



City of Markham

Stormwater Management and Funding

Community Information Meetings (March/April 2013)



Input Overview Report

Report Context



On February 12, 2013, City of Markham Council defined a City-wide flood control strategy, including:

- Service level targets (100 year storm level of protection for storm sewer systems).
- Project implementation strategy and timeframe (start with priority areas and implement across entire city over 30 years).
- Funding sources to address \$155M in identified needs.

Specifically, Council has determined that the funding source will be a City-wide fee, offset by a portion of the City's Canada Gas Tax revenues. These revenues have previously been allocated to Markham District Energy and to other projects on a project-specific basis. Since minimizing flood risks is a priority, Council decided that Canada Gas Tax be considered to offset the cost of City-wide fees.

Council directed that a series of public meetings be held to provide this information to residents and to seek feedback. The following public meetings were held. Input was also invited via e-mail to staff and through a new stormwater page on the City's web site.

Tuesday, March 26, 2013 7:30 – 9:30 p.m. Centennial Community Centre The Penalty Box Lounge 8600 McCowan Road	Thursday, April 4, 2013 7:00 – 9:00 p.m. Cornell Community Centre & Library Rehearsal Hall 3201 Bur Oak Avenue
Wednesday, March 27, 2013 7:30 – 9:30 p.m. Thornhill Community Centre & Library North Hall 7755 Bayview Avenue	Thursday, April 11, 2013 7:00 – 9:00 p.m. Rouge River Community Centre Auditorium 120 Rouge Bank Drive
Tuesday, April 2, 2013 7:00 – 9:00 p.m. Angus Glen Tennis Centre Upper Lounge 3990 Major Mackenzie Drive East	

What were the goals of the public meetings?

The goals for the public meetings were to:

- ↓ Present background information regarding stormwater management and flooding in Markham.
- ↓ Identify the need for a dedicated stormwater fee.
- ↓ Explain Council decisions on service level targets, priority areas and funding sources.
- ↓ Hear and document various perspectives from all participants regarding the implementation of the fee.

How was the meeting publicized?

This meeting was broadly advertised through the local newspaper, local Councillors and their newsletters, ratepayer groups, direct mail and e-mail and on the City's website. The intent of this advertising was to draw in a broad cross section of stakeholders from across all wards.

Who attended the public meetings?

Approximately 130 residents attended the public meetings. The largest attendance (approximately 60 people) was at the Thornhill Community Centre, likely because of the recent flooding events within the community. Other meetings were attended by roughly 10 to 25 people, largely residential property owners. Meetings were also attended by local and regional Council members, the deputy Mayor, the Mayor, staff and consultants.

Approximately 6 residents also provided e-mail comments following the public meetings.

What was the meeting format?

Participants were welcomed, invited to sign in and view the poster boards (see **attachment a**). Comment forms were also available. After approximately ½ hour of informal time, participants were invited to hear a presentation given by the staff and consulting team (see **attachment b**). Following the presentation, a facilitated question and answer session took place. All of the questions and answers were documented in individual meeting minutes (see **attachment c**). The meeting in Thornhill (meeting #2) was also recorded by residents and placed on You Tube and can be viewed at <http://www.youtube.com/watch?v=dJHSlqwIOaY>

Following the question and answer session, participants were invited to remain and discuss any property-specific or outstanding matters with staff. Participants were also invited to provide additional feedback to staff by April 30, in order that comments could

be considered by staff as they prepare a report to Council regarding implementation of the fee. These comments were compiled and are included as **attachment d**.

What did we hear?

Over the course of the five evenings and through e-mail input, a number of key messages and questions were identified by stakeholders. This information is anecdotal and does not represent statistically valid findings. It can, however, provide useful input to staff and decision makers in considering next steps in how the new fee will be implemented. It should also be noted that a number of comments are out-of-scope and not directly related to the new fee and its implementation. These comments can be directed to the appropriate staff for consideration.

General

- It would be beneficial to provide general information about the City's existing stormwater management program (costs, development charges, stormwater management guidelines, capital expenses, operating and maintenance practices, and key contacts), as well as the differences between the stormwater and sanitary sewer systems.
- Residents are very interested in understanding the application of source control measures, such as downspout disconnection and installation of backflow preventers, which can be undertaken at home/business. It was felt that the downspout disconnection program in particular has City-side application.
- There is a need to continue to clearly explain the origins of and need for this fee, including legislated requirements, environmental benefits, predicted impacts of climate change and the trade-offs being made in dedicating fees towards stormwater management.
- Although it was explained that new developments are required to manage stormwater on-site, meeting participants noted a concern that new development could exacerbate stormwater/flooding issues.
- A number of residents expressed concern about enforcement of driveway related by-laws, as it seems more and larger driveways are being paved, creating additional impervious surfaces and compounding stormwater management issues.

Support/Concern for Fee

- Many residents who attended the public meetings, expressed support for the City-wide fee. It was felt that stormwater management infrastructure should get a higher profile when compared with other City services and facilities.
- A number of residents raised concerns about the fairness and equity of contributing to a stormwater fee when stormwater from their properties is managed through ditches. Some of these properties are larger in size, so an additional concern was raised that they may be required to pay more than some of the smaller properties, who have experienced more flooding issues.
- Concern was expressed about adding another fee to the tax burden, especially if the fee is to be paid by all property types including tax-exempt properties.

- Some support was expressed for increasing the stormwater management fees and implementing the strategy over a shorter period of time.

Implementation

- Participants were interested in how credits could be earned to offset the fee.
- Suggestion was made that the City should identify clear success metrics, show the stormwater fee separately (i.e. as a distinct item), report annually on how the funds were spent and what progress was being made on achieving success within the overall strategy.
- Participants were very interested in the priority areas that have been identified, as well as the process for identifying future priority areas.
- Concern was raised that over the 30-year implementation timeframe, the areas that were addressed first would likely have sub-standard service levels at the time of completion. Many participants expressed an interest in shortening the implementation timeframe from the proposed 30 years.

How will the information be utilized?

Input received during the public meetings will be carefully considered by staff as they prepare a report to Council regarding the implementation of the stormwater fee. Input will help to determine a recommended course of action that will be the subject of additional consultation. The next report to City Council is expected in June 2013, and the fee is expected to be implemented in 2014.

Next Steps

At the conclusion of each public meeting, participants were informed that all comments would be documented and considered by staff as the fee implementation strategy is developed for implementation in 2014. In order to further explore some of the considerations and concerns identified during the public meetings, and to include a broader cross section of taxpayers (i.e. from industrial, commercial and institutional sections, including tax-exempt property owners), it is suggested that focus group and/or additional consultation sessions be held prior to finalizing the implementation approach. Items for consideration could include:

- Implications (on all property types) of the fee and of expediting the proposed 30-year timeline.
- Most acceptable fee payment and reporting mechanisms.
- Potential rebate and credit system.

- Program success measures.
- Testing key messages for a broader public education approach related to stormwater management in general and this fee specifically.

April 2013

Appendix A
Poster Boards

Stormwater Management

Community Information Meeting

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 Management

Stormwater management is a service that keeps a low profile, but that faces increasing demands to maintain City commitments to service level improvements

- Stormwater runoff is generated when precipitation from rain and snowmelt flows over land and is not absorbed into the ground
- Compared to natural conditions, roads, rooftops and parking areas increase runoff and pollutants that are washed off
- Controlling flooding and 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 Challenges

- Urbanization: Growth and development alters the amount of runoff and pollution
- Aging infrastructure: Pipes, culverts and outfalls have a limited life expectancy
- Changing design standards: Older systems that were designed to previous standards may be inadequate with respect to current and future regulatory requirements
- Need for long-term planning: An appropriate amount of 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 on a regular basis
- Design or construction issues: Development plans must be thoroughly reviewed and sites adequately inspected during construction to maintain standards
- Climate Change: Stormwater facilities must be able to respond to rainfall events that are becoming more intense and are occurring with greater frequency



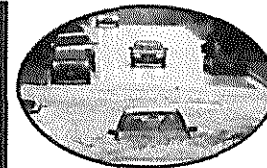
New Development

Aging Infrastructure

Aging Infrastructure



Flooding



Flooding



Culvert Blocked with Debris

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

How Stormwater Interacts with the Land

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.

Urban Hydrologic Cycle

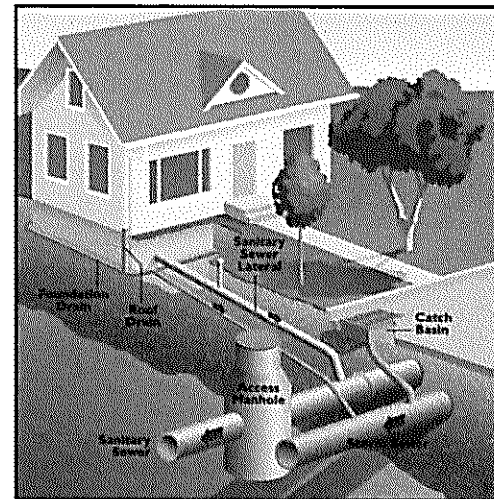
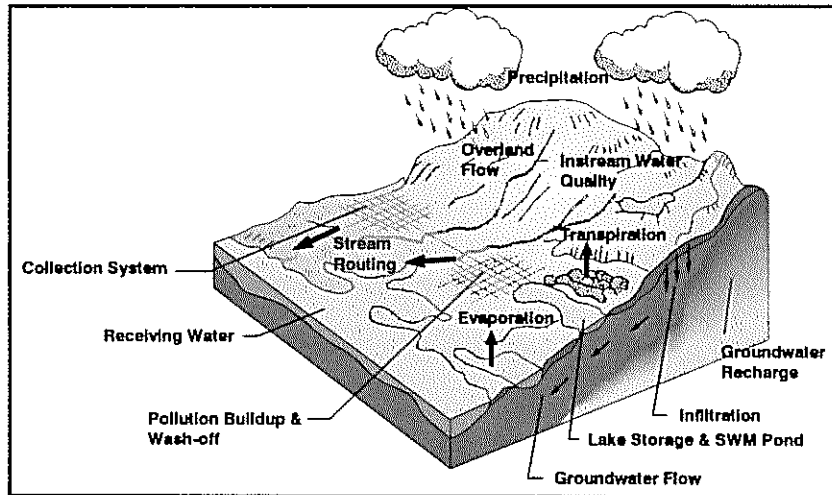
Urbanization affects the hydrologic cycle through the disruption of the natural drainage paths and the decrease of vegetation and absorbent surfaces throughout the watershed. These disruptions can significantly alter the environment. Stormwater management techniques are used in urban areas to help mitigate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



A Little Runoff



A Lot of Runoff



Stormwater in an Urban Setting

The amount of stormwater runoff and pollutant loading is influenced primarily by rainfall and impervious area. Impervious area refers to hard surfaces such as roads, parking areas, driveways, sidewalks, and building rooftops that prevent stormwater from soaking into the ground. These areas generate more runoff, transport it more quickly, and accumulate more pollutants than from an equivalent natural area.

The City and its partners in watershed management ensure that new developments are designed to minimize runoff and potential impacts to the environment and downstream owners. The City also retrofits the stormwater system in older areas to reduce the impact of urbanization that occurred under older, less-comprehensive design standards.

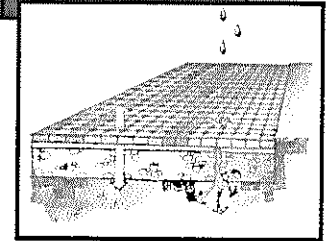
Impacts of Increased Urbanization

Increased impervious areas due to development and urbanization 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



Stream Erosion
Don River Watershed



Permeable Pavers to
Reduce Runoff

Although rainfall is unpredictable, the amount of impervious area runoff can be controlled by developers and landowners. Low impact development practices can limit the amount of stormwater runoff and pollutant loading generated by a property and delivered to the City's stormwater management system.

