Welcome

Basement Flooding & Water Quality Improvements Study – Area 43
Municipal Class Environmental Assessment Study

Public Drop-In Event # 2 – July 16, 2019




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Study Purpose and Objective

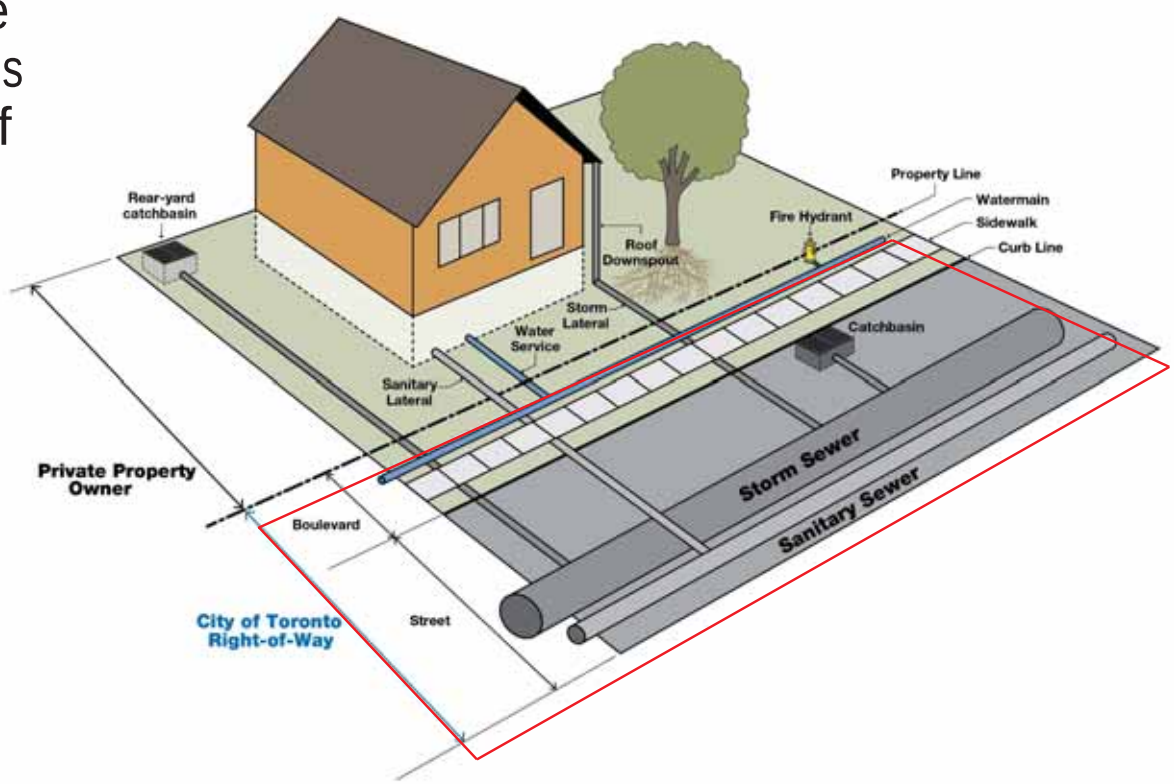
- Examine existing stormwater drainage, combined and sanitary sewer systems to identify the potential causes of basement flooding and/or surface flooding (severe ponding on streets during extreme storms)
- Assess opportunities to integrate water quality improvement measures where flooding remediation works are proposed
- Make recommendations to:
  - Reduce the risk of future basement flooding
  - Reduce negative impact of storm runoff on water quality

Areas of Responsibility - City

City (what this study covers)

The City is responsible for infrastructure within the public Right-of-Way and plans to achieve a higher than existing level of service

- Sanitary Sewers
- Storm Sewers
- Catchbasins within roadways
- Overland drainage within roadways and City-owned parks



