



**ONTARIO
RIVERS
ALLIANCE**

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Environment and Climate Change Canada
4905 Dufferin Street, 2S4Z3
Toronto, Ontario
M3H 5T4

By email to: ec.water-eau.ec@canada.ca

Re: Canada Water Agency – Discussion Paper

Dear Sirs:

The Ontario Rivers Alliance (ORA) is a not-for-profit grassroots organization with a mission to protect, conserve, and restore riverine ecosystems.

The ORA is pleased to comment on the proposal set out in the Discussion Paper, which would establish a Canada Water Agency to work with the provinces, territories, Indigenous communities, local authorities, scientists and others to find effective ways to keep our water safe, clean and well managed.

The ORA supports all of the freshwater objectives as set out in the proposed Canada Water Agency Discussion Paper; however, we feel it will be necessary to ensure effective management and protection of freshwater resources and ecosystems through the legislative process.

ORA supports objectives that involve clean, healthy, safe and sustainable freshwater management. Our lakes and rivers flow across many borders, including municipal, regional, provincial and country-wide borders. Therefore, it is necessary to consider a Canada Water Agency that uses an integrated watershed and basin approach in its core mission and mandate, acting as an oversight agency.

All levels of government must cooperate and coordinate to ensure local and regional freshwater environmental issues are addressed. All levels of government are in service to its citizens, and a healthy and sustainable environment is in their best interests.

The federal government should take on an oversight capacity and bridge the gaps to ensure that important environmental initiatives can move forward, and to provide funding for organizations and municipalities that are working to protect, conserve and restore freshwater resources.

“Healthy Rivers – Healthy Communities”



Unfortunately, time commitments were too great to allow for substantial comments; however, please consider our recommendations as follows:

Conservation Authorities:

Ontario has had a long history with Conservation Authorities (CAs), which have been operating in the province since the 1940s. Since then, CAs have worked to protect Ontario's natural resources from contamination, degradation and depletion through an integrated watershed approach. They are responsible for source water protection, flood management, climate change initiatives, watershed stewardship, assisting and encouraging local environmental initiatives, and for certain development authorizations under the provincial Conservation Authorities Act.

However, each municipal and provincial election often brings in a different government, and in Ontario's current regime, CAs have lost more and more of their capacity, autonomy and authority. The CAs provide a multitude of excellent services to the public, especially flood management and source water quality monitoring, and yet their services are at great risk. CAs rely on municipal and provincial funding; and therefore, cannot always make objective decisions when the same municipalities and provincial governments that provide their funding want to see increased development. It is a major conflict, and the provincial government recently took their authority away by providing themselves with the authority to override decisions made by the CAs.

A Canada Water Agency would do a great public service if it duplicated the full scope of the Ontario CA model throughout all its developed regions across Canada and provided the necessary funding to manage our freshwater, source water protection, flood management, wetlands and climate change mitigation.

Wastewater Treatment:

During heavy rain events, many older wastewater treatment plants in Ontario bypass partially treated and untreated sewage into receiving streams in order to protect wastewater infrastructure and homeowners' basements. All wastewater treatment plants in Ontario discharge effluent into freshwater creeks and rivers, so this is a huge problem that contributes to water quality degradation in our lakes and rivers, and ultimately in the Great Lakes.

Untreated and under treated sewage contains many contaminants that could be harmful to humans and the environment. Many families draw their drinking water from the river for their household use, and the receiving streams are also used for recreational activities such as swimming. It is therefore important that the public is informed when it is not safe to swim downstream of these wastewater facilities.

Currently, there are only two municipalities/Cities in all of Ontario that notify the public with a Sewage Bypass Alerts (Alerts) in real time when a sewage bypass occurs, or effluent has not



gone through the full treatment process. An email is immediately issued to all those who have registered to receive the Alerts, and they are again notified when the bypass ends.

The following Cities have adopted the Alert system and also provide public access on their websites to their monthly and annual reports, as well as bypass and overflow details.

- City of Kingston – [Map & Historical Overflow Log & Annual Report](#)
- City of Sudbury – [Register to Receive Sewage Alerts](#) * [Monthly Sewage Bypass Reporting and Annual Reports](#).

