Basement Flooding Study Area 65
Finch Avenue West, Keele Street to Sheppard Avenue West, Dufferin Street / Allen Road

Municipal Class Environmental Assessment Study
October 2022

TORONTO

Learn about our Study

We invite you to read through this presentation to learn more about the City's study about basement flooding for Study Area 65 in the Don River neighbourhoods extending from Finch Avenue West/Keele Street to Sheppard Avenue West/Dufferin Street.

You will learn about:

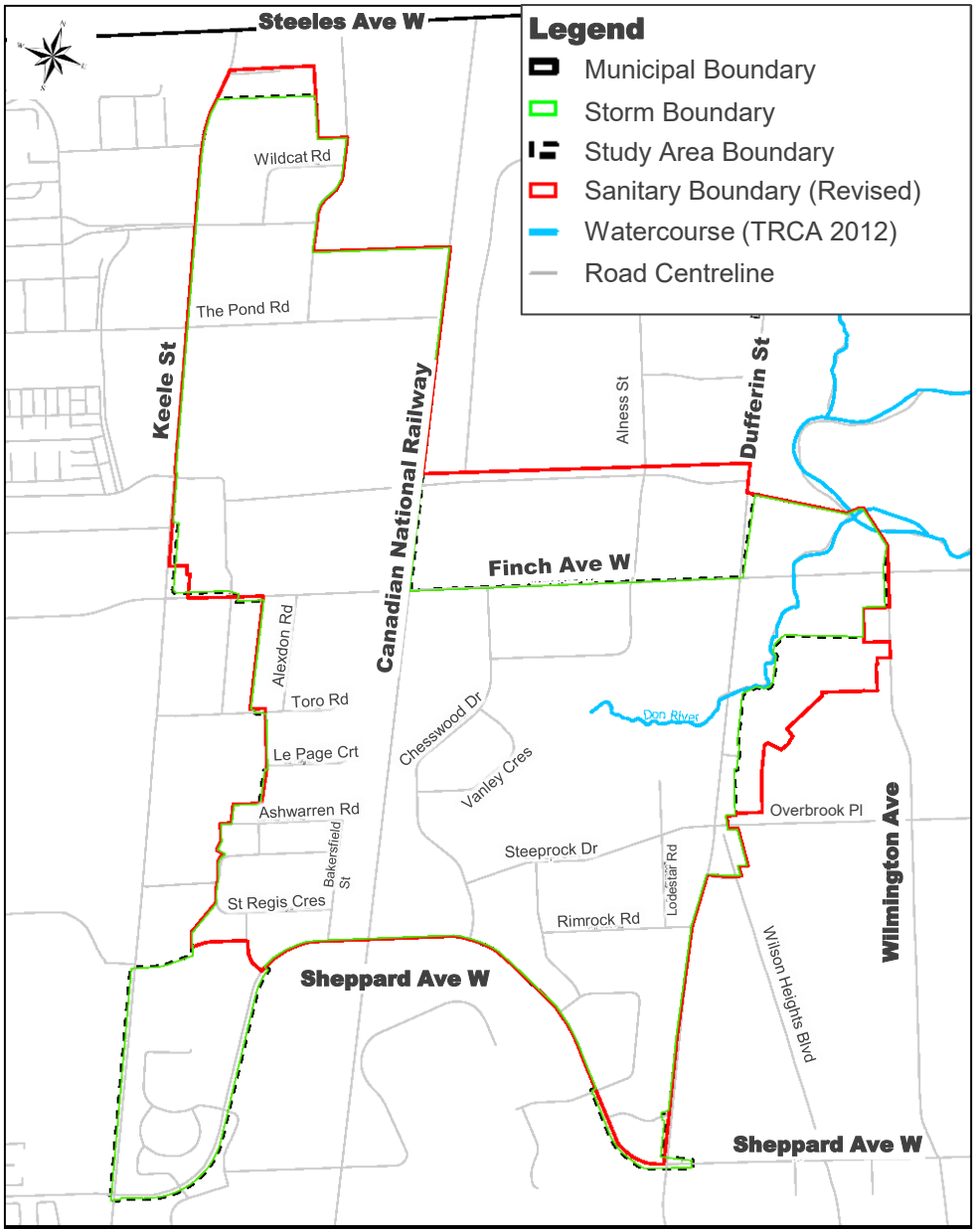
- the purpose of the study
- what solutions have been considered and the preferred solution
- how impacts will be managed
- how to connect with City staff to ask questions or share your comments

TORONTO

Study Area

The Study Area is located within the ward of York Centre.

The area is bounded by Finch Avenue to the north, Sheppard Avenue to the south, and Keele Street and Dufferin Street/Allen Road to the west.



