City of Mississauga

Stormwater Financing Study

Prepared by:

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Project Number:

60247202

Date:

April 2013

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April 10, 2013

Lincoln Kan, P.Eng.
Manager, Environmental Services
Transportation and Works Department
City of Mississauga
201 City Centre Drive, Suite 800
Mississauga ON L5B 2T4

Dear Mr. Kan:

Project No: 60247202

Regarding: Stormwater Financing Study

We are pleased to submit ten paper copies and an electronic version of the final report for this study. This report summarizes our work on this important undertaking for the City of Mississauga and incorporates staff review comments on previous draft report submittals.

Our report includes a number of recommendations that we believe will assist the City in implementing a stable, dedicated and sustainable level of funding for your future stormwater management program.

If you have any questions or require additional information regarding this submittal, please contact me at (519) 650-8697.

Sincerely,
AECOM Canada Ltd.

Michael A. Gregory, M.Sc., P.Eng.
Senior Water Resources Engineer

Encl.

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Revision Log

Revision #	Revised By	Date	Issue / Revision Description
1	M. Gregory	15-Feb-2013	Revised 29-Nov-2012 draft to incorporate City review comments
2	M. Gregory	10-Apr-2013	Revised 15-Feb-2013 final draft to incorporate City review comments

AECOM Signatures

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1. Project Overview

This section summarizes the project goals and objectives, the individual study tasks, project organization and key highlights.

1.1 Background and Study Purpose

As part of the City of Mississauga's financial sustainability initiative, the Transportation and Works Department has investigated the feasibility of implementing an equitable, self-supporting, stable and dedicated funding mechanism that will support the future expenditures related to the City's stormwater management (SWM) program.

The City's SWM system comprises valuable infrastructure assets including storm sewers, catchbasins, inlets and outlets, bridges and culverts, watercourses and ponds. The management of these assets includes the design and construction of capital projects such as stormwater management ponds, stream rehabilitation and flood mitigation works, operations, maintenance and rehabilitation of existing infrastructure, environmental compliance, emergency response and clean-up, street sweeping and the enforcement of by-laws among other activities. By controlling the quality and quantity of stormwater reaching our streams and rivers, the City's SWM system protects the health and safety of the public and the natural environment.

Despite investments in the City's stormwater infrastructure, stormwater related issues such as flooding, water quality and stream erosion are persistent. As this infrastructure continues to age it will incur additional operation, maintenance and capital improvement costs over time to sustain sufficient levels of service. Further, regulatory requirements and design standards continue to evolve and become more rigorous in addressing the environmental impacts of stormwater.

The City has experienced financial challenges under the present funding system of property taxes and Development Charges (DC). Stormwater revenue drawn from tax funds must compete with many other City services and is often inadequate to provide the service levels demanded by federal/provincial regulatory agencies, citizens, businesses, other community organizations, and a changing climate. Further, as remaining developable lands within Mississauga diminish, the City cannot depend on DC funds as a reliable source of revenue for capital expenditures. In order to support the City's stormwater management program in the future, alternative funding options beyond property taxes and development charges need to be explored.

On September 14, 2011, Council approved a report dated August 16, 2011 from the Commissioner of Transportation and Works identifying the need to commence a study to determine the appropriate funding approach in support of the City's SWM program. In February of 2012, a consulting team led by AECOM was retained by the City to undertake a Stormwater Financing Study, with the task of identifying, reviewing and evaluating alternative funding mechanisms to support the municipal stormwater management program in Mississauga and to recommend the preferred funding approach. To achieve this goal, the following steps were undertaken by the project team:

- Compile and quantify the cost of the City's existing stormwater management program including operations and maintenance, asset management, planning and monitoring activities and capital plans
- Develop and evaluate various stormwater management program options based on varying levels of service and recommend a program that will meet the desired levels of service, targets for compliance with regulations and other future pressures
- Review available stormwater financing options
- Recommend the preferred option that offers a fair and equitable method for allocating the costs of the stormwater management program
- Develop a strategy to implement the recommendations

1.2 Study Tasks

This study included the following tasks and activities:

- Task 1: Existing Stormwater Management Program. The intended outcome of this task was an assessment of the state of the City's existing SWM program including operations and maintenance, capital improvement plans, and quantification of all stormwater related expenditures.
- Task 2: Future Stormwater Management Program. In this task, the level of service was evaluated and potential enhancements to existing functions, activities, and services associated with the City's SWM program were investigated. Future activities and the corresponding expenditures were quantified that meet the desired service levels, comply with regulations, and address other future pressures.
- Task 3: Evaluation of Stormwater Financing Options. Available options that have been used to provide funding for similar municipal SWM programs throughout Canada and the U.S. were reviewed and evaluated. A preferred option was identified that offers a fair and equitable method for allocating the costs of the future SWM program.
- Task 4: Public Consultation and Draft Report. To assist with the public engagement process undertaken as part of this study, the project team was involved in the formation of a stakeholder group and facilitation of regular monthly meetings as well as two public information meetings. Technical input for City communications and website materials was also provided over the course of the project. The outcome of this task included submittal of a draft report documenting the analysis, study findings, and recommendations to Council.
- Task 5: Final Report. The end product of this study is a report incorporating draft report review comments.

1.3 Project Organization and Key Highlights

The project team was led by a Working Team comprised of City staff, including:

- Lincoln Kan (Project Manager – Manager, Environmental Services)
- Jeremy Blair (Storm Drainage Programming Engineer, Environmental Services)
- Sandro Torresan (Supervisor Transportation Infrastructure, Transportation Asset Management)
- Kimberly Hicks (Public Affairs Consultant, Communications Support)
- Marcello Gaudio (Financial Analyst, Financial Services)
- Michael Masliwec (Manager, Financial Services)
- Susan Cunningham (Senior Policy Analyst, Financial Planning)
- Bob Levesque (Manager, Works Maintenance and Operations)
- Zubair Ahmed (Financial Analyst, Financial Planning)
- John Murphy (Manager, Financial Policy)
- Steve Dickson (Legal Counsel, Legal Services, Municipal)

The project team was directed by a Steering Committee comprised of senior City management, including:

- Martin Powell (Commissioner, Transportation and Works)
- Brenda Breault (Commissioner, Corporate Services)
- Wendy Alexander (Director, Transportation and Infrastructure Planning)
- Patti Elliot-Spencer (Director, Finance)
- Joe Pitushka (Director, Engineering and Works)
- Mary Ellen Bench (City Solicitor)

Technical guidance and assistance for this study was provided by an engineering consulting team that included the following firms:

- AECOM Canada Ltd. was the lead firm, responsible for the overall project management, coordination, and support of the technical analyses. AECOM has conducted similar stormwater rate studies in Ontario and

Alberta as well as other SWM policy development, stormwater inventory and drainage assessments, water and wastewater rate studies, and creek and pond rehabilitation projects.

- Camp Dresser & McKee, Inc. (CDM) performed the technical analysis and database development for this study. CDM has established itself as a leader in the development and implementation of stormwater rates, having conducted stormwater financing studies for over 170 communities throughout North America.

Following the project initiation meeting on February 9, 2012, there were a total of 10 meetings with the Working Team and 10 meetings with the Steering Committee through the end of November, 2012.

An integral component of this study was the public engagement process to solicit feedback from the public and private sectors. The following summarizes the public consultation undertaken as part of this study.

Stormwater Financing Stakeholder Group

A total of 35 invitations were originally sent out by Mayor McCallion at the beginning of this study to solicit membership on a Stormwater Financing Stakeholder Group (SFSG). Subsequently, representatives from three additional organizations joined the SFSG once the project was underway. Members included representatives from ratepayer groups, the business and development communities, tax-exempt properties and other interested parties including Conservation Authorities and non-governmental organizations. Group members were asked to represent the views of their organizations or sector and provide input on issues such as priorities of the City's stormwater management program and setting an appropriate level of service and expenditure to meet these needs.

Table 1 shows the member organizations that comprised the SFSG, indicating those that were initially invited but did not attend any meetings as well as those organizations that were added to the group during the course of the study.

Table 1: Stormwater Financing Stakeholder Group Members

Residential	
Gordon Woods Homeowners' Association	
Rockwood Homeowners Association	Did not attend
Whiteoaks Lorne Park Community Association	Did not attend
Mississauga Oakridge Residents Association	Did not attend
Friends of Lake Wabukayne Stewardship	
Lisgar Residents' Association	
Credit Reserve Association	Did not attend
Condo Owners Association	
Cooksville Creek Task Force	
Kaneff Group of Companies	Did not attend
Peel Housing	Did not attend
Sherwood Forest Residents Association	Added June 2012

Ex-Officio	
Credit Valley Conservation	
Toronto and Region Conservation	
Environmental Advisory Committee	
Credit River Anglers Association	
EcoSource	Did not attend

Commercial/Industrial	
Building Industry & Land Development Assoc.	Did not attend
Mississauga Board of Trade	Did not attend
Ontario Restaurant Hotel & Motel Association	Did not attend
Clarkson Business Improvement Association	Did not attend
Erin Mills Development Corporation	Did not attend
Orlando Corporation	
ProLogis	Did not attend
Oxford Properties Group (Square One)	
Sheridan Park Association	
Westwood Mall - Fieldgate Commercial	Did not attend
Dixie Outlet Mall	Added June 2012

Institutional/Government	
Peel District School Board	
Dufferin-Peel Catholic District School Board	
University of Toronto (Mississauga)	
Trillium Health Centre	Did not attend
Canadian Council of Churches	Did not attend
Islamic Society of North America	Did not attend
Greater Toronto Airports Authority	
Metrolinx	Did not attend
Region of Peel	
St. Peter's Anglican Church	Added June 2012

Over the course of the study, the following six SFSG meetings were held:

- SFSG No. 1: Introduction to Stormwater Management and Financing held Tuesday, May 8, 2012 at the Central Library - 2nd Floor, Classroom 4, attended by 15 SFSG members in addition to the project team members
- SFSG No. 2: Overview of Stormwater Problems/Solutions held Wednesday, June 6, 2012 at the Mississauga Civic Centre - Committee Room 'A', attended by 18 SFSG members
- SFSG No. 3: Level of Service and Existing Financing held Wednesday, July 4, 2012 at the Mississauga Civic Centre - Committee Room 'A', attended by 13 SFSG members
- SFSG No. 4: Alternative Funding Options held Wednesday, August 29, 2012 at the Mississauga Civic Centre - Committee Room 'A', attended by 14 SFSG members
- SFSG No. 5: Proposed Financing Mechanism held Wednesday, September 26, 2012 at the Mississauga Civic Centre - Committee Room 'B', attended by 16 SFSG members
- SFSG No. 6: Development of Recommendations for Council held Wednesday, November 14, 2012 at the Mississauga Civic Centre - Committee Room 'A', attended by 13 SFSG members

Public Information Meetings

Two public information meetings were held which included a display of poster boards and formal presentation. These meetings included:

- Public Information Meeting 1 held Wednesday, June 27, 2012 at the Living Arts Centre, with a total of 24 attendees signed in and two comment forms were received
- Public Information Meeting 2, held Tuesday, November 20, 2012 at the Icelands Arena, with a total of 25 attendees signed in and six comment forms were received

Other Engagements

Individual meetings were also held with numerous organizations and stakeholder group members including the Mississauga Board of Trade, Orlando Corporation, a joint meeting with representatives from the Building Owners and Managers Association Toronto (BOMA), the International Council of Shopping Centers (ICSC), the Commercial Real Estate Development Association Greater Toronto (NAIOP) and the Real Property Association of Canada (REALpac), as well as individual homeowner representatives.

Written comments and submissions were also received from interested parties including Orlando Corporation, the Greater Toronto Airports Authority (GTAA), an Environmental Advisory Committee member, Credit River Anglers Association and a joint submission from BOMA Toronto, ICSC, NAIOP and REALpac (industrial and commercial sector).

While the stakeholders generally agreed with the importance of addressing the City's capital and operation deficiencies, some of their issues raised included:

- The public engagement process was moving too quickly and there was insufficient consultation time
- Concerns from the commercial and industrial sector with shifting the cost of the stormwater program from residential to non-residential class
- Concerns from tax-exempt properties who traditionally did not have to pay for the City's stormwater program
- The need to look into a credit program as part of this study
- Concerns that the study recommendations do not include credits for residential homeowners, but instead is looking into incentives/rebates

Appendix A contains materials presented at the SFSG and public information meetings and the corresponding meeting minutes. This appendix also includes public comments received.

1.4 Report Structure

The structure of the remaining sections in this report includes the following:

- An overview of the City's SWM program in Section 2
- An overview of stormwater financing mechanisms, comparison of funding options, Canadian case studies and lessons learned in Section 3
- A parcel and stormwater rate analysis in Section 4
- A summary of the conclusions and recommendations in Section 5

2. Existing Stormwater Management Program

This section provides an overview of municipal stormwater management, typical needs and issues as well as the specific details on the City of Mississauga's SWM services program.

2.1 Municipal Stormwater Management Programs

Stormwater management involves controlling the quantity and quality of runoff resulting from rainfall. Urbanization dramatically changes the runoff response characteristics of natural land surfaces and a variety of problems can result when stormwater systems and facilities are not properly managed. Stormwater problems are most evident in areas that are prone to chronic flooding or erosion, but less discernible are the long-term impacts to water quality, stream stability, and the environment in general.

Stormwater management systems represent valuable public assets that provide a number of benefits for many users. A municipality's SWM system includes storm sewers, roadside ditches, watercourses, municipal drains, culverts, bridges, swales, catchbasins, inlets, outfalls, ponds and other water quality treatment facilities. By controlling floodwaters and preventing pollutants from reaching our streams, rivers and lakes, SWM systems protect the health and safety of the public and the environment as well as minimize flooding and erosion threats to public and private property. In so doing, clean and healthy water resources support public drinking water supplies and can attract local investment through increased land values. Furthermore, clean and healthy water resources support recreational activities, tourism, business and manufacturing, as well as aquatic and terrestrial habitats that rely on water.

Municipal stormwater management refers to all of the services provided by a local unit of government to properly and effectively manage stormwater within the community (i.e., collect, convey, transport, store, treat, and discharge to a downstream receiving waterbody or waterbodies). A typical municipal SWM program includes a number of components as illustrated in **Figure 1**, including:

- Design, permitting, and construction of new capital improvement projects
- Operation and maintenance of SWM facilities
- Asset management, valuation, and planning
- Rehabilitation, renewal, retrofit, reconstruction or upgrade of existing facilities
- Emergency response, recovery, and clean-up for flooding events, system failures (e.g., pipe collapses, streambank slope instabilities), spills and other water quality violations
- Engineering and support services for review and regulation of proposed developments, inspection, monitoring, environmental compliance programs, record maintenance and document management
- Support for public education and community involvement programs
- Administration, staffing, computer resources, equipment, etc., including enforcement of by-laws and detection of illicit discharges and cross-connections

In general, municipalities are responsible for managing all aspects of stormwater within their jurisdiction, including operations and maintenance of SWM facilities located within the public right-of-way limits or easements. The City does not maintain facilities that are located on private property, within provincial road rights-of-way, or that fall under the jurisdiction of another governmental authority, such as the Region of Peel and the local Conservation Authorities.

Municipal ownership and operation of stormwater collection systems and SWM facilities constructed by a developer are typically included as part of the formal assumption process of a subdivision. This process includes an initial warranty period (i.e., typically two years after the municipality has issued preliminary inspection approval) in which the developer must maintain all SWM facilities, outfall structures, channel works, and appurtenances. A final inspection by municipal staff is conducted to certify that all collection systems, SWM facilities and related services

are in a condition satisfactory to the municipality's standards for assumption. Once the municipality's financial requirements have been met (e.g., payments to cover any future anticipated maintenance or other costs associated with the assumption), formal municipal ownership of the SWM facilities typically begins upon Council resolution, through a by-law, that all conditions of the subdivision agreement and approved site plans have been fulfilled and all maintenance requirements have been completed.

Figure 1: Components of a Municipal Stormwater Management System

2.2 Municipal Stormwater Management Needs and Issues

Typical municipal drainage and SWM problems can generally be classified into the following categories:

- **Flooding**: This is probably the most visible of stormwater problems. Serious flooding presents a threat to public safety and can damage public and private property, disrupt business, result in insurance premium increases or loss of coverage, and otherwise hamper normal activities within a community. Stormwater management facilities are designed to safely collect, convey or store runoff as a result of rainfall and snowmelt events. However, the recurrence frequency of these events is subject to change as a result of climate variability. During frequent rainfall events, runoff is collected in the minor system of storm sewers, swales, and roadside ditches. During the rare events in which the minor system capacity is exceeded, runoff is also conveyed through the major system that includes curb and gutter drainage in the public road right-of-way and other surface overland flow routes and storage in detention facilities or floodplain areas.
- **Water Quality**: Road salt, oil/grease, metals, nutrients, chemical spills, illegal dumping, sediment and urban debris can degrade water quality, impacting the natural environment including aquatic and terrestrial habitat as well as affecting drinking water supplies. Stormwater management systems are designed to improve the water quality of discharge of urban runoff to receiving waterbodies, but need to be properly planned, constructed, operated, and maintained in order to do so.
- **Erosion**: Water traveling over a bare or unprotected surface will erode the soil material, increasing sediment loads discharged to the watercourse and also threatening the stability of the streambank, which can jeopardize both public and private property if not addressed properly. Stormwater management systems are also designed to control the movement of stormwater in such a way as to minimize the erosion of streambanks, adjacent hill slopes, and exposed structures.

- **Debris/Deterioration**: During rainfall events, debris, trash and other deleterious material on land surfaces can be transported through the SWM system. As a result, this material may create a barrier to flow and increase the flooding potential, or it may flow to downstream watercourses and impact water quality. The conveyance capacity of stormwater infrastructure can also be impacted by deteriorating drainage systems. Routine inspection and maintenance of the stormwater collection system and other facilities, as well as an appropriate emergency response/recovery program is necessary to minimize these problems.

Despite substantial investments in municipal SWM systems and facilities, there will always be a need to invest in new capital improvement projects and to reinvest in the operation, maintenance, planning, and management of the stormwater program. Existing SWM systems may be inadequate for a variety of reasons, including:

- **Urbanization**: Growth and development adds new impervious area to landscapes, which alters the amount of runoff and pollution discharged to the SWM system. Additional impacts may include the compaction of soil, removal of native vegetation, and the alteration of natural drainage systems.
- **Aging Infrastructure**: Pipes, culverts, bridges, pond control structures, hardened streambanks, and outfalls have a limited life expectancy and must be repaired or replaced eventually. Structural deficiencies result when aging infrastructure has exceeded its anticipated service life. Performance issues exist as systems and use expands and the maximum hydraulic capacity of the systems is exceeded.
- **Regulatory Requirements and Design Standards**: Regulatory requirements are always changing (e.g., relaxed design standards due to limited technology, or increased design standards due to more stringent regulatory requirements, new and improved technologies, etc.). As a result, systems designed to previously accepted criteria may be inadequate with respect to current standards. Also, the level of protection to be provided by SWM facilities is often dictated through studies and governing agencies for water quality and habitat protection.
- **Climate Change**: The impacts of climate change include an increase in the frequency and severity of extreme rainfall events, increasing temperatures, and more rapid snowmelt events in Southern Ontario. Consequently, municipalities can expect more frequent exceedances of stormwater design criteria. Future infrastructure planning, design, and construction projects based on adapting to climate change will place further financial stress on municipalities and their ability to fund stormwater services.
- **Planning**: To avoid future problems, the City must proactively plan its SWM program to ensure the appropriate resources, measures, and improvement projects address needs and problems. In addition, facilities and SWM assets must be inventoried and evaluated at regular intervals, in keeping with best practices for municipal asset management.
- **Design and Construction**: Development site plans must be properly reviewed by the City and adequately inspected during construction to minimize the potential for hazards.
- **Maintenance**: To avoid problems, the City must actively and routinely inspect and operate facilities, maintain watercourses, clean catchbasins and inlets/outlets, sweep streets/gutters, collect leaves/debris in and around stormwater infrastructure.

Like other public works, SWM facilities have a specific design capacity and service life, regular Operations and Maintenance (O&M) needs, and their performance decreases with age and additional demands placed on the system. As a result, stormwater facilities and related infrastructure must be inventoried, assessed, valued, and managed according to sound asset management principles in order to plan an appropriate schedule for replacement, renewal, and rehabilitation.

Of all the public works provided by a municipality, SWM services are often the least understood by members of the community. Storm pipes are underground and out of sight, detention facilities and ponds are presumed to be natural features, such that the function of SWM facilities and practices are not easily recognized. As a result, there is little public awareness of a municipality's SWM services, program needs, and expenditures. Stormwater management systems often only attract attention during periods of rainfall, particularly when systems fail or rainfall exceeds the design capacity resulting in property flooding or road inundation. Further, property owners have widely varying

perceptions concerning how their properties generate stormwater runoff and pollution, since usage of the municipal SWM system is not based on demand in the same manner as water and sewage systems (e.g., turning on a tap, flushing a toilet). This may result in the misconception that property owners cannot control the discharge of stormwater runoff from their property into the municipal SWM system.

2.3 Regulatory Requirements

Stormwater regulations and design standards are continually evolving, resulting in many existing SWM systems and facilities that do not meet current federal or provincial requirements for the construction of new facilities and/or long-term maintenance. More stringent federal and provincial requirements for water quality and quantity control are also being proposed, further widening the gap to bring these publicly-owned systems into compliance.

The City of Mississauga has been adapting its policies and practices in order to meet regulatory requirements. To achieve full regulatory compliance, the City recognizes the need to increase its SWM related level of service and performance standards, which is a key driver for this study. Furthermore, increased levels of service are needed in the extent and frequency of O&M activities and in the implementation of the City's capital improvements programs to accelerate currently planned and backlogged projects.

Traditionally, there have been limited regulatory requirements for the design of stormwater facilities and there are very few performance measures or "benchmarks" compared to water and sewage systems. Design criteria prior to the mid-1990s were focused on flood control objectives only. Water quality, erosion, and other environmental hazards began to be addressed since the 1990s through new permitting and approvals processes.

The following summarizes the pertinent regulatory requirements from the various levels of government and other agencies.

2.3.1 Provincial and Federal Legislation

The Ontario **Water Resources Act** (OWRA, RSO 1900 and amendments) prohibits activities that introduce pollutants into natural waterbodies, such as creeks, rivers and lakes:

> *"Every person that discharges or causes or permits the discharge of any material of any kind into or in any waters ... that may impair the quality of the water… is guilty of an offence" (Section 16.(1)).*

The OWRA gives the Ontario Ministry of the Environment (MOE) authority to regulate water supply, sewage disposal and to control sources of water pollution, which includes surface waters and groundwater in Ontario. The MOE issues Environmental Compliance Approvals under Section 53 of the OWRA for the treatment and disposal of sewage by municipal and private systems, which includes SWM facilities. Stormwater is defined as "sewage" under the OWRA. Stormwater facilities constructed prior to the mid-1950s (when the OWRA was first applied) would not have received approval. A Director, as defined in the OWRA, has the power to order the owner of a sewage works (e.g., a municipality owning a SWM pond or a storm sewer system) that may discharge deleterious material into a watercourse to carry out works or activities to reduce or alleviate the water quality impairment. This power has not been applied to municipalities for normal operation of storm sewer and SWM systems, although it could be.

Current practices demonstrate that although regulatory agencies (e.g., MOE, MNR, and Conservation Authorities) encourage retrofit controls, they have not enforced a formal requirement. However, a formal obligation for retrofit controls could be applied through the discretionary powers of MOE. The main impetus has been that municipal staff has accepted the premise that watercourses are part of the natural environment and must be protected and rehabilitated as part of their infrastructure management responsibility. These are embodied in SWM guidelines discussed later in this section.

Provincial Water Quality Objectives (PWQO) are numerical and narrative criteria which serve as chemical and physical indicators representing a satisfactory level for Ontario's surface and ground waters under the OWRA, based on public health and aesthetic considerations. The PWQO are intended to provide guidance in making water quality management decisions, and are often used as the starting point in deriving requirements included in Environmental Compliance Approvals. They are also used to assess ambient water quality conditions, infer use impairments, assist in assessing spills, and monitoring the effectiveness of remedial actions.

The Ontario **Clean Water Act**, 2006 ensures communities are able to protect their municipal drinking water supplies through developing collaborative, locally driven, science-based protection plans. Under this Act, communities are required to identify existing and potential threats to their water supplies and take action to reduce or eliminate the significant threats and risks. This will require municipalities to work in collaboration with the regional government and Conservation Authorities, which may lead to programs and criteria to be developed and incorporated into City policies.

The Ontario **Brownfields Act**, 2004 addresses the clean-up process for proposed redevelopment in brownfields, which are abandoned, idle or underutilized commercial or industrial properties where past activities have caused known or suspected environmental contamination. The Brownfields Act incorporates a number of technical documents that specify soil and groundwater remediation criteria and laboratory analytical protocols. These protocols address landfilling operations for dredged sediment from SWM facilities, for which the City of Mississauga would be responsible for sediment sample collection and lab chemical analysis costs.

The Ontario **Emergency Management Act**, revised and amended from the Emergency Plans Act through Bill 148 in 2002, legally mandates that municipalities implement risk-based emergency management programs and as part of this, perform hazard and impact risk assessment, including assessment of weather-related risks, to critical infrastructure. These emergency management programs consist of emergency plans, training programs and exercises, public education and any other element prescribed by regulation. Municipalities are required to review and, if necessary, update these emergency management plans on an annual basis. This regulation has particular application to a municipality's SWM program given its role in drainage and mitigating the effects of weather-related flooding.

The **Ontario Water Opportunities Act**, 2010 is intended to guide clean water technology, services and conservation efforts, as well as promote innovative and cost-efficient solutions for drinking water, sewage and stormwater system challenges. Under this Act, municipalities and other water service providers are required to prepare municipal water sustainability plans. Grant funding programs have also been initiated to stimulate innovative municipal water sustainability research, planning and commercialization of new technologies, as well as support public education and awareness about water conservation.

Although SWM is not specifically addressed, the Ontario **Sustainable Water and Sewage Systems Act**, 2002 was also enacted to help ensure clean, safe drinking water and requires that municipalities recover the full costs of providing essential water and sewer services, through a variety of user fees and charges, collectively known as "rates".

The Canadian **Environmental Protection Act**, 1999 was enacted for the purpose of "pollution prevention and the protection of the environment and human health in order to contribute to sustainable development". In 2001, Environment Canada determined that road salts were entering the environment in large amounts and posed a risk to plants, animals, birds, fish, lake and stream ecosystems and groundwater. The report recommended that salt be designated as toxic under the Act. Furthermore, Environment Canada assembled a working group that developed the "Code of Practice for the Environmental Management of Road Salts" released in 2004. This document recommends that road authorities prepare salt management plans that identify actions they will take to improve their

practices in salt storage, general use on roads and snow disposal. In Mississauga, the storm sewer systems are closely associated with the road network, and therefore salt management practices directly relate to the quality of stormwater runoff.

Subsection 36(3) of the Canadian **Fisheries Act** (R.S., 1985, c. F-14) prohibits the deposit of a deleterious substance into water frequented by fish. A deleterious substance includes harmful chemicals but also sediment and water at an increased temperature. This can have an impact on the design and management of stormwater facilities to ensure sediment removal efficiencies are maintained and outflow water temperature is not overly heated.

The preceding legislation addresses activities and services related to the City's SWM program. Regarding the legal authority to implement a stormwater user fee, the **Municipal Act**, SO 2001, s. 391, authorizes municipalities to pass by-laws for the recovery of both capital and operating costs for their SWM program. There are additional provincial statutes that set out limitations and procedures for establishing fees for specific services and situations, including:

- **The Building Code Act** (1992) allows fees to be charged for the administration and enforcement of the Building Code
- **The Planning Act** (1990) permits municipalities to establish fees for planning matters
- **The Development Charges Act** (1997) allows fees to be levied to pay for the growth-related capital costs of new development

In addition, the Ontario **Drainage Act**, 1990 allows municipalities to collect funds to make minor improvements, deepening, widening or extending a drain to an outlet. Municipal drain assessments are only intended for water quantity works (i.e., to provide conveyance capacity to the drainage outlet) with costs apportioned based on drainage area and runoff. Water quality/source water improvement projects, planning studies, and other (typically) urban drainage issues generally fall under the OWRA rather than Drainage Act.

2.3.2 Regulatory Agencies

There are a number of agencies involved in the administration and approvals for storm drainage and SWM systems as described below.

Ministry of the Environment (MOE)
The Ministry of the Environment's vision is an Ontario with clean and safe air, land and water that contributes to healthy communities, ecological protection, and environmentally sustainable development for present and future generations. The MOE develops and implements environmental legislation, regulations, standards, policies, guidelines and programs. The Ministry's research, monitoring, inspection, investigations and enforcement activities are integral to achieving Ontario's environmental goals. The Ministry's responsibility includes an oversight role for municipal stormwater management, through a number of acts and regulations, but primarily through the OWRA as noted above.

Ministry of Municipal Affairs and Housing (MMAH)
This provincial ministry sets out land use planning policies through the Provincial Policy Statement and acts as a one-window approval authority on such matters related to the Planning Act. Stormwater management is an important consideration in the subdivision planning process as part of the Planning Act. In specific areas there may be additional planning requirements (e.g., Greenbelt Plan, Oak Ridges Moraine Conservation Plan and the Lake Simcoe Plan). MMAH has oversight responsibilities for municipal authority and activities, as well as the Building Code.

Ministry of Natural Resources (MNR)
This provincial ministry's role for stormwater management is focused primarily on overseeing the response to floods and emergencies, with local implementation of emergency response plans. MNR's role in planning is in association with MMAH to approve Special Policy Areas which are designed to regulate historic towns and residential areas that lie inside floodplain areas and act to restrict further intensification of such areas. MNR provides an oversight role for the Conservation Authorities Act and is also identified in an Order in Council 1492/1995 as the provincial lead ministry for flooding.

Conservation Authorities
These agencies were established under the Conservation Authorities Act to work collaboratively with the member municipalities to address a broad range of issues to jointly undertake water and natural resource management initiatives, and coordinate the preparation of environmental plans on a watershed or sub-watershed basis. Under the Conservation Authorities Act, authorities permit development within regulated floodplains, as well as review and provide advice to municipalities on development matters affecting water quantity and quality. Many authorities have been designated under the Fisheries Act to comment on activities affecting fish habitats. Further, many Conservation Authorities maintain hydrologic and hydraulic models for the watershed, which can be used to develop stormwater master plans.

The City of Mississauga falls within the jurisdiction of three Conservation Authorities, including:

- Credit Valley Conservation (CVC)
- Toronto and Region Conservation Authority (TRCA)
- Conservation Halton (CH)

Ministry of Infrastructure (MOI)
The Places to Grow Act enables the government of Ontario, through MOI, to develop growth plans for any area in the province. As part of this Act, the Growth Plan identifies a number of policies related to stormwater management (e.g., municipalities are encouraged to implement and support innovative stormwater management actions as part of redevelopment and intensification). MOI also develops general infrastructure policy and advises on the government's investment priorities in public infrastructure under the Building Canada Fund. This includes stormwater management infrastructure.

Ministry of Transportation (MTO)
This provincial ministry functions both as an owner/developer and a regulator. As an owner/developer, MTO plans, builds and maintains highways including stormwater management facilities. As a regulator, MTO develops design standards, reviews and approves design reports, and issues permits. MTO's key statutes pertaining to stormwater are the Public Transportation and Highway Improvement Act, which manages highway drainage and provides authority for construction, alteration and maintenance.

Ministry of Agriculture Food and Rural Affairs (OMAFRA)
This provincial agency directs the planning and maintenance of drainage works, as authorized through provincial statutes pertaining to stormwater is the Drainage Act,

Ministry of Community Safety and Correctional Services (MCSCS)
Under the Emergency Management and Civil Protection Act, all provincial government ministries must set up an emergency management program. As a result, the MCSCS has developed an Emergency Response Plan and Business Continuity Plan, which includes a stormwater flood response.

Federal Government –
Environment Canada (EC), Department of Fisheries and Oceans (DFO) and Infrastructure Canada (INFC)
Several federal agencies such as these provide science, monitoring and financial support in the area of stormwater management. In particular EC has several networks and tools to monitor and predict our changing climate. Although there are a few federal acts that touch upon stormwater management (e.g., Fisheries Act, Species at Risk Act, and the Canadian Environmental Assessment Act), the regulatory role is left to individual provinces. The federal government is also an important partner in municipal, provincial and federal infrastructure funding partnerships such as the Building Canada Fund.

2.3.3 Agency Guidelines and Requirements

A number of design standards, policies, guidelines and other agency requirements for stormwater management have been developed based on federal and provincial legislation and are described below.

Ministry of the Environment (MOE)
- Water Management - Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of the Environment (MOE, 1994)
- Guide for Applying for Approval of Municipal and Private Sewage Works (MOE, 2000)
- Stormwater Management Planning and Design Manual (MOE,2003)

Ministry of Natural Resources (MNR)
- Natural Channel Systems: Adaptive Management of Stream Corridors in Ontario (MNR, 2002)
- Natural Hazards: Technical Guides for Rivers and Stream Systems and Hazardous Sites. (MNR, 2002)
- Watershed management and storm drainage guidelines

Ministry of Transportation (MTO)
- Drainage Management Manual (MTO, 1997)
- Stormwater Management Requirements for Land Development Proposals (MTO, 1999)

Conservation Authorities
- Protection and management of wetlands
- Regulation of development within floodplains
- Fisheries management plans (with MNR)
- Special flood protection and erosion control projects
- Various water quality, water supply, geomorphic classifications, groundwater programs and watershed/subwatershed planning studies

2.4 City of Mississauga – Current Stormwater Management Program

The City of Mississauga is responsible for managing all aspects of stormwater within its jurisdiction, including planning, design, construction, O&M, monitoring and inspections, renewal and rehabilitation. The Region of Peel is responsible for drinking water, wastewater and solid waste management. The current stormwater management program involves many staff and resources from across the various City departments. This section summarizes the current program activities and their related expenditures. **Table 2** lists the City's 2011 stormwater infrastructure assets. This table shows the system inventory, age and asset value, and is grouped into three broad categories:
- "Pipe" assets which include the buried storm sewers and tunnels as well as open roadside ditches and swales
- "Pond" assets which include stormwater management facilities
- Watercourse assets which include rivers, creeks and streams

Table 2: Stormwater Infrastructure Assets (2011)

Mississauga Stormwater Inventory	Estimated Quantity	Unit of Measure	Estimated Useful Life (Years)	Average Network Age	Total Replacement Value (2011)
Pipe Assets					
Storm sewers	2,000	km length	100	29	**$1.6 Billion**
Catch basins	48,000	number			
Stormwater manholes	28,000	number			
Outlets to receiving waters	1,000	number			
Diversion structures (trunk sewers)	100	km length			
Ditches / storm water swales in urban areas	250	km length			
Pond Assets					
SWM Facilities (Hard and Soft Components)	57	number	25-50	19	**$76 Million**
Watercourse Assets					
Watercourses, Streams, Rivers, and Creeks (31 Separate Creeks)	200	km length	25	18	**$58 Million**
				Total Value	**$1.7 Billion**

Assets can also be described as either “hard” infrastructure (e.g., to describe the pipes, pond control structures, and other features made of hard plastic, concrete, asphalt, steel, etc.) or “soft” (e.g., natural earthen and vegetated features), each with distinctly different construction materials and maintenance needs. For each asset category, Table 2 shows the quantity, expected service life, average system age, current estimated book value and replacement value. The stormwater assets in Mississauga are designed to be in service for a period of 25 -100 years. The phrase “Life Cycle Cost” refers to all of the costs incurred during the full life cycle of the asset. These costs start at the time an asset is first considered and extend throughout its entire service life. The total replacement value of all City stormwater assets is estimated to be $1.7 billion.

Table 3 shows the City’s 2012 tax funded expenditures, categorized by capital projects and O&M activities as described below. In 2012, the City funded $14.7 million on stormwater management through property tax, payments in lieu of taxes and reserves. Program expenditures that are funded through DC are not included in this amount.

Table 3: Tax Funded Stormwater Expenditures (2012)

Activity	Cost	Description
Capital Improvement Projects		
Erosion Control	$4,470,000	Watercourse erosion protection and rehabilitation
Flood Relief	$1,260,000	Culvert capacity improvements and flood protection berms
Storm Sewer	$350,000	Rehabilitation and replacement of existing storm sewers
Studies	$1,000,000	Stormwater-related studies
Stormwater Management Facilities	$280,000	Pond dredging/rehabilitation, quantity control facilities and low impact development
Channelization	$470,000	Watercourse conveyance improvements
Community Services (estimated)	$200,000	Departmental project costs associated with stormwater-related programs
Subtotal	**$8,030,000**	
Operation & Maintenance		
Engineering & Works	$5,260,000	Day to day operating costs of Stormwater Management Program
Support Services	$1,010,000	Support staff required for the planning of future stormwater infrastructure needs
Community Services (estimated)	$350,000	Departmental project costs associated with stormwater-related programs
Subtotal	**$6,620,000**	
Total Expenditures	**$14,650,000**	

Notes:
1. The 2012 capital budget also includes $2 million for infrastructure associated with growth. These projects have been funded with development charges revenue and are not included in this table.

2.4.1 Capital Program

The main objectives of the City's capital program include:

- Maintaining stormwater infrastructure in a good state of repair
- Accommodating stormwater infrastructure needs of development growth
- Enhancing levels of service over time, which includes reducing flooding and erosion hazards, improving water quality, adapting to climate change, and other environmental considerations

Capital projects are carried out in accordance with City and other regulatory requirements as outlined in Section 2.3. The tax funded (fully and partially) capital project activities, identified as part of the 2012 capital program, are described in the top part of Table 3. Individual projects from each activity were identified and developed from a variety of sources including:

- Planning and engineering related studies (City and external regulators) which includes:
  - Mississauga Stormwater Quality Control Strategy Update
  - Credit River Water Management Strategy Update
  - Cooksville Flood Evaluation Study
  - Credit River Adaptive Management Strategy
- Field monitoring and inspections
- Watercourse Management Program
- Stormwater Management Pond monitoring program

The City funded $8.0 million of its 2012 capital program through property tax, payments in lieu of taxes and reserves. This program also includes $2.0 million for studies and works associated with growth, which is funded through DC revenue. The City's DC program collects fees from developers in a fund that is specifically set aside for new growth-related capital costs. These funds cannot be used to pay for O&M of existing SWM facilities in established areas. Further, development charges cannot be used to recover the costs of future O&M or life cycle replacement costs of SWM facilities that were constructed using DC funds.

2.4.2 Operations and Maintenance

The City maintains and manages its SWM system with the goal of keeping it and public rights-of-way in a good state of repair, through the investment of resources such as office and field staff, contractors, equipment and supplies. The O&M activities listed in Table 3 include routine inspection, cleaning and minor repair of stormwater facilities including bridges, culverts, storm sewer outfalls and headwalls, storm sewer pipes, manholes, catch basins, curb inlets, oil/grit separators, ponds or other detention facilities, watercourses and ditches, as well as by-law enforcement and outreach activities. Precautionary maintenance is performed on a regular basis throughout the City, such as street sweeping, leaf collection, catch basin maintenance, spill prevention, and ditch cleaning. The City also provides required maintenance for damaged curbs and gutters, investigates flooding complaints, and responds in the event of accidental spills.

The City funded $6.6 million in 2012 for stormwater O&M activities entirely through property tax, payments in lieu of taxes and reserves.

2.5 City of Mississauga – Future Stormwater Management Program

City staff recognized that the SWM program is underfunded and cannot meet current and future obligations. The City's current SWM program will need to be enhanced to meet the desired service levels, comply with regulations, and address other known and anticipated future pressures.

2.5.1 Future Program Pressures

Stormwater related needs and pressures are persistent despite investments in the City's stormwater infrastructure. Pressures on the SWM program include increased capital needs (e.g., new priority projects or a reprioritization of projects from a previous capital program) and operational needs (e.g., new O&M activities or an increase in the extent or frequency of existing activities). The following list summarizes a number of the City's future SWM program pressures:

- Minimize storm related flood risks to all buildings/structures in the City: The Cooksville Flood Evaluation Study recommended the construction of approximately 15 flood storage facilities with an estimated cost of $150 million, most of which is not funded in the City's current budget. Flood evaluation studies for other flood-prone areas still need to be done and will likely identify other infrastructure needs.
- Enhance water quality treatment initiatives: This includes increasing the coverage of areas within the City that receive water quality treatment (currently only approximately 15%) and would involve the construction, operation and maintenance of low impact development measures. This would also be achieved through naturalization programs (e.g., tree planting), and social marketing which aims to provide notification and public education on City initiatives as well as looking for partnership opportunities (e.g., low impact development, educational brochures, etc.).
- Enhance by-law enforcement: Additional staff resources are needed for outreach, inspections and enforcement efforts related to the City's Storm Sewer Use and Erosion & Sediment Control by-laws. This would also include addressing encroachments into the City's storm drainage easements.
- Enhance monitoring and maintenance activities: This includes improvements to the City's current sewer inspection and cleaning programs, rain gauge and stream flow measurement stations, and pond monitoring efforts. Further, the City's Woody Debris Management program would be extended throughout Mississauga.
- Adapt to climate change: This would involve developing hydrologic and hydraulic models of the City's SWM system as well as conducting infrastructure vulnerability assessments and upgrades.
- Achieve regulatory requirements: These were identified above and involve, at a minimum, increasing the City's current efforts related to monitoring as well as specific requirements outlined in the new Ontario Water Opportunities Act.

It should be noted that some of these pressures are relatively new to the City and other municipalities such as the uncertainties about future climatic conditions and the need to adapt to the impact of severe weather. This is confirmed by the fact that the Insurance Bureau of Canada has indicated that the majority of the claims payouts are now related to severe weather and water damage.

Another pressure that is of significance is infrastructure life-cycle renewal The City's SWM system can only be sustainable when it is properly designed, operated and maintained at an appropriate service level. Further, all components have a useful service life and will ultimately fail if assets are not renewed, replaced, or rehabilitated over the long term.

Stormwater management ponds and watercourses in Mississauga are nearing the end of their useful service life and the City has been taking steps within its current budget allocation to reinvest through prioritized capital projects (e.g., pond dredging and rehabilitation as well as watercourse rehabilitation and works renewal). Given the relatively young age of the City's stormwater pipe assets (i.e., an average of 30 years in a 100-year service life), there has not been a significant need to reinvest in the storm sewer/ditch collection system. This will be a major issue in the future as pipe assets represent nearly 95% of the total stormwater system replacement value shown in Table 2. For example, a 1% annual reinvestment in the City's stormwater pipe assets (i.e., renew/replace/rehab all storm sewers over a 100-year cycle) would require additional funding of 16 million dollars per year.

While the City needs to be practical and consider affordability issues related to raising additional funds, storm sewer replacement cannot be ignored or future generations will be faced with daunting infrastructure problems.

2.5.2 Future Program Expenditures

Three stormwater program service levels were developed in consideration of the pressures discussed above. These service levels are called "Status Quo", "Interim" and "Sustainable", and are described as follows. **Table 4** shows the average annual future SWM program costs by service level.

Table 4: Annual Stormwater Expenditures (Future Program)

Stormwater Program Item	Future Cost (Average 2014-2023)		
	Status Quo	Interim	Sustainable
Capital	$8,030,000	$15,540,000	$15,540,000
Operations & Maintenance	$6,620,000	$7,950,000	$7,950,000
Storm Pipe Reinvestment	$0	$3,120,000	$16,000,000
Program Total	**$14,650,000**	**$26,610,000**	**$39,490,000**

Status Quo Service Level
This service level is based on the 2012 Capital and Operating Budgets and maintains the level of service provided in the City's current SWM program. There are a number of items that are not funded under this approach including:

- Unfunded capital program, with needs identified in the 2012 to 2021 Capital Budget and Forecast (primarily the Cooksville Creek Flood Remediation facilities and land costs) that would remain unfunded
- Unfunded O&M, with pressures (such as enhancing watercourse maintenance, by-law enforcement and foundation drain collector sewer monitoring/maintenance) that would remain unfunded
- Unfunded pipe reinvestment, with no money put aside for future storm pipe renewal needs
- Estimated annual program cost of $14,650,000

Interim Service Level
This service level represents full funding of the City's capital program and O&M needs: It includes:

- Funded capital program based on all priority projects identified in the 2013 to 2022 Capital Budget and Forecast
- Funded O&M needs and pressures
- Funded pipe reinvestment, that introduces a "Pipe Renewal" reserve fund, starting with a modest initial annual collection rate of 0.15% of the storm pipe system replacement cost ($1.6 billion in 2012), or $2.4 million per year, which would be increased by 0.01%, or $0.16 million annually (not including inflation)
- Estimated annual cost of $26,610,000

Sustainable Service Level
This service level represents full funding of the City's capital program, O&M, and pipe renewal needs: It includes:

- Funded capital program based on all priority projects identified in the 2013 to 2022 Capital Budget and Forecast
- Funded O&M needs and pressures
- Funded pipe reinvestment, that introduces a "Pipe Renewal" reserve fund with an annual collection rate of 1% of the storm pipe system replacement cost ($1.6 billion in 2012), or $16 million annually (not including inflation, and note the 1% rate is based on an expected infrastructure service life of 100 years)
- Estimated annual cost of $39,490,000

After analysis of the various service levels by the project team and through internal and external consultation, the Interim Service Level was chosen as the most appropriate service level for the City's future SWM program. This service level balances cost and pressures as this program will ensure that the additional operating and capital funding needs of the City are met along with a modest step towards saving money for future infrastructure renewal costs.

3. Stormwater Funding Mechanisms

This section identifies the available funding mechanisms that have been used to support municipal SWM programs throughout North America. In addition, the advantages and disadvantages of various stormwater funding options were evaluated with respect to the unique needs and issues of the City of Mississauga.

3.1 Background

Although municipal governments are responsible for managing all aspects of stormwater within their jurisdiction, they have limited flexibility and autonomy in generating revenue. Despite new regulations, there are no new federal or provincial funding sources to achieve them, thereby increasing budget pressures. With tax-funded SWM programs, annual stormwater budgets have to compete with other vital public services.

In cases where the resource requirements placed upon a community far exceed the available resources appropriated by the elected officials, the implementation of capital projects or the extent/frequency of O&M activities, for example, becomes dependent on the availability of funds, rather than based on need. This situation does nothing to reduce the infrastructure gap. As a result, it is expected that competing demands for limited public funds will continue, forcing municipalities to pursue alternative financing mechanisms in order to provide a sustainable SWM program.

3.2 Overview of Funding Mechanisms

To support current and future SWM needs, there are five general mechanisms for funding the major components of municipal SWM programs in North America, including:

- Taxes, which are mandatory levies authorized through legislation, collected by a public body, and not related to any specific benefit or government service (i.e., these are for general services to support the public good)
- Fees and special charges, which are payments made to offset the cost of a specific service and payable by those people who benefit from the service
- Special levies that have specific designations and limitations for usage
- Other means such as public-private partnerships, federal or provincial economic stimulus grants for infrastructure investment, debentures, and long-term debt-financing strategies
- A combination of the above

Funding opportunities for SWM projects are possible through grants to municipalities from a variety of governmental sources. Grant programs are often very competitive, based on project merits, and in many cases require matching funds. Grants also tend to be time-limited and not a reliable or sustainable funding source. To be successful, the municipality must therefore be proactive to take advantage of the grant program. Communities with an identified revenue stream will be in a better position to compete for and use the grant funds as they become available. Grant funding options include:

- Earmarked money from the provincial capital budget including direct grants or gas tax revenues allocated to Ontario municipalities
- Infrastructure investment programs such as the Ontario Rural Infrastructure Investment Initiative and the Canada-Ontario Municipal Rural Infrastructure Fund
- The federal government, through the Federation of Canadian Municipalities, has established grant funding under the Green Municipal Fund that could be used to support municipal governments and their partners in developing communities that are more environmentally, socially and economically sustainable (note: eligible projects may include feasibility studies, field tests, sustainable community plans, and capital projects that demonstrate leadership in sustainable development and serve as examples for other communities)
- Research grants, typically in conjunction with a local university or other partners

Table 5 shows the funding options that have been used to support all or some portion of municipal SWM programs in North America. Property taxes are the primary source of funding for SWM programs in Canada.

Table 5: General Stormwater Program Funding Options

Category/Description	Category/Description
Taxes	**Fees and Special Charges**
Local Income Taxes	Aquifer Protection Fees
Local Sales Taxes	Connection Fees
Personal (Tangible) Property Taxes	Construction Fees
Real (Ad Valorem) Property Taxes	Debenture/Bond Issuance Fees
Selective Sales Taxes	Development Charges/Impact Fees
State/Provincial Sales and Use Taxes	Exactions
	Inspection/Monitoring/Testing Fees
Other Means	Permitting Fees
Debentures/Bonds	Septic System Impact Fees
Fines and Penalties	Special Assessments
Grants	Stormwater Rates
Loans	Tolls
Public-Private Partnership Arrangements	Water Rights Application Fees
	Water/Wastewater Rates
	Well Permit/Pumping Fees

The consultant team has compiled details from a number of Canadian municipalities that have implemented a stormwater user fee or have investigated alternative financing mechanisms through formal studies. **Table 6** summarizes stormwater user fees in Canada, as of December 2012, and is based on discussions with municipal staff throughout the country or through website research. For each municipality, the user fee type is given along with the status or implementation date, and the basic details.

The following sections review the funding options that are commonly used throughout Canada, namely:

- Property Tax
- Development Related Charges and Fees
- Stormwater Rate

Table 6: Summary of Stormwater User Fees in Canada

Municipality	User Fee Type	Start	Details (as of December 2012)
Ontario			
Aurora	Tiered Flat Fee	1998	Storm Sewer Charge, Res'l $4.11/mo, Comm'l/Ind'l $57.69/mo.
London	Tiered Flat Fee	1996	Storm Drainage Charge, Res'l $11.65/mo, Comm'l high rise $14.17/mo, Inst'l $11.24/mo, Ind'l $1,170/ha/yr, Ind'l over 600,000m3 $995/ha/yr.
St. Thomas	Tiered Flat Fee	2000	Storm Drainage Rate, Res'l $7.32/mo, Comm'l/Ind'l $7.32/mo or $101.09/ha/mo if land area >1800m2.
Kitchener	Variable Rate	2011	Stormwater Utility, Average Single-Family Detached Home $9.73/mo (see rate schedule for other property types). www.kitchener.ca/en/livinginkitchener/stormwater_utility.asp
Waterloo	Variable Rate	2011	Stormwater Rate (combined with tax, 50% funding in 2012), Average Single-Family Detached Home $2.49/mo (see rate schedule for other property types). www.city.waterloo.on.ca
Saskatchewan			
Regina	Tiered Flat Fee	2001	Based on property size in 2,000 m2 increments, typical Res'l $11.40/mo.
Saskatoon	Variable Rate	2012	Storm Water Utility, Res'l $4.40/mo, non-residential = $4.40/mo per 265m2 of impervious area (replaced Flat Fee that had been implemented in 2005).
Alberta			
Calgary	Flat Fee	1994	Storm Drainage Service Charge, $8.36/mo (per water meter) to fund capital projects.
Edmonton	Variable Rate	2003	Land Drainage Utility based on intensity of development factor. Typical Res'l = $6.00/mo.
St. Albert	Tiered Flat Fee	2003	Storm Sewer Use Fee, Res'l $11.44/mo, Non-Res'l $31.18/mo.
Strathcona County	Flat Fee (two communities)	2007	Storm Sewer Operations charge, Res'l $2.00/mo and $8.87/mo in two communities.
British Columbia			
Richmond	Tiered Flat Fee		Flood Control & Drainage Charge, typical Res'l = $9.19/mo.
Langley	Flat Fee/Parcel Tax		Implemented as a parcel tax (as authorized under BC Community Charter SBC 2003).
Surrey	Flat Fee/Parcel Tax		Implemented as a parcel tax and used for flood control measures, $13.42/mo (regardless of zoning and size, but distinguishes lowland from upland service areas).
White Rock	Tiered Flat Fee/ Parcel Tax		Implemented as a parcel tax, Res'l $23.00/mo.
Pitt Meadows	Tiered Flat Fee		Drainage levy (combined with tax funding), Res'l $6.50/mo.
West Vancouver	Tiered Flat Fee		Drainage levy, Res'l $10.05/mo.

3.3 Property Tax

3.3.1 General Tax Fund

Local property taxes are the most significant revenue source to support municipal SWM programs in Canada. Revenue derived from the municipality's portion of property tax goes into a general fund which covers the operating and capital expenditures of many services across several departments. Property tax is determined based on the property value assessment multiplied by the applicable tax rate which depends on zoning/building type and taxing status. The City also collects tax revenue on behalf of the school boards and the upper tier government, if applicable. The municipal portion on the annual property tax bill is calculated as the assessed property value times the corresponding rate by property type.

Property tax rates are established on an annual basis by Canadian municipalities to meet their projected funding needs and in consideration of the total current value assessment of all taxable properties within their jurisdiction. Further, a number of municipalities have a capping adjustment program that limits tax payments for selected property types (e.g., Commercial, Industrial and Multi-Residential Properties).

Tax-exempt properties generally do not contribute tax funds to the municipality's SWM program. Tax-exempt properties include governmental parcels (e.g., municipal, regional, provincial, and federal buildings) as well as institutional parcels (e.g., schools, hospitals, and churches) and other charitable organizations that are registered with the Canada Revenue Agency and therefore exempt from taxation under the Income Tax Act.

Some municipalities charge a core service fee or tax-like payment to tax-exempt properties. For example, the federal government administers the Payments in Lieu of Taxes (PILT) program which distributes funds on behalf of eligible tax-exempt institutions to property taxing authorities to compensate for valuable services such as SWM, police protection, fire protection, waste disposal and roads. In Ontario, provincial legislation authorizes a "heads and beds" charge to institutions (e.g., hospitals, post-secondary schools, and correctional facilities), where payments of $75 per person/year or per bed/year are made under this program. For example, a 400-bed hospital would contribute $30,000 to the local municipality as a payment in lieu of taxes.

3.3.2 Dedicated Tax Levy

A dedicated levy can be administered specifically to raise revenue for stormwater services, such that a fixed property tax rate is applied and itemized on the property owner's annual tax bill, as is done in other Canadian municipalities for other public services (e.g., Police, Fire, Transit, Local Improvements, etc.). A by-law would be required to dedicate these funds specifically to SWM. With the general tax fund, money to support the SWM program comes from the City's overall tax rate and is not dedicated until the annual budget is set each year.

3.3.3 Advantages and Disadvantages

Funding a municipal SWM program through property taxes offers several advantages, including:

- Property-tax-based revenues are already accepted as the primary existing source of revenue for municipalities
- Can be used to fund all SWM program activities
- The billing system is well established

Funding a municipal SWM program through property taxes offers several disadvantages, including:

- Property taxes are based on a property's assessed value, which does not correlate with its runoff contribution, so the fairness and equity of this revenue source is low

- It is not a stable and dedicated funding source (except in the case of a dedicated tax levy as described in Section 3.3.2)
- There is an annual competition for general tax funds to support other community services and can therefore prove difficult to sustain the SWM program (e.g., funding demands for public safety and health care decrease the ability of property taxes to support significant increases in other programs such as SWM)
- There is no incentive for property owners to reduce stormwater runoff and pollutant discharge
- Tax-exempt properties contribute very little (i.e., through payments in lieu of taxes) or nothing to support the SWM program

3.4 Development Related Charges and Fees

3.4.1 Development Charges

Through the Development Charges Act, 1997, municipalities in Ontario are authorized to pass by-laws for the recovery of costs incurred to provide services to new and re-development projects. Development charges are a one-time cost that can only be utilized to fund eligible growth-related capital costs, and only for the services for which they were collected. In Mississauga, the storm drainage component of development charges, aside from SWM facilities, is based on the percentage of remaining developable lands (approximately 3% in 2009).

Revenue derived from DC can be applied to projects throughout the municipality. As mentioned above, it is used to cover the capital costs related to growth, which may include a portion of the following SWM program components for Mississauga:

- Stream erosion control and restoration works
- Conveyance works, including channelization, culvert and storm sewer improvements
- Storm sewer oversizing
- Stormwater quality control facilities and retrofits
- Studies and monitoring

The City of Mississauga has a development charges program in place and is updated in accordance with the Development Charges Act, 1997.

3.4.2 Cash-in-lieu Charges

In areas where there is the potential for re-development/infill, and on-site SWM facilities are considered infeasible (e.g., by presenting an undue maintenance burden on the municipality) contributions to off-site SWM facilities can be allocated in the form of a cash-in-lieu policy. Like DC, the rates are based on the area of development (or number of dwelling units) and area-specific rates can be determined for different geographic locations within the community. Unlike DC however, revenue derived from cash-in-lieu charges can be applied to both capital and O&M costs of SWM facilities. A number of municipalities in Ontario have adopted a cash-in-lieu program.

3.4.3 Advantages and Disadvantages

Funding a municipal SWM program through development related charges offers several advantages, including:

- Accepted by the development community
- Charges are based on contributing area, which is more equitable than property value

Funding a municipal SWM program through development related charges offers several disadvantages, including:

- Charges are limited by the amount of developable land within the municipality and funds can only be used to support growth related projects
- Directly dependent on growth and growth rates (i.e., if the growth rate declines, so does the revenue collected)
- Development charges are limited to the capital costs associated with future development and cannot be used for O&M (except in the case of cash-in-lieu charges)

3.5 Stormwater Rate

A stormwater rate is a financing mechanism that allocates charges to individual properties and is administered as a user fee, in a similar fashion as a water/wastewater rate. This is known as a stormwater utility in the U.S. The fee for a stormwater rate is typically applied on a monthly basis. The basic calculation for a stormwater rate is simply the municipal SWM program expense divided by the number of billing units within the municipality. To determine the billing unit denominator, there are a number of methods to allocate SWM-related costs to property owners. The following billing unit methods have been used throughout North America and are listed in increasing order of accuracy (i.e., in terms of fairness and equity of the charge allocation):

- Flat Fee: the charge does not vary according to usage of the property (e.g., a charge of $5 per month per water meter account) or per hectare of land.
- Tiered Flat Fee: this extends the Flat Fee by offering different ratepayer categories (e.g., $5 per month per residential property, and $1,000 per year per commercial/industrial property).
- Runoff Coefficient: the charge varies by property size and an assumed coefficient that reflects stormwater runoff potential by property type (e.g., residentially zoned properties are assigned a runoff coefficient of 0.4 and industrially zoned properties are assigned a runoff coefficient of 0.7).
- Intensity of Development Factor: similar to Runoff Coefficient billing method however adjustment factors are applied to account for the property's development status (e.g., a factor of 0.0 for undeveloped properties, 1.0 for fully developed properties, and a factor between 0.0 and 1.0 for properties considered to be underdeveloped within their underlying zoning category).
- Equivalent Residential Unit (ERU): a statistical sampling of measured impervious area for residential dwelling units is performed to determine the average ERU size (i.e., square meters of impervious area). The average impervious area for all types of residential dwelling units becomes the base billing unit. Charges for residential properties are based on assigning one stormwater billing unit to each residential dwelling unit, regardless of density. Given the wide variability in impervious area statistics for non-residential properties, the impervious area for each non-residential property should be measured. The charge for non-residential properties is determined by dividing the measured impervious area by the average ERU size.
- Single Family Unit (SFU): a statistical sampling of measured impervious area for single-family detached homes is performed to determine the average SFU size (i.e., square meters of impervious area). The average impervious area for single-family detached homes becomes the base billing unit with one stormwater billing unit assigned to each single-family detached home and fractional billing units assigned to other residential property types. Multi-family residential properties such as apartments, condominiums, and townhouses have a smaller SFU size than single-family detached homes. The charge for non-residential properties is determined by dividing the measured impervious area by the average SFU size.
- Tiered Residential Rate (e.g., Tiered SFU): the Tiered SFU billing unit method extends the SFU method by accounting for the wide variability in impervious area among residential properties by assigning three tiers to single-family detached homes (e.g., Small, Medium and Large). The number of categories for multi-family residential properties can also be extended to distinguish high-rise apartments and condos, for example.
- Level-of-Service/Geography Base: the ERU and SFU billing unit methods can be extended to include separate rate structure calculations that vary by the level of service provided within distinct geographical boundaries (e.g., a higher rate in urban areas that receive more frequent O&M activities and facilities that provide a higher level of flood protection than in rural areas).

- Impervious Area Measurement (Complete Coverage): the most accurate of all billing unit methods is to measure the impervious area of all properties within a given jurisdiction.

As noted above, the methods listed are in increasing order of accuracy with respect to allocating charges among property types based on relative contribution of stormwater runoff and pollutant loading. The first four methods are the easiest to set up and administer, however they are the least fair and equitable indicators of the property's contribution to the municipal SWM system. The final five methods are based on measured impervious area and described in detail in the next section. With increasing accuracy however, the cost to administer and manage the stormwater rate increases. The final two billing unit methods often feature prohibitively high administration costs.

There are perhaps 20 to 30 municipalities across Canada that have either implemented or are in the process of implementing a stormwater user fee and Table 6 included details for many of these. Other municipalities in Ontario are known to be evaluating various stormwater funding options.

3.5.1 Variable Stormwater Rate (Impervious Area Based)

A variable stormwater rate involves charges within specific customer classes that vary according to the amount of impervious area. This is distinguished from flat rate charges in which individual properties within each customer class are all charged the same rate. A variable rate accounts for the contribution of stormwater runoff from each property to the local drainage system (e.g., ditches, sewers, and channels) and water quality control facilities. The area of impervious ground cover (e.g., rooftops, driveways, and parking lots) is typically used as the basis for the stormwater rate because impervious area is a common indicator of stormwater flow and pollution discharge potential. **Figure 2** illustrates the impervious area for a non-residential property, highlighting the building footprint in the left panel and the driveway and parking areas in the right panel. The sum total of these areas within the lot boundary represents the total impervious area for this property.