Stormwater in a Legislative and Regulatory Context

Provincial and Federal Legislation

- **Ontario Water Resources Act** prohibits activities that introduce pollutants into waterbodies
- **Provincial Water Quality Objectives** 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
- **Ontario Environmental Assessment, 1990** ensures municipal stormwater projects minimize and mitigate impacts to the natural and social environments
- **Conservation Authorities Act** regulates development and activities in or adjacent to stream valleys, watercourses, hazardous lands and wetlands so as to control flooding, erosion, and water quality, and also to protect watercourses and wetlands
- **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
- **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 **Canada Fisheries Act** 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:

- **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; Stormwater Management Requirements for Land Development Proposals
- **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)
- **Others** - In partnership with other agencies, including the Toronto and Region Conservation Authority (TRCA), the City manages watercourses, including the rehabilitation of erosion sites to restore ecosystem health and protect private/public infrastructure. The City also implements policies to protect sensitive surface/groundwater features identified through provincial plans and initiatives (e.g., Oak Ridges Moraine Conservation Plan, Greenbelt Plan, Source Protection Plan).

Stormwater Management in Markham

Markham's Strategy for Managing Stormwater

The City's strategy is guided by the principles of promoting community health and safety while minimizing environmental impacts in a financially sustainable manner. It includes:

1. Flood Control projects and policies to manage flooding risks to public/private property
2. Erosion Control projects and policies to protect roadways and critical infrastructure through erosion prevention and erosion site restoration
3. Watercourse Management to restore aquatic habitat and environmental health and to ensure sufficient capacity to convey flows during large rain storms
4. Stormwater Facility Retrofits to add water quality treatment functions to old ponds and pond cleaning/maintenance to ensure newer ponds operate efficiently
5. Policies and Standards to guide the design, operation, and rehabilitation of stormwater assets
6. Resources and Funding to support the strategy as well as administration, staffing, computer resources, and equipment

A number of studies have been undertaken recently by the City to refine this strategy:

Flood Control

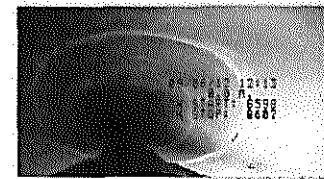
- West Thornhill Flood Remediation
- Don Mills Channel Capacity (on hold pending funding)
- Flood Emergency Response Plan

Erosion Control

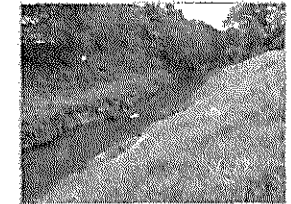
- City-wide Master Erosion Control Implementation Study

Watercourse Management

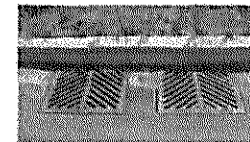
- Pomona Mills Creek Erosion Restoration & Habitat Enhancement



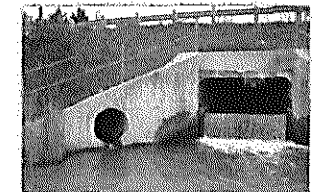
Storm Sewer



Storm Channel



Catch-basins



Storm Outfall and Culvert

Markham's Stormwater Assets

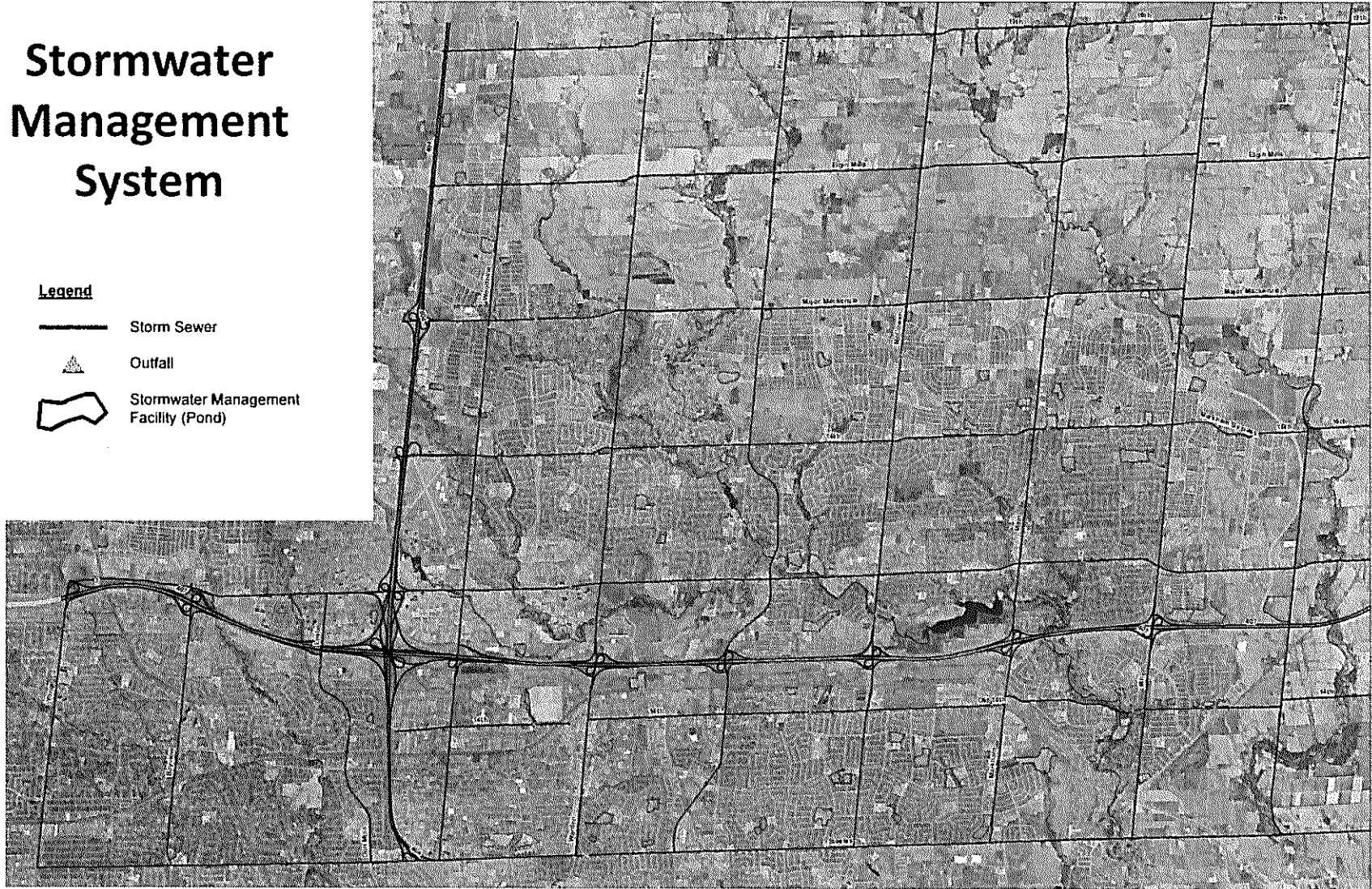
- 743 km of storm sewers
- 176 km of ditches
- 11,400 manholes
- 20,000 catch-basins
- 301 sewer outfalls
- 4,500 bridges and culverts
- 70 stormwater management facilities (ponds)
- 2 stormwater pumping stations

Markham's storm sewers, manholes and catch-basins have an estimated replacement value of \$500 million.

Stormwater Management System

Legend

- Storm Sewer
- ▲ Outfall
- ◊ Stormwater Management Facility (Pond)



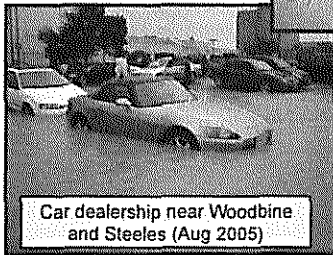
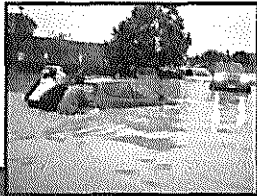
Stormwater Management Issues and Challenges in Markham

Flooding: While infrequent, flooding is the most visible evidence of stormwater capacity issues. Flooding presents a threat to public safety and can damage public and private property, disrupt business, and hamper our everyday activities. It can also overload the City's wastewater system with unwanted inflows, increasing basement flooding risks.

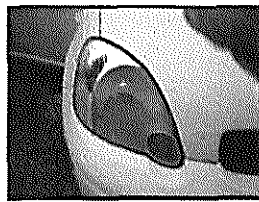
Erosion: Water traveling quickly over an unprotected surface will cause that surface to erode. Controlling the movement of runoff is important to prevent the erosion of stream banks, hill slopes and even roadways and structures.

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.

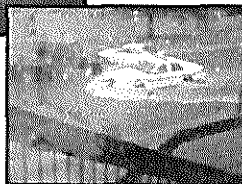
Debris: Flowing water carries whatever it can and deposits this material when obstructions are in the way. This can cause a build-up of debris that blocks water getting through and may cause flooding as a result.



Car dealership near Woodbine and Steeles (Aug 2005)



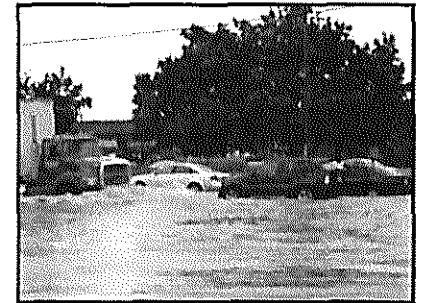
Woodbine Ave (Don Mills Channel Area, Aug 2005)



Woodbine Ave (Don Mills Channel Area, Aug 2005)



Laureleaf Rd and Steeles Ave E (West Thornhill, June 2008)



Woodbine Ave (Don Mills Channel Area, Aug 2005)

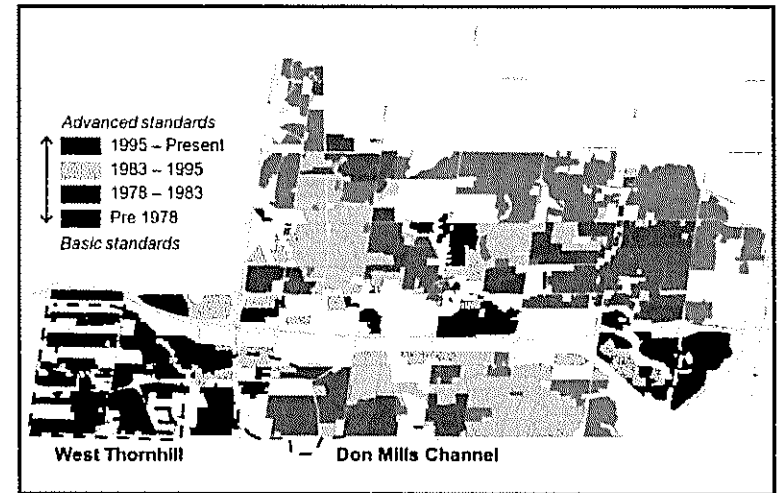


Laureleaf Rd and Hammock Cres (West Thornhill, June 2008)

Stormwater Service Levels within Markham

The map on the right shows how the City's stormwater system was built up over many decades, under a range of design standards and regulatory requirements that were in place at the time of construction. The capacity of storm sewer and roadway systems to handle intense storms without flooding private property was limited prior to 1980.