Study Purpose

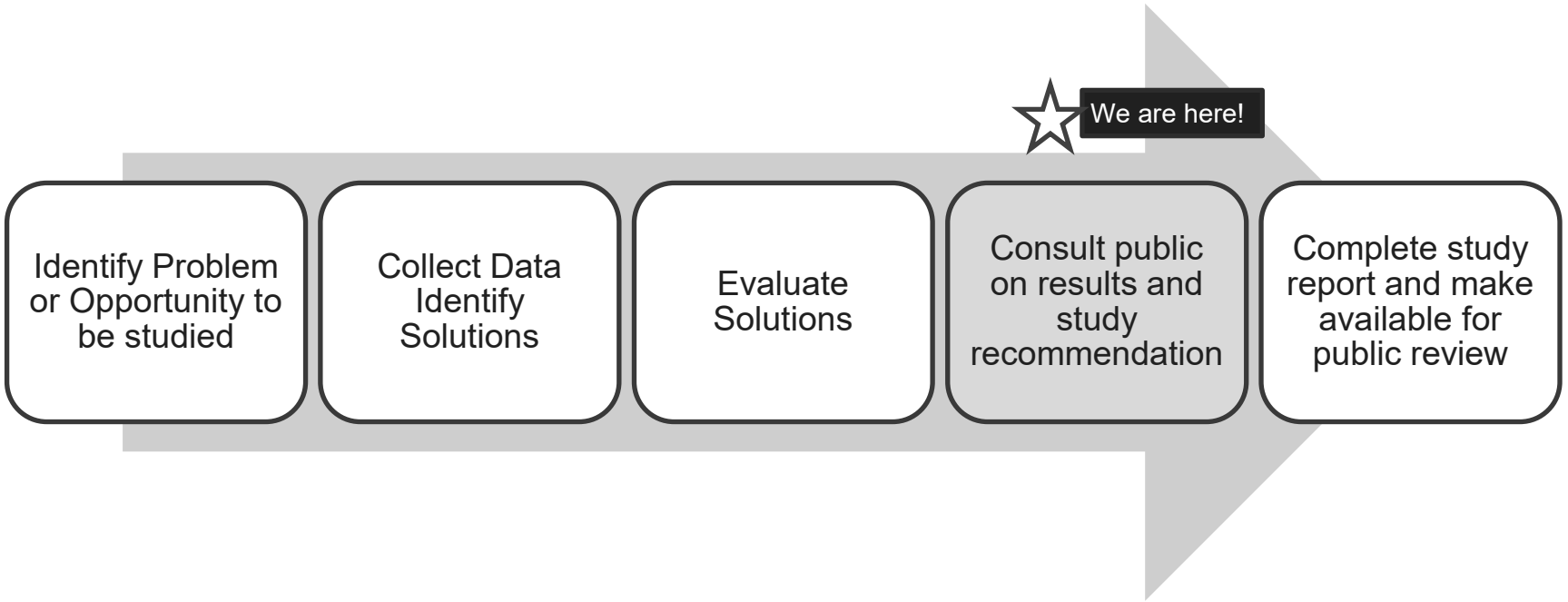
The City is undertaking a Basement Flooding Study to:

- examine the existing storm water drainage and sanitary sewer systems and identify the causes of basement flooding and/or surface flooding (severe ponding on streets during extreme storms)
- identify and evaluate solutions
- make recommendations to reduce the risk of future basement flooding in the area and increase capacity in the City's storm and sanitary collection and overland drainage systems

TORONTO

Study Process

The study is being undertaken in accordance with the Municipal Engineers Association's Municipal Class Environmental Assessment process for Schedule B projects which involves completion of Phases 1 & 2 of the planning process as illustrated beow.