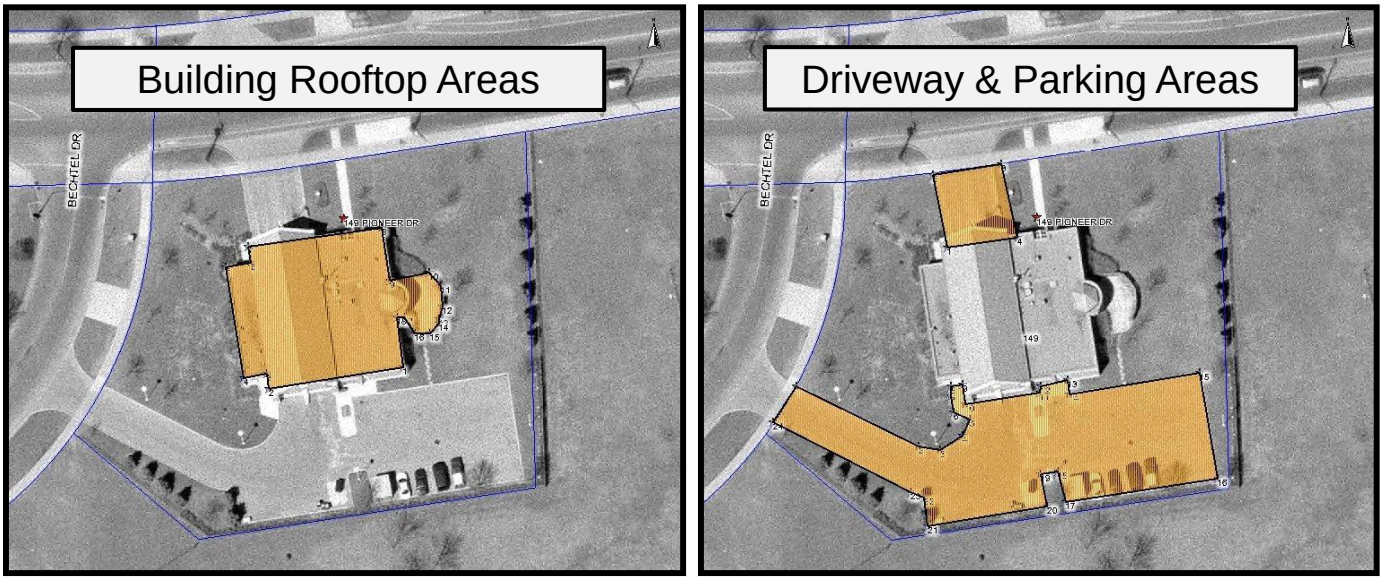

Figure 2: Example of Impervious Areas of a Single-Family Detached Home

In January 2011, the City of Kitchener began implementing a Tiered SFU rate structure, the first stormwater utility of its kind in Canada. The City of Waterloo also began its stormwater rate in January 2011, although charges are assessed as a tiered flat rate by zoning category and property area, the basis for residential categories is the Tiered

SFU rate structure developed during the feasibility study. As of December 2012, other municipalities in Canada with a variable stormwater rate in operation include Edmonton and Saskatoon.

A stormwater rate based on impervious area offers a more equitable funding mechanism than other funding sources, because fees assessed to each parcel of land are based on runoff contribution to the municipal SWM system rather than property value or size. Because commercial and industrial properties generally generate much more runoff and stormwater pollution per square meter than single-family residential properties, these properties are charged a proportionally greater fee. Revenue generated through the rate can be used for any SWM program related costs.

The principal advantage associated with a stormwater rate is that all parcels can be assessed a user fee that reflects their relative stormwater contribution to the municipal SWM system, including tax-exempt properties (e.g., places of worship, GTAA, and other tax-exempt buildings and entities), but not necessarily properties that are exempt from municipal fees and charges. For example, each tax-exempt parcel could be charged a stormwater user fee that is proportional to the stormwater discharge from the property. This method is similar to the manner in which other public utility or user fee operations bill tax-exempt property based on usage (e.g., electricity usage and water consumption).

The basic objective of SWM is to maintain characteristics of flow and water quality in the receiving watercourse as near as possible to undeveloped conditions. Regulatory requirements follow this principle by defining a common baseline which represents undeveloped land. The receiving watercourse will adapt to achieve an equilibrium state (e.g., conveyance capacity, sediment/nutrient transport, etc.) in response to these undeveloped lands. Therefore, if all land in a watershed remains undeveloped, there would not be a need for man-made SWM facilities and operations (and, consequently, municipal SWM program expenditures) to manage the resulting quantity and quality impacts.

When development occurs within a watershed, these activities necessitate the construction of physical facilities to manage runoff and the maintenance functions to assure the impacts are not detrimental to lands in the service area or to downstream properties. When developed lands generate increased runoff quantity and a decreased runoff quality, the impact can be directly correlated to the impervious area within the development. With the exception of public rights-of-way (since public roads are considered part of the drainage system), the remaining impervious area can serve as a variable that correlates an individual parcel's impact to the entire impervious area within the service area. Therefore, a parcel's impervious area is the most precise method to directly relate an individual parcel's impact upon the entire SWM system's needs.

Although detailed hydrologic and hydraulic analyses must be performed to effectively size the required facilities to manage quantity and to improve water quality, only the impervious area is required to allocate charges to individual properties. The basis for SWM facility and collection system sizing and operation is the total flow volume and peak flow rates, depths, and velocities for a variety of storm recurrence intervals. However, the total revenue requirement on an annual basis is the cost that must be allocated effectively to the contributing properties. This process allows the increased impact (i.e., development within a watershed) to be the basis for cost allocation since these are the impacts that must be mitigated.

There will be certain properties that will have characteristics that do not fit the exact model that states "increased development correlates to impervious area". Examples include developments that have large quantities of grassed area (which have somewhat different hydrologic properties than natural undeveloped lands) or have disconnected their impervious areas from the storm sewer/drainage system (e.g., by discharging onto pervious surface areas or into porous media). Likewise, developments that incorporate source controls or private SWM facilities prior to discharge to the municipal collection system should be charged less than developments that do not adopt best

management practices. These two examples reflect the characteristics that will allow an effective credit policy to be developed to reflect the differences between developed properties.

The use of impervious area as the basis for setting a stormwater rate is supported by standard manuals of practice. These manuals confirm the use of impervious area as a technically sound, fair and equitable basis for allocating SWM program costs, and include:

- Water Environment Federation (1994). User-Fee-Funded Stormwater Utilities. This manual was prepared by the Water Environment Federation's Task Force on User-Fee-Funded Stormwater Utilities and summarizes stormwater rate implementations throughout the U.S.
- Florida Stormwater Association (2003). Establishing a Stormwater Utility in Florida - 2003 Edition. This manual was developed from the state with the largest number of stormwater rate implementations in the U.S.

A stormwater rate based on measured impervious area is a relatively new concept in Canada, but has been successfully implemented throughout the U.S. There are well over 1,500 stormwater user fees across the U.S. and over 700 of these are based on measured impervious area. References on stormwater rates and their application throughout North America can be found in **Appendix B**.

Legal precedents in the U.S. have demonstrated the viability of a user fee charge based on impervious area. Specific court cases have been decided that reaffirm the use of impervious area as the necessary variable to allocate system cost to individual properties. However, most court cases have been brought against local governments with the principal consideration being whether the stormwater charge is a user fee or a tax. In every example where a governmental entity has delineated the programmatic nature of the revenue requirements throughout the system and confirmed that those expenditures were providing nearly uniform service, the court has ruled in support of the stormwater fee for that jurisdiction. The allocation of system-wide costs based on impervious area has been supported in each instance. Example court findings are as follows:

- Supreme Court of Georgia; Decided- June 28, 2004; S04A0696-McLeod et al. v. Columbia County
- District Court of Appeal First District, State of Florida; Case No. 1D99-4548; City of Gainesville, Appellant, v. State of Florida Department of transportation, Appellee; Opinion filed March 5, 2001
- Supreme Court of Washington; Teter et al v. Clark County; Case No. 51173-0; August 8, 1985
- Supreme Court of Colorado; Zellinger et al v. The City and County of Denver; Case No. 84SA508; September 8, 1986

The average impervious area per dwelling unit (in square meters) for residential land use categories is typically designated as the base unit for the user fee structure. The base unit represents the stormwater discharge potential of the average residential dwelling and its associated lot. It can be based on all residential development (including multi-family) or on single-family residential development only. The average impervious area of the base unit is calculated by summing the impervious area (in square meters or square feet) for all residential parcels and dividing by the total number of dwelling units. A stormwater rate typically charges a flat fee to each residential dwelling unit and charges a non-residential parcel based on the ratio of the parcel's impervious area to that of the base unit. For example, if a commercial or industrial parcel has four times the impervious area of the base unit, the parcel would be billed four times the monthly flat fee for residential dwelling units.

Figure 3 illustrates the stormwater rate charges for a commercial and industrial property that have approximately the same taxable property value assessment, and therefore would contribute the same amount towards the municipal SWM program under tax-based funding. The photo on the left shows a tall office complex in an urban center. The photo on the right shows a large, flat industrial building. Note the photos are at different scales and the industrial property has a much larger footprint than the office tower property, with approximately 12 times the impervious area, and hence 12 times the runoff contributed to the municipal SWM system. The stormwater rate charge for the office

tower property on the left was determined to be $1,170 per year, while the industrial property on the right would be charged $13,970 per year.

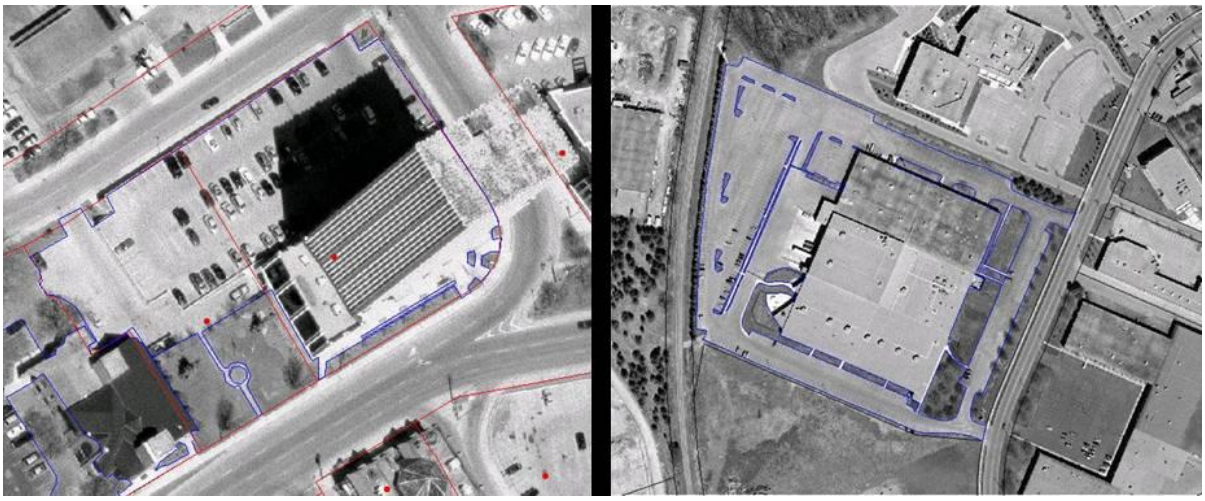

Figure 3: Example Properties Comparing Stormwater Rate Charges

The key principle in a variable stormwater rate is to charge a higher rate for properties with a larger impervious footprint and a lower rate for those with a smaller impervious footprint. This philosophy is amenable to the unique housing characteristics in Mississauga, as a stormwater rate can account for the wide variability in impervious area among residential properties. A tiered charge structure was evaluated in this study to specifically distinguish single-family detached homes according to their impervious area. In addition, fractional billing units for multi-family residential properties (e.g., apartments, condos, and townhouses) were evaluated in this study.

3.5.2 Advantages and Disadvantages

Funding a municipal SWM program through a stormwater rate offers several advantages, including:

- Stable and dedicated funding source
- Fair and equitable fee that is based on runoff contribution rather than property value
- Costs for municipal SWM services are equitably distributed to all privately and publicly-owned developed properties within the municipality
- With a credit program, provides an incentive for property owners to reduce stormwater runoff and pollutant discharge
- A stable funding source for all SWM program activities to allow long-range planning, large-scale capital improvements, and leverage for debentures
- A mechanism to ensure privately owned SWM infrastructure is properly maintained

Funding a municipal SWM program through a stormwater rate offers several disadvantages, including:

- Additional implementation costs (e.g., rate study, database management, billing and customer service)
- The possibility that a new fee may not be well received by the public

Practical considerations for overcoming these disadvantages are described in greater detail in Sections 3.8.4 and 3.8.5. Implementation costs for database management are typically less for municipalities like Mississauga that have high-quality, established Geographic Information Systems (GIS). Billing costs could be minimized through the use of existing billing systems such as electricity, water/sewer, etc. Further, public reception can be enhanced through a structured public consultation program.

3.6 Comparison of Funding Options

The three primary funding options explored in Sections 3.3 through 3.5 were evaluated and compared in this study. **Table 7** compares the various stormwater funding options with respect to several criteria, including:

- City-Wide Applicability: This category indicates whether or not the funding method can be used throughout the municipality's jurisdiction
- Used for Capital Costs: Identifies the eligibility for funds to be used to support capital improvement projects
- Used for O&M Costs: Identifies the eligibility for funds to be used to support operations and maintenance activities
- Used for Engineering/Support Costs: Identifies the eligibility for funds to be used to offset the costs of engineering, support, and overall administration of the SWM program
- Fair & Equitable Allocation: This category indicates whether or not the funding method charges the property owner according to individual contribution to the SWM program expenditures
- Dedicated Funding Source: Identifies those funding methods that are sustainable and funds are dedicated solely to SWM program expenditures
- Effort to Administrate: This category identifies the relative effort to administer the funding option (i.e., options with low administrative effort are considered to be advantageous)
- Environmental Benefits: This category identifies the relative scale of environmental benefits provided by the option (i.e., options with high environmental benefit are considered to be advantageous and generally include those options that provide incentives to reduce stormwater and pollutant loads using source control measures)

Table 7: Comparison of Stormwater Funding Options

Funding Method	City Wide Applic-ability	Used for Capital Costs	Used for O&M Costs	Used for Eng'rg/ Support Costs	Fair & Equitable Allocation	Dedicated Funding Source	Effort To Admin-istrate	Environ-mental Benefits
Property Tax	Yes	Yes	Yes	Yes	No	No	Low	Low
Development Charges	No	New Capital	No	Partly	Partly	Yes	Medium	Medium
Stormwater Rate	Yes	Yes	Yes	Yes	Yes	Yes	High	High

An ideal funding source would have the following characteristics:

- Consistent with provincial and federal legislation
- Applicable for use on a City-wide basis and across all land use types
- Provides a sustainable, stable and dedicated funding source to support SWM program needs
- Revenue meets the requirements for the optimum level of service provided
- Costs and benefits are equitably distributed across the community
- Appropriate reserve funding levels are maintained
- Specifically for the case of fees and special charges, sound policies are in place for credits, adjustments and appeals, and rate study recommendations are publicly supported
- Reasonable implementation costs (e.g., billing systems and administration)

A stormwater rate is considered the most fair and equitable funding mechanism because the costs are allocated based on the relative amount of stormwater runoff generated by a property. It also provides a sustainable funding mechanism since a rate diverts funding from the general tax stream into a dedicated enterprise fund, where revenue can only be spent on SWM program expenditures. By reducing the revenue requirements from the general tax stream, more funds become available for general municipal services and therefore a high score is assigned.

Under a stormwater rate, the correlation between the amount of impervious area and the relative quantity and quality of stormwater runoff allows a fair and equitable allocation of SWM costs. In addition, a stormwater rate provides a mechanism to provide financial incentives to reduce stormwater and pollutant load contributions at source as well as a dedicated revenue source that can be used to implement a comprehensive program.

As shown in Table 7, only the property tax and stormwater rate alternatives address all aspects of a comprehensive SWM program on a city-wide scale. As a result, the funding options to support the City's future SWM program that were investigated in this study (Section 4) included:

- Property tax (i.e., increasing the City's current tax rates)
- A new stormwater rate

Development related charges are an important source of revenue, but changes to the City's current DC program were not investigated at this time for the following reasons:

- DC revenue cannot be used to support the entire program (i.e., it can only be used to fund eligible growth-related capital costs and only for the services for which they were collected)
- DC revenue cannot be used to cover O&M costs or life cycle asset reinvestment
- Collection of DC funds is declining as the City is nearly built out
- A new background study will be completed in 2014 to identify future DC program needs

3.7 Ontario and Alberta Case Studies

This section highlights recent stormwater rate studies in Ontario and Alberta.

3.7.1 Cities of Kitchener and Waterloo, Ontario

The Kitchener-Waterloo Stormwater Utility Feasibility Study was initiated in July 2005. This study was prompted by a variety of SWM program needs for both Cities, including:

- Identification of deficiencies in the current levels of service and with respect to legislative requirements
- Inability to fund current SWM infrastructure needs (both construction and maintenance)
- Desire to consolidate and coordinate SWM activities and services that are currently spread across multiple departments and budgets
- Need to improve the existing level of service and to better plan, schedule and proactively manage their respective SWM programs
- Develop an appropriate and sustainable source of funding (i.e., consistent from year to year) to support the improved SWM program and protect the existing stormwater infrastructure with funds that are dedicated solely to SWM and generated on a fair and equitable basis

The overall objective of the Kitchener-Waterloo study was to quantify an appropriate level of service, and evaluate potential funding sources as a means to support and enhance the respective SWM programs in the Cities of Kitchener and Waterloo in a sustainable manner. Specific study objectives included a detailed quantification of the current operations and capital SWM program elements as well as a detailed quantification of the projected SWM program needs, as identified by an appropriate and affordable level of service. A recommendation of the financial mechanisms to meet these needs was made along with an implementation plan identifying the key activities and corresponding schedules to implement the recommended funding option. Key project highlights included:

- Kickoff workshop in August 2005 that included presentations, interviews, and related discussion session with key staff from several City departments
- A series of six facilitated Stormwater Advisory Committee (SWAC) meetings from October 2005 thru April 2006

- Individual discussion meetings in March 2006 with SWAC members (i.e., residents, business, and education groups)
- Two public open house forums (in February and April 2006) with summary presentations, informational poster boards, and activities targeted to specific groups (i.e., residential taxpayers, non-residential taxpayers, tax-exempt entities)

The existing and future SWM program needs and expenditures were reviewed and evaluated for each city. In addition, a statistical sampling of the impervious area for residential land use categories was performed using computer based measurements from aerial photographs. Impervious areas for non-residential parcels were estimated.

The project was halted in May 2006 in order to solicit more public feedback on expenditures and funding options for both cities' stormwater programs. During the project hiatus, the project name was changed to the Kitchener-Waterloo Stormwater Management Program and Funding Review. The project resumed the following year with an interim report in May 2007 that reviewed the current SWM programs and identified current and future funding needs and expenditures.

Research focus groups were held in November 2007 to provide additional public feedback. Participants in the focus groups were randomly recruited from their target population representing Kitchener residents, Waterloo residents, business owners from both municipalities, and tax-exempt property owners or board members from both municipalities. Meetings were held individually with these four groups and were facilitated by a neutral, third party facilitator. The key findings from the focus group meetings included the following:

- In general, people support the concept that those who contribute the most stormwater to the system through impermeable surfaces should contribute the most funds toward managing it
- In general, residential property owners support a user fee model (which charges in relation to the stormwater runoff contribution from a property, rather than property tax which is based on assessed value). This is likely influenced by the possibility that they would pay less than they currently do
- Business and tax-exempt property owners are much more concerned about a user fee structure that would have them absorb additional costs
- Tax-exempt properties would experience unique and perhaps profound challenges under a user fee scenario, as revenue generation opportunities are limited
- The introduction of a combination fee structure (i.e. blended revenue from the tax base and user fees) is seen by many to be a more palatable first step towards a user pay system
- Stormwater and related funding matters were not a high priority issue for most participants
- Once informed about the current program and funding challenges, many expressed greater levels of interest in SWM and support for additional funding
- Skepticism was expressed by some participants that moving to a user fee would result in any decrease in property taxes
- Education, incentives and credits are seen as key success factors for any SWM funding system

The stormwater rate structure analysis resumed in January 2008. The average detached Single Family Unit (SFU) uses the average impervious area of the single-family detached home as the base billing unit. Under this rate policy, single-family residences are charged 1 SFU per dwelling unit. Multi-family, duplex, triplex, condominiums and mobile homes would be charged based upon the total impervious area of that category divided by the number of dwelling units, and then divided by the average area of a single-family parcel.

Based on the parcel analysis, a Tiered SFU structure was deemed to be appropriate in Kitchener and Waterloo.

The draft report was submitted in October 2008, which described the recommended rate structure and implementation strategy. The final SWAC meeting was held in December 2008. The final report was presented to the respective City Councils in October 2009. In June 2010, both City Councils approved the implementation of a stormwater rate that would begin in January 2011. Details of the City of Kitchener stormwater rate implementation are described below in Section 3.7.6.

Project references include the following:

Mr. Nick Gollan, C.E.T.
Manager, Stormwater Utility
City of Kitchener
200 King Street West, 9th Floor
Kitchener, ON N2G 4G7
Tel: (519) 741-2422

Ms. Denise McGoldrick, P.Eng.
Director of Water Services
City of Waterloo
265 Lexington Court
Waterloo, ON N2J 4A8
Tel: (519) 747-8605

3.7.2 City of Stratford, Ontario

The City of Stratford Stormwater Rate Study and Implementation Plan project was initiated in March 2006 to develop and implement an equitable, self-supporting, and dedicated funding source for the City's SWM program, including:

- An identification of the City's SWM program needs and expenditures
- An evaluation of the appropriate funding mechanisms and resultant customer charges to support these needs
- Development of an implementation plan for the recommended funding mechanism

Key project highlights included:

- Kickoff workshop in March 2006 that included presentations, interviews, and related discussion session with key staff from various City departments
- A series of six facilitated SWAC meetings and one open dialog session were held from June 2006 through December 2006
- A Public Information Centre held at the Kiwanis Centre in September 2006
- An Open House at City Hall in March 2007 that featured summary presentations, informational poster boards, and activities targeted to specific groups (i.e., residential taxpayers, non-residential taxpayers, tax-exempt entities)

The City's existing and future SWM program needs and expenditures were reviewed and evaluated. To accommodate proposed capital expenditures of $30 million for recommended improvement projects, long-term financing options were evaluated with respect to a stormwater rate.

A statistical sampling of the impervious area for residential land use categories was performed and all non-residential parcels were individually measured on a parcel-by-parcel basis. The impervious area for each parcel was calculated using computer based measurements from aerial photographs. Based on the parcel analysis, an SFU rate structure was deemed to be appropriate in Stratford. Under this rate policy, all customers are charged a fee based on the total impervious area on each parcel divided by the average area of a single-family parcel. The non-residential customer class made up 9 percent of the total number of developed parcels, but contributed 54 percent of the total impervious area for the City.

Recommendations in the final report included implementing a stormwater rate to cover the cost of the City's non-capital activities (i.e., operations and maintenance, Upper Thames River Conservation Authority levy contribution, and rate implementation costs), representing approximately 16 percent of the City's proposed SWM program

expenditures. Options for funding the capital portion (i.e., 84 percent of the average annual SWM program expenditures) were recommended to be put forth as a referendum to voters, with the following options:

- 100% tax, 0% rate
- 50% tax, 50% rate
- 0% tax, 100% rate

Additional recommendations included:

- Reducing property tax support for the City's SWM program by the corresponding stormwater rate revenue and the amount of reduced property tax support identified should not be used for other City functions
- An equitable adjustment and credit policy manual should be developed for eligible non-residential property owners and owner associations
- Tax-exempt properties should be funded by a property-tax subsidy in an amount equal to the stormwater rate charge to these properties
- Public information and outreach during implementation
- Adoption of a by-law and rate resolution for the stormwater rate
- Definition of the required procedures and responsibilities to carry out the administrative functions of the stormwater rate (e.g., development of accounting procedures to accommodate the rate revenue and track expenditures)
- Implementation of a billing system and data management procedures for the program, in which the stormwater rate charge will be added to Festival Hydro bills

The final report was submitted in April 2007 and City council deliberations continued from May through October 2007. During these deliberations, the stormwater rate structure was determined under a range of scenarios from 25% rate (and 75% tax) to 100% rate. Initial councillor votes at the Finance Committee level unanimously favored a full stormwater rate, however feedback from business owners in September and October 2007 persuaded councillors to ultimately vote to continue tax-based funding of the City's SWM program. As a result the project ended in November 2007.

Project Reference:

Mr. George Bowa, P.Eng.
Director of Engineering and Public Works
City of Stratford
82 Erie Street, 3rd Floor
Stratford, ON N5A 2M4
Tel: (519) 271-0250 Ext. 222

3.7.3 Credit Valley Conservation, Ontario

In June 2007, the Credit Valley Conservation Authority (CVC) investigated various funding mechanisms employed in North America to support municipal SWM programs and conduct conceptual financial analyses for selected municipalities within the Credit River watershed. The key deliverables included:

- Reviewed and evaluated stormwater funding options that have been used as successful financial models for SWM programs throughout North America, including representative case studies from communities that best reflect the needs and issues of CVC member municipalities
- Held various working sessions with Steering Group members to confirm goals and objectives for the financial analysis and explored related issues generated by the participants
- Conducted a conceptual stormwater rate analysis for selected CVC member municipalities to explore rate structure options and establish preliminary revenue expectations

- Documented the results and findings in a report, with follow-up presentations to the Steering Group and CVC Board of Directors

A stormwater rate was chosen to be the focus of this study as it is the most fair, equitable and sustainable funding mechanism for allocating the costs of a municipal stormwater management program (i.e., capital, operations, and administration). With a stormwater rate, property owners would be charged in relation to the amount of impervious area (i.e., rooftops, driveways, and parking areas), which directly correlates to their property's contribution of runoff volume and pollutant loading. The implementation of a stormwater rate would represent a dedicated and sustainable source of revenue generated in a more equitable manner than property taxes (which are based on the assessed property value rather than the contribution to runoff) and development charges (which are based on total number of dwelling units or land area).

As a dedicated and sustainable source of funding, a stormwater rate would provide more budgeting flexibility than property tax or growth-related funding. Further, a stormwater rate would also support CVC strategies and initiatives by including incentives for private property source controls. Not only would there be an inherent developer incentive for installing stormwater source controls (i.e., since they reduce land requirements for end-of-pipe facilities and therefore can reduce overall SWM construction costs), but property owners with source controls would be eligible for stormwater rate credits if these facilities are properly maintained.

To explore rate structure options and establish preliminary revenue expectations, a conceptual stormwater rate analysis was conducted for two CVC member municipalities. The development of a stormwater rate structure required an estimate of the annual SWM program expenditures and the impervious area characteristics of each municipality, which were selected in order to represent a cross-section of CVC communities that vary by geography, governance, population, and land use characteristics.

The final report was submitted in October 2008, which included a generalized implementation strategy for municipalities that may choose to consider a stormwater rate.

Project Reference:

Ms. Christine Zimmer, P.Eng., MSc (Eng)
Manager, Protection and Restoration
Credit Valley Conservation Authority
1255 Old Derry Road
Mississauga, ON L5N 6R4
Tel: (905) 670-1615

3.7.4 City of Calgary, Alberta

This study was initiated in May 2008 with the purpose of investigating refinements to the City's current fixed stormwater charge that would charge a variable rate structure to fund the City's SWM program. The SWM program includes various operation and maintenance activities, capital improvement projects, and other related activities and program components. A stormwater rate based on impervious area characteristics of all properties within the City of Calgary was investigated and a preliminary rate structure was developed to achieve the current SWM program revenue requirements. Key project highlights included:

- Review of the City's current SWM program activities and capital and operational budgets
- Summary of available funding mechanisms that have been used to support municipal SWM programs throughout North America, including an evaluation of the advantages and disadvantages with respect to the unique needs and issues of the City of Calgary
- Set of lessons learned and case study findings from other stormwater rate studies in Canada

- Stormwater rate analysis was performed
- Base charge developed to support the City's current SWM program revenue requirement
- Assessment of property owner impacts for the variable rate charge versus the current flat fee

The stormwater rate analysis involved coupling a parcel analysis with SWM program revenue requirements to derive an appropriate base charge for property owners within the City. Based on measurements of over 500 residential properties throughout Calgary, the results of the residential parcel analysis indicated the following:

- The average impervious area for all residential properties was determined to be 186 m^2 (2,000 ft^2) per dwelling unit
- The average impervious area per single-family detached home was determined to be 235 m^2 (2,530 ft^2)

The Equivalent Residential Unit (ERU) and Tiered Single Family Unit (Tiered SFU) methods were felt to provide the best balance between accuracy (i.e., fairness and equity) and level of effort (i.e., rate administration costs) and were therefore evaluated in this study. Under the ERU billing unit method, all residential dwelling units, regardless of property type, would be charged 1 ERU per dwelling unit. Under the Tiered SFU billing unit method, the average impervious area of single-family detached homes is used as the base billing unit, however three single-family residential tiers were distinguished:

- Single Family (Small): This tier is based on the impervious area of properties within the smallest 10 percentile of single-family homes, 158 m^2 (1,700 ft^2) or less impervious area
- Single Family (Medium): This tier is based on the impervious area of properties within the 80 percentile of single-family homes, between 158 m^2 and 309 m^2
- Single Family (Large): This tier is based on the impervious area of properties within the largest 10 percentile of single-family homes, 309 m^2 (3,330 ft^2) and greater

An assessment of the potential impact to property owners was performed that identified the impact on the overall revenue distribution under a variable rate compared to the current flat rate charge. Additionally, the impact on the annual charge for specific properties throughout Calgary was assessed.

The final report was completed in December 2008.

Project Reference:

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3.7.5 City of Hamilton, Ontario

This project was initiated in June 2009 to investigate the feasibility of an impervious area-based stormwater rate for the City of Hamilton. The City currently funds its stormwater management program through a combination of water/wastewater rate revenue and property taxes. The City has experienced financial challenges recently with reduced revenue and high treatment costs for combined sewage during wet weather events. As a result, the City investigated the feasibility of a stormwater rate to offer a more sustainable, fair and equitable funding mechanism to respond to the City's SWM needs.

This feasibility study evaluated a set of appropriate funding mechanisms and developed a preliminary rate structure to support the City's future anticipated SWM program expenditures based on impervious area characteristics. In order to properly depict alternative revenue sources, the study team identified stormwater billing units based on aerial photography and parcel boundary data, including both Equivalent Residential Unit (ERU), and Single Family Unit (SFU) rate structures. Further, SWM asset/inventory and financial information was collected and reviewed to quantify the City's current and future capital improvements and O&M activities, for the purpose of identifying a number of level of service scenarios related to the City's future SWM program.

In anticipation of Council's decision to proceed with the implementation phase of this project, additional public consultation and outreach activities were added to the Phase 1 contract in August 2009. These activities were intended to engage representative stakeholders through Public Information Centres and meetings with selected Industrial/Commercial/ Institutional representatives.

The final report was submitted in January 2010. The City proceeded with the implementation study in late 2010, however it was halted by City Council in February 2011. As of December 2012, the City is currently conducting a revised rate structure review for water, wastewater and stormwater services and expects to finalize the rates for implementation in January 2014.

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3.7.6 City of Kitchener, Ontario

This implementation study is the continuation of the feasibility study completed in 2008. Initiated in March 2010, the City began development of a new utility billing system and public education program. In addition, a technical analysis was conducted as part of the implementation strategy and included the following tasks:

- Statistical analysis of impervious area and property characteristics to establish ratepayer classifications and rate billing codes
- Financial analysis to determine base rate charges under various revenue and cost-share scenarios
- Development of the stormwater rate schedule
- Impact analysis for various taxpayer groups

Based on the analysis, the final recommended rate structure featured a Single Family Unit (SFU) billing unit methodology for residential properties, which accounts for variations in the impervious characteristics of single-family detached homes as well as the variable density of multi-family residential units. A tiered flat fee approach for non-residential properties was recommended, where individual properties would be assigned to one of several categories based on impervious area.

One of the key deliverables was the development of the stormwater rate schedule from the breakpoint analysis of property characteristics and the required level of sustainable funding. The rate schedule was applied to all taxable and tax-exempt properties in the City to determine the rate charge each property will receive on their monthly utility bill. The final approved rate schedule for the City of Kitchener is shown in **Table 8**.

Table 8: City of Kitchener Stormwater Rate Schedule (January 2011)

Rate Code	Description	Basis for Charge	Number of Dwelling Units	SFU Factor	Monthly Charge per Property
1	Residential Single Detached Small	Detached homes with building footprint size of 105 m^2 or less	1	0.6	$6.30
2	Residential Single Detached Medium	Detached homes with building footprint size between 106-236 m^2	1	1.0	$10.50
3	Residential Single Detached Large	Detached homes with building footprint size of 237 m^2 or more	1	1.3	$13.80
4	Residential Townhouse	Per property (per Tax Roll ID number)	1	0.7	$7.50
5	Residential Condominium	Per property (per Tax Roll ID number)	1	0.4	$4.20
6	Multi-Residential (2-5 Units)	Per building	Duplex	0.4	$8.40
			Triplex	0.4	$12.60
			Four-plex	0.4	$16.80
			Five-plex	0.4	$21.00
7	Multi-Residential (>5 Units)	Per property (according to number of dwelling units)	varies	0.2	Charge = (# units) × ($2.10/month) ***See Note***
8	Non-Residential Smallest	26 - 1,051 m^2 of impervious area	n/a	1.9	$20.10
9	Non-Residential Small	1,052 - 1,640 m^2 of impervious area		5.1	$53.70
10	Non-Residential Medium-Low	1,641 - 7,676 m^2 of impervious area		13.4	$140.70
11	Non-Residential Medium-High	7,677 - 16,324 m^2 of impervious area		39.1	$410.70
12	Non-Residential Large	16,325 - 39,034 m^2 of impervious area		94.8	$995.40
13	Non-Residential Largest	39,035 m^2 or greater of impervious area		203.5	$2,136.90

Note: 10-unit apt. = $21.00/mo ($252/yr); 25-unit apt. = $52.50/mo ($630/yr); 100-unit apt. = $210.00/mo ($2,520/yr).

The implementation study was supported by an extensive education and outreach program with City staff, specific ratepayer groups, and City elected officials, including:

- Two-day workshop in March 2010 with several City departments to confirm objectives, highlight challenges, and develop strategies for the rate implementation
- Ongoing coordination with GIS, utilities, and revenue department staff
- Public outreach, including meetings and workshops with elected officials and special interest groups representing tax-exempt charitable organizations
- Presentation of study findings at several city council meetings

In June 2010, City Council adopted a resolution to proceed with implementation of the stormwater rate in January 2011 and the initial billing began in February 2011. Council approved the City's Stormwater Credit and Rebate Policy in March 2012. The application process and billing system adjustments were in place for the October 2012 billing cycle.

Project reference:

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4. Funding Analysis

This section describes the analysis of the property tax and stormwater rate funding options identified in Section 3 as the viable alternatives to support the City's future SWM program. Example charges for selected properties are also presented and the preferred funding option is identified.

4.1 Property Tax

The current tax funding for the City's 2012 stormwater management program (described in Section 2.4) is shown in **Table 9**. The capital portion of the City's annual $14.7M expenditure is currently funded from two sources:

- Tax & PILT, which includes property tax and Payments In Lieu of Taxes (PILT, described in Section 3.3.1) collected for the current fiscal year
- Reserves, which originated from taxes and revenue collected in previous years

Table 9: Tax Funding (2012)

		Funding Source		Tax & PILT
Stormwater Program Item	**Cost**	**Tax & PILT**	**Reserves**	**Allocation**
Capital	$8,030,000	$2,100,000	$5,930,000	0.57%
Operations & Maintenance	$6,620,000	$6,620,000	$0	1.79%
Storm Pipe Reinvestment	$0	$0	$0	0.00%
Total Program	**$14,650,000**	**$8,720,000**	**$5,930,000**	**2.36%**

With $5.9M transfer from reserves, only $8.7M of the current (2012) stormwater program is funded through Tax & PILT, which corresponds to 2.36% of the total City tax levy plus PILT. That is, 2.36% of the total tax funds (Tax & PILT) was allocated to the City's stormwater program in 2012. The remainder of the program was funded from reserves, which is made up of taxes and other revenues collected in previous years. However, due to the decline in reserve balances, this source will not be available to fund the future stormwater program. One option is to replace the tax funded reserves with debt financing. The annual repayment of the debt would need to be accounted, either by reducing the annual program expenditures or increasing the City's tax levy. Further, there are restrictions imposed by the City's debt policy that will limit future financing. As a result debt-financing was not considered to be a sustainable option.

The only viable option for the current service level (described in Section 2.5.2) would be to replace the tax funded reserves with Tax & PILT revenues, in an amount that fully funds the City's capital program, as shown in **Table 10**. This is referred to as the Status Quo service level and would represent an annual tax increase of $5.9M, bringing the allocation of tax associated with the City's stormwater program to approximately 3.96%, an increase of 68% from existing.

Table 10: Status Quo Service Level Funding

		Funding Source		Tax & PILT
Stormwater Program Item	**Cost**	**Tax & PILT**	**Reserves/Debt**	**Allocation**
Capital	$8,030,000	$8,030,000	$0	2.17%
Operations & Maintenance	$6,620,000	$6,620,000	$0	1.79%
Storm Pipe Reinvestment	$0	$0	$0	0.00%
Total Program	**$14,650,000**	**$14,650,000**	**$0**	**3.96%**

The annual stormwater cost for the various properties under the three service levels described in Section 2.5.2 is shown in **Table 11**. The program costs and Tax & PILT allocations for the various service levels are shown in the top rows of the table.

Table 11: Stormwater Program Funding - Property Tax

Stormwater Program Item	Existing (2012)[1]	Future Stormwater Management Program (2014-2023)								
		Status Quo			Interim			Sustainable		
Program Cost[3]	$14,650,000	$14,650,000			$26,610,000			$39,490,000		
Property Tax & PILT Allocation	2.36%	3.96%			7.19%			10.67%		
Single-Family Detached Home		Charge	Δ	%	Charge	Δ	%	Charge	Δ	%
10-percentile assessed value	$22.10	$37.13	$15.03	68%	$67.44	$45.34	205%	$100.09	$77.99	353%
50-percentile assessed value	$28.58	$48.01	$19.43	68%	$87.21	$58.63	205%	$129.42	$100.85	353%
90-percentile assessed value	$40.69	$68.36	$27.67	68%	$124.16	$83.47	205%	$184.26	$143.57	353%
Brooks Drive	$28.37	$47.66	$19.29	68%	$86.57	$58.20	205%	$128.47	$100.10	353%
Robin Drive	$42.69	$71.72	$29.03	68%	$130.28	$87.59	205%	$193.34	$150.65	353%
Homelands Drive	$27.39	$46.01	$18.62	68%	$83.58	$56.19	205%	$124.03	$96.64	353%
Beacham Street	$31.08	$52.22	$21.14	68%	$94.85	$63.77	205%	$140.76	$109.67	353%
King Richard's Place	$40.14	$67.44	$27.30	68%	$122.50	$82.35	205%	$181.79	$141.65	353%
Condominium										
Sherobee Road	$15.86	$26.64	$10.78	68%	$48.39	$32.54	205%	$71.82	$55.96	353%
Multi-Family (7+ Units)										
Goreway Drive (per unit)	$10.54	$17.71	$7.17	68%	$32.18	$21.63	205%	$47.75	$37.21	353%
Commercial										
Mall	$10,445	$17,548	$7,103	68%	$31,875	$21,429	205%	$47,303	$36,858	353%
Tax-Exempt										
Church (Dundas St.)	$0	$0	$0	n/a	$0	$0	n/a	$0	$0	n/a

Notes:
1. Current program includes $8.7M (Tax & Payment In Lieu of Taxes) plus $5.9M (Reserves). As such, the 2.36% shown is based only on $8.7M. Due to declining reserves, the program will ultimately need to be fully funded by tax.
2. Values are in present day dollars (inflation is not included).
3. This represents the tax funded component of the City's program (capital funding from Development Charges is not included).

Tax payments are based on assessed value and the corresponding tax rate which varies by property type. The 2012 property tax rates for the City's Tax Levy (i.e., does not include Region of Peel or Provincial tax rates) are:

- Residential: 0.2849%
- Multi-Residential: 0.5067%
- Commercial: 0.4016%
- Industrial: 0.4474%

The first column in Table 11 shows a range of selected property types. For the single-family detached homes, the first three entries represent statistical samples from all such homes in Mississauga, whereas the final five entries are actual properties. The statistical samples were based on assessment data for 600 single-family homes that were sampled in the residential parcel analysis used to develop the stormwater rate (described in Section 4.2.1). Percentiles are used to indicate the range in assessed values and include:

- 10-percentile: $330,000 (10 percent of single-family detached homes in Mississauga have an assessed value equal to or below this value)
- 50-percentile (also known as the median): $430,000 (50 percent of homes equal to or below this value)
- 90-percentile: $610,000 (90 percent of homes equal to or below this value)

The second column in Table 11 shows the existing annual tax payments that are used to support the City's 2012 SWM program. The average single-family detached homeowner is currently paying $29 per year for stormwater. The remaining columns show the corresponding tax payments for the various service levels. For example, to support the Status Quo service level, the average single-family detached homeowner would pay $48 per year for stormwater, reflecting a $19 annual tax increase or 68% compared to the existing program which partially funds capital through reserves. Likewise, the average single-family detached homeowner would pay $87 and $129 per year respectively for the Interim and Sustainable service levels.

Although tax rates vary by property type, the relative increase to support the greater stormwater revenue requirements, in comparison with the 2012 allocation, would be the same for all taxpayers (which is directly proportional to the tax funding increases noted in the discussion for Table 10), namely:

- Status Quo: 68% increase
- Interim: 205% increase
- Sustainable: 353% increase

4.2 Stormwater Rate

Stormwater rate involves coupling a parcel analysis with SWM program revenue requirements to derive an appropriate base charge for property owners within the City. This section summarizes the development of a preliminary stormwater rate structure and presents example charges for selected properties.

4.2.1 Parcel Analysis

A stormwater rate assigns a fee to customers according to the runoff generated by the property owned or used. Customer properties are identified and characterized with regard to their stormwater impact through a land use analysis of parcels. A parcel refers to any contiguous property, lot, or land tract under single ownership. A parcel analysis identifies the characteristics of parcels in a municipality, which in turn determines the stormwater rate charge for a property. The total number of the various types of parcels located within a municipality affects how much revenue a stormwater rate can generate.

Several factors influence the characteristics of stormwater generated by a particular parcel of land. Parcel size, soil type, topography, impervious area, and development intensity interact to influence the volume of stormwater runoff and pollutant loading from a parcel. The impervious area of a parcel refers to surfaces covered with material that is highly resistant to the infiltration of water (e.g., building rooftops, paved areas, and compacted gravel). The amount of impervious area is the most important parameter affecting the quantity and quality of runoff. Because this value is directly proportional to stormwater runoff, and is readily quantified using desktop methods, rate policies developed for stormwater rates typically focus on impervious area for allocating municipal SWM program costs to customers.

For this study, a database of parcels was created based on tax assessment data, parcel data, and aerial photography/parcel boundary data. All spatial information and data attributes were obtained from the City and organized for the purposes of this study.

The various data sources were used to establish the parcel distribution, number of residential dwelling units, and estimated impervious area by parcel type, as shown in **Table 12**. This information was segregated into the 16 land use categories (13 residential and 3 non-residential). The impervious area estimates were based on the 2011 assessment database (coupled with the 2011 aerial photography and the 2011 parcel boundary data). The parcel counts shown in Table 12 are based on the parcel database that was provided. The methodology for estimating impervious area varied somewhat for residential and non-residential properties and is described separately below.

Table 12: Parcel Analysis Results

Parcel Type	Number of Parcels		Dwelling Units (d.u.)		Estimated Impervious Area (m^2)		
	Count	%	Count	%	Total	%	Avg/d.u.
Single-Family Detached	93,707	45.3%	93,707	40.8%	25,003,800	27.6%	267
Two Unit Residences	31,205	15.1%	31,205	13.6%	5,705,500	6.3%	183
Triplex	53	0.0%	159	0.1%	18,000	0.0%	113
4-plex	10	0.0%	40	0.0%	4,000	0.0%	100
5-plex	7	0.0%	35	0.0%	2,500	0.0%	71
6-plex	24	0.0%	144	0.1%	12,900	0.0%	90
Condominium	59,451	28.7%	59,451	25.9%	3,634,200	4.0%	61
Townhouse/Row House	5,204	2.5%	5,024	2.2%	702,900	0.8%	140
Multi-Family (7+ Units)	298	0.1%	31,900	13.9%	1,555,100	1.7%	49
Linked Homes	1,945	0.9%	1,945	0.8%	341,700	0.4%	176
Row Housing	51	0.0%	2,894	1.3%	345,000	0.4%	119
Co-Op Housing	23	0.0%	2,804	1.2%	104,000	0.1%	37
Mobile Home Park	3	0.0%	313	0.1%	80,900	0.1%	259
Residential Subtotal	**191,981**	**92.8%**	**229,621**	**100.0%**	**37,510,500**	**41.4%**	**163**
Industrial/Comm/Institutional	10,776		n/a		53,101,400		n/a
Miscellaneous	943				included in		
Vacant	3,117				total above		
Non-Residential Subtotal	**14,836**	**7.2%**			**53,101,400**	**58.6%**	
Total	**206,817**	**100.0%**			**90,611,900**	**100.0%**	

Residential Properties

Given the large number of residential properties within Mississauga (nearly 192,000 parcels), it is not feasible to measure the impervious area for each parcel. As a result, the study team performed a statistical sampling of selected properties within each residential land use category. The objective of the sampling process was to estimate the average impervious area per dwelling unit in each residential category with a 95 percent confidence interval that is within 10 percent of the average impervious area. The impervious area for each sampled parcel was calculated using GIS software to view and manipulate the spatial data provided by the City.

As with other stormwater rate investigations conducted in Ontario, the single-family detached category was initially sampled to obtain the basis for a unit of measure that could establish the billing unit. The number of residential detached parcels in each ward was identified and the value and age of these properties was correlated to identify a relationship that was similar to the relationship within the entire city, to reduce sampling bias. Parcels were randomly selected to represent the fraction that should be collected in each ward by the range of property values. A total of 600 single-family detached homes were sampled as shown in **Table 13**.

As a result of this sampling approach, the average impervious area per single-family home (i.e., first row in Table 12) was determined to be 267 m^2 (2,872 ft^2).

Within the remaining residential parcel categories, measurements were obtained for at least 300 dwelling units in each representative category. Those categories that contained less than 300 dwelling units had all dwelling units measured. Over 600 samples were measured for the Townhouse/Row House and Two-Unit Residences categories. In all, impervious area measurements were taken in approximately 2,300 residential parcels.

The respective impervious area for each of these residential categories is identified in the final column of Table 12 and ranged from 37 m^2 to 259 m^2 of impervious area per dwelling unit. The average impervious area for all residential properties was determined to be 163 m^2 (1,758 ft^2) per dwelling unit.

Table 13: Impervious Area Samples for Single-Family Detached Homes

Ward	Number of Single-Family Homes	Percent By Ward	Number of Impervious Area Samples
1	8,709	9%	56
2	8,764	9%	56
3	6,340	7%	41
4	5,289	6%	34
5	8,234	9%	53
6	11,875	13%	76
7	6,506	7%	42
8	10,559	11%	68
9	7,838	8%	50
10	10,242	11%	66
11	9,353	10%	60
	93,707	**100%**	**600**

Non-Residential Properties

The bottom portion of Table 12 shows the non-residential impervious area estimates. While the imperviousness of residential properties generally falls within an expected statistical distribution, the range for non-residential properties is highly variable. That is, a sampling of non-residential properties cannot achieve the same statistical confidence as with residential properties.

It was not within the scope of this study to measure all non-residential properties, as is typically done during the implementation phase of a stormwater rate. As a result, the total impervious area of non-residential parcels was estimated based on identifying zones that were principally non-residential parcels. Large impervious polygons for each non-residential category were developed, excluding the public rights-of-way. Based on the consultant team's experience in over 170 stormwater rate studies, this method of estimating the total non-residential impervious area has been found to be within +/- 15% of the actual value obtained by measuring all parcels. Subsequent implementation phases will need to complete the measurement of impervious areas in order to accurately bill all non-residential properties.

4.2.2 Billing Unit Analysis

The various billing unit methods for a stormwater rate were summarized in Section 3.5. The Equivalent Residential Unit (ERU), Single Family Unit (SFU), and Tiered Single Family Unit (Tiered SFU) methods were felt to provide the best balance between accuracy and level of effort and were therefore evaluated in this study. At the request of stakeholder group representatives, charges for the Flat Fee option were also investigated.

Equivalent Residential Unit (ERU)

The first five columns in **Table 14** repeat the parcel and impervious data that were shown in Table 12. The average impervious area for all residential properties was determined to be 163 m^2 (1,758 ft^2) per dwelling unit in Mississauga. The fifth column shows the ERU Factor applied to each residential property type. Under the ERU billing unit method, all residential dwelling units, regardless of property type, would be charged one equivalent residential unit (1 ERU) per dwelling unit. The final two columns in Table 14 show the distribution of ERU billing units. There are a total of 229,600 residential ERUs. For non-residential properties, the number of ERU billing units is determined by dividing the impervious area by the ERU base area. For the estimated 53,100,000 m^2 of non-residential impervious area in Mississauga, the corresponding number of ERU billing units is 325,100, resulting in a total of 554,700 ERUs for all properties.

Table 14: ERU Analysis Results

Parcel Type	Number of Parcels	Dwelling Units (d.u.)	Est'd Impervious Area (m^2) Total	Est'd Impervious Area (m^2) Avg/d.u.	ERU Factor	ERU Distribution Count	ERU Distribution %
Single-Family Detached	93,707	93,707	25,003,800	267	1.00	93,707	16.9%
Two Unit Residences	31,205	31,205	5,705,500	183	1.00	31,205	5.6%
Triplex	53	159	18,000	113	1.00	159	0.0%
4-plex	10	40	4,000	100	1.00	40	0.0%
5-plex	7	35	2,500	71	1.00	35	0.0%
6-plex	24	144	12,900	90	1.00	144	0.0%
Condominium	59,451	59,451	3,634,200	61	1.00	59,451	10.7%
Townhouse/Row House	5,204	5,024	702,900	140	1.00	5,024	0.9%
Multi-Family (7+ Units)	298	31,900	1,555,100	49	1.00	31,900	5.8%
Linked Homes	1,945	1,945	341,700	176	1.00	1,945	0.4%
Row Housing	51	2,894	345,000	119	1.00	2,894	0.5%
Co-Op Housing	23	2,804	104,000	37	1.00	2,804	0.5%
Mobile Home Park	3	313	80,900	259	1.00	313	0.1%
Residential Subtotal	**191,981**	**229,621**	**37,510,500**	**163**		**229,621**	**41.4%**
Industrial/Comm/Institutional	10,776	n/a	53,101,400	n/a	n/a	325,061	58.6%
Miscellaneous	943		included in total above			included in total above	
Vacant	3,117						
Non-Residential Subtotal	**14,836**		**53,101,400**			**325,061**	**58.6%**
Total	**206,817**		**90,611,900**			**554,682**	**100.0%**

Single Family Unit (SFU)

Table 15 shows the results from the SFU analysis in the same format as Table 14.

Table 15: SFU Analysis Results

Parcel Type	Number of Parcels	Dwelling Units (d.u.)	Est'd Impervious Area (m^2) Total	Est'd Impervious Area (m^2) Avg/d.u.	SFU Factor	SFU Distribution Count	SFU Distribution %
Single-Family Detached	93,707	93,707	25,003,800	267	1.00	93,707	27.6%
Two Unit Residences	31,205	31,205	5,705,500	183	0.69	21,383	6.3%
Triplex	53	159	18,000	113	0.42	67	0.0%
4-plex	10	40	4,000	100	0.38	15	0.0%
5-plex	7	35	2,500	71	0.27	9	0.0%
6-plex	24	144	12,900	90	0.34	49	0.0%
Condominium	59,451	59,451	3,634,200	61	0.23	13,620	4.0%
Townhouse/Row House	5,204	5,024	702,900	140	0.52	2,634	0.8%
Multi-Family (7+ Units)	298	31,900	1,555,100	49	0.18	5,828	1.7%
Linked Homes	1,945	1,945	341,700	176	0.66	1,281	0.4%
Row Housing	51	2,894	345,000	119	0.45	1,293	0.4%
Co-Op Housing	23	2,804	104,000	37	0.14	390	0.1%
Mobile Home Park	3	313	80,900	259	0.97	303	0.1%
Residential Subtotal	**191,981**	**229,621**	**37,510,500**	**163**		**140,579**	**41.4%**
Industrial/Comm/Institutional	10,776	n/a	53,101,400	n/a	n/a	199,008	58.6%
Miscellaneous	943		included in total above			included in total above	
Vacant	3,117						
Non-Residential Subtotal	**14,836**		**53,101,400**			**199,008**	**58.6%**
Total	**206,817**		**90,611,900**			**339,587**	**100.0%**

Under the SFU billing unit method, the average impervious area of single-family detached homes is used as the base billing unit. The average impervious area of single-family detached homes was determined to be 267 m^2 (2,872 ft^2) in Mississauga. The SFU factor shown relates the average impervious area of each residential parcel type to this SFU size.

The final two columns in Table 15 show the distribution of SFU billing units. For residential properties, the SFUs are assigned by multiplying the number of dwelling units by the SFU factor. There are a total of 140,600 residential SFUs. For non-residential properties, the number of SFU billing units is determined by dividing the impervious area by the SFU size. For the estimated 53,100,000 m^2 of non-residential impervious area in Mississauga, the corresponding number of SFU billing units is 199,000, resulting in a total of 339,600 SFUs for all properties.

Tiered Single Family Unit (Tiered SFU)

The Tiered SFU billing unit method extends the previous method by accounting for the variability in impervious area among single-family detached homes. Like the SFU billing unit method, the average impervious area of single-family detached homes is also used as the base billing unit (i.e., 267 m^2 or 2,872 ft^2). However, three residential tiers are identified and these are included in **Table 16** as the following:

- Single Family (Small): This tier is based on the impervious area of properties within the smallest 10 percentile of single-family homes, that are 184 m^2 (1,979 ft^2) or less
- Single Family (Medium): This tier is based on the impervious area of properties within the middle 80 percentile of single-family homes, that are between 185 m^2 and 364 m^2
- Single Family (Large): This tier is based on the impervious area of properties within the largest 10 percentile of single-family homes, that are 364 m^2 (3,922 ft^2) or greater

Table 16: Tiered SFU Analysis Results

Parcel Type	Number of Parcels	Dwelling Units (d.u.)	Est'd Impervious Area (m^2) Total	Est'd Impervious Area (m^2) Avg/d.u.	SFU Factor	Tiered SFU Distribution Count	Tiered SFU Distribution %
Single-Family (small)	9,370	9,370	1,723,100	184	0.69	6,459	1.9%
Single-Family (medium)	74,967	74,967	20,001,200	267	1.00	74,967	22.0%
Single-Family (large)	9,370	9,370	3,414,400	364	1.37	12,798	3.8%
Two Unit Residences	31,205	31,205	5,705,500	183	0.69	21,385	6.3%
Triplex	53	159	18,000	113	0.42	67	0.0%
4-plex	10	40	4,000	100	0.38	15	0.0%
5-plex	7	35	2,500	71	0.27	9	0.0%
6-plex	24	144	12,900	90	0.34	49	0.0%
Condominium	59,451	59,451	3,634,200	61	0.23	13,622	4.0%
Townhouse/Row House	5,204	5,024	702,900	140	0.52	2,635	0.8%
Multi-Family (7+ Units)	298	31,900	1,555,100	49	0.18	5,829	1.7%
Linked Homes	1,945	1,945	341,700	176	0.66	1,281	0.4%
Row Housing	51	2,894	345,000	119	0.45	1,293	0.4%
Co-Op Housing	23	2,804	104,000	37	0.14	390	0.1%
Mobile Home Park	3	313	80,900	259	0.97	303	0.1%
Residential Subtotal	**191,981**	**229,621**	**37,645,400**	**163**		**141,102**	**41.5%**
Industrial/Comm/Institutional	10,776	n/a	53,101,400	n/a	n/a	199,031	58.5%
Miscellaneous	943		included in total above			included in total above	
Vacant	3,117						
Non-Residential Subtotal	**14,836**		**53,101,400**			**199,031**	**58.5%**
Total	**206,817**		**90,746,800**			**340,133**	**100.0%**

The final two columns in Table 16 show the distribution of Tiered SFU billing units. For residential properties, the Tiered SFUs are assigned by multiplying the number of dwelling units by the SFU factor. There are a total of

141,100 residential SFUs. For non-residential properties, the number of SFU billing units is determined by dividing the impervious area by the SFU size. For the estimated 53,100,000 m^2 of non-residential impervious area in Mississauga, the corresponding number of Tiered SFU billing units is 199,000, resulting in a total of 340,100 Tiered SFUs for all properties.

The Tiered SFU is appropriate to distinguish the variability in impervious area. There is a dramatic difference in the impervious area of the smallest and largest 10 percent of single-family homes when compared to the average value. Establishing distinct SFU values for each tier (i.e., 0.7 SFU for small homes and 1.4 SFU for large homes) is consistent with the fairness and equity principles.

Table 17 compares the impervious area statistics of Mississauga's single-family detached homes with other Canadian municipalities. The table shows the population (based on the 2011 census) and impervious areas from recent stormwater financing studies conducted in Ontario and Alberta (using the same methodology described above, and each with a minimum of 400 samples). Results are sorted by the average SFU size in descending order.

Table 17: Impervious Area Statistics for Canadian Municipalities

			SFU Size (m^2)		
Municipality	**Population**	**ERU Size (m^2)**	**10-Percentile**	**Average**	**90-Percentile**
Hamilton, ON	519,900	215	131	301	503
Markham, ON	301,700	239	188	294	448
Stratford, ON	30,900	196	181	282	399
Mississauga, ON	**713,400**	**163**	**184**	**267**	**364**
Waterloo, ON	98,800	167	164	266	353
Kitchener, ON	219,200	183	168	259	344
Calgary, AB	1,096,800	186	158	235	309

Flat Fee

Under the Flat Fee billing unit method, charges to property owners would be determined based on the total property area, not the impervious area as in the previous methods. **Table 18** shows the distribution of land area based on the various zoning categories taken from the Mississauga Existing Land Use Study (2010). A user fee would be determined based on the City's future SWM program cost and the total area of Mississauga (29,070 ha). The Flat Fee charge for each property would then simply be the property size times the area-based rate (i.e., $/ha/month).

Table 18: Land Distribution by Zoning

Land Use Category	Land Area (ha)	%
Residential	8,530	29.3%
Transportation Rights-of-Way	6,000	20.6%
Industrial	4,450	15.3%
Open Space/Greenbelt	3,220	11.1%
School/Public/Institutional/GTAA	2,700	9.3%
Commercial/Office/Mixed Use	1,750	6.0%
Vacant/Farm	1,470	5.1%
Utilities/PublicWorks	590	2.0%
Community/Place of Religious Assembly	270	0.9%
Other	90	0.3%
Total	**29,070**	**100.0%**

Preferred Billing Unit Method

A Flat Fee has advantages over the variable rate billing unit methods presented above, including lower administration costs and efforts related to billing implementation and ongoing data management. However, a Flat Fee was not favoured because in some cases they can be less fair and equitable than property tax. For example, a 1-acre natural park would be assessed the same charge as 1-acre paved parking lot with an area-based charge. Further, although not tested in Canadian courts, U.S. state supreme courts have ruled against Flat Fees on the basis that there was not adequate justification (rational nexus) for the fee charged to the service provided.

Given the amount of high-density residential dwelling units in Mississauga, the SFU method is clearly more fair and equitable than the ERU method. Further, results from the statistical analysis of single-family homes suggest that a Tiered SFU is appropriate to distinguish the variability in impervious area. The Single Family (Large) impervious area is twice as large as the Single Family (Small) area.

As a result, the Tiered Single Family Unit (SFU) was selected as the preferred billing unit method as it provides the best balance between accuracy (i.e., maximizing fairness and equity) and level of effort to administer and manage (i.e., minimizing rate administration costs). The Tiered SFU option accounts for the wide variability in impervious area among residential properties by assigning three tiers to single-family detached homes (Small, Medium and Large) as well as assigning fractional billing units for multi-family residential properties (e.g., apartments, condos, and townhouses).

4.2.3 Base Charges

In this section, the base charge is determined for the preferred billing unit method (Tiered SFU). The following definitions are helpful to clarify the discussion on base charges:

- **Adjustments**: These are typically requested through an appeals process in cases where the property owner feels their charge is incorrect (e.g., assigned to the wrong rate category, incorrect impervious area due to misinterpreted surface cover or newly installed materials). If approved, the base charge would be adjusted accordingly.
- **Credits**: These are typically requested through an application process and if approved, would result in a reduced charge for property owners that have installed, operate and maintain eligible SWM facilities or practices on their property.
- **Exemptions**: This includes eligible land uses that are not included in the rate calculation (e.g., public transportation rights-of-way that are considered part of the City's SWM system) or properties for which the City does not have the legislative authority to charge a user fee.
- **Subsidies/Grants**: This would include selected properties for which Council may decide to use City tax funds to pay the charge on behalf of the property owners (e.g., economically disadvantaged homeowners, charitable organizations, or places of worship).

The base charge for a stormwater rate is determined by dividing the annual cost of the municipal SWM program by the total number of billing units. The goal of assigning credits is to reduce the City's program expense. As a result, the total credit amount would be removed from the rate revenue requirement (i.e., the numerator in the charge calculation). For exemptions, the impervious area of exempt properties would be removed from the assessable total billing units (i.e., the denominator in the charge calculation).

