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DATE: September 1, 2010

REPORT TITLE: **STORMWATER MANAGEMENT IN PEEL REGION**

FROM: Dan Labrecque, Commissioner of Public Works

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## RECOMMENDATION

**That the Region of Peel facilitate a collaborative working group between the three area Municipalities and Conservation Authorities in order to develop a Regional Stormwater Management Strategy.**

## REPORT HIGHLIGHTS

- The Municipal Act of Ontario and Conservation Authorities Act provides specific powers to Municipalities and Conservation Authorities with regards to stormwater management, land drainage and flood control;
- Consultation Meetings were conducted with Regional, Conservation Authority and Area Municipal staff to obtain details on stormwater management programs and initiatives;
- In many cases, stormwater management roles, responsibilities and mandate between Region, Areas Municipalities and Conservation Authorities is not clearly defined;
- Consulted Regional, Area Municipal and Conservation Authority staff indicate that the development of a stormwater management strategy for the Peel Region area would be beneficial. The purpose of the strategy would be to clearly define the mandate and roles and responsibilities for each of these agencies in regards to stormwater management in the Peel Region area.

## DISCUSSION

### 1. Background

Regional Council directed staff to report on the Regional, Conservation Authority and Area Municipal responsibilities in regards to storm water management. Consultation meetings were conducted with Area Municipal, Conservation Authority and Region staff to obtain information on their stormwater programs and associated responsibilities. Consultation meetings were focused to staff that are involved in stormwater management programs. This report provides details on the consultation process and findings from these consultation meetings.

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**2. Consultation Meetings**

Water Division Program Planning staff consulted with staff from the following Regional, Conservation Authority and Area Municipal program areas:

City of Mississauga:	Transportation and Works
City of Brampton:	Planning, Design and Development Works and Transportation
Town of Caledon:	Public Works and Engineering
TRCA:	Ecology and Water Resources
CVC:	Water Resources
Region of Peel:	Water Division, Wastewater Division, Transportation, Development Engineering, Planning.

Consultation meetings were geared towards obtaining information on the following:

- Mandate and responsibility with regards to stormwater management;
- Identification of existing stormwater management related programs including information on the structure, funding and delivery mechanisms for these programs;
- Interaction between Region, Area Municipalities and Conservation Authorities on stormwater related programs.

**3. General Findings**

Area Municipalities, Conservation Authorities and Region of Peel have a range of responsibilities associated with management of stormwater within the geographic Region of Peel. The following subsections provide information on the Municipal and Conservation Authority jurisdictional responsibilities and mandate with regards to stormwater management.

A matrix of roles and responsibilities in regards to stormwater management is provided in Appendix I. Details on specific stormwater management programs, roles and responsibilities for Area Municipalities, Conservation Authorities and Region of Peel is provided in Appendix II.

**a) Municipal Roles and Responsibilities**

The Municipal Act of Ontario grants powers and jurisdiction to municipalities for collection of stormwater and other drainage from land. In the Region of Peel, the lower-tier municipalities of Mississauga, Brampton and Caledon are responsible for establishment and maintenance of stormwater collection systems and management of stormwater related land drainage within their jurisdictional boundaries with the exception of Regional Roads and Region of Peel facilities.

Each Area Municipality has developed programs for the management of stormwater within their jurisdictions. Information on these programs is provided in the following subsections. This information is based on the consultation meetings conducted with Area Municipal staff.

**b) Conservation Authority Roles and Responsibilities**

Under the *Conservation Authorities Act, 1990* a Conservation Authority has the following powers associated with stormwater and flood management and control:

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- To study and investigate the watershed and develop programs to conserve, restore and manage the natural resources within its watershed boundaries;
- To control the flow of surface waters in order to prevent or reduce the adverse effects of floods or pollution;
- To alter the course of any watercourse and divert or alter the course of any infrastructure as needed to accommodate any existing or proposed works by the Conservation Authority with respect to flood management/control.