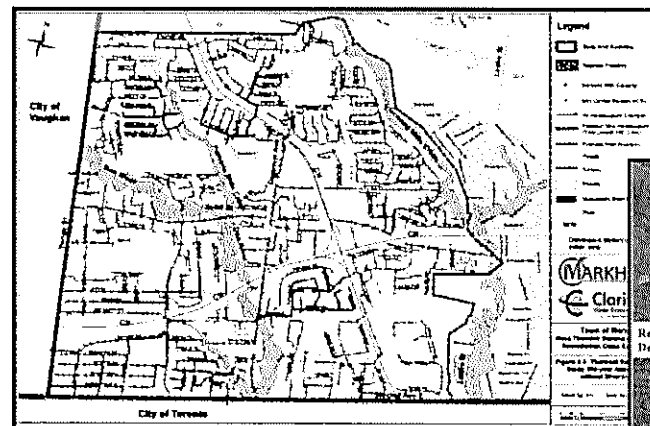
Stormwater pipes and facilities are designed to safely convey or store runoff in response to extreme rainfall events. The level of service for flood protection is typically defined by the largest rainfall event that a stormwater management system or component is designed to control. For example, a pond that provides a 100-year level of service is designed to temporarily store the runoff from a 100-year return period storm (that is, a storm that has a 1% chance of occurring in a given year). A channel or sewer pipe that provides a 5-year level of service indicates it was designed to safely convey runoff from a 5-year return period storm (that is, a storm that has a 20% chance of occurring in a given year).



Managing Flood Risks

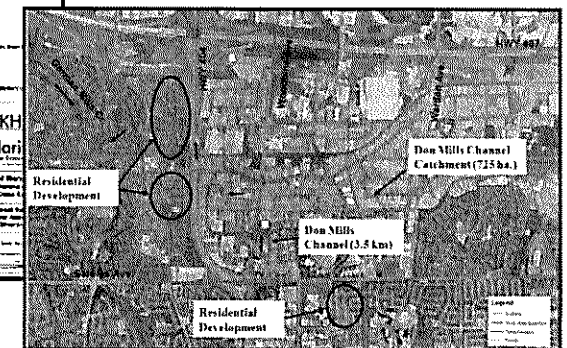
Flood protection is a core service that benefits all residents and businesses. It is therefore desirable to achieve a consistent level of service for flood protection across the City.

Some areas require substantial system upgrades and service level improvements right now to alleviate flooding problems. Markham Council has confirmed that this is a City-wide responsibility and that costs should be shared by all property owners.



West Thornhill

Don Mills Channel



Stormwater Program Funding and Challenges

Current Funding Sources

Markham's current stormwater program is funded by a combination of revenue sources, including:

- **Property tax:** This is the primary source of funding. Stormwater revenue drawn from tax funds must compete with many other City services and can be inadequate to provide the desired service levels.
- **Development charges:** The City collects fees from developers in a fund that is specifically set aside for new growth-related capital costs including erosion restoration. These funds cannot be used to maintain existing facilities in established areas nor can they be used to recover the costs of future maintenance of facilities constructed using developer funds. Further, as remaining developable lands diminish, the City cannot depend on these funds as a reliable source of revenue.
- **Other sources:** grants from government agencies and cost-sharing by partners like York Region. Grant programs are often very competitive, and challenging to secure. They also tend to be time-limited and therefore can only be treated as a supplemental source of funds.

Future Funding Needs

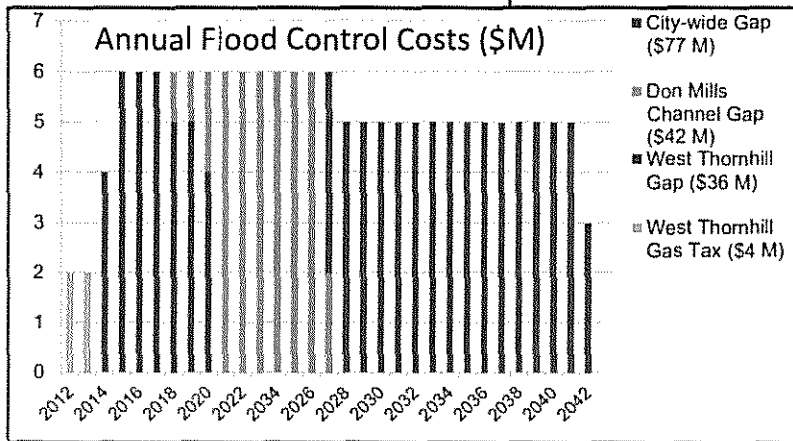
Despite investments in the City's stormwater program, flooding and erosion issues continue to exist. As infrastructure ages, additional rehabilitation efforts and capital improvements will be needed just to maintain current levels of service. Regulatory requirements and design standards continue to evolve and are becoming more rigorous in addressing the environmental impacts of stormwater, increasing the funding pressures.

As part of its flood control strategy, the City has identified \$159 million in future flood control costs throughout Markham. A funding source has not been identified for \$155 million of this total. The flood control costs and how the resulting annual expenditures might be planned over a 30-year timeframe are shown below.

Type of Work	Estimated Cost		Funding Identified
	5-year Protection	100-year Protection	
a) Don Mills Channel	\$42M	\$142M	\$0
b) West Thornhill	\$17M	\$40M	\$4M – Gas Tax
c) Town-wide	\$33M	\$77M	\$0
Total Flood Control	\$92M	\$229M	Total \$4M

\$ 159 M Flood Control Cost

\$ 155 M Funding Gap



Markham's Flood Control Strategy

Council Decisions

During the February 12, 2013 Council meeting, a number of decisions were made related to the City's flood control strategy, including:

- Service level targets for flood protection throughout the City
- An appropriate implementation timeframe for priority flood control projects
- The corresponding funding sources to be investigated that will support these projects

Funding Options

A number of options were considered during project-specific studies and workshops on City-wide needs. Council approved a city-wide stormwater management fee, rather than a local charge assessed to property owners who would directly benefit from improvement projects. Consideration of Canada Gas Tax Funding to offset fees was also approved.

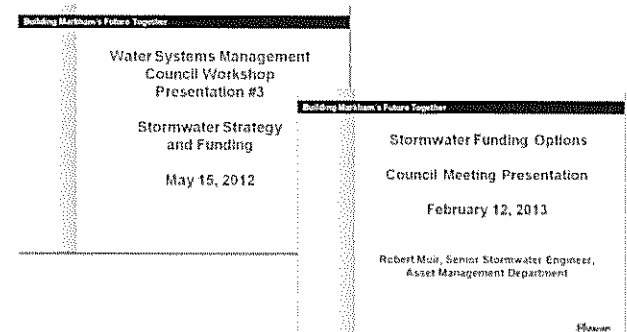
The fee will provide a dedicated and sustainable funding source for stormwater management throughout the City. Details from the workshops have been placed on the City's website at www.markham.ca.

(2) WATER SYSTEMS MANAGEMENT PRESENTATION #4 STORMWATER FUNDING OPTIONS (5.5)
Presentation

Moved by Councillor Colin Campbell
Seconded by Councillor Carolina Moretti

- 1) That the presentation by Robert Muir, Senior Stormwater Management Engineer regarding the Water System Management - Stormwater Funding Options be received, and,
- 2) That the City's flood control strategy adopt a 100-year level of service target for City-wide storm drainage systems, subject to technical feasibility and approvals as part of future Class Environmental Assessments (EA) which shall consider different levels of protection, and, **Service Level**
- 3) That the City's flood control strategy adopt a 5 year level of service target for Don Mills Channel drainage system based on its original design and consider other options, subject to technical feasibility and approval as part of a future Class EA, and,
- 4) That the City adopt a 20 year implementation timeframe for its flood control strategy, and, **Project Timing/Priority**
- 5) That the flood control strategy implement City-wide flood risk reduction projects, prioritized on the basis of identified risk and cost-effectiveness of solutions; and,
- 6) That the flood control strategy be updated on a 5 year cycle considering projects identified in completed technical studies and updated budget requirements; and,
- 7) That funding responsibility shall be a 100% City-wide infrastructure responsibility, paid for by City-wide fees; and, **Funding Options & Public Feedback**
- 8) That staff proceed with City-wide Public Information Meetings with the City-wide funding option noted above; and,
- 9) That Canada Gas Tax Funding be considered to offset the cost of the above options; and further,
- 10) That staff report back on the details of the Public Information Meetings, with recommendations on the funding mechanisms to be used to generate the city wide fees and an overall citywide stormwater strategy based on the recommendations noted above, and an imminent timeframe for implementation

CARRIED AS AMENDED BY RECORDED VOTES
(See following recorded votes)
(10:1 for Resolution Nos. 1 to 6, 9 and 10)
(8:3 for Resolution Nos. 7 and 8)



Next Steps and Contact Information

In 2013, City staff will be developing a City-wide fee structure that is appropriate for residential property owners and businesses throughout Markham. Preliminary estimates suggest that the cost for a typical residential property would be about \$48 per year to implement the approved flood control strategy. The costs would be reduced with the contribution of Canada Gas Tax funding identified by Council. For non-residential properties, this fee is anticipated to be in the order of \$560 per year, with some variance based on the size of the property. Again, the fees would be reduced with the contribution of Canada Gas Tax funding.

Public feedback on the City's flood control strategy and funding source is most welcome. Please fill out a comment sheet and place in the box provided or send to the contact below. Comments received will be compiled and summarized in a staff report to Council in May 2013. Further notifications and information sessions regarding implementation of the City-wide fee structure are expected. Those completing comments forms can advise if they wish to be notified of subsequent Council Committee, Council, and public meetings on stormwater management and flood control funding.

City staff and Councilors recognize the importance of stormwater management and the potential impacts to citizens and businesses. In addition to the Spring 2013 community information meetings (including tonight's), a number of education materials and resources have been placed on the City's website at www.markham.ca.


Contact

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

Robert Muir, M.A.Sc., P.Eng., Senior Stormwater / Environmental Engineer
Asset Management Department, City of Markham
8100 Warden Ave, Markham, Ontario L6G 1B4
Phone: (905) 477-7000 ext. 2894
Fax: (905) 479-7766
Email: rmuir@markham.ca


Appendix B
Presentation

Building Markham's Future Together



Stormwater Management

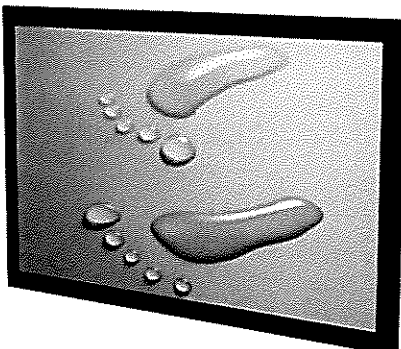
Spring 2013



Stormwater Management


Agenda - Stormwater Management

- What it is
- What the City is doing now
- Future needs
- Funding
- Question and Answers



Building Markham's Future Together **Towards a Sustainable Community**



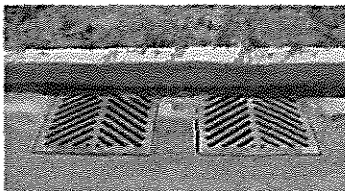
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Stormwater Management


Markham's Stormwater System

- 743 km of storm sewers
- 11,400 manholes
- 20,000 catch basins
- 301 sewer outfalls
- 4,500 bridges/culverts