About Basement Flooding

Flooding within the Study Area

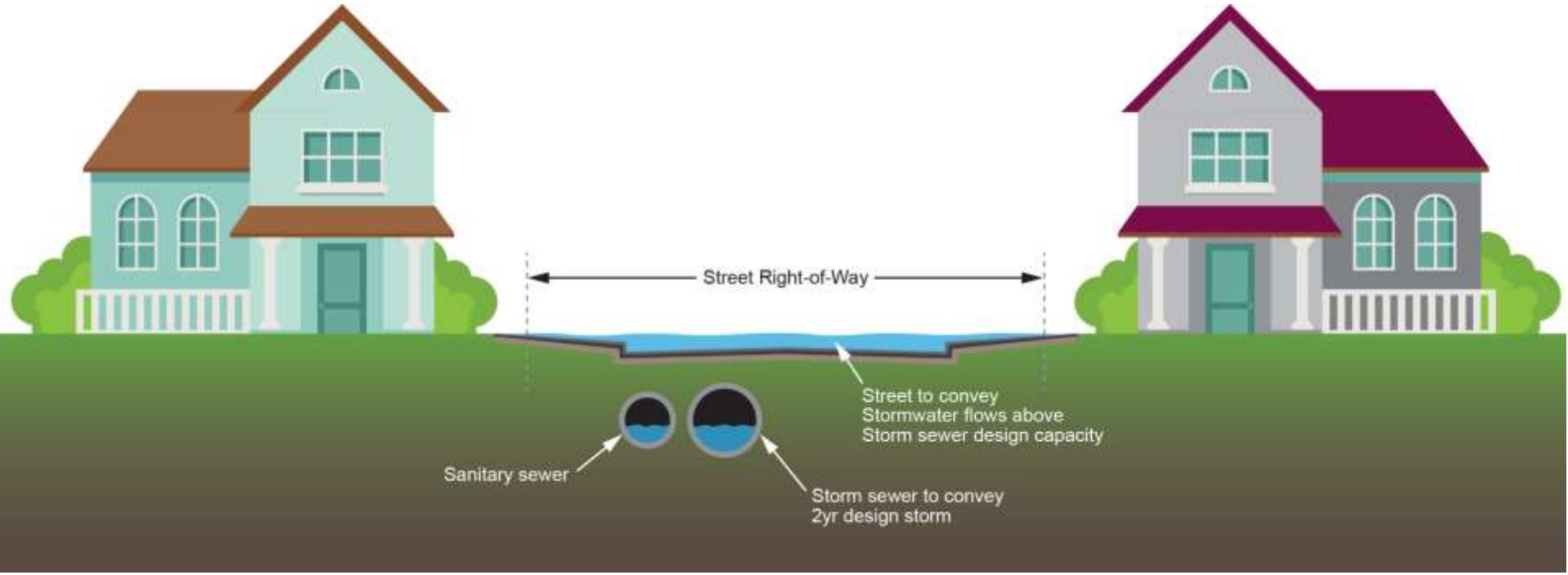
There are a number of factors contributing to flooding in the area, including:

- Surcharge (overflow) of the sanitary sewer during heavy rainfall
- Surcharge of the storm sewer system, which may result in increasing the flow to the sanitary sewer system through potential interaction between the two systems
- High groundwater table, above the sewer or basement elevation
- Accumulation of surface rainwater runoff in low-lying areas
- Backup from sewer outfall or accumulation of sediment in the outflow conduit (channel)
- High overland flow depth on the right-of-way (roadway)
- Undersized storm sewer or undersized catchbasins resulting in high overland flow
- Blocked/broken storm and sanitary sewers, maintenance holes and catchbasins