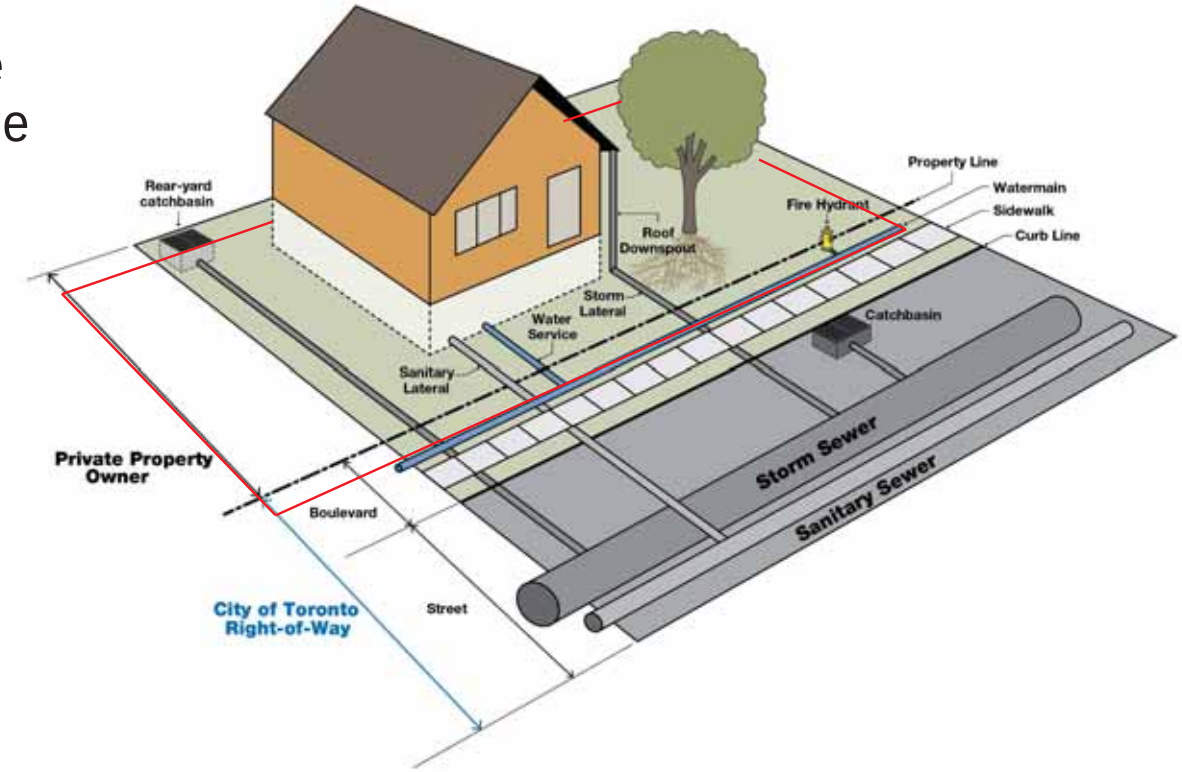
Areas of Responsibility - Property Owner

Property Owner

(what this study does not cover)

Each homeowner is responsible for the operation and maintenance of drainage systems on private property including:

- Lot grading
- Front and rear-yard or driveway drainage catchbasins
- Foundation drains
- Sump pumps and backwater valves
- Private tree roots and what you put down the drains (fats, oils, grease, etc.)
- Disconnecting downspouts



Purpose of Tonight's Event

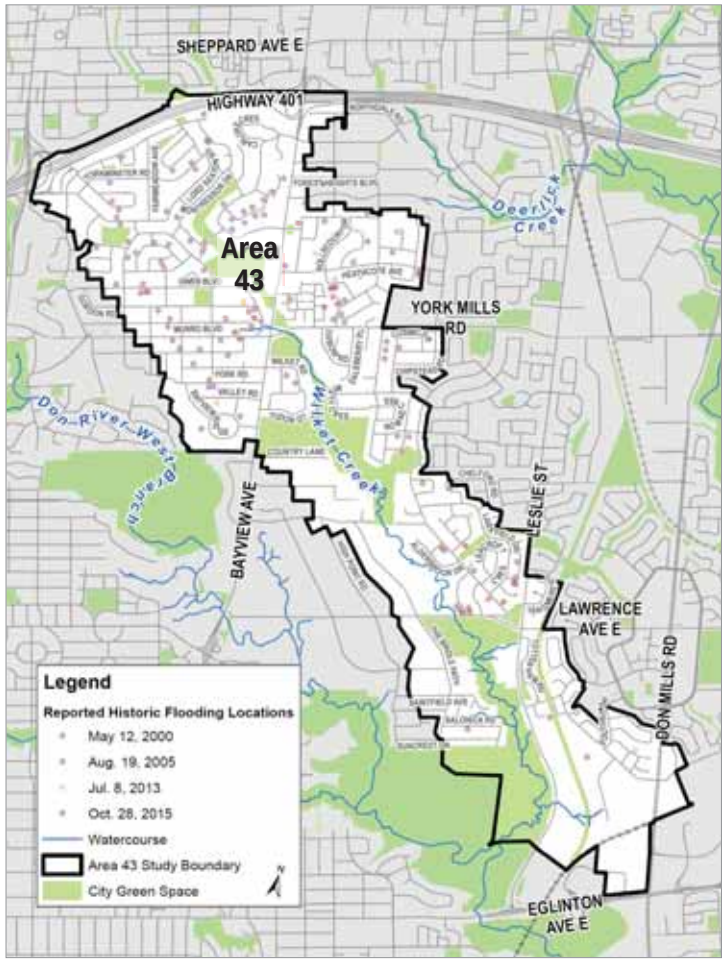
This Public Drop-In Event focuses on presenting:

- Results of evaluation of the sanitary and storm systems
- The preferred solutions for basement flooding protection
- Gather feedback on the recommended solutions

Please take a Comment Form and a pen. As you review the information presented today, we encourage you to ask questions and provide feedback.

