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Briefing Note 1

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2017 Capital Budget Briefing Note Basement Flooding Protection Program – Program Status Update

Issue:

City Council, through the creation of the City's Basement Flooding Protection Program, has directed staff to reduce the risk of basement flooding across the City through a combination of public drainage system improvements and through the use of policies, by-laws, and incentives to reduce flood risks on private and public properties.

This briefing note provides an update on Toronto Water's efforts to reduce the risk of basement flooding in the City. Specifically, ward by ward progress updates are provided to summarize the progress to date on Environmental Assessment studies, infrastructure upgrades, and private property flood protection device subsidies.

Background:

Basement Flooding Environmental Assessment (EA) Studies

Environmental Assessment (EA) studies are undertaken that assess the capacities of the City's existing storm, sanitary, and combined sewer drainage systems and recommend infrastructure improvements to these systems to reduce future basement and surface flooding. Deficiencies in private drainage systems are not identified and not assessed through the City's Basement Flooding EA studies.

The Basement Flooding Protection Program (BFPP) was expanded to be City-wide following the severe storm of July 8, 2013. This expansion resulted in the creation of new Basement Flooding study areas, bringing the total to 67 study areas. City Council, at its meeting on March 10 and 11, 2015, requested the General Manager, Toronto Water, to initiate and expedite the completion of new Basement Flooding EA studies for the remainder of the City, specifically Study Areas 42 through 67 and in the order of priority as shown in Schedule A to the report (December 18, 2014) from the General Manager, Toronto Water. The Council decision can be viewed at: http://app.toronto.ca/tmmis/viewAgendaltemHistory.do?item=2015.EX3.1

As of September 30, 2016, EA studies have been completed for 30 Basement Flooding Study Areas. EA studies for eleven study areas are underway, of which one EA study is planned to be completed by the end of 2016 (Study Area 26), eight EA studies are planned for completion in 2017 (Study Areas 20, 27, 34, 35, 36, 37, 38 and 39), and two EA studies are planned for completion in 2018 (Study Areas 40 and 41). The 30 completed Basement Flooding EA studies have recommended an estimated \$1.683 billion of infrastructure improvement projects.

A preliminary schedule (subject to future adjustments) for undertaking Basement Flooding EA studies was provided in the December 18, 2014 Staff Report. Toronto Water committed to providing City Council with an updated schedule when there is a change in the EA schedule (e.g. advancement or delay of an EA study start) that exceeds one year. As per the commitment in the 2014 Staff Report, the revised schedules for study areas 42, 43, 44, 45 and 62 are provided in Table 1.

Table 1 - Revised Schedules for Basement Flooding Study Areas 42, 43, 44, 45 and 62

Basement Flooding Study Area	Original EA Study Start Year	Revised EA Study Start Year
42	2016	2017
43	2016	2017
44	2016	2017
45	2018	2017
62	2024	2017

While the EA start schedules for study areas 42, 43 and 44 have been delayed, the schedules for study areas 45 and 62 are being advanced. Study area 62 is hydraulically connected with study areas 42 and 44, and these connections warrant the bundling of study area 62 with study areas 42 and 44. In addition, the Lower Simcoe underpass (between Front Street West and Bremner Boulevard) which has experienced multiple closures due to surface flooding incidents over the past several years, is located within study area 62. Both of these factors warrant the acceleration of study area 62.

Implementation of Infrastructure Upgrades

Infrastructure upgrades to reduce the risk of basement flooding are prioritized and scheduled, as per Council approved criteria to protect the greatest number of properties as soon as possible, within approved budgets, and are coordinated with other capital projects.

A key criteria in the decision to proceed with the design and construction of BFPP infrastructure upgrades is the requirement for projects to cost less than or equal to \$32,000 cost per benefitting property. This threshold was adopted by City Council at its meeting of September 21, 2011. The adopted staff report can be found at: http://app.toronto.ca/tmmis/viewAgendaltemHistory.do?item=2011.PW7.6

Projects that meet the \$32,000 cost per benefitting property threshold at the completion of the EA stage, proceed to preliminary design. At the completion of preliminary design, projects that meet the \$32,000 cost per benefitting property threshold, proceed to detailed design and construction. By the end of 2016, it is projected that approximately \$247 million of infrastructure upgrades will have been designed and constructed within the BFPP. This value represents approximately 15% of the total value of the improvements that have been recommended by completed Basement Flooding EA studies.

While many projects meet the \$32,000 cost per benefitting property threshold, there are also many projects that do not meet it. Of the \$1.683 billion of recommended infrastructure improvement projects identified to date, approximately \$915 million or 54% of the total value did not meet the \$32,000 cost per benefitting property threshold. These projects have not been scheduled for implementation within the 5 year capital plan, in accordance with City Council direction.

The remaining \$551 million of recommended infrastructure projects are in various stages of implementation. These stages include: under construction, in the design process (i.e. preliminary design or detailed design stages), and planned to begin the design process.

Basement Flooding Protection Subsidy Program

The City's Basement Flooding Protection Subsidy Program (BFPSP) offers property owners of single-family, duplex and triplex residential homes financial assistance of up to \$3,400 per property to install flood protection devices, including a backwater valve, sump pump, and pipe severance and capping of the home's storm sewer or external weeping tile.

The BFPSP was initially created for homeowners in response to the May 12, 2000 storm event, and was initially known as the "Voluntary Private Home Isolation from Public Sewer System Program". As a result of properties being impacted by subsequent storm events including the August 14, 2003, August 19, 2005 and May 17, 2006 storm events, the program was expanded City wide. City Council at its meeting in July 2006 adopted a report to expand the program City-wide and requested the General Manager of Toronto Water to incorporate funding to support the Program in its 2007 Capital Budget submission. The Council decision can be viewed at: http://www.toronto.ca/legdocs/2006/agendas/council/cc060725/pof6rpt/cl041.pdf

Since the subsidy program was expanded City wide in 2006, over 19,500 applications have been approved with over \$32.4 million in total subsidy payments issued to property owners by Toronto Water as of the end of June 2016. On average, the City currently issues approximately \$1,600 in subsidy payments to participating properties. The number of subsidy applications approved by the City have varied considerably from ward to ward as shown in Figure 1.

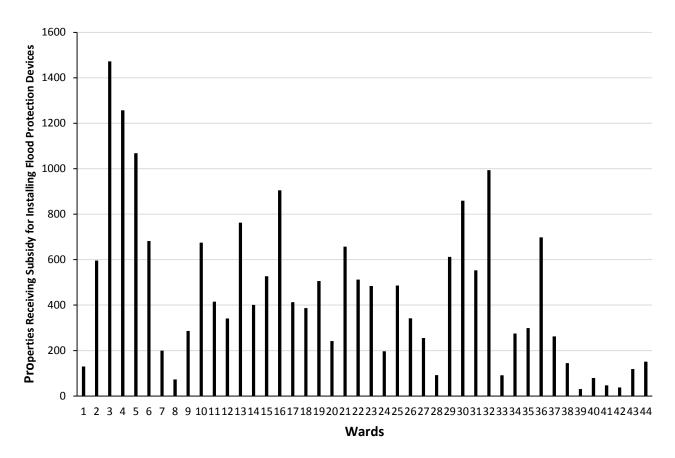


Figure 1 - Number of Properties Receiving a Subsidy for Installing Flood Protection Devices by Ward (up to end of June 2016)

Key Points:

Progress in the Basement Flooding Protection Program varies considerably from ward to ward. This briefing note provides a ward by ward summary in Schedule A and highlights the accomplishments achieved to date. Specifically, the progress regarding EA studies, construction of infrastructure upgrades, and participation in the subsidy program is provided.

These summaries highlight that while significant effort has been expended on this program, there still remains a great deal of effort to achieve the elevated level of service to reduce the risk of basement flooding across the entire City.

The summary for each City ward includes:

- A map showing the limits of each ward, the private properties that have installed flood protection devices, and the boundaries for the EA studies along with different shading to identify the portions of each ward where EA studies have been completed, are ongoing, or are planned to begin;
- A pie chart and table illustrating the proportion of each ward where an EA study has been completed, is ongoing, and is planned to begin in the future.

- A pie chart illustrating the status of the infrastructure improvement works that were recommended through completed EA studies. The chart is subdivided into five categories, namely 'Constructed', 'Under Construction', 'Design Process Initiated', 'Planned for Design Initiation', and 'Deferred Projects'. To align with the typical budgeting cycle, expected construction costs to the end of the 2016 calendar year have been estimated. The pie charts represent the portions of the ward where EA studies have been completed. Infrastructure improvement costs for the portions of the ward not yet studied are not estimated within the provided values.
- As projects move though the implementation process, cost estimates are updated and replaced with actual costs, which results in variations in the values from year to year.
- Bar charts are provided to illustrate the accomplishments of the City's Basement Flooding Protection Subsidy Program, which provides financial assistance to pay for some of the costs of installing flood protection devices. Both program participation and program expenditure summaries up to the end of June 2016 are provided.