The additional costs to administer a stormwater rate would need to be factored into the numerator of the rate equation. Annual administration costs would typically include staff labor and resources related to the following:

- Billing, customer service, and collections
- Credit application reviews and site inspections

- Database management (e.g., changes to impervious area, rate schedules, credits, owner/address information, etc.)

For this study, an estimated annual rate administration cost of $1,000,000 has been included in the rate revenue requirement for all service level scenarios. This estimate is preliminary and would be refined in a subsequent implementation phase. It is assumed that an existing utility billing system would be used. If a new billing system is required, administration costs would be higher initially.

Credit Policy

While the development of a credit and incentive program was not intended to be a part of the Stormwater Financing Study, many Stormwater Financing Stakeholder Group members requested that a cursory review be included. Suggestions were raised that an evaluation of the credit programs offered by the Cities of Kitchener and Waterloo would be of benefit to the study.

The underlying basis for such a policy is to credit property owners for their SWM measures, practices, or services in lieu of municipal services (e.g., inspections, cleaning, public education and spill prevention programs, although these are required for certain land use activities such as gas stations and car washes). Property owners who reduce stormwater runoff or who improve the quality of the stormwater runoff that discharges from their property into the City's stormwater system and/or surrounding waterbodies may qualify for a credit and receive a reduction in their stormwater rate. Credits can be cumulatively applied for measures that provide flooding and erosion protection, water quality treatment, and other environmental enhancements.

Depending on the credit policy, the total amount of credits awarded typically amounts to 3-7% of the rate revenue. This value would be higher in cases where additional credits are given for properties that have incorporated extensive SWM measures. The policy may also require that an initial application be accompanied by an MOE permit under certain circumstances, and that property owners certify they will operate and maintain the facilities as prescribed, and grant access to their property for inspection. Credit applications may be renewed on a regular basis, typically annually or bi-annually. The credit amount for individual property owners would be determined by a municipality on a case-by-case basis and the typical maximum credit for any individual property is 40-50%.

Through a preliminary review of the credit programs offered by the Cities of Kitchener and Waterloo, who have jointly developed their respective stormwater rate credit policies, it was determined that, in general, a maximum of 45% credit is offered to non-residential and residential properties based on varying criteria. This percentage is based on the portion of the Cities' respective stormwater program costs which can potentially be influenced by stormwater measures on individual properties. When Mississauga staff compared the City's stormwater program based on the same approach, the findings were similar to that of Kitchener and Waterloo in that approximately 45% of the City's stormwater program costs can potentially be influenced by stormwater measures or activities on private and publicly owned properties.

For Mississauga, it is recommended that a credit program be developed which will provide credits to non-residential properties that provide on-site SWM measures and incentives to residential properties. Although the City recognizes the importance of on-site stormwater measures on residential properties, the anticipated high administration cost for a credit application, approval and processing program may outweigh the net savings in the City's stormwater program resulting from this initiative. As such, it is recommended that an incentive program be explored which offers a one-time discount on the capital cost of implementing stormwater controls such as rain barrels.

Rate Exemptions

For municipalities that have implemented a rate, public transportation rights-of-way are considered to be part of the drainage system and therefore not included in the rate calculation.

Under pre-development conditions, the natural drainage system can handle stormwater runoff and pollutant loads without the need for engineered collection systems and treatment facilities. With development, the City is responsible for, and incurs expenses for, collecting, conveying, treating, and returning stormwater runoff to the receiving watercourse, while minimizing flooding and erosion hazards, and without harming the environment. The City is also responsible for planning, building, and operating roads to serve development. Drainage systems are an integral part of the roadway and therefore, public transportation rights-of-way are not included in the stormwater rate calculation.

Rate exemptions also include properties that the City does not have the legislative authority to charge a user fee. Sections 9 and 11, and Part XII of the Municipal Act authorize the City to impose, by by-law, a fee or charge to property owners for services provided by a municipality, including stormwater management. This authority is limited in two respects:

- Section 2 of Ontario Reg. 584/06 provides that a fee or charge cannot be used for capital costs that could otherwise have been raised through the Development Charges process
- Where provisions exist in other legislation that expressly exempt entities from paying these charges, then the City cannot legally impose these fees

The Supreme Court of Canada has clearly stated that there must be a reasonable nexus between fees and charges imposed and services received, otherwise a charge could be construed as an unauthorized tax. Accordingly, a reasonable connection must be established between the amount of the stormwater user fee and the cost of the service being provided. This test is met by the work undertaken by City staff in matching rate revenue with the cost of the City's SWM program. In certain cases, where stormwater management infrastructure has been installed on rate eligible property, it would be necessary to establish a credit policy to create a reasonable connection between the amount of the charge and the SWM services provided.

It is important to note that tax-exempt status does not exempt the property owner from a user fee. For example, land owned by a religious organization and used as a place of worship, a hospital or a university will be exempt from property taxation but will not necessarily be exempt from user fees or charges under the Municipal Act. Legislation establishing the Greater Toronto Airports Authority, Ontario Power Generation Inc., University of Toronto, Region of Peel, and City of Mississauga, for example, does not provide an exemption from municipal user fees and charges.

Ontario Reg. 584/06 establishes that the federal and provincial Crown are not liable to pay municipal user fees and charges. The following are examples of entities exempted from a stormwater user fee:

- Canada Lands Company Ltd
- Sheridan College
- Dufferin-Peel Catholic District School Board
- Peel District School Board
- Metrolinx
- Canada Post Corporation

Tiered SFU Charge

The total estimated impervious area of the fee-exempt properties listed above is approximately 5,900,000 m^2, which represents 6.5% of the total impervious area within Mississauga. Table 16 showed a total of 340,100 Tiered SFU billing units for all City properties. When billing units for the fee-exempt properties (22,100 SFUs) are subtracted, there are a total of 318,000 Tiered SFU billing units.

The impact of rate funding on selected property owners is shown in **Table 19**, and is expressed as an annual stormwater rate payment for the City's future stormwater program. The program costs and base rate (using Tiered SFU billing units) for the various service levels are shown in the top rows of the table. The program costs include an

estimated annual administration cost of $1,000,000 for all service levels. Further, the calculation of charges assumes a collection rate of 92%. This represents unrecognized revenue of 8%, which includes allowances for credits, billings errors, and non-payments. This number is subject to refinement, the values for credits in particular will need to be adjusted as the credit policy is being developed.

Table 19: Rate Funding (Tiered SFU) for Future Service Levels

Billing Units (SFU)	Service Level:	Status Quo	Interim	Sustainable
	Program Cost[3]	$15,650,000	$27,610,000	$40,490,000
	Base Rate ($/SFU/mo)	$4.46	$7.86	$11.53
Single-Family Detached Home				
0.7	10-percentile (Small Tier)	$36.89	$65.01	$95.37
1.0	10-percentile assessed value	$53.52	$94.32	$138.36
1.0	50-percentile assessed value	$53.52	$94.32	$138.36
1.0	90-percentile assessed value	$53.52	$94.32	$138.36
1.4	90-percentile (Large Tier)	$73.10	$128.82	$188.97
1.0	Brooks Drive	$53.52	$94.32	$138.36
1.0	Robin Drive	$53.52	$94.32	$138.36
1.0	Homelands Drive	$53.52	$94.32	$138.36
1.0	Beacham Street	$53.52	$94.32	$138.36
1.0	King Richard's Place	$53.52	$94.32	$138.36
Condominium				
0.2	Sherobee Road	$12.26	$21.61	$31.70
Multi-Family (7+ Units)				
0.2	Goreway Drive (per unit)	$9.78	$17.23	$25.28
Commercial				
519.1	Mall	$27,782	$48,961	$71,822
Tax-Exempt				
14.9	Church (Dundas St.)	$800	$1,410	$2,068

Notes:
1. Rate assumes 92% collection with estimated annual administration cost of $1,000,000 (subject to refinement based on credit policy).
2. Values are in present day dollars (inflation is not included).
3. This represents the tax funded component of the City's program (capital funding from Development Charges is not included).

The base charges, expressed as $/SFU/month, include the following:

- Status Quo: $4.46 ($53.52 per year)
- Interim: $7.86 ($94.32 per year)
- Sustainable: $11.53 ($138.36 per year)

The first column in Table 19 shows the number of Tiered SFU billing units for each property. This table includes the same properties as were shown for the tax funding option in Table 11. Two additional entries have been added to the single-family detached homes:

- 10-percentile (Small Tier): This corresponds to the smallest single family tier, with impervious area of 184 m^2 (1,979 ft^2) or less and assigned a charge of 0.7 SFUs
- 90-percentile (Large Tier): This corresponds to the largest single family tier, with impervious area of 364 m^2 (3,922 ft^2) or greater and assigned a charge of 1.4 SFUs

All other single-family homes fall into the Medium Tier, which encompasses 80% of all single-family detached homes in Mississauga and are assigned a charge of 1.0 SFU.

The final three columns in Table 19 show the annual stormwater rate payments for the various service levels. For example, to support the Status Quo service level, the average single-family detached homeowner would pay $54 per year. Likewise, the average single-family detached homeowner would pay $94 and $138 per year, respectively for the Interim and Sustainable service levels.

Potential charge reductions due to individual credits have not been included in the amounts shown. Aerial photographs of the Table 19 sample properties have been included in **Appendix C**.

4.3 Preferred Option

The tax and rate funding options are compared for selected property owners in **Table 20**. The second and third columns are taken from Table 11, showing the annual tax payment for the City's 2012 SWM program and for the Interim service level). The average single-family detached homeowner would pay $87 per year for stormwater, reflecting a $59 annual tax increase or 205% compared to the current 2012 program.

Table 20: Comparison of Tax and Rate Funding

Stormwater Program Item	Existing (2012)[1]	Future - Interim Service Level (2014-2023)					
		Tax		Rate[2]			
Single-Family Detached Home		Charge	$\Delta_{Existing}$	Charge	$\Delta_{Existing}$	Δ_{Tax}	%
10-percentile (Small Tier)	$22.10	$67.44	$45.34	$65.01	$42.91	-$2.43	-4%
10-percentile assessed value	$22.10	$67.44	$45.34	$94.32	$72.22	$26.88	40%
50-percentile assessed value	$28.58	$87.21	$58.63	$94.32	$65.74	$7.11	8%
90-percentile assessed value	$40.69	$124.16	$83.47	$94.32	$53.63	-$29.84	-24%
90-percentile (Large Tier)	$40.69	$124.16	$83.47	$128.82	$88.14	$4.66	4%
Brooks Drive	$28.37	$86.57	$58.20	$94.32	$65.95	$7.75	9%
Robin Drive	$42.69	$130.28	$87.59	$94.32	$51.63	-$35.96	-28%
Homelands Drive	$27.39	$83.58	$56.19	$94.32	$66.93	$10.74	13%
Beacham Street	$31.08	$94.85	$63.77	$94.32	$63.24	-$0.53	-1%
King Richard's Place	$40.14	$122.50	$82.35	$94.32	$54.18	-$28.18	-23%
Condominium							
Sherobee Road	$15.86	$48.39	$32.54	$21.61	$5.75	-$26.78	-55%
Multi-Family (7+ Units)							
Goreway Drive (per unit)	$10.54	$32.18	$21.63	$17.23	$6.69	-$14.94	-46%
Commercial							
Mall	$10,445	$31,875	$21,429	$48,961	$38,516	$17,086	54%
Tax-Exempt							
Church (Dundas St.)	$0	$0	$0	$1,410	$1,410	$1,410	n/a

Notes:
1. Current program includes $8.7M (Tax & Payment In Lieu of Taxes) plus $5.9M (Reserves).
2. Rate (Tiered SFU, with Exemptions) assumes 92% collection with estimated annual administratior cost of $1,000,000 (subject to refinement based on credit policy).

The next set of columns in Table 20 show the annual rate payments with charges taken from Table 19 for the Interim service level. The average single-family detached homeowner would pay $94 per year for stormwater, reflecting a

$66 annual increase or 230% compared to the current tax payment for the 2012 program. The last two columns on the right compare the annual rate payment to the tax option; the average single-family home would have a rate payment that is $7 higher or 8% compared to the tax option. Cells in the final column are highlighted red if the rate charge is higher than the tax charge, and green if the rate charge is lower than the tax charge.

The comparison is given for illustrative purposes only. It is not possible to make general statements based on such a small sample size of properties. It is evident however that:

- The tax option would be preferred by property owners with a relatively low assessed value per square meter of impervious area (or a large impervious footprint per dollar of assessed value, which is reflective of sprawling development as shown in the left panel of Figure 3)
- The rate option rate would be preferred by property owners with a relatively high assessed value per square meter of impervious area (or a small impervious footprint per dollar of assessed value, which is reflective of more dense development as shown in the right panel of Figure 3)

In this section, two viable options to fund the City's future SWM program were evaluated:

- Property tax, which allocates charges to properties based on assessed value
- Stormwater rate, which allocates charges to properties based on impervious area

Increasing the current property tax has the sole advantage of minimal administrative costs. The estimated annual administration cost for a new stormwater rate is estimated to be $1.0M, or 3.8% of the future SWM program (Interim service level). However, the advantages of a stormwater rate include:

- Charges are allocated in a more fair and equitable manner to all properties throughout the City, due to the correlation between impervious area and quantity/quality of stormwater runoff contributed to the City's SWM system
- Provides a sustainable, stable and dedicated funding source
- Offers financial incentives for property owners to provide on-site controls to reduce stormwater and pollutant loads to the municipal SWM system, through the adoption of a credit policy

As a result, the preferred funding mechanism for the City of Mississauga is a Tiered SFU stormwater rate.

5. Conclusions and Recommendations

This section summarizes the conclusions of this study and presents a recommended strategy for the City of Mississauga to pursue the implementation of a stormwater rate.

5.1 Conclusions

Based on the findings of this study, the following conclusions have been made by the project team:

1. The current stormwater management program does not meet all of the City's needs and an increased level of service is necessary. The Interim service level is the most appropriate at this time as it provides the capital and operating funding needed to address current pressures and challenges faced by the City with a modest step toward setting aside funds for future infrastructure renewal costs. Over time, gradual steps toward a Sustainable service level should be taken.
2. The preferred stormwater financing mechanism is a stormwater user fee based on the Tiered SFU rate structure. This was selected as most appropriate option for the City since charges are allocated in the most fair and equitable manner, it generates a sustainable and dedicated source of revenue, and it provides financial incentives for property owners to install and operate environmentally-friendly stormwater management facilities and practices on their property.
3. The user fee should be charged to all properties in Mississauga except those that are exempted from payment of municipal fees and charges through legislation. Further, the exempted properties' share of the stormwater program cost should be recovered through the stormwater rate.
4. A credit policy will need to be developed that offers credits to non-residential properties that provide on-site stormwater management measures. Further, the loss of revenue due to credits should be recovered through the stormwater rate. Although the City recognizes the importance of on-site stormwater management measures on residential properties, the anticipated high administration cost for a credit application, approval and processing program may outweigh the net savings in the City's stormwater program resulting from this initiative. As such, it is recommended that an incentive program be explored which offers a one-time discount on the capital cost of implementing stormwater controls such as rain barrels. The development of this credit policy will coincide with billing implementation.

5.2 Recommended Implementation Strategy

In order to proceed, the City will need to develop a detailed plan that addresses the timelines and resource requirements for establishing and administering a new stormwater rate, including the development of a credit policy, database management activities, adaptation or creation of a billing system, and the related policy and business process considerations.

The recommended strategy for the City of Mississauga to proceed with the implementation phase of a stormwater rate is presented in the form of work plan activities listed in sequential order:

- Task 1: Develop Credit Policy. This would be based on the notion that property owners within the City may qualify for credit when they can demonstrate that their existing or proposed stormwater facilities provide a cost savings that the City otherwise would incur as part of its efforts to manage stormwater. The amount of reduction should be determined on a case-by-case basis for the approved service level. This may involve a series of monthly facilitated stakeholder group meetings, in the same format as the Stakeholder Group meetings described in Section 1.3, as well as individual meetings with the various group members.
- Task 2: Refine Financing System and Rate Structure. This would involve a refinement of the recommended financing mechanism along with the corresponding rate structure and billing system to allocate, in a fair and equitable manner, the costs of operating and maintaining the City's stormwater management system.

- Task 3: Classify Parcels. This would involve classifying all parcels within the City into one of four classifications: Residential, Non Residential, Mixed Use, and Undeveloped. Currently there are approximately 206,800 parcels in the City. Classification should consider the MPAC property coding and be refined based on updated parcel data, building footprint shapefiles, and aerial photography.
- Task 4: Calculate Fee for Residential Properties. This is meant to optimize the number of residential rate categories and classify each Residential or Mixed Use parcel into the appropriate category. Each category would have an associated Tiered SFU billing unit value along with a characteristic number of dwelling units for each parcel. For single-family detached homes, the impervious area footprint should be used to determine the appropriate SFU tiers (Small, Medium, or Large).
- Task 5: Calculate Fee for Non-Residential Properties. For parcels classified as Non Residential or Mixed Use, the impervious area footprint and corresponding number of billing units should be calculated, based on the average SFU size (267 m^2). It is estimated that there are 8,000 such parcels to be measured and processed.
- Task 6: Develop Master Billing File. This task would depend upon the method used to deliver the assigned parcel fee to the property owner, occupant(s), or property management representative. At this time, it may be assumed that the process will involve matching the parcel and associated fee to the City's taxing identification number and formatting the data according to the billing system requirements (whether billing is done through the City's current tax system or with a new standalone billing system).
- Task 7: Database Management and File Maintenance. After developing the master billing file in Task 6, guidance and support should be provided to assist City staff with the implementation and long-term maintenance of the stormwater billing data file, focusing on changes to existing billing data as the program proceeds. Existing detailed billing, maintenance data, and the various types of City reports would be used to keep the existing stormwater rate billing data current. Data sources such as building permits, assessment data, and GIS data would be considered. Internal IT support would also be required to assist in the development of a database management/file maintenance and stormwater billing support system.
- Task 8: Train and Assist Staff. This would involve developing training sessions for City staff to update and maintain the stormwater utility data file. On-call technical support to City staff tasked with answering questions from citizens about the fee could also be provided.
- Task 9: Prepare Stormwater Funding By-law. This would involve developing the stormwater funding by-law(s) for Council approval.
- Task 10: Extend Public Information and Education Program. The public information and education program task is a critical component for implementation of the stormwater rate and should be viewed in a broad sense to include City staff, elected officials and the general public. This task would extend the public consultation plan from the current study by conducting public information presentations to elected officials, and general public interest groups to address concerns and answer questions.
- Task 11: Prepare Report Documents. This would involve documenting the work products and deliverables from each task and should include a Credit Policy and Procedures document as an appendix (see Task 1).

Appendix A

Stakeholder Group and Public Information Meeting Materials and Comments Received

Gregory, Mike (Canada)

From: Lincoln Kan <Lincoln.Kan@mississauga.ca>
Sent: Wednesday, October 03, 2012 8:18 AM
To: John Murphy; Gregory, Mike (Canada); Michael Masliwec; Jeremy Blair; Zubair Ahmed
Cc: Martin Powell; Wendy Alexander; Patti Elliott-Spencer; Brenda Breault
Subject: FW: Meeting with the City of Mississauga on the Stormwater Financing Study

<<Mississauga 2012 Existing Land Use.pdf>>
<<Land Use & Imperviousness - Mississauga SWM Funding.pdf>>
Good morning:

Please see below the questions that Orlando would like to meet with the City about.

Regards,
Lincoln

From: Lana Russell [mailto:lrussell@tmig.ca]
Sent: 2012/10/02 7:55 PM
To: Lincoln Kan
Cc: David Ashfield; Kramer, Gary
Subject: Meeting with the City of Mississauga on the Stormwater Financing Study

Lincoln,

Thanks for hosting a meeting with Orlando Corporation on the above noted study.
To start here are a few facts about Orlando's Mississauga operations:

- They own over 2000 acres of industrial lands in Mississauga;
- Orlando pays over $62 million in taxes per year to Mississauga;
- They have owned and operated Business Parks for over 50 years in Mississauga; and
- They are good corporate citizens in the City.

Orlando Corporation also recognize the need for good Stormwater Management (SWM) and have been developing their Business Parks with appropriate on-site measures (roof top storage, parking lot storage and oversized pipes, as well as SWM ponds) to attenuate stormwater runoff to pre-development conditions, as specified by the City of Mississauga requirements for all development applications. These SWM improvements were made to each of Orlando's sites based on the assumption that the overall system would be sustainable. In addition, Orlando has made further storm drainage payments to the City of Mississauga in the amount of $30-$40 million over the past 30 years to supplement additional SWM improvements.

We would like to focus our questions in the following areas:

1) **General Principles**

There are a few principles that need to be applied for the financing to be fair:

- The fee needs to apply to everyone (including the GTAA).
- The fee needs to be used for the purposes it has been collected.
- There needs to be open and clear accounting of the monies collected / spent and on what.
- There needs to be continued efforts to improve the efficiencies of the accounting system.

2) Anticipated Costs

- What is included in the $16 billion SWM infrastructure figure?
  - Are the existing SWM Pond land costs included?
    - New land would not need to be obtained.
  - What is included in SWM pond costs?
    - Likely only one cleanout and a replacement of the outlet structures would be required rather than a full scale rebuild of the facility.
  - Can the current SWM fund estimate be broken down into components such as Water Quality, Quantity, Erosion, Water Balance, and Operation & Maintenance?
- What does the $16 million figure contain?
- What happens to the $10 million tax base now?
- How was the previous reserve fund attained?
- What has the $30-$40 million been used for that Orlando has funded the City over the last 30 years via storm drainage payments?
- Is the state of our desired stormwater beyond our ability to fund it?

3) Funding Formula

- The formula and administration need to be kept simple and efficient.
- Need to be based on the principle that everyone pays:
  - See attached 2012 City of Mississauga Land Use map and TMIG review of imperviousness.
  - The municipal roads would have a share attributed to them due to their high imperiousness.
  - Is this a City expense? How would the City portion be funded?

4) Credits

- For areas that drain to “Orlando Constructed” SWM ponds that drain directly to creeks, we feel that there should be a large credit in the range of 80%.
- How will the Cash-in-lieu that has been paid historically be credited?
- When credits are established how does the shortfall of funds get replaced?
- How are on-site controls to be accounted for since they are built, maintained and operated by Orlando?

5) Tax vs. SWM Fund

- We believe the tax system is the best for collecting the funds since there is a balance that must be maintained with all public costs.
- Elected officials need to make those tough decisions and develop the balance for public funding; increasing taxes; and the public good in a holistic manner.

I look forward to our conversation

Regards,
Dave

Lana Russell on behalf of

David Ashfield, P.Eng.
founding partner

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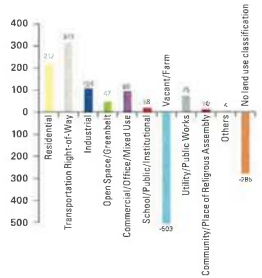
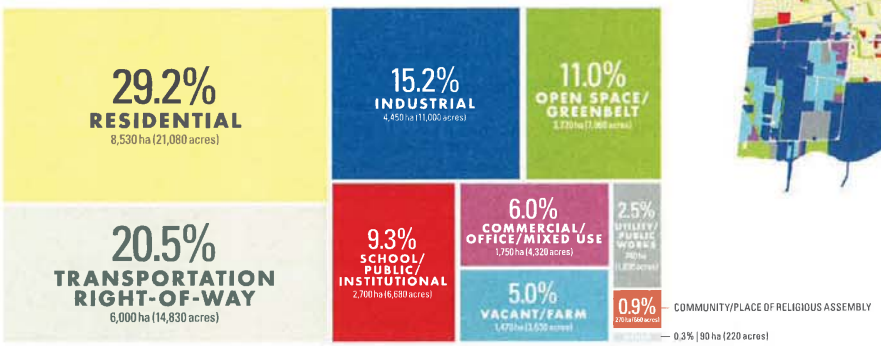
2012 EXISTING LAND USE

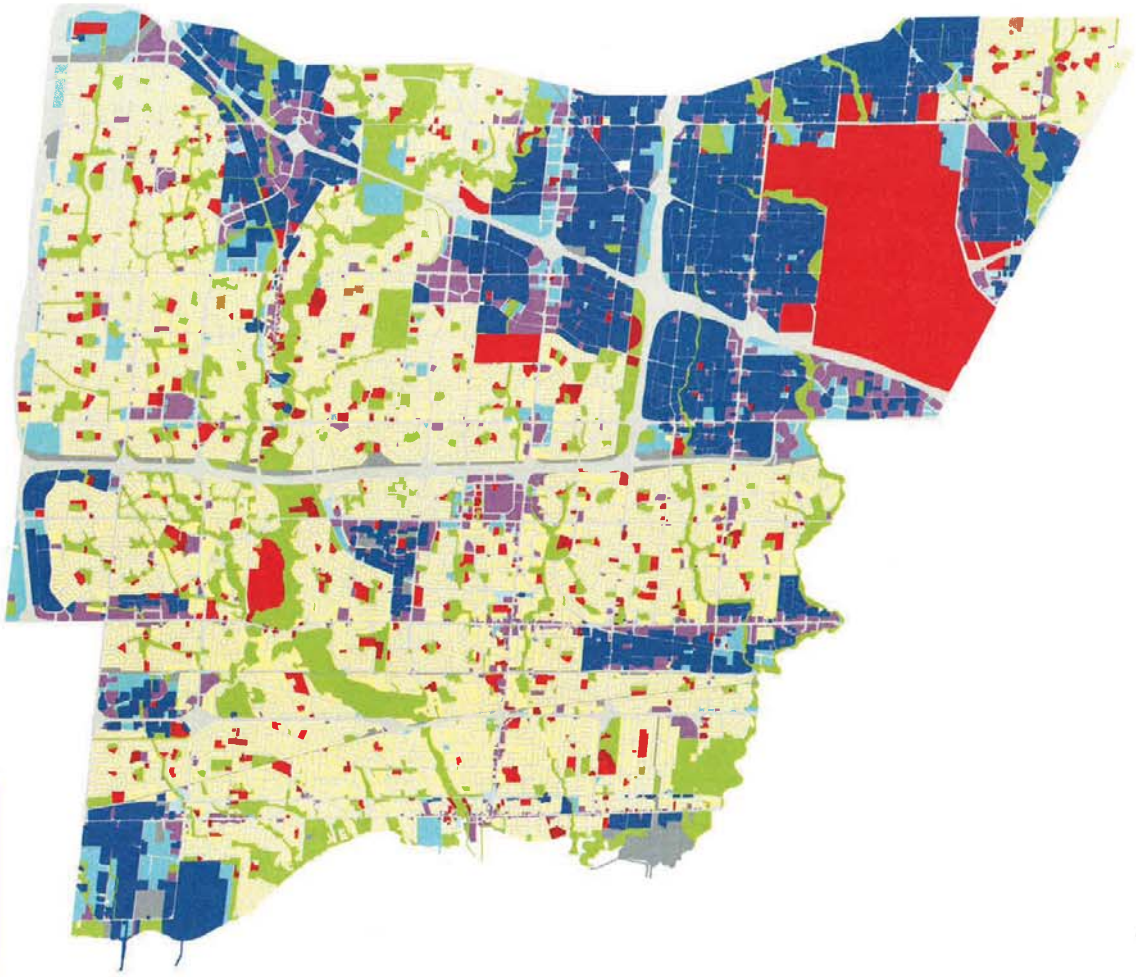
EXISTING LAND USE OVERVIEW

TOTAL AREA OF MISSISSAUGA (HECTARES/ACRES)	29,210 ha 72,180 acres
PERCENTAGE OF LAND IN DOWNTOWN MISSISSAUGA COMPRISING APARTMENTS	20.1%
PERCENTAGE OF LAND COMPRISING DETACHED HOMES IN NEIGHBOURHOODS	36.5%
PERCENTAGE OF OFFICE LAND LOCATED IN CORPORATE CENTRES	64.6%

EXISTING LAND USE CHANGE IN HECTARES (2006–2012)







Read more about the 2012 existing land use and view this map as a KML at mississauga.ca/data

mississauga data

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Breakdown of Land Uses and Imperviousness

City of Mississauga SWM Funding

Land Use	Total Land Area (acres)	Average Imperviousness (%)	Resultant Impervious Area (acres)	*% Share of Impervious Area*
Residential	21,080	40%	8,432	*19.31%*
Transportation Rights-of-Way	14,830	90%	13,347	*30.57%*
Industrial	11,000	90%	9,900	*22.67%*
Open Space / Greenbelt	7,950	20%	1,590	*3.64%*
School / Public / Institutional / GTAA	6,680	75%	5,010	*11.47%*
Commercial / Office / Mixed Use	4,320	90%	3,888	*8.90%*
Vacant / Farm	3,630	20%	726	*1.66%*
Utilities / Public Works	1,470	30%	441	*1.01%*
Community / Place of Religious Assembly	660	50%	330	*0.76%*
Other	220	0%	0	*0.00%*
TOTAL	***71,840***	***---***	***43,664***	*100.00%*

Meeting Request:
City of Mississauga Stormwater Financing Study

November 5, 2012

About BOMA Toronto:
Over 800 of Toronto's most influential Property and Facility Managers, Developers, Leasing Agents, Service Providers, Industry Influencers and Commercial Real Estate Professionals in its membership roster, representing 80 per cent of all commercial and industrial real estate companies in the Greater Toronto Area and beyond.

About ICSC:
Founded in 1957, ICSC is the premier global trade association of the shopping center industry. Its more than 55,000 members in over 90 countries include shopping center owners, developers, managers, marketing specialists, investors, retailers and brokers, as well as academics and public officials. As the global industry trade association, ICSC links with more than 25 national and regional shopping center councils throughout the world.

About NAIOP Greater Toronto:
NAIOP Greater Toronto Chapter represents commercial real estate developers, owners and investors of office, industrial, retail and mixed-use properties. It provides strong advocacy, education, and business opportunities, and connects its members through a powerful local and North American network.

By fostering the right business climate where members can share ideas, cultivate new relationships and stay on top of the most current industry information and trends, NAIOP strives to be the leading association for the commercial real estate industry in the Greater Toronto Area.

About REALpac:
REALpac is Canada's senior national industry association for owners and managers of investment real estate. Our members include publicly traded real estate companies, real estate investment trusts (REITs), private companies, pension funds, banks and life insurance companies with investment real estate assets each in excess of $100 million. The association is further supported by large owner/occupiers and pension fund advisors as well as individually selected investment dealers and real estate brokerages.

Subject: Meeting Request: City of Mississauga Stormwater Financing Study

On behalf of the *Building Owners and Managers Association Toronto* ('BOMA'), the *International Council of Shopping Centers* ('ICSC'), the *Commercial Real Estate Development Association Greater Toronto* ('NAIOP'), and the *Real Property Association of Canada* ('REALpac'), we would first like to thank the City of Mississauga for engaging stakeholders in a topic that is of crucial importance to our industry.

By way of background, *BOMA Toronto*, *ICSC*, *NAIOP Greater Toronto*, and *REALpac* have been very active on stormwater related consultations in the past, and recognize the importance of addressing capital funding and reinvestment deficiencies for any major municipality. Over the course of the last several months, our coalition has worked closely with staff from the City of Mississauga in their 'Stormwater Financing Study' and believe we have a firm understanding of the goals and challenges your municipality is facing. Principally, this coalition seeks to ensure that funding is fairly and evenly distributed amongst the commercial and residential sector alike. However, as a result of materials presented during stakeholder meetings and the clear direction as to where the City of Mississauga's staff recommendations are heading, we believe it is imperative that City Councillors understand the negative externalities that come with certain financing mechanisms.

Stormwater User Fee:
BOMA Toronto, *ICSC*, *NAIOP Greater Toronto*, and *REALpac* are **strongly opposed** to a stormwater user fee being applied in the City of Mississauga and see the following as issues related to it:

- Change in billing methodology to impervious area shifts stormwater costs from residential property to non-residential property, particularly to horizontal properties with large parking areas (i.e. shopping centres/box stores and industrial facilities);
- A major source of stormwater runoff is from common municipal roads, sidewalks, municipal buildings and municipal parking facilities. A shift in funding responsibility to non-residential property through the use of impervious area will allocate a disproportionate share of these common use facilities to non-residential owners;
- Stormwater management is a municipal service serving the greater public good and, as such, should be funded through the general property tax. It is not a consumable item and, in our view, should not be funded through a user fee. All properties contribute to stormwater runoff, not just properties with impervious areas.
- Advocates of stormwater charges based on impervious area state that the area measure is more equitable as it quantifies the relative contribution of stormwater runoff as a function of land use practices and development decisions of property owners. In reality, many of these decisions were established many years ago based on municipal zoning requirements, particularly respecting off street parking requirements;
- Off street parking design standards requiring impermeable surfaces were previously mandated. Only recently has technology allowed for hard surface permeable parking areas, however, at a significant cost premium;

- Businesses such as shopping centres, industrial facilities, car dealers, vehicle repair shops and gas stations require large impervious sites to operate their businesses and will be heavily impacted;
- Commercial properties requiring off street parking are disadvantaged when compared to street front business which only utilize exempted street parking;
- The shifting of stormwater costs from residential to non-residential will result in an effective increase in fixed costs to business that are already overtaxed relative to residential. Advocates of using impervious area based on fairness and equity are promoting a selective user pay system based on run-off. In fact, large commercial properties pay more to municipalities than the value of services they get in return. Perhaps Mississauga should also be considering a change to user fees from property taxes for such municipal services as libraries, community centres, roadways and parks not used by business. Large properties also provide their own fire protection, security, waste and snow removal reducing the need for additional municipal fire, police, waste and snow removal services.
- The increase in fixed costs to commercial properties would translate to a reduction in commercial property values and a corresponding decrease in assessed values and increased tax rates.
- Tenants are responsible for all operating costs and, therefore, as tenants compete for business on a regional level, the switch to a stormwater charge in Mississauga will place tenants at a disadvantage relative to their competition in neighbouring municipalities;
- A change to impervious area will require the creation of a new costly administration to measure and calculate charges based on impervious area including the creation of an impartial dispute resolution process to handle area disagreements. The database will have to be maintained and constantly updated to reflect physical changes; and,
- Switch to an impervious area calculation will shift the burden to commercial property owners, the economic engine for the city of Mississauga and will result in loss of employment within the city of Mississauga.

Meeting with City Staff on October 23, 2012

This coalition met with City staff and their consultant on October 23, 2012 as part of the stakeholder engagement process. Key findings are:

- **A change to a stormwater rate based on impervious area would require the creation of significant administrative costs. Staff has estimated this cost at $770,000 per year, however, our experience is that these costs would be significantly higher.**
- **Staff acknowledged that stormwater costs, at any level of service, can be fully funded through the existing property tax system, with no additional administrative costs.**

Recommendations for the City of Mississauga:

BOMA Toronto, *ICSC*, *NAIOP Greater Toronto*, and *REALpac* support the increase in level of service for stormwater management, however we recommend that the increases be funded through increased property taxes together with appropriate development charges, impact fees, (new development), or cash-in-lieu charges (infill/redevelopment). Property taxes are allocated based on current property values and, therefore, are an indirect proxy of ability to pay. As with most other public services, we believe that

property assessment is the most equitable basis for distributing the cost of stormwater services within a municipality.

This coalition believes that we have not been given enough timely information and even at this late date have yet to receive significant financial data on how this will affect our properties; we are requesting that this process include direct consultation with our membership following the release of the financial information. In addition, there is also serious concern that City staff have not done their due diligence in examining other potential revenue models.

In line with the principles outlined earlier in this submission, our goal is to work with the City of Mississauga to ensure that any stormwater financing option is fair and equally distributed amongst the commercial and residential sector.

We would like to meet with you and your fellow City Councillors to outline our concerns with some of the financing mechanisms presented in the financing study. Please contact Ryan J. Eickmeier at (416) 642-2700 ext. 224 to arrange a time that best fits your schedule.

Sincerely,

Paul Morse
Chief Executive Officer
REALpac
pmorse@realpac.ca

Ryan J. Eickmeier
Manager, Government Relations & Policy
REALpac
reickmeier@realpac.ca

Craig Smith
Chair, Government Relations Committee
NAIOP Toronto
cmith@ashlarurban.com

Ted Williams
Chair, Government Relations Committee
ICSC
Ted.Williams@ivanhoecambridge.com

Chris Conway
President & Chief Staff Officer
BOMA Toronto
cconway@boma.ca

Gregory, Mike (Canada)

From: Gray , Derek <Derek.Gray@gtaa.com>
Sent: Friday, November 16, 2012 10:25 AM
To: Lincoln Kan
Cc: Gregory, Mike (Canada)
Subject: RE: Stormwater Financing Stakeholder Group meeting #6

Lincoln:

Further to the meeting on Wednesday I'd like to reiterate the concerns I raised during the meeting and one additional item.

1. The City's Legal opinion including the GTAA as an entity subject to user fees and charges. I noticed that Metrolinx, and Canada Post are listed as exempt.
2. The rational nexus of stormwater fees remaining fair and equitable considering the ability for the City to implement any stormwater management at the airport or on stormwater from the airport.
3. The PILT that the GTAA already provides to the City and the component that would be currently allocated to stormwater management by the City.
4. Since assuming the operation of Toronto Pearson International Airport the GTAA has made capital investment of over $120 million capital investment in stormwater management plus the annual maintenance cost associated with these facilities and the stormwater infrastructure assumed from Transport Canada.
5. The Credit Program did not make reference to the City's stormwater that the GTAA manages and conveys on airport property.

If you have any questions or concerns, I am available at your earliest convenience.

Regards,

Derek R. Gray P.Eng., A.A.E.,
Manager, Environmental Services
Greater Toronto Airports Authority
Operations and Customer Experience
P.O. Box 6031, 3111 Convair Drive, Toronto AMF, Ontario, L5P 1B2
Phone (416) 776-3049 | **Fax** (416) 776-7358 | **Mobile** (416) 573 - 7268
www.TorontoPearson.com

From: Lincoln Kan [mailto:Lincoln.Kan@mississauga.ca]
Sent: Monday, November 12, 2012 3:01 PM
To: Bri-Ann Stuart (Dixie Outlet Mall); Celina Wrobel (THC - May Chang); Christine Capewell (UTM); Christine Zimmer (CVC); Dan Labrecque (ROP); Gray , Derek; DPCDSB; Fred Theiss; Gary Kramer (Orlando); Jeff O'Leary (Friends of Lake Wabukayne Stewardship); Jennifer Reid (St. Peter's Anglican Church); J-M Rouleau(Oxford); Kiruthiha Kulendiren (Lisgar); Linda Pinizzotto (COA); Matthew Coleridge (RJB - Square One); May Chang (THC); Michael Dewit (EAC); Michael

Ewaschuk (CRAA); Paul Mountford (PDSB); Richard Dundas (GWHA); Roger Coote (Cooksville Task Force); Sameer Dhalla (TRCA); Sheldon Leiba (MBOT); Steve Blaney (Sherwood Forest RA)
Cc: Martin Powell; Brenda Breault; Patti Elliott-Spencer; John Murphy; Zubair Ahmed; Wendy Alexander; Steve Dickson; Mary Ellen Bench; Jeremy Blair; Gregory, Mike ; Arseneau, David (David.Arseneau@aecom.com); Kimberly Hicks
Subject: Stormwater Financing Stakeholder Group meeting #6

Good afternoon:

The Stormwater Financing Stakeholder Group meeting #6 is scheduled for **Wednesday, November 14, 2012** at **City Hall** in **Committee Room 'A'** from **6:00 pm to 8:00**.

Please find attached the following items:

- Proposed agenda for meeting #6
- Minutes from Meeting #5
- Presentation from meeting #5
- Sign-in sheet from meeting #5

It would be appreciated if you can please review the minutes from the previous Stakeholder Group meeting and advise of any errors or omissions.

Thank you,

Lincoln Kan, P.Eng. | Manager, Environmental Services | Transportation & Works
905-615-3200 ext. 4086 | 905-615-3173 | lincoln.kan@mississauga.ca


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www.aecom.com

Minutes of Meeting

Date of Meeting	May 8, 2012	Start Time	6:30pm	Project Number	60247202
Project Name	Mississauga Stormwater Financing Study				
Location	Mississauga Central Library (2nd Floor, Classroom 4)				
Regarding	Stormwater Financing Stakeholder Group – Meeting #1				
Attendees	(see attached sign-in sheet)				
Distribution	Attendees; file.				
Minutes Prepared By	Mike Gregory, David Arseneau				

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

	Action
1. Introductions/Presentation • Martin Powell (Commissioner of Transportation and Works, City of Mississauga) opened the meeting by introducing the study team and describing the overall purpose and goals of the study. • Introductions were conducted around the table. • A presentation was given by Mike Gregory (AECOM) outlining the study, the key components of a stormwater management program, the different funding options available to a municipality and some details on a stormwater rate system. See handout attached.	
2. Open Discussion • Following the presentation there was an open discussion period among the stakeholders. The following describes questions and topics of discussion: • Q: Does the study team have an idea where current shortfalls in the stormwater program are? Is monitoring being done? • A: The main shortfall is in the operation and maintenance of existing facilities, as well as erosion control in City creeks and in stormwater asset management. Historically, the City has not budgeted sufficient funds to adequately maintain and fix existing assets. Monitoring is a current shortfall, and more needs to be completed in the future. • Q: Is the background work to establish program needs being done as part of this study? • A: Yes, the background work is currently underway. • There was general discussion on the roles the various Conservation Authorities play with respect to regional stormwater management (i.e., Credit Valley Conservation (CVC), Toronto and Region Conservation Authority (TRCA), and Conservation Halton). The overall opinion was that this study should be integrated with	see Comment

Conservation Authority initiatives. • *Comment: Both TRCA and CVC are stakeholder group members and the City will work collaboratively with these agencies in the development of a sustainable stormwater management program.*	
• Q: How are other municipalities involved (i.e., Brampton, Caledon)? • A: Brampton is aware of this study and considering similar investigation of funding options. Mississauga is open to sharing any knowledge and experience with them to facilitate their own study.	
• Q: What is the timeline for implementation of the preferred stormwater financing strategy, once it is selected? • A: It is premature at this point to comment on implementation timelines, but City Council will be presented with the recommended financing strategy in October.	
• Q: Have discussions with Peel Region taken place regarding using their existing water/sewer billing system? • A: Not yet, consultation with other parties will be conducted as the study progresses.	
• Comment: MIRANET should have been included in the stakeholder group. • *Response: The list of invitees was endorsed by Council to represent an equal mix of property owners, community groups, the business community and others. MIRANET will be notified of the June public open house*	see Response
• Comment: Conservation Halton should also be included due to the recent Lisgar flooding. • *Response: Please note that Credit Valley Conservation (CVC) and Toronto and Region Conservation (TRCA) have accepted the invitation to participate in the stakeholder group. It is felt that the views of the conservation authorities would be well represented by CVC and TRCA as conservation authorities meet frequently.*	see Response
• Comment: There is a need for development in Mississauga due to its position within the GTA (i.e., Airport). The housing/settlement focus here needs to be acknowledged by other jurisdictions.	
• Q: It seems like a decision has already been made that the rate/user fee will be the preferred financing strategy; is there room for other options to be evaluated (i.e., alternative methods being used in Europe and South Korea)? • A: We would prefer an option that has been tried and proven in Ontario, Canada, or North America. We need to explore options other than simply raising taxes. • *Response: AECOM will undertake a review of other available stormwater financing methods outside of North America and report back to the stakeholder group.*	see Response
• Comment: Site restoration and greenbelt protection do not seem to be included in the City's stormwater program. This is a deficiency and needs to be captured in the program. What about floodplain protection as part of the program? We need the Conservation Authorities at the table. • Response (from Christine Zimmer, CVC): There needs to be more detail on the scope of the study and the proposed program (i.e., more than just focusing on the pipes and ponds, but include pollution prevention, green infrastructure, and monitoring for example). Conservation Authorities currently undertake monitoring and	

have a management strategy. We have found that urban areas are not currently meeting Provincial water quality objectives. Our whole way of thinking needs to change: municipalities can't even meet current standards, so dealing with future legislation will be a challenge. There is a need to not only build new stormwater infrastructure, but to retrofit older areas as well, and this needs to be a component of the program. Flooding in the GTA has resulted in over $1 billion in insurance claims (there have been five 50-year storms and three 100-year storms in the past 8 years). The Great Lakes Protection Act has identified stormwater as one of the primary pollutant sources. To deal with climate change, municipalities need to adopt an aggressive stormwater program. • Response (from Lincoln Kan, City): The City's stormwater program is quite comprehensive and includes many things that are not explicitly mentioned in tonight's presentation or the study terms of reference. The program needs are currently being established and we will present more specific details at our next meeting.	City/ AECOM
• Q: Please clarify slide 60 of tonight's presentation: is each unit in a multi-family building charged the same amount as a single-family residence even though they have less average impervious area? • A: No, the table shows the charge for the property as a whole, which depends on the number of dwelling units in the building.	
• Comment: It was noted in the presentation that a stormwater rate also serves as an incentive to reduce impervious cover, through a credit program. • Response: An example from Kitchener's stormwater rate was given. Conestoga College had invested in significant on-site stormwater facilities that used the underlying soils to infiltrate runoff for large storm events. As a result, the college receives a significant credit on their rate. Neighbouring commercial properties (with the same soils) chose to discharge directly to the City's stormwater system and therefore did not receive any credit. • Q: What about the City Centre area? There is only so much green space that can be retrofit into the heavily developed areas. • A: Opportunities are not only limited to green space (i.e., permeable areas), they include permeable pavement, green roofs, cisterns, infiltration, etc. Further, for sites that do not have the space or resources to implement on-site stormwater facilities, a stormwater education program (e.g., at schools or church congregations) is also eligible for credits.	
• Q: Does Kitchener have a retrofit rebate program? • A: Kitchener's stormwater rate credit policy has just been approved, but there are no rebates to assist with the capital costs of building retrofits. These are covered separately through the City's cash-in-lieu program, a form of development charges. • Response (from Christine Zimmer, CVC): CVC offers assistance to help implement retrofits in some cases. • Q: Would TRCA or HC do the same? • A: Conservation Authorities have a stormwater working group that meets every two months. CVC and TRCA developed joint stormwater guidelines and a Low Impact Development manual which are offered to all conservation authorities if they want to use them.	

• Q: What is the City doing with respect to the public right-of-way? For example, Oakville just converted a ditch system to a curb and gutter system. • A: The City would generally avoid curb and gutter where possible. There are some demonstration projects with roadside ditching/bio-swales in Mississauga that have been built.	
• Q: Can this study look at the Condominium Act? The Act is outdated and needs to be overhauled to force builders to construct better to manage stormwater: condos will only become more prevalent in the future. • *Response: Looking at changes to the Condominium Act is beyond the scope of this study. However, there are a number of initiatives such as the City's Green Development Strategy and Standards, which focuses on achieving sustainability and environmental responsibility in new development in Mississauga as well as the CVC and TRCA's Stormwater Management Criteria document (draft) to address stormwater related issues such as flood protection, water quality and erosion control.*	See Response
• Q: Will minutes be provided for this meeting? Some people in the stakeholder group don't have the same level of knowledge of stormwater issues and terminology as others. Is there a primer on stormwater issues available? • A: Yes, minutes will be made available. CVC has some good general information on stormwater management. We will compile a glossary of stormwater management terms that the group can use.	AECOM
3. Next Meeting • The next meeting is scheduled for Wednesday June 6 at City Hall (in the Committee Room 'A') from 6:30-8pm.	

Attachments:

1. Sign-in sheet "SFSG1-Attendees_8May2012.pdf"
2. Presentation handout "Mississauga_StormwaterFinancing_SFSG1.pdf"

City of Mississauga
Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 1, 8-May-2012)

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City of Mississauga
Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 1, 8-May-2012)

Name	Affiliation	Phone	E-mail
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City of Mississauga - Stormwater Financing Study

Stormwater Financing Stakeholder Group
May 8, 2012 – Meeting No. 1
Central Library (2nd Floor, Classroom 4)

Project Manager: Lincoln Kan, P.Eng.
Consultant PM: Mike Gregory, P.Eng., AECOM

CDM Smith AECOM

Meeting Purpose and Objectives

- Summarize current initiative by Mississauga
- Outline key components of municipal stormwater management
  - Problems and solutions
  - Needs and issues
- Present summary of funding options
  - Property tax
  - Development & growth related funding
  - Stormwater user fees
- Open Discussion

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STORMWATER FINANCING STUDY DETAILS

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Project Tasks (RFP Statement of Work)

- 1: Research of City's Existing Program and Benchmarking Exercise
  - Meeting 1: Project initiation
  - Task 1.1: Assess the state of the City's existing SWM program including O&M, asset management, planning and monitoring activities, budget forecasting, capital improvement plans, and related expenditures
  - Task 1.2: Benchmark the City's SWM program against other major municipalities in Ontario, including levels of service, expenditures and funding mechanisms
  - Task 2.1: Develop a Consultation Plan to identify and outline a framework and schedule for consultation with City staff and Leadership Team, the Mayor and Members of Council, Conservation Authority staff, private stakeholders, the business community, rate payers' representatives and the general public
  - Meeting 4: Meetings (6) with Working Team

Project Tasks (continued)

- 2: Development of Recommended Stormwater Management Program
  - Task 1.3: Develop and evaluate various SWM program options the City could implement, based on increasing levels of service from Business As Usual to a program addressing all future pressures
  - Task 1.4: Recommend a SWM program for the City to implement, through consultation with staff, Mayor and Members of Council, Stormwater Advisory Committee and other interested parties, that will meet the desired levels of service, targets for compliance with regulations and guidelines, and other future pressures
  - Meeting 7: Meetings (4) with the Steering Committee at the following milestones (completion of Discussion Paper #1, Discussion Paper #2, draft report and final report)

Project Tasks (continued)

- 3: Evaluation of Stormwater Financing Options
  - Task 1.5: Undertake a review of available options that have been used to support similar municipal SWM programs and evaluate the advantages and disadvantages of each in relation to the City's needs
  - Task 1.6: Present stormwater financing options and recommend the preferred option that offers a fair and equitable method for allocating the costs of the recommended stormwater management program
  - Task 1.7: Develop and evaluate several scenarios and preliminary financing structures for the preferred funding option
  - Task 1.8: Develop a strategy to proceed with the implementation phase of the Stormwater Financing Study including a timeline schedule
  - Meeting 8: Meetings (3) with the Leadership Team at the following milestones (completion of Discussion Paper #2, draft report and final report).

Project Tasks (continued)

- 4: Draft Report
  - Task 1.9: Provide a draft report to the City for review and comment
  - Task 2.2: Assist in the formation of a Stormwater Advisory Committee
    - Meeting 2: Monthly meetings (6) with Stormwater Advisory Committee
  - Task 2.3: Conduct education sessions
    - Meeting 5: An education session with Leadership Team
    - Meeting 6: An education session with the Mayor and Members of Council
  - Task 2.4: Coordinate and facilitate public consultation meetings
  - Task 2.5: Make all arrangements for the required public notification and prepare all presentation drawings, materials, etc.
    - Meeting 3: Meetings (2) using 'focus group' approach with representatives from residential, non-residential and tax exempt property owners
    - Meeting 9: Two (2) Public Information Centres
  - Task 2.6: Provide technical content & assistance to City Communications
  - Meeting 10: Any other 3 meetings deemed necessary by the City

Project Tasks (continued)

- 5: Final Report
  - Task 1.9: Based on all applicable input on the draft report, a final report will be provided upon completion of this assignment

Project Highlights & Schedule

- Range of funding options to be investigated
  - Tax-based funding (status quo for existing system)
  - Development charges (status quo for new development)
  - User fee approach
- Led by: Working Team, Leadership Team, and Steering Committee
- Advised by: Stormwater Financing Stakeholder Group & general public
- Recommended implementation plan presented to Council in October

	2012										
Task / Description	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1. Existing Stormwater Management Program											
2. Future Stormwater Management Program											
3. Funding Options											
4. Stakeholder Meetings and Draft Report											
5. Final Report											

Invited Stakeholders

- Residential
  - Gordon Woods Homeowners' Association
  - Rockwood Homeowners Association
  - Clarkson BIA
  - Whiteoaks Lorne Park Community Assoc.
  - Mississauga Oakridge Residents Assoc.
  - Friends of Lake Wabukayne Stewardship
  - Lisgar Residents' Association
  - Credit Reserve Association
  - Condo Owners Association
  - Cooksville Creek Task Force
  - Kaneff Group of Companies
  - Peel Housing
- Commercial/Industrial
  - Building Industry and Land Dev'pt Assoc.
  - Mississauga Board of Trade
  - Ontario Restaurant Hotel & Motel Assoc.
  - Erin Mills Development Corporation
  - Orlando Corporation
  - ProLogis
  - Square One - Oxford Properties Group
  - Sheridan Park Association
  - Westwood Mall - Fieldgate Commercial

Invited Stakeholders

- Institutional/Government
  - Peel District School Board
  - Dufferin-Peel Catholic Dist. School Board
  - University of Toronto (Mississauga)
  - Trillium Health Centre
  - Canadian Council of Churches
  - Islamic Society of North America
  - GTAA
  - Metrolinx
  - Region of Peel
- Ex-Officio
  - Credit Valley Conservation
  - Toronto and Region Conservation
  - Environmental Advisory Committee
  - Credit River Anglers Association
  - EcoSource

Group Meetings

- SFSG No. 1: Introduction to Stormwater Management and Financing
  - 6:30-8pm Tuesday May 8 at Central Library - 2nd Floor, Classroom 4
- SFSG No. 2: Overview of Stormwater Problems/Solutions
  - 6:30-8pm Wednesday June 6 at City Hall - Committee Room 'A'
- SFSG No. 3: Existing and Future Level of Service
  - 6:30-8pm Wednesday July 4 at City Hall - Committee Room 'A'
- SFSG No. 4: Existing Financing and Alternative Funding Options
  - 6:30-8pm Thursday August 2 at City Hall - Committee Room 'A'
- SFSG No. 5: Proposed Financing Mechanism
  - 6:30-8pm Wednesday August 29 at City Hall - Committee Room 'A'
- SFSG No. 6: Development of Recommendations for Council
  - 6:30-8pm Wednesday September 26 at City Hall - Committee Room 'B'

MUNICIPAL STORMWATER MANAGEMENT PROGRAMS

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Typical Causes of Stormwater Problems

- Urbanization: Growth and development alters the amount of runoff and pollution.
- Aging infrastructure: Pipes, culverts and outfalls have limited life expectancy.
- Changing design standards: Systems designed to old standards may be inadequate with respect to current regulatory requirements.
- Inadequate planning: Appropriate resources, facilities, and improvement projects must be proactively planned to address needs and problems.

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Typical Causes of Stormwater Problems (continued)

- Inadequate maintenance: Facilities must be actively operated; watercourses maintained; and streets, catchbasins, culverts and outfalls cleaned.
- Poor design or faulty construction: Developer plans must be thoroughly reviewed and sites adequately inspected during construction.
- Climate Change: Facilities respond to rainfall events that are becoming more intense and with greater frequency.

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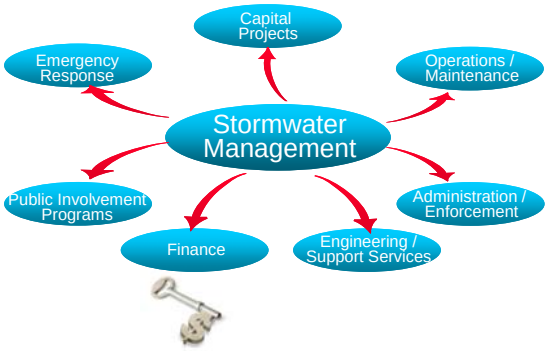
Finch Avenue,
Toronto
August 19, 2005

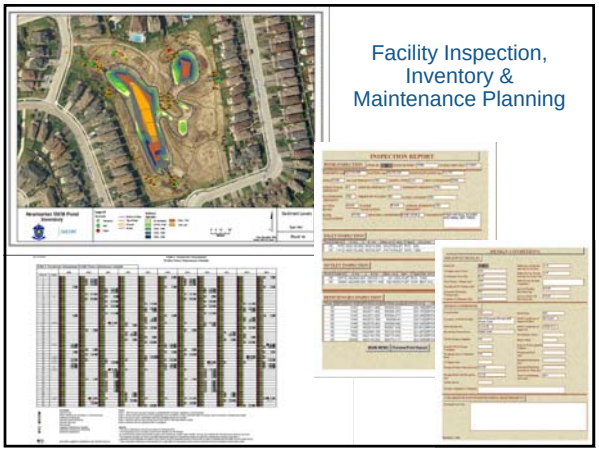
Municipal Stormwater Management (SWM) Program



Capital Projects

Operations and Maintenance


Operations and Maintenance
Inspections
Debris Removal
Repair


Facility Inspection, Inventory & Maintenance Planning


Monitoring

Enforcement of Sewer Use bylaw

Spill Cleanup

Typical Issues

- The general public typically has limited knowledge and appreciation of what the City does to manage stormwater runoff, especially:
  1. How much money is spent on the stormwater management program
  2. How the program is financed
- Issue 1: Level of Service
  - Higher levels needed to better plan, build, maintain, monitor & renew assets
  - Due to increasing regulatory requirements, new technologies, aging infrastructure, rising customer expectations, climate change, etc.
- Issue 2: Allocation of Charges
  - Provide dedicated and sustainable revenue to support all program needs
  - Emphasize fairness and equity (same charge basis for all property owners)
  - Offer incentive opportunities to reduce runoff and pollutant discharge

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Program Expenditures

- Affected by magnitude & extent of the various program components
- Capital Projects (put them where & how big?)
- Operations & Maintenance (what & how often?)
- Asset management (what & when to Repair/Rehab/Replace and what about Long-Term Sustainability?)