Study Area Map

- Study Area 43 is located in the central part of the City (North York) and is generally situated along the axis of Wilket Creek (mainly in Ward 15 and a portion of Wards 16 and 18)
- The study area is based on the sanitary sewershed and generally bound by:
  - Highway 401 to the north
  - Eglington Avenue East to the south
  - Don River West Branch to the west
  - Leslie Street/Don Mills Road to the east
- Area 43 is 854 ha and includes over 4,300 properties
- Complaints of basement flooding received in 2000, 2005, 2013, and 2015
- Most of the reported cases of basement flooding clusters are in northern limits of the study area, approximately between Highway 401 and York Mills Road

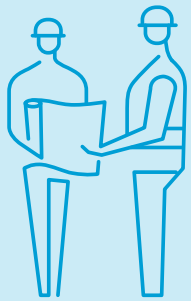


Class Environmental Assessment and Implementation Process

- To meet the requirements of Ontario's Environmental Assessment (EA) Act, the City is undertaking a Master Plan in accordance with the Municipal Engineers Association's Municipal Class EA.
- The Master Plan involves completion of Phases 1 and 2 of the Municipal Class EA.

Phase 1

- Identify the problem or opportunity
- **Notice of Commencement - late 2017**
- **Study Newsletter No. 1 – early 2018**



Phase 2

- Collect and review background studies, information on existing conditions
- Conduct field surveys
- Identify flooding locations, and causes
- Develop draft evaluation criteria
- **Study Newsletter No. 2 - mid 2018**
- **PIE #1 – June 2018**

We are here

- Develop computer models to analyze causes of flooding and impact of surface runoff on water quality
- Develop and Evaluate alternative solutions
- Establish the Preferred Solution (combination of projects)
- **Study Newsletter No. 3 – mid 2019**
- **PIE #2 – July 2019**

Documentation

- Incorporate Comments
- Complete the Master Plan, 2019

30 Day Review

Capital Plan

- High-priority projects added to capital budget plan based on a City Council adopted criteria
- Funding acquired to proceed to design and construction

Design and Construction

- Design, surveys, and constructability evaluation take place
- Construction and monitoring

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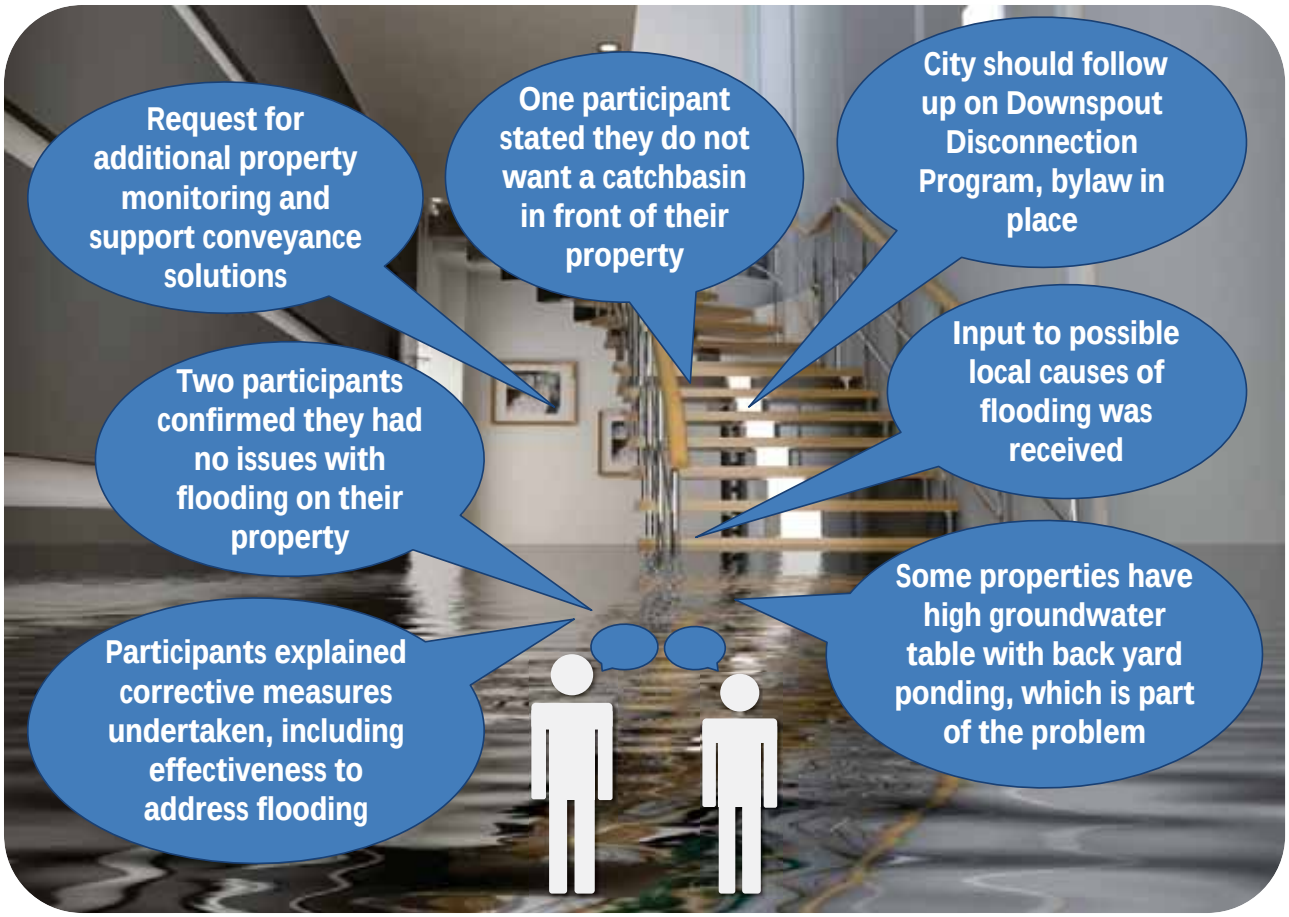
Community input –
What did we hear since last Public Event