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Toronto Water

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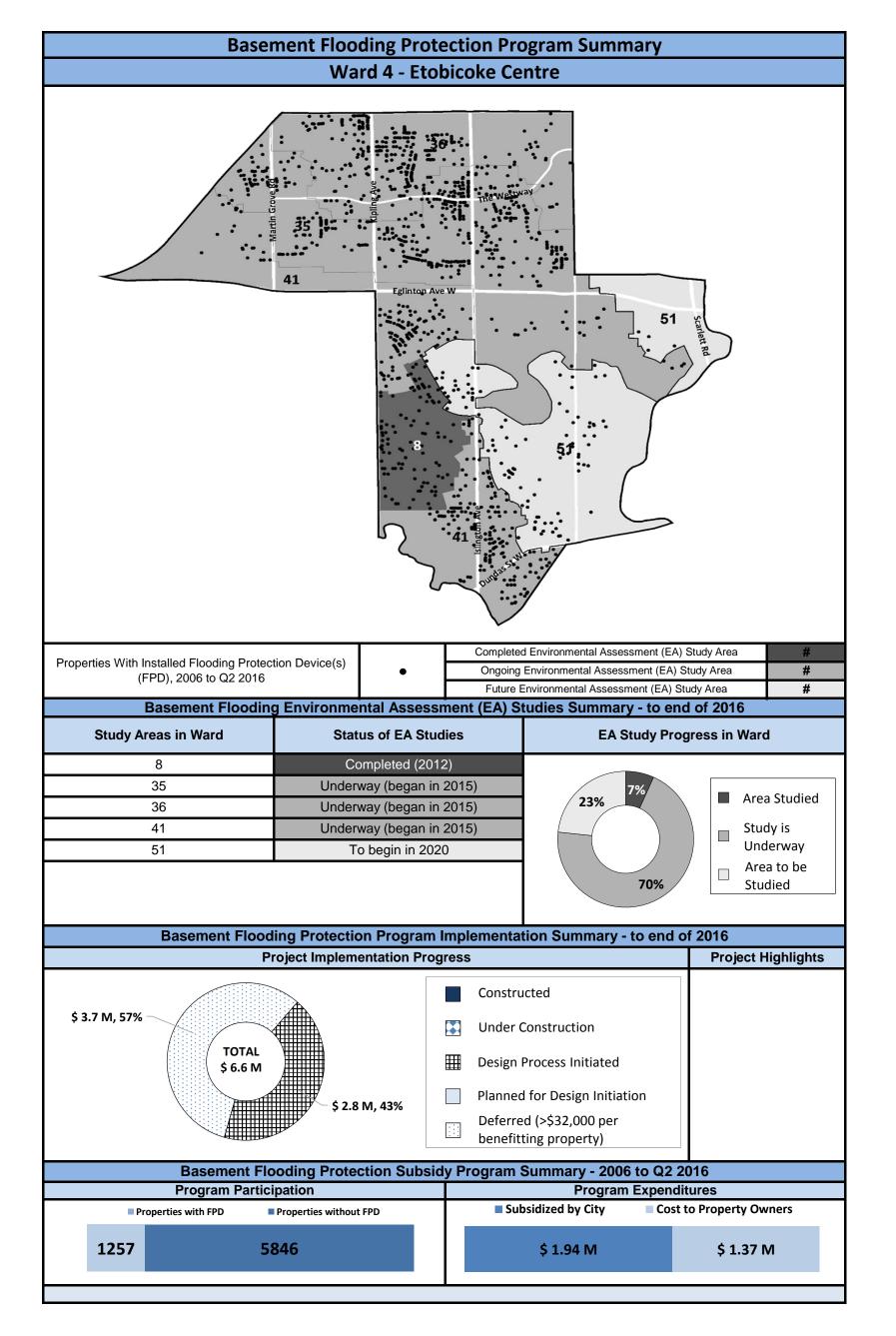
Email: ghardin2@toronto.ca

Date: October 21, 2016

Basement Flooding Protection Program Summary Ward 1 - Etobicoke North 11 51 Humber College Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2012) 11 48 To begin in 2018 Area Studied 20% 51 To begin in 2020 Study is Underway Area to be 80% Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** 1.1 km of storm sewer Constructed upgrades installed **Under Construction TOTAL Design Process Initiated** \$ 4.7 M Planned for Design Initiation \$ 4.7 M, 100% Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD **130** 3551 \$ 0.20 M \$ 0.14 M

Basement Flooding Protection Program Summary Ward 2 - Etobicoke North Belfield Rd 36 41 35 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 35 Underway (began in 2015) 36 Underway (began in 2015) Area Studied 39 Underway (began in 2015) 36% Underway (began in 2015) 41 Study is Underway 48 To begin in 2018 64% Area to be 51 To begin in 2020 Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the first Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 596 3656 \$ 0.90 M \$ 0.66 M

Basement Flooding Protection Program Summary Ward 3 - Etobicoke Centre 50 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2012) 8 Completed (2012) 11% Area Studied 9 Completed (2012) 26% Completed (2012) 10 Study is Underway 38 Underway (began in 2015) Area to be 41 Underway (began in 2015) Studied 63% 50 To begin in 2020 54 To begin in 2022 **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** 2.9 km of storm sewer \$ 2.4 M, 5% Constructed upgrades installed **Under Construction** \$ 29.1 M, 60% •3.1 km of sanitary **TOTAL Design Process Initiated** \$ 48.7 M sewer upgrades installed Planned for Design Initiation \$ 16.5 M, 34% Deferred (>\$32,000 per benefitting property) \$ 0.6 M, 1% Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 1472 4536 \$ 2.31 M \$ 1.57 M



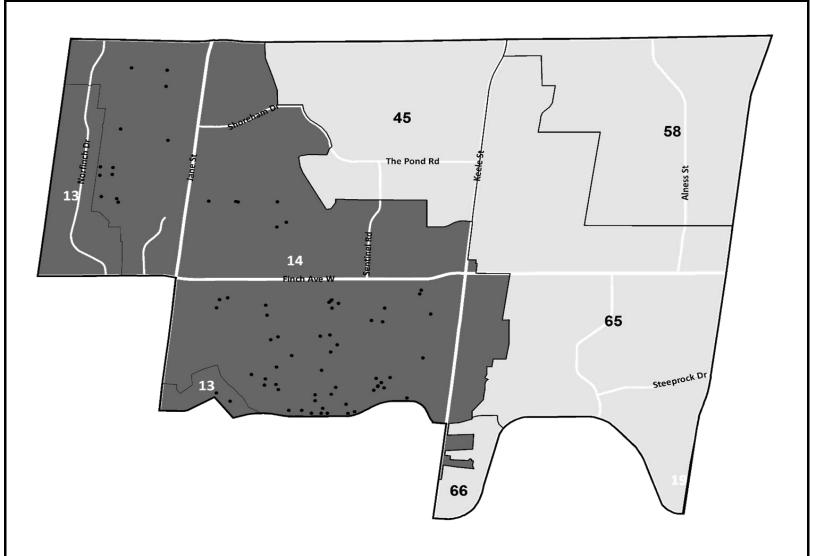
Basement Flooding Protection Program Summary Ward 5 - Etobicoke—Lakeshore 51 North Queen St Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 10 Completed (2012) 0.5% 38 Underway (began in 2015) Area Studied 17% 41 Underway (began in 2015) 49 To begin in 2018 Study is Underway 51 To begin in 2020 Area to be 54 To begin in 2022 Studied 82% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the next Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 1068 6975 \$ 1.74 M \$ 1.29 M

Basement Flooding Protection Program Summary Ward 6 - Etobicoke—Lakeshore 54 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 38 Underway (began in 2015) 49 To begin in 2018 6% Area Studied 53 To begin in 2020 54 To begin in 2022 Study is Underway Area to be Studied 94% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** Constructed **Under Construction** Implementation will proceed following completion of the first Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 682 7332 \$ 1.14 M \$ 0.84 M

Basement Flooding Protection Program Summary Ward 7 - York West 61 Clayson Rd Wilson Ave Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 12 Completed (2010) 13 Completed (2014) Area Studied 21% 14 Completed (2009) 15 Completed (2014) Study is Underway 45 To begin in 2017 Area to be To begin in 2020 51 **79%** Studied 61 To begin in 2024 **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** 1.7 km of storm sewer \$ 6.5 M, 11% \$ 8.9 M, 15% Constructed upgrades installed **Under Construction** \$ 5.7 M, 9% •2.4 km of sanitary **TOTAL Design Process Initiated** \$ 60.4 M sewer upgrades installed Planned for Design Initiation \$ 13.1 M, 22% \$ 26.2 M, 43% Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 200 4192 \$ 0.31 M \$ 0.25 M

Basement Flooding Protection Program Summary

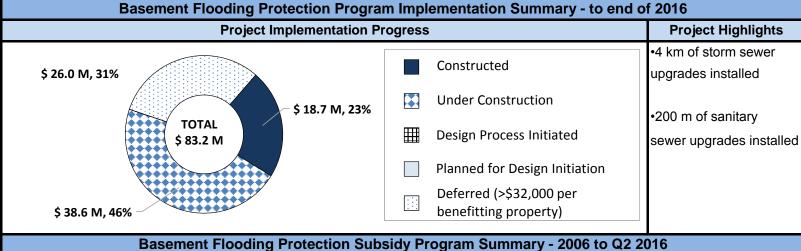
Ward 8 - York West

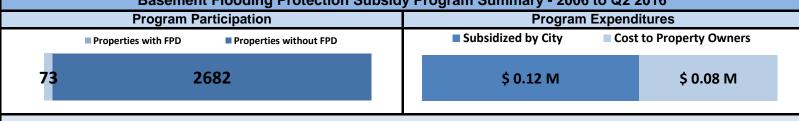


Properties With Installed Flooding Protection Device(s) (FPD), 2006 to Q2 2016

Completed Environmental Assessment (EA) Study Area	#
Ongoing Environmental Assessment (EA) Study Area	#
Future Environmental Assessment (EA) Study Area	#

Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 13 Completed (2014) 14 Completed (2009) Area Studied 45 To begin in 2017 Study is To begin in 2022 58 46% Underway 54% 65 To begin in 2025 Area to be 66 To begin in 2025 Studied





Basement Flooding Protection Program Summary Ward 9 - York Centre 66 16 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 13 Completed (2014) 14 Completed (2009) Area Studied 15 Completed (2014) Study is 16 Completed (2012) 47% 53% Underway 19 Completed (2014) Area to be 45 To begin in 2017 Studied 66 To begin in 2025 **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** 250 m of storm sewer \$ 3.7 M, 7% Constructed \$ 25.7 M, 46% upgrades installed **Under Construction TOTAL Design Process Initiated** \$ 56.0 M Planned for Design Initiation \$ 23.0 M, 41% Deferred (>\$32,000 per \$ 3.5 M, 6% benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures**