The Conservation Authority Act allows, subject to approval by the Minister of Natural Resources, the Conservation Authorities to make the following regulations with respect to stormwater or flood control in their jurisdictional areas:

- Restricting and regulating the use of water in or from rivers, streams, inland lakes, ponds and wetlands;
- Prohibiting, regulating or requiring approval by the Conservation Authority for altering, diverting or interfering with the existing channel of a watercourse or with a wetland;
- Prohibiting, regulating or requiring approval by the Conservation Authority for new developments if the development may affect the control of flooding, erosion and pollution;
- Providing for the appointment of officers to enforce any of these regulations;

TRCA and CVC have developed programs for the management of stormwater and flood control within their jurisdictions. Information on these programs is provided in the following subsections. This information is based on the consultation meetings conducted with Conservation Authority staff.

#### 4. Detailed Findings and Issues

The following detailed findings and issues in regards to stormwater management roles and responsibilities were inferred from the consultations with Regional, Area Municipal and Conservation Authority staff:

- The web of interaction between the Area Municipalities, Conservation Authorities and the Region on stormwater management projects and initiatives is convoluted and complex and in many aspects the mandates and responsibilities are not clearly defined. Municipal and Conservation Authority staff have indicated that the lack of clear mandates has resulted in project delays for development/infrastructure/stormwater management projects within Regulated Areas, whether it be due to review delays, funding or jurisdictional issues.
- Consulted area municipal staff have indicated that they look to Conservation Authorities to provide expertise on stormwater management with respect to implementing pilot projects for innovative technologies and Low Impact development. These types of activities are typically partially funded by Region of Peel through Conservation Authority budgets. Peel Region staff typically participates as a stakeholder in these projects. Area municipal staff have indicated a desire to undertake additional pilot studies/projects with support from Conservation Authorities and Region of Peel.
- Consulted Conservation Authority staff indicate that management of stormwater is needed at the larger watershed/regional perspective. Stormwater management activities

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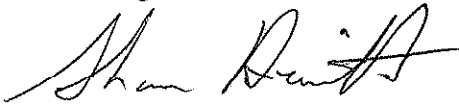
such as retrofits and implementation of innovative technologies (or lack thereof) in the upstream areas of Peel Region has the potential to benefit (or impact) the downstream municipalities (Brampton & Mississauga). These staff have indicated that funding received from the Region for these stormwater management related projects, especially retrofit projects, not only benefit the receiving Area Municipality but also the downstream Municipality and the Watershed/Region as a whole. Consulted staff at Area Municipalities seem to agree with Conservation Authorities on this aspect.

- Many consulted Conservation Authority and Municipal staff seem to agree that a more sustainable funding source and/or arrangement is needed to address existing and future stormwater related needs. For example, the CVC Board of Directors, at its July 9, 2010 meeting, passed resolution #83/10 in regards to sustainable funding of stormwater management and recommendation that CVC Watershed Municipalities consider the adoption of stormwater management rates. A copy of the CVC Board Resolution #83/10 is included in Appendix III of this report.

**CONCLUSIONS**

Consulted Area municipal, Conservation Authority and Regional Staff generally support the development of a stormwater management strategy on a regional scale basis for the Peel Region area. The purpose of the strategy would be to clearly define the mandate and roles and responsibilities for each of these agencies in regards to stormwater management in the Peel Region. The strategy could also be used to determine the overall set of targets and criteria that will most benefit the watersheds as a whole.

The Region of Peel is likely best situated to facilitate the development of a collaborative working group to further assess the current status of stormwater management roles and responsibilities in Peel Region and identify next steps to address identified issues. The working group would include equally weighted representation from the Area Municipalities, Conservation Authority and Region of Peel.



*per* Dan Labrecque  
Commissioner of Public Works

**Approved for Submission:**


D. Szwarc, Chief Administrative Officer

*He* For further information regarding this report, please contact Rodney Bouchard at extension 4894 or via email at [rodney.bouchard@peelregion.ca](mailto:rodney.bouchard@peelregion.ca)

