

# Protecting Ontario's Waterways in a Changing Climate – Managing Stormwater

## Why do we manage stormwater?

Stormwater is rain, melted snow, or other precipitation that comes into contact with the ground or any surface and runs off the land into storm sewers, streams, or lakes. Stormwater can come from residential, industrial, commercial, or institutional properties. Urbanization creates more hard surfaces (buildings and roads), and runoff because it is harder for stormwater to go into the ground. In addition, contaminants from these hard surfaces are carried with the stormwater into streams and lakes.

Managing stormwater is needed to maintain a more natural water cycle, reduce the risk of flooding and erosion, and protect water quality. It can include practices that manage stormwater:

- at the lot level on the property
- as it is conveyed or carried; and at the
- end-of-pipe treatment.

Ontario municipalities, property developers, and private property owners all have a role in managing stormwater.

## How can climate change impact stormwater?

The effects of climate change are already being felt. Average temperatures in Ontario could rise by several degrees. More extreme weather events are expected such as rain, snow, drought, heat waves, and ice storms. Weather is also likely to be more variable and less predictable with more high intensity rain showers.

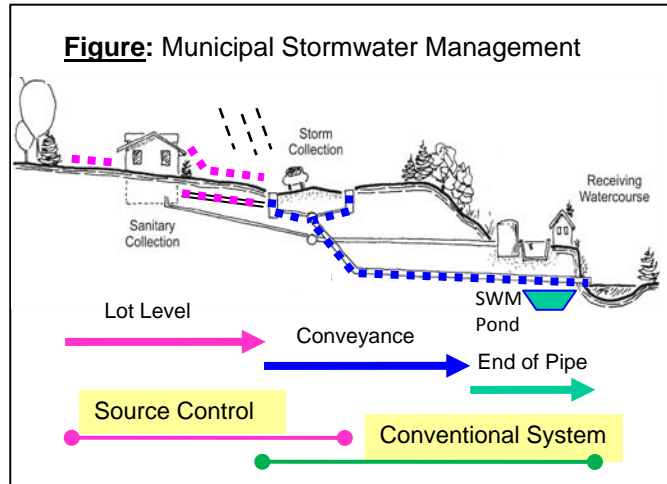
In recent years, severe storms have caused flooding and damaged homes and infrastructure such as pipes and roads. In the future, parts of Ontario may receive less precipitation. The risk of such impacts is expected to increase in the future. Stormwater management systems need to be resilient so they can adapt to the stress and a changing climate.

## How is the Ministry of the Environment (MOE) taking action?

In its report, *Adapting to Climate Change in Ontario*, the Expert Panel on Climate Change Adaptation recommended the ministry review stormwater management throughout the province to ensure climate change risks are taken into account.

MOE completed an Environmental Bill of Rights review in March 2010. It examined the ministry's policies, acts, and regulations including the [Ontario Water Resources Act](#) and the [2003 Stormwater Management Planning and Design Manual](#), and found:

- we have come a long way in improving stormwater management in Ontario
- resilience will be important in adapting to climate change.



The ministry has supported stormwater-related activities across the province. Activities have included: support for development of design guidance by conservation authorities, long-term stormwater management planning studies by municipalities, public information, training, and online initiatives to encourage resilient stormwater systems. Ontario's [Water Opportunities and Water Conservation Act](#) also supports the creation and use of innovative stormwater technology. The ministry is also continuing to work with its partners to protect our lakes and watersheds and safeguard our water supplies from the impacts of climate change. Collaboration in implementing the [Lake Simcoe Protection Plan](#) is a good example of its partnerships.

### **What more needs to be done?**

Innovative stormwater practices and systems that promote reduction, reuse, recycling, and improved water quality are needed so everyone can better adapt to the impacts of climate change. Stormwater management can also include strategies for pollution prevention, protection of natural areas, and communities designed to reduce stormwater generation.

#### ***Innovative Source Controls***

Managing stormwater is needed to maintain a more natural water cycle, reduce the risk of flooding and erosion, and protect water quality. Source control involves managing stormwater and preventing pollution on individual lots or in the neighbourhood, such as along side roads. It relies on property owners and developers to implement practices such as Low Impact Development (LID) on their property. LID is a common source control practice used extensively in North America and overseas. It uses the natural landscape, ground, or vegetation to reduce runoff, improve water quality, and promote green spaces. In Ontario, practices such as rain gardens, green roofs, permeable pavement, and rainwater harvesting have been used.



Green roof

#### ***Conventional Systems***

Conveyance practices that carry stormwater (e.g. storm sewers), and end-of-pipe treatment practices that treat stormwater such as stormwater ponds are often referred to as conventional systems. These are usually managed by municipalities and provincial authorities.

Increasing the resiliency of stormwater systems to climate change may include strengthening the conventional storm sewer and treatment infrastructure. However, stormwater reuse and source controls may provide greater opportunities and benefits. Stored stormwater could be used for watering sports fields and parks. Around the house, people could use treated stormwater for flushing toilets and watering.

### **What can you do?**

Climate change affects all of us and we can all help reduce the potential impacts of stormwater, for example, by using a rain barrel to water our plants and lawn, creating a rain garden, and not using pesticides.

The province, municipalities, developers, and individual land owners also have a role in implementing new and innovative stormwater management practices that will increase the resiliency of our stormwater systems and improve our ability to adapt to a changing climate and protect Ontario's waterways. For more information, refer to the [Policy Review of Municipal Stormwater Management in the Light of Climate Change – Summary Report](#).