Many municipalities do not make any wastewater information available to the public and a Freedom of Information Application is required to gain access. However, public health risks are at stake when partially treated and untreated sewage is discharged into the receiving stream. This transparency has also drawn more attention to the bypass issues which encourages municipalities to repair, upgrade and improve their wastewater systems.

The ORA is recommending that the Canada Water Agency adopt this Ontario model where these Sewage Bypass Alerts are emailed to registered participants in real-time as bypass events are happening and are notified again when the bypass ends.

Hydroelectric Development:

The ORA would like to take this opportunity to address hydroelectric infrastructure that should not be considered renewable and/or emission free power generation. We would like to point out that greenhouse gas emissions (GHG) resulting from the operation of hydroelectric facilities must be acknowledged and considered as an environmental impact. The Canada Water Agency could spearhead this initiative to ensure that GHG emissions are effectively assessed and accounted for when sediment builds up behind a dam and when headponds are used to produce power during peak demand hours.

Many hydroelectric proponents and governments like to claim hydroelectric produces “emission free” power generation and like to link to “*readily available research from Hydro Quebec on reservoirs and greenhouse gas emissions*”. However, the lead scientist in all of their studies is [Alain Tremblay, PhD., Environmental Sciences, Hydro Quebec](#). Their studies are highly suspect when a corporation uses their own in-house scientists rather than relying on independent arms-length scientists.

For instance, Ontario Power Generation (OPG) recently reported that “*the generation of hydroelectric power is a sustainable source of power that does not produce greenhouse gases and therefore is an important component of Ontario’s climate change plan”¹. Even Hydro Quebec doesn’t claim that hydroelectric does not produce any greenhouse gases. Their bogus claim is that “*net GHG emissions from Québec hydropower are significantly lower than electricity generation from natural gas and coal, and are on par with wind*”².*

ORA submits that Hydro Quebec’s studies are biased in favour of its own profit-based self-interests. As you well know, the “emission free” label is used to great benefit as a sales pitch for



waterpower producers. As a matter of fact, OPG claimed that one of the payoffs were the “potential CO₂ emission credits in the future Canadian carbon market”, and another is the sale of “low GHG emissions”³ power to other jurisdictions.

Contrary to these claims, there are a multitude of independent studies indicating that when sediment builds up behind a dam it releases net emissions of carbon dioxide and methane into the atmosphere for decades and possibly centuries following flooding.^{4,5}

In contrast to the widespread assumption (e.g., in Intergovernmental Panel on Climate Change scenarios) that GHGs emitted from reservoirs are negligible, measurements made in boreal and tropical regions indicate they can be substantial^{6,7,8}

“Methane is a potent greenhouse gas with a heat trapping capacity 34 times greater than that of carbon dioxide on a 100 year time scale.⁹ Methane is generated in reservoirs from bacteria living in oxygen-starved environments. “These microbes eat organic carbon from plants for energy, just like people and other animals, but instead of breathing out carbon dioxide, they breathe out methane.”¹⁰

The assessment of GHG emissions produced from new and older hydroelectric reservoirs is complex and variable, depending on the amount of upstream erosion, wastewater effluent, agriculture run-off, depth of the reservoir, amount of sediment build-up behind the dam, and the cumulative effects of all these combined influences.

River networks with high nutrient and sediment loading from erosion, agricultural or wastewater effluent, or hard shorelines in residential/industrial/commercial development areas, provides microbial communities with a large source of carbon that can deplete oxygen and fuel methane production. Algal blooms from excessive nutrient loading can further enrich reservoir sediments.¹¹

“With the “green” reputation of large hydroelectric dams already in question, scientists are reporting that millions of smaller dams on rivers around the world make an important contribution to the greenhouse gases linked to global climate change. Their study, showing that more methane than previously believed bubbles out of the water behind small dams...”¹² For instance,

With smaller dams storage becomes increasingly important. Reservoirs silting up or becoming overloaded with nutrients are common problems with major reservoirs and could be at least as serious where shallower bodies of water are created – the shallower a water body, the more easily eutrophic it can become. Likewise, methane generation occurs largely where water and sediment meet, and this means that a shallower water body is likely to release more methane [CH₄] per unit area than a deeper water body. Shallow reservoirs are not unlike paddy fields which are known to contribute substantially to methane emissions...¹³

Clearly dams and waterpower reservoirs (small and large) contribute to world GHG emissions and these emissions must be carefully assessed and reported in a transparent and authentic attempt to address climate change.