Building Markham's Future Together Towards a Sustainable Community

3

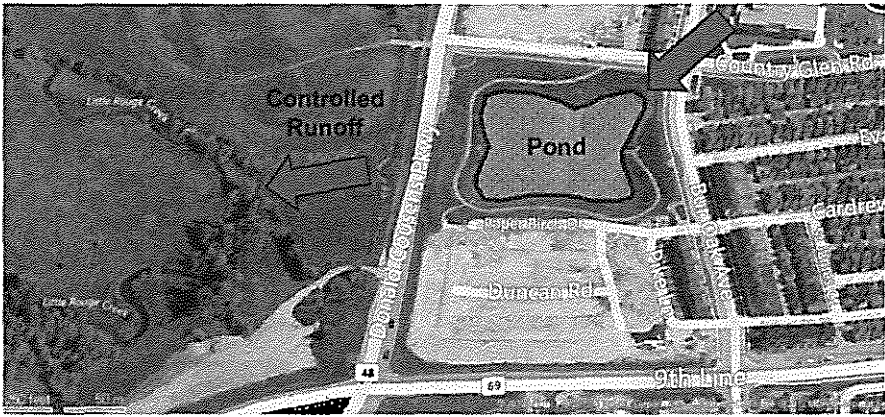


Stormwater Management

Markham's Stormwater System

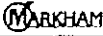
- 70 stormwater ponds

Urban Runoff



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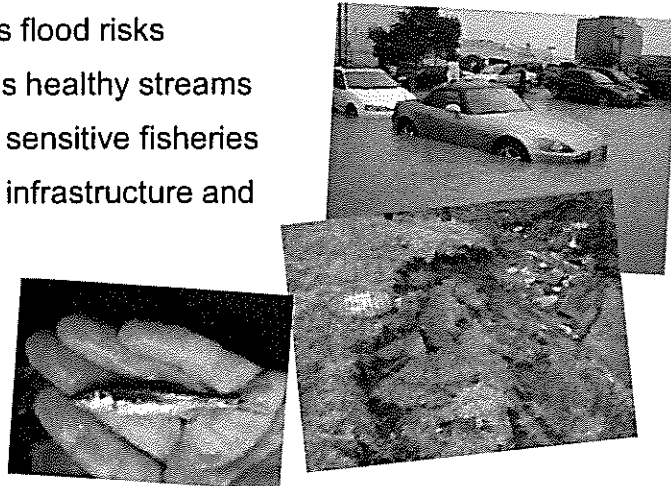
4



Stormwater Management


Markham's Stormwater Program

- Manages flood risks
- Maintains healthy streams
- Protects sensitive fisheries
- Protects infrastructure and property



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5




Stormwater Management


Program Pressures & Challenges

- Changing design standards
- Aging infrastructure
- Climate change
- Urbanization / growth

Old standards




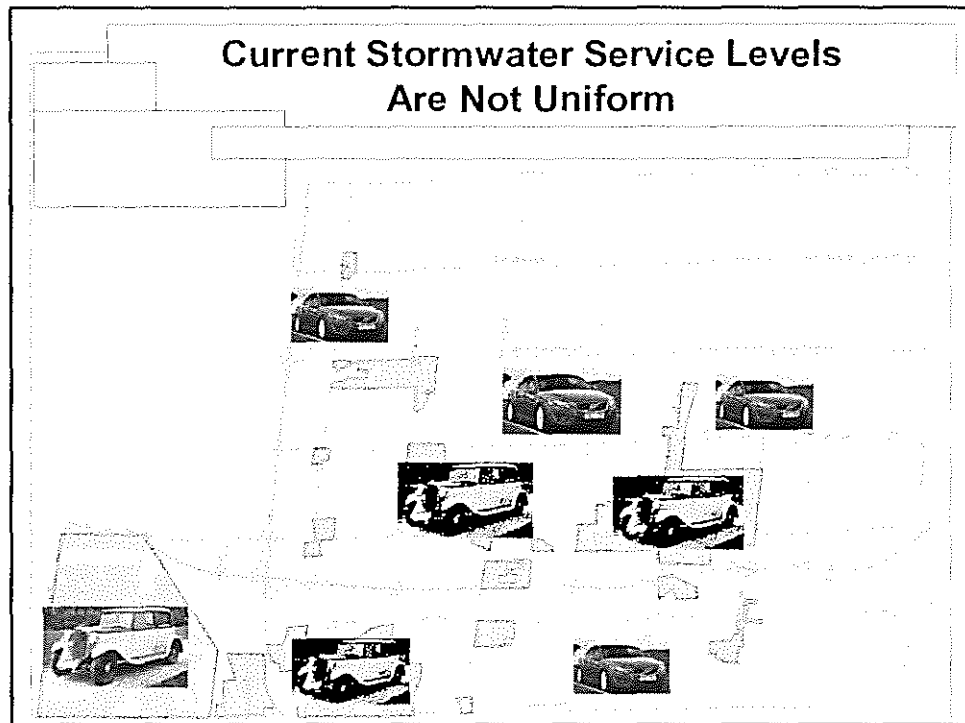
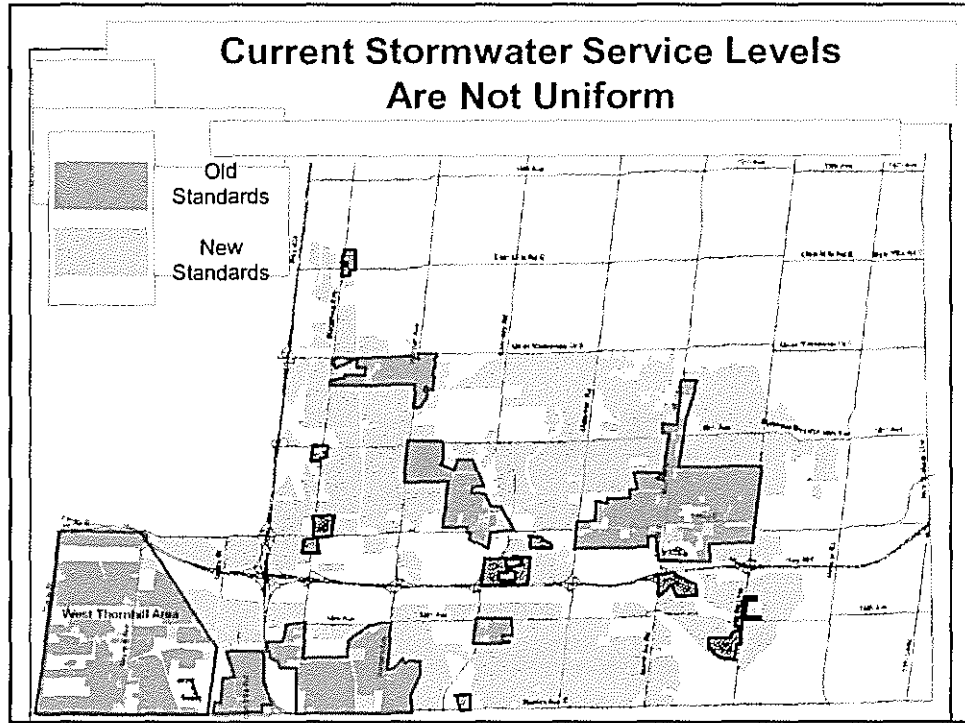
New standards



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6

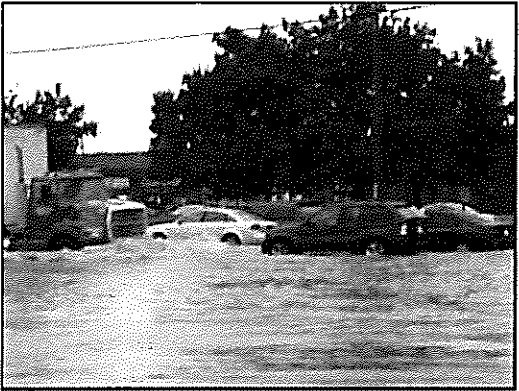




Stormwater Management

Managing Flood Risks


- Higher service levels needed across City
- Some areas require substantial upgrades



Woodbine Ave (Aug 2005)

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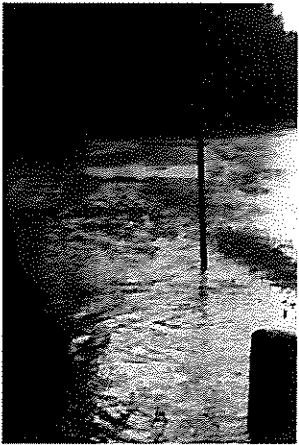
9



Stormwater Management

Stormwater Program Funding


- Sustainable funding source for flood control not available for approved projects
- Council decisions defined a City-wide flood control strategy Feb. 12, 2013
- The strategy includes
 - Service level targets (100 year for storm sewer systems)
 - Project implementation strategy
 - Funding sources



Apricot St. (June 2008)

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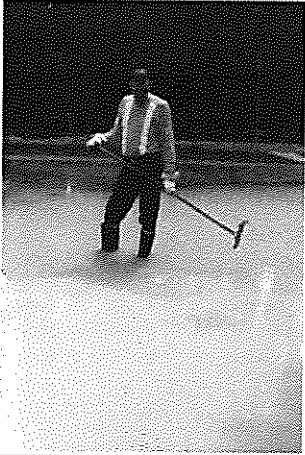
10



Stormwater Management

Stormwater Program Funding


- Future service levels set across the City
- Cost to reach approved service levels is \$155 million
- Requires long-term implementation over 30 years
- Annual cost of \$ 5.2 million is close to 3x the existing stormwater program spending



Laureleaf Rd.(June 2008)

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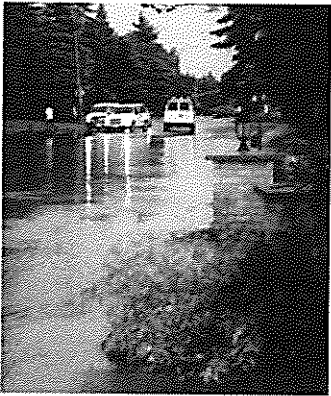
11



Stormwater Management

Funding Sources


- City-wide fee and Canada Gas Tax Fund
- Fee may be flat or varied based on property size, land use type
- Estimated average annual cost per residential property:
 - \$48 without Gas Tax offset
 - \$36 with Gas Tax offset
- More cost information at www.markham.ca



Laureleaf Rd. north of Steeles Ave. E (June 2008)

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12



Stormwater Management

Next Steps

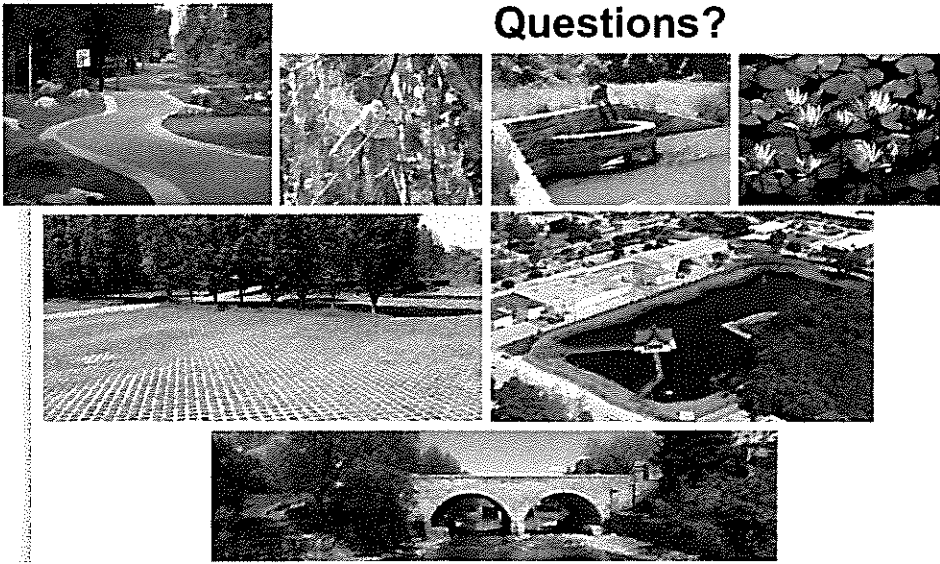
- Report to Council on implementation of City-wide fee (fee structure, fee credits, billing method)
- Fee implementation
- Final design and construction of approved flood control projects
- Additional studies in older areas (future projects)
- Please fill out a comment sheet or contact:
 Robert Muir, Senior Stormwater / Environmental Engineer
 T: (905) 477-7000 x 2894 • E: rmuir@markham.ca
 8100 Warden Ave, Markham, Ontario L6G 1B4
- Additional Resources at www.markham.ca

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13 

Stormwater Management

Questions?