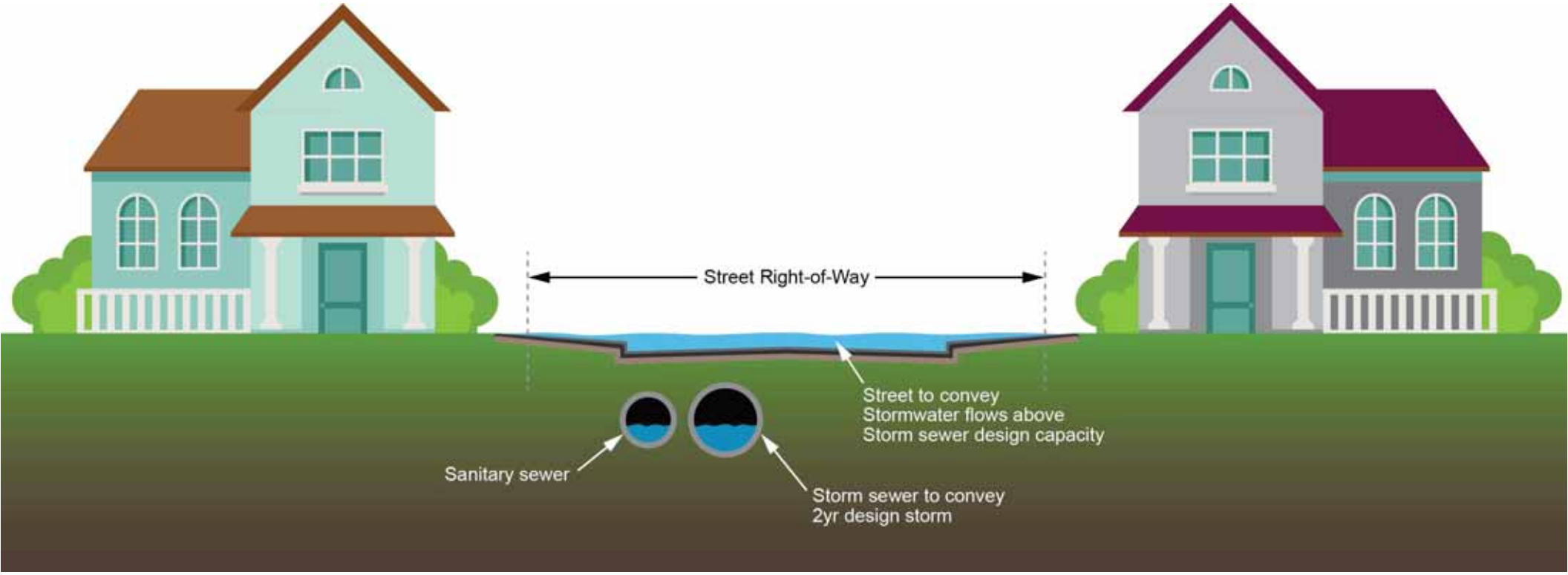
- Approximately 15 members of the public signed in and met with project team members in June 2018.

- Questions and concerns documented through conversations with the project team at the last public event were collected and incorporated as part of the study.