Additionally, hydroelectric power generation has resulted in significant and ongoing impacts to fish and wildlife populations and habitat, to ecological processes, and to aboriginal communities.¹⁴ Smaller hydroelectric projects on smaller and more sensitive streams can have even more damaging impacts than larger projects on larger streams. ORA submits that one of the most significant reasons for the decline in many iconic species of fish in Ontario is the almost total lack



of fish passage at hydroelectric facilities. There are currently only three hydroelectric dams out of a total of 224 in Ontario that have installed fish passage.

Furthermore, facilities that use headponds, impoundments, diversions, or cycling and peaking operations, can be particularly harmful to the environment. These types of projects can harm the environment for many kilometers both upstream and downstream of the dam.

Additionally, multiple cascading units on a single river, with interconnecting impoundments can compound the impacts across a catchment and beyond. These cumulative effects can include serious turbine mortalities¹⁵, exacerbation of water quality and water quantity impacts, as well as severe fragmentation of aquatic and terrestrial habitats, due to the associated construction and mere presence of infrastructure (generating stations, hydro corridors and access roads). Many of these effects are ongoing, and at times accumulating in their effects for the life of the facility and may be irreversible.^{16,17}

The cumulative impacts of multiple waterpower facilities must be assessed at the appropriate regional scale¹⁸. Cumulative effects assessment at the individual project scale frequently addresses the wrong perspective in time and space.¹⁹ "*The accumulated effects of multiple small-scale waterpower operations could amount to similar overall environmental degradation per unit of electricity generated as is caused by larger projects.*"²⁰ In fact the cumulative impacts of many small projects can be even larger, depending on the circumstance.^{21,22}

The Canada Water Agency should ensure that the GHG emissions from hydroelectric facilities are effectively assessed and accounted for.

Thank you for this opportunity to comment.

Respectfully,

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Chair, Ontario Rivers Alliance
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¹ *Proposed Calabogie Generating Station Redevelopment Project, Environmental Report, 4.7.4 Climate Change Impacts (Mitigation Of) – Greenhouse Gas Reduction. P-4-70.*

² *Understanding Quebec Hydropower, Among the Lowest Greenhouse Gas Emissions of all Electricity Generation Options.*

³ *Hydro Quebec, Sustainable Development, Greenhouse gas emissions and reservoirs.*

⁴ *Venkiteswaran, J.J., Schiff, S.L., St. Louis, V.L., Matthews, C.J.D., Boudreau, N.M., Joyce, E.M., Beaty, K.G., and Bodaly, R.A. (2013), Processes affecting greenhouse gas production in experimental boreal reservoirs, Global Biogeochem. Cycles, 27, doi:10.1002/gbc.20046*

⁵ *Maeck, A., DelSontro, T., McGinnis, D.F., Fischer, H., Flury, S., Schmidt, M., Fietzek, P. and Lorke, A., 2013. Sediment Trapping by Dams Creates Methane Emission Hot Spots, Environmental Science and Technology, 8130-8137, Online: <http://www.dx.doi.org/10.1021/es4003907>*

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- ⁸ Environment Canada. 2004. *Threats to Water Availability in Canada. National Water Research Institute, Burlington, Ontario. NWRI Scientific Assessment Report Series No. 3 and ACSD Science Assessment Series No. 1. 128 p.*
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- ¹² Phys.org. Sediment trapped behind dams makes them 'hot spots' for greenhouse gas emissions. July 31, 2013. Online : <http://phys.org/news/2013-07-sediment-hot-greenhouse-gas-emissions.html>
- ¹³ Abbasi, T. and Abbasi, S.A. 2011b. Small hydro could add up to big damage. *SciDev.Net* 20/06/11. Online: <http://www.scidev.net/global/water/opinion/small-hydro-could-add-up-to-big-damage-1.html>
- ¹⁴ PEW Environment Group. 2011. A Forest of Blue: Canada's Boreal. Online: <http://www.pewtrusts.org/~media/legacy/uploadedfiles/peg/publications/report/PEGBorealWaterReport11March2011.pdf.pdf>
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