c. Legislative Services

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**STORMWATER MANAGEMENT IN PEEL REGION  
APPENDIX I**

**Matrix of Area Municipal, Regional, and Conservation Authority Roles and Responsibilities for Stormwater Management**

ROLES	RESPONSIBILITIES			
	Province	Region of Peel	Area Municipality	Conservation Authority
<b>Regulatory and Policy</b>				
Collection of Stormwater		Regional Roads and Facilities Only	X	
Stormwater Management Regulations	X (MOE)			
Stormwater Management By-Laws			X	
Stormwater Management Policies	X (MOE)	Regional <sup>(1)</sup>	Local	Support
Flood Control Regulations	X (MNR)			Local Policies
Flood Control Management		Local Support	Local	X
<b>SWM Planning &amp; Design</b>				
Watershed Planning		Participate, Review and Support	Participate and Review	X Technical lead
Stormwater Management Master Planning			X	Technical Support
Floodplain Mapping		Support		X
SWM Pond/Sewer Design Standards	X		Local	Research, Technical Support
SWM Pond/Sewer Design Approval	X Certificates of Approval		Ensure Compliance with Local By-Laws/Standards	Review and Input on behalf of MOE
Stormwater Research (e.g. Low Impact Development)		Participate; Support	Participate; Funding Support	X Research Lead/Training
<b>SWM Facility Implementation</b>				
Construction – Infrastructure Related (e.g. storm sewer)		Regional Roads and Facilities Only	X	Technical Support
Construction - Development			X (developers)	Technical Support
Operation and Maintenance		Regional Roads and Facilities Only	X	
Retrofits - BMPs		Regional Roads and Facilities Only	X	Research & Technical Support
<b>SWM Facility Funding</b>				
New Storm Sewer and SWM Ponds		Regional Roads and Facilities Only	X Mississauga – Development Charges Brampton & Caledon – Developer Funded	
Operation and Maintenance		Regional Roads and Facilities Only	X	
SWM Pond Retrofits		Regional Roads and Facilities Only	X	

Notes: X - Denotes the Agency with Primary Responsibility

(1) – Regional Official Plan and several Regional water resource related policies includes components that relate to stormwater management

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**APPENDIX II**

Details on Area Municipal, Regional and Conservation Authority Programs and Roles Relating to Stormwater Management

<b>Report Name</b>	<b>STORMWATER MANAGEMENT IN PEEL REGION</b>
<b>Report Date</b>	<b>August 5, 2010</b>
<b>Municipality/Conservation Authority</b>	<b>Roles, Responsibilities and Programs</b>
<i>City of Mississauga</i>	<p>The City of Mississauga has developed a Stormwater Management Strategy to address the management of stormwater within its jurisdictional boundaries. This Strategy is currently being updated and should be completed in 2010. Mississauga also has a Storm Sewer Use By-Law, updated in 2005, which is designed to “regulate the discharge of materials to municipal and private storm sewer systems and to protect water quality by preventing the discharge of harmful substances to municipal and private storm sewer systems.</p> <p>During the consultation process, Mississauga Transportation and Works staff also provided the following information relating to stormwater management:</p> <ul style="list-style-type: none"> <li>• Development charges are used to fund stormwater management ponds and stormwater infrastructure and are based on projection of costs to the year 2031.</li> <li>• Mississauga has developed a Storm Drainage &amp; Water Capital Works program for its stormwater related capital projects. This includes a component for streambank erosion and conveyance (movement of stormwater through channels, pipes, etc.);</li> <li>• Mississauga has approximately 50 stormwater management ponds in existence. Since future land development in Mississauga is limited, very few new stormwater management ponds will be constructed;</li> <li>• Mississauga reviews and approves the design of stormwater management ponds as part of subdivision planning; Associated ecological and water flow model reviews are conducted internally by staff;</li> <li>• Mississauga collaborates with Conservation Authorities in the development of Watershed Plans and Subwatershed Plans and in the undertaking of pilot projects for innovative stormwater management related initiatives (e.g. infiltration for Low Impact Development)</li> <li>• Mississauga collaborates with Region of Peel on stormwater management pond issues related to roads where Regional and Area Municipal Roads intersect;</li> <li>• Mississauga does not directly collaborate with City of Brampton or Town of Caledon on stormwater related initiatives and it relies on the Conservation Authorities to provide that link through such activities as Watershed Plan Development, Credit River Water Management Strategy, etc.</li> </ul>
<i>City of Brampton</i>	<p>The City of Brampton is responsible for the construction and maintenance of storm sewers within its boundaries. Brampton has a Discharge of Sewage By-Law which regulates the discharge of materials to municipal and private storm sewer systems. Brampton is also responsible for design approval of stormwater management ponds for new</p>

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developments and operation and maintenance of existing stormwater management ponds.