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Level of Service

- The phrase "Level of Service" applies to all components of the municipal stormwater management program:
  - Level of flood protection in a pond design
  - Extent and frequency of street sweeping
  - Timeliness and responsiveness in responding to a flooding complaint or chemical spill
- Regulatory requirements for stormwater are not explicitly quantified
- Affordability of the stormwater program is directly impacted by decisions related to the level of service required
- Public feedback on the desired level of service is critical to municipal stormwater service delivery

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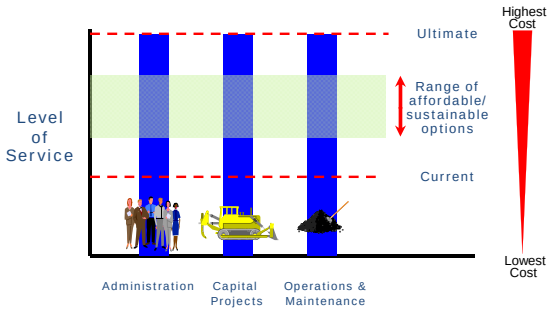
Level of Service Decisions Affect Program Affordability



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Future SWM Program Expenditures

- Municipal governments have limited flexibility and autonomy in generating revenue
- Annual stormwater budgets have to compete with other vital public services. As a result…

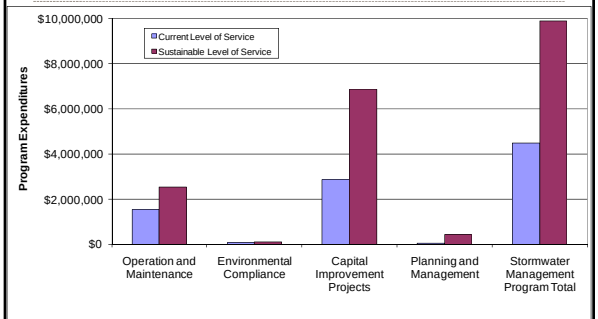
  the implementation of capital projects and the extent/frequency of O&M activities often becomes dependent on the availability of funds, rather than based on need

- It is expected that competing demands for limited public funds will continue, forcing municipalities to pursue alternative financing mechanisms in order to provide a sustainable SWM program
- Stormwater management is a service that keeps a low profile, but ***without adequate funding can lead to serious problems that will only get worse unless steps are taken now***

Sustainable Level of Service

- Intermediate alternative between current & ultimate
  - Ramp up existing services to meet capital + O&M needs + regulatory requirements over a realistic timeframe
- Ideally, this quantifies municipal staff's assessment of future SWM program activities & expenditures required to:
  - Provide a more proactive and preventative maintenance program
  - Provide infrastructure and additional activities to meet provincial and federal water quality requirements
  - Manage assets in a more sustainable manner
  - Meet service expectations of the public

Example SWM Program – Level of Service Comparison






COMPARISON OF FUNDING OPTIONS

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Stormwater Funding Categories

- Taxes: mandatory levies that are not related to any specific benefit or government service (i.e., general services for the public good)
- Fees: payments made to offset the cost of a specific service and payable by those people who benefit from the service (i.e., a "rational nexus" must be demonstrated)
- Special levies that have specific designations and limitations for usage
- Other means: e.g., public-private partnerships, long-term debt-financing strategies, federal or provincial economic stimulus grants for infrastructure investment
- Any combination of the above

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Stormwater Funding Mechanisms – North America

Category/Description	Category/Description
Taxes	**Fees and Special Charges**
Local Income Taxes	Aquifer Protection Fees
Local Sales Taxes	Bond Issuance Fees
Personal (Tangible) Property Taxes	Connection Fees
Real (Ad Valorem) Property Taxes	Construction Fees
Selective Sales Taxes	Developer Charges
State/Provincial Sales and Use Taxes	Direct Water Use Charges
	Exactions
	Impact Fees
	Inspection/Monitoring/Testing Fees
Other Means	Permitting Fees
Credit Enhancement Mechanisms	Professional Certification Fees
Debentures/Bonds	Septic System Impact Fees
Fines and Penalties	Special Assessments
Grants	Stormwater Rates
Loans	Tolls
Public-Private Partnership Arrangements	Water Rights Application Fees
	Water/Wastewater Rates
	Well Permit/Pumping Fees

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Stormwater Funding Options – Canada

- Property Tax
- Development/Growth Related
  - Development charges or impact fees (new development)
  - Cash-in-lieu charges (infill/redevelopment)
- Stormwater User Fee
  - Typical range in Canada is $2-10 per month for average homeowner
  - Wide variety in service levels and portion of program that is rate financed
  - Flat fee: equal charge to all utility customers (Calgary, Saskatoon)
  - Tiered flat fee: charges assigned by customer type (London, Aurora)
  - Variable rate: property owners based on measured impervious area (>700 throughout the U.S. and 1 in Canada – Kitchener)

Property Tax

- Local property taxes are the most significant revenue source to support municipal SWM programs in Canada
- Determined based on the property value assessment times the applicable tax rate
- Many municipalities have caps that limit tax payments for selected property types
  - Commercial / Industrial
  - Multi-residential

Property Tax Exemptions

- Tax-exempt properties include gov't buildings, schools, hospitals, churches, and other charitable organizations
- Some charge a core municipal service fee or tax-like payment to tax-exempt properties (e.g., Payments in Lieu of Taxes program)
- In Ontario, the Municipal Act authorizes a "heads and beds" charge to hospitals, post-secondary schools, and correctional facilities of up to $75 per person/year or per bed/year
  - For example, a 400-bed hospital would contribute $30,000 to the local municipality as a payment in lieu of tax

Dedicated Tax Levy

- With the general tax fund, money to support the SWM program is not dedicated until the annual budget is set each year
- Dedicated levy can be administered specifically to raise revenue for SWM
- Fixed property tax rate itemized on the annual tax bill
- By-law required to dedicate these funds specifically to SWM

Property Tax Funding

	Pros	Cons
Tax-Based Funding	• Already accepted as the primary existing source of revenue for municipalities • Can be used to fund all stormwater management program activities • The billing system is already established • Applicable throughout municipality	• Property taxes are based on a property's assessed value, not runoff contribution, so the fairness and equity of this revenue source is low • Not a dedicated* or stable funding source • Annual competition for general tax funds to support other community services • No incentive to adopt source controls to reduce runoff • Tax-exempt properties don't contribute to SWM program

**Note: A dedicated tax levy for specific SWM services could be adopted*

Development Charges

- Ontario Development Charges Act of 1997 authorizes municipalities to pass by-laws to recover costs incurred related to new and re-development projects
- Only used to fund eligible growth-related capital costs, and only for the services for which they were collected
- Revenue derived from DC can be applied to projects throughout the municipality
- Often based on the number of residential dwelling units or the building floor area for non-residential developments

Cash-In-Lieu Charges

- Contributions to off-site SWM facilities can be allocated in the form of a cash-in-lieu policy
  - Re-development/infill areas; and
  - On-site SWM facilities are considered infeasible (e.g., undue maintenance burden)
- Like DC, rates based on the area of development (or number of dwelling units)
- Unlike DC however, revenue derived from cash-in-lieu charges can be applied to both capital and O&M costs of SWM facilities
- Also known as Fee-in-Lieu (Mississauga, Brampton, Markham)

Development/Growth Related Funding

	Pros	Cons
Dev'pt Related Funding	• Accepted by development community • Based on contributing area, more equitable than property value	• Limited by developable land within municipality (i.e., not applicable throughout municipality) • Directly dependent on growth and growth rates (i.e., if growth rate declines, so does the revenue collected) • Development charges are generally limited to the capital costs associated with the development

Stormwater User Fees

- Progression of public utilities
  - Once funded from general tax support…
  - … then shifted to enterprise fund
- Charges derived on a fairness and equity basis
  - Water – Volume used
  - Wastewater – Volume generated
  - Solid Waste – Volume/Weight generated
  - Stormwater – Runoff contribution

Impervious Area Based Stormwater Rate

- Charge based on impervious area measurements:
  - Rooftops
  - Driveways
  - Parking areas
  - Patios
  - Sidewalks
- Fair and equitable basis for user fee
  - Based on property's contribution of runoff volume and pollutant loading
  - Not assessed value, # of water meters, frontage, zoning type, area, etc…

Stormwater User Fees

- A few municipalities in Ontario have implemented a tiered flat fee (typical range is $4-$11 per month per household):
  - Town of Aurora
  - City of London
  - City of St. Thomas
- Several municipalities in western Canada have implemented a rate based on zoning and intensity of development
- Several hundred municipalities in the U.S. have implemented a stormwater rate based on impervious area measurements of properties
- New stormwater utilities in Canada (January 2011):
  - Kitchener $10.50/mo (avg. single detached home)
  - Waterloo $4.50/mo (avg. single detached home; utility partially funds SWM program costs)

Stormwater User Fee Funding

	Pros	Cons
User-Fee Funding (e.g., Stormwater Rate based on impervious area)	• Dedicated and stable funding source for all SWM program activities (i.e., sustainable) • Fair and equitable fee based on runoff contribution (assessed to all private and publicly-owned properties in the same manner) • With a credit program, provides an incentive for property owners to reduce stormwater runoff and pollutant discharge • Mechanism to ensure privately owned SWM facilities are maintained	• Additional implementation costs (rate study, database management, billing and customer service*) • Possibility that a new fee may not be well received by the public *Note: Potential to administer stormwater rate through other existing billing systems (e.g., hydro, water/ sewer, etc.).

Stormwater User Fees in Canada

Municipality	Rate Type	Status	Details (as of November 2009)
Ontario			
Aurora	Tiered Flat Fee	Implemented in 1998	Storm Sewer Charge, Res'l $3.66/mo ($43.92/yr). [illegible] rates are effective May 1, 2009.
London	Tiered Flat Fee	Implemented in 1996	Storm Drainage Charge, Res'l $10.69/mo, Com $10.31/mo; Ins'l over 600,000m² $10.31/mo; Ind'l 600,000m² and less than 1,200,000m² $912.85/ha/yr.
St. Thomas	Tiered Flat Fee	Implemented in 2000	Storm Drainage Rate, Res'l $7.32/mo, Comm'l/Ind'l $7.32/m [illegible] land area >1800m2.
Manitoba			
Winnipeg			Have investigated drainage utility, status unknown.
Saskatchewan			
Regina	Water Use Surcharge		Daily charges are applied for all properties based on size.
Saskatoon	Flat Fee	Implemented January 2002	All customers pay a monthly charge for stormwater management and infrastructure upgrades, $7.40/mo (per water meter). Currently investigating a move towards a land drainage utility.
Alberta			
Calgary	Flat Fee	Implemented March 1994	Storm Drainage Upgrade Charge, $7.30/mo to fund capital improvement projects. Currently investigating a move towards a variable rate charge.
Edmonton	Land Drainage Utility	Implemented January 2003	Utility based on intensity of development factor. Typical Res'l = $3.50/mo. Includes credit policy. Charges are based on property size (A), development intensity (I), and a runoff coefficient (R) based on land zoning and a city-wide monthly rate. The charges are calculated as follows: A x I x R x Rate = Land Drainage Utility Charge
Red Deer			Land Drainage Utility or flat rate, not known.
St. Albert	Tiered Flat Fee	Implemented January 2003	Storm Sewer Utility, bi-monthly billing, Res'l $9.05/mo, Res'l (stacked/ condo) $6.25; Non-Res'l $24.65.
Strathcona County	Flat Fee (in selected communities)	Implemented January 2007	Storm Sewer Operations charge, Res'l $1.75/mo and $8.25/mo in two communities.
British Columbia			
Langley	Land Drainage Utility		Details not known.
Prince George	Feasibility Study		Recently completed a feasibility study, but decided not to implement.
Richmond	Land Drainage Utility		Dykes & Drainage Charge, typical Res'l = $6.50/mo.
Vancouver			Have investigated drainage utility, status unknown.

New in 2011! Kitchener & Waterloo

Comparison of Funding Options

- Blended revenue options are feasible!

Funding Method	City Wide Applic-ability	Used for Capital Costs	Used for O&M Costs	Used for Eng'rg/ Support Costs	Fair & Equitable Allocation	Dedicated Funding Source	Effort To Admin-istrate	Environ-mental Benefits
Property Tax	Yes	Yes	Yes	Yes	No	No	Low	Low
Development Charges	No	Yes	No	Partly	Partly	Yes	Medium	Medium
Stormwater Rate	Yes	Yes	Yes	Yes	Yes	Yes	High	High

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STORMWATER RATE DETAILS

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Stormwater Rate Calculation

$$\text{Charge} = \frac{\$\text{Expense}}{\text{Units}} = \$/\text{Month/Unit}$$

$$\text{Units (ERU)} = \text{Dwelling Units} + \frac{\text{Non Residential Impervious Area}}{m^2 / \text{ERU}}$$

ERU = Equivalent Residential Unit

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Common Billing Unit Methodologies

- Flat Fee
- Runoff Coefficient
- Intensity of Development Factor
- Residential Flat Rate
  - Equivalent Residential Unit (ERU)
  - Single Family Unit (SFU)
- Tiered Residential Rate
- Level-of-Service / Geography Base
- Impervious Area Measurements (all properties, each year)

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Equivalent Residential Unit (ERU)

- Single Family
- Multi-Family
- Condominiums
- Townhouses

→ = Flat Rate (1 billing unit per residential dwelling unit)

- Governmental
- Commercial
- Institutional
- Industrial

→ $\frac{\text{Parcel Impervious Area}}{\text{ERU Area*}}$ = Units

*Range: 150 to 320 m^2 (1,600 to 3,400 ft^2)
Typical Average: 230 m^2 (2,500 ft^2)

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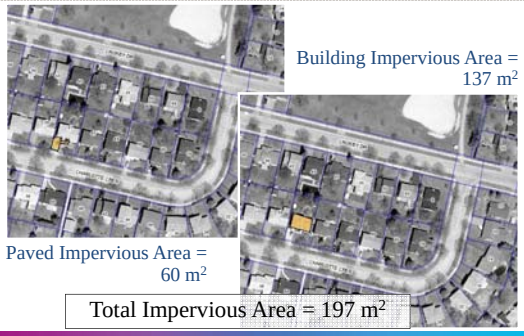
Single Family Detached Home



Building Impervious Area = 137 m²

Paved Impervious Area = 60 m²

Total Impervious Area = 197 m²

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Multi-Family Residential

Building Impervious Area = 1,736 m²

Paved Impervious Area = 4,025 m²

Total Impervious Area = 5,761 m² = 230 m²/dwelling unit

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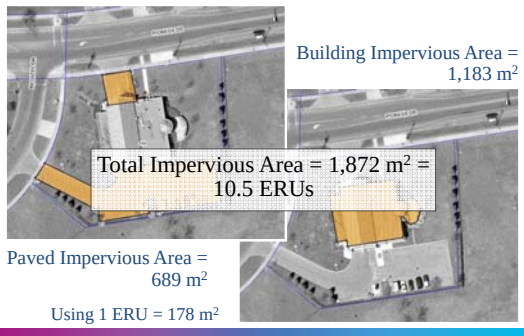
Non-Residential (Fire Station)



Building Impervious Area = 1,183 m²

Total Impervious Area = 1,872 m² = 10.5 ERUs

Paved Impervious Area = 689 m²

Using 1 ERU = 178 m²

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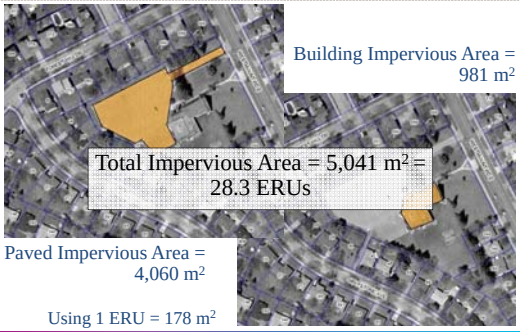
Non-Residential (Church)

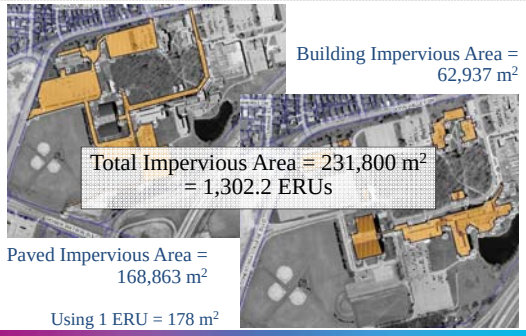


Building Impervious Area = 981 m²

Paved Impervious Area = 4,060 m²

Using 1 ERU = 178 m²

Non-Residential (College)



Building Impervious Area = 62,937 m²

Paved Impervious Area = 168,863 m²

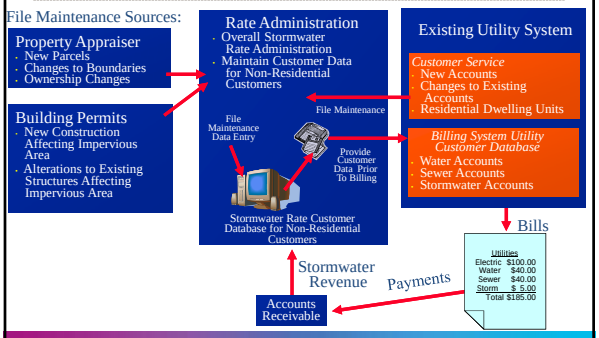
Using 1 ERU = 178 m²

Summary of Sample Areas

Location	Impervious Area (m²)	Dwelling Units	Projected Base Charge	
			ERU	Monthly Charge
Single Family	197	1	1.0	$4.4
Multiple Family	5,761	25	25.0	$110.0
Fire Station	1,872	n/a	10.5	$46.3
Church	5,041	n/a	28.3	$124.7
Public School	11,184	n/a	62.9	$276.6
College	231,800	n/a	1,302.2	$5,729.9
Strip Mall	4,004	n/a	22.5	$99.0

Using 1 ERU = 178 m² and Rate = $4.41/ERU/month

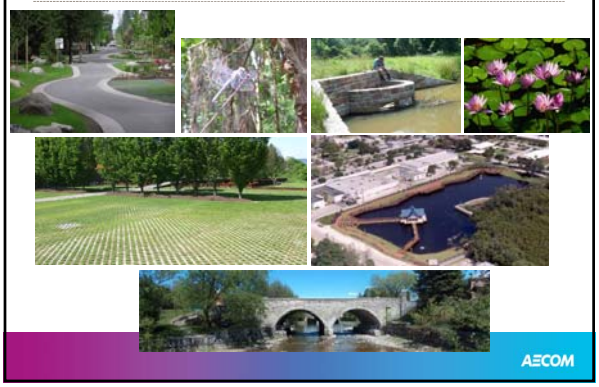
Stormwater Rate – Billing System



Contacts

- City Project Manager
  Mr. Lincoln Kan
  Manager, Environmental Services
  Transportation and Works Department
  201 City Centre Drive, Suite 800, Mississauga ON L5B 2T4
  Phone: 905.615.3200 ext 4086
  Email: Lincoln.Kan@mississauga.ca
- Consultant (AECOM)
  Mr. Mike Gregory
  Senior Water Resources Engineer
  50 Sportsworld Crossing Road, Unit 290, Kitchener ON N2P 0A4
  Phone: 519.650.8697
  Email: mike.gregory@aecom.com

Questions?



AECOM
50 Sportsworld Crossing Road, Suite 290 519.650.5313 tel
Kitchener, ON, Canada N2P 0A4 519.650.3424 fax
www.aecom.com

Minutes of Meeting

Date of Meeting	June 6, 2012	Start Time	6:30pm	Project Number	60247202
Project Name	Mississauga Stormwater Financing Study				
Location	City Hall, Committee Room 'A'				
Regarding	Stormwater Financing Stakeholder Group – Meeting #2				
Attendees	(see attached sign-in sheet)				
Distribution	Attendees; file.				
Minutes Prepared By	Mike Gregory, David Arseneau				

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

	Action
1. Group Welcome/Business /Presentation • Lincoln Kan opened the meeting by welcoming Group members and introductions were conducted around the table. • Minutes of the previous meeting (Meeting No. 1, May 8) were accepted. The Group was asked for additional comments or questions since the last meeting. • Q: What are others in the Region doing with respect to stormwater financing studies? • A: We understand Brampton is considering their own financing study, however they are not directly involved in the present study. • A presentation was given by Mike Gregory (AECOM) outlining the City's stormwater responsibilities and services, regulatory requirements and responsibilities of other jurisdictions. Details of the City's stormwater program were provided including presentations by Sandro Torresan (assets and inventory summary), Jeremy Blair (capital projects and studies) and Marcello Gaudio (current stormwater expenditures). See handout attached. • It was requested that a Group contact list be included as a handout at the next meeting.	AECOM
2. Open Discussion The following describes questions and topics of discussion that arose during the presentation or in the open discussion following the presentation. • Q: How does the rain gauge network operate and where are they located? A: Jeremy responded that tipping-bucket monitors are placed on fire stations or other public buildings to restrict access. The recorded data is relayed to a computer or downloaded manually. Christine Zimmer (Credit Valley Conservation, CVC) noted that these are placed throughout the City, located by watershed/subwatershed and integrated or co-ordinated with the larger gauge network of municipalities and conservation authorities.	

• Q: What percentage of runoff currently drains to ponds? • A: Approximately 15% of the City is controlled by stormwater management facilities (i.e., captured and treated in ponds). The remaining 85% is uncontrolled (i.e., captured by the storm sewer collection system and discharged directly into the creeks, rivers, and Lake Ontario) • Q: How often do ponds need to be dredged? • A: Jeremy replied that the average pond clean-out frequency is typically every 25 years. • Comment: There was a concern regarding enlarging pipes or culverts to address flooding problems since this could lead to problems downstream. • Response: Both upstream and downstream impacts are considered during the planning phase of capital projects. • Q: Where does the sediment go after it is taken out of the ponds? • A: Jeremy replied that it depends on the sediment quality, samples need to be taken and tested in a lab. Typically it is sent to a landfill. It was also noted that the Ontario Ministry of Environment (MOE) issues permits when ponds are constructed that require an ongoing commitment from the owner to inspect as well as properly operate and maintain the facility. • Q: Mississauga is a relatively young city that will be facing new challenges. What will stormwater management service levels look like in the future? • A: Marcello replied that staff are currently reviewing future stormwater needs as part of this study. He also noted that the numbers shown for existing service levels do not include costs related to new growth-related infrastructure which are funded through Development Charges (DC). Lincoln added that DC funds are dwindling, which puts more pressure on the tax base to support the City's stormwater system. • Q: Money collected from DC is used for many things, is a portion allocated specifically for stormwater? • A: Yes, the DC charge for stormwater is based on the property size and specifically allocated for ponds (and the studies that need to be done to plan and design the ponds) as well as a portion that is applied to erosion control works, which is based on the upstream developable area. • Q: What about stormwater facilities located on private property, what proportion does this make up in the City? • A: The City has limited influence on private property facilities, but is committed to conducted public education and involvement programs. • Q: It doesn't appear that innovation is included in the City's budget, it should invest in innovative eco-based solutions. Where does the money go and how could we improve the situation in the future? • A: Jeremy replied that the City's stormwater program is currently limited by available funds, but are actively seeking creative and cost-effective solutions for the future. Community service funds are currently used for naturalization of stream corridors, managing encroachments onto these corridors, biodiversity of vegetation, low impact development, tree planting, etc.	

• Comment (from Gail Robinson, Dufferin-Peel Catholic District School Board): Regarding the last meeting that presented a proposal to investigate stormwater user fees, it seems like the City has already made their decision. We view this as a tax which the school board is exempt from paying. Paul Mountford (Peel District School Board) also noted that the school board could expect a charge of $400K per year for all of its properties. It was noted that the Cities of Kitchener-Waterloo are currently in a battle with their school boards regarding the new storm utility and there are currently discussions in place between Ministry of Education and Municipal Affairs to resolve difficulties. • Response: A decision has not been made at this point. The objective of this study is to review all funding options, both status quo (property tax and development charges) as well as alternative mechanisms such as a user fee. The outcome of this study will be a recommendation to Council and it is their decision whether to implement or not. • Q: Is there any indication of what the future revenue needs will be? • A: This will be the topic of discussion for the next meeting. • Comment (from Christine, CVC): most municipalities in the U.S. are moving towards stormwater user fees due to infrastructure deficits, but they include incentives to reduce impervious area. Supercentres and schools may look a lot different under these incentive/credit programs. Keep an open mind – some of these options may be more fiscally responsible, many eco-friendly schools are being built. • Comment: A portion of the tax bill goes towards education, but there have been heavy cuts and school boards are regulated by the Province. There are different taxation rates than the U.S. We need to be sensitive of these realities when comparing ourselves to others. • Comment: The study team also needs to understand that Peel schools are severely underfunded, some residents cannot afford a new stormwater tax. • Q: As a commercial property manager, this initiative can be supported but there needs to be more information. Can we get stormwater budgets for the last 5 years and the next 5 years? • A: The City will provide the requested budget information to the Group.	City City
3. Next Meeting • The next meeting is scheduled for Wednesday July 4 at City Hall (in the Committee Room 'A') from 6:30-8pm.	

Attachments:

1. Sign-in sheet “MississaugaStormFinancing_Attendees_6Jun2012.pdf”
2. Presentation handout “MississaugaStormFinancing_Presentation_6Jun2012.pdf”

City of Mississauga
Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 2, 6-Jun-2012)

Name	Affiliation	Phone	E-mail
Roger Coote	Cooksville Creek Task Force	9-896-1868	thecootes@bell.net
Bri-Ann Stuart	Pixie Outlet Mall	416-936-7819	bstuart@ivanhoecambridge.com
Canon Jennifer Reid	St. Peter's Anglican Church	905-828-2095	rector@stpetererindale.org
Vida Stripinis	Gordonwoods Homeowners Assn	9-2799412	vida.stripinis@sympatico.ca
Steve Blaney	Sherwood Forest Res. Assoc.	855-1070	steveblaney@rogers.com
GARY KRAMER	ORLANDO CORPORATION	905.677.5480	kramerg@orlandocorp.com
~~MATT GOLDBERG~~	~~RBC~~		
Maggie Liu	TRCA	416-661-6600	~~mliu@trca.on.ca~~ mliu@trca.on.ca
Marcello Gardin	CITY OF MISSISSAUGA	#3861	
Sandro Torresan	City of Mississauga	#5153	
GAIL ROBINSON	DUFFERIN-PEEL CATHOLIC DSB	9-890-0708 ext 24255	gail.robinson@dpcdsb.org
Randy McGill	Greater Toronto Airport Auth	416 776-5091	randy.mcgill@gtaa.com

City of Mississauga
Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 2, 6-Jun-2012)

Name	Affiliation	Phone	E-mail	Present?
Christine Capewell	University of Toronto (Mississauga)	905-828-5405	christine.capewell@utoronto.ca	✓
Dan Labrecque	Region of Peel	905-791-7800 x4395	dan.labrecque@peelregion.ca	
Jeff O'Leary	Friends of Lake Wabukayne Stewardship	905-363-4622	jefftoleary@yahoo.ca	✓
Derek Gray	GTAA	416-776-3049	Derek.Gray@gtaa.com	✓
Paul Mountford	Peel District School Board	905-890-1010 x2217	paul.mountford@peelsb.com	✓
Gary Kramer	Orlando Corporation	905-677-5480	kramerg@orlandocorp.com	✓
Michael Ewaschuk	Credit River Anglers Association	519-580-1708	mewaschuk@nrsi.on.ca	
Darren O'Neil	Sheridan Park Association	905-403-4200	DONeil@hatch.ca	✓
J-M Rouleau	Oxford Properties Group (Square One)	905-270-7771	jrouleau@oxfordproperties.com	
Linda Pinizzotto	Condo Owners Association (Mississauga)	416-561-7373	linda@lindapinizzotto.com	NO
Kiruthiha Kulendiren	Lisgar Residents Association	416-975-8603	KKulendiren@Bluelotus.ca	✓
Christine Zimmer	Credit Valley Conservation	905-670-1615	czimmer@creditvalleyca.ca	✓
Richard Dundas	Gordon Woods Homeowners Association	905-279-3321	rdundas006@sympatico.ca	
Michael DeWit	Environmental Advisory Committee	905-274-0391	mdewit@rogers.com	✓
GAIL ROBINSON	DUFFERIN-PEEL CATHOLIC DSB	9-890-0708 EXT. 24259	GAIL.ROBINSON@DPCDSB.ORG	✓
MATT COLERIDGE	RJ BURNSIDE	905-821-1800	matthew.coleridge@rjburnside.com	✓
Project Team				
Lincoln Kan	City of Mississauga	905-615-3200 x4086	Lincoln.Kan@mississauga.ca	✓
Jeremy Blair	City of Mississauga	905-615-3200 x3133	Jeremy.Blair@mississauga.ca	✓
Kimberly Hicks	City of Mississauga	905-615-3200 x5232	Kimberly.Hicks@mississauga.ca	NO
David Arseneau	AECOM	519-650-8631	David.Arseneau@aecom.com	✓
Mike Gregory	AECOM	519-650-8697	Mike.Gregory@aecom.com	✓
Sandro Torresan	City of Mississauga	x.5153	alessandro.torresan@mississauga.ca	✓
Marcello Gandio	City of Mississauga	#3861	marcello.gandio@mississauga.ca	

City of Mississauga - Stormwater Financing Study

Stormwater Financing Stakeholder Group
June 6, 2012, 6:30 – 8:00 pm – Meeting No. 2
City Hall (Committee Room 'A')

Project Manager: Lincoln Kan, P.Eng.
Consultant PM: Mike Gregory, P.Eng., AECOM

Group Welcome/Business

- Introductions/New Members
- Acceptance of previous meeting minutes (Meeting No. 1, May 8)
- Additional comments or questions since last meeting?

Tonight's Meeting

- Objective: for Stakeholder Group members to understand what the City is currently doing to plan, build, operate and maintain its stormwater management system
- Stormwater Management Overview
  - City stormwater responsibilities and services
  - Regulatory requirements and other jurisdiction responsibilities
- City of Mississauga Stormwater Program Details
  - Assets and inventory summary of stormwater related infrastructure
  - Capital projects, studies, and expenditures
  - Operations & Maintenance activities and expenditures
- Next steps, schedule and upcoming meetings
- Open Discussion

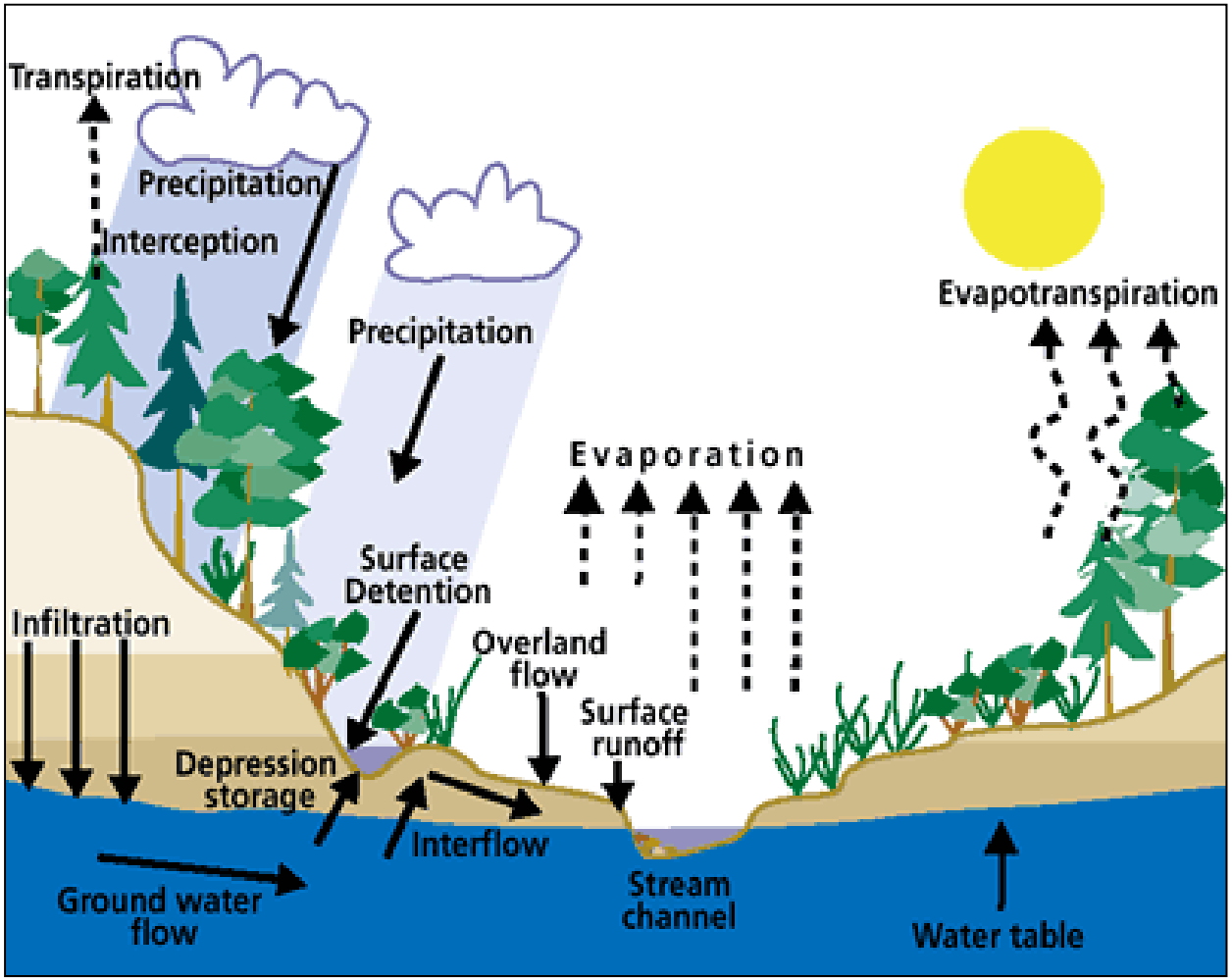
STORMWATER MANAGEMENT OVERVIEW

AECOM

City Stormwater Responsibilities and Services

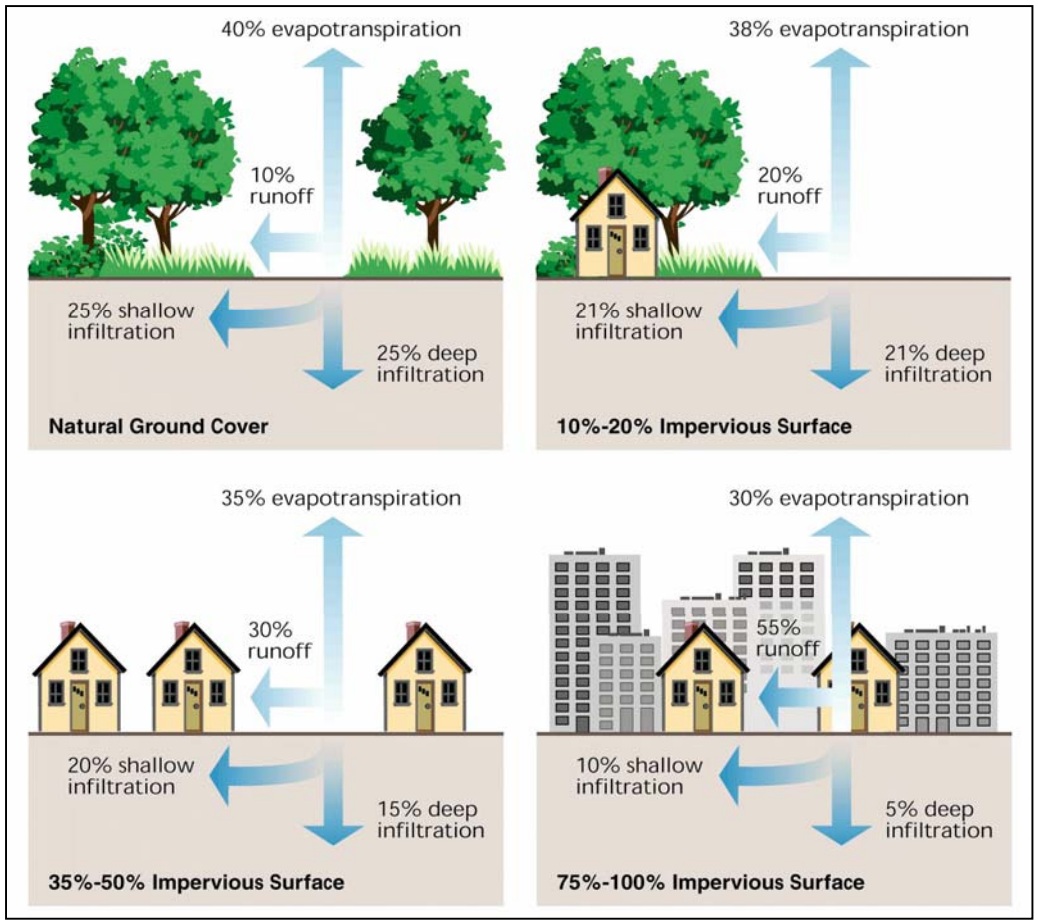
- The City of Mississauga is responsible for managing all aspects of stormwater within its jurisdiction (e.g. planning, design, construction, operations and maintenance)
  - Including facilities located within the public right-of-way limits or easements
  - Excluding facilities located on private property, within provincial road rights-of-way, or that fall under the jurisdiction of another governmental authority
  - Ownership and operation of facilities constructed by developers is typically included as part of the formal assumption process of a subdivision (following initial warranty period and final inspection)
- The City of Mississauga is not responsible for drinking water, wastewater and solid waste management – these services are under the Region of Peel
- The City's current stormwater program involves all City departments
- The City's stormwater management assets have an estimated replacement value of $1.7 billion dollars

Hydrologic Cycle

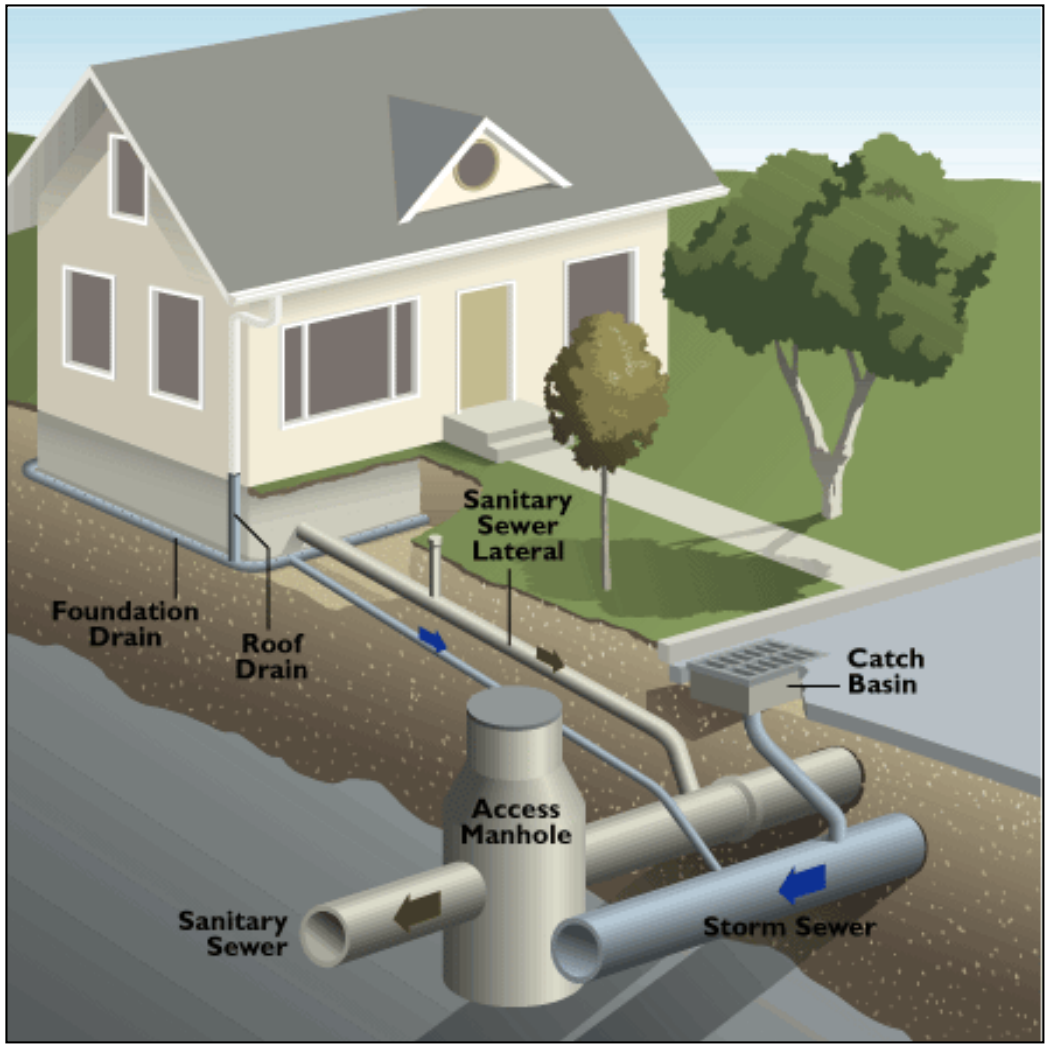


AECOM

Hydrologic Cycle



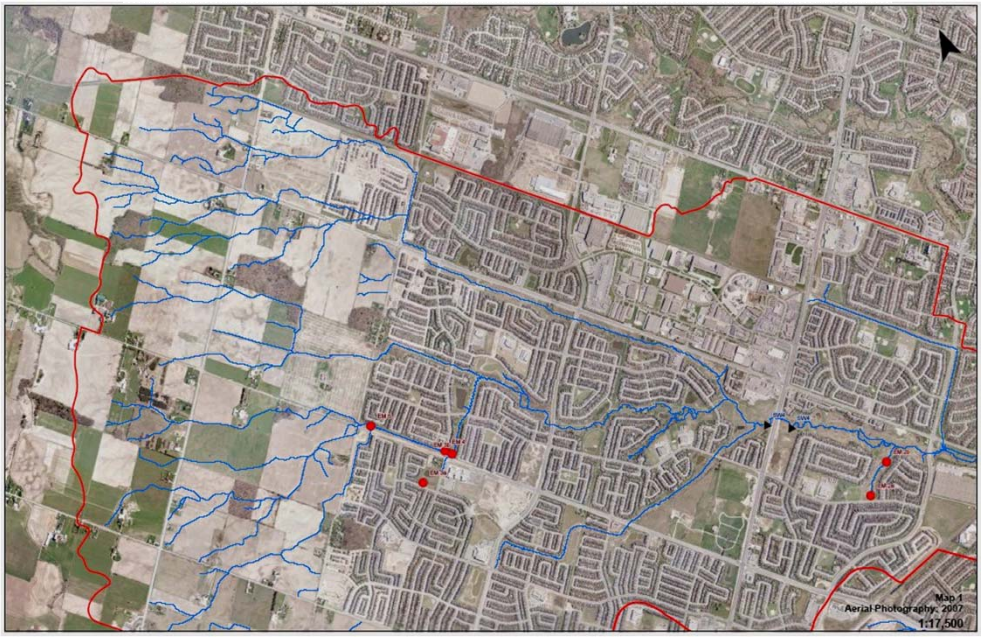
Storm & Sanitary Sewer System



Change in Land Use

Upper Fletcher's Creek (1999)

Upper Fletcher's Creek (2007)



Cooksville Creek Bank Erosion

Cooksville Creek Bank
Slumping / Path Damage

Mimico Creek
Bank Erosion

Cooksville Creek Engineered Channels


16 Mile Creek
Naturalized Channel


Loyalist Creek
Naturalized Channel

Water Quality Issues

Cooksville Creek Flooding

Stormwater Pond Construction

Stormwater Management Ponds

Cooksville Creek Debris

Cooksville Creek Outfall Blockage

Fletchers Creek Debris

Sawmill Creek Outlet

Cooksville Creek –
Erosion can threaten infrastructure

Cooksville Creek

Damaged Outfalls

Gabion Failure

Mimico Creek
Maintenance

Serson Creek
Road Crossing

Mimico Creek
Fish Rescue

Storm Sewer
Repair

Provincial and Federal Legislation

- ***Ontario Water Resources Act*** (OWRA) prohibits activities that introduce pollutants into natural water bodies
- ***Provincial Water Quality Objectives*** serve as chemical and physical indicators for Ontario's surface water and groundwater
- ***Ontario Water Opportunities Act, 2010*** will conserve and sustain water resources for present and future generations
- ***Ontario Clean Water Act, 2006*** ensures communities are able to protect their municipal drinking water supplies through developing collaborative, locally driven, science-based protection plans
- ***Ontario Brownfields Act, 2004*** addresses the clean-up process for proposed redevelopment in brownfields, which are abandoned, idle or underutilized commercial or industrial properties where past activities have caused known or suspected environmental contamination

Provincial and Federal Legislation (continued)

- ***Ontario Sustainable Water and Sewage Systems Act, 2002*** ensures clean, safe drinking water and requires that municipalities recover the full costs of providing essential water and sewer services, through a variety of user fees and charges
- ***Canadian Environmental Protection Act, 1999*** is aimed at pollution prevention, protection of environment and human health in order to contribute to sustainable development
- ***Ontario Emergency Management Act, 2002*** legally mandates that municipalities implement risk-based emergency management programs (i.e., emergency plans, hazard & impact risk assessments)
- Subsection 36(3) of the federal ***Fisheries Act*** prohibits the deposit of a deleterious substance into water frequented by fish

Agency Responsibilities – Conservation Authorities

- Credit Valley Conservation (CVC); Toronto and Region Conservation Authority (TRCA); and Conservation Halton (CH)
- Established under the ***Conservation Authorities Act:***
  - Protection and management of wetlands
  - Regulation of development within floodplains
  - Coordinate the preparation of environmental plans on a watershed basis
  - Comment on development activities affecting water quantity and quality, fish habitat (on behalf of DFO), and fisheries management plans (with MNR)
  - Special flood protection and erosion control projects
  - Various water quality, water supply, groundwater programs and watershed/subwatershed planning studies that dictate design criteria and maintenance requirements for stormwater facilities

Agency Responsibilities – Provincial

- Ministry of the Environment (MOE)
  - Develops and implements environmental legislation, regulations, standards, policies, guidelines and programs
  - Research, monitoring, inspection, investigations and enforcement activities are integral to achieving Ontario's environmental goals
  - Primary permitting and oversight role for municipal stormwater management, through a number of acts and regulations (e.g., OWRA)
- Ministry of Municipal Affairs and Housing (MMAH)
  - Provincial land use planning policies and other matters under ***Planning Act***
  - Stormwater management is critical to the subdivision planning process
  - Oversight responsibilities for municipal authority and activities, as well as the ***Ontario Building Code***.
  - In specific areas there may be additional planning requirements (e.g., Greenbelt Plan, Oak Ridges Moraine Conservation Plan)

Agency Responsibilities – Provincial (continued)

- Ministry of Natural Resources (MNR)
  - Planning role primarily focused on emergency management programs (identified in Order in Council 1492/1995 as the provincial lead for flooding)
  - Approval of Special Policy Areas (in association with MMAH) to regulate historic towns and residential areas that lie inside floodplain areas and act to restrict further intensification of such areas
  - Technical guidance for fisheries and natural channel systems
- Ministry of Infrastructure (MOI)
  - As part of the ***Places to Grow Act***, Ontario's Growth Plan identifies a number of policies related to stormwater management (e.g., municipalities are encouraged to implement and support innovative stormwater management actions as part of redevelopment and intensification)
  - Develops general infrastructure policy and advises on the government's investment priorities in public infrastructure, which includes stormwater

Agency Responsibilities – Provincial (continued)

- Ministry of Transportation (MTO)
  - As an owner/developer, MTO plans, builds and maintains highways including stormwater management facilities
  - As a regulator, MTO develops design standards, reviews/approves design reports and issues permits
  - Key statutes pertaining to stormwater include the ***Public Transportation and Highway Improvement Act*** which manages highway drainage and provides authority for construction, alteration and maintenance
- Ministry of Agriculture Food and Rural Affairs (OMAFRA)
  - Stormwater responsibility under the ***Ontario Drainage Act***, which directs the planning and maintenance of drainage works
- Ministry of Community Safety and Correctional Services (MCSCS)
  - Development of Emergency Response Plan and Business Continuity Plan, which includes a stormwater flood response

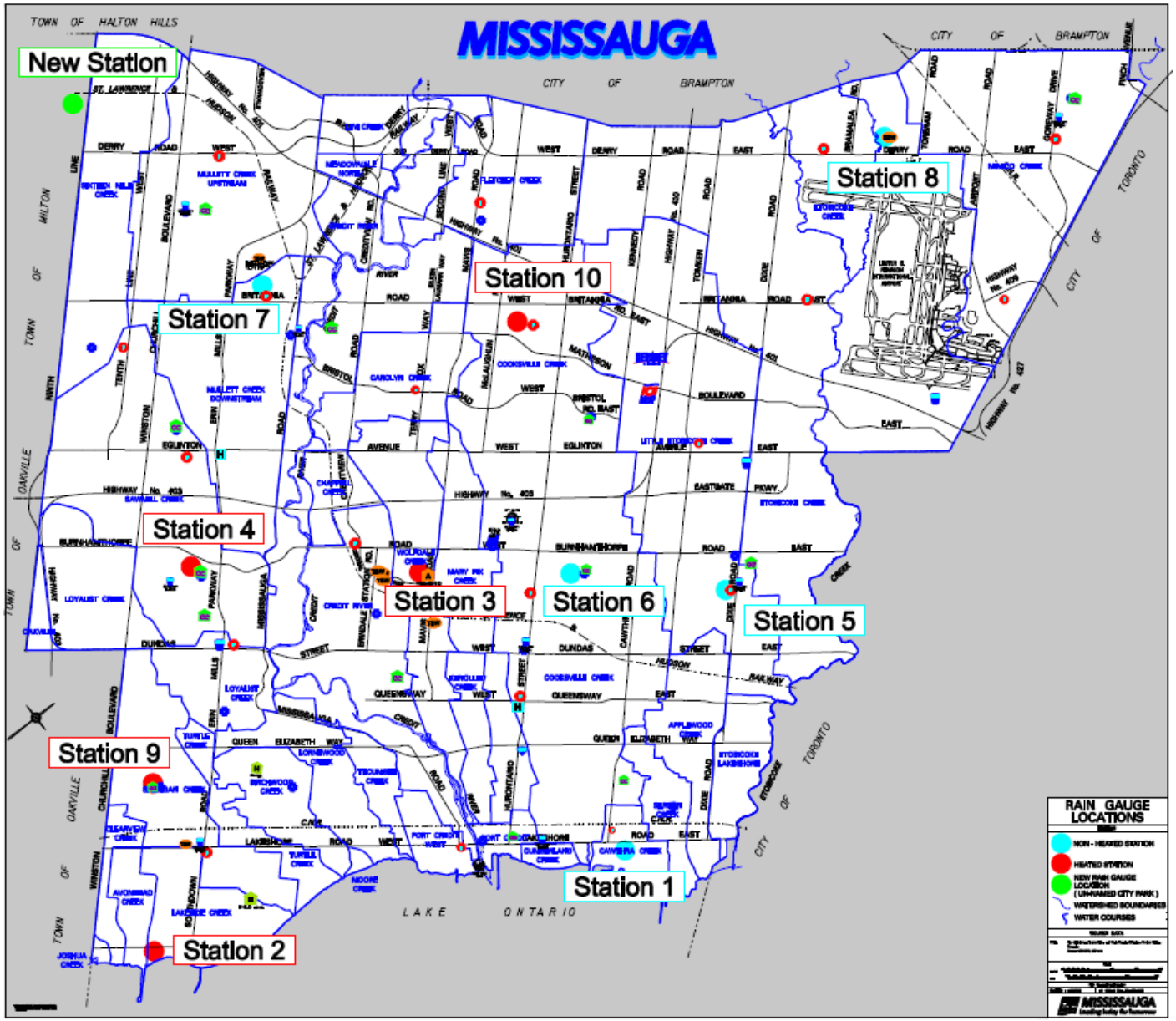
Agency Responsibilities – Federal

- Environment Canada (EC); Department of Fisheries and Oceans (DFO); and Infrastructure Canada (INFC)
  - EC has several networks and tools to monitor and predict climate change
  - Although there is much federal legislation related to stormwater, the regulatory role is left to individual provinces
  - The federal government is also a partner in municipal, provincial and federal infrastructure funding partnerships

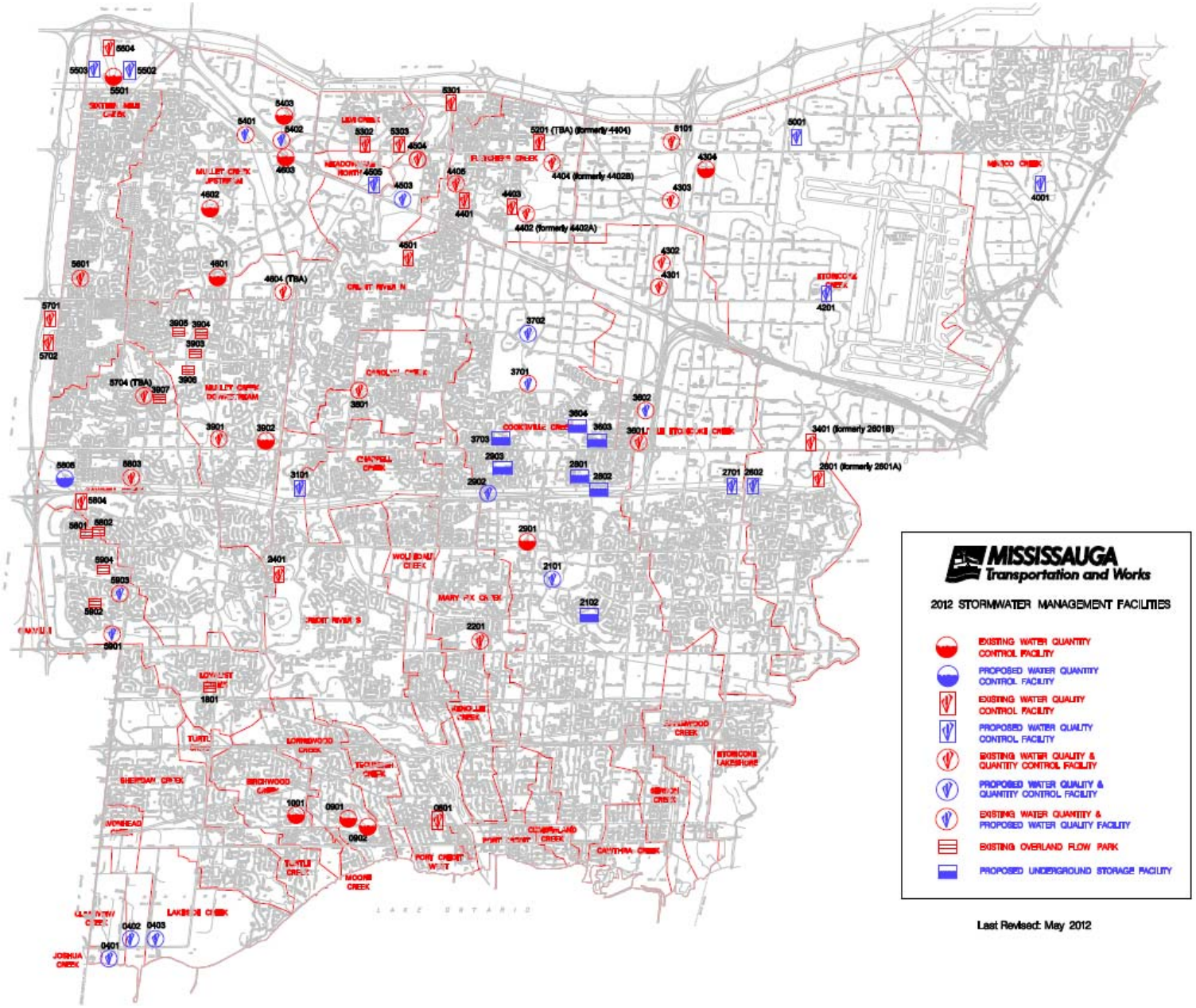
MISSISSAUGA STORMWATER PROGRAM DETAILS

AECOM

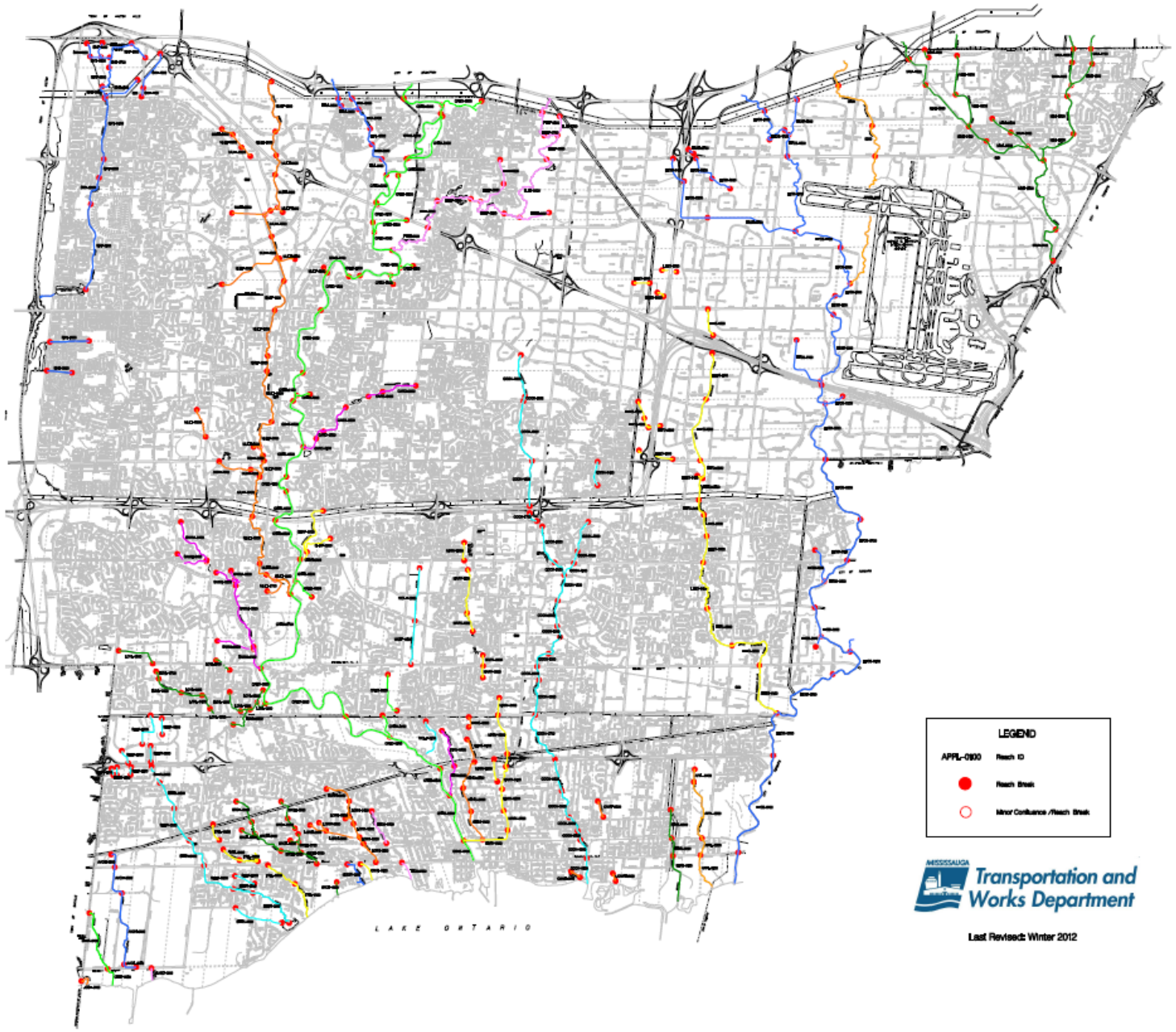
Rain Gauge Network



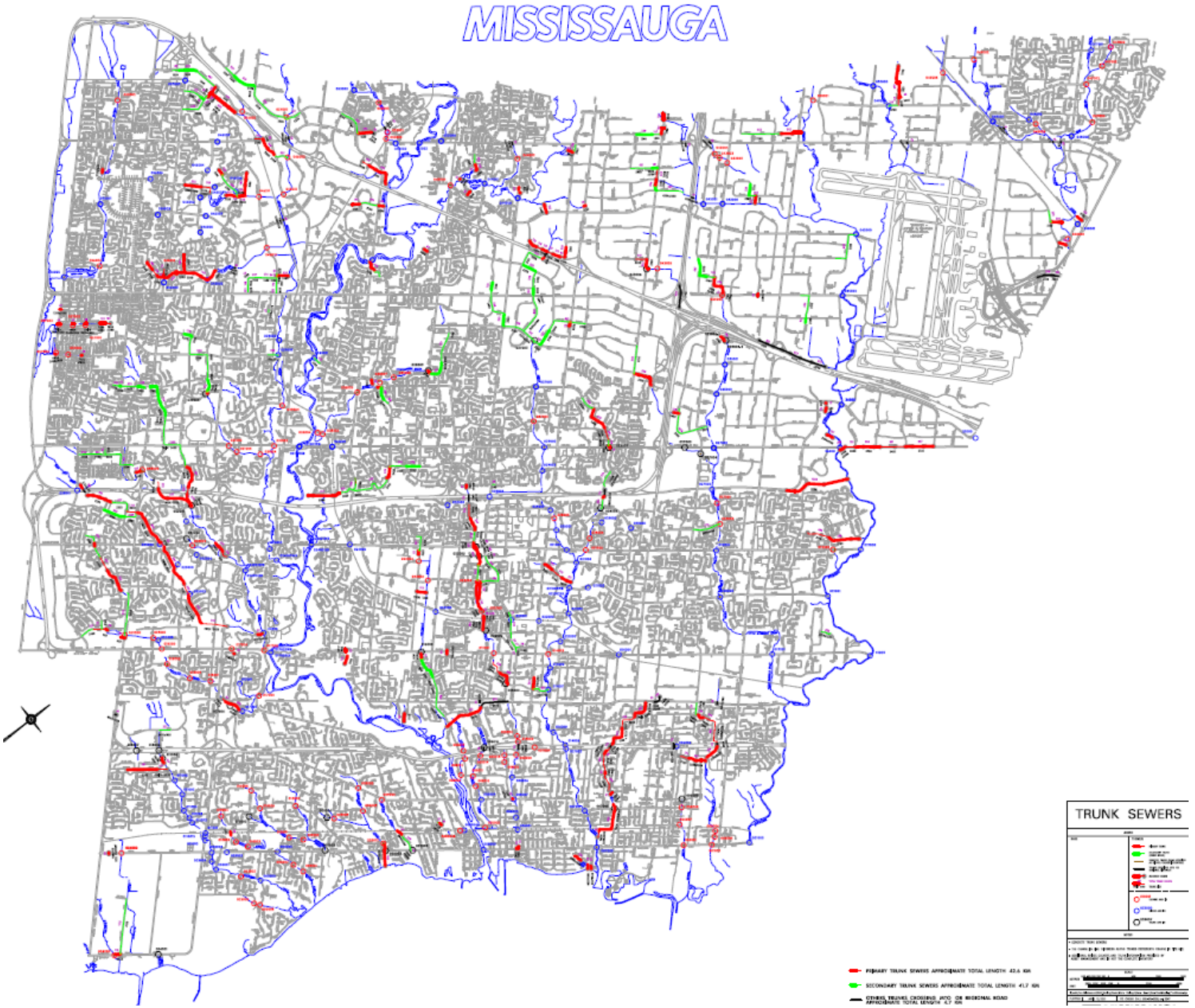
Stormwater Management Facilities



Watercourses – Creek and River Assets



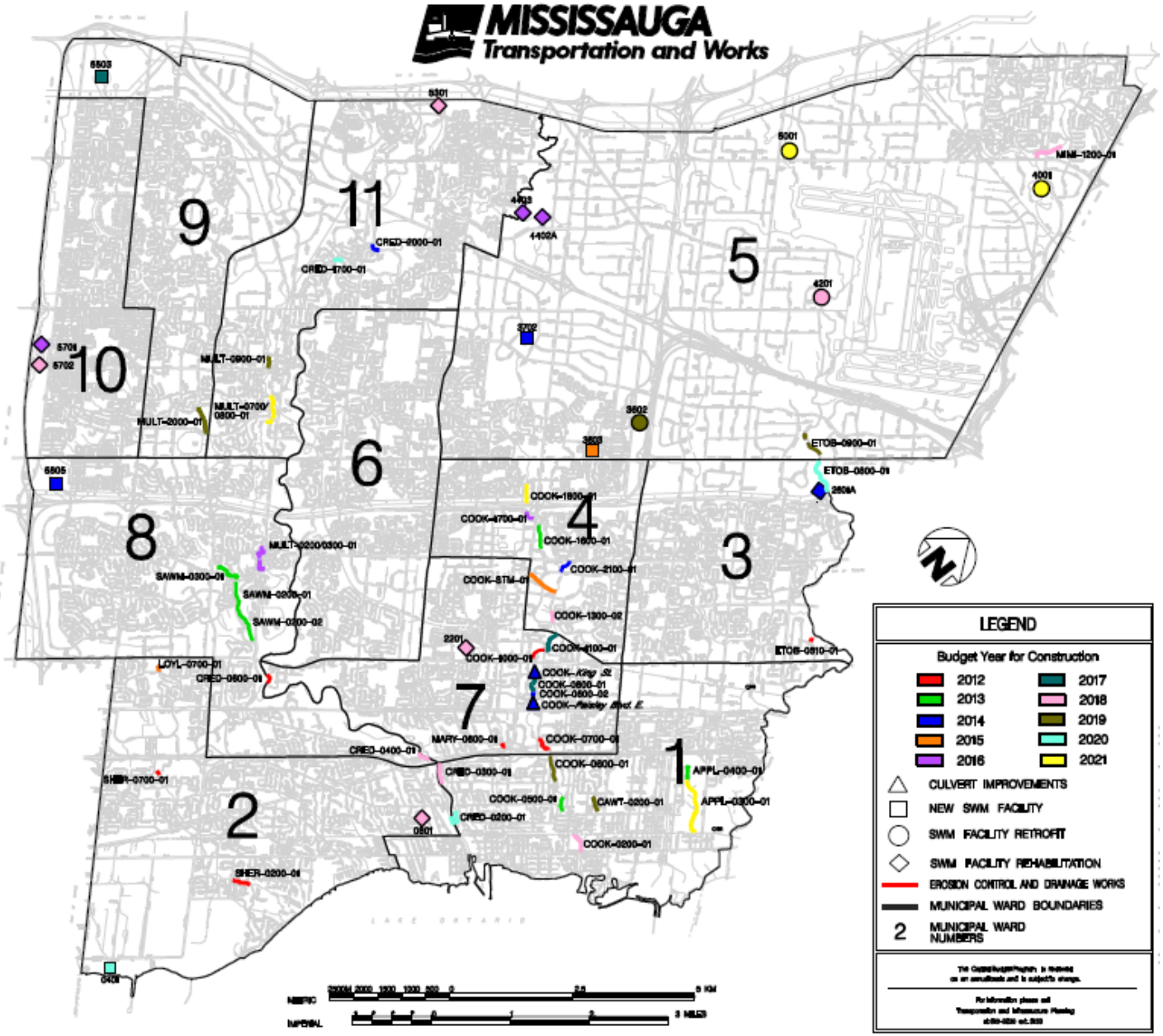
Trunk Storm Sewers and Tunnels



Stormwater Infrastructure Assets

Mississauga Stormwater Inventory	Est. Quantity	Unit of Measure	Estimated Useful Life (Years)	Average Network Age	Closing Net Book Value (2011)	Total Replacement Value (2011)
Storm sewers	2,000	km length	100	29	$534 Million	$1.6 Billion
Catch basins	48,000	number				
Stormwater manholes	28,000	number				
Outlets to receiving waters	1,000	number				
Diversion structures (trunk sewers)	100	km length				
Ditches / storm water swales in urban areas	250	km length				
SWM Facilities (Hard and Soft Components)	57	number	25-50	19	$26 Million	$76 Million
Watercourses, Streams, Rivers, and Creeks (31 Separate Creeks)	200	km length	25	18	$21 Million	$58 Million
Total Cost						**$1.7 Billion**

Capital Works Program



Stormwater Program Examples (Drainage Maintenance)

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Stormwater Program Examples (Drainage Systems)

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Stormwater Program Examples (Creeks and Ponds)

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Stormwater Program Examples (Spill Response)

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Stormwater Program Examples (Monitoring)

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Stormwater Program Examples (cont'd)

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Stormwater Program Examples (Public Education)

Stormwater Management Program Tax Funded Expenditures- Current Service Level - 2012

Activity	Cost ($)	Description
Operation & Maintenance		
Engineering & Works	5,260,000	Day to day operating costs of Stormwater Management Program
Support Services	1,010,000	Support staff required for the planning of future stormwater infrastructure needs
Community Services (estimated)	350,000	Departmental project costs associated with stormwater-related programs
Subtotal	**6,620,000**	
Capital Improvement Projects		
Erosion Control	4,470,000	Watercourse erosion protection and rehabilitation
Flood Relief	1,260,000	Culvert capacity improvements and flood protection berms
Storm Sewer	350,000	Rehabilitation and replacement of existing storm sewers
Studies	1,000,000	Stormwater-related studies
Stormwater Management Facilities (SWM)	280,000	pond dredging/rehabilitation, quantity control facilities and low impact development practices
Channelization	470,000	Watercourse conveyance improvements
Community Services (estimated)	200,000	Departmental project costs associated with stormwater-related programs
Subtotal	**8,030,000**	
Total	**14,650,000**	

Note : The 2012 capital budget also includes $2 million for infrastructure associated with growth. These projects have been funded with development charges revenue.

