



# MONCTON

Rethinking flood management strategies

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Source: City of Moncton

## THE SCIENCE

Climate projections until the year 2100 predict an increase in the severity and frequency of rainfall and storm events for the Province of New Brunswick. In New Brunswick, the City of Moncton has already experienced flooding events. The city is adjacent to the Petitcodiac River, a tidal river influenced by the famous Bay of Fundy, which experiences some of the largest tides in the world. The City of Moncton is vulnerable to an increase in precipitation, but also sea level rise. A study completed for the City of Moncton predicted that relative sea level rise will gradually increase to approximately one metre over the next century. The city, as a result of extreme weather, has already experienced road and highway closures, residential damages, and a halt in communications and business activities on several occasions due to previous flooding events. It is expected that the situation will worsen under future climate projections.

## THE TRIGGER

In April 2010, the cities of Moncton and Dieppe, and the town of Riverview participated, in a Regional Adaptation Collaborative (RAC) program, a cost-shared federal program developed to identify and reduce the impacts of climate change on Canadian communities. Through this partnership, a technical study was produced identifying climate change trends and what they mean for the region, as well as creating flood plain mapping that projected flood levels during a 100-year flood. In the fall of 2012, the results of the project were presented to Moncton City Council, who requested the development of an action plan. In June 2013, the City of Moncton released its Climate Change Adaptation and Flood Management Strategy.

## THE APPROACH

Vulnerable infrastructure were identified as part of the study and included a century old CN rail culvert that drains water from Jonathan Creek into the Petitcodiac River. Indeed, the culvert was not designed to the appropriate size to allow the amount of stormwater entering the system which resulted in flooding upstream numerous times during storm events.

Following the analysis, a decision was made to replace the culvert. The cost for replacement was split between CN rail and the City of Moncton. The culvert, designed in 1925, is said to have been sized to accommodate a major storm event (1:100-year), but as a result of subsequent development and increased rainfall intensities, it resulted in an undersized structure.

As recommended in the flood management strategy, the City designs new culverts to accommodate a capacity for the 1:100 year storm plus 20% (which is the equivalent of a 1 in 100-year storm predicted for the year 2100). The design also considered peak tide elevation of 9.1 metres, and the resulting culvert size was able to withstand acceptable headwater elevation under a range of both flow and tail water conditions. These changes will reduce the risk of flooding as well as the disruption of a major railway route due to extreme weather.



**Figure 12:** Construction of the new culvert in Moncton.  
(Source: City of Moncton)

## THE OUTCOME

The replacement of this critical piece of infrastructure has already proven to have reduced the risk of flooding due to extreme weather. Since the project was completed, there has been no flooding events reported.

The City of Moncton has also partnered with the Provincial Government of New Brunswick's Department of Transportation and Infrastructure to conduct work in the Jones Lake spillway. This separate project also targeted critical infrastructure including a spillway structure and culvert located under Main Street, which was prone to failures. This project replaced and upsized these structures to the same standards outlined within their Climate Change Adaptation Plan.

These are just a few examples of how the City of Moncton has prioritized key pieces of infrastructure and used updated standards that take into consideration future climate predictions to lower the impacts of flooding events.

## A WORD FROM MONCTON

When asked what recommendations she would give to other municipalities interested in pursuing similar initiatives, Elaine Aucoin, Director of Environmental Planning and Management for the City of Moncton, highlighted the importance of considering future climate projections in the design of infrastructure. "All Canadian municipalities should look at what is anticipated in their region in terms of future rainfall intensity, and add that factor into the design and rehabilitation of stormwater infrastructure," said Ms Aucoin. Stormwater management based on future climate projections is integrated into several initiatives in Moncton. For instance, when separating sewers, the City ensures that storm sewers can provide increased capacities for future rainfall intensities. The construction of new developments is also regulated when considering the management of stormwater: More specifically, the amount of runoff entering the sewer system in new developments must be less than or equal to pre-development conditions in order to minimize flood risk.