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14 

Stormwater Management

[outline]

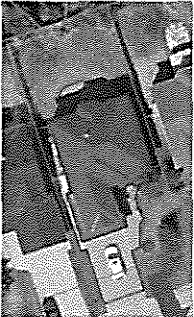
- **7:15-7:20 Greetings by Councillor/Mayor (some venues not all) or senior staff**
- **Introduction of staff and consultant (Soran)**
- **Presentation by Mike [7:20-7:40]**
 - (Stormwater management) What it is
 - What the City is doing now
 - Future needs
 - **Rob: Starting slide 10 Strategy and Funding (per resolutions) [Soran April 11th]**
- **Q&A facilitated by Tracey / Rob [7:30-8]**
- **Ward map? SWM facilities? (bring for reference)**

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15 

Stormwater Management

Stormwater Fee Based on Property Size




Single Family Home
Average Runoff and Fee
(\$48 without Gas Tax offset)



Multi-Family Condo (27 units)
More Runoff, Higher Total Fee (low fee per unit)

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16 

Stormwater Management

Stormwater Fee Based on Property Size



Multi-Family Condo

Shopping Centre
More Runoff, Higher Fee

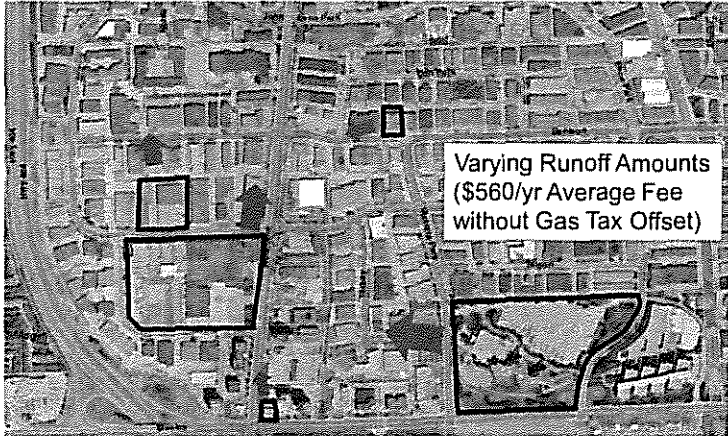
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17



Stormwater Management

Stormwater Fee Based on Property Size

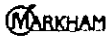


Varying Runoff Amounts
(\$560/yr Average Fee
without Gas Tax Offset)

Industrial, Commercial, Institutional property sizes vary significantly and so could stormwater fees (e.g., Don Mills Channel watershed shown above).

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18



Appendix C
Meeting Minutes

Minutes of Meeting

Date of Meeting	March 26, 2013	Start Time	8:00pm	Project Number	60147255
Project Name	Markham Stormwater Management and Financing Study				
Location	Centennial Community Centre				
Regarding	Community Information Meeting No. 1 (Wards 3 & 4)				
Attendees	(see attached sign-in sheet)				
Distribution	File				
Minutes Prepared By	Glenn Farmer, Mike Gregory				

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
<p>1. Group Welcome</p> <ul style="list-style-type: none"> • Rob Muir (Senior Stormwater Engineer) opened the meeting by welcoming attendees. He introduced Ward 3 Councillor Hamilton and Ward 4 Councillor Moretti as well as the project team. 	
<p>2. Presentation</p> <ul style="list-style-type: none"> • A presentation was given by Rob and Mike Gregory (AECOM) providing an overview of the City's stormwater management program, its assets, service levels, future program pressures and funding options. • Tracey Ehl (Ehl Harrison Consulting Inc.) facilitated the open discussion that followed the presentation. A summary of the discussion items is presented as follows: • Q: Is the City considering stormwater runoff from new development areas that drain into older areas? • A: Soran Sito (Environmental Assets Manager) replied that all new developments require flood control in order to match pre-development flows and prevent downstream flooding impacts. The intent of this strategy is to provide flood control to the same uniform service level City-wide by addressing older development areas. The subwatershed studies undertaken by the City are intended to quantify and address downstream impacts associated with new development. • Q: Who is responsible for cleaning obstructions from channels and maintenance? • A: Rob noted that the City's operations department carries out maintenance and cleaning of channels and storm drainage infrastructure on a regular basis and also in response to public complaints. Most open channels are either owned by the City or there are easements or access agreements to allow access by City staff for cleaning and maintenance. 	

- Q: Is the proposed stormwater fee for combined sewer systems?
- A: Rob replied that there are no known combined storm and sanitary sewers in the City of Markham.
- Q: What would be the expected service life of the new storm sewer system?
- A: Rob responded that the typical service life can range from 80 to 100 years for planning purposes.
- Q: Where would the City get the \$155M required funding from?
- A: Rob indicated that the required funding would be raised through a City-wide fee collected over a proposed 30-year period. The collected funds would be put towards the identified priority projects. The program, including project priorities, the required funding and fee amounts would likely be reassessed every 5 years.
- Q: I am in one of the older areas. Is my area going to last until it is time to upgrade the storm sewer system?
- A: Rob noted that the City conducts regular structural condition surveys in order to identify any significant concerns. Repairs are prioritized and completed City-wide right now. Brenda Librecz (Community & Fire Services Commissioner) added that the project implementation could be accelerated if any additional funding became available through Provincial or Federal grants.
- Q: Does the gas tax relate to the natural gas systems installed in new neighborhoods?
- A: Rob replied that the gas tax is derived from gasoline used for vehicles. A portion of the federal tax revenue derived from gas sales is returned to municipalities for infrastructure spending.
- Q: Is the gas tax based on a per liter rate?
- A: Rob replied that the gas tax is based on a fixed rate negotiated with the federal government. The rate is indexed according to the City's population and may be adjusted if Markham's population grows but is not guaranteed.
- Q: Is our storm sewer system in trouble? What about Milne Dam? Are we on high ground?
- A: Rob noted that it is possible that significant property damage could occur as a result of flooding in some of the older storm sewer areas that do not have a proper drainage design or were designed to a lower level of service. Dam Safety Assessments related to river system flooding (i.e., Milne Dam) are carried out by the Toronto and Region Conservation Authority (TRCA) according to Ministry of Natural Resources (MNR) requirements. The City is completing inspections of its dams (e.g., Toogood Pond) but is not aware of any flood risks
- Q: Is \$155M all that is required (i.e., is this a one-time fee)?
- A: Rob responded no, the ongoing funding requirements will be assessed every 5 years based on project requirements. Once the older areas have been upgraded to meet the City-wide service standards, then some level of funding will continue to be required in order to maintain stormwater infrastructure. Today's existing program funding for operations and maintenance (i.e., pond clean-outs, erosion restoration, etc.) will continue after sewer capacity upgrades are complete.
- Q: Shouldn't the required funding be obtained through Development Charges?
- A: Rob indicated that the primary cause of flooding within the older areas is not attributable to new development. New development is required to implement

<p>management measures to treat and control stormwater runoff to existing levels in order to prevent downstream flooding. Subwatershed studies are funded through Development Charges as a means to confirm development criteria and ensure that downstream river system impacts are minimized.</p> <ul style="list-style-type: none"> • Q: Is new development tied into existing storm sewer systems? • A: Rob replied that most new development is directed to new storm outlets into adjacent watercourses. • Q: A study by McMaster University indicates that a storm sewer system designed for the 100-year event will only be able to handle the 50-year event by the year 2050. Why aren't we designing larger storm sewer systems given this information? • A: Rob noted that the City is considering climate change in its design standards. The City has used appropriately conservative design storm rainfall information (i.e., a safety factor or buffer on rainfall intensities that adds 15-30% when sizing storm drainage systems). Further, it is standard practice to incorporate redundancies in design, including additional volume and freeboard and emergency spillways in ponds. While we can't predict 50 years ahead, we can conservatively-design stormwater infrastructure to help accommodate potential increases associated with climate change and other uncertainties. • Mayor Frank Scarpitti was introduced. He commented on the importance of stormwater management in Markham and that it is a major priority with City Council. • Q: Would farmers with large unpaved areas that promote infiltration and people who install rain barrels receive a stormwater fee credit? • A: Rob replied that these considerations will be examined thoroughly as part of the next steps in the study to be completed in 2013. • Q: Why doesn't the City enforce the bylaw associated with driveway size, since it adds to runoff? • A: Rob responded that the City does intend to make use of existing tools like bylaws. If there are particular locations that you would like to have reviewed by the City, please pass on those locations to us for follow-up by by-law enforcement. • Q: Why doesn't each home doesn't have a containment system for stormwater runoff in order to address the flooding problems? • A: Rob indicated that while the City does not discourage homeowners from implementing water conservation measures and low impact development techniques such as rain barrels, pervious pavement, rain gardens, etc., these types of systems can only treat and control runoff from frequent rainfall events and cannot satisfy the flood control requirements on their own. 	
<p>3. Concluding Statements</p> <ul style="list-style-type: none"> • Following the question period, Tracey reminded participants to complete their comment forms and return them by April 30, 2013. • The meeting adjourned at 9:00pm. 	

Attachment:

Sign-in / comments sheet: "Markham_StormwaterManagement_CommunityInfoMtg1_26Mar2013.pdf"

Minutes of Meeting

Date of Meeting	March 27, 2013	Start Time	7:40pm	Project Number	60147255
Project Name	Markham Stormwater Management and Financing Study				
Location	Thornhill Community Centre (North Hall)				
Regarding	Community Information Meeting No. 2 (Wards 1&2)				
Attendees	(see attached sign-in sheet)				
Distribution	File				
Minutes Prepared By	Mike Gregory				

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
<p>1. Group Welcome</p> <ul style="list-style-type: none"> Ward 1 Councillor Valerie Burke opened the meeting by welcoming attendees, followed by Brenda Librecz (Community & Fire Services Commissioner) Rob Muir (Senior Stormwater Engineer) introduced the project team. 	
<p>2. Presentation</p> <ul style="list-style-type: none"> A presentation was given by Rob and Mike Gregory (AECOM) providing an overview of the City's stormwater management program, its assets, service levels, future program pressures and funding options. Tracey Ehl (Ehl Harrison Consulting Inc.) facilitated the open discussion that followed the presentation. A summary of the discussion items is presented as follows: Comment: City staff's efforts in educating the public about stormwater are appreciated, with thanks also to the mayor and councillors for their interest. Q: How would churches and schools be treated differently from a shopping plaza, for example? A: Rob noted that the City's approach would consider all properties that are contributing runoff to the City's stormwater management system. Mike indicated that other municipalities in Ontario have pursued a legal opinion on their ability to enact a stormwater user fee to tax-exempt properties. Mississauga has determined that school boards would be exempt. In Kitchener, school boards are charged a stormwater fee and the City subsidizes (equivalent to a 100% grant) all places of worship. Comment: Thanks were expressed to City staff, in particular to Rob for his professionalism and expertise in explaining stormwater management issues to the resident's association over the years. His conduct is the epitome of what a City employee's service to the community. 	

