



FRESHWATER RESOURCES: PROTECTION RANGING FROM INVASIVE SPECIES TO TOXIC POLLUTANTS

Canada's fresh waters contribute extensively to the social, ecological and economic well-being of our country and are a tremendous resource on a global scale.

Canadians recognize freshwater is Canada's most important natural resource, as shown in a recent 2016 RBC Canadian Water Attitudes study.⁶⁵ In celebration of Canada's 150th birthday, the Green Budget Coalition recommends that the Government of Canada strengthen its commitment to improving and protecting the nation's freshwater resources by investing in a national **Canada Water Fund**. Such a commitment will strengthen the national framework to achieve long-term watershed health, support and lead in the area of world class science, strengthen capacity and partnerships, and address significant watershed-scale challenges.

The Green Budget Coalition recommends that the Canada Water Fund invest in:

1. Long-term watershed health:
 - ♦ Alleviating land based run-off of pollutants and nutrients through the creation of a national, partnership-based nutrient reduction stewardship strategy, with a focus on inter-jurisdictional watersheds, with Environment and Climate Canada and the agricultural industry: *\$100 million per year for five years, matched by government and non-government partners.*
 - ♦ Continuing implementation of the Great Lakes Water Quality Protocol with an emphasis on addressing remaining Canadian Areas of Concern and ongoing threats from chemicals of mutual concern:⁶⁶ *\$60 million per year for five years to implement the GLWQP*
 - ♦ Enhancing measures to control and eliminate aquatic invasive species: *\$25 million per year for five years;*
2. Building a World Class Freshwater Monitoring Framework - ensuring a national water quality and quantity monitoring framework that is data sufficient, accessible and comprehensible: *\$40 million per year over five years*^{67,68}

Total Recommended Investment:

Canada Water Fund: \$225 million per year for five years

Background and Rationale

Canada's natural fresh-water systems are priceless and irreplaceable, yet we continue to see troubling deterioration of this resource. Some of the key problems associated with our freshwater resources in Canada include: pollution and issues of water quality, eutrophication, invasive species, and issues of decreased water supply and quantity without a comprehensive understanding of cumulative impacts or national

understanding of water resources. These result from a variety of human and non-human impacts. For example, a lack of strong and effective watershed management policies and legislation, particularly with respect to habitat loss and other detrimental land use management practices, are major drivers of water quality degradation which must be addressed. Unregulated land conversion, including wetland drainage and deforestation are exacerbating threats to human health, such as algal blooms on some of our largest lakes and rivers.

65 2016 RBC Canadian Water Attitudes Study. http://www.rbc.com/community-sustainability/_assets-custom/pdf/CWAS-2016-report.pdf

66 The three "remaining" Areas of Concern, those that are solely Canadian responsibility and have not yet been allocated sufficient funding to remediate them, are Toronto, Port Hope, and Thunder Bay.

67 Canadian Centre for Policy Alternatives, 2014. Striking a Better Balance: Alternative Federal Budget 2014.

<http://canadians.org/sites/default/files/publications/AFB2014-water.pdf>

68 Canadian Centre for Policy Alternatives, 2014. Striking a Better Balance: Alternative Federal Budget 2014.

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The current trend of increasing pollutants and toxins in our freshwater systems must be reversed. According to the Commission of Environmental Cooperation, the volume of released pollution from Canadian-based facilities to on-site surface water was 127,432,798.33 kg in 2013⁶⁹ – a nearly 7% increase since 2009.⁷⁰

Long term investments to protect and restore Canada's freshwater resources benefit Canadians in many ways, including improved drinking water quality, healthier and more sustainable fisheries, and enhanced economic sustainability of freshwater-dependent recreation based industries. Agricultural and other businesses will benefit from assistance in managing pollution impacts on waterways from their operations.

Further details are provided below.

1. Long-term watershed health

1a. Alleviating land based run-off of pollutants and nutrients

Land based run-off of pollutants and nutrients have a severely detrimental impact on many waters that are under federal jurisdiction or impacted by federal decision-making and institutions. Examples of these include nutrient (both phosphorous and nitrogen) run-off with resulting eutrophication and ecosystem health impacts in the Great Lakes; Lake Winnipeg; Lake Diefenbaker (Saskatchewan); Lake St. Augustin (Quebec);⁷¹ Lac la Biche (Alberta);⁷² Tabor Lake (BC);⁷³ lakes in the Carleton and Meteghan River watersheds in Nova Scotia, and others. Other types of pollutants, such as pesticide run-off, as well as deposition of toxic contaminants in lakes from air emissions, also adversely affect aquatic ecosystem health.

