Conservation Ontario's Response to *Climate Ready: Ontario's Adaptation Strategy and Action Plan*

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Conservation Ontario is the network of 36 Conservation Authorities, local watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations. Organized on a watershed basis, Conservation Authorities promote an integrated watershed approach balancing human, environmental and economic needs.

As leaders in environmental protection in Ontario, Conservation Authorities applaud and support the Province's recently released report *Climate Ready: Ontario's Adaptation Strategy and Action Plan (2011).* Conservation Authorities have long recognized the importance of climate change adaptation and many Conservation Authorities are already working to understand the potential impacts of a changing climate on water and land resources in order to develop adaptation plans to address those impacts.

One of the major implications of climate change made clear by Ontario's Adaptation Strategy and Action Plan is the diverse range of potential impacts on Ontario's water resources. There are aspects of water management included in all of the Strategy's five goals and many of the proposed Actions touch on water management issues. Rising temperatures and changing precipitation patterns in Ontario have already reduced river flows, warmed surface waters and impacted wetlands. These impacts will likely continue, and other threats to environmental and public health are expected to materialize including increased flooding and reduced quantity and quality of drinking water.

Managing impacts on water, water infrastructure and water related natural features as we adapt to a changing climate will be a significant challenge for everyone. Traditionally, water and environmental policies and programs have been developed for specific features or activities. However, the complexity and scope of the water and environmental management response required today needs a different approach.

Conservation Authorities support the important principles outlined in the Province's Strategy. We agree that it is critical to incorporate climate change adaptation into existing government policies and programs, prioritizing actions that have co-benefits between mitigation and adaptation. As well, given the uncertainty that surrounds climate change impacts, we need to utilize the best available science, in order to facilitate informed decision-making. Enabling ongoing sustainability of Ontario's environment will ensure the health and safety of current and future residents of Ontario.

While there are many areas within the Strategy where Conservation Authorities can support action in local watersheds, the priorities identified by Conservation Ontario include:

- Promote greater collaboration for climate change adaptation through an Integrated Watershed Management approach
- Enhance science and monitoring in order to track local impacts of climate change and support local watershed adaptation strategies;
- Improve ability to protect Ontario from flood hazards through updated mapping and review of flood forecasting systems and flood control infrastructure
- Review of natural hazard technical guidelines in support of CA land use planning responsibilities and associated regulatory tools under the Conservation Authorities Act
- Early review of the Ontario Low Water Response Program
- Build local ecosystem resilience through continued investments and partnerships around biodiversity and the Great Lakes shoreline;
- Closer collaboration between Conservation Ontario and the Province through the proposed Climate Change Directorate.

A Watershed Management Approach to Climate Change Adaptation

Conservation Ontario promotes an Integrated Watershed Management (IWM) approach as a logical means to organize and coordinate the work of the various Ministries and agencies that will be involved in adapting to our changing climate. There are many inter-relationships between the proposed actions and rather than addressing these individually there is an opportunity to develop a coordinated response that would treat these as an integrated set.

Integrated watershed management is the process of managing human activities and natural resources in an area defined by watershed boundaries. This approach allows us to address multiple issues and objectives; and enables us to plan within a very complex and uncertain environment.

As Ontario's watershed management agencies, Conservation Authorities have been leading the development and implementation of watershed plans for many years. In 2010, Conservation Ontario completed an investigation into the current status of Integrated Watershed Management in Ontario today and its potential as a coordinated approach to the management of water and related resources. This project was done in partnership with the Ministry of Natural Resources (MNR), Ministry of the Environment (MOE) and the federal Department of Fisheries and Oceans (DFO). The final report, *Integrated Watershed Management: Navigating Ontario's Future* (www.iwmontario.ca) provides a number of recommendations to facilitate implementation of a more enhanced approach to integrated watershed planning across Ontario.

In recent years Ontario has developed significant experience in applying IWM to water management issues. The Clean Water Act, although specific to protecting municipal drinking water sources, is based on a multi-stakeholder watershed approach. Although still in progress, its watershed-based multi-stakeholder decision making process is proving to be very successful. As well, the Lake Simcoe Watershed Plan is also an example of using an IWM approach for water management. Climate change adaptation is a logical extension of these initiatives. Watershed adaptation strategies using watershed scale information and local collaborative decision making will be critical to successful adaptation and Conservation Ontario supports the development of the Lake Simcoe Adaptation Strategy as a potential model for adaptation planning.

Conservation Ontario recommends that the Climate Change Adaptation Directorate adopt an integrated watershed management approach as the most viable process for coordinating the water management response to climate change.