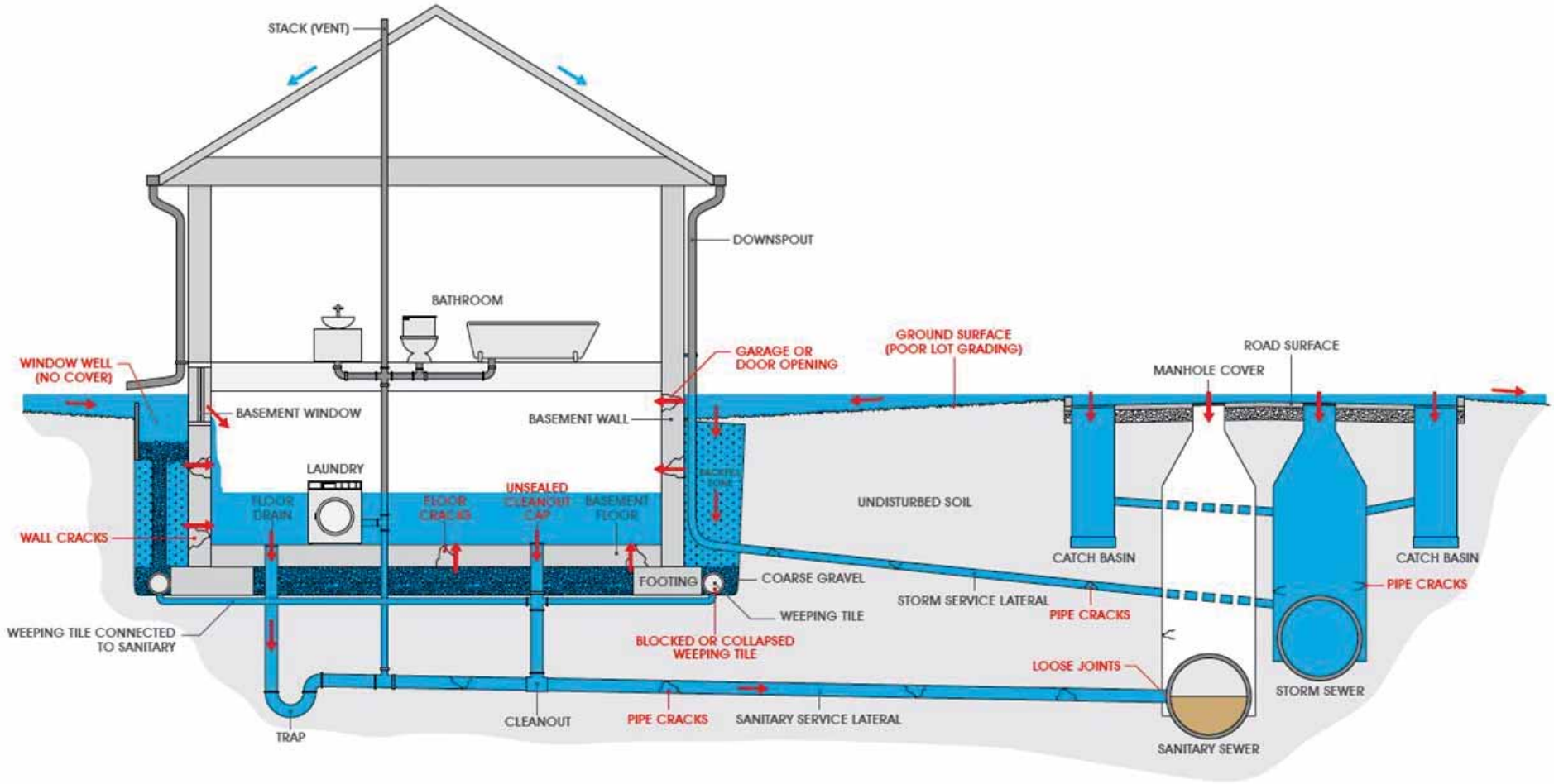


Storm System - Dual Drainage System
Major (streets) and Minor (sewer pipes)

- Storm sewers (minor system) convey stormwater runoff from up to 2 year event.
- Streets (major system) convey major storms that exceed the storm sewer capacity.
- Temporary ponding on streets is expected during major rain storms.



Potential Causes of Property Flooding

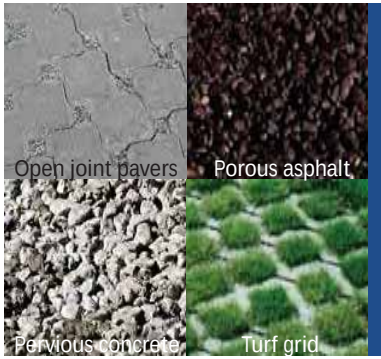


Property Owner - Potential Solutions

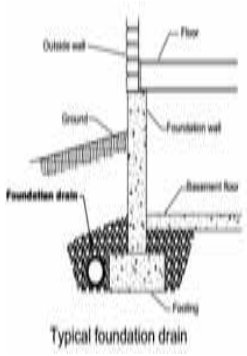
Source control solutions that can be implemented by property owners include:

Maintaining front and rear-yard drainage or driveway catchbasins

Installing backwater valve



Installing permeable paving



Disconnecting foundation drains from sanitary sewer and installing / maintaining sump pumps

Improve lot grading

Disconnecting downspouts

Using rain barrels

Targeted Level of Protection

- Proposed solutions reduce the risk of basement flooding
- Sanitary system solutions are proposed to improve the level of protection against basement flooding for May 12, 2000 storm recorded near Sheppard/Leslie
- Storm system solutions are proposed to improve the level of protection against basement flooding for 100-year storm
- Solutions are sized to maintain the maximum water level in the sewers or below theoretical basement elevation (1.8 meters), and keep the surface runoff within the public right-of-way, where feasible
- The design criteria may not be achieved in cases where sewers are shallow and cannot be deepened, where no house connections / basements exist, or the level of receiving watercourse is close to nearby ground surface. In these instances, solutions improve the existing level of protection to the extent possible

Evaluation Criteria for Alternatives

Alternatives were evaluated based on their ability to address the Study's purpose, stakeholder input, and their potential impacts. Evaluation criteria considered included:

Natural Environment

Potential impacts on:

- ✓ Terrestrial systems (vegetation, trees, wildlife)
- ✓ Aquatic systems (aquatic life and vegetation)
- ✓ Surface and groundwater
- ✓ Soil and geology
- ✓ Receiving water quality

