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Sharifa Wyndham-Nguyen
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By email to: eamodernization.mecp@ontario.ca

Re: ERO-019-2377 – Proposed Comprehensive Project List
Under the Environmental Assessment Act

Dear Ms. Wyndham-Nguyen:

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

The Ministry of Environment, Conservation and Parks (MECP) is proposing a Comprehensive Project List that will be subject to the comprehensive environmental assessment requirements in Part II.3 of the Environmental Assessment Act (EAA) and to be designated in regulation as Part II.3 projects. The MECP is also expressing their intent for a Streamlined EA Project List that will be developed in the future as they transition away from Class EA and exemption regulations.

The ORA objects to the way in which the EAA has been gutted and is now being reconstructed in such a piece-meal, vague and opaque manner. The proposed Comprehensive Project List (CPL) and the Streamlined Project List (SPL) should have been placed on the registry for comment at the same time. The ERO posting suggests that "*Since the introduction of the EAA in 1975, there has been a need to exempt many types of projects simply because an EA was required when it was not warranted*". It boggles the mind to think of what projects were "*not warranted*". These EAA amendments are literally throwing out the baby with the bathwater and are only designed for the expediency of unfettered development. If the true "*vision for a project list that focuses on potential environmental impact*" and is "*intended to focus environmental assessment requirements and environmental oversight on high (comprehensive) and medium impact (streamlined) projects*", then the project list will be extensive and include all proposed projects that could pose any risk to the environment or communities.

The entire proposal relies on the Ministry's "experience" in selecting the projects to be included in the Comprehensive Project List, instead of science and evidence-based justifications. The proposal informs that once the project list regulation is made, the government could make specific projects subject to the EAA requirements if they are not included in the project list or have been exempted. This method is hit and miss and lacks assurance for stakeholders and proponents of the process. This also means that many environmentally harmful projects could go unassessed and contribute to significant cumulative environmental damage.

ORA submits that project lists and any decisions regarding project lists must be based on science and evidence-based criteria, not on arbitrary, random, or convenient whims.

This proposed CPL falls far short of a "comprehensive" list of projects that could pose a risk to the environment and the public. This entire proposal is irresponsible and unacceptable and must be withdrawn.

Notwithstanding ORA's position on the EAA amendments and the CPL as noted above, we offer the following for the types of environmentally significant projects that should be contained in a science and evidence-based project list.

Small, Medium and Large Hydroelectric Facilities:

The proposed CPL, under Section 3, addresses "*A new hydroelectric facility with a capacity greater than or equal to 200 Megawatts [MW]*" and under Section 5, "*Significant modifications to electricity projects* – Any expansion of or change in a generation facility… or any *significant modifications in a generation facility…*".

While the effects of large hydro projects (200 MW) have been well known and documented for over a century, small (up to 10 MW) and medium sized (10 MW to 200 MW) hydroelectric projects involve many of the same impacts per unit of power generated[1] and, cumulatively, the environmental degradation can exceed that of large hydro projects.[2,3,4] Small and medium sized hydro projects are situated on smaller and often more sensitive riverine ecosystems; however, like large hydro projects, will also alter the river's flow regime and can have significant impacts on the aquatic environment, as flow is a major determinant of a river's ecological characteristics and its aquatic biodiversity[5,6].

Reductions in flow caused by small and medium sized hydroelectric projects can transform river ecosystems across wide geographic ranges[7] and result in a number of changes to river hydrology, including flow velocity, sediment transport, turbidity, bed and bank stability, wetted width and water depth, and temperature.[8,9,10] Changes in hydrology can significantly alter habitat for fish and other species, at times resulting in elimination or significant reduction in aquatic populations, and to changes in aquatic community composition.[11] Many riverine fish and invertebrate species have a limited range of conditions to which they are adapted. The relatively recent pattern of daily fluctuations in flow and water levels often associated with small and large hydro is not one to which many species are adapted; and such conditions can reduce the abundance, diversity, and productivity of many riverine organisms.[12]

A recent study examined scaled hydropower impacts in the Nu River basin of southwestern China, where the researchers calculated impact per MW of capacity across 14 metrics between small and large hydropower projects (with small being below 50 MW as defined in Chinese policy). **They found that small hydropower dams had greater impact per MW for 9 of the 14 metrics, including length of river channel affected and impact on habitat designated as conservation priorities**.[13]

Greenhouse Gas Emissions and Methylmercury:

Most waterpower facilities on smaller rivers in Ontario today use cycling and/or peaking strategies to maximize power generation during peak demand hours to earn substantial bonuses. To maximize power generation, waterpower facilities will create a reservoir or headpond (impoundment) above the dam to increase the head and provide water storage. Even with small waterpower projects, the headpond can flood many hectares of land, including wetlands, extend for several kilometers upstream, and impact many more kilometers of downstream riverine ecosystem.

Dams and associated hydroelectric facilities harm the environment[14] and when headponds or reservoirs are flooded, can produce carbon dioxide and methane for decades, and possibly for centuries.[15,16] *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 [17,18]*.[19]

The effect of damming on methane emissions conducted in a central European impounded river revealed that reservoir reaches are a major source of methane emissions and that areal emission rates far exceed previous estimates for temperate reservoirs or rivers. It showed that sediment accumulation correlates with methane production and subsequent ebullitive release rates. Results suggested that sedimentation-driven methane emissions from dammed river hot spot sites can potentially increase global freshwater emissions by up to 7%.[20]

Clearly dam and waterpower reservoirs (small and large) can contribute to world GHG emissions and these emissions must be carefully considered in attempts to address climate change, in the development of carbon pricing actions, and in the proposed CPL.