- Q: What measures could property owners install in order to receive credits for a fee (e.g., low impact development)?
- A: Rob replied that there are a range of emerging technologies required as part of new development. The Toronto and Region Conservation Authority (TRCA) requires that 5mm of runoff be retained on site in order to reduce stream erosion. Property owners that exceed the regulatory requirements, store the 100 year storm, and demonstrate reductions in City's flood control costs could be eligible for a fee credit.
- Q: Regarding the \$155M funding gap, how high of a priority is this? This question was directed to Mayor Frank Scarpitti.
- A: The Mayor noted his pride in the City's efforts to set up a steering committee to address stormwater issues as well as the Thornhill Class Environmental Assessment (EA) flood remediation study which the City has maintained a strong commitment through the appeals process. Any infrastructure funding has been at the top of Council's list regarding applications for infrastructure grants, and including advancing \$4M from the City's allotment of federal gas tax.
- Q: What has the City been doing regarding flooding at the CN Rail crossing (Steeles underpass) and the Apricot Street issues? Problems were identified here during the 2005 flooding event.
- A: Rob noted that the Class EA solution is being refined in that area in consultation with CN Rail. Storm sewer upgrades have been identified to address issues. This work needs to be coordinated with the City of Toronto who receives the runoff. Alternatives including a storage pond have been discussed with the Bayview Golf and Country Club in the past as one approach, but this was not included in the Class EA.
- Q: What are the EA options being considered for Thornhill?
- A: Rob replied that alternatives have been reviewed and refined there was no opportunity for a pond solution in parks Bayview Glen, so the preferred solution there is to convey flows with a network of large diameter pipes.
- Comment: A long-time resident (over 50 years) wanted to commend the Mayor and Council for getting the stormwater program started. He agreed with their decision that it should be a City-wide fee, and suggested that the charge be included as a line item on the tax bill.
- Q: Does the stormwater strategy have a fixed duration?
- A: Rob indicated that the 30-year implementation strategy is intended to collect \$5M per year in order to address the funding gap. The strategy may end there or there may be other pressures and challenges in the future.
- Q: Why should we contribute money into a central pot to help others outside of our neighborhood?
- A: Rob answered that a uniform level of service across the City provides a community benefit including protecting major roadways. Some parts require upgrades now and if everyone contributes then it will accelerate the program.
- Comment: In the 30-year implementation, it appears that the first 8 years would be spent solely on Thornhill projects. There was concern about the risk, since 2 or 3 flooding events could occur over the implementation period and it was suggested that the program be moved faster to reduce insurance costs.
- Response: It was also noted that there are more factors than just the storm sewer

system affecting flooding risk and in many areas the storm sewer isn't connected to basements. Wastewater flows have been reduced (e.g., downspout disconnection program) and the system has been tested in a larger storm in September 2012 resulting in limited issues. Overall the system will be more resilient after storm capacity upgrades.

- Q: How much is spent on maintenance?
- A: Rob noted that the City spent \$1.7M on erosion, pond cleaning and other operations and City-wide maintenance activities (not including paving). Of the erosion component, approximately 2/3 was funded through development charges and the remaining 1/3 paid through property taxes.
- Comment: A resident expressed their thanks at the City's transparency and communication of stormwater issues. They also inquired how the stormwater system worked in the Bayview Glen area. Will there be traffic impacts?
- Response: Rob answered that generally the storm sewer is in the public right-of-way, under the street. In this area overland flow (that exceeds the pipe capacity) is conveyed through a network of drainage swales that weaves around the street blocks and through several backyards. Upgrades will keep sewer improvements on right of ways. Large sewers and works at Doncrest and Bayview could close the road for a couple months.
- Comment: A resident cautioned that history repeats and that flooding will happen again. His heritage house basement contained only a furnace and a sump pump. Be careful not to store valuables in the basement of a home located in a flood-prone area.
- Q: How confident is the City that the stormwater system in Thornhill will accommodate changing climate conditions into the year 2050.
- A: Rob noted there will always be uncertainty predicting the weather. The City's design standards have a 30% safety buffer on short duration storms in order to address such climate uncertainties. Further, the City is developing a Sustainable Action Plan that is looking at complementary protection over time (e.g., rain barrels).
- Q: There are infill housing developments in West Thornhill with driveways that are larger than the existing driveways and building footprints are larger. Residents ask committee of adjustment (COA) for semi-permeable driveways in all new houses, but COA does not order it because the planning department is not requiring it. To help in West Thornhill, every infill house should have a semi-permeable driveway and it is an easy thing to do. One comment is that a new announcement that municipalities are getting a greater share of the gas tax could speed up process of 100 year upgrades, and Council can decide on priorities.
- A: Rob replied that the requirement for permeable pavers is something that staff can look at.
- Q: We are reviewing the Official Plan (OP). Can permeable surface requirements be added into the Official Plan?
- A: Rob replied that the OP does not get down to that level of detail, but does contain general policies and principles so that new communities mimic the natural hydrologic cycle with more infiltration to reduce runoff impacts..
- Comment: Staff is doing a tremendous big job. The resident expressed concern that the City's planning, and by-laws groups are not working together. Planning approves high density without considering the stormwater and the sewage problems. Need more inter-

<p>department coordination to take place regarding trees and by-laws</p> <ul style="list-style-type: none"> • Q: Doesn't the province's call for intensification (i.e., which encourages higher density development) go against the City's concern for increased runoff? • A: Rob noted that during site plan development review, City staff check to ensure there is no increase in peak runoff rates from new development. For some developments, they are actually reducing runoff with innovative water reuse/recycling features (e.g., World on Yonge). • Q: Does the \$150M include inflation? • A: Rob replied no, this figure is in today's dollar. 	
<p>3. Concluding Statements</p> <ul style="list-style-type: none"> • Following the question period, Tracey reminded participants to complete their comment forms and return them by April 30, 2013. • Rob noted that staff will report back to Council in June. • The meeting ended with concluding remarks from Ward 2 Councillor Howard Shore and the Mayor. The meeting adjourned at 9:10pm. 	

Attachment:

Sign-in / comments sheet: "Markham_StormwaterManagement_CommunityInfoMtg2_27Mar2013.pdf"

Minutes of Meeting

Date of Meeting	April 2, 2013	Start Time	7:20pm	Project Number	60147255
Project Name	Markham Stormwater Management and Financing Study				
Location	Angus Glen Tennis Centre (Upper Lounge)				
Regarding	Community Information Meeting No. 3 (Ward 6)				
Attendees	(see attached sign-in sheet)				
Distribution	File				
Minutes Prepared By	Mike Gregory				

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
<p>1. Group Welcome</p> <ul style="list-style-type: none"> • Ward 6 Councillor Alan Ho opened the meeting by welcoming attendees. • Rob Muir (Senior Stormwater Engineer) introduced the project team. 	
<p>2. Presentation</p> <ul style="list-style-type: none"> • A presentation was given by Rob and Mike Gregory (AECOM) providing an overview of the City's stormwater management program, its assets, service levels, future program pressures and funding options. • Tracey Ehl (Ehl Harrison Consulting Inc.) facilitated the open discussion that followed the presentation. A summary of the discussion items is presented as follows: <ul style="list-style-type: none"> • Comment: Please elaborate on the downspout disconnection program. • Response: Rob noted that the program would be undertaken in stages. Connections to the sanitary sewer would be addressed first as a matter of enforcing the City's bylaw. Stormwater disconnections would then be encouraged, if the lot grading is conducive (i.e., so as not to impact adjacent properties) and where opportunities allow. • Q: For the 30-year implementation, what are your priorities, where do you start? • A: Rob replied that the plan is to complete the West Thornhill and Don Mills Channel projects first. The next priority will be given to chronic flooding problem areas in neighbourhoods in which stormwater management facilities were designed to the older standards. • Comment: Once an insurance claim is made, it isn't necessarily reported by the insurance company to the City. • Response: Rob indicated that some flooding complaints are reported to the City staff and councillors by the property owners themselves. Suggestions on how to improve communication with external parties are certainly welcome. 	

- Q: What exactly are you looking for feedback on?
- A: Rob noted that Council has recently narrowed the funding option field and the City would like feedback from citizens on the options that were considered, the priority areas that have been identified, and the implementation timeframe.
- Q: What do you require for new pond designs?
- A: Rob mentioned that ponds are designed to collect, store, and treat the runoff from up to about 40 ha (100 acres) of new development. These ponds are generally built by the developers and later assumed by the City. Soran Sito (Environmental Assets Manager) added that their design functions can include flood control and water quality treatment, and also erosion protection for the downstream watercourses.
- Q: Why not just recover the costs directly through the tax base (e.g., as a dedicated mill rate)?
- A: Rob noted that the City requires dedicated funding for the implementation projects that were identified. With tax-based funding there could be a loss of transparency in tracking how the additional tax money collected will be directly spent on these projects. Also, taxation is based on the market value of the property and there are other funding methods that allocate stormwater charges in a more fair and equitable manner. Finally, it is the City's intent to reward compact developments that reduce their impact to the City's stormwater management system upgrades. The current method of taxation does not offer any incentives for reducing runoff contributions.
- Q: Why doesn't the City clean up debris in the streams?
- A: Rob replied that the City's current stormwater operation and maintenance activities include cleaning debris from stormwater inlets and sewer outfalls, however the City does not have jurisdiction over some watercourses and stormwater facilities and therefore doesn't have a legal obligation to clean them. The Conservation Authorities generally have jurisdiction over the larger streams and rivers. There is also a distinction with the type of debris: trash is certainly an undesirable material to be cleaned up, however woody debris might be considered beneficial for fish habitat and the federal Department of Fisheries and Oceans (DFO) may require this material to be left in place.
- Q: How does the City handle water from natural springs?
- A: Rob noted that Natural springs fall under the jurisdiction of the Conservation Authorities, DFO, and Ministry of Natural Resources, and Ministry of the Environment (MOE).
- Q: Why not charge only the people that directly benefit from the stormwater upgrades?
- A: Rob responded that Council was presented with that option but decided that a City-wide fee was the most appropriate for the citizens and business owners in Markham. This issue is broader than merely solving localized flooding problems; it extends to the wider benefit of providing a uniform level of service across the community (i.e., keeping floodwaters off of the roadways).
- Q: Why charge a fee to properties that don't have sewers, just ditches?
- A: Rob replied that the City still needs to maintain those ditches and ensure that there is sufficient capacity downstream. Council has endorsed a City-wide fee that does not consider whether an area has sewers or ditches.
- Q: Do ponds have to be cleaned before the City takes over the ownership?
- A: Rob answered that yes, this is a requirement before the City assumes the