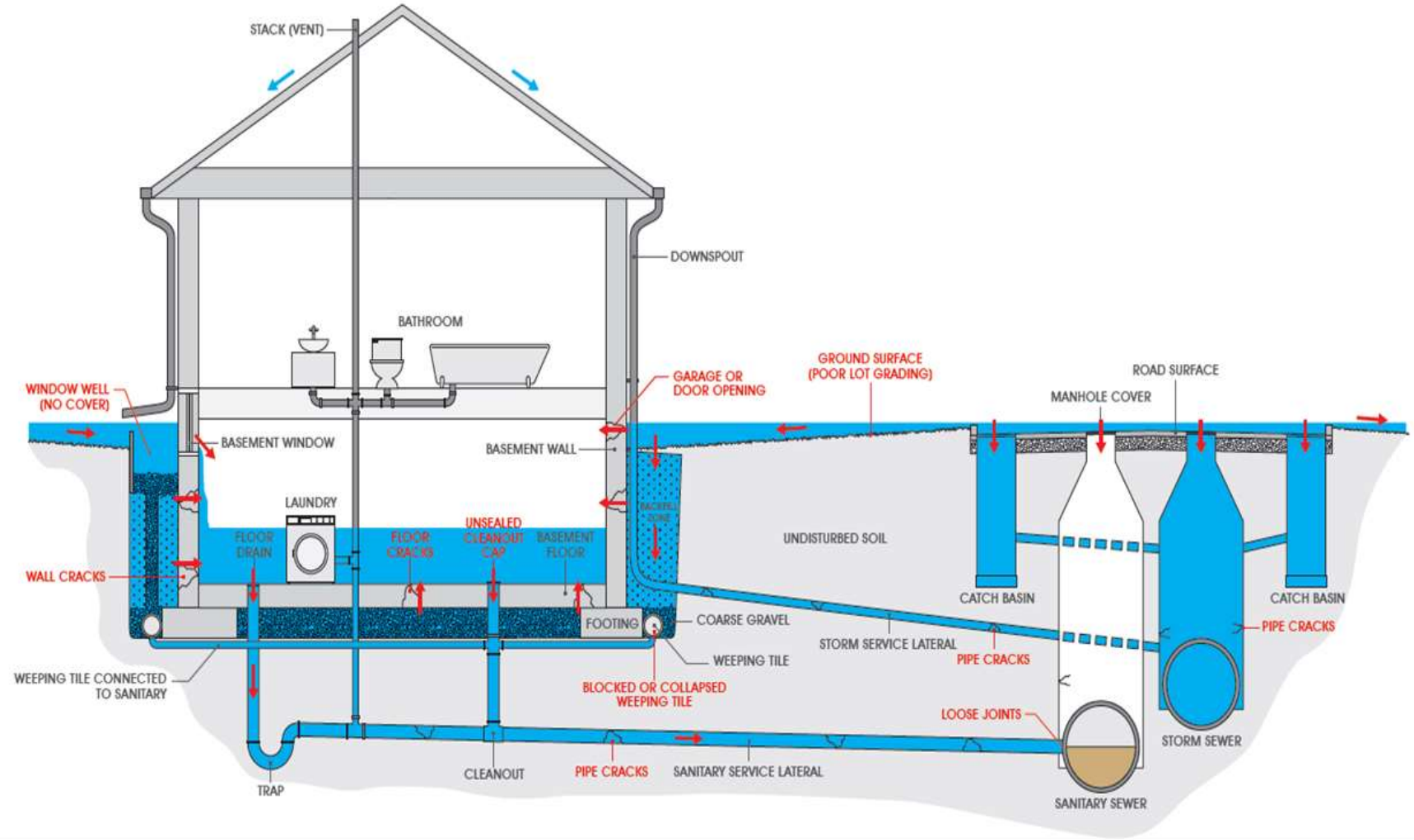
Storm Drainage System

Storm sewers (or minor system) convey stormwater runoff from up to 2-year design storm.

Streets (or major system) convey major storms that exceed the storm sewer capacity. Temporary ponding on streets is expected during major rainstorms