Development of a Sustainable Stormwater Program

Needs and Pressures to Achieve Sustainable Level of Service:

- Increasing Capital Needs – watercourse erosion/rehabilitation, SWM pond dredging, flood protection works, culvert improvements, low impact development practices
- Increasing Operating Needs – infrastructure inspections and maintenance, education and outreach, by-law enforcement, rain gauge network, naturalization and tree planting
- Other Pressures – infrastructure renewal, climate change adaptation, new/increasing regulations

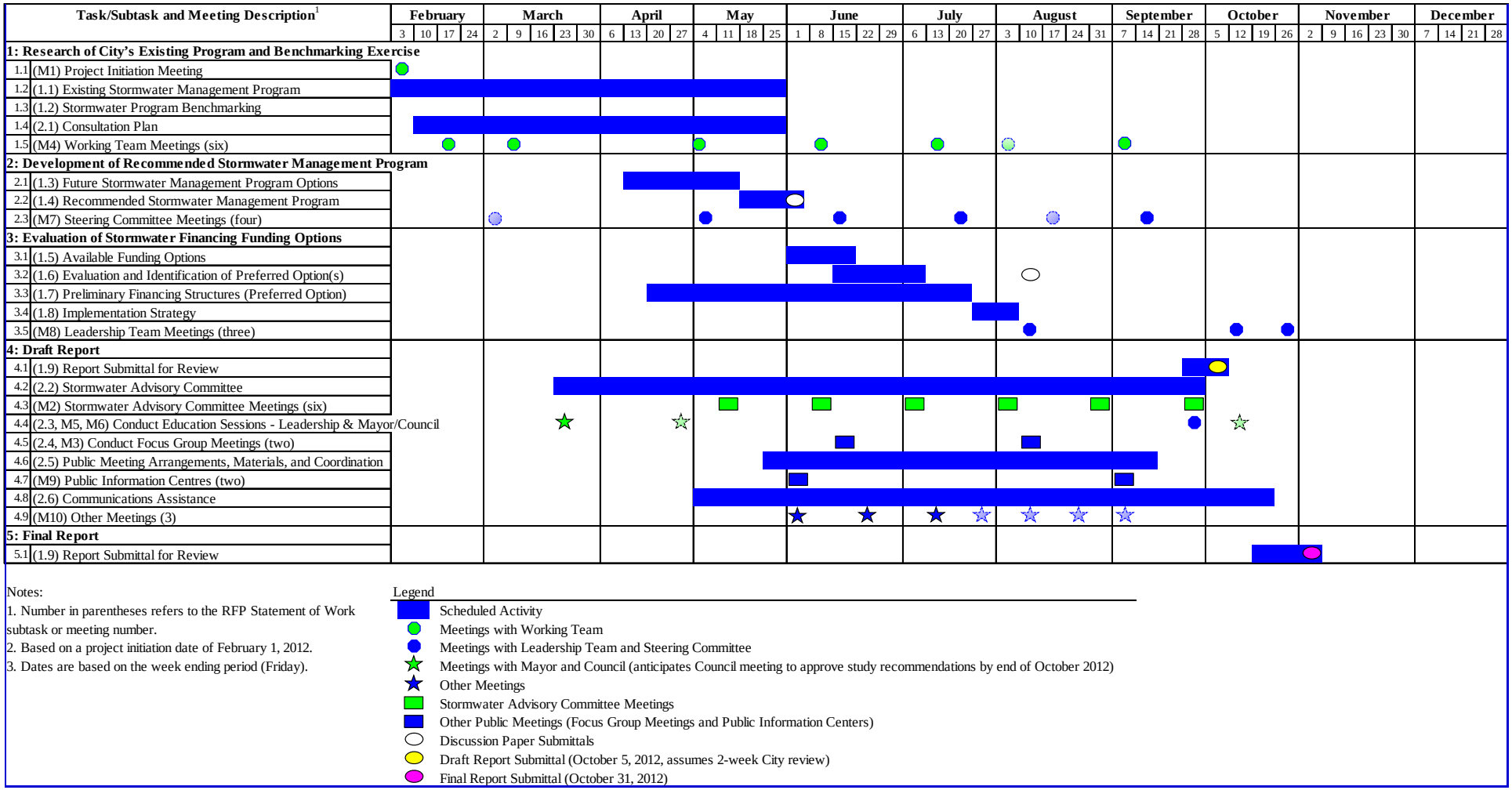
STORMWATER FINANCING STUDY

AECOM

Next Steps

- PIC No. 1 (June 27, 6:30-9pm, Living Arts Centre)
- SFSG No. 3: Level of Service and Existing Financing
  - 6:30-8pm Wednesday July 4 at City Hall - Committee Room 'A'
- SFSG No. 4: Alternative Funding Options
  - 6:30-8pm Thursday August 2 at City Hall - Committee Room 'A'
- SFSG No. 5: Proposed Financing Mechanism
  - 6:30-8pm Wednesday August 29 at City Hall - Committee Room 'A'
- SFSG No. 6: Development of Recommendations for Council
  - 6:30-8pm Wednesday September 26 at City Hall - Committee Room ‘B'

Project Schedule



Notes:

1. Number in parentheses refers to the RFP Statement of Work subtask or meeting number.
2. Based on a project initiation date of February 1, 2012.
3. Dates are based on the week ending period (Friday).

Legend

- Scheduled Activity
- Meetings with Working Team
- Meetings with Leadership Team and Steering Committee
- Meetings with Mayor and Council (anticipates Council meeting to approve study recommendations by end of October 2012)
- Other Meetings
- Stormwater Advisory Committee Meetings
- Other Public Meetings (Focus Group Meetings and Public Information Centers)
- Discussion Paper Submittals
- Draft Report Submittal (October 5, 2012, assumes 2-week City review)
- Final Report Submittal (October 31, 2012)

Contacts

- City Project Manager

  Mr. Lincoln Kan
  Manager, Environmental Services
  Transportation and Works Department
  201 City Centre Drive, Suite 800, Mississauga ON L5B 2T4
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- Consultant (AECOM)

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  Email: mike.gregory@aecom.com

Questions?







AECOM

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Minutes of Meeting

Date of Meeting	July 4, 2012	Start Time	6:30pm	Project Number	60247202
Project Name	Mississauga Stormwater Financing Study				
Location	City Hall, Committee Room 'A'				
Regarding	Stormwater Financing Stakeholder Group – Meeting #3				
Attendees	(see attached sign-in sheet)				
Distribution	Attendees; file.				
Minutes Prepared By	Mike Gregory, David Arseneau				

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

	Action
1. Group Welcome/Business /Presentation • Lincoln Kan opened the meeting by welcoming Group members and introductions were conducted around the table. • Minutes of the previous meeting (Meeting No. 2, June 6) were accepted with no issues or additional items. • The Group was asked for additional comments or questions since the last meeting; none were asked.	
2. Presentation • A presentation was given by Mike Gregory (AECOM), Jeremy Blair (City of Mississauga) and David Arseneau (AECOM), outlining research on international stormwater funding, the recently held Public Information Centre, the City's current stormwater capital program and funding sources, the proposed stormwater capital program and funding needs, and a description of the life-cycle and operating factors that pressure the management of stormwater infrastructure. See attached handout and note that slides 23-26 were updated after the meeting. • The following describes questions and topics of discussion that arose during the presentation or in the open discussion following the presentation. • Q: How detailed is the City's budget/accounting procedures? For example, is it possible to determine how money that was collected under certain categories (i.e., water quality, water quantity) was actually spent? A: Yes, each component of the program is tracked and allocated accordingly. Development Charges (DC) are segregated for growth-related drainage components. • Q: Are DC funds differentiated geographically? Are funds for water quality and quantity separated? Can the timing be identified? • A: Funds are collected for city-wide expenditures (i.e., growth-related, prioritized projects). Funds are collected for general allocation and distributed as needed (within the rules for the use of DC's). The timing and use of DC funds can be tracked through	

the approved annual capital budgets. • Q: Has the balance of funding between property tax and DC shifted recently? • A: Yes, over the past few years the funding has shifted more towards property tax as the sources of DC begins to decline. • Q: If this is true, then why is there such a large proportion of DC in the future projected budget for the next 10 years compared to the proportion in the 2012 budget? • A: The DC forecasts are based on the forecast of development and are not consistent from year to year. There will be spikes some years as areas are developed, in other years there will be nothing. • Q: Is the DC forecast based on population growth? Mississauga is only expected to grow by another 100,000 people (to the projected maximum of 900,000); how was the $40 million in DCs over the next ten years projected? • A: The Storm Drainage Component of the DC is not based on population but on net developable area. Sometimes when DC funds are collected they are not spent for a while, but can be tied to specific projects. Much of the forecasted DC allocations (approximately $25 million) have already been collected and held in reserve.	City
• Q: Can you provide a summary of the money that has been collected versus what has been spent, in order to track where the money is going? • A: Yes, the study team will look into producing this information. • Q: What is the $150 million dedicated to Cooksville flooding for? Are all the monies to be used for the study? • A: The $150 million has been allocated to projects identified in the study to fund land, design and construction cost primarily for above and below ground flood storage facilities throughout the watershed. • Q: How many sites are planned, and what size are they? • A: There are 2 large sites with many smaller sites with an approximate footprint of a baseball diamond. These facilities will also provide a water quality benefit in addition to their primary purpose of water quantity control. • Q: What is the lifespan of a typical storm sewer? • A: The industry standard is an average of 100 years, depending on the storm flows, groundwater conditions, soil properties and loading conditions. • Q: Does the City currently have any method to assess the performance of its stormwater system under flood conditions (i.e., similar to the Cooksville flood)? • A: No, there is no model of the overall stormwater management system, the City only has the design sheets from the original construction. • Q: What sort of overlap is there between Credit Valley Conservation (CVC) and the City with respect to management of the creek corridors, etc.? • A: There is not much overlap. Both the City and CVC engage in stream flow monitoring, but in separate areas. The City owns some lands along the creeks and	City

the CVC owns some lands as well, and there is often a maintenance agreement between the City and CVC for these lands. • Q: Is there information available that can identify potential cost savings as a result of adopting the ultimate level of service program? For example, reduced costs from homeowner flooding to residents and insurance companies, etc. • A: Risk management factors like this are difficult to quantify. • Comment: Perhaps we can start with a list of certain things that have occurred in the past 5 years that resulted in emergency repairs. I imagine that emergency costs would be much more than a planned replacement. • Q: How is risk management addressed by the City? • A: It is done differently for different situations (i.e., for watercourse erosion we assess how quickly the problem is progressing and what is at risk from the erosion, etc). It is hard to quantify the dollar value, so the estimated risks are often relative. CVC looks at relative risks, for example, by identifying which flood levels impact which houses, etc. In terms of vulnerability to future risk, the City would require additional tools to be able to perform an appropriate assessment. • Comment: There was no precedent for the 2009 Cooksville flood. It turns out that in practice, risk is borne by the individuals and businesses adjacent to the creek. A part of the Cooksville study included a presentation by an insurance representative and how they look at risk. Any investment to the storm system can reduce this risk. • Q: What are examples of Payment-in-Lieu (PIL) properties? • A: The most prominent in the City is the Greater Toronto Airport Authority, which accounts for approximately $19.6 million of the $24.6 million in PIL. Other large contributors include Sheridan College, U of T at Mississauga, hospitals, schools, etc. • Comment: It's hard to put all these numbers in context. • Response: The study team will also provide comparisons of different service levels at the next SFSG meeting, indicating what would be paid under different scenarios, as well as benchmark comparisons from other municipalities. • Q: What does the $71 million represent (total stormwater cost to be recovered through DC funds to 2031)? • A: It represents all required costs for the 20-year horizon, minus the existing reserves. • Q: What land does the 919 hectares represent? • A: It represents the remaining net developable lands in the City, including those for redevelopment, minus those areas that have already paid DC in the past. This amounts to about 3% of the total area in the City. • Q: Why would future developers need to pay the entire costs of the storm system for the next 20 years? How does the $77,000 charge per hectare for storm DC compare to historical charges? • A: The study team will look into the past storm DC charges. Costs have risen significantly in recent years, and these will inflate as land values rise due to costs associated with the sizing and placement of facilities. Council does consider and	AECOM City

approve all DC rate increases. • Q: Are DC numbers presented in this meeting based on the 2009 study? • A: Yes; the developable land area has reduced since the study was completed. The DC study is scheduled for an update in 2013 based on the 5-year renewal cycle.	
3. Next Meeting • The next meeting is scheduled for Wednesday August 29 at City Hall (in the Committee Room 'A') from 6:30-8pm.	

Attachments:

1. Sign-in sheet “MississaugaStormFinancing_SFSG3_Attendees_4Jul2012.pdf”
2. Presentation handout “MississaugaStormFinancing_Presentation_4Jul2012.pdf”

City of Mississauga - Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 3, 4-Jul-2012)

Name	Affiliation	Phone	E-mail	Present?
Christine Capewell	University of Toronto (Mississauga)	905-828-5405	christine.capewell@utoronto.ca	
Dan Labrecque	Region of Peel	905-791-7800 x4395	dan.labrecque@peelregion.ca	
Jeff O'Leary	Friends of Lake Wabukayne Stewardship	905-363-4622	jefftoleary@yahoo.ca	
Derek Gray	GTAA	416-776-3049	Derek.Gray@gtaa.com	
Paul Mountford	Peel District School Board	905-890-1010 x2217	paul.mountford@peelsb.com	
Gary Kramer	Orlando Corporation	905-677-5480	kramerg@orlandocorp.com	
Michael Ewaschuk	Credit River Anglers Association	519-580-1708	mewaschuk@nrsi.on.ca	
Darren O'Neil	Sheridan Park Association	905-403-4200	DONeil@hatch.ca	
J-M Rouleau	Oxford Properties Group (Square One)	905-270-7771	jrouleau@oxfordproperties.com	
Linda Pinizzotto	Condo Owners Association (Mississauga)	416-561-7373	linda@lindapinizzotto.com	
Kiruthiha Kulendiren	Lisgar Residents Association	416-975-8603	KKulendiren@Bluelotus.ca	
Christine Zimmer	Credit Valley Conservation	905-670-1615	czimmer@creditvalleyca.ca	
Richard Dundas	Gordon Woods Homeowners Association	905-279-3321	rdundas006@sympatico.ca	
Michael DeWit	Environmental Advisory Committee	905-274-0391	mdewit@rogers.com	
Roger Coote	Cooksville Creek Task Force	416-616-4311C	thecootes@bell.net	
Steve Blaney	Sherwood Forest Residents Association		sblaney@kcl.ca	
Bri-Ann Stuart	Dixie Outlet Mall		Bri-Ann.Stuart@ivanhoecambridge.com	
Gail Robinson	Dufferin-Peel Catholic District School Board		gail.robinson@dpcdsb.org	
Rev. Jennifer Reid	St. Peter's Anglican Church (Erindale)		rector@stpeterserindale.org	
Ezra Cyrus	Dufferin Peel CDSB	(905)890-0708	ezra.cyrus@dpcdsb.org	
Debb Lukes	CVC (for Christine)	905-670-1615	r.lukes@creditvalleyca.ca	
Vida Stripinis	Gordon Woods Homeowners Assc.	905 279-9412	vida@stripinis@sympatico.ca	
→ Matt Coleridge	Oxford rep (for J-M)			
Project Team				
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David Arseneau	AECOM	519-650-8631	David.Arseneau@aecom.com	
Mike Gregory	AECOM	519-650-8697	Mike.Gregory@aecom.com	

Michael Masliwec City of Mississauga 905-615-3200x3127 Michael.Masliwec@mississauga.ca

City of Mississauga - Stormwater Financing Study

Stormwater Financing Stakeholder Group
July 4, 2012, 6:30 – 8:00 pm – Meeting No. 3
Civic Centre (Committee Room 'A')

Project Manager: Lincoln Kan, P.Eng.
Consultant PM: Mike Gregory, P.Eng., AECOM

Group Welcome/Business

- Introductions/New Members
- Acceptance of previous meeting minutes (Meeting No. 2, June 6)
- Additional comments or questions since last meeting?

Tonight's Meeting

- Objectives:
  - For Stakeholder Group members to understand future level of service issues facing the City and to provide feedback on affordability issues
  - To present information on the existing funding mechanisms and revenue sources that currently support stormwater management throughout the City
- Stormwater Program Service Levels
  - Current program summary
  - Future program considerations
  - Stormwater asset reinvestment
- Current Stormwater Program Funding
  - Property tax
  - Development charges
- Open Discussion

Stormwater Funding Outside of North America

- Property Tax
  - Remains the most common method of stormwater funding in developed areas (i.e., Europe, Australia)
- Development Charges/Impact Fees
  - Same North American principle is used worldwide (“growth pays for growth”)
- Stormwater User Fee
  - Investigated by many municipalities in Australia and South America
  - Currently used by municipalities in Europe
  - In Sweden and Germany, a fee based on impervious area is charged (Dresden Germany, 1.04 €/m^2/year) [average home ±25-30$ per month]
  - United Nations Environment Program:

    “Cost recovery from the user of the facilities is considered the only valid approach to creating revenues for wastewater and stormwater management in Western Europe”

International Stormwater Funding (continued)

- Competitive Grants
  - Australia National Urban Water and Desalination Plan: grants so far have provided up to $300 million for stormwater harvesting and reuse projects
- Private/Public Partnerships
  - Private capital to finance public infrastructure, investment typically recouped through user fees and long-term operations contracts
  - Morocco: primarily water/wastewater treatment facilities, but also includes flood control (e.g., large stormwater drainage system in Casablanca)
- Intergovernmental Funding (EU Cohesion Funds)
  - Co-financing of eligible projects to reduce regional economic disparities, applies “Polluter Pays” principle that guides water pricing in the EU
  - Examples: stormwater master plans for flood protection (Malta), climate change (Finland), water quality treatment (Poland)
- International Aid (primarily for basic water and sanitation services)

Public Information Meeting No. 1

- Held last week at the Living Arts Centre…
  - 6:30 p.m. Sign In and Review Poster Boards
  - 7:30 p.m. Stormwater Financing Presentation
  - 8:00 p.m. Questions and/or Clarification
  - 9:00 p.m. Adjourn
- 24 attendees signed in
- Comment sheet (see handout)
- General impressions, common themes & issues:
  - Need more service (recognize funding gap and
  - Equitable charge to appropriate users (distinguishable by ratepayer type)
  - Incentive/credit program would be desirable

STORMWATER PROGRAM COSTS

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Capital Program Objectives

- Maintaining stormwater infrastructure in a good state of repair
- Accommodating stormwater infrastructure needs of development growth
- Enhancing levels of service over time:
  - reduce flood risks
  - improve water quality
  - climate change adaptation
  - other environmental considerations

Development of the Capital Program

What is in the Capital Program?

- Watercourse erosion control
- Stormwater management facilities (new, retrofits, rehabilitations)
- Flood control and protection
- Storm sewer and culvert improvements/replacements
- Other drainage improvements
- Studies

Development of the Capital Program

Where do the projects come from?

- Planning and engineering related studies (City and external regulators)
  - Mississauga Stormwater Quality Control Strategy Update
  - Credit River Water Management Strategy Update
  - Cooksville Flood Evaluation Study
  - Credit River Adaptive Management Strategy
- Field monitoring and inspections
  - Watercourse Management Program
  - Stormwater Management Pond monitoring program

Development of the Capital Program

How is it currently funded?

- Capital Program currently funded by:
  - Property Tax
  - Development Charges (DC)
- Historically, Capital Program Budget based on available/prescribed tax funding envelopes and DC cash flow
- 2013 budget based on City-wide prioritization process
  - May lead to greater funding pressures on the stormwater program

Approved 2012 to 2021 Capital Program

Stormwater Management Capital Program	Property Tax	DC's and Developer Contributions	Totals
Approved 2012 Budget [1]	$8 million	$2 million	$10 million
2013 to 2021 Forecast [2]	$44 million	$40 million	$84 million
2012 to 2021 Capital Program *(funding envelope)*	$52 million	$42 million	$94 million

Notes:

1. Council approves the Capital Budget one year at a time.
2. 9-year forecast is not approved for spending but reflects long-term funding envelope.

Development of the 2013 to 2022 Capital Program

- Draft 2013 to 2022 Capital Program based on needs, not previous funding envelopes
- Approved funding in 2013 Budget will be based on City-wide prioritization process
- It is not yet known which needs will or will not be funded in 2013 and future Capital Budgets

Proposed 2013 to 2022 Capital Program
(Numbers For Discussion Only)

Stormwater Management Capital Program	Property Tax	DC's and Developer Contributions	Totals
Draft 2013 to 2022 Capital Program *(based on needs)* [1]	$145 million	$36 million	$181 million
Approved 2012 to 2021 Capital Program *(based on funding envelope)*	$52 million	$42 million	$94 million
Difference in cost [2]	$93 million	($6 million)	$87 million

Notes:

1. Preliminary numbers based on identified needs and pressures; has not yet been reviewed or approved by Council.
2. Additional funding requirements will be identified through future studies which will likely increase forecasted program cost

Pressures on the Capital Program

- Minimize storm related flood risks to all buildings/structures in the City
  - Cooksville Flood Evaluation Study – flood storage facilities
  - Estimated cost - $150 million ($79 million in 2013 to 2022 program)
  - Flood evaluation studies of other flood prone areas need to be done
- Enhanced water quality treatment initiatives
  - Increase water quality treatment from current coverage of 15%
  - Low impact development, naturalization programs, social marketing

Pressures on the Capital Program (continued)

- Infrastructure life cycle renewal costs
  - Stormwater management pond dredging and rehabilitation
  - Watercourse rehabilitation
  - Storm sewer system (dominant long term pressure – currently not included in draft 2013 to 2022 Capital Program – should it be?)
- Climate change adaptation
  - Storm sewer networking model
  - Infrastructure vulnerability assessments and upgrades

Infrastructure Life Cycle Renewal Pressures

Infrastructure Life Cycle Renewal

- “Life Cycle Cost” refers to all costs incurred during the full life cycle of the asset - from asset planning throughout service life (25-100 years)
- Stormwater management systems are only sustainable when properly designed, operated & maintained at the appropriate service level
- All components have a useful service life and will ultimately fail if assets are not renewed, replaced, or rehabilitated over the long term
- Ponds and watercourses in Mississauga are nearing the end of their useful service life and the City has been taking steps within its current budget allocation to reinvest through prioritized capital projects

Infrastructure Life Cycle Renewal – Pipe Assets

- Given the relatively young age of the City's stormwater pipe assets (i.e., 30 years in a 100-year service life), there has not been a significant need to reinvest in this storm sewer/collection system
- Pipe assets represent $1.6 billion of the total stormwater system replacement value ($1.7 billion)
- For example, reinvestment options include:
  - 1% annual reinvestment (i.e., renew/replace/rehab all storm sewers over a 100-year cycle) would require additional funding of $16 million per year
  - 0.5% annual reinvestment (200-yr service life cycle) = $8 million per year
  - 0.125% annual reinvestment (800-yr service life cycle) = $2 million per year
- The City needs to be practical and consider affordability issues related to raising additional funds, *but pipe assets cannot be ignored indefinitely*

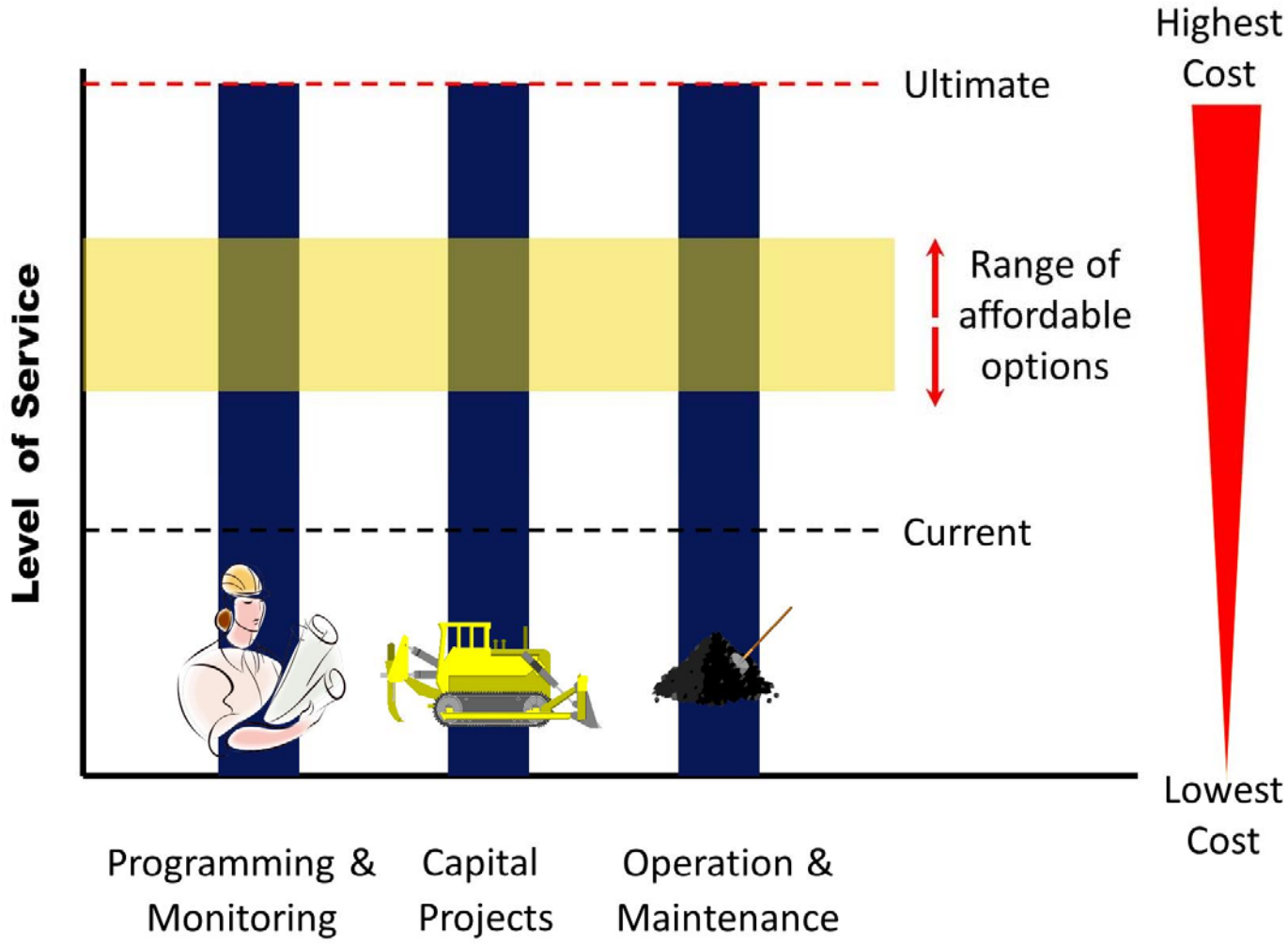
Operating Activities and Funding

- Day to day operating costs of Stormwater Management Program, such as:
  - office and field staff
  - contractors, equipment and supplies
  - inspection and maintenance activities
  - bylaw enforcement and outreach
- Support staff required for the planning of future stormwater infrastructure needs
- Annual cost of approximately $6.6 million
- Funded entirely by Property Tax

Operating Cost Pressures

- Additional Operation & Maintenance funding:
  - expand woody debris management program City-wide
  - maintain low impact development installations
  - improvements to sewer inspection and cleaning programs
- Additional staffing and material needs:
  - enhanced bylaw enforcement
  - stormwater management facility monitoring
  - naturalization programs
- Administration of stormwater financing system
- Approximately $1.5 million additional annual funding required

Level of Service Decisions Affect Program Affordability



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CURRENT STORMWATER PROGRAM FUNDING

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Current Funding – Property Tax (City Portion)

- Tax rates applied to assessed value of each property

Property Tax Class	2012 Final Tax Rates
Residential	0.2849%
Commercial	0.4016%

Current Funding – Property Tax (City Portion)

- Current Value Assessment totals ("Weighted CVA") and City Tax Levy totals below are summed by category
- PIL = Payment-in-Lieu of property taxes

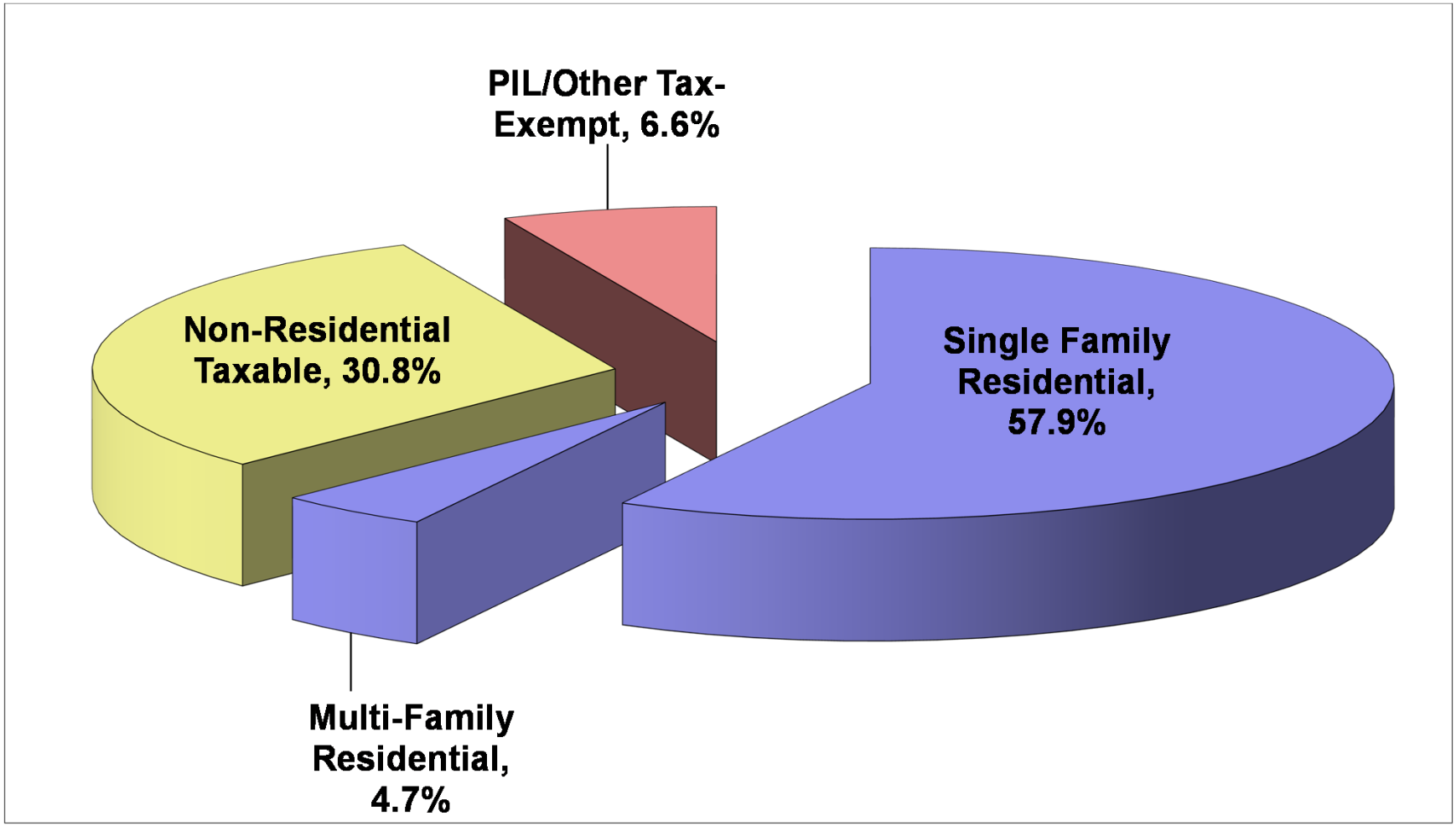
Category	Weighted CVA	City Tax Levy
Single Family	$75,154,906,977	$214,079,310
Multi-Family	$6,161,643,666	$17,551,487
Commercial	$32,151,408,253	$91,583,521
Industrial	$7,654,067,433	$21,802,667
Pipelines	$144,740,309	$412,294
Farmlands, Managed Forests	$2,008,192	$5,721
Exempt	$9,002,902,750	$0
Total	**$130,271,677,580**	**$345,435,000**

Payment in Lieu of Property Taxes (PIL)	$24,600,500

Total City Tax Levy and PIL	**$370,035,500**

Current Funding – Property Tax Distribution

- City Tax Levy and PIL support for stormwater management



Sample Property Tax Contributions

- Program Expenditure: $14,650,000 (FY 2012, tax funded portion)
- Total Program Allocation from City Tax Levy: 2.36%
- Sample contributions from a range of Single-Family detached homes:

2012 Assessed Value	2012 City Tax Rate	2012 City Tax Payment (Annual)	2012 City Tax Payment (Monthly)	SWM Program Allocation (Monthly)
$250,000	0.284851%	$712	$59	$1.4
$450,000	0.284851%	$1,282	$107	$2.5
$600,000	0.284851%	$1,709	$142	$3.4
$800,000	0.284851%	$2,279	$190	$4.5
$1,000,000	0.284851%	$2,849	$237	$5.6
$1,500,000	0.284851%	$4,273	$356	$8.4

Note: average assessed value for single-family home = $451,000 (2012)

Current Funding – Development Charges (DC)

- The City's DC program collects fees from developers to recover capital costs related to new growth
- DC does not cover…
  - Operations & Maintenance costs
  - Life cycle reinvestment of assets
- 2012 capital budget (current level of service):
  - Operations & Maintenance: $6,620,000 (tax funded)
  - Capital Improvement Projects: $8,030,000 (tax funded)
  - Capital Improvement Projects: $2,000,000 (DC funded)

2009-2013 Development Charge Program

- 5-year review of City's DC program (storm drainage component) was last completed in 2009. Program components include:
  - Stream erosion and restoration
  - Conveyance improvements (i.e., channelization, culvert upgrades, storm sewer improvements)
  - Stormwater management facilities (i.e., ponds and water quality retrofits)
  - Storm sewer oversizing
  - Background studies and monitoring
- DC Background Study key findings:
  - Total stormwater cost to be recovered through DC = $70,800,000
  - Total land available for development (and infill/re-development) is 919 ha
  - The storm drainage component of DC is $77,000 per net hectare of developable land

STORMWATER FINANCING STUDY

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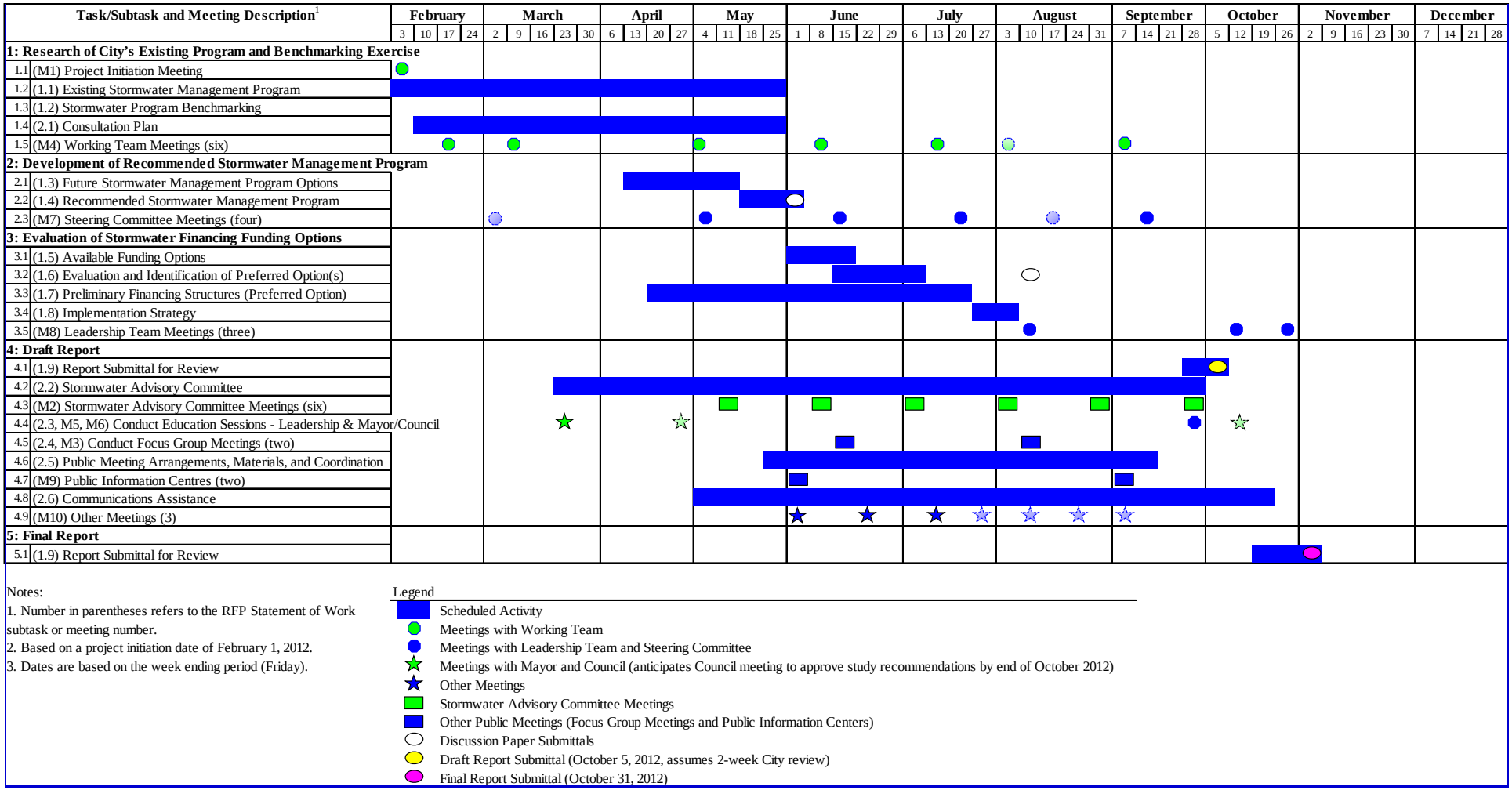
Group Meetings

- SFSG No. 1: Introduction to Stormwater Management and Financing
  - 6:30-8pm Tuesday May 8 at Central Library - 2nd Floor, Classroom 4
- SFSG No. 2: Overview of Stormwater Problems/Solutions
  - 6:30-8pm Wednesday June 6 at City Hall - Committee Room 'A'
- SFSG No. 3: Level of Service and Existing Financing
  - 6:30-8pm Wednesday July 4 at City Hall - Committee Room 'A'
- SFSG No. 4: Alternative Funding Options
  - 6:30-8pm Thursday August 2 at City Hall - Committee Room 'A'
- SFSG No. 5: Proposed Financing Mechanism
  - 6:30-8pm Wednesday August 29 at City Hall - Committee Room 'A'
- SFSG No. 6: Development of Recommendations for Council
  - 6:30-8pm Wednesday September 26 at City Hall - Committee Room 'B'

Project Schedule



Notes:

1. Number in parentheses refers to the RFP Statement of Work subtask or meeting number.
2. Based on a project initiation date of February 1, 2012.
3. Dates are based on the week ending period (Friday).

Legend

- Scheduled Activity
- Meetings with Working Team
- Meetings with Leadership Team and Steering Committee
- Meetings with Mayor and Council (anticipates Council meeting to approve study recommendations by end of October 2012)
- Other Meetings
- Stormwater Advisory Committee Meetings
- Other Public Meetings (Focus Group Meetings and Public Information Centers)
- Discussion Paper Submittals
- Draft Report Submittal (October 5, 2012, assumes 2-week City review)
- Final Report Submittal (October 31, 2012)

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Contacts

- City Project Manager

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  Transportation and Works Department
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Questions?







AECOM

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Minutes of Meeting

Date of Meeting	August 29, 2012	Start Time	6:30pm	Project Number	60247202
Project Name	Mississauga Stormwater Financing Study				
Location	City Hall, Committee Room 'A'				
Regarding	Stormwater Financing Stakeholder Group – Meeting #3				
Attendees	(see attached sign-in sheet)				
Distribution	Attendees; file.				
Minutes Prepared By	Mike Gregory, David Arseneau				

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1. Group Welcome/Business /Presentation • Lincoln Kan opened the meeting by welcoming Group members and introductions were conducted around the table. • Minutes of the previous meeting (Meeting No. 3, July 4) were accepted with no issues or additional items. • The Group was asked for additional comments or questions since the last meeting; none were asked.	
2. Presentation • A presentation was given by Mike Gregory (AECOM) and Steve Sedgwick (CDM Smith), outlining City expenditures related to the future stormwater management program, potential funding mechanisms and preliminary impacts to typical property owners. Please see the attached presentation slides for the contents. • The following describes questions and topics of discussion that arose during the presentation or in the open discussion following the presentation. • Q: What are the reasons for Hamilton's relatively high stormwater program spending per capita (see slide 12)? Is it because the city is older? • A: Hamilton has an older stormwater system which requires a higher level of asset management and reinvestment. Hamilton also has legacy combined sewers (i.e., sewers that carry both sanitary and storm flows) which require large expenditures to manage and replace. In addition, Hamilton is the only city shown on the comparison to specifically include lifecycle replacement costs. • Q: The proposed pipe reinvestment reserve will accumulate interest; has this been accounted for in the revenue forecasts? • A: The inflation of the pipe replacement costs should balance the interest that will accumulate on reserves. In addition, it is expected that reserves will remain relatively small as it will be continually expended on replacement infrastructure.	

• Q: How are existing on-site stormwater management (SWM) controls accounted when determining potential charges for each property? • A: These features are typically accounted for using credits (see later discussion in minutes). • Q: Has the study team looked at the impact of runoff once it leaves certain properties? For example, some residential areas are ditched, include water quantity/quality controls, and are situated on sandy soils, resulting in less runoff. • A: These features would also typically be accounted for using a credit program (see later discussion in minutes) • Q: How much of a reduction is typically available in a credit program? • A: Typically up to 50% reduction is available for on-site SWM controls, dependent on the specific program and the effectiveness of the SWM control. Property owners would need to apply to the City in order to receive their credit. • Q: Why does the property owner need to apply to the City for the credit? Why isn't this part of the original analysis to determine the runoff coming from each property? • A: The functionality and effectiveness of SWM controls on private property needs to be continually verified in order to receive the credit. The original design when the property was developed may not reflect its current performance (i.e., orifice plates may have been removed, facilities not cleaned, etc.). An additional challenge is that the quantification of impervious area using desktop methods and existing databases, whereas the confirmation of SWM controls on each property would require extensive research into the City's archived files or field verification. These files may or may not exist for each property, and would not necessarily reflect the existing conditions. It is standard practice for municipalities that have a stormwater user fee credit policy that the onus is one the credit applicant to confirm that their SWM controls remain functional. • Q: Would credits be available for individual homeowners? • A: Some municipalities have allocated credits for individual homeowners. It is premature in this study to develop a credit policy before the recommended level of service and preferred funding mechanism have been identified. • Q: To clarify, do SWM controls installed as part of development qualify for a credit? • A: Typically all SWM controls on a property would be considered according to the specifics of the credit program and the effectiveness of the control, and considering the stormwater standards that existed at the time of the property development. The development of credit policy will look into this issue. • Q: How would the program account for stormwater-related Development Charges that have historically been collected from properties? • A: A potential financing and credit program would be constructed to be fair and equitable to all property owners; the specifics for such a program for Mississauga remain undefined. • Q: To clarify, the typical residential tax payments shown on slide 30, these numbers represent only the City portion? There would be no change to the education/Regional amounts? • A: This is correct. Only the City portion of the property tax would be increased as a	

result of potential increases to stormwater spending. • A: These points are very important to the overall structure and format of a potential funding mechanism, and will require discussion in later SFSG meetings. • Q: Is the redistribution of revenue shown on slide 35 based on the impervious area of the different property classes? • A: Yes, and divided into taxable and non-taxable for comparison purposes. • Q: The non-residential category needs to be broken down into those properties that currently control their stormwater runoff and those that have no existing controls. What does the City Economic Development office have to say about the shift of revenue source to the non-residential sector? Wouldn't this be a disincentive for businesses in the City? It seems that the non-residential and tax-exempt sectors would be unfairly burdened with the redistribution of fees. • A: Another viewpoint may be that the residential sector has been subsidizing the non-residential sector under the current funding mechanism. There are many perspectives on this issue, and this study is intended to identify as much feedback as possible from stakeholders and the general public. • Q: The SFSG presentations have tended to take up the majority of the meeting time; will there be more opportunity in future meetings for open discussion around the table? • A: The project team agrees! Open discussion and the sharing of opinions is the most important goal of the SFSG. The upcoming meetings will devote the majority of time to allowing group members to voice their concerns, ideas and opinions. • Q: Can Group members provide sample properties in order to see the potential impacts of the proposed funding mechanisms? • A: Yes, any properties can be evaluated for their potential impacts. Please provide the address of the property you would like to have evaluated to Lincoln Kan (contact info on last slide) and the results will be presented in the next SFSG meeting. • Q: Can the study team provide a full-sized contact list to SFSG members? • A: Yes, the contact list will be updated and distributed to all SFSG members.	City/ AECOM
3. Next Meeting • The next meeting is scheduled for Wednesday September 26 at City Hall (in the Committee Room 'B') from 6:30-8pm.	

Attachments:

1. Sign-in sheet "MississaugaStormFinancing_SFSG4_Attendees_29Aug2012.pdf"
2. Presentation handout "Mississauga_StormwaterFinancing_SFSG4.pdf"

City of Mississauga - Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 4, 29-Aug-2012)

	Name	Affiliation	Phone	E-mail	Present?
*	Christine Capewell	University of Toronto (Mississauga)	905-828-5405	christine.capewell@utoronto.ca	
	Dan Labrecque	Region of Peel	905-791-7800 x4395	dan.labrecque@peelregion.ca	
	Jeff O'Leary	Friends of Lake Wabukayne Stewardship	905-363-4622	jefftoleary@yahoo.ca	
	Derek Gray	GTAA	416-776-3049	Derek.Gray@gtaa.com	✓
	Paul Mountford	Peel District School Board	905-890-1010 x2217	paul.mountford@peelsb.com	✓
	Gary Kramer	Orlando Corporation	905-677-5480	kramerg@orlandocorp.com	✓
	Michael Ewaschuk	Credit River Anglers Association	519-580-1708	mewaschuk@nrsi.on.ca	✓
	Darren O'Neil	Sheridan Park Association	905-403-4200	DONeil@hatch.ca	
	J-M Rouleau	Oxford Properties Group (Square One)	905-270-7771	jrouleau@oxfordproperties.com	
	Linda Pinizzotto	Condo Owners Association (Mississauga)	416-561-7373	linda@lindapinizzotto.com	
*	Kiruthiha Kulendiren Marya Anderson	Lisgar Residents Association	416-975-8603	KKulendiren@Bluelotus.ca	✓
	Christine Zimmer	Credit Valley Conservation	905-670-1615	czimmer@creditvalleyca.ca	
	Richard Dundas	Gordon Woods Homeowners Association	905-279-3321	rdundas006@sympatico.ca	
	Michael DeWit	Environmental Advisory Committee	905-274-0391	mdewit@rogers.com	✓
	Roger Coote	Cooksville Creek Task Force	416-616-4311	thecootes@bell.net	✓
	Steve Blaney	Sherwood Forest Residents Association		sblaney@kcl.ca	
	Bri-Ann Stuart	Dixie Outlet Mall		Bri-Ann.Stuart@ivanhoecambridge.com	✓
	Gail Robinson	Dufferin-Peel Catholic District School Board		gail.robinson@dpcdsb.org	✓
	Rev. Jennifer Reid	St. Peter's Anglican Church (Erindale)		rector@stpeterserindale.org	✓
*	KRIS HORVATH	UNIVERSITY OF TORONTO (MISSISSAUGA)	905 828-5280	KRISTIAN.HORVATH@UTORONTO.CA	✓
	MATT COLERIDGE	BURNSIDE FOR OXFORD	416	hava 17	✓
	Robb Lukes	CVC on behalf of Czimmer	905-670-1615	robb.lukes@creditvalleyca.ca	✓
	Vida Stripinis	Gordon Woods Homeowners Assoc.	905-279-9412	Vida.Stripinis@sympatico.ca	✓
	Project Team				
	Lincoln Kan	City of Mississauga	905-615-3200 x4086	Lincoln.Kan@mississauga.ca	✓
	Jeremy Blair	City of Mississauga	905-615-3200 x3133	Jeremy.Blair@mississauga.ca	✓
	Kimberly Hicks	City of Mississauga	905-615-3200 x5232	Kimberly.Hicks@mississauga.ca	✓
	Steve Sedgwick	CDM Smith	904-527-6709	SedgwickSR@cdmsmith.com	✓
	David Arseneau	AECOM	519-650-8631	David.Arseneau@aecom.com	✓
	Mike Gregory	AECOM	519-650-8697	Mike.Gregory@aecom.com	✓
	JOHN MURPHY	MISSISSAUGA	5290	JOHN.MURPHY@MISSISSAUGA.CA	✓
	ZUBAIR AHMED	City of Mississauga		zubair.ahmed@mississauga.ca	✓

City of Mississauga - Stormwater Financing Study

Stormwater Financing Stakeholder Group
August 29, 6:30-8:00 pm – Meeting No. 4
Civic Centre (Committee Room 'A')

Project Manager: Lincoln Kan, P.Eng.
Consultant PM: Mike Gregory, P.Eng., AECOM

Group Welcome/Business

- Introductions/New Members
- Acceptance of previous meeting minutes (Meeting No. 3, July 4)
- Additional comments or questions since last meeting?