Brampton is currently developing a Stormwater Management Master Plan to address existing and future stormwater management related issues and provide a funding mechanism to address those issues. This proposed Master Plan is being developed to address the following stormwater related components:

- Capital construction of best management practices to address impacts associated with proposed development;
- Operation and maintenance of existing and proposed stormwater management facilities;
- Retrofitting of existing storm sewer outfalls or ponds;
- In-stream erosion control works;
- Source control program for existing urban areas; and
- Conveyance Control Program for existing urban areas.

During the consultation process, Brampton staff also provided the following information relating to stormwater management:

- Brampton has developed a Subdivision Design Manual (2008) that includes requirements for stormwater management for new subdivision developments;
- Construction of stormwater management facilities for new developments is fully funded by developers. Brampton does not use development charges to fund stormwater management infrastructure. Brampton uses a Cash-in-Lieu program to fund new stormwater management facilities and retrofits of existing stormwater management ponds to accommodate increased development. As part of this program, developers provide funds to the City based on the agreed upon estimated construction costs for stormwater management facilities and these funds are used by Brampton to implement the appropriate stormwater management solution;
- Brampton staff reviews and approves the design of stormwater management ponds as part of subdivision planning;
- Brampton has approximately 115 stormwater management ponds in existence; estimates approximately 400 ponds will be in place at build-out;
- Brampton is currently undertaking the Stormwater Management Facilities Assessment and Maintenance Study to support the proposed Stormwater Management Master Plan. The study is anticipated to be completed by the end of 2010.
- Brampton staff rely on Conservation Authorities staff for review of ecological and modeling components of stormwater management facility applications by developers;
- Brampton staff rely on Conservation Authorities for floodline mapping; flood line maps are used as part of the development planning process;
- Brampton collaborates with Conservation Authorities and Region of Peel in the development of Watershed Plans and Subwatershed Plans and in the undertaking of pilot projects for innovative stormwater management related

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	<p>initiatives (e.g. infiltration for Low Impact Development)</p> <ul style="list-style-type: none"> <li>• Brampton staff interact with Conservation Authorities and stormwater facility retrofit projects;</li> <li>• Brampton collaborates with Region of Peel on stormwater management pond issues related to roads where Regional and Area Municipal Roads intersect;</li> </ul> <p>Brampton does not directly collaborate with City of Mississauga or Town of Caledon on stormwater related initiatives and it relies on the Conservation Authorities to provide that link through such activities as Watershed Plan Development, Credit River Water Management Strategy, etc.</p>
<p><i>Town of Caledon</i></p>	<p>The Town of Caledon is responsible for design approval of stormwater management ponds for new developments and operation and maintenance of existing stormwater management ponds. During the consultation process, Town of Caledon staff also provided the following information relating to stormwater management:</p> <ul style="list-style-type: none"> <li>• Construction of stormwater management facilities for new developments is fully funded by developers. Caledon does not use development charges to fund stormwater management infrastructure and uses a Cash-in-Lieu program, similar to that used by City of Brampton, to fund new stormwater management facilities;</li> <li>• Town staff reviews and approves the design of stormwater management ponds as part of subdivision planning;</li> <li>• Town staff rely on Conservation Authorities staff for review of ecological and modeling components of stormwater management facility applications by developers;</li> <li>• Town staff rely on Conservation Authorities for floodline mapping; flood line maps are used as part of the development planning process;</li> <li>• Caledon collaborates with Conservation Authorities and Region of Peel in the development of Watershed Plans and subwatershed plans;</li> <li>• Caledon collaborates with Region of Peel on stormwater management pond issues related to roads where Regional and Area Municipal Roads intersect;</li> <li>• Caledon does not directly collaborate with City of Mississauga or City of Brampton on stormwater related initiatives and it relies on the Conservation Authorities to provide that link through such activities as Watershed Plan Development, Credit River Water Management Strategy, etc.</li> </ul>
<p><i>Region of Peel</i></p>	<p>Region of Peel is responsible for stormwater management for its Regional road network and regional facilities such as waste management sites, works yards, etc. Regional staff are responsible for the design components of these stormwater management ponds. Conservation Authority staff provide review services for proposed Regional infrastructure work, including stormwater management facilities, within Conservation Authority Regulated areas. With regards to stormwater management, the Region functions in the following capacity:</p> <ul style="list-style-type: none"> <li>• The Region provides funding to Conservation Authorities via special levy projects to fund Watershed Plans, Subwatershed Plans. Regional staff participate on the committees;</li> <li>• The Region funded the development of CVC's Credit River Water Management Strategy Update;</li> <li>• The Region provides funding to CAs, through the Climate Change Funding, for Low Impact Development pilot</li> </ul>