Subsidized by City

\$ 0.47 M

■ Properties with FPD

286

■ Properties without FPD

5456

Cost to Property Owners

\$ 0.34 M

Basement Flooding Protection Program Summary Ward 10 - York Centre .58 65 66 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 19 Completed (2014) 24 Underway (began in 2012) Area Studied 28 Completed (2008) 39% To begin in 2022 Study is 58 Underway 65 To begin in 2025 60% Area to be 66 To begin in 2025 Studied 2% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** 2.5 km of storm sewer Constructed upgrades installed \$ 9.5 M, 6% \$ 84.7 M, 50% **Under Construction TOTAL Design Process Initiated** \$ 168.4 M \$ 44.5 M, 26% Planned for Design Initiation Deferred (>\$32,000 per \$ 29.7 M, 18% benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD

\$ 1.22 M

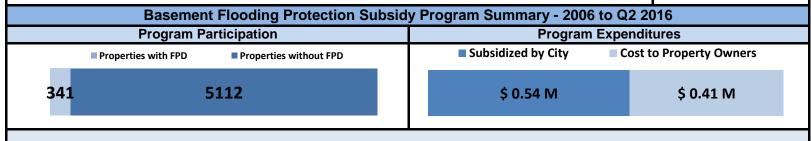
\$ 0.84 M

675

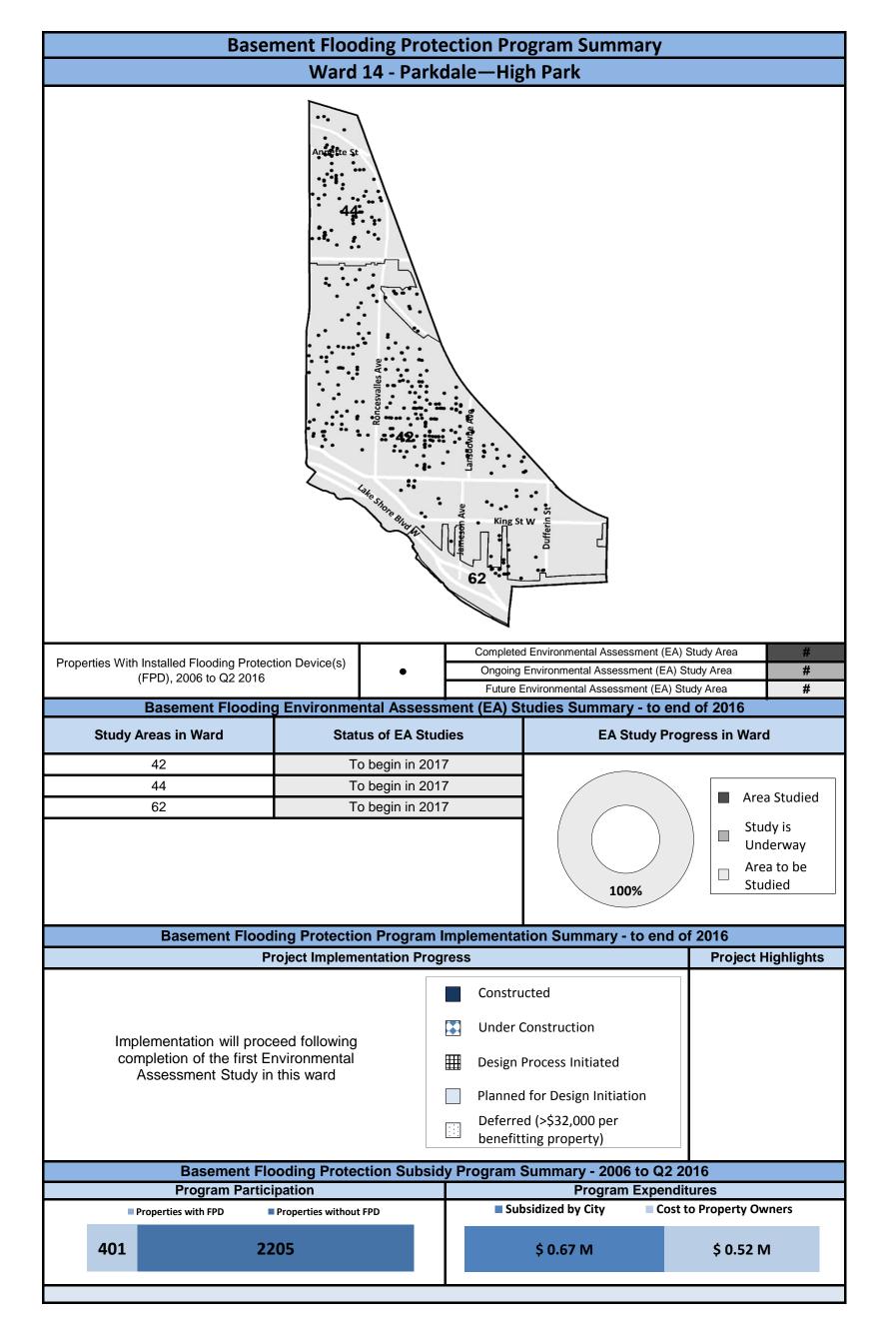
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Basement Flooding Protection Program Summary Ward 11 - York South—Weston 44 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2014) 4 6 Completed (2014) Area Studied 44 To begin in 2017 40% To begin in 2017 45 Study is Underway 51 To begin in 2020 60% Area to be Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed \$ 10.4 M, 17% **Under Construction TOTAL** \$ 47.7 M, 79% **Design Process Initiated** \$ 60.2 M Planned for Design Initiation \$ 2.1 M, 4% Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 415 \$ 0.52 M 5725 \$ 0.65 M

Basement Flooding Protection Program Summary Ward 12 - York South—Weston rethewey or 45 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 3 Completed (2011) 4 Completed (2014) Area Studied 16 Completed (2012) 31% 45 To begin in 2017 Study is Underway Area to be Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** 2.4 km of storm sewer \$ 23.2 M, 22% Constructed upgrades installed **Under Construction** \$ 21.3 M, 20% •400 m of sanitary **TOTAL Design Process Initiated** \$ 107.1 M sewer upgrades installed Planned for Design Initiation \$ 10.0 M, 9% \$ 52.6 M, 49% Deferred (>\$32,000 per benefitting property)



Basement Flooding Protection Program Summary Ward 13 - Parkdale—High Park 42 The Queensway Lake Shore Blvd W Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2014) 4 5 Completed (2014) 10% Area Studied 42 To begin in 2017 To begin in 2017 Study is 44 Underway 49 To begin in 2018 Area to be 51 To begin in 2020 Studied 90% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** Constructed **Under Construction** \$ 1.3 M, 62% **TOTAL** \$ 0.8 M, 38% **Design Process Initiated** \$ 2.1 M Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 763 4527 \$ 1.20 M \$ 1.02 M



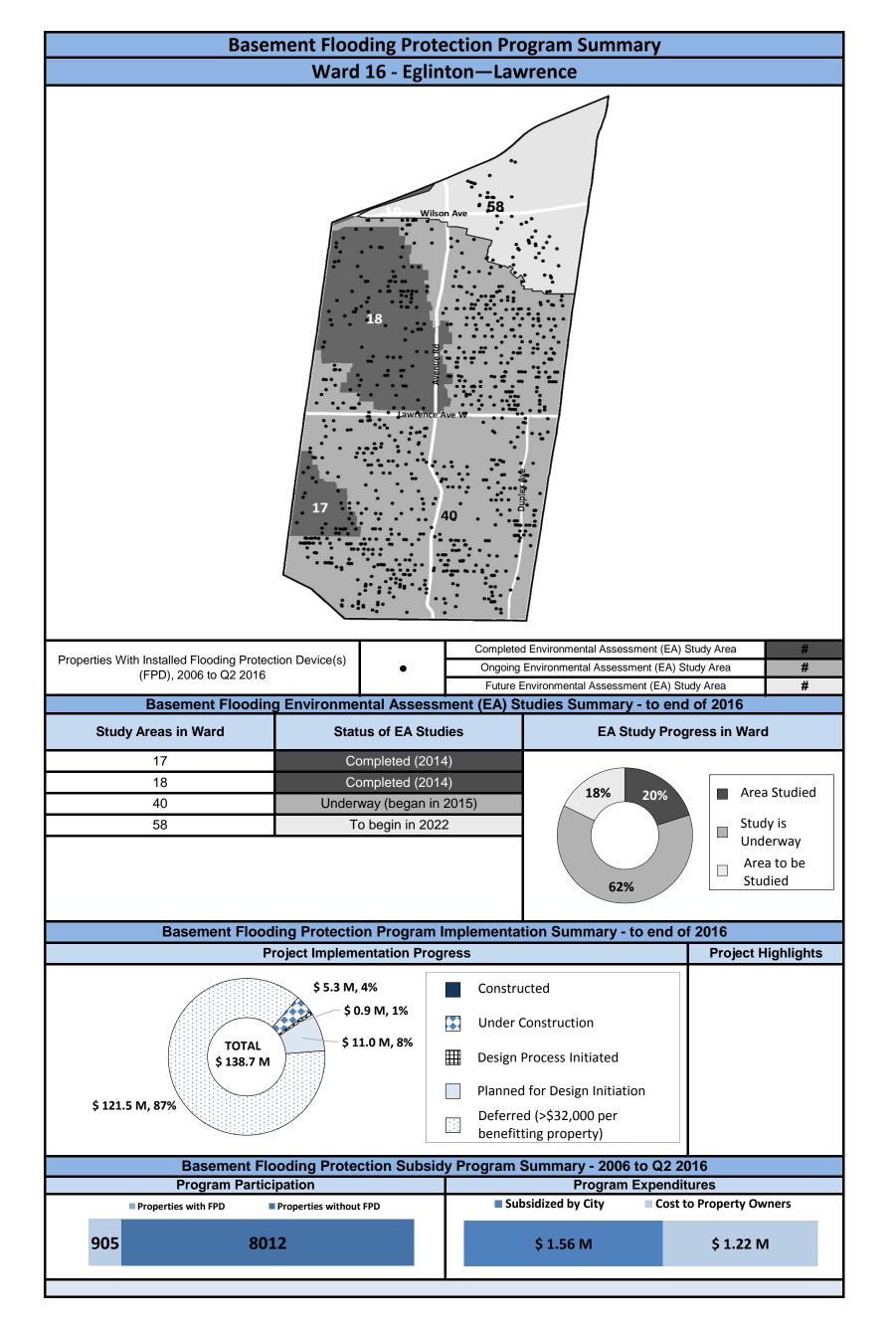
Basement Flooding Protection Program Summary Ward 15 - Eglinton—Lawrence Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 3 Completed (2011) 16 Completed (2012) 17% Area Studied 17 Completed (2014) Study is 18 Completed (2014) Underway 19 Completed (2014) Area to be 37 Underway (began in 2015) 83% Studied 40 Underway (began in 2015) **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** 1 km of storm sewer \$ 6.7 M, 2% Constructed upgrades installed \$ 7.5 M, 2% **Under Construction** \$ 206.2 M, 66% •500 m of sanitary **TOTAL Design Process Initiated** \$ 315.3 M sewer upgrades installed \$ 60.0 M, 19% Planned for Design Initiation Deferred (>\$32,000 per \$ 35.0 M, 11% benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD

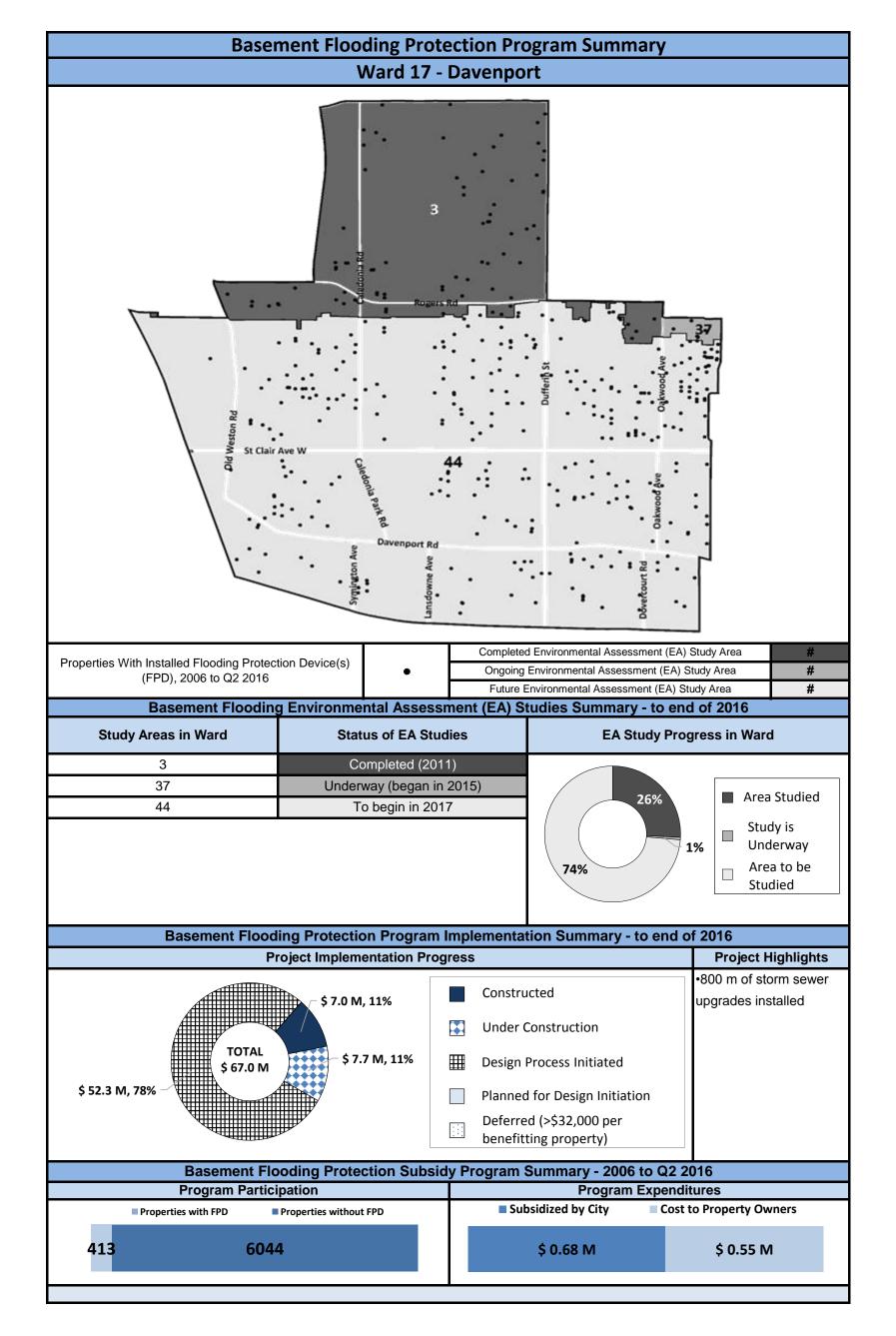
\$ 0.91 M

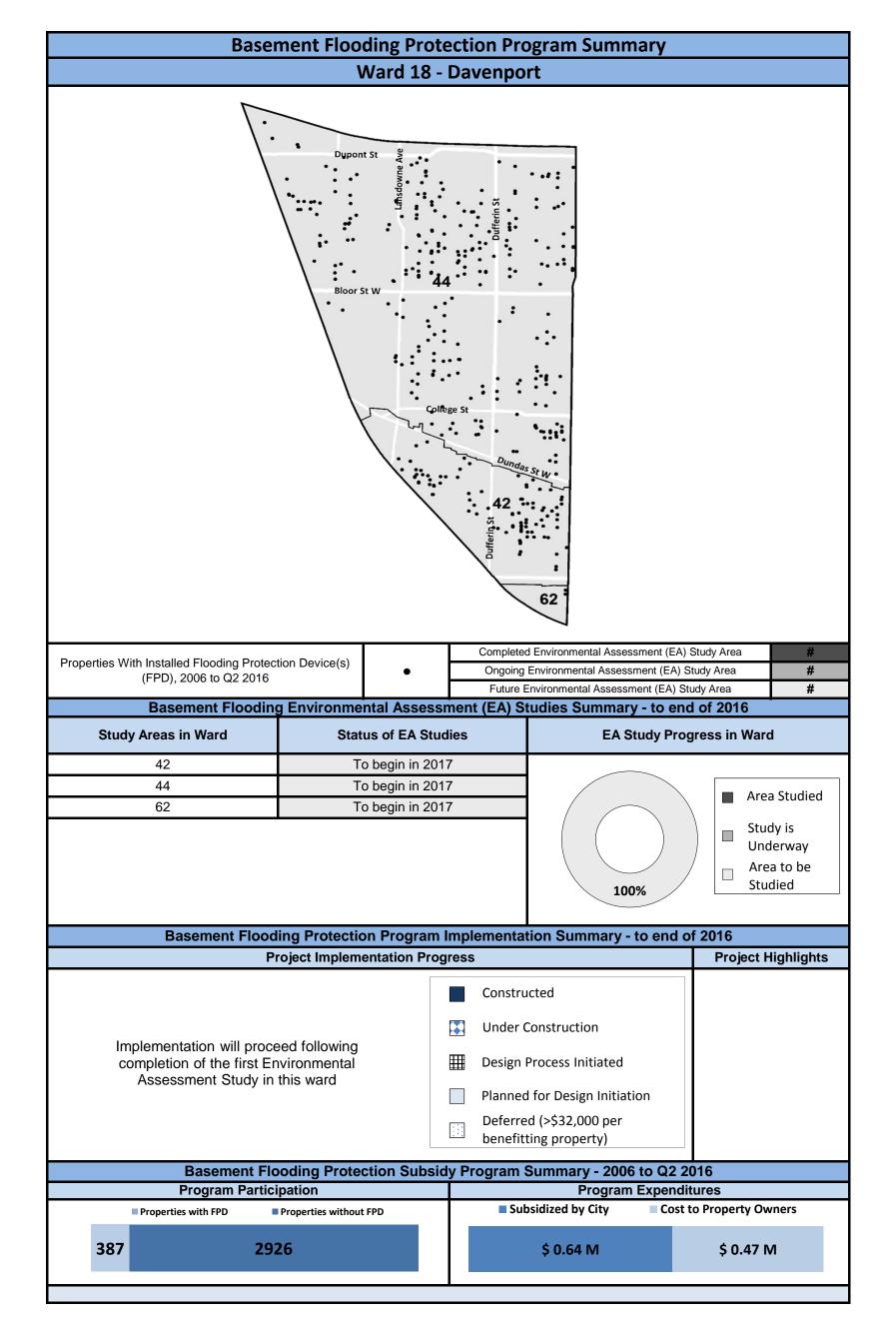
\$ 0.66 M

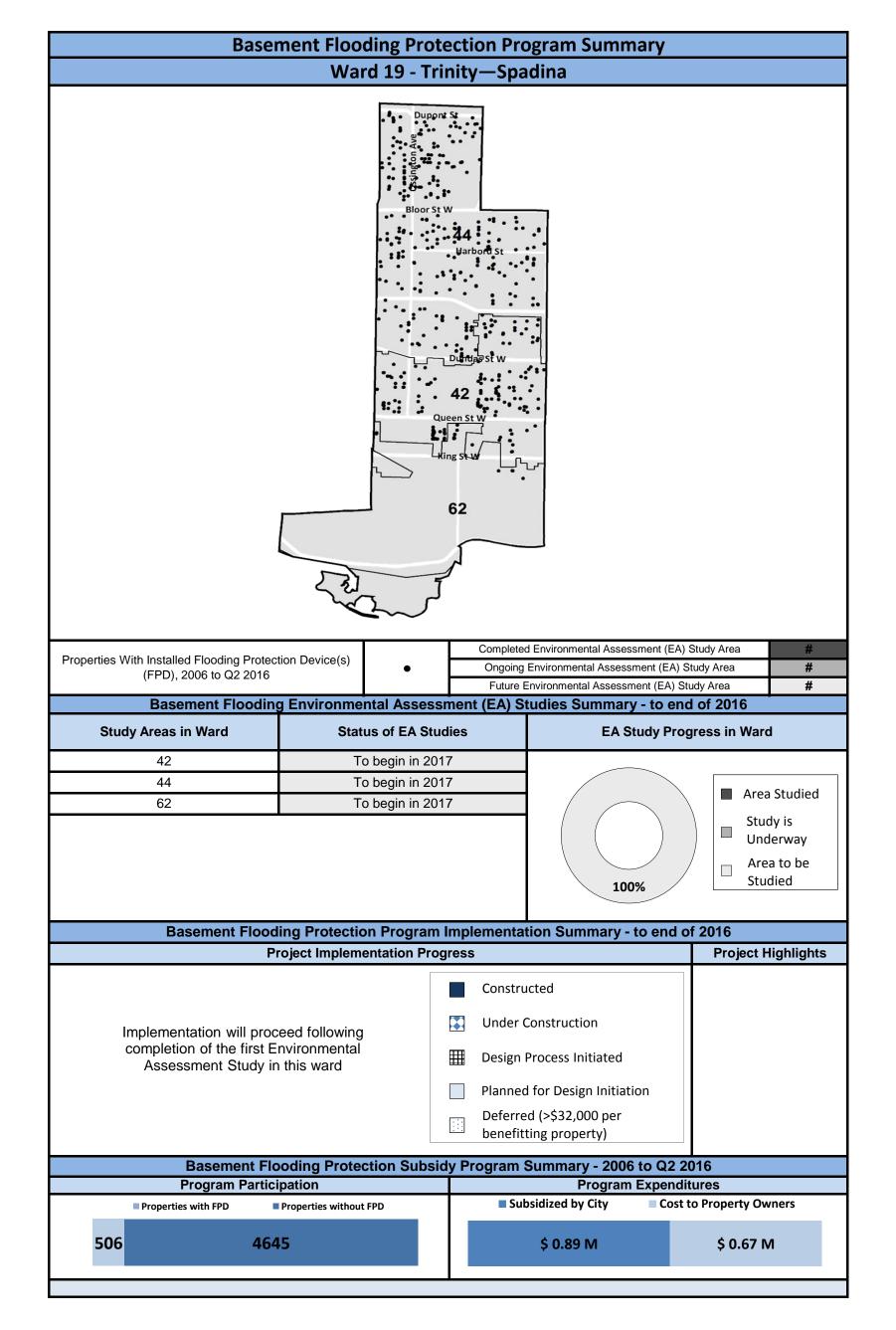
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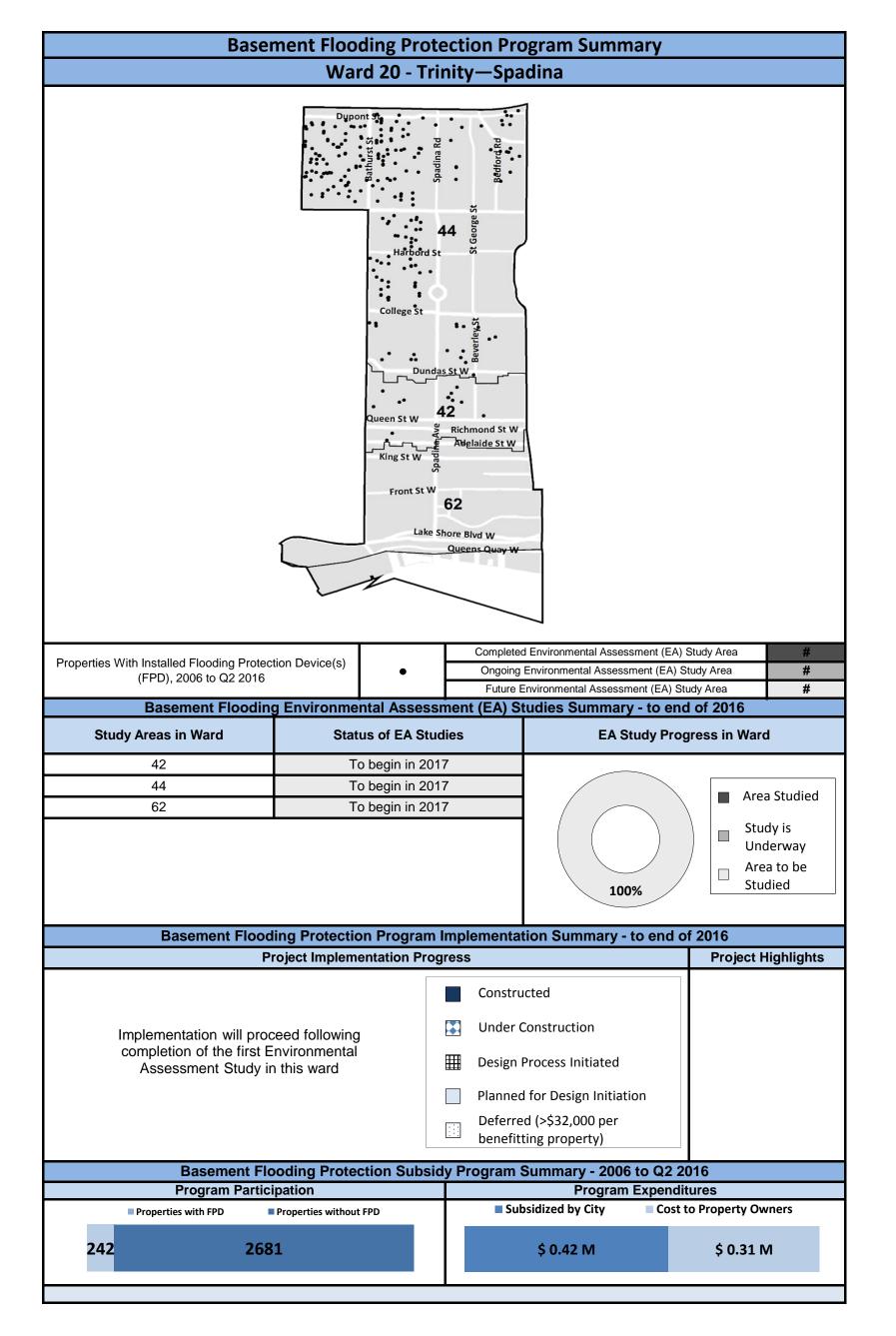
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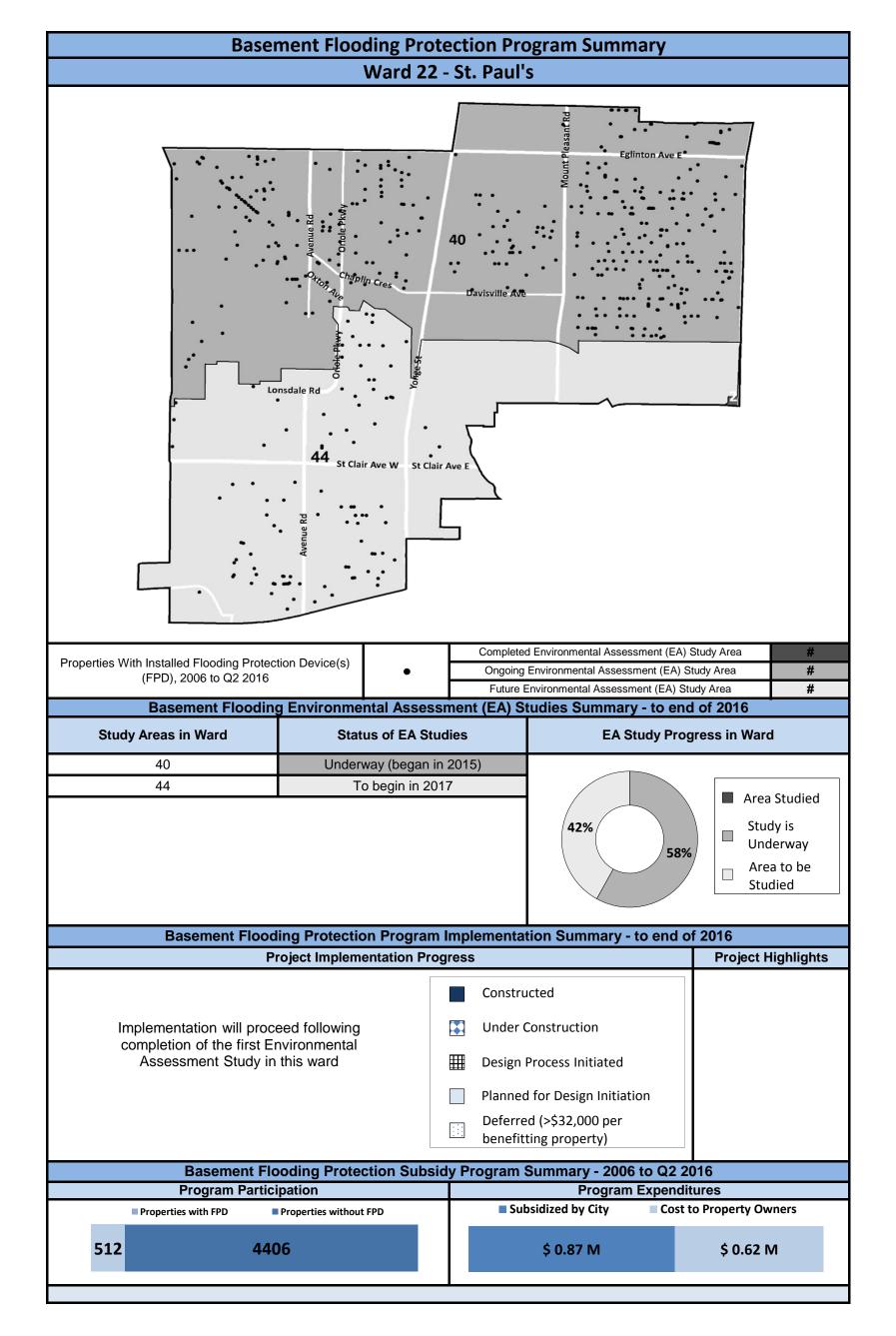








Basement Flooding Protection Program Summary Ward 21 - St. Paul's Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 37 Underway (began in 2015) 40 Underway (began in 2015) Area Studied 44 To begin in 2017 36% Study is Underway 64% Area to be Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the first Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 657 4458 \$ 0.83 M \$ 1.19 M