In recent years, the federal government has committed some funds to addressing the on-going threats from nutrients and land-based pollution runoff to several key freshwater resources in Canada, including a \$29 million investment in the Lake Simcoe/Southeastern Georgian Bay Clean-up Fund, and \$37 million invested in the Lake Winnipeg Initiative to address water quality as well as nutrients loading in Lake Winnipeg. Unless renewed,

69 Commission on Environmental Cooperation (CEC), 2016, Taking Stock Online. <http://takingstock.cec.org/Report?AgencyIDs=1&Culture=en-US&IndustryLevel=3&Measure=3&MediaTypes=41&ReportType=4&ResultType=1&WatershedLevel=4&Years=2013,2012,2011,2010,2009>

70 CEC, 2016, Taking Stock Online. Ibid.

71 Trophic Status Evaluation for 154 Lakes in Quebec, Canada: Monitoring and Recommendations, Rosa Galvez-Cloutier and Michelle Sanchez, Water Qual. Res. J. Canada, 2007 · Volume 42, No. 4, 252-268.

72 Natural Resources Canada, 2008, The cultural eutrophication of Lac la Biche, Alberta, Canada: a paleoecological study D.W. Schindler, Alexander P. Wolfe, Rolf Vinebrooke, Angela Crowe, Jules M. Blais, Brenda Miskimmin, Rina Freed, and Bianca Perren. <http://faculty.eas.ualberta.ca/wolfe/eprints/Schindler2008CJFAS-LLB.pdf>

73 Chlorophyll a seasonality in four shallow eutrophic lakes (northern British Columbia, Canada) and the critical roles of internal phosphorus loading and temperature, Todd D. French & Ellen L. Petticrew; *Hydrobiologia* (2007) 575:285–299. http://www.unbc.ca/assets/ellen_petticrew/french_petticrew_hydrob.pdf

these critically important programs will sunset by March 31, 2017.

The federal role in alleviating land based run-off of pollutants and nutrients includes: implementation of international agreements where applicable; facilitating inter-jurisdictional co-operation; conducting research and gathering baseline data; monitoring and analyzing trends; exchanging information; and consulting with and reporting to the public on how these issues are being addressed.

The GBC's proposed Canadian Water Fund would analyze the areas of highest pollutant loading to these fresh waters and assist with implementation of best management practices and other strategies on the landscape to reduce pollutant volumes.⁷⁴

Recommended Investment:

The GBC recommends initial funding to the Clean Water Fund of \$100 million per year for five years, inclusive of continued funding to Lake Winnipeg Basin Initiative of \$18 million per year and continued funding of the Lake Simcoe/South-eastern Georgian Bay Clean-up Fund of \$29 million per year.

1b. Continuing implementation of the Great Lakes Water Quality Protocol

The Great Lakes Water Quality Protocol remains an important agreement for Canada to restore and protect the Great Lakes Basin. The federal government's renewal of funding for essential work to advance efforts on nutrients and land-based run off pollutants is critical. The Green Budget Coalition urges the Government of Canada to re-commit funds necessary to address contaminated sediments in the Canadian Areas of Concern, and the Great Lakes Nutrients Initiative. In addition, the GBC recommends that additional funds be allocated to advance to the promotion of avoidance and informed substitution of Chemicals of Mutual Concern.

The GBC also recommends investing an additional \$60 million per year in Budget 2017 for implementation of the Great Lakes Water Quality Protocol (GLWQP of 2012; which replaced the Great Lakes Water Quality Agreement),⁷⁵ Areas of Concern (AOCs), environmental monitoring, a climate change impact strategy, and continued investment in the Canada-Ontario Agreement (Great Lakes). Canada continues to lag behind the U.S., its partner in the GLWQP, on its annual investment in Great Lakes protection. The Canadian government invests \$48 million CAD per year towards the Great Lakes, while the U.S. committed \$300 million USD per year for five years

74 CCME, June 2010, Review and Identification of Research Needs to Address Key Issues Related to Reactive Nitrogen (RN) Deposition and Eutrophication in a Canadian Context, Prepared for: Acid Rain Task Group Canadian Council of Ministers of the Environment, Prepared by Judi Krzyzanowski, Executive summary available at: http://www.ccme.ca/files/Resources/air/acid_rain/pn_1450_rn_eutrophication_smry_en.pdf

75 For the full text see: <https://www.ec.gc.ca/grandslacs-greatlakes/default.asp?lang=En&n=A1C62826-1>

towards Great Lakes restoration, beginning in 2017.^{76, 77} The GBC recommends that the federal government increase its funding commitment to the Great Lakes program to achieve greater progress in Canada under the Protocol particularly in support of implementation action to address nutrients and pollutants, delisting of remaining AOCs, and setting of lake ecosystem and contaminant targets.