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	<p>projects (i.e. SNAP), STEP program, and development of stormwater management guidance manuals, proposed policies, workshops, etc.</p> <ul style="list-style-type: none"> <li>• In 2008 and 2009, The Region provided funding to TRCA for stormwater retrofit projects in Brampton. Funding was used for undertaking the necessary Environment Assessments. Study costs were shared with Brampton on a 50/50 basis.</li> <li>• The Region of Peel Public Works staff interact with Area Municipal staff for stormwater management requirements for roads projects that intersect Regional and Area Municipal roads.</li> <li>• The Region of Peel collaborates with City of Mississauga on specific projects to address stormwater/sanitary sewer interrelated issues. Such programs include cooperation on Roof Leader Disconnection projects and the Phase 1, Inflow and Infiltration Remediation Program which is being undertaken to address issues relating to the recent Cooksville Creek flooding event;</li> </ul>
<p><i><b>Toronto and Regional Conservation Authority (TRCA)</b></i></p>	<ul style="list-style-type: none"> <li>• Ontario Regulation 166/06 establishes Regulated Areas where development could be subject to flooding, erosion or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. Under Ontario Regulation 166/06, any proposed development, interference or alteration within a Regulated Area (in TRCA jurisdiction) requires a permit from TRCA.</li> <li>• TRCA has a Flood Management Service that includes: providing emergency management support to municipal and regional partners prior to, and during significant flood events; the operation and maintenance of flood control infrastructure (such as large dams and flood control channels); and the development of flood forecasting tools (real-time gauging and NexFlood radar tools). As part of this program, watershed conditions are monitored for precipitation, flow, snow, etc., on a daily basis and flood messages are issued as required.</li> <li>• TRCA has a Stormwater Management Program that was initiated in 1980, in recognition of the impact urbanization has on flooding and erosion. The program has evolved to include water quality and temperature impacts, source control, and retrofitting facilities that do not meet current design standards. Under this program TRCA has developed stormwater management criteria for each watershed on the basis of Level of Control (water quality), Flood Flow Management, and Frequent Flow Management (erosion control).</li> <li>• TRCA has developed Watershed Plans for Humber, Etobicoke/Mimico with funding support from Region of Peel and interaction with Mississauga, Brampton, and Caledon staff. These plans include stormwater management components.</li> <li>• TRCA has Memorandums of Understanding (MOUs) with area municipalities that specify the TRCA's review role in development applications within TRCA regulated areas such as floodplains. This includes review of proposed stormwater management facilities for developments greater than 5 hectares in Regulated Areas.</li> <li>• TRCA develops floodline maps that are used by Area Municipalities and The Region of Peel for proposed development and infrastructure projects.</li> <li>• TRCA participates on the steering committee for Mississauga's Stormwater Management Strategy</li> <li>• TRCA has undertaken Environmental Assessment for Stormwater Pond Retrofits in Brampton; these were partially funded by Region of Peel through Climate Change Funding.</li> </ul>