Conservation Authority Roles in Climate Change Adaptation

By virtue of their existing responsibilities and experience, Conservation Authorities are an obvious partner to support the implementation of the provincial Strategy's water related actions, and are ready to work with the Province to address these challenges.

Conservation Authorities have a long history of working in partnership with provincial ministries, municipalities and many other stakeholders to manage Ontario's water resources. This includes initiatives such as long standing roles in watershed management, protecting the public from flood hazards and mitigating the impacts of drought. More recently Conservation Authorities have been the Province's key partners in the implementation of the Clean Water Act to protect Ontario's sources of drinking water.

The following are areas where Conservation Ontario and Conservation Authorities can provide specific support to Ontario's Adaptation Strategy.

Science and Monitoring

Conservation Ontario supports enhanced monitoring and modeling to inform adaptation initiatives and will continue to partner with the Province in water and environmental data collection. Enhanced science and information will be the foundation of effective climate change adaptation initiatives. The uncertainties around how Ontario's natural systems will respond to a changing climate require an adaptive approach to future programs and initiatives. Robust environmental monitoring as well as local understanding and modeling of both the changing climate and the environmental response are critical to an adaptive approach.

Through decades of watershed studies and data collection, enabled through a variety of federal, provincial and municipal partnerships, Conservation Authorities have amassed a wide range of scientific information and local knowledge that can support climate change adaptation. They have demonstrated their expertise through their leadership and support of the Province's Drinking Water Source Protection Program which is significantly enhancing the watershed knowledge base and is an excellent foundation for adaptation initiatives. Conservation Authorities are also key partners with MOE and MNR in the ongoing collection of the water and environmental monitoring data that will support climate change detection and adaptation. As referenced in the strategy report Conservation Ontario is currently partnering with the Province on a research project to assess the adequacy of the Provincial Water Quality Monitoring Network (PWQMN) and the Provincial Groundwater Monitoring Network (PGMN) for detecting climate change.

As part of this action it is also important to improve both the coordination of monitoring by the various agencies as well as the enhancement of the tools to manage and access monitoring data. The MOE GIS Portal for Conservation Authorities, developed by the MOE Environmental Monitoring Reporting Branch in partnership with Conservation Ontario, is an example of the latter. Monitoring and modeling tools will be the foundation of watershed adaptation strategies.

Flood Management

The incidence of significant flood events in Ontario is escalating. Adapting to increasing flood hazards will be a major challenge and the Province needs to act quickly to ensure that

Ontario's flood management system has the capacity to cope with the changes in flood patterns.

As the lead agencies in the province for flood hazards, Conservation Authorities are already looking into adapting their programs to account for climate change. For example, the Upper Thames Conservation Authority, Toronto and Region Conservation Authority and Grand River Conservation Authority, have partnered with Environment Canada and with Ontario Universities to assess the potential effects of climate change on flooding. Conservation Authorities are involved in a number of intensity duration frequency (IDF) curve initiatives and continue to work with the Province on determining an urban flooding strategy.

Climate change, together with growing populations, increasing property values and aging infrastructure have diminished the capacity of watersheds to cope with storm runoff, exposing growing populations to increased flood risk. Conservation Ontario's 2009 economic analysis, *Protecting People and Property: A Business Case for Investing in Flood Prevention and Control* (www.conservationontario.ca/projects/flood_information.html) shows that Ontario's flood management programs need to significantly improve in order to continue to protect life and property, and to ensure that flood emergencies can be managed effectively now and in the future.

Specific adaptation challenges Conservation Authorities are facing with respect to flooding include:

- Floodplain mapping is the basis of all flood prevention programs. As documented in the Conservation Ontario Report and acknowledged in Ontario's Adaptation Strategy, there is a significant need to update flood risk assessments and floodplain maps. Conservation Ontario urges immediate action by the Province to incorporate climate change into floodplain criteria and to extend and update floodplain mapping coverage.

- Conservation Authorities, in partnership with MNR, operate Ontario's flood forecasting and emergency response system. A number of Conservation Authorities are already reviewing and upgrading their systems in response to changing storm conditions. Conservation Ontario recommends that a provincial program review should also be undertaken.

- Conservation Authorities own and operate $2.7 billion worth of flood control infrastructure including 900 structures which mitigate flood risks to Ontario residents. Some Conservation Authorities, such as the Mississippi Valley Conservation Authority, have already undertaken studies to assess how climate change might change the way they need to operate their reservoirs and water control structures. Identifying the vulnerability of this infrastructure to climate change is a critical first step to the continued effectiveness of these structures.