Typical Causes of Basement Flooding

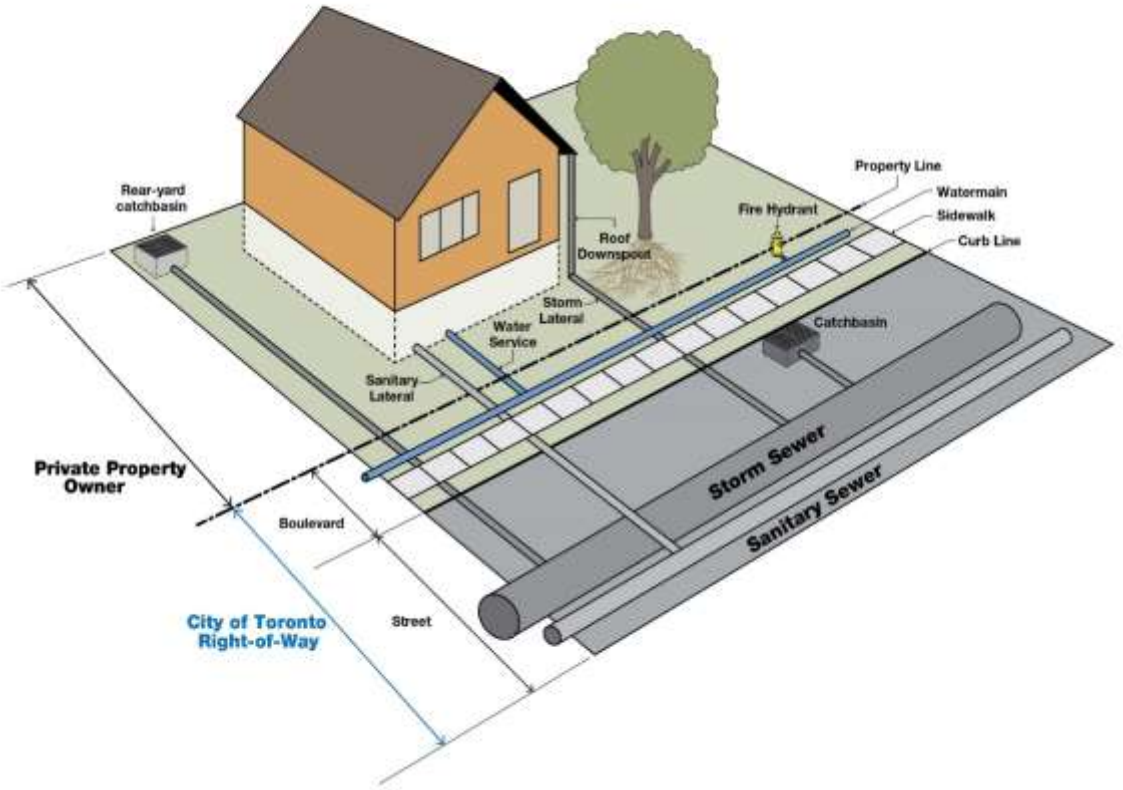


TORONTO

Areas of Responsibility - City

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

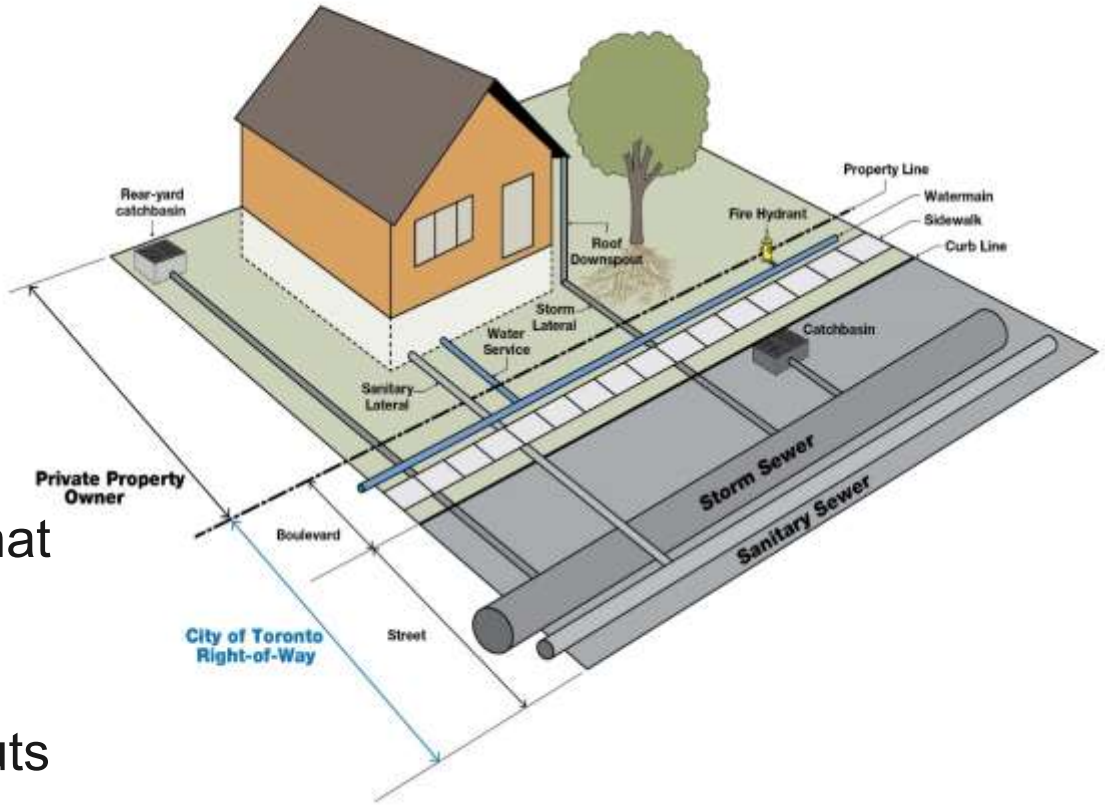
- Sanitary Sewers
- Storm Sewers
- Catchbasins within roadways
- Overland drainage within roadways



Area of Responsibility – Property Owner

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



Property Owner – Potential Solutions

Solutions that can be implemented by property owners include:

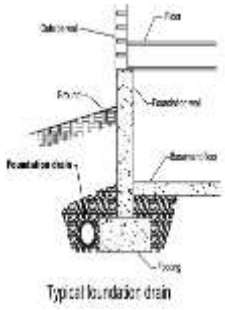
Maintaining front and rear yard drainage or driveway catchbasins

Installing backwater valve

Open joint pavers Porous asphalt

Pervious concrete Turf

Installing permeable paving



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

Improving lot grading

Disconnecting downspouts

Using rain barrels

TORONTO

Existing Flooding Conditions

Existing Flooding Conditions

The City and its consultants have examined a number of factors related to flooding. They include:

- Overland flow (i.e., the amount of surface drainage conveyed on the road during large rainfall events)
- Locations of sags in the roadway where overland flow will pond, which are vulnerable to surface and basement flooding
- Capacity of existing storm and sanitary sewers

The general locations of flooding experienced within the study area are shown in the following two maps.