Socio-Cultural

- ✓ Land use impacts (parks, ravines, open spaces)
- ✓ Disruption to existing community during construction (traffic, noise, construction in easements)
- ✓ Disruption to existing community post construction (visual impact, odour, safety)
- ✓ Potential impacts to archaeological and cultural resources
- ✓ Impacts to First Nations

Technical

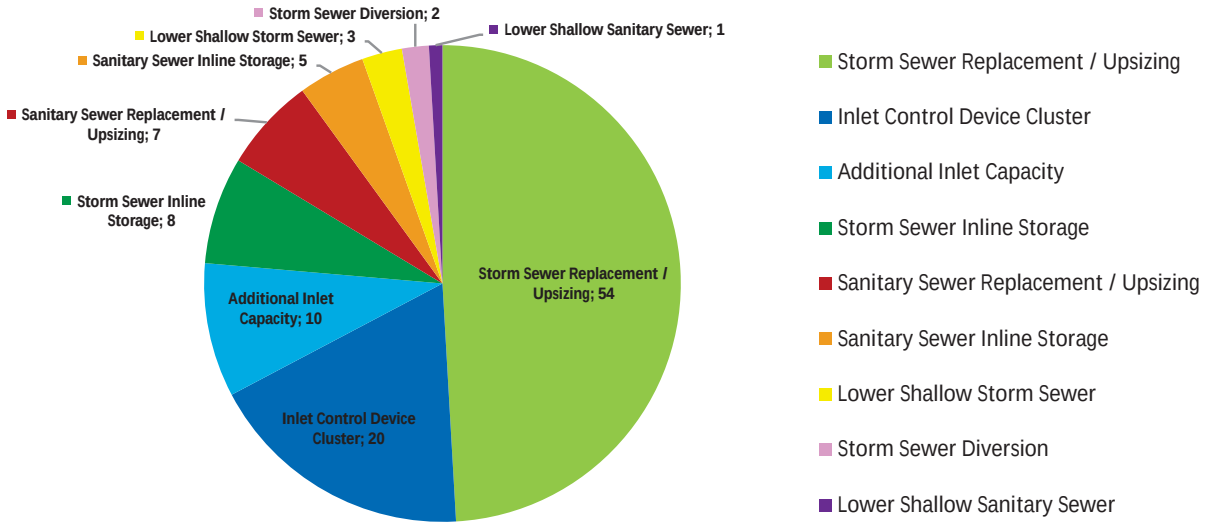
- ✓ Effectiveness in reducing surface and basement flooding and improving stormwater runoff quality
- ✓ Feasibility of implementation (available space, accessibility, constructability, easement requirements, approvals)
- ✓ Potential impacts on upstream, downstream and surrounding area infrastructure
- ✓ Impacts on operating and maintenance requirements

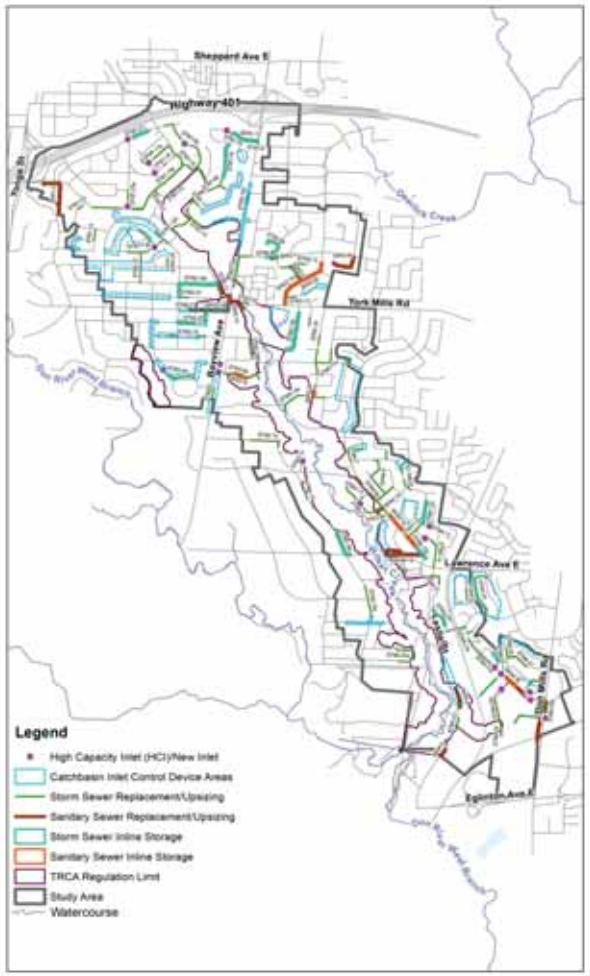
Economics

- ✓ Capital cost
- ✓ Operating and maintenance costs

Solutions Map

- There are a total of 101 projects (some including multiple works) proposed to alleviate basement flooding problems within Study Area 43. This includes 20 sanitary sewer upsize, storage and/or shallow sewer replacement projects; all other improvements are related to storm sewer system improvements.





- The projects are spread out geographically and will be implemented over time.

Preferred Solution

Overland Flow – High Capacity Inlets (Controls Basement Flooding)

Description

- The rapid collection of surface drainage in low lying areas that have no direct outlet to reduce surface ponding depths

What Does it Involve?