<p>responsibility. Pond surveys are also required to compare with the design drawings and the developer/property owner is required to clean out the sediment and legacy construction material in the pond. Soran added that once the ponds have been assumed by the City, the pond's Certificate of Approval issued by the Ministry of the Environment dictates that once the pond exceeds 50% full of sediment, then it must be cleaned out. Copies of these certificates can be provided to residents, if requested.</p> <ul style="list-style-type: none"> • Q: Where is stormwater on the City's list of priorities? • A: Andy Taylor (Chief Administrative Officer) and Mayor Frank Scarpitti introduced themselves and both responded to this comment. Stormwater management is a major priority with City Council and is reflected in the attention to holding these meetings throughout the City. The Mayor, Deputy Mayor and Councillors have made an effort to attend these meetings to receive feedback firsthand. • Comment: Please elaborate on the gas tax. • Response: Rob replied that Markham has been allotted \$8M this year in federal gas tax funds. Over past years, the City has earmarked a total of \$4M towards stormwater projects, further testament to stormwater management being a priority in Markham. • Q: What to do about properties that are located in the floodplain? My house is located in an old heritage area and there is no room to put in a new pond. Also, with climate change, it seems that storms are becoming more frequent. • A: Rob reiterated that the identified improvement projects do not address flooding of the Rouge River. The identified solutions deal with flooding risks due to capacity restrictions in the City's stormwater management system. Regarding climate change, the City design standards include an extra 15-30% buffer on capacity that can be used to account for uncertainties including climate change fluctuations in the future. • Q: What can be done about Canada Geese? • A: Rob acknowledged that controlling geese is a challenge for the City. They have tried to deter nesting at the Civic Centre, installed barriers, hired border colliers and even investigated noise-making devices to limit numbers and impacts. • Q: Do you have a list of the top historical flooding events and who was affected? • A: Rob discussed privacy issues related to flooding information. He also noted that the City operates a series of 6 rain gauges across to the City to measure rainfall in support of the various studies being undertaken. • Q: Are the poster boards and presentation posted on-line? • A: Rob replied that they are not on the City's website yet, but they will be. • Comment: A resident discussed a catchbasin odor issue and was curious about the cause. • Response: Rob suggested that this could result from leaves decomposing in the catchbasins and noted that the City has a regular catchbasin cleaning program to address this. Another cause could be a cross-connection to the sanitary sewer and any information that can be provided to the City would be helpful as part of an investigation to correct this problem. • Q: How are all of the City's pipes connected? • A: Rob replied that there are over 300 storm sewer outfalls, which act as independent storm drainage systems. The City's mapping tools can show these systems. 	
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<ul style="list-style-type: none"> • Q: When someone is buying a house, do they have to disclose prior flooding history? • A: Any information related to prior flooding should be disclosed by the listing agent. • Q: How will you track the usage of City-wide fees collected (and measure progress)? • A: Rob appreciated the feedback; suggestions related to transparency and progress metrics are valuable. The 30-year implementation plan can be divided into 5-year segments that are reassessed on a regular basis to make the program more manageable. As projects are completed the City could post project summaries and success stories on its website. Tracey encouraged others to provide concerns and comments for staff to consider as they prepare their report back to Council in June. • Q: Will the City-wide fee be used to clean ponds? • A: Rob noted that pond cleaning is now funded through tax, and not part of the funding gap identified tonight. Soran added that pond maintenance is funded through a 25-year lifecycle costing that prioritizes the cleaning of approximately 2 ponds per year. It typically takes 10-15 years for a pond to fill up with sediment to the point where it needs to be cleaned out. Soran also noted that additional funds would be necessary as the City assumes more ponds from developers in the future. The City needs to stay proactive with pond maintenance, as MOE conducts random audits to confirm the Certificates of Approval are adhered to (infractions are a violation of the Ontario Water Resources Act). 	
<p>3. Concluding Statements</p> <ul style="list-style-type: none"> • Following the question period, Tracey reminded participants to complete their comment forms and return them by April 30, 2013. She encouraged comments from people, noting that residents are experts on their own property and can provide valuable information that might otherwise be unknown to the City. • Rob noted that staff will report back to Council in June, with a fee structure to be presented to Council for approval at the end of the year. • The meeting ended with concluding remarks from Councillor Ho, Regional Councillor Li, and the Mayor. It was noted that at every opportunity since 2005, the City has applied for provincial/federal funding to help address its stormwater needs. If this program were tax-funded (\$5M per year), it would amount to a 3% overall tax increase. If only the directly benefitting properties were charged, then that's over \$5,000 per property per year. Council chose a City-wide fee however. It also chose the highest 100-year protection level, which was a bold move. This is not a problem that can be fixed in 2-3 years, but the strategy will address the highest priorities first. • The meeting adjourned at 8:40pm. 	

Attachment:

Sign-in / comments sheet: "Markham_StormwaterManagement_CommunityInfoMtg3_2Apr2013.pdf"

Minutes of Meeting

Date of Meeting	April 4, 2013	Start Time	7:15pm	Project Number	60147255
Project Name	Markham Stormwater Management and Financing Study				
Location	Cornell Community Centre				
Regarding	Community Information Meeting No. 4 (Ward 5)				
Attendees	(see attached sign-in sheet)				
Distribution	File				
Minutes Prepared By	Mike Gregory, Erin Jones				

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
<p>1. Group Welcome</p> <ul style="list-style-type: none"> Tracey Ehl (Ehl Harrison Consulting Inc.) opened the meeting by welcoming attendees. She described the meeting purpose and agenda then introduced Ward 5 Councillor Colin Campbell, who discussed the importance of this topic for Markham, the major storms that were recently experienced and the view/rationale for sharing the management costs. Rob Muir (Senior Stormwater Engineer) introduced the project team. 	
<p>2. Presentation</p> <ul style="list-style-type: none"> A presentation was given by Rob and Mike Gregory (AECOM) that provided an overview of the City's stormwater management program, its assets, service levels, future program pressures and funding options. Tracey facilitated the open discussion that followed the presentation. A summary of the discussion items is presented as follows: 	
<ul style="list-style-type: none"> Q: Is the program cost of \$155M in today's dollars and does it include future operations and maintenance costs? A: Rob replied that this is the price tag in today's dollars (i.e., future inflation has not been factored in) and that it only covers capital costs. Q: When and how will the federal gas tax funds be allocated? A: Rob noted that of Markham's \$8M annual allotment, \$4M has been earmarked for Markham District Energy and \$2M has been proposed to be allocated to the stormwater management projects that were discussed. Funds would be available for other projects as well. Comment: We don't want this to compete with other trails projects. Response: Rob acknowledged the City's other needs, pointing out that it is ultimately Council's decision how these funds are apportioned and why additional funding is needed specifically for stormwater. Public feedback is critical to help Council make 	

<p>decisions that involve competing demands.</p> <ul style="list-style-type: none"> • Q: Regarding the downspout disconnection program, can the priorities be changed (i.e., can it be done sooner in other neighborhoods)? This led to a related request to explain the City's disconnection program. • A: Rob noted that the City's Environmental Services Department has conducted a pilot program in Thornhill. The results of this pilot suggest that it can be effective (relatively quick and cost-effective) and the City expects that it will be expanded City-wide. Rob explained the historical perspective on downspout connections as allowed in various City bylaws, and noted that connections to the sanitary sewer would be the City's first priority. It was further noted that various departments are coordinating their efforts and that in some areas the disconnection program can have a big impact on reducing flows into the sanitary sewer system, but is highly variable across the City and varies on block-by-block basis depending on many factors and house construction details. • Q: What has been done in Thornhill since the large 2005 flooding event? • A: Rob replied that flooding issues encompass both the sanitary sewer system and stormwater system, which increases the complexity of solutions since these are related. The immediate City actions involved operations and maintenance activities to keep the inlets and grates clear of debris. With sanitary sewers, the focus was on basement flooding issues and reducing extraneous wet weather flows from entering the system (e.g., through downspout disconnections or by lining leaky pipes). For stormwater flooding, the City addressed the items it could within their existing budgets by addressing the lot level improvements, channel works, and a heightened emergency preparedness program. Environmental assessment (EA) and planning initiatives were undertaken for the Thornhill and Don Mills Channel projects, unfortunately a "bump-up" request delayed the Thornhill EA for over a year. This past year, the City has been working to get to the point where Council could make the service level and funding decisions for the large capital pipe improvement projects that we discussed. • Q: How much of the \$155M required funding does the City have right now? • A: Rob replied that so far the City has \$2.5M currently available. • Q: How much will be needed to get the program started? Will you need to borrow? • A: Rob noted that the new fee is expected to start funding the program next year, with expected annual expenditures of approximately \$5M per year. The City would not necessarily have to borrow money to support this program. • Q: Why will the program start in Thornhill? It's been 8 years since a major storm. • A: Rob indicated that upgrading the Thornhill service level was still top of mind, and the EA approvals are now in place to proceed with that capacity improvement project. The smaller lot level improvements can be implemented quickly. The next major project would involve the Don Mills Channel area where the Class EA is on hold, and then the City would move on to the next priority neighborhood. • Q: There was concern 30 years seems like a long time for implementation after Thornhill work. We need to protect our basements, and should be doing something now. Do we have to wait 30 years before Markham Village gets attention? • A: Rob replied that some work has been done across the City to manage overall flooding risks. For example, in Old Markham, inflow and infiltration reduction from the sanitary sewer has been identified and paid for by developers, there was no expense to taxpayers. The issue for developers was to free up capacity in the sanitary sewer 	
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system so that future growth could be accommodated. Thornhill is a priority area for stormwater, but no money has been spent yet on stormwater construction. If citizens feel that 30 years is too long, then we need your feedback. Keep in mind that if the implementation period was reduced then the annual cost would be increased (e.g., implementing the program over 15 years, or two times faster, means two times more expensive). The special policy area and manageable risks in Unionville were discussed. Gary Adamkowski (Director, Asset Management) added that the City looks for opportunities to upgrade stormwater pipes whenever road improvement projects are undertaken in order to minimize disruption (e.g., Main St. Markham recently included a stormwater pipe system upgraded to a 100-year service level).

- Q: We can't control the rain. Is the purpose of this study to give us an education on how to control stormwater?
- A: Rob replied that yes there is an education component and that we are focusing on controlling stormwater in existing developed areas where upgrades to the service level are needed. In other areas there are development standards already in place that manage flood risks.
- Q: So this program is needed to correct past errors?
- A: Rob reiterated that older storm system designs were not errors; development met the standards that were in place at that time. The issue is that the standards have changed since then, much like the car analogy given in the presentation.
- Q: I believe that heritage homes (Peter St.) should be a priority and next on the list for this program. My house was built in 1893 and doesn't have a weeping tile drain, although the groundwater is high. There is a catchbasin, but I've never seen it collect water.
- A: Regarding groundwater, Rob noted that the City's strategies are not aimed at lowering the naturally high groundwater table found in many areas. A sewer capacity improvement project wouldn't solve this problem.
- Q: I remember Hurricane Hazel. We should have plenty of photos to document the effects of that event. Why haven't we done anything since then? And we should have better understood how the natural river systems function, before allowing all the development taking place upstream.
- A: Rob agreed that there are many factors affecting how we manage stormwater. We have learned much since Hurricane Hazel, regulations and design standards have changed drastically since then, there have been dramatic advances in technology, mapping and flood risk assessments, and we have done a good job managing our major river systems and floodplains (in association with the Conservation Authorities and other agencies). It's the large storm events that bring attention to smaller localized problem areas that need work beyond the river systems.
- Q: Overland flow in the spring is still a major problem. We need to do more than just upgrading pipes. What about backflow prevention valves?
- A: Rob agreed that backflow prevention devices are cost effective solution for addressing basement flooding problems due to sanitary sewer backups. The City is pursuing downspout disconnection from sanitary sewers to reduce the need for backflow prevention.
- Comment: I live in a home in Markham Village that was built in the 1970s. In the 1990's I had sewer backups in my basement. We should have done more sooner; 30 years to