The ELARP study, on Lake 979 and the surrounding wetland system, demonstrated dramatic increases of 10 to 20 times, in both methylmercury and GHGs (carbon dioxide and methane) in response to flooding of wetland vegetation. Clearly, the microbial breakdown of dead plants and organic soils resulted in the methylation of mercury already present in the system, and the production of significant quantities of carbon dioxide and methane. [21,22]

The ultimate concentration of mercury in aquatic organisms within newly inundated environments depends on a number of factors including the biological and chemical characteristics of the water body and sediment-water interface, including pH, dissolved oxygen, oxidation-redox potential, sulphate concentrations, all of which affect the potential for and rate of bacterial decomposition and methylmercury generation and transfer from sediments to the overlying water. In fact, research suggests there is a complex relationship among various factors such as availability of organic material to stimulate methylation, concentration of mercury in the system, anoxic conditions to allow methylation to occur, the portion of watershed and food chain affected by new inundation and the ongoing flushing and attrition of methylated mercury from the system.[23]

Methylmercury contamination of fish tissue poses a serious risk to Indigenous communities, and all those who rely on fish as a main staple in their diet. Some fish contain mercury at high enough levels to threaten public health and safety, and must be considered in the proposed CPL.

Fisheries and Cumulative Impacts:

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 mortalities to fish[24], 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.[25,26]

For example, the Ottawa River watershed supports 50 waterpower facilities. The individual environmental effects of these facilities have not been effectively identified and mitigated, let alone their cumulative effects; nor has there been any meaningful attempt to do so. However, there have been some relatively recent examinations of the cumulative effects of some Ottawa River waterpower facilities on mortality of downstream migrating eels.[27,28], as well as the effects of water regulation in the Ottawa River on Lake Sturgeon and other large bodied fish communities.[29,30,31] Adding more facilities to this watershed would make little sense without effective mitigation of existing effects.[32,33]

The cumulative impacts of multiple waterpower facilities must be assessed at the appropriate regional scale[34]. Cumulative effects assessment at the individual project scale frequently addresses the wrong perspective in time and space.[35] "*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.*"[36] In fact the cumulative impacts of many small projects can be even larger, depending on the circumstance.[37,38]

Consequently, the size of the project should not be the determining criteria but, instead, a regional scale cumulative approach should be used when fish will be killed, or habitat destroyed.

Hydroelectric power generation has resulted in significant and ongoing impacts to fish and wildlife populations and habitat, to ecological processes, and to aboriginal communities.[39]

Ontario fisheries are a valuable, but ecologically sensitive resource that contributes substantially to Ontario's economy, with recreational and commercial fishing valued at more than $2.5 billion. This includes:

- 41,000 person years of employment;
- more than 1.2 million residents and non-resident anglers, who contribute $2.2 billion annually to the Ontario economy;
- a driving force for Ontario's tourism industry and a key economic component in many communities, particularly in Northern Ontario with 1600 licensed tourist operators generating hundreds of millions of dollars in revenues annually;
- more than 500 active commercial fishing licenses, contributing more than $230 million dollars to the Ontario economy; and
- 1200 commercial bait fishing licenses issued annually, with $17 million in direct sales of live bait.[40]

Upgrades or modifications to hydroelectric facilities can mean an increase in installed capacity, an increase in headpond size, and the construction in and of itself can have negative environmental impacts on the riverine ecosystem.

Hydroelectric proponents tout the fact that their facilities are projected to last up to 100 years, and in the long run are worth the huge up-front investment. However, this only confirms the long-term duration of negative environmental effects of hydroelectric on water quality, water quantity and Ontario's fisheries.

Therefore, it is crucial that this government recognize the massive ecosystem benefits and job creation contributions that healthy rivers bring to the Ontario economy. If we do not protect these important social and economic values, it is the citizens of this province, and our future generations, who will suffer from decisions made today.

The Comprehensive Project List criteria for significant environmental impacts includes the magnitude, geographic extent, duration, frequency, degree of reversibility and the possibility of occurrence of the effect. It is evident from the information ORA has provided, that <u>small, medium</u>

and large hydroelectric projects meet the required criteria to be included in the Comprehensive Project List.

Mining:

The heavy metal contamination settled into the river ecosystems in the Sudbury area is a strong testament for the need for mining projects to undergo rigorous environmental assessments. Mining has contributed to some of the worst toxic heavy metal contamination impacting on Ontario riverine ecosystems than any other industry. Therefore, it is crucial that the mining industry be required to undertake an environmental assessment for all new or expanded mining projects, and must appear on the EAA CPL.

Identified Factors:

It is also important that the Ministry's "identified factors" specifically include climate change and toxics such as heavy metals, herbicide and pesticide contamination in their considerations.

ORA Recommendations:

1. Given the very site-specific nature of hydroelectric, its significant serious and ongoing environmental impacts over wide geographic ranges, its long duration, frequency and degree of reversibility and occurrence of the impacts, that all (small, medium and large) new and upgraded hydroelectric projects incorporating dams, turbines, reservoirs, diversions and peaking or cycling operating strategies, must be included in the Comprehensive Projects List.

2. All proposed projects that could harm the environment, especially all forms of mining, must go through the environmental assessment process and included in the Comprehensive Project List.

3. Climate change and toxics be included as "identified factors" of the CPL.

The ORA also fully supports the Canadian Environmental Law Association's submission regarding the proposed "Comprehensive Project List".

Thank you for this opportunity to comment!

Respectfully,

L. Heron

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Cc: Jeff Yurek, Minister of Environment, Conservation and Parks – Minister.MECP@Ontario.ca

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