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	<ul style="list-style-type: none"> <li>• TRCA provides ecological and modeling expertise related to stormwater management to City of Brampton as part of proposed developments;</li> <li>• TRCA leads the Sustainable Neighbourhood Action Plan (SNAP) that is funded by Region of Peel through Climate Change funding. SNAP pilot projects are designed to incorporate and evaluate Low Impact Development and innovative stormwater management components. Brampton, Mississauga and Region of Peel participates in SNAP</li> <li>• TRCA provides the Sustainable Technologies Evaluation Program (STEP) that is funded by Region of Peel through Climate Change funding. The STEP program is designed to evaluate and test innovative technologies at the pilot study level for items such as permeable pavers for stormwater infiltration and others.</li> </ul>
<p><i><b>Credit Valley Conservation Authority</b></i></p>	<ul style="list-style-type: none"> <li>• On July 9, 2010, the CVC Board of Directors passed resolution #83/10 which pertains to the sustainable funding of stormwater management and recommendation that Municipalities in CVC watershed adopt stormwater management rates.</li> <li>• CVC has developed programs, similar to TRCA's, in regards to flood management, flood forecasting and warning, floodplain management and floodline mapping, and soil and erosion control.</li> <li>• In 2006/2007 CVC generated the Credit River Water Management Strategy Update (CRWMSU) which includes stormwater management components including best management practices and retrofit opportunities. The CRWMSU was partially funded by Peel. This document has been endorsed by Region of Peel, City of Mississauga, City of Brampton and Town of Caledon. CRWMSU has not yet been implemented.</li> <li>• CVC has developed Subwatershed Plans for most of its 22 subwatersheds within the Credit River Watershed. These projects were funded by Peel Region. These documents include stormwater management related components.</li> <li>• CVC collaborated with TRCA to develop the draft "Low Impact Development Stormwater Management Manual". Conducts workshops on Low Impact development.</li> <li>• CVC developed the draft "Watershed Planning and Regulation Policies" document, which is currently in the consultation process. The purpose of this document is to further address the implementation of Ontario Regulation 160/06 (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses);</li> <li>• CVC participates on the committee for Mississauga's Stormwater Management Strategy</li> <li>• CVC provides stormwater management pond development review services to area municipalities for proposed stormwater management applications by developers for developments in CVC Regulated Areas.</li> <li>• CVC is not involved in stormwater management pond retrofit projects in Peel Region.</li> </ul>

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STORMWATER MANAGEMENT IN PEEL REGION  
APPENDIX III



July 13, 2010

To: Distribution List

Electronic distribution only

RE: Sustainable Funding of Stormwater Management

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At its meeting of July 9, 2010, the CVC Board of Directors passed the following resolution:

#83/10

*RESOLVED THAT the presentation entitled, "Sustainable Funding of Stormwater Management" dated July 9, 2010 presented by John Kinkead, Director Water Resources Management & Restoration be received, appended to this resolution and to the minutes of this meeting as Schedule 'F'; and*

*THAT the CVC Board of Directors recommends to all member municipalities in the CVC watershed that they adopt stormwater management rates as described in the presentation; and further*

*THAT CVC staff make presentations to member municipal Councils regarding this subject.*

**CARRIED**

Attached is a copy of the accompanying staff presentation (Schedule 'F').

This resolution directs CVC staff to make a presentation regarding Sustainable Funding of Stormwater Management to your Council at an appropriate future date. Such a presentation would be made by John Kinkead, Director Water Resources Management & Restoration and/or Christine Zimmer, Senior Water Resources Engineer. CVC staff is willing to brief senior municipal staff separately, in advance of a Council presentation.

It would be appreciated if a member of your staff would contact the undersigned to discuss an appropriate date or strategy for which CVC could present this issue to your municipality.

Thank you in advance for your assistance.

Regards,

A handwritten signature in black ink, appearing to read 'Maureen Pogue', is written over the typed name.

Maureen Pogue  
Executive Assistant  
[mpogue@creditvalleyca.ca](mailto:mpogue@creditvalleyca.ca)  
905-670-1615, ext 242



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encl.