- Through their role in development review and permitting, Conservation Authorities are actively involved in urban stormwater management. For example, in the Greater Toronto area, they have developed a technical guideline and are working with their municipal partners in implementing Low Impact Development (LID) measures. Conservation Authorities support the action to develop new stormwater management guidance and are ready to assist the Province.

Land use Planning

Conservation Authorities look forward to continued collaboration with the Province in the land use planning process. Conservation Authorities have delegated responsibilities to represent provincial interests regarding natural hazards encompassed by Section 3.1 of the Provincial Policy Statement, and will have significant responsibilities for ensuring planning decisions adapt to climate change. These policies are critical to delivery of an effective flood prevention program in Ontario and keeping vulnerable development out of natural hazards within watersheds and along Great Lakes shorelines. The supporting science-based natural hazard technical guidelines should be reviewed and updated to include tools/direction for ensuring that decisions address climate change. Similarly, the associated regulatory tools under the *Conservation Authorities Act* need to be examined with regard to facilitating adaptation to climate change and require provincial leadership in the science review and policy amendments for consistency.

Low Water Response

Conservation Ontario supports the proposal to review the Ontario Low Water Response Program and urges early action on this review. Conservation Authorities coordinate and support Low Water Response committees and are ready to work with the Province on this review. Increasing demand for water coupled with the potential for reduced supplies in summer months create the potential for more significant drought events in the province. Early review the program is necessary to incorporate new science developed through the source protection program and to enhance the support for committee decision making.

Biodiversity

Conservation Ontario and Conservation Authorities will continue to collaborate with the Province and others to advance and apply knowledge gained towards implementing conservation, enhancement and restoration of biodiversity to support resilient ecosystems.

Conservation Authorities contribute significantly to the protection of our biodiversity in Ontario and are major landowners, collectively owning 143,000 hectares, including forests, wetlands, areas of natural & scientific interest, and significant natural habitat. Many Conservation Authorities continue to acquire and manage lands of conservation significance adding to a system of conservation lands for the maintenance of biodiversity. In addition, Conservation Authorities also work with local and regional municipal governments to increase natural heritage and biodiversity.

Conservation Authorities also deliver programs that support afforestation and private land stewardship. For example, in 2009 and 2010 Conservation Authorities led the planting of over three million trees. Conservation Authorities are significant partners with Trees Ontario in the 50 Million Trees Program, accounting for 70% of the trees planted under this initiative.

Conservation Authorities also deliver a variety of other private land stewardship programs that support climate change adaptation. These programs include rural water quality improvement; agricultural beneficial management practices; as well as stream and habitat rehabilitation, restoration and enhancement.

Great Lakes

Conservation Ontario supports including adaptation in Great Lakes Agreements and will continue to actively participate in Provincial and Federal discussions around Great Lakes

and climate change. A total of 35 of the 36 Conservation Authorities are located in the Great Lakes Basin. Understanding the relationships between the watersheds managed by Conservation Authorities and the Great Lakes they drain into is fundamental to integrating climate change considerations into Great Lakes agreements. Threats from the watersheds via intense storm events have an impact on the nearshore environment. Watershed-based analyses will be critical in assessing climate change impacts to the nearshore and determining watershed actions to support adaptation.

Additionally, Conservation Authorities are responsible for implementing provincial natural hazard policies and regulations along Great Lakes shorelines and will continue to play a key role in working with the Province in this area. Understanding the risks and vulnerabilities of the Great Lakes shorelines to climate change, for example, with regard to water levels and storm surges, is a critical first step to review the natural hazards policy framework (including flooding) which currently guides shoreline development decisions.

Collaborating on Adaptation – Working with the Climate Change Directorate

Conservation Ontario believes it could provide valuable assistance to the Province by participating on the proposed steering committee that will be supporting the Climate Change Adaptation Directorate.

One of the unique characteristics of Conservation Authorities is the collaborations they develop to deliver on-the-ground programs. These initiatives often involve partnerships with provincial ministries, municipalities, federal departments, academic institutions, landowners, and nongovernmental organizations. As a result, Conservation Authorities have established a network of contacts that puts them in a unique position to support and facilitate the local delivery of climate change adaptation initiatives.

Similar to the successful Source Protection model, Conservation Ontario would be able to provide effective support in the implementation of the Province's Adaptation Strategy with the Conservation Authorities.

Summary

Adapting to a changing climate presents many challenges and opportunities for Ontario. The Province's Adaptation Strategy and Action plan provides a comprehensive set of actions that complement and enhance the work already underway on many fronts across Ontario. Conservation Ontario urges the Province to take an integrated approach to implementing these actions, and encourages the government to leverage Conservation Authorities' programs, resources, local expertise to ensure successful adaptation.