Recommended Investment:

The GBC recommends total investments for the restoration and protection of the Great Lakes of \$60 million per year for five years, including continued investment in the Great Lakes Nutrients Initiative of \$16 million per year.

1c. Aquatic invasive species

Aquatic invasive species are among the most critical threats facing Canada's water systems. Their impacts include declining water quality from increased turbidity, increased concentration of toxic substances in the water system, and changes in the nutrient and energy flows of a particular food web. These changes may have dramatic economic implications for the commercial, agricultural, aqua-cultural, and recreational industries that rely on freshwater resources.

Today, there are approximately 180 invasive and non-native species that have entered the Great Lakes region alone.⁷⁸ Current estimates indicate that the economic impact from invasive species in the Great Lakes range from \$13 billion to \$35 billion. The GBC recommends an increase in federal funding to advance research, monitoring, coordination, and enhanced border protection to combat aquatic invasive species, directed toward the following purposes:

- Research – Funding to continue developing and testing methods of catching, destroying and controlling unwanted fish and other aquatic invasive species.
- Monitoring – Expanding water sampling areas in the Great Lakes and other likely invasion spots
- Coordination – Prioritizing action on aquatic invasive species where the federal and provincial governments' responsibilities and commitments related to the control and management of invasive species in the Great Lakes are well articulated.
- Enhancing border protection – Providing additional training and education for Canadian Border Services Agency staff to identify

⁷⁶ H.R.223 - Great Lakes Restoration Initiative Act of 2016-114th Congress (2015-2016), 2016. <https://www.congress.gov/congressional-record/2016/04/26/house-section/article/H1954-1>

⁷⁷ Environment and Climate Change Canada, 2016, Cleaning Up the Great Lakes. http://www.ec.gc.ca/doc/eau-water/grandslacs-greatlakes_e.htm

⁷⁸ National Oceanic and Atmospheric Administration, Great Lakes Region: Invasive Species. http://www.regions.noaa.gov/great-lakes/index.php/great_lakes-restoration-initiative/invasive-species/

aquatic invasive species, ensuring the strong enforcement of existing laws and regulations)

In 2012, the federal government committed up to \$17.5 million over five years to prevent the introduction and establishment of Asian carp in the Great Lakes. This funding, scheduled to sunset at the end of the current fiscal year, should be renewed and expanded to deal with a broader range of invasive species. Given the level of threat posed by invasive species, Canada should increase its commitment after March 31 2017 to \$25 million per year for five years.

**Recommended Investment:
\$25 million per year for five years.**

2. Building a World Class Freshwater Monitoring Framework

Ensuring long-term watershed health can only be accomplished in conjunction with a strong national freshwater monitoring framework that is both available and accessible to all sectors of society including academia, the public, and the non-governmental agencies working on freshwater issues. However, for far too many watersheds, basic water quality information is filed away in the proprietary reports of corporations or at understaffed non-profit organizations, rendering it inaccessible. In other cases, this critical information may not have been collected in the first place.

Water quality is also deteriorating. WWF-Canada is creating the first national assessment of the health to Canada's waters and the threats they are facing. While nine of the nineteen watersheds already assessed score "fair" or lower, none of the watersheds have "good" water quality. The other ten watersheds assessed to date are data-deficient for water quality. Data is particularly lacking for water quality and benthic invertebrate monitoring systems largely managed by Environment and Climate Change Canada.

The GBC recommends:

- Providing dedicated, long-term monitoring funding for data openness and accessibility, to ensure that availability challenges are resolved, and to reduce the loss of data over time due to programs being disrupted or discontinued.
- Further standardizing data collection and reporting (especially at the local level) via hubs, and mitigating hurdles to allow for greater local-regional-national data integration and comparison
- Extending coverage of monitoring stations to historically underrepresented, and in some cases high-risk, areas (e.g. Saskatchewan, Nunavut, Northern Ontario, Northern Quebec); and
- Facilitating information sharing between data collection staff and watershed monitoring staff.

**Recommended Investment:
\$40 million per year over five years**

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