarily held longer than water flowing in a stream, modifications to water quality and flow regimes will occur. The period of storage will, to some degree, modify temperature, dissolved gases and suspended solids in the water. Drought conditions will also exacerbate warming and can result in toxic blue-green algae, placing upstream and downstream communities at risk.

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[1] *National Observer, 8 May 2017, Here are the climate science benchmarks of the Quebec floods.*
[2] *Metcalfe, R.A., Mackereth, R.W., Grantham, B., Jones, N., Pyrce, R.S., Haxton, T., Luce, J.J., Stainton, R., 2013. Aquatic Ecosystem Assessments for Rivers. Science and Research Branch, Ministry of Natural Resources, Peterborough, Ontario. 210 pp. 1.5.*
[3] *Study: Climate Change Rapidly Warming World's Lakes, 16 December 2015.*
[4] *18 Dams Breached And Death Toll Rises in S.C. Flooding*
[5] *Schindler, D.W., 2001. The cumulative effects of climate warming and other human stresses on Canadian freshwaters in the new Millennium. Canadian Journal of Fisheries and Aquatic Sciences. 58: 18-29.*
[6] *Schindler, D.W., 2001. The cumulative effects of climate warming and other human stresses on Canadian freshwaters in the new millennium. Canadian Journal of Fisheries and Aquatic Sciences. 58: 18-29.*

As was mentioned in a Maitland Conservation report regarding the Gorrie Dam breach, the "*Key issue was that the flows were so great in Gorrie that regardless of how the dam was operated the spillway would have failed*"[7]. Downstream preparations were undertaken by Howick and North Huron in case the Gorrie Dam spillway failed; and at 4:00 pm Gorrie Dam began failing, and the flow rate was twice the rate recorded when the 1974 dam failure occurred. This severe rain event broke previous records by approximately 40%, and the Howson Dam was at capacity. This was the second highest flow on the North Maitland in the 48 years of record.

Increasing intensity of rain and melt events is already challenging manmade infrastructure such as Gorrie Dam like never before, and the magnitude of these impacts is only expected to increase. There is also acknowledgement that old dams deteriorate over time and require costly maintenance and repairs and they are becoming enormous liabilities, and significantly increase the risk to public safety.

ORA respectfully submits, that neither the public good nor the environment are served in a decision to rebuild and maintain the dam, and we understand there is a long history of this dam failing. Decommissioning the Gorrie Dam is in full alignment with Maitland Conservation's priority to build watershed resilience and would be a strong action to take in ensuring the North Maitland River and adjacent communities are more resilient to climate change and, most importantly, it would demonstrate that protecting the safety of local citizens is your top priority.

ORA is asking Maitland Conservation to look beyond the pure aesthetics of a dam and pond feature, to the greater long-term health and vitality of a revived watershed-wide natural environment and fishery, both now and far into the future.

We ask that you choose to decommission and naturalize the North Maitland River at the Gorrie Dam, which will improve its health and resilience and reduce public safety risks and liability.

ORA is looking at the bigger and broader picture that takes into consideration more than just local communities - but what is in the best interests of the whole. A decision made locally isn't simply a community decision, but one that will affect Lake Huron, and ultimately all of us.

ORA would be pleased to meet with you to discuss this further.

Thank you for your consideration.

Respectfully,

Linda Heron
Chair, Ontario Rivers Alliance
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Cc: Erica Magee, Administrative Assistant – Maitland@MVCA.on.ca

[7] *June 23, 2017 Flood Event Chronology, Steve Jackson, Maitland Valley Conservation Authority.*