Appendix II: Case Study on Richmond Hill's Pioneer Park Stormwater Management Rehabilitation Project

CLIMATE CHANGE CASE STUDY

Town of Richmond Hill Pioneer Park Stormwater Management Rehabilitation Project"

What is the goal of this project?

The goal of the project is to improve flood control and erosion protection at a watershed level. Adaptation measures in response to potential climate change impacts are considered in order to ensure the following:

- environmental and public health and safety
- infrastructure security
- emergency service access during flood events

The project won the Federation of Canadian Municipalities National Watershed Award 2010 for leadership in Climate Change Adaptation by Reducing Flood and Water Damage Vulnerability, and the Ontario Public Works Association 2010 Technical Innovation Award.

What did the organization do?

10-year Capital Planning: A Stormwater Management 10-year Capital Plan with a priority rating system for the rehabilitation of aging stormwater infrastructure was developed and then approved by Council in 2008. The Pioneer Park Stormwater Management Facility ranked first in priority as a flood vulnerable area.

Watershed Perspective: A Watershed Stormwater Master Plan was created. The plan expanded the Pioneer Park tributary area from the original 26 ha to 740 ha. This expansion included areas with no previous stormwater management. It protects watershed health and accommodates cumulative drainage of the watershed.

Climate Change Adaptation: Flood protection was incorporated up to the 100-year return storm level. This replaced the original structure that had inappropriate volume and frequent blockages over time, creating a backwater condition. The environmental and hydrological function and health of the watershed was strengthened through the design of the facility to increase watershed resiliency. Protection of fish and wetland habitat was also added. New green

technology optimized hydraulic performance, improved water quality and increased efficiency of operations and maintenance. Ongoing on-site monitoring provides data to ensure the facility functions in accordance with approved design and supports response to climatic changes as they are happening.

What did the organization learn from this project?

Some of the key lessons learned were:

- understanding the nature of climate change impacts
- understanding construction methods for adaptation measures
- arranging available information to make it practical and implementable for municipalities' development approvals requirements, facility operation and maintenance.

What is the impact of this project?

The Pioneer Park project was the first of 10 of the Town's ongoing innovative stormwater management projects. It demonstrates a paradigm shift from end-of-pipe control of stormwater to a water balance approach using low impact development. The project reduced the number of flood vulnerable areas identified and provided water quantity, quality and erosion protection for the whole watershed. Increased protection against flooding during an extreme weather event has been provided for a major transportation artery to a regional hospital, police and fire emergency routes.

The project also supports continuous improvement through ongoing collaborative research projects that are applied to stormwater systems. This research helps improve our broader understanding of mainstreaming climate change adaptation into municipal stormwater management. Research projects include:

- Trent University (Urban Water Biogeochemistry and the Role of Stormwater Management Ponds)
- University of Guelph, Ryerson University (Cumulative Impacts Study, Optimization of Stormwater Management Facility Maintenance)
- Environment Canada (Stormwater Phosphorus Removal Study)
- Toronto and Region Conservation Authority (Cooling Trench Study, and Particle Size Distribution Standards for Oil Grit Separator Performance Review).

What can you take away from this project?

Stormwater management has evolved away from an exclusively engineering approach to the management of water resources on a watershed basis to looking at the whole water balance system. An integrated multi-disciplinary design process allows innovative solutions to be developed where the landscape plays an integral role in the function of the stormwater management facility. A coordinated approach to planning, design, construction and management further supports the development of effective and practical alternatives. These alternatives increase the health and protection of the watershed. This also enhances the facility's capacity to cope with severe weather events anticipated with climate change.

About the organization

The Town of Richmond Hill is located in southern Ontario in the middle of the Greater Toronto Area. It has the highest population density in York Region with approximately

181,000 people in 2006. The Oak Ridges Moraine, an important ecological feature, covers the northern half. The Town is within the Don, Rouge, Humber, and Holland River watersheds. For further information on the Pioneer Park Stormwater Management Project, please refer to the contact information below.

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About Climate Change Case Studies

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Knowledge Mobilization at York

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