Basement Flooding Protection Program Summary Ward 23 - Willowdale Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 24 Underway (began in 2012) 25 Underway (began in 2012) 8% Area Studied 20% 26 Underway (began in 2012) Study is 27 Underway (began in 2012) Underway 28 Completed (2008) Area to be 43 To begin in 2017 Studied 73% 58 To begin in 2022 **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** •9.5 km of storm sewer \$ 9.8 M, 21% Constructed upgrades installed **Under Construction** •300 m of sanitary **TOTAL Design Process Initiated** \$ 47.3 M sewer upgrades installed Planned for Design Initiation Installation of Moore Deferred (>\$32,000 per \$ 37.4 M, 79% Park Stormwater benefitting property) Management Pond Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures**

Subsidized by City

\$ 0.83 M

■ Properties with FPD

484

■ Properties without FPD

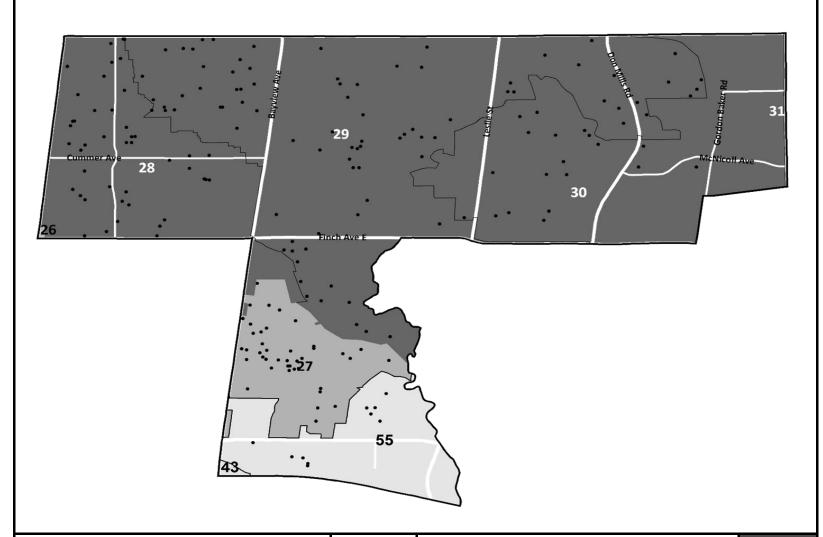
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Cost to Property Owners

\$ 0.63 M

Basement Flooding Protection Program Summary

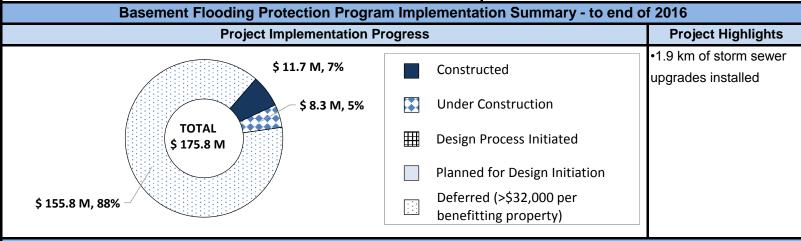
Ward 24 - Willowdale

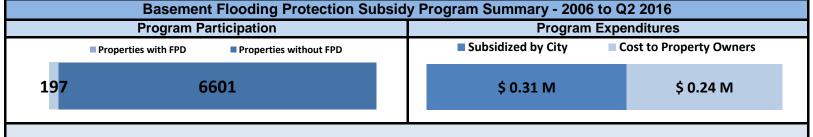


Properties With Installed Flooding Protection Device(s) (FPD), 2006 to Q2 2016

Completed Environmental Assessment (EA) Study Area	#
Ongoing Environmental Assessment (EA) Study Area	#
Future Environmental Assessment (EA) Study Area	#

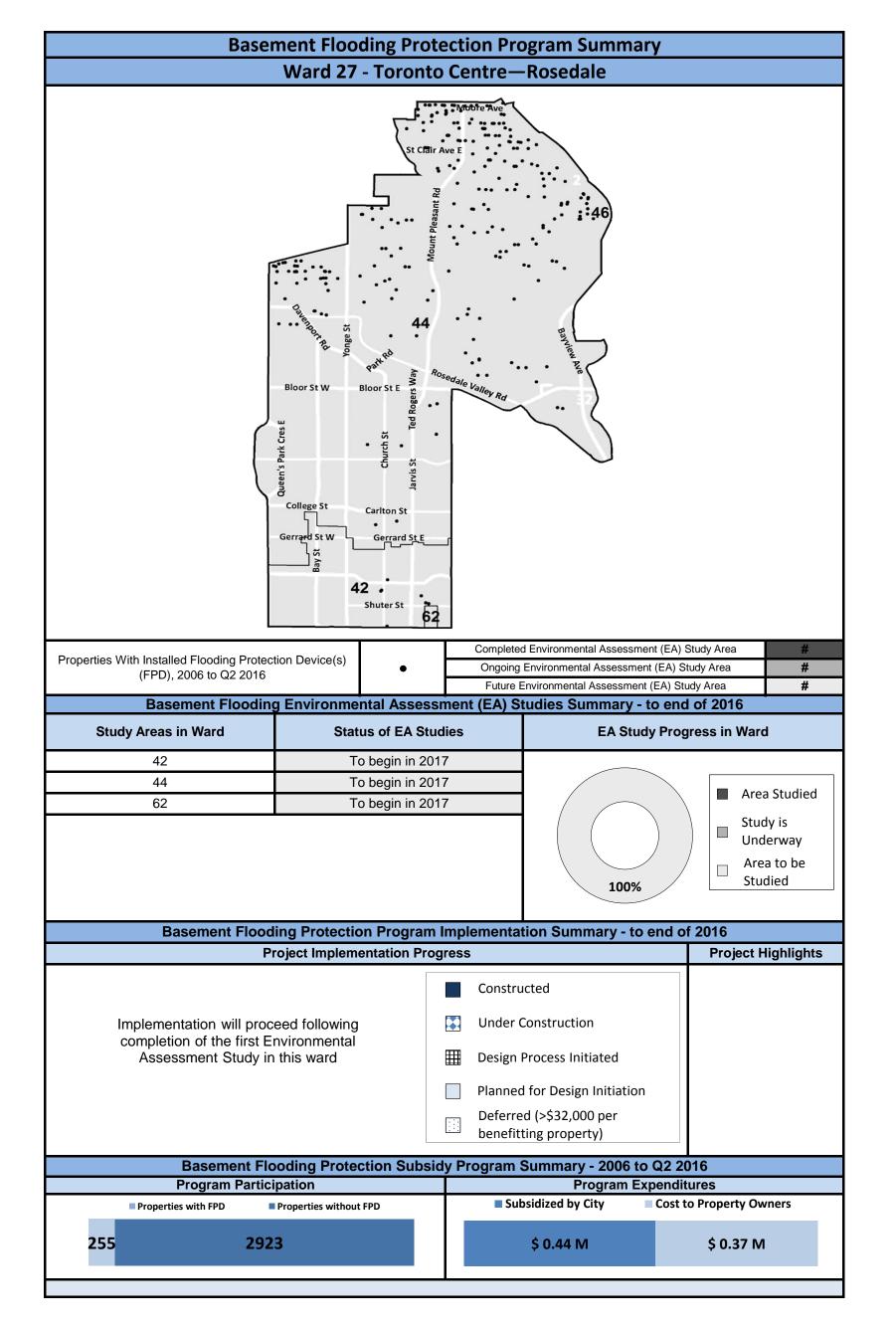
Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 27 Underway (began in 2012) 28 Completed (2008) 9% Area Studied 29 Completed (2008) 8% Study is 30 Completed (2008) Underway 55 To begin in 2022 Area to be 83% Studied