- Addition of “speed bump” or “curb cut” to redirect overland flow to new high capacity inlets, such as a large “curb drain”
- Often includes a storm sewer upsizing to convey the larger resulting sewer flows

Increase Number of Catchbasins (Controls Basement Flooding)

Description

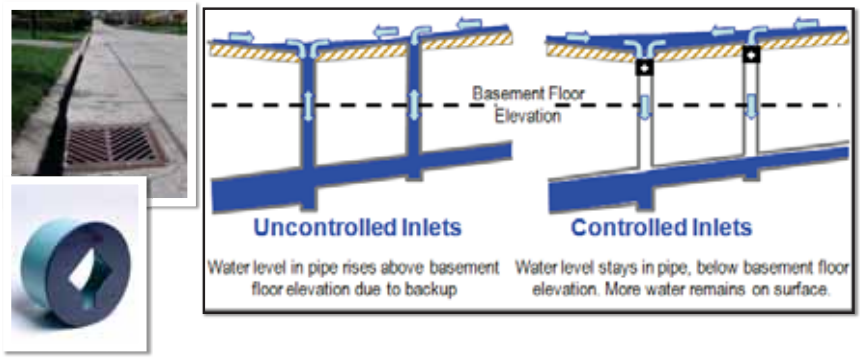
- Where the storm sewer has existing capacity, add more catchbasins to capture more flow from the surface

What Does it Involve?

- Minor street excavation for installation of new catchbasin(s) and connection to storm sewer
- Curb replacement and road restoration

Preferred Solution

Catchbasin Inlet Controls (Controls Basement Flooding)



Description

- Installation of inlet control devices (ICDs) on catchbasins to limit release into the storm sewer system to control back-up (surcharge)

What Does it Involve?

- A plastic or metal plate / device installed inside the catchbasin outlet (not visible from surface)
- Minimal effort and time to install
- Keeps more water on the surface

Replacement of Existing Storm, and/or Sanitary Sewers (Controls Basement Flooding)

Description

- Increase the size of the sewer pipe by replacing the old sewer with a larger pipe

What Does it Involve?

- Road excavation within City property limits (primarily road ROW and in some cases, easements through private land)
- Removal of old sewer and structures (manholes & catchbasins) and disconnection of sewer service line(s)
- Placement of new sewer, reconnection of sewer service line(s) and restoration of road and boulevard

Preferred Solution

Adding New Sewers
(Twinning or diversion)
(Controls Basement Flooding)

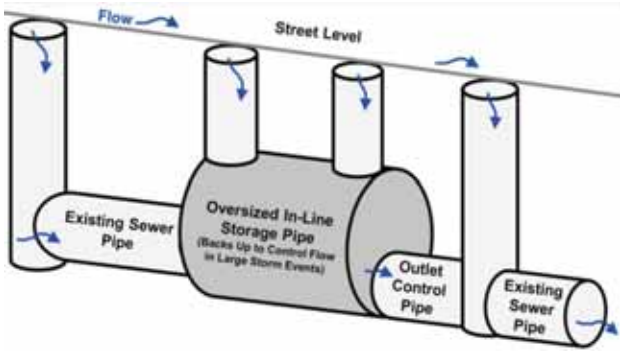
Description

- Increase the capacity of the sewer system by adding another sewer pipe in addition to the existing pipe

What Does it Involve?

- Road excavation within City limits
- Replacement of old structures (manholes & catchbasins) and reconnection of sewer service line(s), if necessary
- Placement of new sewer, reconnection of sewer service line(s) and restoration of road and boulevard

Inline Storage – Oversized Storm or Sanitary Sewers with Restricted Outlets



Description

- Replace the existing storm or sanitary sewer with an underground elongated tank or oversized pipe, including a restricted outlet that controls release rate of inflowing sanitary or stormwater with temporary detention, reducing the potential for flooding

What Does it Involve?

- Excavation and construction of tank or pipe, including inlet and outlet structures
- Infrequent maintenance (monitoring, clean-out)

Stormwater Quality Improvement

Local Bioretention Filters
(Improve Stormwater Runoff Quality)

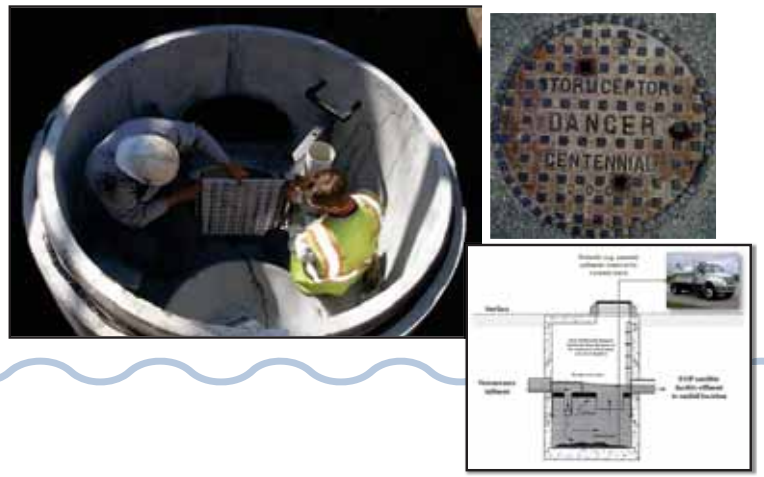
Description

- A vegetated depression and underground trench designed to filter stormwater runoff to remove pollutants and promote infiltration/evapotranspiration

What Does it Involve?