**Distribution List:**

CAO, Cities of Mississauga, Brampton; Towns of Caledon, Oakville, Halton Hills, Erin,  
Orangeville; Townships of Amaranth, East Garafraxa, Mono  
CAO, Regions of Halton and Peel

**cc:** Clerk, Cities of Mississauga, Brampton; Towns of Caledon, Oakville, Halton Hills, Erin,  
Orangeville; Townships of Amaranth, East Garafraxa, Mono  
Clerk, Regions of Halton and Peel  
Rae Horst, CAO  
John Kinkead, Director Water Resources Management & Restoration  
Christine Zimmer, Senior Water Resources Engineer




## Sustainable Funding of Stormwater Management

Presentation to CVC Board of Directors  
July 9, 2010

### Outline

- Needs
- Program Elements
- Financing Mechanisms
- Stormwater Rates Explained
- Rationale for Change
- Ontario Update



### The Need

- Inadequate stormwater controls a major problem for the Credit and its communities
- Current SWM programs underfunded
- Required improvements are added costs
- Climate change increasing the urgency
- Costs not equitably shared



### CRWMSU - Key Recommendations

That the CVC and Municipal Watershed Partners commit to:

- PRINCIPLE** - Recognize rainwater and snowmelt as valuable resources; manage rain where it falls - on lots and streets - before it enters sewers and streams.
- TARGETS** - Formally adopt the Strategy goal, objectives, measurables and targets as basis for future municipal endeavours.
- BMP MEASURES** - Implement a hierarchy of water quality/quantity BMPs in all new development and redevelopment undertakings using a full range of source, conveyance and end-of-pipe controls and restorative measures consistent with the recommended strategy.
- POLICY/STANDARDS** - Ensure municipal planning and development policies, guidelines, processes and standards incorporate an integrated ecosystem approach that draws on the collective expertise and experience of planners, engineers and landscape architects.



### CRWMSU Recommendations (cont'd)

- ❑ **FUNDING** - Initiate the necessary programs and processes to staff and fund a range of retrofit and restorative measures within existing urban and rural areas as recommended in the Strategy.
- ❑ **ADMINISTRATION** - Put in place an appropriate administrative structure to guide and oversee Strategy implementation.



### Stormwater Program Elements

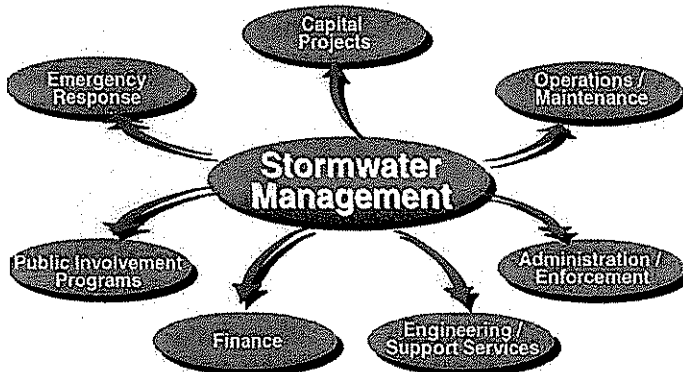



Figure 2-1: Components of a Stormwater Management System



### Financing Mechanisms



- Property taxes
- Development charges
- Infrastructure stimulus funding
- Stormwater rates



### Stormwater Rates Explained

- User fees
- Covers capital and operating
- Based on amount of impervious area
- ICI sector will pay more
- Credits for managing runoff on site
- Typical charge ~ \$4 / month / HH

Equivalent Impervious Area



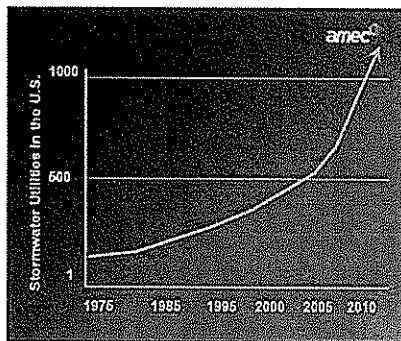


### A Rationale for Change

- Share costs equitably
- Create incentives for implementing BMPs on private property
- Set the course for sustainable funding
- Help achieve our Water Management Objectives
  - Improved water quality
  - Reduced flood risks
  - Improved habitats for fisheries and wildlife
  - Reduced erosion
  - Enhanced groundwater supply



### SWM Rates Usage



#### Ontario

- Currently in Aurora, London, St Thomas
- Coming to Kitchener, Waterloo, Hamilton, Ottawa
- Most GTA municipalities gathering information

#### United States