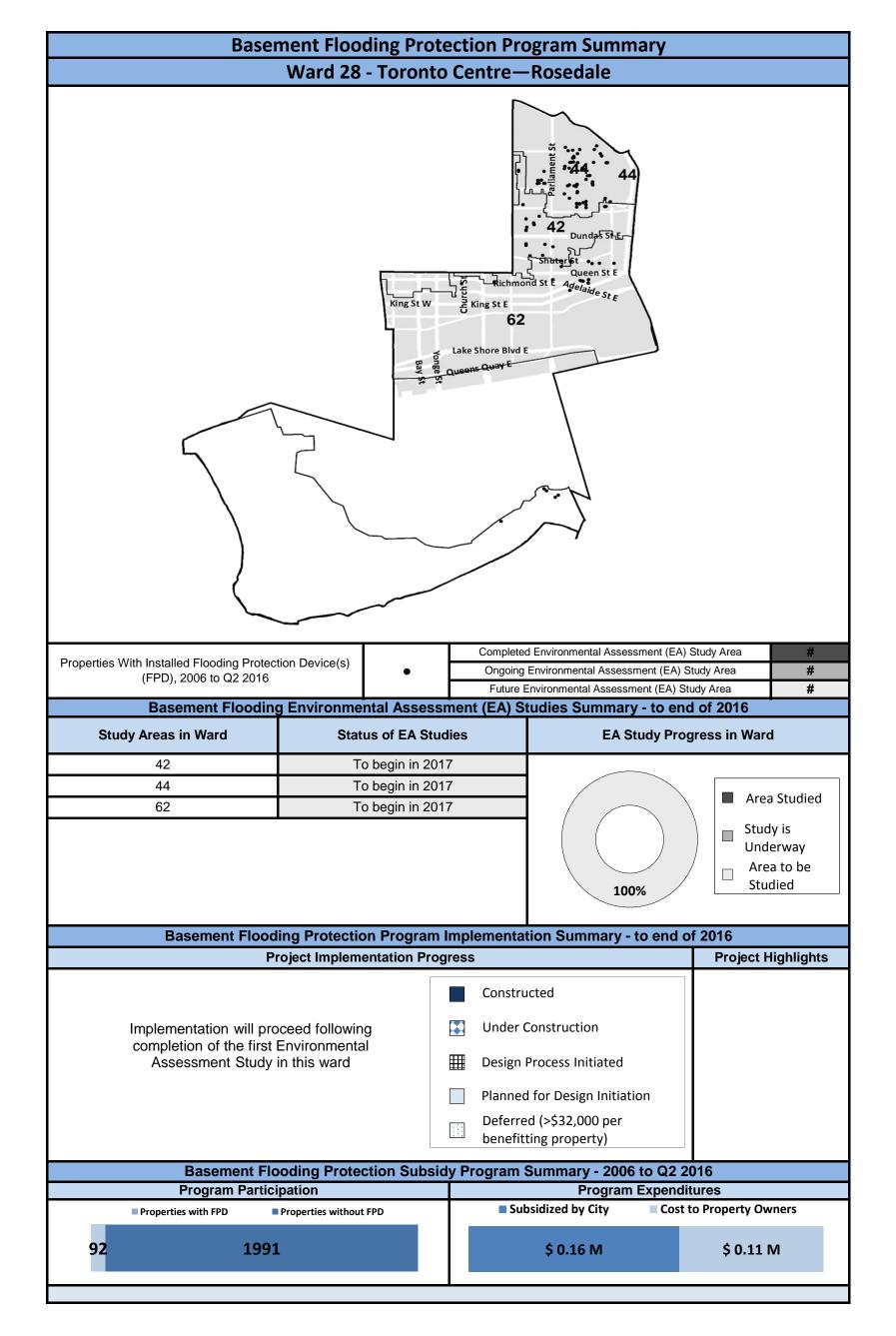




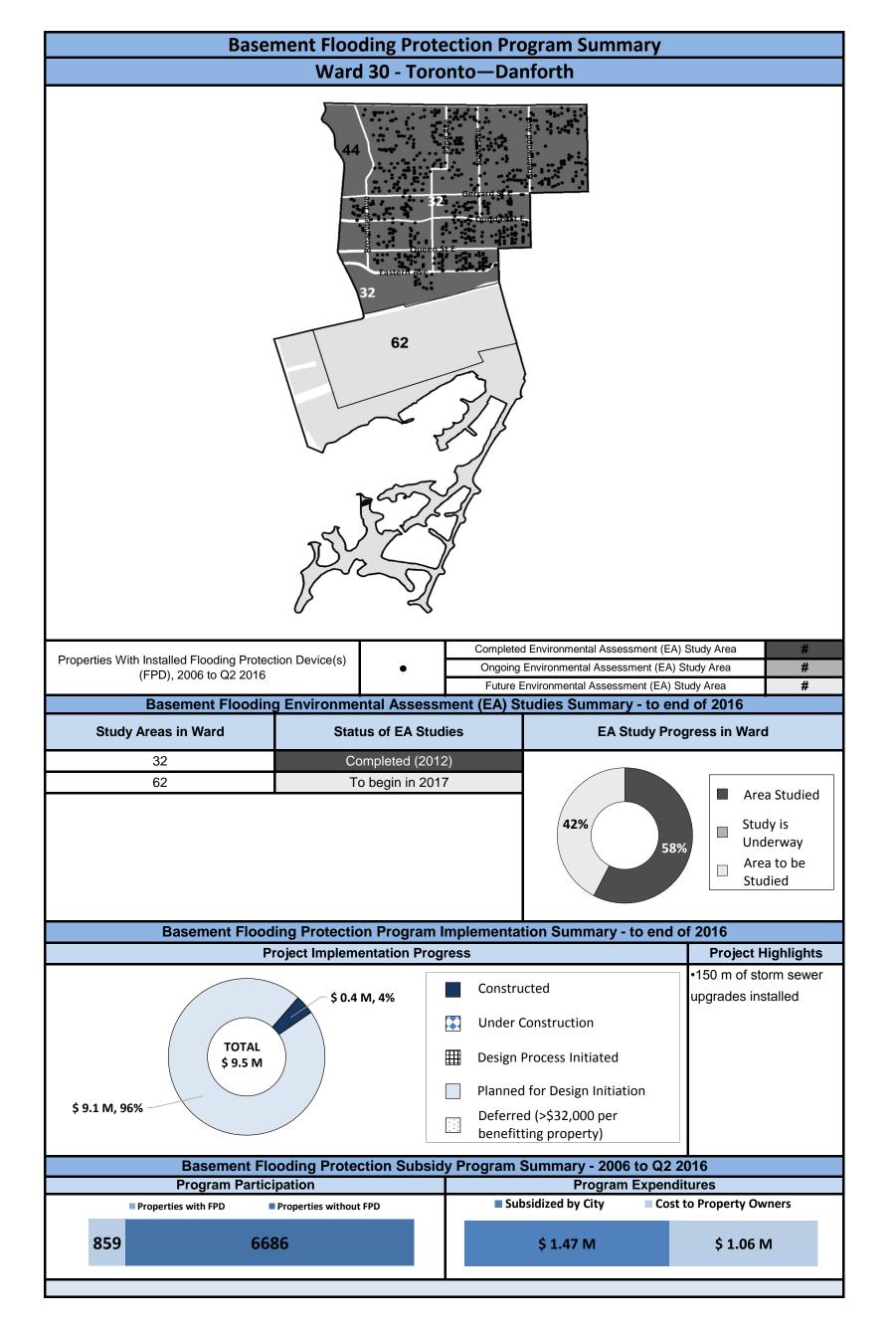
Basement Flooding Protection Program Summary Ward 25 - Don Valley West 58 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 20 Underway (began in 2012) 21 Completed (2016) 12% Area Studied 40 Underway (began in 2015) 43 To begin in 2017 Study is Underway 55 To begin in 2022 Area to be 58 To begin in 2022 70% Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the next Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 486 8099 \$ 0.81 M \$ 0.67 M

Basement Flooding Protection Program Summary Ward 26 - Don Valley West 20 Eglinton Ave 58 55 Overlea Blvd 46 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2015) 2 46 To begin in 2018 Area Studied 55 To begin in 2022 58 To begin in 2022 42% Study is Underway 58% Area to be Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** Constructed \$ 8.07 M, 58% **Under Construction TOTAL Design Process Initiated** \$ 13.8 M Planned for Design Initiation \$ 5.78 M, 42% Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 342 2906 \$ 0.46 M \$ 0.55 M





Basement Flooding Protection Program Summary Ward 29 - Toronto—Danforth Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2015) 32 Completed (2012) Area Studied 46 To begin in 2018 47 To begin in 2018 Study is Underway Area to be 76% Studied Basement Flooding Protection Program Implementation Summary - to end of 2016 **Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the next Environmental Assessment Study in this ward **Design Process Initiated** Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 612 6447 \$ 1.03 M \$ 0.77 M



Basement Flooding Protection Program Summary Ward 31 - Beaches—East York Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2014) 32 Completed (2012) Area Studied 46 To begin in 2018 47 To begin in 2018 Study is Underway 55 To begin in 2022 Area to be **75%** Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** Constructed **Under Construction Design Process Initiated** \$ 16.7 M Planned for Design Initiation Deferred (>\$32,000 per \$ 16.7 M, 100% benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD

\$ 0.64 M

\$ 0.91 M

553

6989

Basement Flooding Protection Program Summary Ward 32 - Beaches—East York 47 ake Shore Blvd I 62 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 32 Completed (2012) 47 To begin in 2018 **12%** Area Studied 62 To begin in 2017 Study is Underway Area to be Studied 88% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** 240 m of combined Constructed \$ 7.7 M, 44% sewer upgrades \$ 0.6 M, 4% installed **Under Construction TOTAL Design Process Initiated** \$ 17.4 M Planned for Design Initiation Deferred (>\$32,000 per \$ 9.0 M, 52% benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 994 7881 \$ 1.58 M \$ 1.34 M

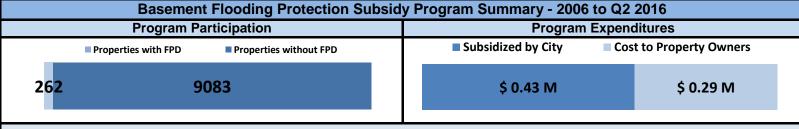
Basement Flooding Protection Program Summary Ward 33 - Don Valley East 55 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) # Ongoing Environmental Assessment (EA) Study Area (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward** Status of EA Studies **EA Study Progress in Ward** Completed (2008) 29 3% 30 Completed (2008) Area Studied 55 To begin in 2022 Study is Underway Area to be Studied 97% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** 4.9 km of storm sewer Constructed upgrades installed **Under Construction** \$ 130.4 M, 76% •100 m of sanitary \$ 41.7 M, 24% **TOTAL Design Process Initiated** sewer upgrades installed \$ 172.0 M Planned for Design Initiation Muirhead Park SWM Deferred (>\$32,000 per Pond, Old Sheppard benefitting property) Underground Storm Tank Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 91 5546 \$ 0.15 M \$ 0.12 M

Basement Flooding Protection Program Summary Ward 34 - Don Valley East Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** Completed (2016) 21 22 Completed (2014) Area Studied 23 Completed (2016) 41% Study is 30 Completed (2008) Underway 43 To begin in 2017 **59%** Area to be 47 To begin in 2018 Studied 55 To begin in 2022 **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** Constructed **Under Construction TOTAL Design Process Initiated** \$ 41.8 M Planned for Design Initiation \$41.8 M, 100% Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 275 4898 \$ 0.36 M \$ 0.44 M

Basement Flooding Protection Program Summary Ward 35 - Scarborough Southwest 47 52 St Clair Ave Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 34 Underway (began in 2015) 47 To begin in 2018 11% Area Studied 52 To begin in 2020 Study is Underway Area to be Studied 89% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed Implementation will proceed following **Under Construction** completion of the first Environmental Assessment Study in this ward **Design Process Initiated** Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 299 **7206** \$ 0.51 M \$ 0.31 M

Basement Flooding Protection Program Summary Ward 36 - Scarborough Southwest Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 32 Completed (2012) 33 Completed (2011) Area Studied 34 Underway (began in 2015) 52 To begin in 2020 Study is 49% Underway 59 To begin in 2024 Area to be Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** Constructed \$ 3.5 M, 37% **Under Construction TOTAL Design Process Initiated** \$ 9.4 M Planned for Design Initiation \$ 5.9 M, 63% Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 698 7564 \$ 1.19 M \$ 0.66 M