- Diversion of small overland or piped drainage areas for small storm events
- Excavation of a trench with specific soil mixture, surface plantings and underdrain within an open area such as a boulevard or park

Oil & Grit Separator
(Improves Stormwater Runoff Quality)



Description

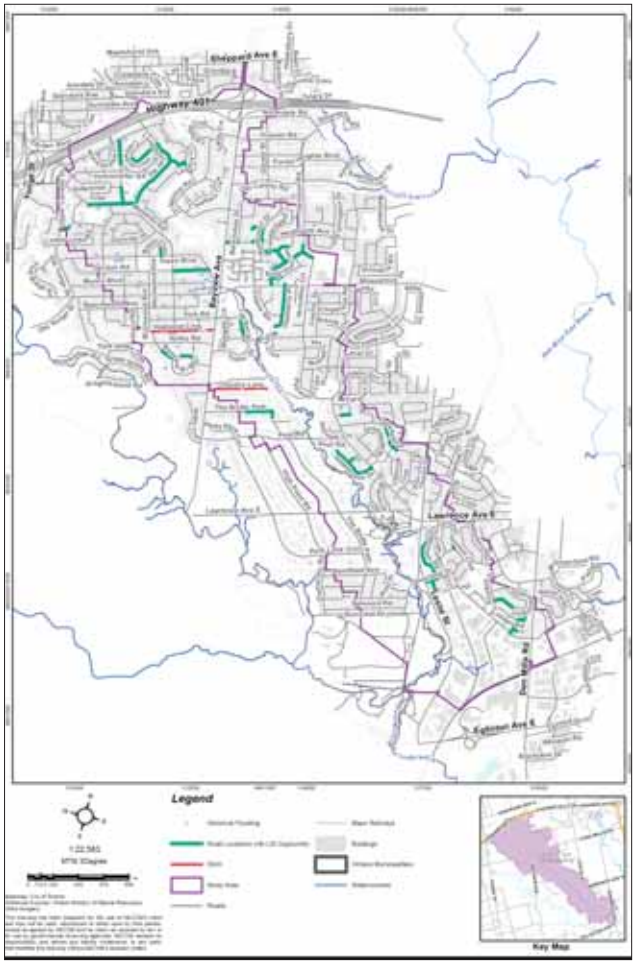
- An underground separation tank that takes the place of a conventional manhole and provides a measure of treatment for small drainage areas

What Does it Involve?

- Similar to a manhole, minor street excavation for installation of structure
- Road restoration
- Annual maintenance (vacuum clean-out)

Improving Wet Weather Impact on Water Quality

- Wilket Creek ultimately receive storm water runoff via a number of outfalls.
- Study area sanitary and storm sewer systems are separated, meaning that only storm runoff reaches Wilket Creek.
- Proposed improvements will not negatively impact water quality and any existing road side ditches will be maintained.
- Potential low impact development measures in the road right-of-way are identified as a means to improve water quality and reduce storm runoff; feasibility of such measures will be confirmed at detailed design.
- Construction will follow best management practices, especially when working near water.



Roads with Potential for LID Implementation

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From Study to Construction

- Once an EA study is complete and following the Toronto Water Annual Capital Work Program approval process, the recommended basement flooding projects may be sequenced into a 5-year project list which is presented on an annual basis to City Council.

- Projects are prioritized and scheduled to protect the greatest number of properties as soon as possible, within approved budgets and coordinated with other construction work — as per Council approved criteria.

- The length and type of construction will vary depending on the type of projects being implemented.

Construction Project Prioritization

- Not all recommended projects from the study will proceed to the detailed design and construction stage.
- Projects are prioritized for implementation based on a City Council adopted $32,000 cost per benefitting property threshold. Projects with a cost-benefit less than $32,000 per property at the EA stage and/or at the preliminary design stage may proceed to construction.
- Projects that exceed the $32,000 cost per benefitting property threshold will not be included in the 5-year Project List to undergo preliminary design. They will be moved into the State-of-Good-Repair's long term capital plan.

Construction Project Prioritization

- Projects that undergo Preliminary Design, may change in size or extent, or may not proceed to construction due to physical constraints that cannot be identified through this EA Study. These changes are identified annually to City Council through Toronto Water's capital budget submissions.

- The implementation of Basement Flooding Protection Program (BFPP) projects takes three key steps after completion of this EA Study: Capital Planning, Preliminary Design, Detailed Design, and Construction.

Next Steps

Thank you for attending this Public Information Centre

- Please fill out a comment sheet or email your comments
- The study team will review your feedback and finalize solutions
- Prepare Project File and make available for 30 day public review later in 2019.

Additional questions or comments please contact:

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