- address these issues is too long. A school was built recently whose playing fields were flooded last fall. Why did we have so many years of no tax increase? My public money should be spent on infrastructure not an arena. We have our priorities backwards.
- Q: I don't mind if it takes \$100 per year per household over a 15-year implementation period, just get it done. Why was 30-year timeframe chosen anyway?
 - A: Rob replied that this period was chosen such that a cost of \$48 per year per household was in the middle of the range of what other municipalities in Ontario and elsewhere are paying for stormwater. Mike added that for the two dozen communities across Canada that have a stormwater user fee in place, the charge ranges between \$2-10 per household per month, or \$24-\$120 per year. Any comments or feedback related to affordability are valuable to staff at this point.
 - Comment: I'd rather spend money to protect my home against flooding than other things such as arenas.
 - At this point Regional Councillor Joe Li and Deputy Mayor Jack Heath were introduced.
 - Q: If this is going to take 30 years to implement then won't the current standards be out of date by the time it's completed?
 - A: Rob responded that the stormwater pipes generally have a service life of approximately 100 years and the City design standards include an extra 15-30% buffer on capacity that can be used to account for uncertainties including climate change fluctuations in the future.
 - Q: What has the feedback been from the other meetings that have taken place? Are people generally in support of this program? Can we say the majority are in favor?
 - A: Rob noted that we don't know exactly how many, but it does seem that the majority of people that have attended support the City-wide fee. Gary added that although we aren't taking a poll, we are monitoring this qualitatively and listening to your feedback. I would agree that most are in favor, some are not.
 - Q: Concerned about development intensification and how it affects infrastructure, roads, and flooding in established areas. Also, how do I know if there's a backflow prevention valve on the sewer to my house, which was built in the mid-1980s?
 - A: Rob noted that regarding development, the City has about 300 existing outfalls, which can be thought of as 300 independent storm drainage systems. New development upstream does not directly affect these downstream systems, since they are not connected (new development generally discharges to new outfalls). Regarding your house, it probably does not have a backflow prevention device; it would only be installed if needed and not a standard procedure for new homes. These are installed by licensed plumbers in flood-prone buildings. They require regular maintenance and are located in the basement.
 - Q: It seems to me that insurance companies would benefit from this program, since they would have reduced claims and know where the flood damage is occurring. Is there any chance to partner with them?
 - A: Rob indicated that flood-related claims are becoming a big issue for insurance companies. He agreed that insurance companies can provide useful resources to help the City prioritize flood-prone areas. The Insurance Bureau of Canada is developing a flood risk assessment tool.
 - Q: How much water could be removed if all roof downspouts were disconnected?

<ul style="list-style-type: none"> • A: Rob responded that we don't know exactly how many are connected across the City. The pilot program mentioned earlier was in an area with approximately 5% of rooftops connected to the sanitary sewer. There are no areas that have 100% rooftops connected. Even in the pilot area, a 30-50% reduction in peak flows can be achieved with disconnection. 	
<p>3. Concluding Statements</p> <ul style="list-style-type: none"> • Deputy Mayor Heath thanked attendees for coming and discussed the City's new clear garbage bag initiative, handing out samples. He gave his opinions on the arena debate (public versus private funding and the risks involved) and why the City should focus on spending public money for infrastructure needs. • Regional Councillor Li also thanked attendees and explained that the reason why he has attended 3 of the first 4 meetings was to listen and confirm that City-wide stormwater funding was what the people wanted. He also expressed his views on the arena debate. • Tracey wrapped up the question & answer segment at 9:00 pm. She invited attendees to complete their comment forms and return them by April 30, 2013 (on-line submissions are also welcome). She also noted that staff will report back to Council in June and that the implementation of the City-wide program would take place in 2014. 	

Attachment:

Sign-in / comments sheet: "Markham_StormwaterManagement_CommunityInfoMtg4_4Apr2013.pdf"

Minutes of Meeting

Date of Meeting	April 11, 2013	Start Time	7:20pm	Project Number	60147255
Project Name	Markham Stormwater Management and Financing Study				
Location	Rouge River Community Centre				
Regarding	Community Information Meeting No. 5 (Wards 7 & 8)				
Attendees	(see attached sign-in sheet)				
Distribution	File				
Minutes Prepared By	Mike Gregory, Erin Jones				

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
<p>1. Group Welcome</p> <ul style="list-style-type: none"> Tracey Ehl (Ehl Harrison Consulting Inc.) welcomed everyone, discussed the agenda and then introduced Ward 7 Councillor Logan Kanapathi. Councillor Kanapathi introduced Ward 8 Councillor Alex Chiu and City staff who were present and then discussed the importance of addressing stormwater management and hearing feedback from Markham citizens. Deputy Mayor Jack Heath also welcomed attendees and gave additional opening remarks. 	
<p>2. Presentation</p> <ul style="list-style-type: none"> A presentation was given by Soran Sito (Environmental Assets Manager) and Mike Gregory (AECOM) that provided an overview of the City's stormwater management program, its assets, service levels, future program pressures and funding options. Tracey facilitated the open discussion that followed the presentation. A summary of the discussion items is presented as follows: 	
<ul style="list-style-type: none"> Q: Where does the runoff from Markham go? A: Soran mentioned there were two major river systems including the East Don River and the Rouge River that discharge runoff from Markham into Lake Ontario. Q: I agree with what the City is doing to minimize flood hazards and as a homeowner, I would like to protect myself against flooding. However, I was not allowed to install my own backflow prevention valve. What can I do? Are new developments required to install them? A: Soran reiterated that the City does support the installation of backflow prevention devices (Soran gave his business card and offered to follow-up with the appropriate staff in the building permit department). He also mentioned that new developments are designed for flood protection to the 100-year design storm event and therefore do not 	City

<p>need backflow prevention devices.</p> <ul style="list-style-type: none"> • Q: Regarding the 30-year implementation period, where are you going to start? • A: Soran noted that the Thornhill and Don Mills Channel projects have the highest priorities right now. The City has undertaken significant work to date on the planning and environmental assessments and the next step is detailed design. • Q: Are there timeline targets for these priorities? • A: Soran directed this person's attention to the timeline on poster board 9, noting that the design and implementation needs to be phased as it cannot be undertaken in a single year. This will proceed as the funding becomes available. • Q: Can you explain why the gas tax is relevant? • A: Soran replied that this is a new federal funding program available to municipalities. Gary Adamkowski (Asset Management Director) noted that these funds are to be used on projects that have some bearing on transportation and related infrastructure and that road flooding certainly qualifies. Markham has been allotted \$8M this year in federal gas tax funds. Half of this amount is dedicated to sustainability and energy projects and the rest for other projects deemed appropriate by the City. The City has over previous years earmarked a total of \$4M towards stormwater projects. • Q: How did the City previously spend the gas tax money? • A: Deputy Mayor Heath responded that it is allotted to large, one-time projects such as bridge repair/replacements. Gary also noted that some previous gas tax funded projects were stormwater related. As part of infrastructure upgrades along Main Street Markham, the City took advantage of the opportunity to provide 100-year storm protection. • Q: In the areas where new drainage standards are in place, you mentioned that stormwater management is not sufficient where intensification is taking place, which further aggravates flooding and erosion issues. A lot of those places have no stormwater ponds. How do you find enough land for building those ponds in order to provide sufficient water quantity control and water quality treatment? • A: Soran noted that intensification in Markham will improve stormwater since redevelopment standards are higher than for existing development. The City conducted a pond retrofit analysis project 10 years ago, which identified 11 opportunities to upgrade the design function of ponds to provide water quality treatment. Since that time, 4 ponds have been upgraded and the City is looking at other opportunities through its City-wide stormwater management planning initiatives. • Q: What timeline is appropriate? I think 30 years is too long. • A: Deputy Mayor Heath noted that the costs per person would increase with a shorter timeline. If shorter timelines are desired then other financing options would be required. Tracey noted the view that the timeline should be shorter has been a common sentiment at these meetings. This is the kind of feedback that the City would like to hear. If anyone disagrees with this viewpoint however, please feel free to bring it up now or discuss with City staff afterward or via written comments. We encourage you to tell your neighbours about the City's website as a means to solicit more feedback. • Q: Also agreed the implementation timeframe is too long. Are there ways to expedite the process, like provide incentives for contractors? And given that construction projects seem to always go over budget and over time, isn't there a risk that by the time you 	
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<p>finish upgrading the “old standards” areas, the “new standards” areas will be in need of upgrades?</p> <ul style="list-style-type: none"> • A: Soran indicated that the areas with new standards have been designed in the last decade to provide a 100-year storm protection that includes a built-in safety factor (i.e., 15-25% extra capacity buffer range) and can compensate for climate change issues. This will help to address your concerns about needing future upgrades in areas that meet the current standards. Deputy Mayor Heath noted that historically City infrastructure projects have typically been on budget, but not always on time. • Q: Could developer fees for condos be used to fund the City’s stormwater projects? • A: Soran replied that funds from development charges cannot be used solve existing flooding problems, except in the case of City-wide erosion control projects in which a portion of the development charges has been applied. • Q: Regarding development charges, in the past developers have been able to pay for downstream costs instead of meeting standards. • A: Soran noted that he has personally been reviewing development projects for the past 7 years and there has never been a project approved that didn’t meet the City’s stormwater management standards. These standards are applied consistently, they are not optional. • Q: How does the City control mosquitos and other nuisances in its ponds? Are you using aerators or other devices? • A: Soran mentioned York Region’s mosquito control programs (e.g. larvae control spraying) and noted that aeration of ponds can be achieved through proper design. Deputy Mayor Heath noted example wind-powered devices in several ponds throughout the City. • Comment: Concerned about pond maintenance and wanted some assurance that maintenance funds would not be eliminated with changes to the City’s funding program. • Response: Soran noted the City’s pond maintenance program is completely separate. This program has been in place for 3 years and they currently maintain 1-2 ponds per year with these funds. • Comment: Pleased with the City’s proactive approach and feel that taxpayers are being well served. • Q: Are there any types of development that can proceed without stormwater management? • A: Soran responded that before any site work is done, the developer or property owner must provide a stormwater management report by a licensed professional engineer that must meet the City’s standards as well as those of the Toronto and Region Conservation Authority (TRCA) and Ministry of Environment (MOE). This has been the City policy for decades. • Q: Are you looking at a downspout disconnection program? • A: Soran noted this is being conducted by the City’s Environmental Services Department. They have conducted a pilot program and will be expanding the program City-wide, with priority based on age and type of service (i.e., priority for by-law compliance is disconnection from the sanitary system). • Q: If a developer fills in a stormwater pond, do they have to build another one? • A: Soran replied that if a pond fills in with sediment during construction, the developer 	
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<p>has to clean it out before the City assumes ownership of that pond. For a specific case located near Highway 48 and Major Mackenzie, the developer is allowed to remove the pond when other stormwater management controls are in place. Gary thought that the person was referring to a temporary pond that was built for erosion and sediment control during construction – these would not need to be replaced when construction was complete.</p> <ul style="list-style-type: none"> • Q: No matter how we design stormwater ponds, we can't beat natural wetlands or marshes. It seems our ponds are quite deep and therefore not so good for certain ecosystems. Do we ever consider shallower ponds? • A: Soran noted that the design of shallow wetlands can provide significant filtering of stormwater but these require a very large footprint area to provide water quantity control (i.e., flood/erosion protection). As a result they are not as efficient from a financial perspective. • Comment: Many of these ponds are located in residential areas and I'm concerned about the safety risks, such as kids who might try to play hockey on those deep ponds. • Response: Soran noted that this is a potential liability to the City and ways to address safety concerns at these facilities are being investigated (e.g., using fences or natural vegetation barriers, draining or lowering the pond lower in the winter, etc.). 	
<p>3. Concluding Statements</p> <ul style="list-style-type: none"> • Tracey wrapped up questions and invited people to chat with staff. She reminded participants to complete their comment forms and return them by April 30, 2013 (on-line submissions are also welcome). • The meeting adjourned at 8:20pm and was followed by informal conversation. 	

Attachment:

Sign-in / comments sheet: "Markham_StormwaterManagement_CommunityInfoMtg5_11Apr2013.pdf"