Basement Flooding Protection Program Summary Ward 37 - Scarborough Centre 60 **Progress Ave** 59 52 Lawrence Ave E 47 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 30 Completed (2008) 34 Underway (began in 2015) Area Studied 47 To begin in 2018 28% 52 To begin in 2020 Study is Underway 59 To begin in 2024 1% Area to be 60 To begin in 2024 71% Studied **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction TOTAL Design Process Initiated** \$ 19.1 M Planned for Design Initiation Deferred (>\$32,000 per \$ 19.1 M, 100% benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016

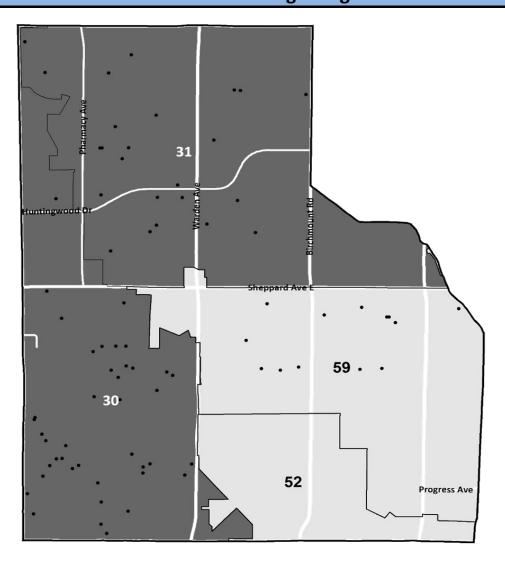


Basement Flooding Protection Program Summary Ward 38 - Scarborough Centre Progress Ave 60 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 52 To begin in 2020 59 To begin in 2024 Area Studied 60 To begin in 2024 Study is 63 To begin in 2025 Underway Area to be Studied 100% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the first Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 145 7099 \$ 0.25 M \$ 0.17 M

Basement Flooding Protection Program Summary Ward 39 - Scarborough—Agincourt 31 60 30 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 30 Completed (2008) 31 Completed (2011) 12% Area Studied 59 To begin in 2024 To begin in 2024 60 Study is Underway Area to be Studied 88% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Implementation Progress Project Highlights** 1 km of storm sewer Constructed upgrades installed \$ 7.5 M, 54% **Under Construction TOTAL Design Process Initiated** \$ 13.9 M \$ 6.0 M, 43% Planned for Design Initiation Deferred (>\$32,000 per benefitting property) \$ 0.4 M, 3% Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016



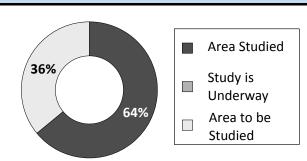
Basement Flooding Protection Program Summary Ward 40 - Scarborough—Agincourt

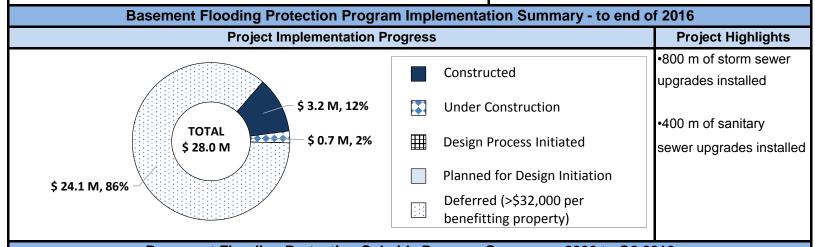


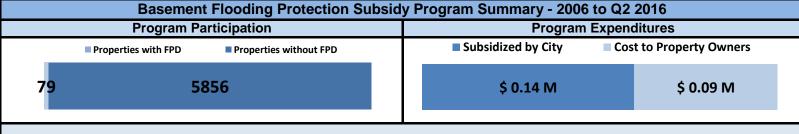
Properties With Installed Flooding Protection Device(s) (FPD), 2006 to Q2 2016

Completed Environmental Assessment (EA) Study Area	Щ
Completed Environmental Assessment (EA) Study Area	#
Ongoing Environmental Assessment (EA) Study Area	#
Future Environmental Assessment (EA) Study Area	#

Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 30 Completed (2008) 31 Completed (2011) 52 To begin in 2020 36% 59 To begin in 2024

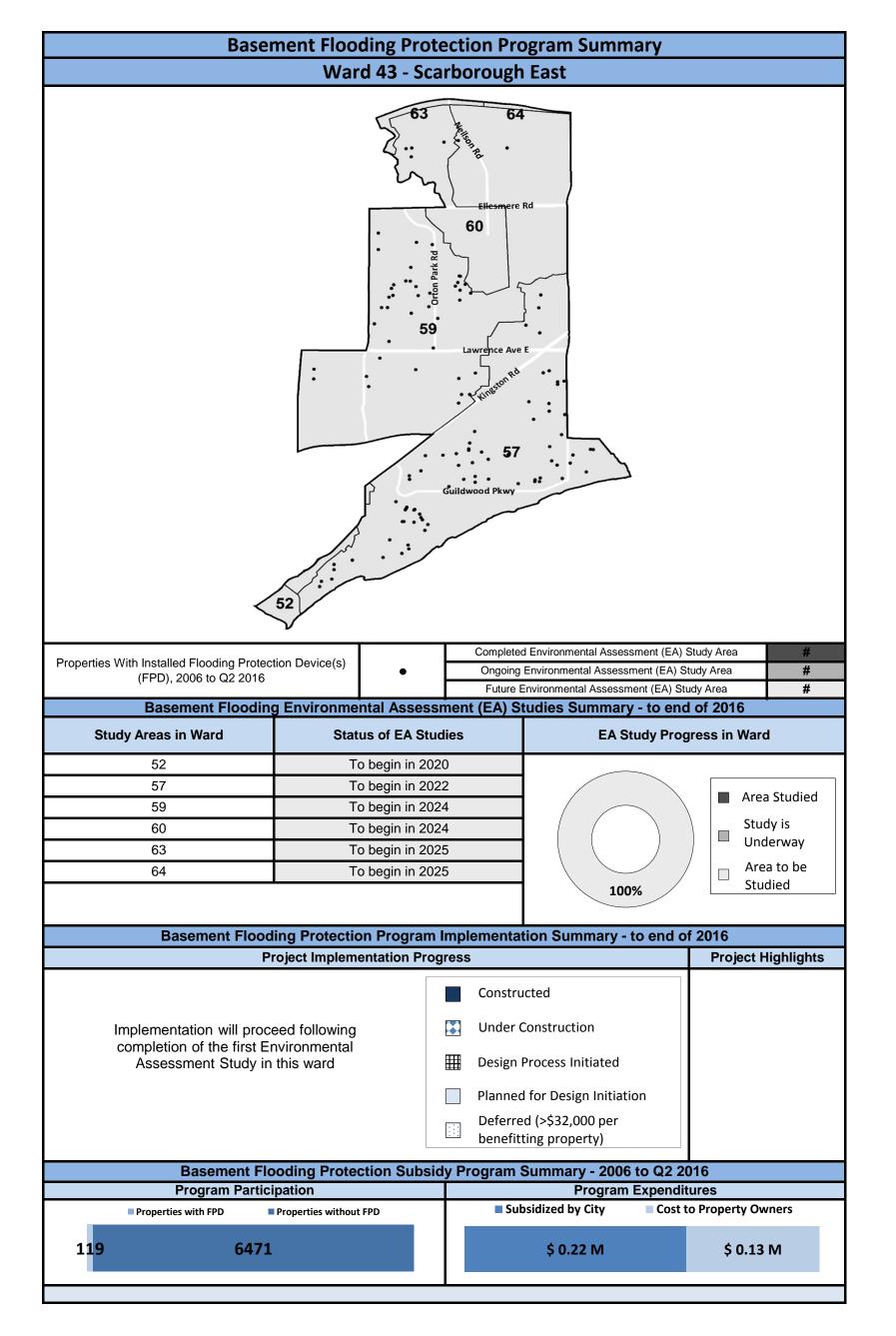






Basement Flooding Protection Program Summary Ward 41 - Scarborough—Rouge River 64 63 Sheppard Ave E Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 31 Completed (2011) 1% 59 To begin in 2024 Area Studied 60 To begin in 2024 To begin in 2025 Study is 63 Underway 64 To begin in 2025 Area to be Studied 99% Basement Flooding Protection Program Implementation Summary - to end of 2016 **Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the next Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Subsidized by City Cost to Property Owners ■ Properties with FPD ■ Properties without FPD 8976 \$ 0.06 M \$ 0.08 M

Basement Flooding Protection Program Summary Ward 42 - Scarborough—Rouge River 67 64 .60 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 60 To begin in 2024 63 To begin in 2025 Area Studied 64 To begin in 2025 Study is To begin in 2025 67 Underway Area to be Studied 100% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the first Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD 38 9417 \$ 0.04 M \$ 0.06 M



Basement Flooding Protection Program Summary Ward 44 - Scarborough East 67 64 59 57 Completed Environmental Assessment (EA) Study Area Properties With Installed Flooding Protection Device(s) Ongoing Environmental Assessment (EA) Study Area # (FPD), 2006 to Q2 2016 Future Environmental Assessment (EA) Study Area # Basement Flooding Environmental Assessment (EA) Studies Summary - to end of 2016 **Study Areas in Ward Status of EA Studies EA Study Progress in Ward** 56 To begin in 2022 57 To begin in 2022 Area Studied 59 To begin in 2024 Study is To begin in 2025 64 Underway 67 To begin in 2025 Area to be Studied 100% **Basement Flooding Protection Program Implementation Summary - to end of 2016 Project Highlights Project Implementation Progress** Constructed **Under Construction** Implementation will proceed following completion of the first Environmental **Design Process Initiated** Assessment Study in this ward Planned for Design Initiation Deferred (>\$32,000 per benefitting property) Basement Flooding Protection Subsidy Program Summary - 2006 to Q2 2016 **Program Participation Program Expenditures** Cost to Property Owners Subsidized by City ■ Properties with FPD ■ Properties without FPD **151** \$ 0.18 M 9338 \$ 0.25 M