Existing Flooding Conditions

Existing Flooding Conditions

Basement Flooding Solutions

Solutions to Basement Flooding

To help reduce the risk of future basement flooding in the area, the City has identified several solutions prioritized for implementation, which include:

- Overland controls
- Increasing the number of catch basins
- Catch basin inlet controls
- In-line storage pipes
- Replacing existing pipes with new larger pipes

TORONTO

Basement Flooding Solutions

Overland Control

- This solution diverts stormwater away from low lying areas that have no direct outlet to reduce ponding on the surface

What Does it Involve?

- Installation of a large inlet grate or “curb drain” (shown below) to intercept road or boulevard flows and direct the flow into the sewer system

TORONTO

Basement Flooding Solutions

Increasing the Number of Catch Basins

- Where there is capacity in the storm sewer, the City will add more catchbasins to capture flow from the surface

What Does it Involve?

- Minor excavation of the road to install the new catchbasin(s) and connect to the storm sewer and restoration of the curb and road

TORONTO

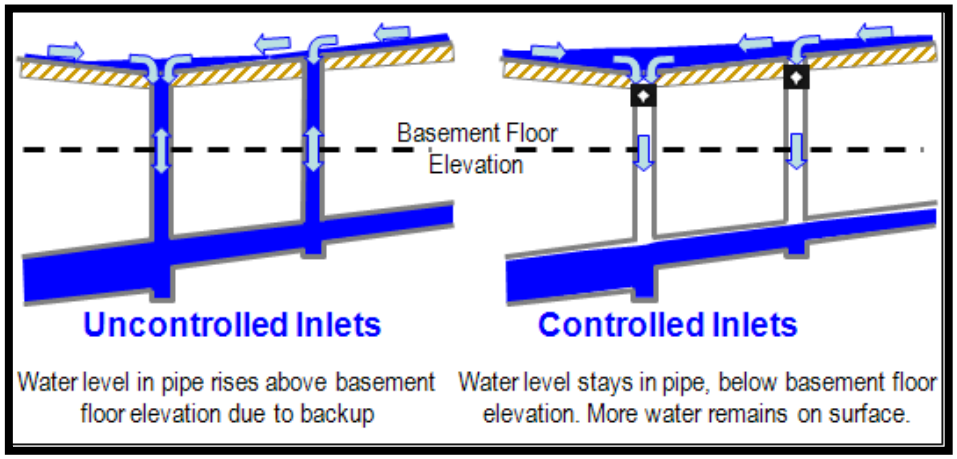
Basement Flooding Solutions

Catch basin Inlet Controls

- Can limit flow into the storm sewer system to control back-up
- Used in locations where more water can be kept on the surface

What Does it Involve?

- Installation of a plastic or metal plate / device inside the catch basin outlet and is not visible
- Requires minimal effort and time to install



TORONTO

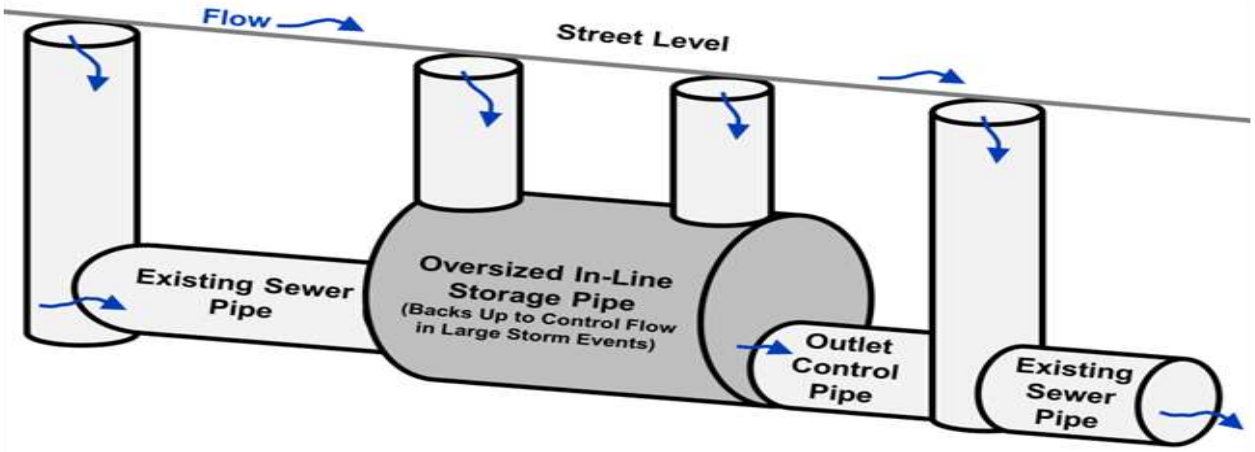
Basement Flooding Solutions

In-line Storage Pipes

- New oversized pipes are constructed to temporarily store water and help relieve overloading of the sewer system

What Does it Involve?