Tonight's Meeting

- Objectives: For Stakeholder Group members to understand…
  - City expenditures related to the future stormwater management program,
  - Potential funding mechanisms available, and
  - Resulting impacts to typical property owners.
- Stormwater Program Service Levels & Expenditures
  - Existing (2012)
  - Future (2014-2023) – Sustainable and Interim
- Future Stormwater Funding Options
  - Evaluation of funding mechanisms (tax, development charges, user fee)
  - Preliminary impact assessments
- Financing Study – Progress Report and Next Steps
- Open Discussion

STORMWATER PROGRAM – SERVICE LEVELS & EXPENDITURES

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Future Stormwater Program – Funding Pressures

- Capital:
  - Includes all priority projects (i.e., 2012's Not Funded list)
  - Primarily Cooksville Creek Flood Relief projects totaling approximately $79M) and other funding initiatives (beginning in 2014 for approx. $4M)
- Operations & Maintenance:
  - Increased services of approx. $1.5M annually
  - Primarily for staffing resources to enhance existing programs
- Storm Pipe Reinvestment:
  - Infrastructure life cycle renewal of stormwater pipe assets is not in the proposed capital program ($1.6 billion total replacement value)
  - The City needs to be practical and consider affordability issues when raising additional funds, but pipe assets cannot be ignored indefinitely

Current Funding - Property Tax (City Portion) & PIL

- Current Value Assessment totals ("Weighted CVA") and City Tax Levy totals at right are summed by category

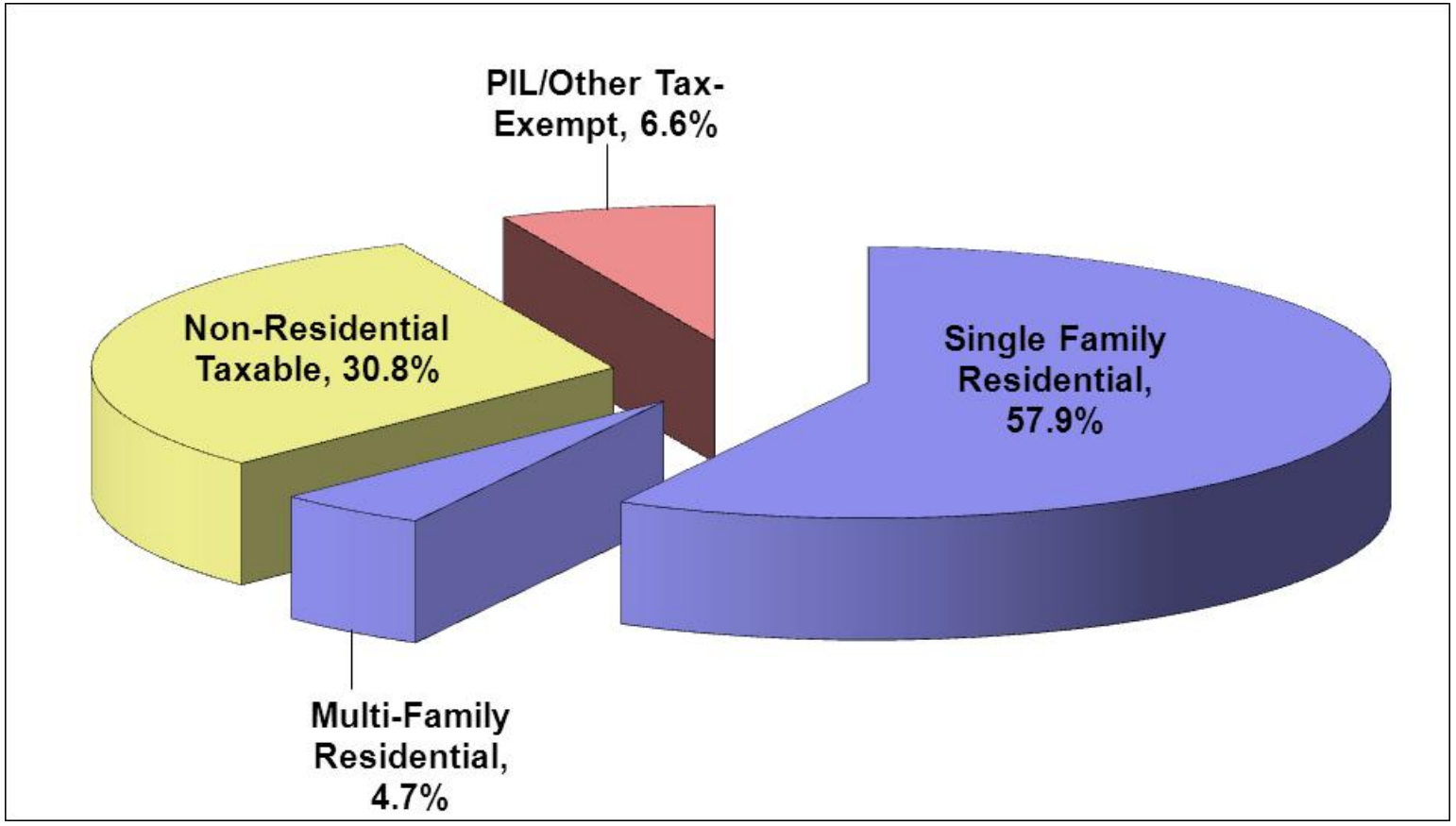
Category	Weighted CVA	City Tax Levy
Single Family	$75,154,906,977	$214,079,310
Multi-Family	$6,161,643,666	$17,551,487
Commercial	$32,151,408,253	$91,583,521
Industrial	$7,654,067,433	$21,802,667
Pipelines	$144,740,309	$412,294
Farmlands, Managed Forests	$2,008,192	$5,721
Exempt	$9,002,902,750	$0
Total	**$130,271,677,580**	**$345,435,000**

Payment in Lieu of Property Taxes (PIL)	$24,600,500
Total City Tax Levy and PIL	**$370,035,500**

- PIL = Payment-in-Lieu of property taxes
  - $19,600,000 (GTAA)
  - $807,000 (Erindale - University of Toronto Mississauga)
  - $150,000 (Trillium, Sheridan, and Credit Valley Hospital)
  - $4,043,000 (all others)

Current Funding – Property Tax & PIL Distribution

- City Tax Levy and PIL support for stormwater management



Existing Stormwater Program (FY 2012)

Stormwater Program Item	Cost	Property Tax Allocation
Capital	$8,030,000	0.57%
Operations & Maintenance	$6,620,000	1.79%
Storm Pipe Reinvestment	$0	0.00%
Total Program	**$14,650,000**	**2.36%**

Future Stormwater Program (10-yr avg. FY 2013-2024) – Sustainable Service Level

Stormwater Program Item	Cost	Property Tax Allocation
Capital	$17,380,000	1.97%
Operations & Maintenance	$9,060,000	1.81%
Storm Pipe Reinvestment	$18,230,000	3.66%
Total Program	**$44,670,000**	**7.44%**

- Capital: based on 2013-2022 draft program (with 2% annual inflation)
- Operations: increased service levels (1.5M per year, plus inflation)
- Storm pipe reinvestment: 1% per year (plus inflation) over its 100-year service life-cycle

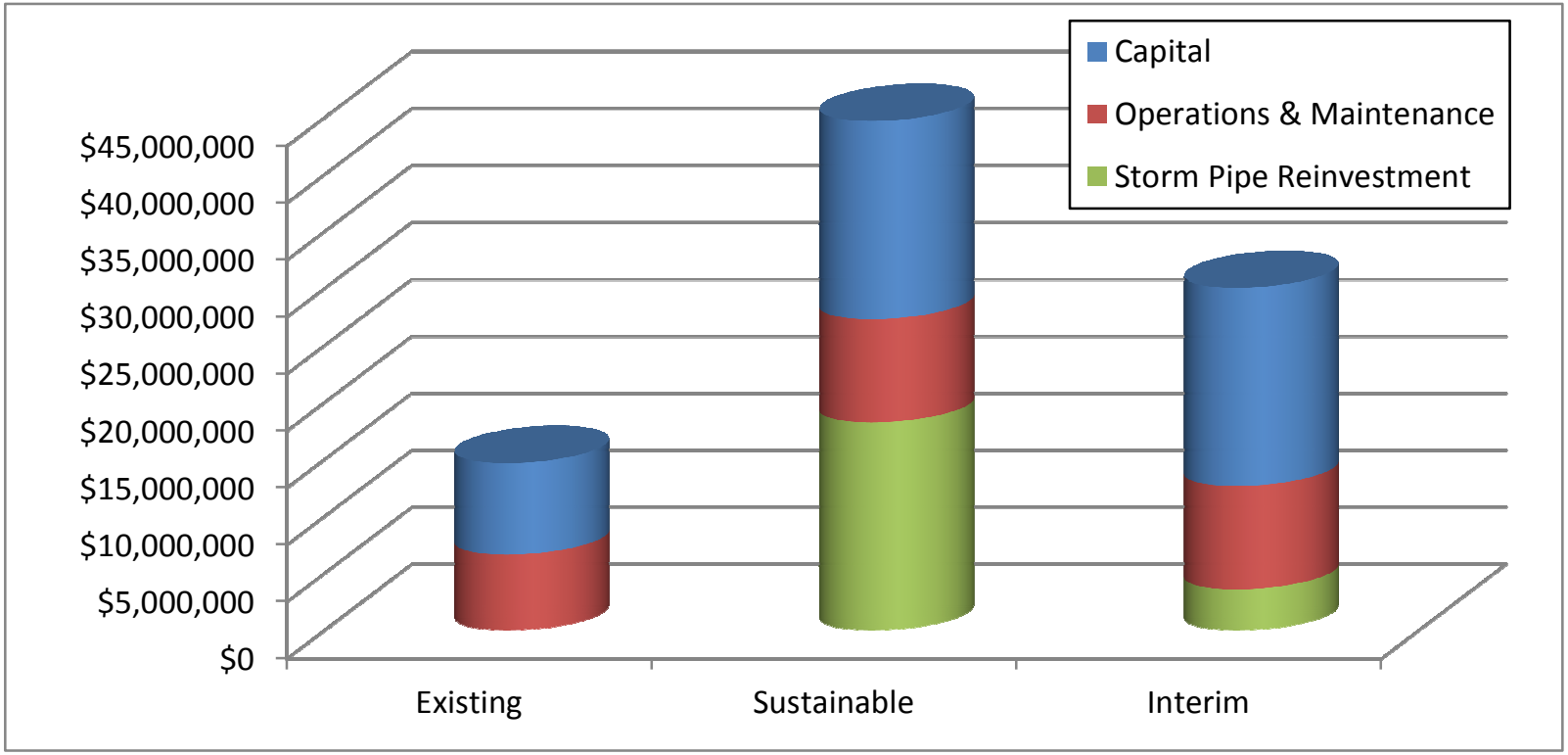
Future Stormwater Program (10-yr avg. FY 2013-2024) – Interim Service Level

Stormwater Program Item	Cost	Property Tax Allocation
Capital	$17,380,000	1.97%
Operations & Maintenance	$9,060,000	1.81%
Storm Pipe Reinvestment	$3,580,000	0.70%
Total Program	**$30,020,000**	**4.49%**

- Capital: based on 2013-2022 draft program (with 2% annual inflation)
- Operations: increased service levels (1.5M per year, plus inflation)
- Storm pipe reinvestment: 0.15% in the first year, followed by an annual increase of 0.01% (plus inflation)

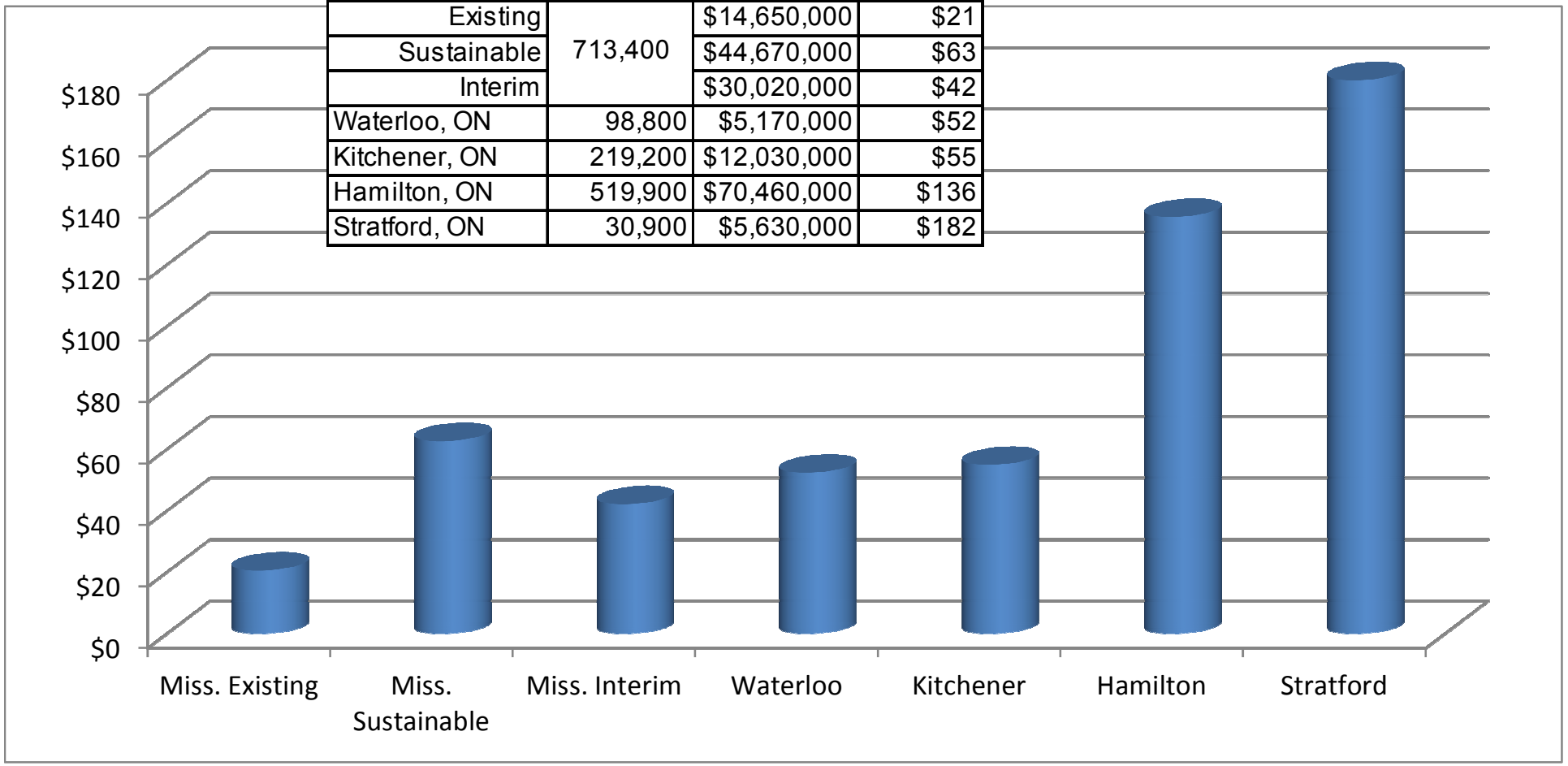
City of Mississauga Stormwater Program Summary

Stormwater Program Item	Existing (2012)	Future (2014-2023)	
		Sustainable	Interim
Capital	$8,030,000	$17,380,000	$17,380,000
Operations & Maintenance	$6,620,000	$9,060,000	$9,060,000
Storm Pipe Reinvestment	$0	$18,230,000	$3,580,000
Program Total	**$14,650,000**	**$44,670,000**	**$30,020,000**



Comparison to Other Ontario Municipalities (Interim)

Municipality	Population	SWM Program	Cost per Capita
Existing	713,400	$14,650,000	$21
Sustainable		$44,670,000	$63
Interim		$30,020,000	$42
Waterloo, ON	98,800	$5,170,000	$52
Kitchener, ON	219,200	$12,030,000	$55
Hamilton, ON	519,900	$70,460,000	$136
Stratford, ON	30,900	$5,630,000	$182



FUTURE STORMWATER FUNDING OPTIONS

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Stormwater Funding Options – Canada

- Property Tax
- Development/Growth Related
  - Development charges or impact fees (new development)
  - Cash-in-lieu charges (infill/redevelopment)
- Stormwater User Fee
  - Typical range in Canada is $2-10 per month for average homeowner
  - Wide variety in service levels and portion of program that is rate financed
  - Flat fee: equal charge to all utility customers (Calgary, Saskatoon)
  - Tiered flat fee: charges assigned by customer type (London, Aurora)
  - Variable rate: property owners based on measured impervious area (>700 throughout the U.S. and 2 in Canada – Kitchener, Waterloo)

Stormwater User Fees

- Progression of public utilities
  - Once funded from general tax support…
  - … then shifted to enterprise fund
- Charges derived on a fairness and equity basis
  - Water – Volume used
  - Wastewater – Volume generated
  - Solid Waste – Volume/Weight generated
  - Stormwater – Runoff contribution

Impervious Area Based Stormwater Rate

- Charge based on impervious area measurements:
  - Rooftops
  - Driveways
  - Parking areas
  - Patios
  - Sidewalks
- Fair and equitable basis for user fee
  - Based on property's contribution of runoff volume and pollutant loading
  - Not assessed value, # of water meters, frontage, zoning type, area, etc…

Stormwater Rate Calculation

$$\text{Charge} = \frac{\$\text{Expense}}{\text{Units}} = \$/\text{Month/Unit}$$

$$\text{Units (ERU)} = \text{Dwelling Units} + \frac{\text{Non Residential Impervious Area}}{m^2 / \text{ERU}}$$

ERU = Equivalent Residential Unit

Common Billing Unit Methodologies

- Flat Fee
- Runoff Coefficient
- Intensity of Development Factor
- Residential Flat Rate
  - Equivalent Residential Unit (ERU)
  - Single Family Unit (SFU)
- Tiered Residential Rate
- Level-of-Service / Geography Base
- Impervious Area Measurements (all properties, each year)

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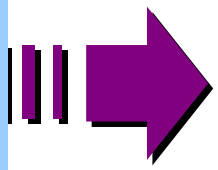
Equivalent Residential Unit (ERU)

- Single Family
- Multi-Family
- Condominiums
- Townhouses

= Flat Rate (1 billing unit per residential dwelling unit)

- Governmental
- Commercial
- Institutional
- Industrial

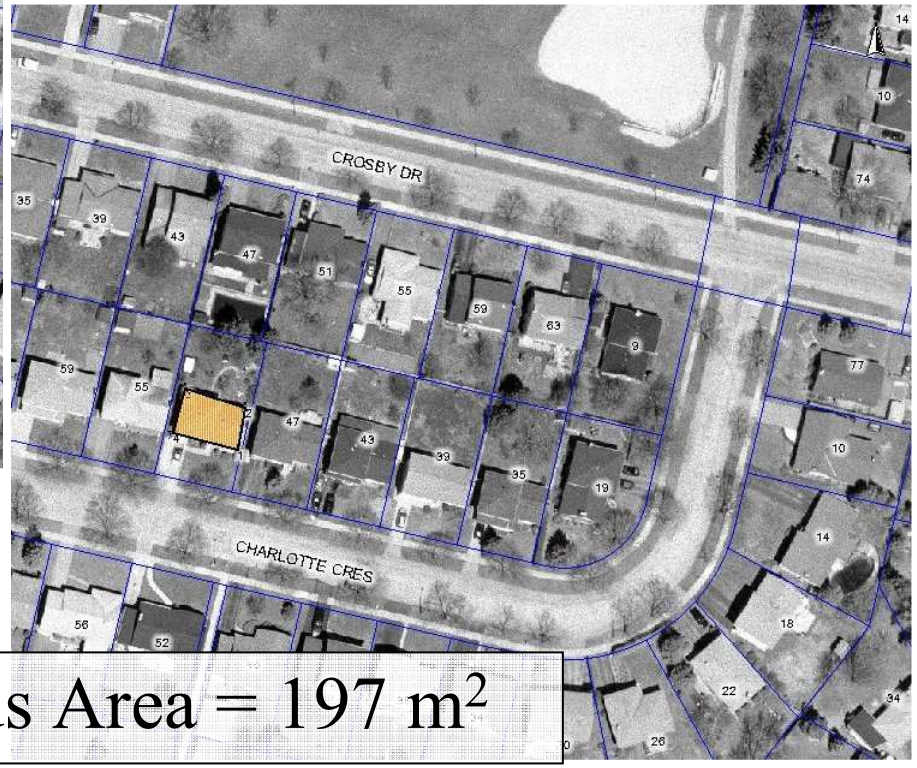


$$\frac{\text{Parcel Impervious Area}}{\text{ERU Area*}} = \text{Units}$$

*Range: 150 to 320 m^2 (1,600 to 3,400 ft^2)
Typical Average: 200 m^2 (2,200 ft^2)

Single Family Detached Home

Building Impervious Area = 137 m^2



Paved Impervious Area = 60 m^2

Total Impervious Area = 197 m^2

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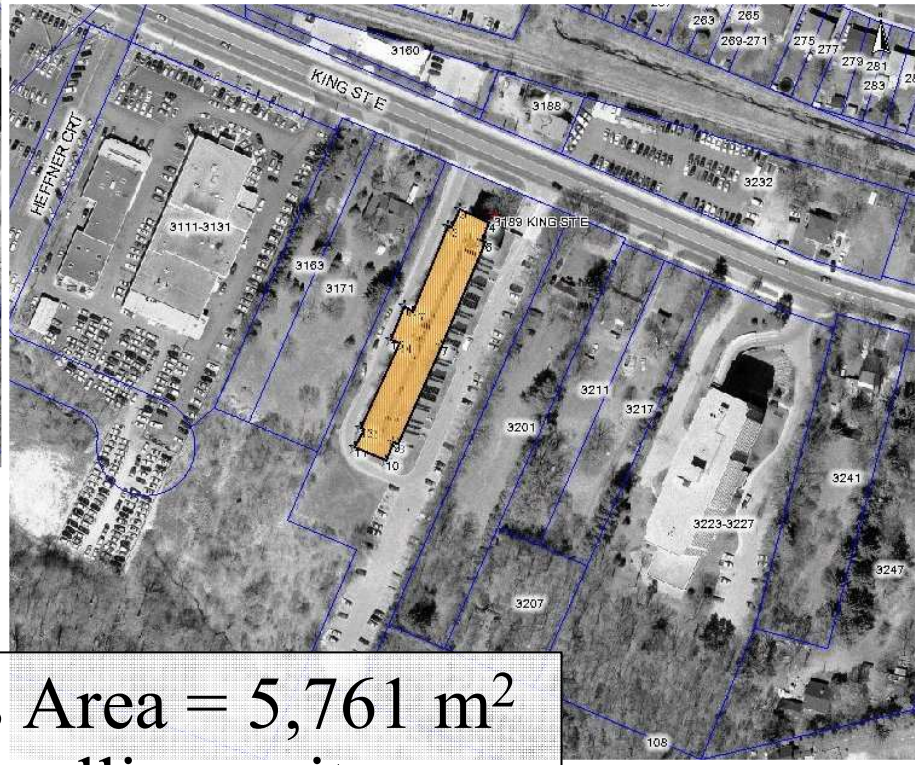
Multi-Family Residential

Building Impervious Area = 1,736 m^2



Paved Impervious Area = 4,025 m^2

Total Impervious Area = 5,761 m^2
= 230 m^2/dwelling unit

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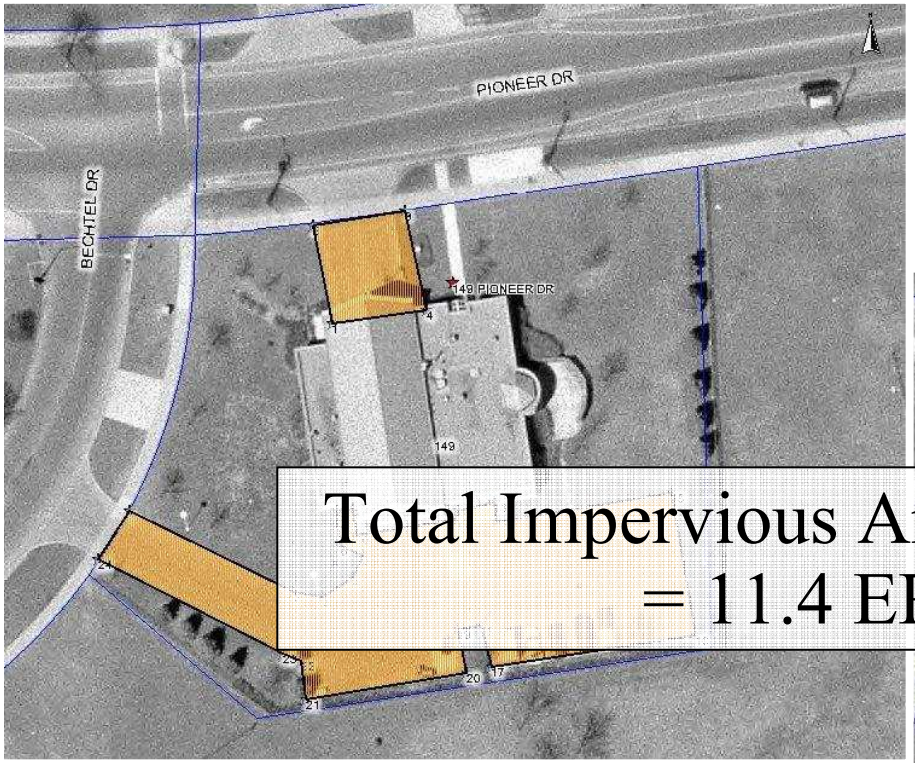
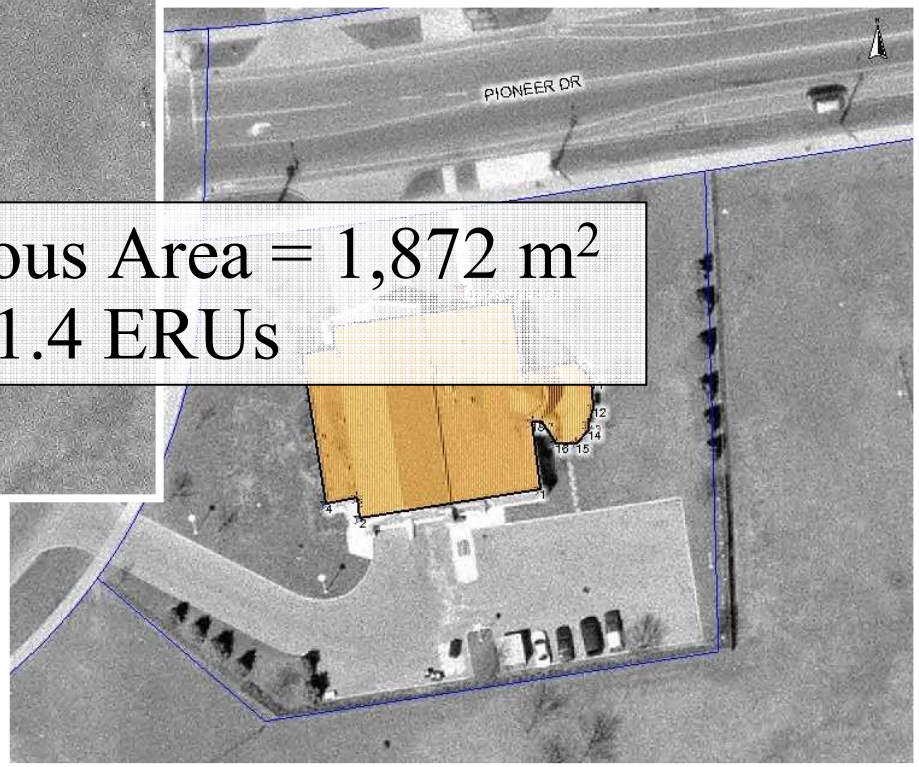
Non-Residential (Fire Station)



Building Impervious Area = 1,183 m^2



Total Impervious Area = 1,872 m^2 = 11.4 ERUs

Paved Impervious Area = 689 m^2

Using 1 ERU = 164 m^2

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Single Family Unit (SFU)

- Single Family
- Multi-Family
- Condominiums
- Townhouses

= Flat Rate (1 billing unit per Single Family home)

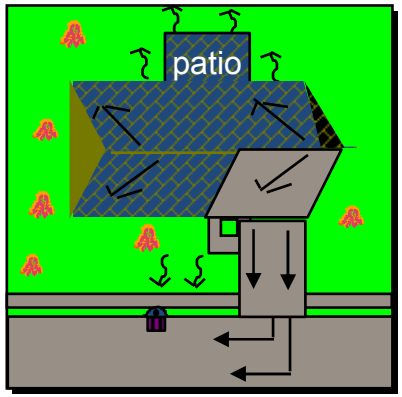
= Flat Rate (fractional billing units per residential dwelling unit)

- Governmental
- Commercial
- Institutional
- Industrial

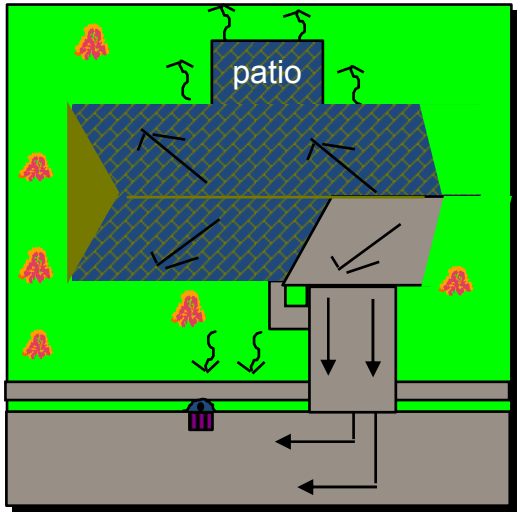
$$\frac{\text{Parcel Impervious Area}}{\text{SFU Base Area*}} = \text{Units}$$

*Range: 210 to 440 m^2 (2,200 to 4,800 ft^2)
Typical Average: 280 m^2 (3,000 ft^2)

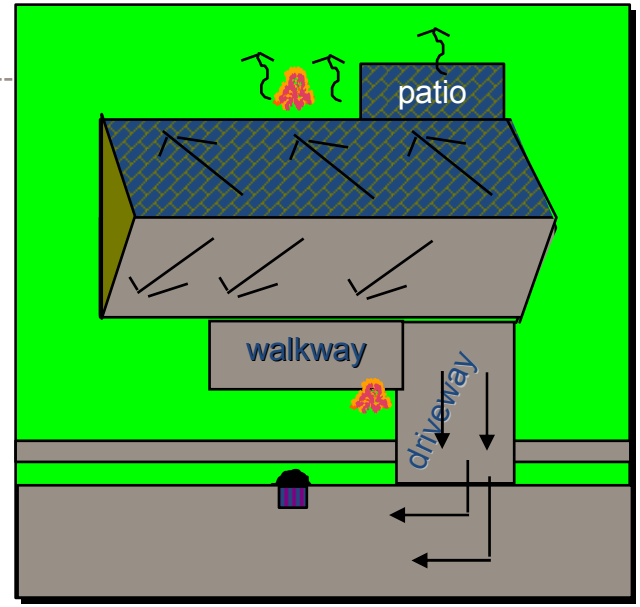
Tiered SFU Rate Structure



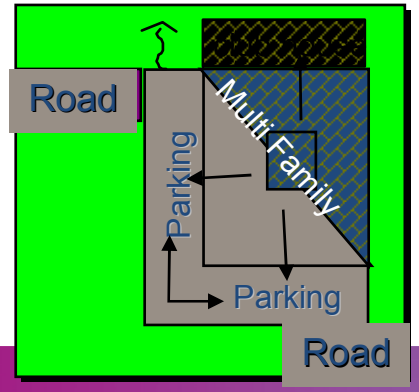
Small *Single Family Home*
184 m² = 0.7 SFU
Lowest 10% (0-184 m²)



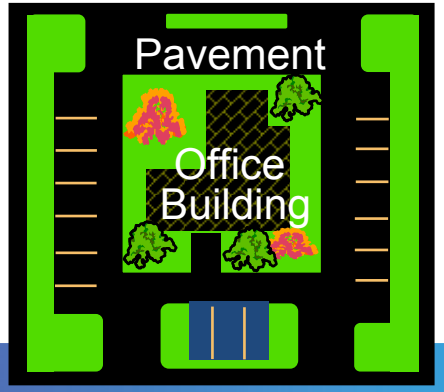
Medium *Single Family Home*
267 m² = 1.0 SFU
Middle 80% (185-363 m²)



Large *Single Family Home*
364 m² = 1.4 SFU
Highest 10% (>364 m²)



Multi-Family
1 Dwelling Unit =
0.1 - 1.0 SFU



$$\text{Units} = \frac{\text{Non-Residential Impervious Area}}{\text{SFU Area}}$$

AECOM

Comparison of Funding Options – Revenue Needs

Funding Method	City Wide Applic-ability	Used for Capital Costs	Used for O&M Costs	Used for Eng'rg/ Support Costs
Property Tax	Yes	Yes	Yes	Yes
Development Charges	No	New Capital	No	Partly
Stormwater Rate	Yes	Yes	Yes	Yes

- City-Wide Applicability: This category indicates whether or not the funding method can be used throughout the municipality's jurisdiction
- Used for Capital Costs: Funds can support capital projects
- Used for O&M Costs: Funds can support operations and maintenance activities
- Used for Engineering/Support Costs: Funds can be used to offset the costs of engineering, support, and overall program administration

Comparison of Funding Options – Other Criteria

Funding Method	Fair & Equitable Allocation	Dedicated Funding Source	Effort To Admin-istrate	Environ-mental Benefits
Property Tax	No	No	Low	Low
Development Charges	Partly	Yes	Medium	Medium
Stormwater Rate	Yes	Yes	High	High

- Fair & Equitable Allocation: Whether or not charges to property owner are based on individual contribution to program expenditures
- Dedicated Funding Source: Whether or not funds are sustainable and dedicated solely to program expenditures
- Effort to Administrate: Relative effort to administer the funding option (options with low administrative effort are considered advantageous)
- Environmental Benefits: Relative scale of environmental benefits (options with high environmental benefit are considered advantageous)

Comparison of Funding Options

Funding Method	City Wide Applic-ability	Used for Capital Costs	Used for O&M Costs	Used for Eng'rg/ Support Costs	Fair & Equitable Allocation	Dedicated Funding Source	Effort To Admin-istrate	Environ-mental Benefits
Property Tax	Yes	Yes	Yes	Yes	No	No	Low	Low
Development Charges	No	New Capital	No	Partly	Partly	Yes	Medium	Medium
Stormwater Rate	Yes	Yes	Yes	Yes	Yes	Yes	High	High

- Preliminary Recommendations:
  - No change to Development Charges program (new 2013 study will assess the program for the period 2014-2018)
  - Level of service increases to be funded through increased property tax or new stormwater rate financing mechanism

Sample Property Tax Contributions

- Program Expenditure: $14,650,000 (FY 2012, tax funded portion)
- Total Program Allocation from City Tax Levy: 2.36%
- Sample contributions from a range of Single-Family detached homes:

2012 Assessed Value	Tax Class	2012 City Tax Rate	2012 City Tax Payment (Annual)	2012 City Tax Payment (Monthly)	SWM Program Allocation (Monthly)
$300,000	RT	0.284851%	$855	$71	$1.68
$400,000	RT	0.284851%	$1,139	$95	$2.24
$450,000	RT	0.284851%	$1,282	$107	$2.52
$500,000	RT	0.284851%	$1,424	$119	$2.80
$600,000	RT	0.284851%	$1,709	$142	$3.36
$700,000	RT	0.284851%	$1,994	$166	$3.92

Note: average assessed value for single-family home = $451,000 (2012)

Property Tax Financing Option

- Sample monthly charges to support current stormwater program:

Stormwater Program Item	Existing (2012)
Program Cost	$14,650,000
Property Tax & PIL Allocation	2.36%
Additional Tax Levy Required	n/a
Single-Family Detached Home	
$300,000	$1.68
$400,000	$2.24
$450,000	$2.52
$500,000	$2.80
$600,000	$3.36
$700,000	$3.92
Non-Residential Taxable	
large Comm'l/Ind'l property	$500

Property Tax Financing Option

- Sample monthly charges to support future stormwater program:

Stormwater Program Item	Existing (2012)	Future (2014-2023, by Service Level)					
		Sustainable			Interim		
Program Cost	$14,650,000	$44,670,000			$30,020,000		
Property Tax & PIL Allocation	2.36%	7.44%			4.49%		
Additional Tax Levy Required	n/a	$31,530,000		5.8%	$16,880,000		2.3%
Single-Family Detached Home		Charge	Δ	%	Charge	Δ	%
$300,000	$1.68	$7.78	$6.10	363%	$4.54	$2.86	170%
$400,000	$2.24	$10.37	$8.13	363%	$6.05	$3.81	170%
$450,000	$2.52	$11.66	$9.15	363%	$6.81	$4.29	170%
$500,000	$2.80	$12.96	$10.16	363%	$7.56	$4.77	170%
$600,000	$3.36	$15.55	$12.19	363%	$9.08	$5.72	170%
$700,000	$3.92	$18.14	$14.23	363%	$10.59	$6.67	170%
Non-Residential Taxable							
large Comm'l/Ind'l property	$500	$2,317	$1,817	363%	$1,352	$852	170%

STORMWATER FINANCING STUDY

AECOM

Project Schedule

	2012										
Task / Description	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1. Existing Stormwater Management Program	■	■	■	■	■						
2. Future Stormwater Management Program				■	■	■					
3. Funding Options					■	■	■	■			
4. Stakeholder Meetings and Draft Report		■	■	■	■	■	■	■	■	■	
5. Final Report										■	

- PIC No. 2 to be held Wednesday October 3 at the Living Arts Centre
- Recommended implementation plan presented to Council in November

Rate – Preliminary Residential Statistics

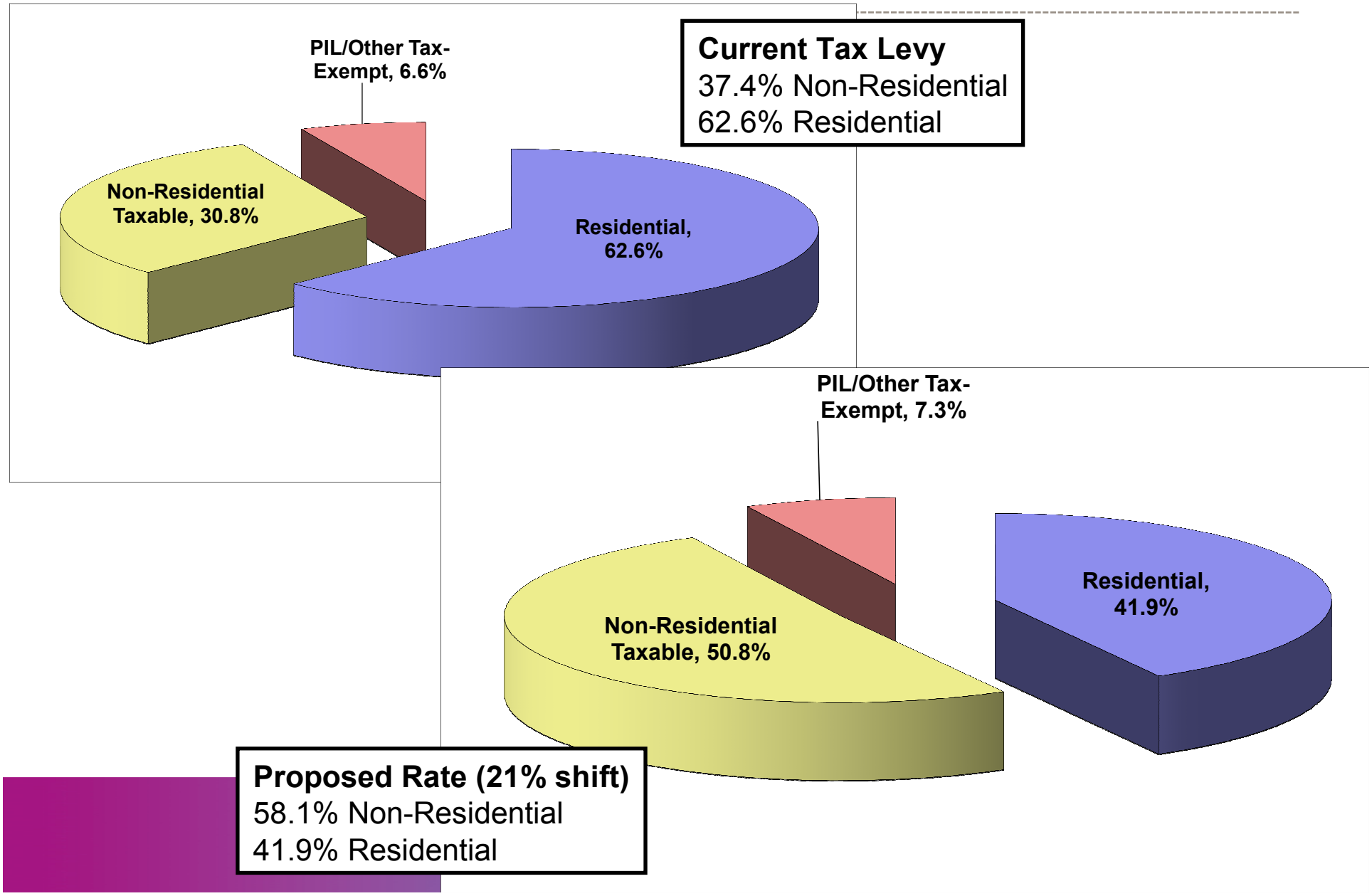
- 600 single-family detached homes sampled
- Evenly distributed across all wards and range of assessed value
- Average Single Family Unit (SFU) size is 267 m^2
- 10-percentile value is 184 m^2
- 90-percentile value is 364 m^2
- Results strongly suggest tiered structure

Ward	SFH Count	% By Ward	# Sampled
1	8709	9%	56
2	8764	9%	56
3	6340	7%	41
4	5289	6%	34
5	8234	9%	53
6	11875	13%	76
7	6506	7%	42
8	10559	11%	68
9	7838	8%	50
10	10242	11%	66
11	9353	10%	60
	93709	100%	600

Residential Stats Comparison…

Municipality	ERU Size (m^2)	SFU Size (m^2)	SFU/ERU Size Ratio	SFD-Small (10%-ile, m^2)	SFD-Large (90%-ile, m^2)	Large/Small Size Ratio
Hamilton	215	301	1.4	131	503	3.8
Markham	239	294	1.2	188	448	2.4
Stratford	196	282	1.4	181	399	2.2
Mississauga	**164**	**267**	**1.6**	**184**	**364**	**2.0**
Waterloo	167	266	1.6	164	353	2.2
Kitchener	183	259	1.4	168	344	2.0
Calgary	186	235	1.3	158	309	2.0

Potential Revenue Redistribution



Group Meetings

- SFSG No. 1: Introduction to Stormwater Management and Financing
  - 6:30-8pm Tuesday May 8 at Central Library - 2nd Floor, Classroom 4
- SFSG No. 2: Overview of Stormwater Problems/Solutions
  - 6:30-8pm Wednesday June 6 at City Hall - Committee Room 'A'
- SFSG No. 3: Level of Service and Existing Financing
  - 6:30-8pm Wednesday July 4 at City Hall - Committee Room 'A'
- SFSG No. 4: Alternative Funding Options
  - 6:30-8pm Wednesday August 29 at City Hall - Committee Room 'A'
- SFSG No. 5: Proposed Financing Mechanism
  - 6:30-8pm Wednesday September 26 at City Hall - Committee Room ‘B'
- SFSG No. 6: Development of Recommendations for Council
  - 6:30-8pm Wednesday October 24 at City Hall - Committee Room ‘B'

Member List

Stormwater Financing Stakeholder Group		Mtg 1	Mtg 2	Mtg 3
Residential				
Richard Dundas/Vida Stripinis	Gordon Woods Homeowners' Association	Y	Y	Y
	Rockwood Homeowners Association			
	Clarkson BIA			
	Whiteoaks Lorne Park Community Assoc.			
	Mississauga Oakridge Residents Association			
Jeff O'Leary	Friends of Lake Wabukayne Stewardship	Y	Y	
Kiruthiha Kulendiren	Lisgar Residents Association	Y	Y	Y
	Credit Reserve Association			
Linda Pinizzotto	Condo Owners Association	Y		
Roger Coote	Cooksville Creek Task Force		Y	Y
	Kaneff Group of Companies			
	Peel Housing			
Steve Blaney	Sherwood Forest Residents Association		Y	
Commercial/Industrial				
	Building Industry and Land Development Association			
Sheldon Leiba	Mississauga Board of Trade			
	Ontario Restaurant Hotel & Motel Association			
	Erin Mills Development Corporation			
Gary Kramer	Orlando Corporation	Y	Y	Y
	ProLogis			
J-M Rouleau/Matt Coleridge	Oxford Properties Group (Square One)	YY	Y	Y
Darren O'Neil	Sheridan Park Association	Y	Y	
	Westwood Mall - Fieldgate Commercial			
Bri-Ann Stuart	Dixie Outlet Mall		Y	Y
Institutional/Government				
Paul Mountford	Peel District School Board	Y	Y	Y
Gail Robinson/Ezra Cyrus	Dufferin-Peel Catholic District School Board		Y	Y
Christine Capewell	University of Toronto (Mississauga)	Y	Y	Y
May Chang	Trillium Health Centre			
	Canadian Council of Churches			
	Islamic Society of North America			
Derek Gray/Randy McGill	GTAA	Y	YY	Y
	Metrolinx			
Dan Labrecque	Region of Peel	Y		
Rev. Jennifer Reid	St. Peter's Anglican Church (Erindale)		Y	Y
Ex-Officio				
Christine Zimmer/Robb Lukes	Credit Valley Conservation	Y	Y	Y
Sameer Dhalla/Maggie Liu	Toronto and Region Conservation Authority		Y	
Michael DeWit	Environmental Advisory Committee	Y	Y	Y
Michael Ewaschuk	Credit River Anglers Association	Y		
	EcoSource			
	Total	**15**	**18**	**13**

Contacts

- City Project Manager

  Mr. Lincoln Kan
  Manager, Environmental Services
  Transportation and Works Department
  201 City Centre Drive, Suite 800, Mississauga ON L5B 2T4
  Phone: 905.615.3200 ext 4086
  Email: Lincoln.Kan@mississauga.ca

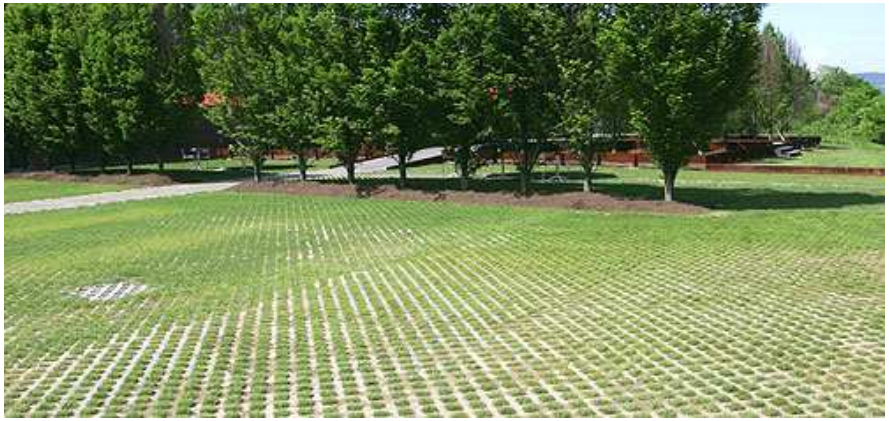
- Consultant (AECOM)

  Mr. Mike Gregory
  Senior Water Resources Engineer
  50 Sportsworld Crossing Road, Unit 290, Kitchener ON N2P 0A4
  Phone: 519.650.8697
  Email: mike.gregory@aecom.com

Questions?







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50 Sportsworld Crossing Road, Suite 290 519.650.5313 tel
Kitchener, ON, Canada N2P 0A4 519.650.3424 fax
www.aecom.com

Minutes of Meeting

Date of Meeting	September 26, 2012	Start Time	6:30pm	Project Number	60247202
Project Name	Mississauga Stormwater Financing Study				
Location	City Hall, Committee Room 'B'				
Regarding	Stormwater Financing Stakeholder Group – Meeting #5				
Attendees	(see attached sign-in sheet)				
Distribution	Attendees; file.				
Minutes Prepared By	Mike Gregory, David Arseneau				

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

	Action
1. Group Welcome/Business • Lincoln Kan opened the meeting by welcoming the Group members and introductions were conducted around the table. • The Group was asked for additional comments or questions since the last meeting; no questions were presented.	
2. Presentation • A presentation was given by Mike Gregory (AECOM) outlining City expenditures related to the future stormwater management program, including two new funding scenarios not presented during the previous meeting, potential funding mechanisms and preliminary impacts to typical property owners. Please see the attached presentation slides for the contents. • The following describes questions and topics of discussion that arose during the presentation or in the open discussion following the presentation. • Q: We had previously discussed the potential for existing stormwater management (SWM) facilities on a property to impact the rate paid; is this now off the table? What about properties that drain directly to a watercourse? • A: The study team will be looking at credits if the rate program is the preferred financing mechanism and is approved by Council, but we do not yet know what the credit program will look like. • Q: Shouldn't existing SWM controls on a property earn a 100% credit? • A: The general philosophy for credits is that property owners who operate and maintain SWM controls that result in a direct decrease in the City's stormwater program costs are eligible for a charge reduction in proportion to the cost savings to the City. The	

typical maximum credit for jurisdictions that have implemented a stormwater rate is 50%. It is unlikely that SWM facilities on private property can control all stormwater runoff (that is, without discharging to the City's collection system) for the range of rainfall events expected, which would warrant a 100% credit.

- Q: The development and implementation of a credit program would further add to the administrative burden of a rate program, which seems counterproductive.
- A: This is true, and the question would be (similar to the charge for debt financing) if the charge should be added to the rate, or deducted from the SWM program by reducing the City's level of service.
- Comment: It is true that the more credits awarded the more the SWM program costs will have to be spread around, but some organizations have spent significant amounts on SWM and would expect a credit.
- Comment: Similarly, some organizations may not be currently paying for the SWM program, but contribute significantly to society in other ways through their communities (i.e., Places of Worship).
- Response: It would also be expected that the reduction of stormwater runoff and pollutant loading into the system (i.e., by implementing credit-eligible SWM controls) would decrease overall program costs over time.
- Comment: In a tax-based system, there is no incentive to improve or adopt sustainable stormwater practices. CVC is currently in discussion with the Insurance Board of Canada regarding flood insurance (which is not currently obtainable in Canada). This is similar to a credit program and would provide incentive for property owners to mitigate their impact.

- Q: There is a concern with the new Status Quo scenarios (debt vs tax financed). Debt incurs costs and would be preferable not to adopt, but in comparison the pay-as-you-go scenario would yield a higher tax burden. How would you pay off the debt over time? The debt charge would compound and this is not accounted for in the slides.
- A: The historical reserve funding used for capital projects has been used up; all capital projects are moving to debt financing in the future.

- Q: The rate system would allow a property to appeal their impervious measurement and perhaps be included in a different category; would a property have to appeal this measurement every year, similar to a typical credit benefit?
- A: The appeal for the impervious area measurement would be a one-time occurrence. Future changes to the property (i.e., widening your driveway or building a house addition) would be captured by the building permit process.

- Q: There may be some confusion at the political level as to who is running the program; a councillor recently told me that the rate program would be run by the Region. Isn't this a City program?
- A: They may have been talking about the Region as a potential billing agent, adding stormwater to the Region's water and sewer bill. Stormwater is a City program and all funds collected would be used by the City.

- Q: Only Mississauga is currently pursuing alternative stormwater financing methods in

the GTA right now, but Mississauga receives stormwater flows from Brampton. Who owns the problem? How can Brampton be engaged? How can the impact of future growth in the GTA be accounted for? What are the cost/rate projections? Also, there needs to be a serious discussion about the rebate program, since it is critical to determine the best course of action for my community. Can rebates be community based? • A: The stormwater financing discussion is happening in all municipalities in the GTA and across Canada. Mississauga is just the first in the GTA to start the process. With respect to growth, this is reflected in the capital budget forecasts (typically over 10 years) that are used to cost future program spending. However, the numbers shown in the slides are just a snapshot in time. Costs will increase in the future. With respect to rebates on the community level, the SWM controls are decided when the community is developed. The nature of a potential credit program is currently unknown. Credits will be evaluated if a rate program is determined to be the preferred funding mechanism and is approved by Council. • Q: Using the Region as a biller will incur additional costs for the Region to administer the bills; however, if the rate is on a City bill it will look like a tax. There needs to be caution as to which billing method is selected. • A: The billing mechanism will be reviewed and approved by Council. The administration fee included in the slides ($770,000 per year) includes billing costs. • Q: Everyone understands the financial pressures the City is under, and sees that Kitchener and Waterloo have started to charge user fees. The charges currently shown on the slides assume that tax-exempt properties would pay fees, but this is currently under legal debate. There is a separate tax funding formula in the Province for school boards and these funds are limited. If the rate program cannot charge schools, then the numbers shown on the slides are wrong since more costs will be borne by others. There needs to be caution in how the analysis is carried out. • A: This is also where incentives and credits come into play. School boards have already shown great initiative in adopting SWM controls and low impact development on their properties. Rebate discussions are important in this context. • Comment: It feels like we are being asked to choose between a rate and increased tax. We should be involved in future conversations regarding other community contributions that offset these costs. • Comment: If tax funding was selected as the preferred mechanism (and it remained based on assessment value), then it would not be fair, since many high value properties have large areas of landscaping with houses not significantly larger than other properties. • Comment: If rates are selected as the preferred funding mechanism, the value gained for small-scale SWM improvements (i.e., rain barrels) would have to be evaluated for their inclusion in a credit program. For administrative cost efficiency, the focus would have to be on large-scale, high-impact improvements.	

• Q: It may help the group if everyone understands what Kitchener did. Did they have a rate program right away? Is the Kitchener information sufficiently generic to distribute to the group? • A: No, Kitchener Council gave City staff one year to develop their credit program, since it is very complex. The credits were then applied retroactively. Kitchener has posted a lot of information on their website last month detailing the credit program. We will summarize the Kitchener program at the next meeting. • Comment: If Kitchener has already figured out the credit program, we should model our program on theirs. No need to reinvent the wheel. • Comment: There appears to be a strong opinion in the group that a credit program is instrumental to approval of the rate. • Q: Considering the current litigation in Kitchener, we should consider all the details of a potential rate program (i.e., credits, groups that would be exempt). We need to figure out if Mississauga residents would want to exempt any of these groups. • A: Our legal staff is currently reviewing the City's legislative authority with respect to a stormwater user fee and will determine if there are any fee-exempt properties. • Q: If we do exempt certain properties, who picks up the bill for the lost revenue? Should the program be reduced, or should the lost revenue be distributed to other rate payers? There is legislation in the Municipal Act regarding fees for tax-exempt properties, indicating that a benefit must be proven for the entity. • A: We are exploring all of these options. • Comment: If we look historically, rising SWM costs have been borne by other users through taxes, this needs to be discussed. • Comment: At one point, both water and sewer were included in the tax bill. There is precedent for moving charges off the tax bill into a rate structure. • Comment: We need to consider the benefits provided to society by tax-exempt entities. We completely understand and appreciate the need for SWM and the current funding pressures, but perhaps tax-exempts can achieve credits through education or other services. • Q: Is there an overall savings to keep SWM on the tax levy? • A: There is a problem with keeping SWM on the tax, since tax is not a dedicated source of funding and must complete with all other City needs. This is similar to water and sewer which used to be on the tax bill but were then moved to a rate structure in order to provide a dedicated source of funding. • Q: What about charging a stormwater fee based on the water bill? This has been done in other jurisdictions. • A: It has been done, but there is no rational connection between water consumed and runoff produced by a property. It is not a fair and equitable system, maybe even less so than assessed value. Consider big box stores with large impervious areas but only 1 or 2 water meters, or parking lots with no water meters but that produce large amounts of runoff? • Comment: The concern was that we are creating a complex system when we already have an underfunded system. We need to keep it simple to reap the maximum	AECOM

benefits. • Comment: University of Toronto at Mississauga currently charges students parking fees in part to provide for SWM. We recognize that the parking lots are a big problem. • Q: Can the presentation slides be issued with larger print? The small type was hard to read. • A: Slides will be reissued in an easier to view format. • Comment: It is very important that the study team hear feedback from as many people/parties as possible. If you have any comments or questions about any of the material discussed during these meetings, please send an email to Lincoln Kan (address below). The City is very interested in all perspectives.	AECOM
3. Next Meeting • The next meeting scheduled is for Wednesday November 14 at City Hall (in the Committee Room 'A') from 6-8pm.	

Please send any sample addresses that you would like evaluated for potential funding impacts to Lincoln at Lincoln.Kan@mississauga.ca. Lincoln can also be reached at 905-615-3200 ext.4086.

Attachments:

1. Sign-in sheet "MississaugaStormFinancing_SFSG5_Attendees_26Sep2012.pdf"
2. Presentation handout "Mississauga_StormwaterFinancing_SFSG5_final.pdf"

City of Mississauga - Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 5, 26-Sep-2012)

Name	Affiliation	Phone	E-mail	Present?
Christine Capewell	University of Toronto (Mississauga)	905-828-5405	christine.capewell@utoronto.ca	✓
Dan Labrecque	Region of Peel	905-791-7800 x4395	dan.labrecque@peelregion.ca	
Jeff O'Leary	Friends of Lake Wabukayne Stewardship	905-363-4622	jefftoleary@yahoo.ca	
Derek Gray	GTAA	416-776-3049	Derek.Gray@gtaa.com	✓
Paul Mountford	Peel District School Board	905-890-1010 x2217	paul.mountford@peelsb.com	✓
Gary Kramer	Orlando Corporation	905-677-5480	kramerg@orlandocorp.com	✓
Michael Ewaschuk	Credit River Anglers Association	519-580-1708	mewaschuk@nrsi.on.ca	
Darren O'Neil	Sheridan Park Association	905-403-4200	DONeil@hatch.ca	
J-M Rouleau	Oxford Properties Group (Square One)	905-270-7771	jrouleau@oxfordproperties.com	
Linda Pinizzotto	Condo Owners Association (Mississauga)	416-561-7373	linda@lindapinizzotto.com	
Kiruthiha Kulendiren	Lisgar Residents Association	416-975-8603	KKulendiren@Bluelotus.ca	✓
Christine Zimmer (& Rob Lukes)	Credit Valley Conservation	905-670-1615	czimmer@creditvalleyca.ca	✓
Richard Dundas	Gordon Woods Homeowners Association	905-279-3321	rdundas006@sympatico.ca	
Michael DeWit	Environmental Advisory Committee	905-274-0391	mdewit@rogers.com	
Roger Coote	Cooksville Creek Task Force	416-616-4311	thecootes@bell.net	✓
Steve Blaney	Sherwood Forest Residents Association		~~sblaney@kcl.ca~~ steveblaney@rogers.com	✓
Bri-Ann Stuart	Dixie Outlet Mall		Bri-Ann.Stuart@ivanhoecambridge.com	✓
Gail Robinson	Dufferin-Peel Catholic District School Board		gail.robinson@dpcdsb.org	✓
Rev. Jennifer Reid	St. Peter's Anglican Church (Erindale)		rector@stpeterserindale.org	✓
Vida Stripinis	Gordon Woods Homeowners Association	905-279-9412	vida.stripinis@sympatico.ca	
Matt Coleridge	RJ Burnside (for Oxford)	905-821-1800	matthew.coleridge@rjburnside.com	✓
KRIS HORVATH	U of T MISSISSAUGA	905-301-1556	KRISTIAN@HORVATH@UTORONTO.CA	✓
DAVE ASHFIELD	THE MUNICIPAL INFRASTRUCTURE GROUP	905-738 5700	dashfield@tmig.ca	✓
Project Team				
Lincoln Kan	City of Mississauga	905-615-3200 x4086	Lincoln.Kan@mississauga.ca	✓
Jeremy Blair	City of Mississauga	905-615-3200 x3133	Jeremy.Blair@mississauga.ca	✓
Kimberly Hicks	City of Mississauga	905-615-3200 x5232	Kimberly.Hicks@mississauga.ca	✓
John Murphy	City of Mississauga	905-615-3200 x5290	John.Murphy@mississauga.ca	
Zubair Ahmed	City of Mississauga	905-615-3200 x5843	Zubair.Ahmed@mississauga.ca	
Steve Sedgwick	CDM Smith	904-527-6709	SedgwickSR@cdmsmith.com	
David Arseneau	AECOM	519-650-8631	David.Arseneau@aecom.com	✓
Mike Gregory	AECOM	519-650-8697	Mike.Gregory@aecom.com	✓

Brenda Breault, City of Mississauga.
Martina Powell, City of Mississauga.

Patti Elliott-Spencer
City of Mississauga

City of Mississauga - Stormwater Financing Study

Stormwater Financing Stakeholder Group
September 26, 6:30-8:00 pm – Meeting No. 5
Civic Centre (Committee Room 'B')

Project Manager: Lincoln Kan, P.Eng.
Consultant PM: Mike Gregory, P.Eng., AECOM

Group Welcome/Business

- Introductions/New Members
- Acceptance of previous meeting minutes (Meeting No. 4, August 29)
- Additional comments or questions since last meeting?

Tonight's Meeting

- Objectives: For Stakeholder Group members to understand
  - Service level scenarios for the City's future stormwater program
  - Funding options that the City is investigating (increased tax or new rate)
  - Resulting impacts to property owners
- Stormwater Program Service Levels & Expenditures
  - New "Status Quo" scenarios; present value costs (without inflation)
- Open Discussion of Funding Options for Future Stormwater Program
- Financing Study – Progress Report and Next Steps

Project Summary

- Issue 1: Level of Service
  - The City needs to spend more on stormwater management
  - Higher levels of service are needed
- Issue 2: Allocation of Charges
  - Dedicated and sustainable revenue is required to support all program needs
  - Allocation should be fair and equitable (same basis of charge to all properties)
- Options investigated [status for further investigation]:
  - Property Tax Increase
  - Development Charges Program
  - New User Fee

Recap of Pressures on Stormwater Program

- Today's service level is not adequate, more needs to be done
- Increasing Capital Needs – watercourse erosion/rehabilitation, SWM pond dredging, flood protection works, culvert improvements, low impact development practices
- Increasing Operating Needs – infrastructure inspections and maintenance, education and outreach, by-law enforcement, rain gauge network, naturalization and tree planting
- Other Pressures – infrastructure renewal, climate change adaptation, new/increasing regulations

Comparison of Funding Options

Funding Method	City Wide Applic-ability	Used for Capital Costs	Used for O&M Costs	Used for Eng'rg/ Support Costs	Fair & Equitable Allocation	Dedicated Funding Source	Effort To Admin-istrate	Environ-mental Benefits
Property Tax	Yes	Yes	Yes	Yes	No	No	Low	Low
Development Charges	No	New Capital	No	Partly	Partly	Yes	Medium	Medium
Stormwater Rate	Yes	Yes	Yes	Yes	Yes	Yes	High	High

- No change to Development Charges program (new 2013 study will assess the program for the period 2014-2018)
  - Only used to fund eligible growth-related capital costs and only for the services for which they were collected
  - Does not cover Operations & Maintenance costs or life cycle reinvestment of assets
  - The collection of Development Charges is declining as the City is nearly built out
- Level of service increases to be funded through increased property tax or new stormwater rate financing mechanism

STORMWATER PROGRAM – FUNDING CURRENT SERVICE LEVEL

AECOM

Paying for Today's Service Level (2012 Program)

- With transfer from reserves, the stormwater program funding only totals $8.7M from Tax and Payment-in-Lieu of Tax (PILT)
- Portion of Capital funded from 2012 City Tax Levy & Payments in Lieu of Taxes (PILT) is $2.1M
- Portion of Capital funded from reserves is $5.9M
  - Tax funding from reserves accumulated in previous years for a portion of the City's stormwater capital projects

		Funding Source		Tax & PILT
Stormwater Program Item	**Cost**	**Tax & PILT**	**Reserves**	**Allocation**
Capital	$8,030,000	$2,100,000	$5,930,000	0.57%
Operations & Maintenance	$6,620,000	$6,620,000	$0	1.79%
Storm Pipe Reinvestment	$0	$0	$0	0.00%
Total Program	**$14,650,000**	**$8,720,000**	**$5,930,000**	**2.36%**

Paying for Today's Service Level (2012 Program) – Reserve Funding Replaced by Debt

- Status Quo Debt Finance Service Level (based on FY 2012)
- Tax Funded Reserves may be replaced by debt financing under this scenario as current level of funding from reserves will no longer be available in the future
- Need to account for annual repayment of debt
- Restrictions imposed by City's Debt Policy will limit future funding available
- To service debt, either annual program expenditures will be reduced or tax requirement will increase

		Funding Source		Tax & PILT
Stormwater Program Item	**Cost**	**Tax & PILT**	**Debt**	**Allocation**
Capital	$8,030,000	$2,100,000	$5,930,000	0.57%
Operations & Maintenance	$6,620,000	$6,620,000	$0	1.79%
Storm Pipe Reinvestment	$0	$0	$0	0.00%
Total Program	**$14,650,000**	**$8,720,000**	**$5,930,000**	**2.36%**

Paying for Today's Service Level (2012 Program) – No Reserve or Debt

- Status Quo Pay-as-you-go Service Level (based on FY 2012)
- Tax portion of stormwater capital funded from annual City tax levy and PILT – assume no debt funding going forward
- 2012 level of funding for program needs will be generated solely by tax levy
- Tax increase required to maintain current program on Pay-As-You-Go basis would be $8M – $2.1M = $5.9M

		Funding Source		Tax & PILT
Stormwater Program Item	**Cost**	**Tax & PILT**	**Reserves & Debt**	**Allocation**
Capital	$8,030,000	$8,030,000	$0	2.17%
Operations & Maintenance	$6,620,000	$6,620,000	$0	1.79%
Storm Pipe Reinvestment	$0	$0	$0	0.00%
Total Program	**$14,650,000**	**$14,650,000**	**$0**	**3.96%**

STORMWATER PROGRAM – FUNDING FUTURE SERVICE LEVELS

AECOM

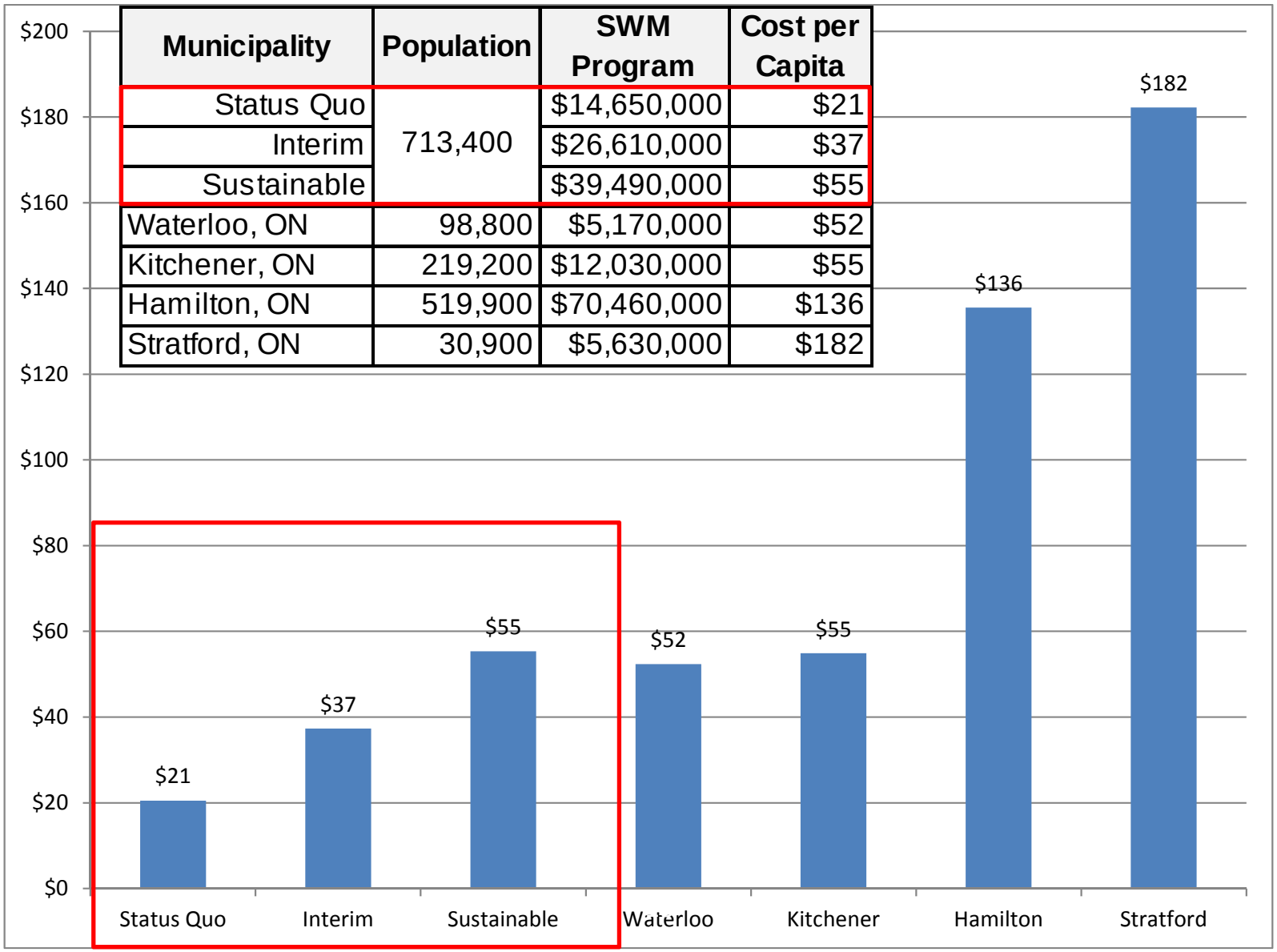
Future Stormwater Program Service Level

- Sustainable service level
  - Capital: Fully funded program, all priority capital projects are included
  - Operations and Maintenance: Additional $1.5M/year
  - Storm Pipe Reinvestment: 1% of asset value per year (= $16M/year)
- Interim service level
  - Capital: Fully funded program, all priority capital projects are included
  - Operations and Maintenance: Additional $1.5M/year
  - Storm Pipe Reinvestment: 0.15% of asset value 1st year + 0.01% per year after

Comparison to Other Ontario Municipalities

(Recommended Service Level per Capita)

Municipality	Population	SWM Program	Cost per Capita
Status Quo	713,400	$14,650,000	$21
Interim		$26,610,000	$37
Sustainable		$39,490,000	$55
Waterloo, ON	98,800	$5,170,000	$52
Kitchener, ON	219,200	$12,030,000	$55
Hamilton, ON	519,900	$70,460,000	$136
Stratford, ON	30,900	$5,630,000	$182



FUTURE STORMWATER FUNDING SCENARIOS

AECOM

Financing Scenarios - Property Tax Impacts

DRAFT – FOR DISCUSSION ONLY

Stormwater Program Item	Status Quo (Debt Financing)	Status Quo (Pay-as-you-go)	Interim	Sustainable
Program Cost	(see Notes 1 & 2)	$14,650,000	$26,610,000	$39,490,000
Property Tax & PIL Allocation	2.36%	3.96%	7.19%	10.67%
Single-Family Detached Home	Charge/yr	Charge/yr	Charge/yr	Charge/yr
10-percentile assessed value	$22.10	$37.13	$67.44	$100.09
50-percentile assessed value	$28.58	$48.01	$87.21	$129.42
90-percentile assessed value	$40.69	$68.36	$124.16	$184.26
Brooks Drive	$28.37	$47.66	$86.57	$128.47
Robin Drive	$42.69	$71.72	$130.28	$193.34
Homelands Drive	$27.39	$46.01	$83.58	$124.03
Condominium				
Sherobee Road	$15.86	$26.64	$48.39	$71.82
Multi-Family (7+ Units)				
Goreway Drive (tax per unit)	$10.54	$17.71	$32.18	$47.75
Commercial				
Mall	$10,445	$17,548	$31,875	$47,303
Grocery Store	$991	$1,665	$3,023	$4,487

Notes:

1. $14,650,000 program includes $8.7M (Tax & PILT) plus $5.9M (Reserves & Debt).
2. To service debt, either annual program expenditure will be reduced or tax requirement will increase

AECOM

Financing Scenarios – Stormwater Rate

- 600 single-family detached homes sampled
- Evenly distributed across all wards and range of assessed value
- Average Single Family Unit (SFU) size is 267 m^2
- Results strongly suggest tiered structure

Municipality	ERU Size (m^2)	SFU Size (m^2)	SFU/ERU Size Ratio	SFD-Small (10%-ile, m^2)	SFD-Large (90%-ile, m^2)	Large/Small Size Ratio
Hamilton	215	301	1.4	131	503	3.8
Markham	239	294	1.2	188	448	2.4
Stratford	196	282	1.4	181	399	2.2
Mississauga	**164**	**267**	**1.6**	**184**	**364**	**2.0**
Waterloo	167	266	1.6	164	353	2.2
Kitchener	183	259	1.4	168	344	2.0
Calgary	186	235	1.3	158	309	2.0

Financing Scenarios - Stormwater Rate Impacts

DRAFT – FOR DISCUSSION ONLY

Billing Units (SFU)	Service Scenario	Status Quo (Debt Financed)	Status Quo (Pay-as-you-go)	Interim	Sustainable
	Program Cost	$8,720,000	$14,650,000	$26,610,000	$39,490,000
	Base Rate ($/SFU/mo)	$2.32	$3.90	$7.09	$10.52
Single-Family Detached Home		**Rate/year**			
0.7	10-percentile (Small Tier)	$19.19	$32.26	$58.64	$87.01
1.0	10-percentile assessed value	$27.84	$46.80	$85.08	$126.24
1.0	50-percentile assessed value	$27.84	$46.80	$85.08	$126.24
1.0	90-percentile assessed value	$27.84	$46.80	$85.08	$126.24
1.4	90-percentile (Large Tier)	$38.02	$63.92	$116.20	$172.42
1.0	Brooks Drive	$27.84	$46.80	$85.08	$126.24
1.0	Robin Drive	$27.84	$46.80	$85.08	$126.24
1.0	Homelands Drive	$27.84	$46.80	$85.08	$126.24
Condominium					
0.2	Sherobee Road	$6.38	$10.72	$19.49	$28.92
Multi-Family (7+ Units)					
0.2	Goreway Drive (per unit)	$5.09	$8.55	$15.55	$23.07
Commercial					
519.1	Mall	$14,452	$24,294	$44,165	$65,530
145.5	Grocery Store	$4,050	$6,809	$12,378	$18,366

Notes:

1. Rate assumes 92% collection, 340,000 Tiered SFU billing units.
2. To service debt, either annual program expenditure will be reduced or tax requirement will increase.
3. Annual rate administration cost of approximately $770,000 has not been included in calculation. Either annual program expenditure will be reduced or rate requirement will increase.