- Excavation of the road to remove the old sewer, manhole and catch basin and disconnection of the sewer service line(s)
- A new sewer is then installed and connected to the system followed by restoration of the road and boulevard



TORONTO

Basement Flooding Solutions

Replacement of Existing Storm, Combined and/or Sanitary Sewers

- Increase the size of the sewer pipe by replacing the old sewer with a larger pipe (upsize), installing underground storage tanks

What Does it Involve?

- Excavation and removal of the old sewer, manhole and catchbasin and disconnection of sewer service line(s)
- A new sewer is then installed and connected to the system followed by restoration of the road and boulevard

TORONTO

Recommendations and Alternative solutions for Keele Street Area

Recommended Improvements

The City has identified four projects to address surface and basement flooding within Study Area 65 (as shown in Slides 27 & 2). The projects include:

- Upgrades to storm sewer system, including in-line storage pipes, sewer upsizing and catch basin works
- Upgrades to sanitary sewer system, including in-line storage pipes and sewer upsizing

Storm upgrades at Canarctic Drive are located outside of City property and must be evaluated following the Municipal Class Environmental Assessment process. See remaining slides for details.

All other solutions are located within City property and do not require further evaluation.

TORONTO

Evaluation Criteria for Alternatives

Each alternative solution was evaluated based on their ability to address the Study's purpose and the criteria below

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)
- ✓ Community disruption during construction (traffic, noise, construction in easements)
- ✓ Community disruption after construction (visual impact, odour, safety)
- ✓ Potential impacts to archaeological and cultural resources
- ✓ Impacts to First Nations

Technical

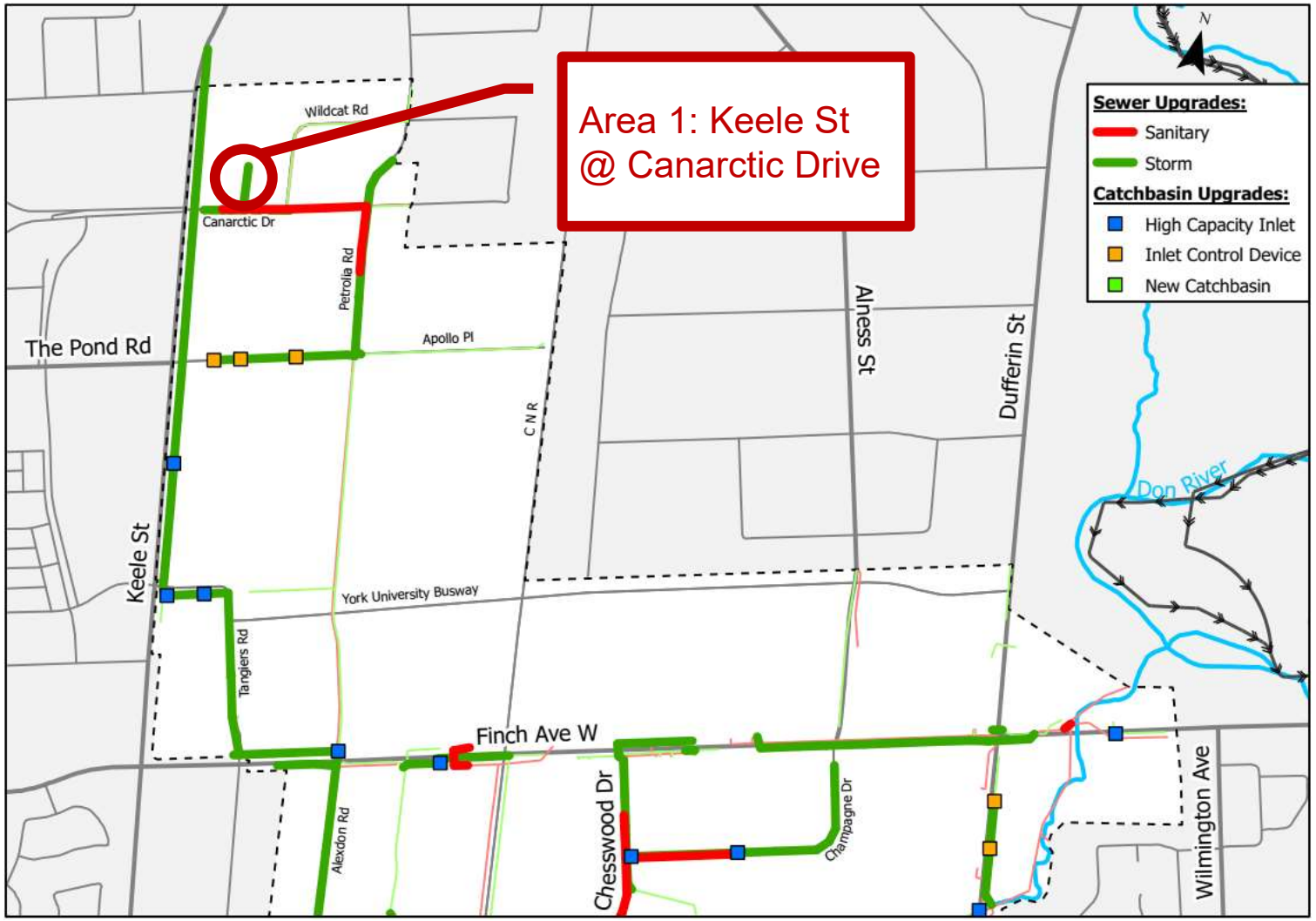
- ✓ Effectiveness in reducing surface and basement flooding
- ✓ Improvement to runoff quality
- ✓ Feasibility of implementation (available space, accessibility, constructability, easement requirements, approvals)
- ✓ Potential impacts on upstream/downstream and surrounding area infrastructure
- ✓ Impacts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

Economics

- ✓ Capital cost
- ✓ Operating and maintenance costs

TORONTO

Recommended Improvements



Recommended Improvements

Area 1: Allen Road/ Keele Street @ Canarctic Drive

Alternative Solutions

Legend

Proposed Sewer Upsizing

Proposed Catch basin Works

Require Easement

Alternative 1

- Upsize storm sewers and provide additional capacity
- Requires easement for the private property (350 Wildcat Road)
- $300,000 Construction Cost

Alternative 2

- Install Inlet Control Devices to reduce the amount of runoff to the storm sewer
- Requires easement for the private property (350 Wildcat Road)
- $12,000 Construction Cost

TORONTO

Recommended Improvement

The sewer upgrades identified along Canartic Drive will require locating sewer infrastructure outside the City's property (or Right-of-Way).

The City has identified and evaluated two alternative solutions for sewer improvements at this location.

Mitigation of Potential Impacts and Next Steps

Mitigation of Potential Impacts

Mitigation measures will be reviewed and refined during the detailed design

Habitat and Trees

- Vegetation removal to occur outside of the breeding bird season of April to August
- If stockpiles of gravel and sand are required during the active turtle season (April to October), install turtle exclusion fencing around stockpiles prior
- Implement erosion and sediment control mitigation measures
- Spill Prevention and Contingency Plan to be developed prior to construction
- Prepare tree removal and protection plans, along with tree protection barriers and signage where required
- Any damaged trees will be pruned through the implementation of proper arboricultural techniques, under supervision of a certified arborist
- On-site inspection during construction

Mitigation of Potential Impacts

Sediment and Watercourse Protection

- Develop hydraulic model prior to the installation of new outfall to determine the impacts to the current banks required to prevent erosion
- Consider additional sediment inputs into the embankment, the creek, and its effects to the navigability of the watercourse through the detailed hydraulic model
- Consider and investigate the effects of increased sediment inputs to aquatic habitat

Construction Measures

- Complete Traffic Management Plan
- Conduct a field review to confirm the result of archaeological potential Use of Best Management Practices for dust control and vibration monitoring during construction
- Use of low noise equipment during construction, where possible
- Notify impacted property owners prior to construction
- Maintain access to fronting properties

TORONTO

From Study to Construction

- All City basement flooding 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
- Projects are also prioritized for implementation based on a City Council adopted $68,000 cost per benefitting property threshold
- Projects with a cost-benefit less than $68,000 per property at the preliminary design stage may proceed to construction
- Projects that exceed the $68,000 cost per benefitting property threshold will be moved into the State-of-Good-Repair's long term capital plan

TORONTO

Contact us

Thank you for viewing the study information

- Contact us if you have any questions or submit comments by email or phone
  - Mae Lee, Senior Public Consultation Coordinator
  - 416-392-8210 or FloodingStudy@toronto.ca
- The study team will review your feedback
- A project file report will then be completed later this year and made available for a 30-day public review

www.toronto.ca/BF65

TORONTO