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Tax Increase vs Stormwater Rate

DRAFT – FOR DISCUSSION ONLY

Billing Units (SFU)	Service Scenario	Status Quo (Debt Financed)		Status Quo (Pay-as-you-go)		Interim		Sustainable	
		Tax	Rate	Tax	Rate	Tax	Rate	Tax	Rate
	Program Cost	(see Note 1)		$14,650,000		$26,610,000		$39,490,000	
	Property Tax & PIL Allocation / Base Rate ($/SFU/mo)	2.36%	$2.32	3.96%	$3.90	7.19%	$7.09	10.67%	$10.52
Single-Family Detached Home		Annual Cost							
0.7	10-percentile (Small Tier)	$22.10	$19.19	$37.13	$32.26	$67.44	$58.64	$100.09	$87.01
1.0	10-percentile assessed value	$22.10	$27.84	$37.13	$46.80	$67.44	$85.08	$100.09	$126.24
1.0	50-percentile assessed value	$28.58	$27.84	$48.01	$46.80	$87.21	$85.08	$129.42	$126.24
1.0	90-percentile assessed value	$40.69	$27.84	$68.36	$46.80	$124.16	$85.08	$184.26	$126.24
1.4	90-percentile (Large Tier)	$40.69	$38.02	$68.36	$63.92	$124.16	$116.20	$184.26	$172.42
1.0	Brooks Drive	$28.37	$27.84	$47.66	$46.80	$86.57	$85.08	$128.47	$126.24
1.0	Robin Drive	$42.69	$27.84	$71.72	$46.80	$130.28	$85.08	$193.34	$126.24
1.0	Homelands Drive	$27.39	$27.84	$46.01	$46.80	$83.58	$85.08	$124.03	$126.24
Condominium									
0.2	Sherobee Road	$15.86	$6.38	$26.64	$10.72	$48.39	$19.49	$71.82	$28.92
Multi-Family (7+ Units)									
0.2	Goreway Drive (per unit)	$10.54	$5.09	$17.71	$8.55	$32.18	$15.55	$47.75	$23.07
Commercial									
519.1	Mall	$10,445	$14,452	$17,548	$24,294	$31,875	$44,165	$47,303	$65,530
145.5	Grocery Store	$991	$4,050	$1,665	$6,809	$3,023	$12,378	$4,487	$18,366

Notes:

1. $14,650,000 program includes $8.7M (Tax & PILT) plus $5.9M (Reserves & Debt). Calculation based on $8.7M
2. Annual replacement of debt under Status Quo (Debt Financed) scenario has not been included in calculation. To service debt, either annual program expenditure will be reduced or tax requirement will increase
3. Rate assumes 92% collection, 340,000 Tiered SFU billing units.
4. Annual rate administration cost of approximately $770,000 has not been included in stormwater rate calculation. Either annual program expenditure will be reduced or rate requirement will increase.

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Discussion with Stakeholder Group

1. Comments on a Stormwater Rate versus Tax Levy to fund the City's stormwater program. Do you agree with the concept of allocating cost based on each property's stormwater runoff contribution?
2. How should the City address pipe reinvestment? The City currently doesn't
3. Which Service Level do you believe the City's stormwater program should be funding? Where should we start?
   - Today's Service Level (2012 Program) – Reserve Funding Replaced by Debt (Status Quo – Debt Financing)
   - Today's Service Level (2012 Program) – No Reserve or Debt (Status Quo – Pay-as-you-go)
   - Interim
   - Sustainable
4. If we start at Today's Service Level, a modest annual increase is necessary to achieve Interim and Sustainable funding levels. What should the timeframe be?
5. The City would like to hold a session before meeting #6 to discuss issues identify by Stakeholder Group members.
6. Others?

FINAL COMMENTS

Project Schedule

	2012										
Task / Description	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1. Existing Stormwater Management Program											
2. Future Stormwater Management Program											
3. Funding Options											
4. Stakeholder Meetings and Draft Report											
5. Final Report											

- PIC No. 2 to be held Thursday November 1 at the Living Arts Centre
- Recommended implementation plan presented to Council in November

Group Meetings

- SFSG No. 1: Introduction to Stormwater Management and Financing
  - 6:30-8pm Tuesday May 8 at Central Library - 2nd Floor, Classroom 4
- SFSG No. 2: Overview of Stormwater Problems/Solutions
  - 6:30-8pm Wednesday June 6 at City Hall - Committee Room 'A'
- SFSG No. 3: Level of Service and Existing Financing
  - 6:30-8pm Wednesday July 4 at City Hall - Committee Room 'A'
- SFSG No. 4: Alternative Funding Options
  - 6:30-8pm Wednesday August 29 at City Hall - Committee Room 'A'
- SFSG No. 5: Proposed Financing Mechanism
  - 6:30-8pm Wednesday September 26 at City Hall - Committee Room ‘B'
- SFSG No. 6: Development of Recommendations for Council
  - 6:30-8pm Wednesday October 24 at City Hall - Committee Room ‘B'

Contacts

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  Transportation and Works Department
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  Email: Lincoln.Kan@mississauga.ca

- Consultant (AECOM)

  Mr. Mike Gregory
  Senior Water Resources Engineer
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  Email: mike.gregory@aecom.com

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Kitchener, ON, Canada N2P 0A4 519.650.3424 fax
www.aecom.com

Minutes of Meeting

Date of Meeting	November 14, 2012	Start Time	6:00pm	Project Number	60247202
Project Name	Mississauga Stormwater Financing Study				
Location	City Hall, Committee Room 'A'				
Regarding	Stormwater Financing Stakeholder Group – Meeting #6				
Attendees	(see attached sign-in sheet)				
Distribution	Attendees; file.				
Minutes Prepared By	Mike Gregory, David Arseneau				

PLEASE NOTE: If this report does not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

	Action
1. Group Welcome/Business • Lincoln Kan opened the meeting by welcoming the Group members and introductions were conducted around the table. • The Group was asked for additional comments or questions since the last meeting; no questions were presented.	
2. Presentation • A presentation was given by Mike Gregory (AECOM) and Dave Arseneau (AECOM) providing an overview of the City of Kitchener stormwater utility credit policies (as an example of what a potential credit program may look like), and to present staff recommendations on future service levels and funding options for the City's stormwater system. Please see the attached presentation slides for the contents. • The following describes questions and topics of discussion that arose during the presentation or in the open discussion following the presentation. • Q: Regarding the list of exempt and non-exempt entities shown on slide 18, who's opinion is this? • A: This is the opinion of the City's solicitor with assistance from an external legal consultant. There are some provincial acts that supersede the Municipal Act, and this forms the legislative basis for a user fee such as a stormwater rate. Although some properties are exempt from tax (and contribute payment-in-lieu-of-taxes, or PILT, in many cases), not all tax-exempt properties would be fee-exempt. • Q: Is there a footnote to recommendation #1 that includes a gradual increase of the service level to the sustainable level? • A: This is currently under discussion, but is expected to be the case. The timeline for the	

increase would be on the order of 10 years or longer. Any increase to a potential stormwater rate would have to be approved by City Council, similar to property tax increases. • Q: Regarding recommendation #4, does this mean that there will be no credits for residential property owners other than coupons to spend more money? • A: The details of a potential credit program are currently unknown, but the City plans to develop a credit policy if Council decides to proceed with implementation. • Q: Will the existing $15 million stormwater budget disappear from the tax bill once a potential rate is implemented? • A: Remember that only $8.9 million is currently funded from the tax bill, with the remaining coming from reserves that are rapidly dwindling. If the user fee is adopted, then yes, the current $8.9 million would no longer be drawn from the City tax levy. • Q: If that's the case, then would residents see a tax savings? • A: This would depend on the budget requirements from other services. Council would want to be very transparent about this process, and will make sure if something replaces stormwater funding on the tax bill that everyone will know what it is and why. • Q: Would the GTAA benefit from a reduction to their PILT? • A: The PILT is calculated differently from property taxes, and would not be affected in the same way due to eliminating stormwater funding from the tax base. • Q: The presentation speaks of a rational nexus that a stormwater user fee would satisfy (i.e., rational connection between a fee charged and a service provided); however, the GTAA already has a significant amount of stormwater management infrastructure servicing the airport. • A: The City recognizes this, and there would need to be a very detailed review of the airport's current infrastructure prior to developing a credit policy, if implementation proceeds. • Q: What governance will be put in place around use of the fund that will be collected for future storm pipe reinvestment? • A: These funds will be put into a dedicated account that can only be used for its stated purpose. This is legislated under the Municipal Act. Peel Region does the same with the water and sewer rate asset renewal funds that they collect. • Comment (Gail Robinson): I would like to thank the committee and City staff for their hard work through this study. • Q: Regarding a potential credit program, would it be based on the Kitchener model? • A: The details of a credit policy would be determined if Council elects to proceed with implementation. The Kitchener program would serve as a useful starting point. • Q: Regarding a credit program, for "ponds maintained by the City", what about ponds that were built by the developer and then assumed by the City? • A: There would be no credit for these ponds. The construction of the ponds was funded	

through Development Charges, however ongoing operations and maintenance of the ponds is paid by the City and creates an ongoing budget pressure. • Comment: Please note that when you define what stormwater features are eligible for credits then you are putting a limit on innovation. Credit policies should be as broad as possible in order to encourage new innovative approaches to controlling stormwater runoff. • Q: Does the City foresee any issues between similar property types that would be fee exempt and those that would not be (i.e., between colleges and universities)? • A: The list shown on slide 18 is a reflection of current legislation and is based on the opinion of the City's solicitor. For example, colleges and universities are formed and administered under different legislation, which interact differently with the Municipal Act. To be as fair as possible, the City plans to bill everyone that is legally allowed. However, Council may grant exceptions to these, likely in the form of grants, or may decide to go against the legal opinion and bill fee-exempt properties (as was done in Kitchener). • Q: Regarding the numbers shown on slide 16 (i.e., Tiered SFU analysis), do they account for fee-exempt properties? • A: No, these numbers include all properties. The legal opinion was provided to staff just this morning. However, approximately 10% of non-residential properties are expected to be fee exempt. Slide 19 shows the impact of exemptions in terms of the proposed base rate charges. • Q: In the Lisgar area, many properties have been classified as being in the floodplain and have lost their insurance for water-related damages. Additionally, many properties throughout the community have implemented stormwater management controls. How firm is the credit policy recommendation regarding only incentives (i.e., coupons or one-time rebates) rather than credits for residential properties? • A: This is staff's initial recommendation, City Council will make the ultimate decision regarding the structure of a credit program to be explored during implementation. The issue with allowing credits for residential properties is entirely related to the high administration costs that would be required; it is expected that there would be better efficiencies to offer incentives. • Comment: It is vital that resident's voices are heard. The Lisgar Residents Association is very active and supportive of sustainable development, but when you add the stormwater user fee onto current homeowner costs, it becomes a significant burden to residents. • Response: Maintaining the current service levels will only create more problems in the future, especially considering the increasing pressure of climate change that will continue to grow. • Q: So why wouldn't the sustainable level be preferred for immediate implementation? • A: We felt that if the sustainable servicing level were implemented immediately, the funding burden would be too large too soon. • Comment: Generally the Lisgar Residents Association supports the user fee, but would like recognition in the credit program for residential homeowner equity. • Q: How will the Cooksville Creek improvements be funded? Through the pipe	

investment fund? • A: The Cooksville Creek projects have been included in capital funding forecasts under the interim and sustainable levels of service scenarios. • Comment: The storm pipe reinvestment fund should have a broader purpose so that it can be applied to more stormwater projects other than pipes. The City needs a rainy day fund to adapt to changing conditions. • Comment: Water quality is also an important concern to the public, considering, for example, the deteriorating quality of the Credit River. • Comment: We would eventually like to see a Provincial/Federal water quality credit or incentives, since all water resources are connected; it is larger than just a local/municipal issue. This would be unlikely, though, considering the large cuts made by the Federal government in recent years. • Q: Regarding slide 21, would like to see some churches on the list in order to determine the impact of various funding scenarios. • A: Sample charges for additional churches will be included in the report. • Q: There are concerns with the accuracy of the impervious area measurements and property evaluation: 3 of 3 churches that were evaluated were reviewed inaccurately (for example, indicated that some water on the St. Peter's property went somewhere that it doesn't in reality). We will be paying a lot to administer a potential rate system, so you need to be sure that it is accurate. • A: As part of the implementation phase, the City would include an appeals process to address any apparent errors noted in the property evaluations. • Comment: Since this is a start-up process, the City would need to go through a notification process, similar to what is done with tax increases. It needs to show where the numbers and charges are coming from. The process is simple for residences but more complicated for the non-residential properties. If no communication is undertaken about the numbers, there will be a large backlash. • A: The City will strive to be as transparent as possible about the charges and how they were determined. • Comment: perhaps several examples of how certain properties were evaluated could be included with communications. • Q: Is the legal opinion presented in the slides recent? • A: It has been in discussion, but was just finalized for briefing to Council this morning. • Comment: The legal opinion is making the process move from fair and equitable to what is legally allowed. • Response: We feel that the process remains fair and equitable as much as is the City is legally allowed to enact a user fee. Even with the fee exemptions, it is the opinion of City staff that the user fee is much more fair and equitable than the current tax system. • Q: Is the tax system any more transparent than a potential user fee? • A: No, it is less transparent. Funding for many services becomes combined into a single source of revenue.	AECOM

• Comment: There may be greater transparency from a stormwater spending perspective, but not regarding the total funding impact to residents. As long as stormwater is on the tax bill, it is clear to residents that if the City needs more money, then the tax bill goes up. This is not a discussion of the need for more stormwater funding, just for clarity and equity. • Response: There are many inequities in the tax system. Property values can swing and create a change in the taxes paid by the owner with no change in the services provided by the City. • Comment: But having the increased funding on the tax bill would also avoid the administration costs of a new program. • Response: That is true, and that is the biggest disadvantage of a new user fee. • Q: What will happen if and when the legal opinion changes or evolves? • A: Changes in the legal opinion would need to be reflected in the program and approved by Council as necessary. The legal opinion is not law until a judge decides that it is. • Comment: Respectfully asked that City staff be mindful of the language in the report and recommendations to Council. There is inequity in incentivizing rather than providing credits for residential property owners, but current credit recommendations are only for non-residential properties. In addition, many people will be overwhelmed by the system, and staff need to be conscious of this. • Q: What about considering changes to road design standards, such as getting rid of curb and gutter where possible? • A: The City used to have a rural road conversion program that allowed ditched roads to be converted to curb and gutter. The City has since stopped this program, and is looking at alternatives to promote better stormwater management such as Low Impact Development (LID) features on all road projects.	
3. Concluding Statements • This is the final stakeholder meeting and City staff are very appreciative of the time and energy that group members have contributed to this study. Additional feedback can still be included in the study report if written input is received by Lincoln Kan (Lincoln.Kan@mississauga.ca) by November 21, 2012. • The study results and recommendations will be presented before the General Committee of City Council on Wednesday December 5, 2012. Deputations from members of the public are encouraged so that Council members are informed when making their decision regarding City staff recommendations. Parties interested in making a deputation are required to register with the Clerk's Office prior to the Council meeting date (preferred 72 hours in advance). • The second Public Information Centre (PIC) for the study is scheduled for Tuesday November 20, 2012 at Iceland (705 Matheson Blvd. E) - North Lounge. The meeting will be held from 6:30pm to 8:00pm.	

Attachments:

1. Sign-in sheet "MississaugaStormFinancing_SFSG6_Attendees_14Nov2012.pdf"
2. Presentation handout "Mississauga_StormwaterFinancing_SFSG6_final.pdf"

City of Mississauga - Stormwater Financing Stakeholder Group
Sign-In Sheet (Meeting No. 6, 14-Nov-2012)

Name	Affiliation	Phone	E-mail	Present?
Christine Capewell	University of Toronto (Mississauga)	905-828-5405	christine.capewell@utoronto.ca	✓
Dan Labrecque	Region of Peel	905-791-7800 x4395	dan.labrecque@peelregion.ca	
Jeff O'Leary	Friends of Lake Wabukayne Stewardship	905-363-4622	jefftoleary@yahoo.ca	
Derek Gray	GTAA	416-776-3049	Derek.Gray@gtaa.com	✓
Paul Mountford	Peel District School Board	905-890-1010 x2217	paul.mountford@peelsb.com	
Gary Kramer LINO MALITO FOR.	Orlando Corporation	905-677-5480	kramerg@orlandocorp.com	✓
Michael Ewaschuk	Credit River Anglers Association	519-580-1708	mewaschuk@nrsi.on.ca	
Darren O'Neil	Sheridan Park Association	905-403-4200	DONeil@hatch.ca	
J-M Rouleau	Oxford Properties Group (Square One)	905-270-7771	jrouleau@oxfordproperties.com	✓
Linda Pinizzotto	Condo Owners Association (Mississauga)	416-561-7373	linda@lindapinizzotto.com	
Kiruthiha Kulendiren	Lisgar Residents Association	416-975-8603	KKulendiren@Bluelotus.ca	✓
Christine Zimmer	Credit Valley Conservation	905-670-1615	czimmer@creditvalleyca.ca	✓ Robb Lukes on behalf
Richard Dundas	Gordon Woods Homeowners Association	905-279-3321	rdundas006@sympatico.ca	
Michael DeWit	Environmental Advisory Committee	905-274-0391	mdewit@rogers.com	✓
Roger Coote	Cooksville Creek Task Force	416-616-4311	thecootes@bell.net	✓
Steve Blaney	Sherwood Forest Residents Association		steveblaney@rogers.com	
Bri-Ann Stuart	Dixie Outlet Mall		Bri-Ann.Stuart@ivanhoecambridge.com	✓
Gail Robinson	Dufferin-Peel Catholic District School Board	905-890-0708 x24259	gail.robinson@dpcdsb.org	✓
Rev. Jennifer Reid	St. Peter's Anglican Church (Erindale)		rector@stpeterserindale.org	✓
Vida Stripinis	Gordon Woods Homeowners Association	905-279-9412	vida.stripinis@sympatico.ca	
Matt Coleridge	RJ Burnside (for Oxford)	905-821-1800	matthew.coleridge@rjburnside.com	✓
Kris Horvath	University of Toronto (Mississauga)	905-301-1556	kristian.horvath@utoronto.ca	✓
Dave Ashfield	The Municipal Infrastructure Group	905-738-5700	dashfield@tmig.ca	
Project Team				
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Lincoln Kan	City of Mississauga	905-615-3200 x4086	Lincoln.Kan@mississauga.ca	✓
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Kimberly Hicks	City of Mississauga	905-615-3200 x5232	Kimberly.Hicks@mississauga.ca	✓
John Murphy	City of Mississauga	905-615-3200 x5290	John.Murphy@mississauga.ca	
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Mike Gregory	AECOM	519-650-8697	Mike.Gregory@aecom.com	✓

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Michael Maslivec City of Mississauga Wendy Alexander COM
Patti Elliott-Spencer - City of Mississauga

City of Mississauga - Stormwater Financing Study

Stormwater Financing Stakeholder Group
November 14, 6:00-8:00 pm – Meeting No. 6
Civic Centre (Committee Room ‘A')

Project Manager: Lincoln Kan, P.Eng.
Consultant PM: Mike Gregory, P.Eng., AECOM

Group Welcome/Business

- Introductions/New Members
- Acceptance of previous meeting minutes (Meeting No. 5, Sept 26)
- Additional comments or questions since last meeting?

Tonight's Meeting

- Objectives: For Stakeholder Group members to understand the staff recommendations on:
  - Service level for the City's future stormwater program
  - Funding option to support this service level
  - Implementation strategy
- Additional stakeholder requests (Credit examples, Flat Fee option)
- Project Findings
  - Future program service levels
  - Funding options
- Staff Recommendations & Open Discussion
- Financing Study – Next Steps

CREDITS (KITCHENER-WATERLOO)

Kitchener Stormwater Utility Credit Policy

- Kitchener City Council adopted the credit policy in March 2012, retroactive to the beginning of the utility (January 2011)
- Credits provide a maximum reduction of 45% to the stormwater utility charge for both residential and non-residential customers
- SWM features located off-site or on a permanent City easement are not eligible for the credit, only those features that are located on the property and are maintained/operated by the property owner
- To receive the credit, the customer completes an application form which may be field-verified by City staff
  - Application must be renewed by the customer on an annual basis
  - Credit is revoked if SWM feature is found to be non-functional

Kitchener Stormwater Utility Credit Policy

- Kitchener undertook a detailed evaluation of credit policy alternatives and impacts in cooperation with the City of Waterloo
- Credit policy alternatives:
  1. Do nothing
  2. Non-residential credits
  3. Residential credits
  4. Rebate program
  5. Combination (2&3, 2&4)
- Financial impact analysis was conducted using estimated credit uptake rates, not including any projected new development
- Policy alternatives were evaluated based on a wide range of economic, environmental and social criteria
- Preferred alternative was combination of alternatives 2 and 3

Non-Residential and Multi-Family Residential Credit Policy Structure

Credit Component	Maximum Credit	Calculation
Water Quantity	25%	Based on the percentage of impervious area on the property that is directed to a stormwater facility, scaled to a maximum of 25%.
Water Quality	15%	Based on the level of water quality protection provided by stormwater facility, as per Ministry of Environment standards: • 15% credit – Enhanced protection • 10% credit – Normal protection • 5% credit – Basic protection
Education	5%	Credit available for educating employees/members about flood prevention and pollution reduction topics, as well as posting and distributing educational information provided by the City or other provincial/federal environmental agencies.

Residential Credit Policy Structure

Credit Component	Maximum Credit	Calculation
Water Quantity	45%	Based on the runoff storage volume provided on the property: • 9% - 200-400L (1-2 rain barrels, small cistern) • 18% - 401-800L (3-4 rain barrels, small cistern) • 27% - 801-2400L (large cistern, combination with rain barrels) • 36% - 2401-3200L (large cistern, combination with rain barrels) • 45% - 3201L+ (large cistern, infiltration gallery)
Water Quality	0%	Water quality credits are not available to residential customers, as residential properties typically do not significantly contribute to water quality issues.
Education	0%	Education credits are not available to residential customers.

STORMWATER PROGRAM – FUTURE SERVICE LEVELS

Future Stormwater Program Service Levels

Status Quo	Interim	Sustainable
▪ Based on 2012 Capital and Operating Budget – maintains current service level ▪ Unfunded Capital Program needs identified in 10-year Capital Plan would remain unfunded ▪ Unfunded Operations and Maintenance pressures would remain unfunded ▪ No money would be put aside for future storm infrastructure renewal needs (storm pipe system)	▪ All currently identified Capital, Operations and Maintenance and pipe renewal needs would be funded ▪ Introduces a "Pipe Renewal" reserve fund, starting with an initial annual collection rate of $2.4 million (0.15% of the $1.6 billion (2012) storm pipe system replacement cost)	▪ All currently identified Capital, Operations and Maintenance and pipe renewal needs would be funded ▪ Introduces a "Pipe Renewal" reserve fund with an annual collection rate of $16 million (1% of the $1.6 billion (2012) storm pipe system replacement cost)
Annual Cost = $14,650,000	Annual Cost = $26,610,000	Annual Cost = $39,490,000

FUTURE STORMWATER FUNDING OPTIONS

Property Tax Option

Stormwater Program Item	Status Quo (2012)[1]	Pay-As-You-Go Financing of Future Stormwater Management Program (2014-2023)								
		Status Quo			Interim			Sustainable		
Program Cost	$14,650,000	$14,650,000			$26,610,000			$39,490,000		
Property Tax & PILT Allocation	2.36%	3.96%			7.19%			10.67%		
Single-Family Detached Home		Charge	Δ	%	Charge	Δ	%	Charge	Δ	%
10-percentile assessed value	$22.10	$37.13	$15.03	68%	$67.44	$45.34	205%	$100.09	$77.99	353%
50-percentile assessed value	$28.58	$48.01	$19.43	68%	$87.21	$58.63	205%	$129.42	$100.85	353%
90-percentile assessed value	$40.69	$68.36	$27.67	68%	$124.16	$83.47	205%	$184.26	$143.57	353%
Brooks Drive	$28.37	$47.66	$19.29	68%	$86.57	$58.20	205%	$128.47	$100.10	353%
Robin Drive	$42.69	$71.72	$29.03	68%	$130.28	$87.59	205%	$193.34	$150.65	353%
Homelands Drive	$27.39	$46.01	$18.62	68%	$83.58	$56.19	205%	$124.03	$96.64	353%
Beacham Street	$31.08	$52.22	$21.14	68%	$94.85	$63.77	205%	$140.76	$109.67	353%
King Richard's Place	$40.14	$67.44	$27.30	68%	$122.50	$82.35	205%	$181.79	$141.65	353%
Condominium										
Sherobee Road	$15.86	$26.64	$10.78	68%	$48.39	$32.54	205%	$71.82	$55.96	353%
Multi-Family (7+ Units)										
Goreway Drive (per unit)	$10.54	$17.71	$7.17	68%	$32.18	$21.63	205%	$47.75	$37.21	353%
Commercial										
Mall	$10,445	$17,548	$7,103	68%	$31,875	$21,429	205%	$47,303	$36,858	353%

Notes:

1. Current program includes $8.7M (Tax & Payment In-Lieu-Of Taxes) plus $5.9M (Reserves & Debt).

Flat Fee Approach

Land Use Category	Land Area (ha)	%
Residential	8,530	29%
Transportation Rights-of-Way	6,000	21%
Industrial	4,450	15%
Open Space/Greenbelt	3,220	11%
School/Public/Institutional/GTAA	2,700	9%
Commercial/Office/Mixed Use	1,750	6%
Vacant/Farm	1,470	5%
Utilities/PublicWorks	590	2%
Community/Place of Religious Assembly	270	1%
Other	90	0%
Total	**29,070**	**100%**

Notes:

1. Categories and areas from TMIG, 2-Oct-2012.

Service Level:	Status Quo (Pay-As-You-Go)	Interim	Sustainable
Program Cost	$14,950,000	$26,910,000	$39,790,000
Base Rate ($/ha/mo)	$46.58	$83.85	$123.98
Base Rate ($/ha/yr)	$558.96	$1,006.20	$1,487.76

Notes:

1. Flat Fee assumes 92% collection with annual administration cost of $300,000.

- Rate calculated based on total property area (not impervious area)
- Does not meet the Fairness & Equity test
  - 1 acre park charged same as 1 acre parking lot

Stormwater Rate – Tiered SFU Analysis

Parcel Type	Number of Parcels	Dwelling Units (d.u.)
Single-Family (small)	9,370	9,370
Single-Family (medium)	74,967	74,967
Single-Family (large)	9,370	9,370
Two Unit Residences	31,205	31,205
Triplex	53	159
4-plex	10	40
5-plex	7	35
6-plex	24	144
Condominium	59,451	59,451
Townhouse/Row House	5,204	5,024
Multi-Family (7+ Units)	298	31,900
Linked Homes	1,945	1,945
Row Housing	51	2,894
Co_Op Housing	23	2,804
Mobile Home Park	3	313
Residential Subtotal	**191,981**	**229,621**
Industrial/Comm/Institutional	10,776	n/a
Miscellaneous	943	
Vacant	3,117	
Unknown	0	
Non-Residential Subtotal	**14,836**	
Total	**206,817**	

- Small Tier: impervious area of properties within the smallest 10 percentile of single-family homes
- Medium Tier: middle 80 percentile
- Large Tier: impervious area of properties within the largest 10 percentile of single-family homes

Equivalent Single Family Unit (SFU) = 266.8 sq.m. (2872 sq.ft.)

Tiered SFU Analysis

Parcel Type	Number of Parcels	Dwelling Units (d.u.)	Est'd Impervious Area (m^2)	
			Total	Avg/d.u.
Single-Family (small)	9,370	9,370	1,723,100	183.9
Single-Family (medium)	74,967	74,967	20,001,200	266.8
Single-Family (large)	9,370	9,370	3,414,400	364.4
Two Unit Residences	31,205	31,205	5,705,500	182.8
Triplex	53	159	18,000	113.0
4-plex	10	40	4,000	100.4
5-plex	7	35	2,500	70.9
6-plex	24	144	12,900	89.9
Condominium	59,451	59,451	3,634,200	61.1
Townhouse/Row House	5,204	5,024	702,900	139.9
Multi-Family (7+ Units)	298	31,900	1,555,100	48.8
Linked Homes	1,945	1,945	341,700	175.7
Row Housing	51	2,894	345,000	119.2
Co_Op Housing	23	2,804	104,000	37.1
Mobile Home Park	3	313	80,900	258.5
Residential Subtotal	**191,981**	**229,621**	**37,645,400**	**163.9**
Industrial/Comm/Institutional	10,776	n/a	53,101,400	n/a
Miscellaneous	943		included in total above	
Vacant	3,117			
Unknown	0			
Non-Residential Subtotal	**14,836**		**53,101,400**	
Total	**206,817**		**90,746,800**	

Equivalent Single Family Unit (SFU) = 266.8 sq.m. (2872 sq.ft.)

Tiered SFU Analysis

Parcel Type	Number of Parcels	Dwelling Units (d.u.)	Est'd Impervious Area (m^2)		SFU Factor	SFU Distribution	
			Total	Avg/d.u.		Count	%
Single-Family (small)	9,370	9,370	1,723,100	183.9	0.69	6,459	1.9%
Single-Family (medium)	74,967	74,967	20,001,200	266.8	1.00	74,967	22.0%
Single-Family (large)	9,370	9,370	3,414,400	364.4	1.37	12,798	3.8%
Two Unit Residences	31,205	31,205	5,705,500	182.8	0.69	21,385	6.3%
Triplex	53	159	18,000	113.0	0.42	67	0.0%
4-plex	10	40	4,000	100.4	0.38	15	0.0%
5-plex	7	35	2,500	70.9	0.27	9	0.0%
6-plex	24	144	12,900	89.9	0.34	49	0.0%
Condominium	59,451	59,451	3,634,200	61.1	0.23	13,622	4.0%
Townhouse/Row House	5,204	5,024	702,900	139.9	0.52	2,635	0.8%
Multi-Family (7+ Units)	298	31,900	1,555,100	48.8	0.18	5,829	1.7%
Linked Homes	1,945	1,945	341,700	175.7	0.66	1,281	0.4%
Row Housing	51	2,894	345,000	119.2	0.45	1,293	0.4%
Co_Op Housing	23	2,804	104,000	37.1	0.14	390	0.1%
Mobile Home Park	3	313	80,900	258.5	0.97	303	0.1%
Residential Subtotal	**191,981**	**229,621**	**37,645,400**	**163.9**		**141,102**	**41.5%**
Industrial/Comm/Institutional	10,776	n/a	53,101,400	n/a	n/a	199,031	58.5%
Miscellaneous	943		included in total above			included in total above	
Vacant	3,117						
Unknown	0						
Non-Residential Subtotal	**14,836**		**53,101,400**			**199,031**	**58.5%**
Total	**206,817**		**90,746,800**			**340,133**	**100.0%**

Equivalent Single Family Unit (SFU) = 266.8 sq.m. (2872 sq.ft.)

Stormwater Rate Calculation (Tiered SFU)

- Total Billing Units: 340,000
- Collection Rate: 92% (may be lower, subject to Credit Policy)
- Program Cost:

Stormwater Program Item	Status Quo	Interim	Sustainable
Capital	$8,030,000	$15,540,000	$15,540,000
Operations & Maintenance	$6,620,000	$7,950,000	$7,950,000
Storm Pipe Reinvestment	$0	$3,120,000	$16,000,000
Rate Administration	$770,000	$770,000	$770,000
Program Total	**$15,420,000**	**$27,380,000**	**$40,260,000**

- Base charge ($/SFU/month):
  - Status Quo: $ 4.11 ($ 49.32 per year)
  - Interim: $ 7.29 ($ 87.48 per year)
  - Sustainable: $10.73 ($128.76 per year)

Municipal Authority to Enact Fees & Charges

- Entities exempt from user fee:
  - The Crown
    - Canada Lands Company Limited
    - Canada Post Corporation
    - Metrolinx (GO Transit)
  - Colleges
  - School Boards

- Entities subject to user fee:
  - Greater Toronto Airports Authority
  - Ontario Power Generation Inc.
  - Universities
  - Private Schools
  - Public and Private Hospitals
  - Regional Municipality of Peel
  - City of Mississauga
  - Conservation Authorities
  - Places of Worship
  - All other private properties

Rate Exemptions – Impact to Base Charge

- Approximate impervious area for fee-exempt properties
  - 5.8 million square meters = 21,940 billing units
- Total Billing Units: 340,000 – 21,940 = 318,060
- Base charge ($/SFU/month):
  - Status Quo: $ 4.39 ($ 52.68 per year)
  - Interim: $ 7.80 ($ 93.60 per year)
  - Sustainable: $11.47 ($137.64 per year)

Stormwater Rate Option (Tiered SFU, with Exemptions)

Billing Units (SFU)	Service Level:	Status Quo (Pay-As-You-Go)	Interim	Sustainable
	Program Cost	$15,420,000	$27,380,000	$40,260,000
	Base Rate ($/SFU/mo)	$4.39	$7.80	$11.47
Single-Family Detached Home				
0.7	10-percentile (Small Tier)	$36.31	$64.52	$94.87
1.0	10-percentile assessed value	$52.68	$93.60	$137.64
1.0	50-percentile assessed value	$52.68	$93.60	$137.64
1.0	90-percentile assessed value	$52.68	$93.60	$137.64
1.4	90-percentile (Large Tier)	$71.95	$127.84	$187.99
1.0	Brooks Drive	$52.68	$93.60	$137.64
1.0	Robin Drive	$52.68	$93.60	$137.64
1.0	Homelands Drive	$52.68	$93.60	$137.64
1.0	Beacham Street	$52.68	$93.60	$137.64
1.0	King Richard's Place	$52.68	$93.60	$137.64
Condominium				
0.2	Sherobee Road	$12.07	$21.45	$31.54
Multi-Family (7+ Units)				
0.2	Goreway Drive (per unit)	$9.63	$17.10	$25.15
Commercial				
519.1	Mall	$27,346	$48,587	$71,448

Notes:

1. Rate assumes 92% collection with annual administration cost of $770,000.

Comparison: Tax versus Stormwater Rate

Stormwater Program Item	Existing (2012)[1]	Future - Interim Service Level (2014-2023)							
		Tax (Pay-As-You-Go)			Rate (Tiered SFU, with Exemptions)				
Single-Family Detached Home		Charge	$\Delta_{Existing}$	%	Charge	$\Delta_{Existing}$	%	Δ_{Tax}	%
10-percentile (Small Tier)	$22.10	$67.44	$45.34	205%	$64.52	$42.42	192%	-$2.93	-4%
10-percentile assessed value	$22.10	$67.44	$45.34	205%	$93.60	$71.50	324%	$26.16	39%
50-percentile assessed value	$28.58	$87.21	$58.63	205%	$93.60	$65.02	228%	$6.39	7%
90-percentile assessed value	$40.69	$124.16	$83.47	205%	$93.60	$52.91	130%	-$30.56	-25%
90-percentile (Large Tier)	$40.69	$124.16	$83.47	205%	$127.84	$87.15	214%	$3.68	3%
Brooks Drive	$28.37	$86.57	$58.20	205%	$93.60	$65.23	230%	$7.03	8%
Robin Drive	$42.69	$130.28	$87.59	205%	$93.60	$50.91	119%	-$36.68	-28%
Homelands Drive	$27.39	$83.58	$56.19	205%	$93.60	$66.21	242%	$10.02	12%
Beacham Street	$31.08	$94.85	$63.77	205%	$93.60	$62.52	201%	-$1.25	-1%
King Richard's Place	$40.14	$122.50	$82.35	205%	$93.60	$53.46	133%	-$28.90	-24%
Condominium									
Sherobee Road	$15.86	$48.39	$32.54	205%	$21.45	$5.59	35%	-$26.95	-56%
Multi-Family (7+ Units)									
Goreway Drive (per unit)	$10.54	$32.18	$21.63	205%	$17.10	$6.56	62%	-$15.07	-47%
Commercial									
Mall	$10,445	$31,875	$21,429	205%	$48,587	$38,142	365%	$16,713	52%

Notes:

1. Current program includes $8.7M (Tax & Payment In-Lieu-Of Taxes) plus $5.9M (Reserves & Debt).

Credit Philosophy – Relate Services to Cost Savings

- Consider cost savings for all components of the collection system, storage/treatment facilities, outfalls, and downstream watercourse:
  - Water quantity control (flooding and erosion protection)
  - Water quality treatment
  - Environmental enhancements (habitat, baseflows, receiving water impacts)
- Consider City standards & SWM requirements at time of development
- Distinguish by Capital, O&M, Storm Pipe Reinvestment, and Admin
- Distinguish local services versus City-wide services
- Amount of expenditures = amount of revenue collected for stormwater and the credit policy maintains this overall balance. Individually:
  - Significant SWM facilities on site = significant credit on stormwater charge

STAFF RECOMMENDATIONS

Future Service Level

- The existing stormwater program does not meet the City's current needs for capital, operations & maintenance, and pipe reinvestment
- ***Recommendation 1: That the Interim service level be selected for the City's stormwater management program***. This represents a $26.6M annual program, including full funding of priority capital projects, increased O&M, and an initial Storm Pipe Renewal reserve fund.

Funding Mechanism

- A user pay model should be implemented that is fair and equitable – based on the contribution of stormwater runoff, as indicated by the amount of impervious cover on each property
- Distinguish the variability in impervious area for all properties, which is consistent with the fairness and equity principle
- ***Recommendation 2: That a user fee in the form of a stormwater rate be implemented to support the Interim service level, based on the Tiered SFU rate structure***

Recommendations (continued)

- ***Recommendation 3: That everyone be charged a stormwater rate unless exempted through legislation***
- ***Recommendation 4: Implement a credit program***
  - Credits be applied to non-residential properties that provide on-site stormwater management measures.
  - Incentives be provided to residential properties which may include discount coupons for rain barrels, for example.
- ***Recommendation 5: Proceed with the implementation phase, with billing to begin July 2013***


Capital Projects
Emergency Response
Operations / Maintenance
Stormwater Management
Public Involvement Programs
Administration / Enforcement
Finance
Engineering / Support Services

NEXT STEPS

Project Schedule

	2012										
Task / Description	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1. Existing Stormwater Management Program											
2. Future Stormwater Management Program											
3. Funding Options											
4. Stakeholder Meetings and Draft Report											
5. Final Report											

- PIC No. 2 to be held Tuesday November 20 at the Living Arts Centre
- Recommended implementation plan presented to Council in December
  - General Committee meeting December 5
  - Council meeting December 12

Stormwater Financing Study

Public Information Meeting No. 1

Wednesday June 27, 2012

6:30 – 9:00 pm

Living Arts Centre of Mississauga
4141 Living Arts Drive

Please complete the sign-in sheet and review display materials.
The project team is available to answer your questions and address any concerns.

Your input is valued!
Please fill out a comment sheet.

Stormwater Financing Study

Stormwater Management

Stormwater management is a service that keeps a low profile, but ***without adequate funding can lead to serious problems that will only get worse unless steps are taken now***

- Stormwater runoff is generated when precipitation from rain and snowmelt flows over land and does not percolate into the ground
- Hard surfaces such as rooftops and parking areas increase runoff and pollutants into waterbodies compared to natural conditions
- Controlling the amount of runoff and quality of water entering the creeks, rivers and Lake Ontario, our source of drinking water, is a main focus of the City's stormwater management program

Possible Causes of Stormwater Problems in Municipalities

- Urbanization: Growth and development alters the amount of runoff and pollution
- Aging infrastructure: Pipes, culverts and outfalls have limited life expectancy
- Changing design standards: Systems designed to old standards may be inadequate with respect to current and future regulatory requirements
- Lack of long term planning: Appropriate resources, facilities, and improvement projects must be proactively planned to address needs and problems
- Limited maintenance: Facilities must be actively operated; watercourses maintained; and streets, catchbasins, culverts and outfalls cleaned
- Poor design or faulty construction: Developer plans must be thoroughly reviewed and sites adequately inspected during construction
- Climate Change: Facilities respond to rainfall events that are becoming more intense and with greater frequency

New Development

Aging Infrastructure

Aging Infrastructure

Flooding

Culvert Blocked with Debris

The City is responsible for managing all aspects of stormwater. However, the City's ability to effectively and adequately perform its duties are limited by available funding.

Stormwater Financing Study

Study Background & Project Organization

Study Background – Program Goals

Council recognized that sustainable funding is needed to satisfy the City's current and future stormwater management program needs and authorized in Summer of 2011 that a Stormwater Financing Study be initiated. The City contracted AECOM in February 2012 to undertake the study with the main objective of determining the most equitable and fair approach to satisfying these current and long term requirements.

Project Organization

Undertaken by: Staff Working Team under the direction of a Steering Committee including senior City management

Advised by: Stormwater Financing Stakeholder Group (representatives from stakeholders including ratepayer groups, the business and development communities, tax-exempt properties and others such as conservation authorities) as well as the general public

The recommended implementation plan is to be presented to Council in October . The schedule is shown below.

	2012										
Task / Description	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1. Existing Stormwater Management Program	■	■	■	■							
2. Future Stormwater Management Program		■	■	■	■						
3. Funding Options			■	■	■	■	■				
4. Stakeholder Meetings and Draft Report		■	■	■	■	■	■	■	■		
5. Final Report									■		

Highlights of Study Tasks

The consulting team has been tasked to identify, review and evaluate alternative funding mechanisms to support the City's stormwater management program and to recommend the preferred funding approach. To achieve this goal, the following steps are being undertaken by the project team:

- Compile and quantify the cost of the City's existing stormwater management program including operations and maintenance, asset management, planning and monitoring activities and capital plans
- Develop and evaluate various stormwater management program options based on varying levels of service and recommend a program that will meet the desired levels of service, targets for compliance with regulations and other future pressures
- Review available stormwater financing options
- Recommend the preferred option that offers a fair and equitable method for allocating the costs of the stormwater management program
- Develop a strategy to implement the recommendations

In addition to the above, an integral part of this study is the formation of a Stormwater Financing Stakeholder Group (SFSG). Members from this group of participants include representatives from stakeholders such as ratepayer groups, business and development communities, tax-exempt properties and others such as conservation authorities. They will be asked to represent the views of their organizations or sector and provide advice and input on issues such as overall community goals and priorities of the City's stormwater management program and feedback on setting an affordable/sustainable level of service and expenditures to meet these needs.

Another important component of the public consultation program is tonight's Public Information Meeting. The City wishes to engage its citizens, business owners and other members of the community with the goal of providing an inclusive, traceable and useful opportunity for dialogue between City staff and stakeholders. Your insight and input is both a valuable and necessary step towards this goal and we encourage you to provide written comments to be communicated to City officials.

Hydrologic Cycle

Natural Hydrologic Cycle

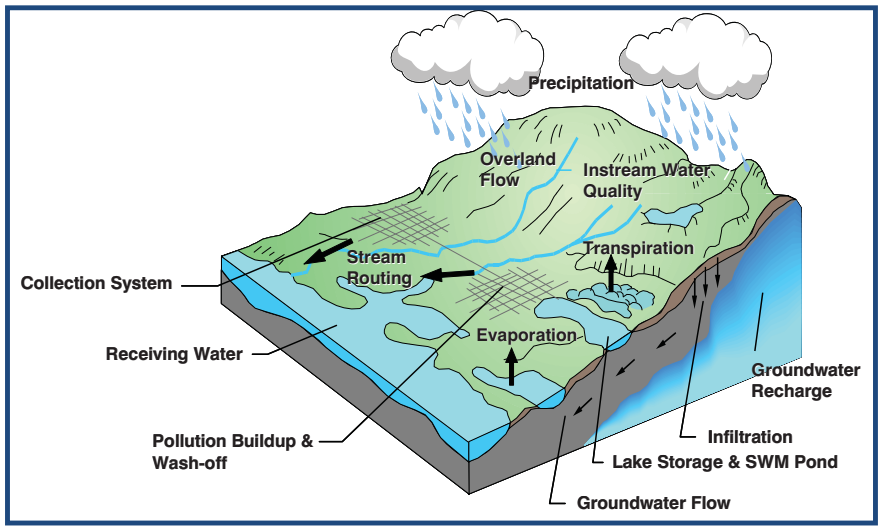
The hydrologic cycle encompasses the movement of water over, under and above the earth's surface, including rain/snow, rivers, lakes, etc. The environment forms itself around this movement of water, and any disruption to the natural cycle inevitably causes a disruption in many other areas of the environment, such as wildlife and vegetation.

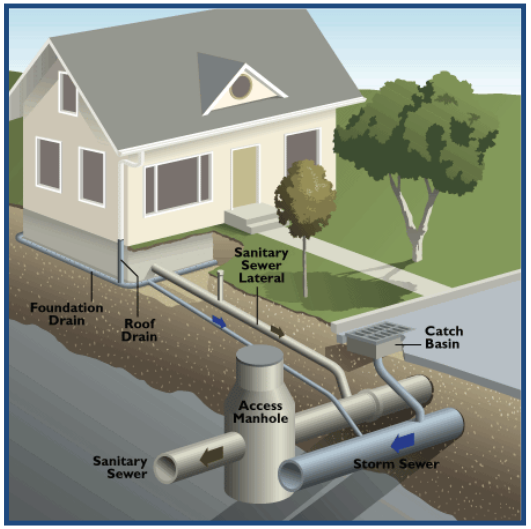
Low Runoff

Urban Hydrologic Cycle

Urbanization affects the hydrologic cycle through the disruption of the natural drainage paths and the increase of impervious surfaces throughout the watershed. These disruptions can significantly alter the environment in the areas which they occur. Stormwater management techniques are used in urban areas to help mitigate the effects of these disruptions, and to attempt to restore the natural water balance and environment.

High Runoff

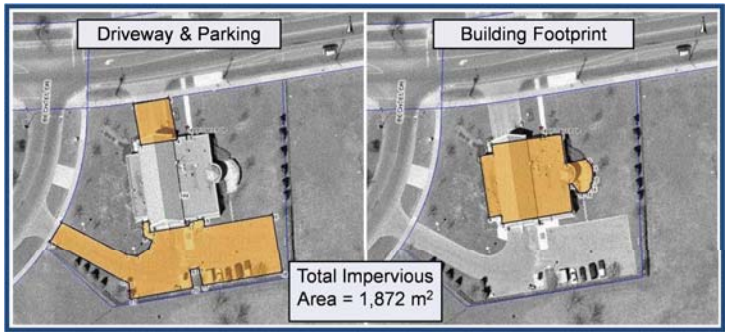




Impervious Area

Impervious area includes surfaces that prevent stormwater from infiltrating into the ground such as roads, parking areas, driveways, sidewalks, building rooftops, and similar structures. These areas generate more runoff, transport it more quickly, and accumulate more pollutants than from an equivalent natural area.

Imperviousness is the percentage of impervious cover within a given area of land, and is often measured through aerial photo interpretation. The impervious areas for a single property are highlighted in yellow in the figure on the right: the building rooftop area or "footprint "(right panel), and all other types of impervious areas (left panel). The sum total is 1,872 m^2 of impervious area on a 3,900 m^2 lot, or 48% imperviousness.



Impacts of Imperviousness

Increased imperviousness can result in a combination of adverse impacts and environmental consequences, including:

- Increased flooding frequency, severity, and extent of inundation during storm events
- Increased sediment and pollutant loads to rivers, lakes, and groundwater resources
- Increased temperature in receiving waterbodies
- Reduced baseflow in streams and reduced groundwater recharge
- Reduced stability of streams and wetland systems (i.e., increased streambank erosion)
- Degraded habitat and reduced biological diversity

Although rainfall is unpredictable, the amount of impervious area can be controlled by landowners. Impervious areas affect the amount of runoff generated by the landowner's property which contributes to the City's stormwater management system.

Stormwater Management Challenges

Types of Stormwater Challenges

Flooding

Flooding is the most visible of stormwater problems. Serious flooding presents a threat to public safety and can damage public and private property, disrupt business, and hamper our everyday activities.

Cooksville Creek Flooding

Credit River Flooding

Water Quality

Road salt, chemical spills, eroded sediments and debris can pollute watercourses. Stormwater management systems can protect water quality when adequately operated and maintained.

Water Quality

Water Quality

Stormwater Management Challenges

Types of Stormwater Challenges

Erosion

Water traveling quickly over an unprotected surface will cause that surface to erode. Controlling the movement of runoff is important to prevent the erosion of stream banks, hill slopes and even structures.

Cooksville Creek – Bank Erosion

Cooksville Creek – Bank Erosion

Debris

Flowing water carries whatever it can and deposits this material when obstructions are in the way. This can cause a build up of debris that blocks water getting through and may cause flooding as a result.

Fletcher's Creek – Woody Debris

Loyalist Creek – Urban Debris

Mississauga's Current Stormwater Assets

Mississauga Stormwater Inventory	Est. Quantity	Unit of Measure	Estimated Useful Life (Years)	Average Network Age	Closing Net Book Value (2011)	Total Replacement Value (2011)
Storm sewers	2,000	km length	100	29	$534 Million	$1.6 Billion
Catch basins	48,000	number				
Stormwater manholes	28,000	number				
Outlets to receiving waters	1,000	number				
Diversion structures (trunk sewers)	100	km length				
Ditches / storm water swales in urban areas	250	km length				
SWM Facilities (Hard and Soft Components)	57	number	25-50	19	$26 Million	$76 Million
Watercourses, Streams, Rivers, and Creeks (31 Separate Creeks)	200	km length	25	18	$21 Million	$58 Million
Total Cost						**$1.7 Billion**

Stormwater Financing Study

Provincial and Federal Legislation

- The **Ontario Water Resources Act** (OWRA, RSO 1900 and amendments) prohibits activities that introduce pollutants into waterbodies
- **Provincial Water Quality Objectives** (PWQO) serve as chemical and physical indicators for Ontario's surface and ground waters
- **Ontario Water Opportunities Act, 2010** will conserve and sustain water resources for present and future generations
- The **Ontario Clean Water Act**, **2006** ensures communities are able to protect their municipal drinking water supplies through developing collaborative, locally driven, science-based protection plans
- The Ontario **Brownfields Act**, **2004** addresses the clean-up process for proposed redevelopment in brownfields, which are abandoned, idle or underutilized commercial or industrial properties where past activities have caused known or suspected environmental contamination
- The Ontario **Sustainable Water and Sewage Systems Act**, 2002 was enacted to help ensure clean, safe drinking water and requires that municipalities recover the full costs of providing essential water and sewer services, through a variety of user fees and charges
- The **Canadian Environmental Protection Act**, **1999** is aimed at pollution prevention, protection of the environment and human health in order to contribute to sustainable development
- Subsection 36(3) of the federal **Fisheries Act** (R.S., 1985, c. F-14) prohibits the deposit of a deleterious substance into water frequented by fish

Agency Guidelines and Requirements

A number of design standards, policies, guidelines and other agency requirements have been developed based on federal and provincial legislation and are described below:

- **Ministry of the Environment** (MOE) - Guide for Applying for Approval of Municipal and Private Sewage Works (MOE, 2000); Stormwater Management Planning and Design Manual (MOE, 2003); Water Management - Policies, Guidelines, PWQOs of the Ministry of the Environment (MOE, 1994)
- **Ministry of Transportation** (MTO) - Drainage Management Manual (MTO, 1997); Stormwater Management Requirements for Land Development Proposals (MTO, 1999)
- **Ministry of Natural Resources** (MNR) - Natural Channel Systems: Adaptive Management of Stream Corridors in Ontario (MNR, 2002); Natural Hazards: Technical Guides for Rivers and Stream Systems and Hazardous Sites (MNR, 2002)
- **Conservation Authorities -** Established under the Conservation Authorities Act to work collaboratively with its member municipalities to address a broad range of issues to jointly undertake water and natural resource management on a watershed basis

Stormwater Asset Reinvestment

Valuation of Assets & Life Cycle Costs

A table of the City's stormwater assets is included on display board No. 8. This table shows the inventory grouped into three broad categories:

- "Pipe" assets which include the buried storm sewers and tunnels as well as open roadside ditches and swales
- "Pond" assets which include stormwater detention facilities
- Watercourse assets which include rivers, creeks and streams

For each asset category, the table shows the quantity, expected service life, average system age, current estimated book value and replacement value. The total replacement value of all City stormwater assets is estimated to be $1.7 billion dollars.

The phrase "Life Cycle Cost" refers to all of the costs incurred during the full life cycle of the asset. These costs start at the time an asset is first considered and extend throughout its entire service life. As shown in the table, the stormwater assets in Mississauga are designed to be in service for a long time (25 -100 years).

Reinvestment Options

A stormwater management system is only sustainable when it is properly designed, operated and maintained at the appropriate service level. Further, all components have a useful service life and will ultimately fail if assets are not renewed, replaced, or rehabilitated over the long term.

As shown in the table on display board No. 8, the pond and watercourse assets are nearing the end of their useful service life and the City has been taking steps within its current budget allocation to reinvest in these assets through prioritized capital projects.

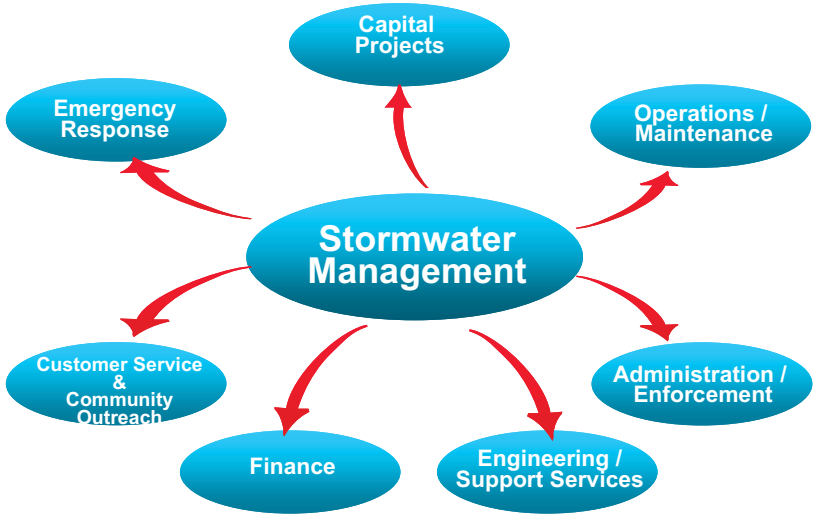
However, given the relatively young age of the City's stormwater pipe assets (i.e., 30 years in a 100-year service life), there has not been a significant need to reinvest in the storm sewer/ditch collection system. This will be a major issue in the future.

While the City needs to be practical and consider affordability issues related to raising additional funds, storm sewer replacement should not be ignored.

Mississauga's Stormwater Management Program

To address stormwater management, the City's program includes:

- Operation and maintenance of stormwater infrastructure
- Rehabilitation, renewal, retrofit, and/or upgrade of stormwater infrastructure
- Design, permitting, construction, and inspection of new capital improvement projects
- Emergency flooding response, recovery, clean-up and by-law enforcements
- Engineering and support services for review and regulation of proposed development
- Inspection, monitoring, and environmental compliance programs
- Administration, staffing, computer resources, equipment, etc.



Operation and Maintenance

Maintaining existing stormwater infrastructure is a large part of the stormwater budget. This vital task includes street cleaning; inspection and maintenance of ponds; inspection, cleaning, and repair of catchbasins (curbside drains), manholes, pipes, outfalls, ditches, channels, culverts, bridges.


Street Sweeper


Debris Removal


Inspection of Outfall


Catchbasin Cleaning


Pond Dredging

Stormwater Program – Capital Projects

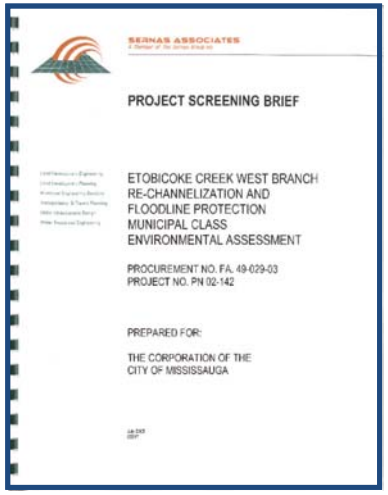
Capital Improvement Projects

Unlike the day-to-day Operations and Maintenance activities, capital budget needs are highly variable. Each project requires planning, design, permitting, construction, and inspection. The City's Capital Works Program is grouped into three categories:

- New Projects
- Reconstruction Projects: Replacement or significant upgrades to existing infrastructure
- Studies

New Bank Stabilization Project

Storm Sewer Reconstruction



Study

Stormwater Program – Planning and Monitoring

Planning and Monitoring

The assessment of the City's existing Stormwater Management Programs and the planning of future programs requires data collection, engineering analysis, and environmental monitoring and analysis.

Monitoring data provides a statistical basis for evaluating the current conditions and assessing any changes in the storm system.

The City completes many Stormwater Monitoring and Planning activities in both the urban and rural areas of the City, including:

- Compliance Monitoring and Reporting
- Flow and Rainfall Monitoring
- Water Quality Monitoring
- Hydraulic Modeling
- Site Inspections
- Stormwater Management Master Planning and Updates
- Plan Review and Inspections
- Financial Lifecycle Costing/Cost of Services Studies and Forecasts

Sewer Flow Monitoring

Rainfall Monitoring Gauge

Sample Collection of Spill

Watercourse Erosion Monitoring

Stormwater Program – Other Activities

Mississauga is largely built out and much of the urban area was constructed prior to the adoption stormwater management practices. Some of the ways to improve water quality is through activities such as Low Impact Development projects as well as Public Education. Low Impact Development is a stormwater management strategy that seeks to mitigate the impacts of increased runoff and stormwater pollution by managing runoff as close to its source as possible.

Bio-retention Facility To Treat Roadway Drainage

Bio-retention Facility To Treat Parking Area

Fish-Shaped Catchbasin Grate

Model For Public Education

Public Events

Yellow Fish Road Program

Current Stormwater Expenditures

The table below shows the City's Stormwater Management Program Tax Funded Expenditures-Current Service Level for 2012 itemized in the following categories: Operations & Maintenance and Capital Improvement Projects

Activity	Cost ($)	Description
Operation & Maintenance		
Engineering & Works	5,260,000	Day to day operating costs of Stormwater Management Program
Planning, Monitoring & Support	1,010,000	Support staff required for the planning of future stormwater infrastructure needs
Community Services (estimated)	350,000	Departmental project costs associated with stormwater-related programs
Subtotal	**6,620,000**	
Capital Improvement Projects		
Erosion Control	4,470,000	Watercourse erosion protection and rehabilitation
Flood Relief	1,260,000	Culvert capacity improvements and flood protection berms
Storm Sewer	350,000	Rehabilitation and replacement of existing storm sewers
Studies	1,000,000	Stormwater-related studies
Stormwater Management Facilities (SWM)	280,000	pond dredging/rehabilitation, quantity control facilities and low impact development practices
Channelization	470,000	Watercourse conveyance improvements
Community Services (estimated)	200,000	Departmental project costs associated with stormwater-related programs
Subtotal	**8,030,000**	
Total	**14,650,000**	

Note : The 2012 capital budget also includes $2 million for infrastructure associated with growth. These projects have been funded with development charges revenue.

Stormwater Program Funding

The City's stormwater program is primarily funded through the following sources:

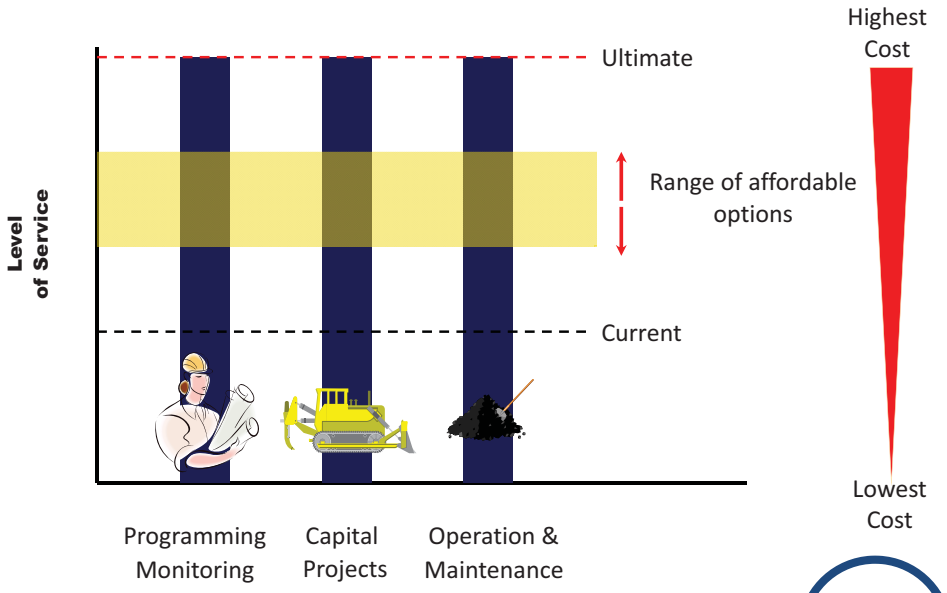
- **Property Taxes**: This method is not equitable among property owners, since the contribution each unit makes to the stormwater program is not related to the amount each unit uses the system, only to property values
- **Development Charges** (DC): Development-related capital projects are funded separately through DCs that are assessed depending on the nature of each project. These DCs are limited in that they can only be used for capital projects related to new development

Despite investments in the City's stormwater infrastructure, stormwater related issues such as flooding, water quality and stream erosion continue to exist. As this infrastructure continues to age, it will incur additional operation, maintenance and capital improvement costs over time to sustain sufficient levels of service. Further, regulatory requirements and design standards continue to evolve and are becoming more rigorous in addressing the environmental impacts of stormwater.

Level of Service

The phrase "Level of Service" applies to all components of the stormwater management program. Examples include: the level of flood protection in a pond design; the extent and frequency of street sweeping; or the timeliness and responsiveness in responding to a flooding complaint or chemical spill. Service level issues to consider include:

- The affordability of the City's stormwater program is directly impacted by decisions related to the level of service required
- Regulatory requirements for stormwater are not yet specifically quantified
- Public feedback on the desired level of service for the City's stormwater program is critical to service delivery



Stormwater Financing Study

Works Undertaken To Date & Contact Information

Works In Progress

To complete the Stormwater Financing Study, the following tasks are currently in progress or completed:

- Finalizing the assessment of the City's current stormwater program
- Developing a sustainable stormwater program
- Completed 2 of 6 meetings with the Stormwater Financing Stakeholder Group
- Continuing to offer and have one-on-one discussions/meetings with interested parties (residents, Mississauga Board of Trade, etc.)
- Hold the first Public Information Meeting on June 27, 2012 (a second Public Information Meeting will be held in early Fall)

Become Involved

If you have any questions, comments or concerns, please contact:

Lincoln Kan, P.Eng.
Manager, Environmental Services
Transportation and Works Department
201 City Centre Drive, Suite 800, Mississauga ON L5B 2T4
Phone: 905.615.3200 ext 4086
Email: Lincoln.Kan@mississauga.ca

Comments received will be compiled and summarized in a report to City Council. Following Council direction the next steps and timeline to complete this project will be determined.

Thank you for your participation today! We hope that you will continue to contribute to this project.

City of Mississauga - Stormwater Financing Study
Public Information Meeting No. 1 - June 27, 2012
Sign-In Sheet

Name	Affiliation	Phone	E-mail
MARIANNE SIRES	CITY OF TORONTO	397-7766	msires@toronto.ca
Jennifer Reid	St. Peter's Anglican Church	905-828-2095	rector@stpetserindale.org
Jody J. Piedrahita	Town of Halton Hills	(9)8732696	jodyp@haltonhills.ca
Rob Merwin	R.J. Burnside	(9)821-1800	rmerwin@rjburnside.com
ROBERT COATES	CMTTO - COOKSVILLE	9-896-1868	thecoates@bell.net
PETER CHEE	P.C.C.	416-230-6935	MIKOCHSAN@ROGERS.COM
Zubair Ahmed	City of Mississauga	647-234-3103	zubair_mba@yahoo.com.
WILSON RIBEIRO	RESIDENT	905-824-92K	CHRISSY_RIBEIRO@YAHOO.CA
Bill Snodgrass	Resident	274 2863	wsnodgrass@rogers.com
Steven Merrich	The Senal Group / GHD		smerrich@gmail.com
Stephen Blaney	Sherwood Forest Residents.	855-1070	Steveblaney@rogers.com
JARRY HUMENIUK	MISSISSAUGA	568-8111	
Jim Craig	Mississauga	905-826-4312	jamescraig@sympatico.ca (res?)
GLEN BROLL	GLENSCHNARR & ASSOCIATES	9-568-8888	GLENB@GSAI.CA
CHRIS BATTE	Resident.	9-274-3627	contekbuildinggroup@bellnet.ca.
Milton Friesen	Research. public policy	905-528-8866 x24	mfriesen@cardus.ca
Stephanie Cox	Dufferin-Peel Catholic District School Board	9-890-0708 x 2463	stephanie.cox@dpcdsb.org
WES CARLISLE	PORTICO COMMUNITY CHURCH	905-826-9622	WCARLISLE@THEPORTICO.CA
DOROTHY TOMIUK	MIRANET	905 298-6437	dtomiuk@sympatico.ca
Kiruthika Kulendiren	Lisgar Residents Assoc.	416-575 8603	KKulendiren@hotmail.com
Jennifer Park	resident		chara7@gmail.com

City of Mississauga - Stormwater Financing Study
Public Information Meeting No. 1 - June 27, 2012
Sign-In Sheet

Name	Affiliation	Phone	E-mail
ORESTE PFEIFFER	LAKEHEAD UNIVERSITY.	905-782-2029	ore-pfeiffer@hotmail.com.
Robb Lukes	CVC	905-615-3200	rlukes@creditvalleyca.ca
Brian-Stuart	Pixie Outlet Mall	416 936 7819	

Gregory, Mike (Canada)

From: Lincoln Kan <Lincoln.Kan@mississauga.ca>
Sent: Wednesday, July 11, 2012 8:10 AM
To: Gregory, Mike (Canada); Jeremy Blair
Subject: FW: Stormwater Financing Committee - Public Comments

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From: John Kendell [mailto:johnkendell@rogers.com]
Sent: July 10, 2012 10:04 PM
To: Lincoln Kan
Subject: Stormwater Financing Committee - Public Comments

Hi Lincoln,

It has been a couple years since we met. I hope you are well. I continue to manage CRAA with a substantially growing membership and active executive. Mike Ewaschuk, a volunteer with CRAA will be our lead member working with the city on this project and I will assist where needed. He attended the meeting several weeks ago.

However I thought I would take a moment to share my knowledge, input and experience how it relates to the Credit River watershed and more importantly the fish within and the related values, benefits and needs.

Storm water management, improvement and reduction are top priorities to CRAA and our membership (which is running close to 5,500 now). The impacts on the river and tributaries such as habitat loss, sediment, erosion, etc are well known and an issue that must be dealt with to ensure this recourse is available for the future.

I have noted my comments below for the public meeting 1 and related documents...sorry it is so long!

John Kendell
416-704-8896 mobile
905-821-0891 fax
President, CRAA
www.craa.on.ca

PUBLIC INFORMATION MEETING No. 1
June 27, 2012
Stormwater Financing Study

_____

The City of Mississauga is interested in hearing the community's comments, questions, concerns and suggestions regarding the current Stormwater Financing Study. Please take a few minutes to complete this brief comment sheet. All comments will be carefully considered as part of this project.

1. Did the information presented tonight provide a clear understanding of the stormwater management issues facing the City?

Based on my knowledge of the river and urban storm flow the information was very general, but suitable for the broader public except it did lack one important component. While the impacts of erosion and flooding

were shown, there was no information on how that impacts fish and their habitat. How erosion destroys spawning areas, fills in pools, high sediment (especially from new development) smothers eggs and suffocates fish. A photo of a dead fish in the muddy water or fish gasping for air in sediment laden water would illustrate the issue of 'how and why' the fish are impacted.

Comment on slide 4 Water cycle – the photo of row crops as "Low Runoff" is false. You should use a photo of a forest. Row crops have much higher runoff and lower evaporation rates (sort of a half way point between forest and urban). (Fallow agricultural fields also transmit enormous quantities of deleterious sediments to watercourses. Runoff is promoted via rain impact on the exposed soil, which destroys soil aggregates with fine particles clogging interstitial spaces, resulting in decreased infiltration. So the point being made is that agriculture that does not employ best management practices also generates stormwater runoff, albeit this is not much of a concern in Mississauga.)

Comment on slide 6 – The photo of the Credit Valley Golf Club Ice Jam flooding. This flooding was caused by an ice jam that has more to do with the deforestation of the valley between Dundas and the QEW which results in high anchor ice, ice building and thus flooding. The water flow in the river is primarily snow melt from the entire watershed and local urban runoff from Mississauga was a small portion of the cause.

General comments – Wood debris jams and natural (pre colonization level) erosion are natural and essential components of dynamic channel equilibrium. Wood debris jams are only an issue at road crossings where insufficiently small crossings have been installed. Erosion is an issue where it interferes with poorly selected locations for infrastructure and buildings. Erosion is also an issue when its rate is higher than the historic normal, via impervious cover or some other activity (i.e. row-crop agriculture) which has decreased the historic infiltration to runoff ratio.

2. What do you believe are Mississauga's most critical stormwater issues (e.g., flood protection, erosion control, operations/maintenance, pollution prevention, environmental impacts, etc.)?

All of the above.

First step is to select priority areas (this must be a fast process, not a 3 year study but rather your teams knowledge of what to is needed, working with CVC staff and community partners such as CRAA. I strongly suggest the bulk of efforts towards subwatersheds/storm systems on the Credit watershed as a priority given the fishery, endangered species and visibility. An example might be Loyalist Creek as noted below as a priority. Other safety priorities and opportunities (i.e. large benefit sites that want to have work done (i.e. Square One Parking Lot) need to be addressed simultaneously as needed. By putting say 50-75% of effort to one watershed you can make substantial, measurable gains in a short period of time (1-2 years). Once a target area is substantially updated move to the next one. It might take 20 years, but step by step you and your team will have made a huge, measurable improvement to the river, habitat and water quality.

I'd like to point out stormwater impacts to the Credit River and tributaries: In summer in Loyalist Creek, I've measured spikes in water temperature from 19*C to over 30*C in a couple of minutes from thunderstorms running off extremely hot pavement, which is more than sufficient to kill all salmonids. Retro-fitting with stormwater ponds must always be bottom drawn and checked to ensure they are releasing cold water with reduced sediment. This creek was historically a coldwater creek, and is still used by salmonid smolts and fry in the summer when the river temps exceed their thermal thresholds. It is critical that we manage it, and other tribs, back towards coldwater streams by reducing impervious cover and promoting infiltration. The high impervious cover in the Loyalist Creek watershed has resulted in wide and shallow channels, or expensive

armour stoning or engineered stabilized channels. Some portions of the creek are also buried in pipe (Erin Mills Parkway area). Similarly, the main stem of the Credit River tends to be wider and shallower than it should be because of a combination of artificially high stormwater runoff in the watershed and lack of riparian forest. The result is a lack of heterogeneity in fish habitat, and conditions that are conducive to river-warming which are deleterious to the coldwater fishery and many native and endangered species. Again, minimizing artificial stormwater runoff will help remediate this.

In winter, judging by the amount of salt used by residents in my neighbourhood alone, we are likely impacting all Mississauga tributaries (such as Carolyn, Mullet, Loyalist Creeks) and possibly the main river. In a study on Laurel Creek in Waterloo, salt concentrations in the creek via runoff were occasionally recorded at acute levels of toxicity (i.e. instant effects). On the main Credit River there appears to be weaker and weaker formation of winter ice. This is likely a function of warmer winters, but may be exacerbated by salt runoff. Flow of winter ice through the main river channel scours new pools and recruits new wood to the channel (where the riparian zone is forested). The lack of these normal spring freshets must be regarded as deleterious given that this is a historic condition that drives the physical formation of fish habitat. We need this process to continue and would like to see the amount of salt reaching the river and its tributaries decrease through use of Low Impact Development, and general incentives to reduce impervious cover.

The general intent of the above two paragraphs is that both direct runoff and poorly designed/maintained stormwater ponds are having a massive impact on river productivity/sustainability and its tributaries. Reducing impervious cover will help reduce the above noted impacts and potentially re-establish some natural shallow-groundwater inputs to the river and tribs, which are critical to salmonid smolts and fry that require coldwater refuge through the summer.

3. How should the City address aging stormwater infrastructure? (select one)

• __Repair only when structural failure occurs or is imminent (i.e., let future generations deal with problems as they arise);
• _X_Collect money now to renew and rehabilitate infrastructure in the highest priority areas (i.e., proactively reinvest in consideration of future generations); or
• _X_Other/Comment:

The city is partially on the right course (retrofitting older systems), however the work is far too slow and not concentrated enough to show tangible benefits to the natural stream/watershed systems pertaining to the Credit River. While the city has 31 streams (per the slides), the Credit River is the only system with a major sport fishery and home to several endangered and threatened species such as American eel, lake sturgeon, Redside dace and Atlantic salmon.
However a broad, well coordinated (watershed or sub watershed basis) and legislated approach is mandatory to succeed:

- Mandatory disconnection of downspouts where possible (change existing development regulations as well – they simply do not make sense as I have brought up in the past (more info below)
- Mandatory inclusion of swales, bio filters and other at or near source storm water control and infiltration at new sites and build them into existing systems where possible (everywhere possible). Any new developments, with only Low Impact technologies being acceptable.
- Tax based on impervious cover (as outlined) is great with incentives for people to solve stormwater on their property
- Would also like to see a program where we disconnect downspouts for free and provide a free rain barrel. City and other agencies (CVC, TRCA, NGO's like CRAA, TU, Sierra Club, etc).

- Public education will be necessary through ward newsletters, Mayor update newsletters and direct newsletters from the works department or region of peel notices or some combination. Education about rain barrels, disconnected downspouts, success stories!

4. How should the City's stormwater management costs be allocated? (select one)

- __Based on each property's taxable value;
- _X_Based on each property's stormwater runoff contribution; or
- __Other/Comment:

This is the only fair option. Would also like to see costs downloaded to the developer for new developments: Why should the municipality and its taxpayers have to pay for stormwater impacts caused by developers trying to maximize profit by squeezing as many homes into a space as possible!

5. The main funding options presented tonight included: property taxes, development charges, and a stormwater user fee. Are there any other funding options that should be considered?

The charges are too low based on $4.40 per month for a single house. That is $53.00 per year. My residential taxes are $6,000. $53 is less than 1%. I suggest rates 1.5 to 2 times higher. It costs about $10-15 to disconnect a downspout, for the cost of one years charges any house in the city could be disconnected. Creating the financial incentive to encourage change is one good option. Legislation with a slight tax to pay for the disconnection to cover city costs would work better.

6. Additional comments:

The value of the sport fishery and other recreational use (boating, hiking, park use) and costs associated with sediment and flooding (erosion control, harbour dredging, fish stocking) should also be shown as the cost/benefit analysis. The costs of not solving the urban storm water problem are far greater than you have shown and the costs to fix the short term issues is also much higher than shown. Jim Tovey (Ward 1) said to me the other week the Port Credit fishery was estimated to be worth 2.5 million dollars per year. In 2007 CVC estimated the lower Credit fishery in Mississauga worth $650,000 in direct spending. Fishing activity/participation has jumped 300-400% in the past 5 years suggesting the lower river fishery is now worth 1.5-2 million and growing. The steelhead run this year was up 600% from 8 years ago and 86% of the fish are wild. This is drawing thousands of anglers from Ontario. Every time it rains and the river floods people cannot fish...this is a huge economic loss for the city.

There will be some public backlash because people generally have no idea about the costs required for the infrastructure on which they depend. It must be clearly elaborated to the public the costs associated stormwater management, as you've done nicely on one of your slides.

<u>Scenario 1:</u>

You also need to present a clear message on how impervious cover is charged to land owners/business. For example (my house):

- My driveway is 2,000 sf and slopes to the road so it should be charged
- My front porch 300 sf drains to the road and should be charged
- My roof is disconnected and drains to the lawn – there should be no charge
- my walkway and patio in the rear yard drain to the grass and infiltrate so they should not be charged
- my pool is drained to the yard always so there should be no charge

Being clear with these and other scenarios is key to implement this.

Also dealing with commercial/institutional properties is vital. Working with them to implement projects funded in part or whole by storm water tax revenue to stop runoff at the source.

Example 2:

Scenario 2:

One of my schools in Streetsville with roof, parking lot and playground is 95% impervious cover. When I installed the play area and sidewalk I wanted to install bio retention areas. The city development/building office would not allow me to. The only way I could was to also install a catch basin in the lot at a cost of $20,000. The irony is my design would have stopped 50% of the runoff and held/infiltrated it. Instead all 95% goes straight to the storm sewer as a result of city building codes/requirements. Therefore part of the funding needs to address inconsistent planning/design rules in the city itself.

PUBLIC INFORMATION MEETING No. 1

June 27, 2012

Stormwater Financing Study

The City of Mississauga is interested in hearing the community's comments, questions, concerns and suggestions regarding the current Stormwater Financing Study. Please take a few minutes to complete this brief comment sheet. All comments will be carefully considered as part of this project.

1. Did the information presented tonight provide a clear understanding of the stormwater management issues facing the City?

YES

2. What do you believe are Mississauga's most critical stormwater issues (e.g., flood protection, erosion control, operations/maintenance, pollution prevention, environmental impacts, etc.)?

WE ALL KNOW NOW THAT WE HAVE WEATHER / CLIMATE CHG
① FLOOD PROTECTION, ② OPERATIONS / MAINTENANCE
SO #1 IS PRIORITY AND #2 CURRENT MAINTENANCE

3. How should the City address aging stormwater infrastructure? (select one)
   - __Repair only when structural failure occurs or is imminent (i.e., let future generations deal with problems as they arise);
   - ✓Collect money now to renew and rehabilitate infrastructure in the highest priority areas (i.e., proactively reinvest in consideration of future generations); or
   - __Other/Comment: _____

4. How should the City's stormwater management costs be allocated? (select one)
   - __Based on each property's taxable value;
   - ✓Based on each property's stormwater runoff contribution; or
   - __Other/Comment: _____

FOR RES IDENTIAL
APPLY CREDITS ON LAWN AREA,
TREES QTY & SIZE TO ENCOURAGE
THE GREENING OF EXISTING HOMES

5. The main funding options presented tonight included: property taxes, development charges, and a stormwater user fee. Are there any other funding options that should be considered?

TO REDUCE STORM WATER FLOWS WE NEED
MORE SERIOUS FINANCIAL INCENTIVES TO HELP
INDUSTRY & COMMERCIAL OPERATIONS USE SEMI
PERMEABLE SURFACES

MISSISSAUGA Leading today for tomorrow

AECOM CDM Smith

PUBLIC INFORMATION MEETING No. 1

June 27, 2012

Stormwater Financing Study

Record of Attendance & Additional Comments Form

Please print your name and mailing address clearly. We regret that if your name and address are not legible we will be unable to contact you.

Name:	Address:	Phone #:
Robert Coutts	on file	9 896 1868
Email:	thecoutts@bell.net	

Additional Comments/Questions:

Please drop-off sheet in Comments Box or mail/fax it by July 18th, 2012 to:

City of Mississauga
Transportation and Works Department
Environmental Services
201 City Centre Drive, Suite 800
Mississauga, ON L5B 2T4
Fax: 905-615-3173

The personal information on this form is collected under authority of Section 11 of the Municipal Act, 2001, and will be used to inform you of any future meetings regarding the Stormwater Financing Study, to respond to your comments/concerns if necessary and to maintain a record of attendance at the public meeting. Questions about the collection of this personal information should be directed to: Mr. Lincoln Kan, Manager, Environmental Services by phone (905-615-3200 ext. 4086) or by mail to the above address.

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AECOM CDM Smith

Stormwater Financing Study

Public Information Meeting No. 2

Tuesday November 20, 2012

6:30 – 8:30 pm

Presentation will begin at 7:00 pm

Iceland Arena (North Lounge)
705 Matheson Boulevard East

Please complete the sign-in sheet, review display materials and fill out a comment sheet.
The project team is available to answer your questions and address any concerns.

Stormwater Financing Study

Study Background & Project Organization

Program Goals

Council recognized that sustainable funding is needed to satisfy the City's current and future stormwater management program needs and authorized in Summer of 2011 that a Stormwater Financing Study be initiated. The City contracted AECOM in February 2012 to undertake the study with the main objective of determining the most equitable and fair approach to satisfying these current and long term requirements.

Project Organization

Undertaken by: Staff Working Team under the direction of a Steering Committee including senior City management

Advised by: Stormwater Financing Stakeholder Group (representatives from stakeholders including ratepayer groups, the business and development communities, tax-exempt properties and others such as conservation authorities) as well as the general public

The recommended implementation plan will be presented to Council on December 5, 2012 .

The project schedule is shown below.

	2012										
Task / Description	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1. Existing Stormwater Management Program											
2. Future Stormwater Management Program											
3. Funding Options											
4. Stakeholder Meetings and Draft Report											
5. Final Report											

Stormwater Financing Study

Highlights of Study Tasks

The consulting team has been tasked to identify, review and evaluate alternative funding mechanisms to support the City's stormwater management program and to recommend the preferred funding approach. To achieve this goal, the following steps are being undertaken :

- Compile and quantify the cost of the City's existing stormwater management program including operations and maintenance, asset management, planning and monitoring activities and capital plans
- Develop and evaluate various stormwater management program options based on varying levels of service and recommend a program that will meet the desired levels of service, targets for compliance with regulations and other future pressures
- Review available stormwater financing options
- Recommend the preferred option that offers a fair and equitable method for allocating the costs of the stormwater management program
- Develop a strategy to implement the recommendations

In addition to the above, an integral part of this study is the formation of a Stormwater Financing Stakeholder Group (SFSG). Members from this group include: representatives from stakeholders such as ratepayer groups, business and development communities, tax-exempt properties and others such as conservation authorities. They have been asked to represent the views of their organizations or sector and provide advice and input on issues such as overall community goals and priorities of the City's stormwater management program and feedback on setting an affordable/sustainable level of service and expenditures to meet these needs.

Another important component of the public consultation program is tonight's Public Information Meeting. The City wishes to engage its citizens, business owners and other members of the community with the goal of providing an inclusive, traceable and useful opportunity for dialogue between City staff and stakeholders. Your insight and input is both a valuable and necessary step towards this goal and we encourage you to provide written comments to be communicated to City officials.

Background information and presentation material from the first Public Information Meeting (held in June) can be found at www.mississauga.ca/stormwaterstudy.

Stormwater Management

Stormwater management is a service that keeps a low profile, but ***without adequate funding can lead to serious problems that will only get worse unless steps are taken now.***

Stormwater runoff is generated when precipitation from rain and snowmelt flows over land and does not percolate into the ground. Hard surfaces such as rooftops and parking areas increase runoff and pollutants into waterbodies compared to natural conditions. Controlling the amount of runoff and quality of water entering the creeks, rivers and Lake Ontario, our source of drinking water, is a main focus of the City's stormwater management program.

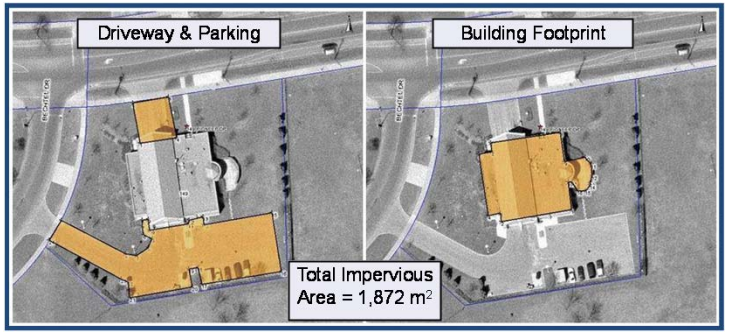
The City is responsible for managing all aspects of stormwater. However, the City's ability to effectively and adequately perform its duties are limited by available funding.

Impervious Area

Impervious area includes surfaces that prevent stormwater from infiltrating into the ground such as roads, parking areas, driveways, sidewalks, building rooftops, and similar structures. These areas generate more runoff, transport it more quickly, and accumulate more pollutants than from an equivalent natural area.

Imperviousness is the percentage of impervious cover within a given area of land, and is often measured through aerial photo interpretation. The impervious areas for a single property are highlighted in yellow in the figure on the right: the building rooftop area or "footprint "(right panel), and all other types of impervious areas (left panel). The sum total is 1,872 m^2 of impervious area on a 3,900 m^2 lot, or 48 percent imperviousness.

The amount of impervious area on a property directly correlates to the stormwater runoff and pollutant loading that is contributed to the City's stormwater management system. Although rainfall is largely unpredictable, the amount of impervious area can be controlled by landowners.



Current Stormwater Program and Expenditures

Currently, the City's stormwater program is primarily funded through the following sources:

- **Property Taxes**: This method is not equitable, since the contribution each property owner makes to the stormwater program is not related to the property's use of the system (the contribution is based on property value, not on the amount of stormwater runoff generated)
- **Development Charges** (DC): Development-related capital projects are funded separately through DCs that are assessed depending on the nature of each project. These DCs are limited in that they can only be used for capital projects related to new development

The table below shows the annual cost of the City's current stormwater program (tax-funded portion for 2012).

Activity	Cost ($)	Description
Operation & Maintenance		
Engineering & Works	5,260,000	Day to day operating costs of Stormwater Management Program
Planning, Monitoring and Support	1,010,000	Support staff required for the planning of future stormwater infrastructure needs
Community Services (estimated)	350,000	Departmental project costs associated with stormwater-related programs
Subtotal	**6,620,000**	
Capital Improvement Projects		
Erosion Control	4,470,000	Watercourse erosion protection and rehabilitation
Flood Relief	1,260,000	Culvert capacity improvements and flood protection berms
Storm Sewer	350,000	Rehabilitation and replacement of existing storm sewers
Studies	1,000,000	Stormwater-related studies
Stormwater Management Facilities	280,000	Pond dredging/rehabilitation, quantity control facilities and low impact development practices
Channelization	470,000	Watercourse conveyance improvements
Community Services (estimated)	200,000	Departmental project costs associated with stormwater-related programs
Subtotal	**8,030,000**	
Total	**14,650,000**	

Note : The 2012 capital budget also includes $2 million for infrastructure associated with growth. These projects have been funded with development charges revenue.

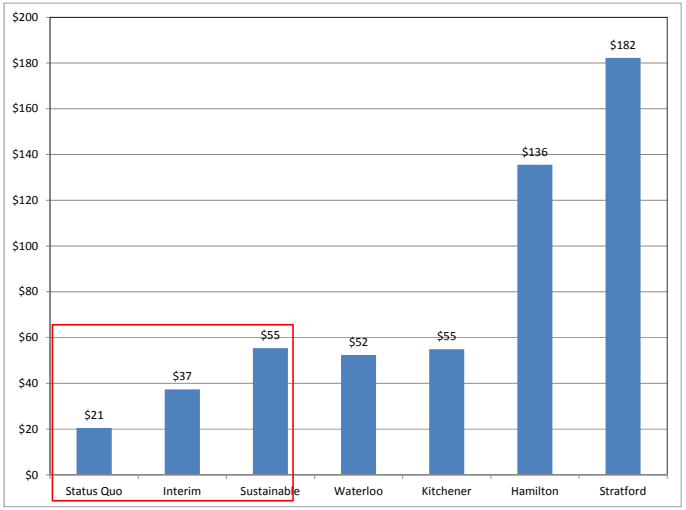
Future Stormwater Program and Expenditures

The City's current funding program does not provide sufficient funds to achieve the City's desired service levels for stormwater management. Please see the materials from the first Public Information Meeting for more details on the challenges faced by the City of Mississauga.

In addition to widening the infrastructure gap, if the City continues its current funding program then additional tax funding will be necessary just to maintain status quo. A large portion of the City's stormwater capital projects is funded from reserves (i.e., taxes accumulated in previous years), such that the current year tax funding only provides $8.7M of the total $14.7M annual program. Funding from reserves will not be available in the future and taxes will need to be increased in order to generate the revenue needed to support the full stormwater program.

The table below summarizes the future stormwater program scenarios and the corresponding annual expenditures. The Status Quo scenario represents the City's current partially funded program and the Sustainable scenario represents full funding of priority capital projects, operations and maintenance, as well as a reinvestment fund to address the City's aging storm pipe system. The City has identified an Interim scenario in consideration of affordability issues, representing reduced funding for future storm pipe reinvestment. The chart below compares these service level scenarios (on a per capita basis) to other municipalities in Ontario that have recently conducted similar stormwater financing studies.

Status Quo	Interim	Sustainable
▪ Based on 2012 Capital and Operating Budget – maintains current service level ▪ Unfunded Capital Program needs identified in 10-year Capital Plan would remain unfunded ▪ Unfunded Operations and Maintenance pressures would remain unfunded ▪ No money would be put aside for future storm infrastructure renewal needs (storm pipe system)	▪ All currently identified Capital, Operations and Maintenance and pipe renewal needs would be funded ▪ Introduces a "Pipe Renewal" reserve fund, starting with an initial annual collection rate of $2.4 million (0.15% of the $1.6 billion (2012) storm pipe system replacement cost)	▪ All currently identified Capital, Operations and Maintenance and pipe renewal needs would be funded ▪ Introduces a "Pipe Renewal" reserve fund with an annual collection rate of $16 million (1% of the $1.6 billion (2012) storm pipe system replacement cost)
Annual Cost = $14,650,000	Annual Cost = $26,610,000	Annual Cost = $39,490,000



Comparison of Funding Options

In addition to the City's current funding mechanisms (tax funding and development charges), a stormwater rate was evaluated as an alternative. A stormwater rate is a type of user fee that would be administered in a similar fashion as Region of Peel's current water and wastewater rate. With a stormwater rate, landowners are charged in relation to the amount of impervious area on their property. Allocating charges in this manner quantifies the relative contribution of stormwater runoff from each property to the City's stormwater management system, since runoff is a function of the land use practices and surface treatment decisions of property owners. A stormwater rate generates funding that is more fair and equitable than property taxes, which is based on the assessed property value. There are hundreds of such stormwater rates across North America. Both Kitchener and Waterloo implemented a stormwater rate in 2011 and a number of Ontario municipalities are currently investigating this as an alternative funding mechanism.

The stormwater funding options were evaluated against the following criteria (see table below):

- Applicability of funding method citywide
- Eligibility to support capital improvement projects
- Eligibility to support operations & maintenance activities
- Eligibility to offset costs for engineering, support, and overall administration of the stormwater program
- Fair & Equitable Allocation - charges the property owner according to individual contribution to the stormwater program expenditures
- Dedicated and sustainable funding source dedicated solely to stormwater program expenditures
- Effort to Administrate
- Environmental Benefits including opportunities for incentives to reduce stormwater and pollutant loads using source control measures

Funding Method	City Wide Applic-ability	Used for Capital Costs	Used for O&M Costs	Used for Eng'rg/ Support Costs	Fair & Equitable Allocation	Dedicated Funding Source	Effort To Admin-istrate	Environ-mental Benefits
Property Tax	Yes	Yes	Yes	Yes	No	No	Low	Low
Development Charges	No	New Capital	No	Partly	Partly	Yes	Medium	Medium
Stormwater Rate	Yes	Yes	Yes	Yes	Yes	Yes	High	High

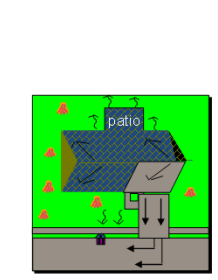
Stormwater Rate Details

The basic calculation for a stormwater rate is simply the stormwater program expense divided by the number of billing units within Mississauga. To determine the billing unit denominator, there are a number of methods to allocate a stormwater charge to property owners that have been used in stormwater rate implementations throughout North America. The Tiered Single Family Unit (SFU) was selected as the preferred option as it provides the best balance between accuracy (i.e., maximizing fairness and equity) and level of effort to administer and manage (i.e., minimizing rate administration costs). Based on a review of provincial legislation, a number of entities have been determined to be exempt from municipal fees and charges. They include, but may not be limited to, the following: The Crown (including Canada Lands Company Limited, Canada Post Corporation, and Metrolinx, among others), Colleges, and School Boards. Impervious area for fee-exempt properties was removed from the billing unit calculations

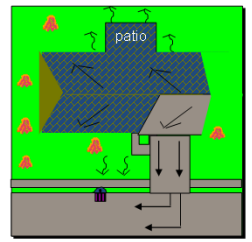
Tiered Single Family Unit (SFU)

The Tiered SFU option accounts for the wide variability in impervious area among residential properties by assigning three tiers to single-family detached homes (Small, Medium and Large) as well as assigning a number of categories for multi-family residential properties (e.g., apartments, condos, and townhouses). Each residential category features unique impervious area characteristics with statistical properties determined by taking many measurements throughout Mississauga.

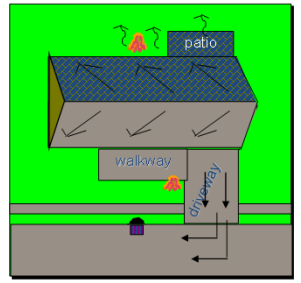
For residential properties, the average impervious area of single-family detached homes is used as the base billing unit (i.e., one SFU per single-family home). The smallest 10 percent would be billed 0.7 SFU to reflect a smaller impervious footprint. The largest 10 percent would be billed 1.4 SFU to reflect a larger footprint. All other single family homes (the middle 80 percent) would be billed 1.0 SFU. Multi-family residential properties would have fractional SFU values. For non-residential properties, the number of SFU billing units is determined by dividing the impervious area by the SFU size.



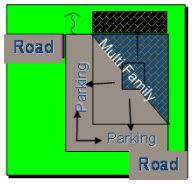
***Small** Single Family Home*
184 m^2 = 0.7 SFU
Lowest 10% (0-184 m^2)



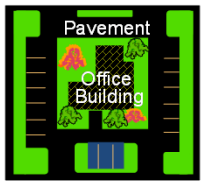
***Medium** Single Family Home*
267 m^2 = 1.0 SFU
Middle 80% (185-363 m^2)



***Large** Single Family Home*
364 m^2 = 1.4 SFU
Highest 10% (>364 m^2)



Multi-Family
1 Dwelling Unit =
0.1 - 1.0 SFU



$$\text{Non-Res'l} = \frac{\text{Impervious Area}}{267\ m^2}$$

Funding Impact – Property Tax Option

The table below shows the annual charges for selected properties using property tax to fund the City's future stormwater program. The first column shows a range of property types. The first three single-family homes represent assessed value statistics (all other entries shown are actual properties):

- 10-percentile: 10 percent of homes in Mississauga have an assessed value less than or equal to $330,000
- 50-percentile: the median assessed value of homes in Mississauga is $430,000
- 90-percentile: 90 percent of homes in Mississauga have an assessed value less than or equal to $610,000

The second column shows annual charges for the City's current stormwater program (Board No. 4). The remaining columns show the "Pay-As-You-Go" option (i.e., property tax funding without reserves or debt financing) for the various future service levels (Board No. 5). The property tax and Payment-In-Lieu-Of Tax (PILT) allocation indicates the proportion of the total City tax revenue that would be used to fund the stormwater program cost.

Stormwater Program Item	Existing (2012)[1]	Pay-As-You-Go Financing of Future Stormwater Management Program (2014-2023)								
		Status Quo			Interim			Sustainable		
Program Cost	$14,650,000	$14,650,000			$26,610,000			$39,490,000		
Property Tax & PILT Allocation	2.36%	3.96%			7.19%			10.67%		
Single-Family Detached Home		Charge	Δ	%	Charge	Δ	%	Charge	Δ	%
10-percentile assessed value	$22.10	$37.13	$15.03	68%	$67.44	$45.34	205%	$100.09	$77.99	353%
50-percentile assessed value	$28.58	$48.01	$19.43	68%	$87.21	$58.63	205%	$129.42	$100.85	353%
90-percentile assessed value	$40.69	$68.36	$27.67	68%	$124.16	$83.47	205%	$184.26	$143.57	353%
Brooks Drive	$28.37	$47.66	$19.29	68%	$86.57	$58.20	205%	$128.47	$100.10	353%
Robin Drive	$42.69	$71.72	$29.03	68%	$130.28	$87.59	205%	$193.34	$150.65	353%
Homelands Drive	$27.39	$46.01	$18.62	68%	$83.58	$56.19	205%	$124.03	$96.64	353%
Beacham Street	$31.08	$52.22	$21.14	68%	$94.85	$63.77	205%	$140.76	$109.67	353%
King Richard's Place	$40.14	$67.44	$27.30	68%	$122.50	$82.35	205%	$181.79	$141.65	353%
Condominium										
Sherobee Road	$15.86	$26.64	$10.78	68%	$48.39	$32.54	205%	$71.82	$55.96	353%
Multi-Family (7+ Units)										
Goreway Drive (per unit)	$10.54	$17.71	$7.17	68%	$32.18	$21.63	205%	$47.75	$37.21	353%
Commercial										
Mall	$10,445	$17,548	$7,103	68%	$31,875	$21,429	205%	$47,303	$36,858	353%
Tax Exempt										
Church (Dundas St.)	$0	$0	$0		$0	$0		$0	$0	

Notes:

1. Current program includes $8.7M (Tax & Payment In-Lieu-Of Taxes) plus $5.9M (Reserves & Debt).

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Stormwater Financing Study

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Funding Impact – Stormwater Rate Option

The table on the left shows the annual charges for selected properties if a new stormwater rate was used to fund the City's future stormwater program. The first column shows the number of billing units for each property. The second column lists the same properties that were shown on Board No. 8, with two additional single-family home types: the 10-percentile (Small Tier) and 90-percentile (Large Tier) entries correspond to the smallest and largest tiers (Board No. 7). The other 10-, 50-, and 90- percentile entries correspond to the Medium Tier, and thus would be assigned 1.0 SFU billing units. The remaining columns show the charges for the various future service levels (Board No. 5).

The table on the right compares annual charges for both property tax and stormwater rate options for the Interim service level, indicating the difference between existing charges both as a dollar value and as a percentage. The last two columns compare the rate to the proposed tax option.

Billing Units (SFU)	Service Level:	Status Quo (Pay-As-You-Go)	Interim	Sustainable
	Program Cost	$15,420,000	$27,380,000	$40,260,000
	Base Rate ($/SFU/mo)	$4.39	$7.80	$11.47
Single-Family Detached Home				
0.7	10-percentile (Small Tier)	$36.31	$64.52	$94.87
1.0	10-percentile assessed value	$52.68	$93.60	$137.64
1.0	50-percentile assessed value	$52.68	$93.60	$137.64
1.0	90-percentile assessed value	$52.68	$93.60	$137.64
1.4	90-percentile (Large Tier)	$71.95	$127.84	$187.99
1.0	Brooks Drive	$52.68	$93.60	$137.64
1.0	Robin Drive	$52.68	$93.60	$137.64
1.0	Homelands Drive	$52.68	$93.60	$137.64
1.0	Beacham Street	$52.68	$93.60	$137.64
1.0	King Richard's Place	$52.68	$93.60	$137.64
Condominium				
0.2	Sherobee Road	$12.07	$21.45	$31.54
Multi-Family (7+ Units)				
0.2	Goreway Drive (per unit)	$9.63	$17.10	$25.15
Commercial				
519.1	Mall	$27,346	$48,587	$71,448
Tax-Exempt				
14.9	Church (Dundas St.)	$787	$1,399	$2,057

Notes:
1. Rate assumes 92% collection with annual administration cost of $770,000.

Stormwater Program Item	Existing (2012)[1]	Future - Interim Service Level (2014-2023)							
		Tax (Pay-As-You-Go)			Rate (Tiered SFU, with Exemptions)				
Single-Family Detached Home		Charge	$\Delta_{Existing}$	%	Charge	$\Delta_{Existing}$	%	Δ_{Tax}	%
10-percentile (Small Tier)	$22.10	$67.44	$45.34	205%	$64.52	$42.42	192%	-$2.93	-4%
10-percentile assessed value	$22.10	$67.44	$45.34	205%	$93.60	$71.50	324%	$26.16	39%
50-percentile assessed value	$28.58	$87.21	$58.63	205%	$93.60	$65.02	228%	$6.39	7%
90-percentile assessed value	$40.69	$124.16	$83.47	205%	$93.60	$52.91	130%	-$30.56	-25%
90-percentile (Large Tier)	$40.69	$124.16	$83.47	205%	$127.84	$87.15	214%	$3.68	3%
Brooks Drive	$28.37	$86.57	$58.20	205%	$93.60	$65.23	230%	$7.03	8%
Robin Drive	$42.69	$130.28	$87.59	205%	$93.60	$50.91	119%	-$36.68	-28%
Homelands Drive	$27.39	$83.58	$56.19	205%	$93.60	$66.21	242%	$10.02	12%
Beacham Street	$31.08	$94.85	$63.77	205%	$93.60	$62.52	201%	-$1.25	-1%
King Richard's Place	$40.14	$122.50	$82.35	205%	$93.60	$53.46	133%	-$28.90	-24%
Condominium									
Sherobee Road	$15.86	$48.39	$32.54	205%	$21.45	$5.59	35%	-$26.95	-56%
Multi-Family (7+ Units)									
Goreway Drive (per unit)	$10.54	$32.18	$21.63	205%	$17.10	$6.56	62%	-$15.07	-47%
Commercial									
Mall	$10,445	$31,875	$21,429	205%	$48,587	$38,142	365%	$16,713	52%
Tax-Exempt									
Church (Dundas St.)	$0	$0	$0	n/a	$1,399	$1,399	n/a	$1,399	n/a

Notes:
1. Current program includes $8.7M (Tax & Payment In-Lieu-Of Taxes) plus $5.9M (Reserves & Debt).

Study Recommendations & Contact Information

Study Recommendations

The following recommendations will be presented to Council on Wednesday, December 5, 2012:

Recommendation 1: That the Interim service level be selected for the City's stormwater management program. This represents a $26.6M annual program that meets currently identify capital needs, unfunded Operations and Maintenance pressures and an initial Storm Pipe Renewal reserve fund.

Recommendation 2: That a user fee in the form of a stormwater rate be implemented to support the Interim service level, based on the Tiered SFU rate structure.

Recommendation 3: That everyone be charged a stormwater rate unless exempted through legislation

Recommendation 4: That a credit program be implemented. Credits are to be applied to non-residential properties that provide on-site stormwater management measures. Incentives are to be provided to residential properties which may include discount coupons for rain barrels, for example.

Recommendation 5: Proceed with the implementation phase, with billing to begin July 2013

Contact

If you have any questions, comments or concerns, please contact:

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Transportation and Works Department
201 City Centre Drive, Suite 800, Mississauga ON L5B 2T4
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Email: lincoln.kan@mississauga.ca

Comments received will be compiled and summarized in the final report.

City of Mississauga - Stormwater Financing Study
Public Information Meeting No. 2 - November 20, 2012
Sign-In Sheet

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ROGER COATES	CMPHO	416-616-4311	thecoates@bell.net
ROB BELFONT	MISSISSAUGA NEWS.		
SIMI KAPUR.	Rockwood Homeowners	416-999-2927	simikapur@rogers.com

City of Mississauga - Stormwater Financing Study
Public Information Meeting No. 2 - November 20, 2012
Sign-In Sheet

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Kelley des Tombe	pinnacle International (DEV.)		Kdestombe@pinnacleinternational.ca
Earl Cochrane	Resident	905-822-5866	winmar@sympatico.ca
PAUL WALKER	ST. HILARY'S CHURCH	905-279-2304	PAULJWALKER@BELLNET.CA
Barry KELLY		647-772-3653	rahoon78@Gmail.com
ERIN OBURN	Yourmississauga biz.com	647-290-5086	erin.oburn@yourMSiz.com

PUBLIC INFORMATION MEETING No. 2

November 20, 2012

Stormwater Financing Study

Record of Attendance & Additional Comments Form

The City of Mississauga is interested in hearing the community's comments, questions, concerns and suggestions regarding this study. Please print your name and mailing address clearly. We regret that if your name and address are not legible we will be unable to contact you.

Name:	Address:	Phone #:
JOE SILVA	1684 SALTDENE TERRACE	905 629-4567
Email: JOE.SILVA@Bell.Net		

Additional Comments/Questions:

I would like to receive a copy of Tonights Presentation. Or be able to Download a PDF Copy.

Thank you

Please drop-off sheet in Comments Box or email by November 30th, 2012 to:

Mr. Lincoln Kan
Manager, Environmental Services
City of Mississauga – Transportation and Works Department
Email: Lincoln.Kan@mississauga.ca
Mail: 201 City Centre Drive, Suite 800, Mississauga ON L5B 2T4

The personal information on this form is collected under authority of Section 11 of the Municipal Act, 2001, and will be used to inform you of any future meetings regarding the Stormwater Financing Study, to respond to your comments/concerns if necessary and to maintain a record of attendance at the public meeting. Questions about the collection of this personal information should be directed to: Mr. Lincoln Kan, Manager, Environmental Services by phone (905-615-3200 ext. 4086) or by mail to the above address.

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AECOM CDM Smith

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Name:	Address:	Phone #:
SUSANNE THISTLE	6427 ALDERWOOD TRAIL	9058244994
Email: david.thistle@sympatico.ca		

Additional Comments/Questions:

1. DPIS. PUT PRESENTATION (NOV 28) ON WEBSITE
2. APPEAL PROCESS FOR CREDIT (REVISH)
3. WHAT IS THE COST OF THIS STUDY?

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Name:	Address:	Phone #:
GLEN BROLL	GLEN SCHNARR & ASSOC. 700-10 KINGSBRIDGE GARDEN CIRCLE	9-568-8888
Email:		

Additional Comments/Questions: ON BEHALF OF THE ARCHDIOCESE OF TORONTO:

FUNDING SHOULD BE THROUGH TAXATION OR CHURCHES SHOULD EXEMPT FROM ANY STORMWATER RATE CHARGE. CHURCHES ARE CHARITABLE ORGANIZATIONS. ANY ADDITIONAL FEES CHARGED TO A CHURCH WILL TAKE MONEY AWAY FROM SOCIAL OUTREACH PROGRAMS PROVIDED BY CHURCH COMMUNITIES TO THOSE IN NEED, THAT ARE NOT PROVIDED BY MUNICIPALITIES.

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Name:	Address:	Phone #:
James Craig	5534 Millbrook Cres. Miss L5M 3Z1	416-569-8223
Email: James.craig@gympatico.ca		

Additional Comments/Questions:

I am very concerned re the impact of this necessary levi on faith communities + non-profits. These organizations serve a huge number of people in our city and are usually funded by donations. In these times of huge pressure on non-profits an additional cost will have a collective impact on the level of service they can deliver. These organizations are already doing so much to serve those in need as well as valuable preventative work with youth, Seniors + families. I believe it will be socially and financially counter-productive to impose this levy on these organizations. Therefore I appeal to the city to grant an exception to these organizations.

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Name: Paul Wartman	Address: 2901 Coulson Court Mississauga, ON	Phone #: 905 302 0408
Email:		

Additional Comments/Questions:

- Facilitator/Presenter tip: Create a bike rack at the back of the room. Invite participants to put their questions/comments on so presentation is not interrupted. Followed by question period at end.
- Open up other opportunities/avenues for giving feedback. Not everyone is comfortable with asking a public question. Ex. Open up a website poll/survey to allow 24 hour access to info and to send questions
- Contact me if you want a grad student to work on a pilot project for residential incentives. (Seriously, I'll get funding)
  wartmanpaul@gmail.com.

Thank you for holding this

Please drop-off sheet in Comments Box or email by November 30th, 2012 to:

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Name:	Address:	Phone #:
CHARLES BROWN	382 MOONGLOW CRT.	905-279-9534
Email: cabrown382@aol.com		

Additional Comments/Questions:

PLEASE SEE MATERIAL ENFOLDED.

CAB.

Please drop-off sheet in Comments Box or email by November 30th, 2012 to:

Mr. Lincoln Kan
Manager, Environmental Services
City of Mississauga – Transportation and Works Department
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THE STORMWATER INFRASTRUCTURE PROPOSAL

My name is Charles Brown. I have been a resident of Mississauga since 1967, living several blocks from the Cooksville Creek in Cooksville. I am very familiar with the flooding situation of the creek and am aware of the damage done by flooding to residences along Sherobee Drive. I sympathize with the residents who have suffered property damage and I agree action to avoid a recurrence is called for. In fact, effective action should have been undertaken before properties were affected when the problem was first identified almost 30 or so years ago. Had it been we would not be faced with this proposal and some of its unacceptable solutions and outrageous cost.

I speak specifically to the intention of measuring the asphalt surface for parking at my church and having the church assessed financially because of the stormwater that flows from it. When the church was built in 1957, an oversize dry well was installed to accept all the stormwater from its weeping tile. I had all downspouts disconnected to permit roof water to flow on to the church lawn. Water on the parking lot is channelled to a portion of church property that was lowered to store the runoff. The parking surface was sloped to permit this. This was done under my direction when the parking lot was surfaced two years ago. As well, the parking lot is at a level below that of the N. Service Road and water is more likely to flow towards us than away. We do not add to the stormwater problem. We are keeping our water on our property, but, interestingly, on several occasions have had water from the municipal roadway flow on to our lawn and on one occasion up to the edge of our Daycare play area. Clearly, our efforts to implement good environmental practices are to be ignored in this frantic rush to accumulate money to fix a problem that should have been dealt with 30 years ago. As a member of my church I cannot support this one size fits all style. We are not a contributor to the problem you are facing.

Appendix B

Stormwater Rate References

Black & Veatch Management Consulting (2010). 2010 Stormwater Utility Survey. This report summarizes the results of a survey with respondents representing 70 stormwater utilities across the U.S., serving a wide range in population and service area. It includes useful information related to billing systems, data management, and public education. Retrieved April 9, 2013 from http://204.118.135.81/

Brisman, A. (2002). Considerations in Establishing a Stormwater Utility. Southern Illinois University Law Journal. Vol. 26, pp. 505-529. This document discusses potential legal challenges to stormwater fee structures.

Busco, D. and G. Lindsey (2002). An Annotated Bibliography of Stormwater Finance Resources. Center for Urban Policy and the Environment, Indiana University-Purdue University Indianapolis. This document is available online as part of An Internet Guide to Financing Stormwater Management. Retrieved April 9, 2013 from http://stormwaterfinance.urbancenter.iupui.edu

Campbell, C.W. (2012). Stormwater Utility Survey 2012, Western Kentucky University, Bowling Green. This report identifies 1,314 stormwater utilities in the U.S., describes some of the challenges faced by the utilities and those who develop them, and evaluates the various methods through which the rates are developed. Survey results indicate the average charge for a single-family home is $4.20 per month, with a median value of $3.65 and a high value of $22.37. Retrieved April 9, 2013 from http://www.wku.edu/engineering/civil/fpm/swusurvey/

Debo, T.N. and A. Reese (2002). Municipal Stormwater Management. Second Edition. CRC Press. Boca Raton, FL. This publication includes a comprehensive treatment of stormwater utilities.

Florida Stormwater Association, (2011). Stormwater Utilities Survey 2011. Tallahassee, FL.. Florida has over 470 counties and cities and it is estimated that there are approximately 154 local governments that have established a stormwater utility. Representatives from 91 of these utilities responded to the 2011 survey questionnaire. A summary of each utility is presented, including billing systems and historical annual revenue generated. Retrieved April 9, 2013 from http://www.florida-stormwater.org

Gregory, M., R. Tufgar, and S. Sedgwick (2010). Sustainable Financing for Municipal Stormwater Management Programs, Chapter 23 in Dynamic Modeling of Urban Water Systems, Monograph 18, CHI Publications, ISBN 978-0-9808853-3-0, pages 379-406.

Gregory, M., K.G. Murphy, R. Tufgar, and S. Sedgwick (2011). Stormwater Rate Financing: Implementing an Impervious-Area Based Charge in Canada, session paper P12 in proceedings of the 2011 StormCon Conference, Anaheim, California.

Hoag, G. (2004). Developing Equitable Stormwater Fees. Stormwater: The Journal for Surface Water Quality Professionals. This document focuses on the issue of equity in implementing a stormwater utility and discusses the evaluation process used to calculate pollutant-based fees for stormwater programs. Retrieved April 9, 2013 from http://www.stormh2o.com

Keeley, M. (2007). Using Individual Parcel Assessments to Improve Stormwater Management. Journal of the American Planning Association, 73(2), pages 149-160.

McClelland, S., S. Sedgwick, and P. Chernin (2003). Billing Structure and Data Collection Methods. In: Establishing a Stormwater Utility in Florida, Florida Stormwater Association, chapter 5.

Porter-Bopp, S., O. Brandes, C. Sandborn, and L. Brandes (2011). Peeling Back the Pavement: A Blueprint for Reinventing Rainwater Management in Canada's Communities. Victoria, BC: POLIS Project on Ecological Governance. Retrieved April 9, 2013 from http://poliswaterproject.org

Reese, A. (2007). Stormwater Utility User Fee Credits. Stormwater: The Journal for Surface Water Quality Professionals. Retrieved April 9, 2013 from http://www.stormh2o.com

Slack, E. (2011). Financing Large Cities and Metropolitan Areas. Institute on Municipal Finance and Governance, Papers on Municipal Finance and Governance, No. 3. Retrieved April 9, 2013 from http://www.munkschool.utoronto.ca

Water Environment Federation (1994). User-Fee-Funded Stormwater Utilities. Alexandria, Virginia. This manual was prepared for professionals interested in creating stormwater utilities. The authors discuss the technical, financial, and institutional requirements for the successful implementation of a stormwater utility in detail and they stress the importance of public education programs. The second edition is scheduled for publication in 2013 and will include Kitchener, Ontario among its case studies.

Appendix C

Sample Property Charges

Description	Address	Impervious Area	SFU billing units	Base Charge
Single-Family (Medium)	Brooks Drive	295.8 m^2	1.0	$94.32/yr (Interim)

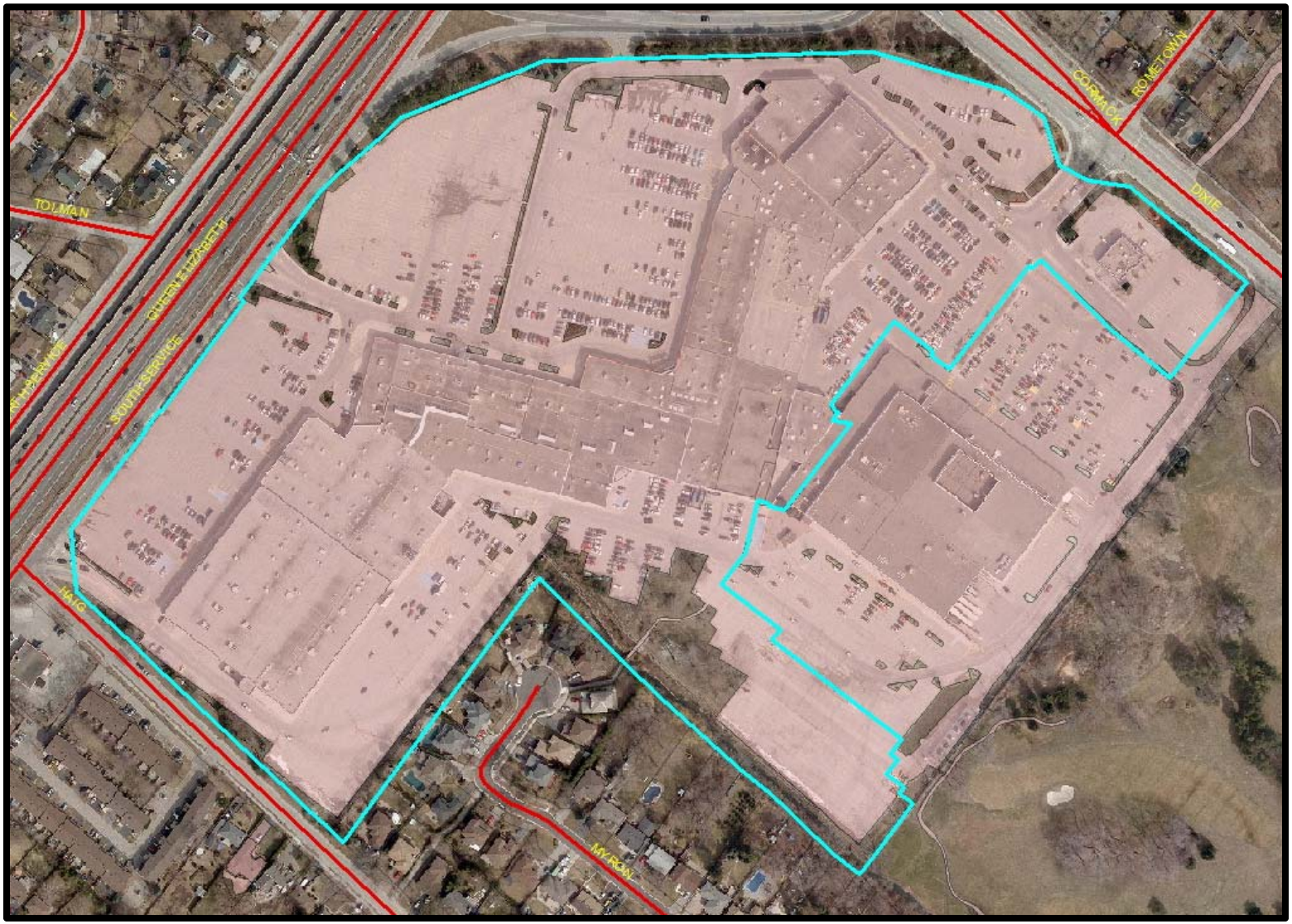
Description	Address	Impervious Area	SFU billing units	Base Charge
Single-Family (Medium)	Robin Drive	305.1 m^2	1.0	$94.32/yr (Interim)

Description	Address	Impervious Area	SFU billing units	Base Charge
Single-Family (Medium)	Homelands Drive	214.8 m^2	1.0	$94.32/yr (Interim)

Description	Address	Impervious Area	SFU billing units	Base Charge
Single-Family (Medium)	Beacham Street	288.9 m^2	1.0	$94.32/yr (Interim)

Description	Address	Impervious Area	SFU billing units	Base Charge
Single-Family (Medium)	King Richard's Place	328.6 m^2	1.0	$94.32/yr (Interim)

Description	Address	Impervious Area	SFU billing units	Base Charge
Dixie Outlet Mall	South Service Road	138,494.3 m^2	519.1	$48,961/yr (Interim)



Description	Address	Impervious Area	SFU billing units	Base Charge
St. Peters Anglican	Dundas Street W	3,987.6 m^2	14.9	$1,410/yr (Interim)