

# **AUDITOR GENERAL'S REPORT**

## **Improving the Effectiveness of the Basement Flooding Protection Subsidy Program**

**October 13, 2017**

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**Auditor General**



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# EXECUTIVE SUMMARY

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**Toronto continues to have more frequent and intense rain events**

Toronto is experiencing more severe storms, with more rain falling over a short period of time. Severe storms increase the pressure on the sewer systems and overland drainage routes such as roads, local rivers and streams. When underground sewer and storm water systems become overloaded, the water has nowhere else to go.

**The City and homeowners should both take reasonable steps to prevent basement flooding**

When basements flood, it has a large impact on homeowners and City resources. Residents can make claims against the City if the City's Water Division has not met installation and maintenance standards for sewage and storm water systems. Where the City has met its responsibility, the City is not at fault. Reducing basement flooding requires an investment from both the City and the homeowner.

In an effort to assist homeowners who experienced basement flooding in certain areas, the City developed the "Voluntary Private Home Isolation Program" in the year 2000. The City provided financial assistance to homeowners to install flood protection devices to prevent basement flooding.

After multiple major rain events in 2003, 2005 and 2006, City Council recognized that the entire City was vulnerable to flooding and decided to expand the program, making it available City-wide in 2006.

**Multi-year infrastructure program to address the adverse effects of storm water**

The City has made, and continues to make, significant investments to refurbish and upgrade sewer and storm water infrastructure through the Basement Flooding Protection Program. This is a multi-year and comprehensive Program to improve sewer system and overland drainage route infrastructure. The City has undertaken a number of Environmental Assessment Studies, mapped out the high-risk areas, and is in the process of upgrading infrastructure on a priority basis.

**The City offers a Subsidy Program to assist homeowners in taking steps to prevent flooding**

The Basement Flooding Protection Subsidy Program, the subject of this audit, is a part of the overall Basement Flooding Protection Program. It has been offered to homeowners for over ten years. The aim of the Subsidy Program is to assist homeowners to take action to reduce the risk of basement flooding on their private property while the larger City infrastructure becomes available. Over a period of time, the need for the Subsidy Program, in areas where the infrastructure upgrades have been implemented, will decline.

**\$36.5 million in subsidies paid to over 21,500 homeowners**

Through the Subsidy Program, the City offers owners of a single-family, duplex or triplex home a financial subsidy of up to \$3,400 per property to install flood protection devices including a backwater valve, sump pump, and pipe severance and capping. As of December 2016, over \$36.5 million in subsidies have been paid to approximately 21,500 or 7 per cent of eligible homeowners across the City.

**Audit included a review of the administration and oversight of the Subsidy Program**

The objective of our audit was to evaluate the administration and oversight of the Subsidy Program. Our goal was to answer two questions:

1. Is the Subsidy Program effectively assisting homeowners to protect their homes against basement flooding?
2. Is the Subsidy Program well controlled?

**Toronto Water is effectively managing the day-to-day administration and processing of subsidy applications**

Toronto Water is effectively managing the day-to-day administration and processing of subsidy applications. However, there are also opportunities for improvement. These are outlined below.

### **Design and Objectives of the Subsidy Program**

**Conduct a formal review of the ten year old Program**

The Subsidy Program has been in place for over ten years as a City-wide program. During this time, Toronto Water has made, and continues to make, significant investments in improving storm water infrastructure. However, a formal review has not been completed to consider whether the Subsidy Program continues to be needed and how long to continue the Program.

**Assess whether the Program is having the desired impact**

In light of the participation rate and the ongoing administration costs, it is essential to assess whether the Subsidy Program is having the desired impact and is still a worthwhile investment of the City's funds on an ongoing basis, given the current fiscal constraints and competing demands for funding.

**Clarify expected outcomes for the Program**

Although the intent of the Subsidy Program is to assist homeowners to protect their homes from basement flooding by subsidizing the cost to install flood prevention devices, measurable targets for increasing participation in the Program are not set.

**7% of eligible homeowners have received subsidies**

Overall program uptake was approximately 7 per cent, or 21,500 of the 298,000 eligible homes at the end of 2016. With an average participation rate of 8 per cent, homeowners in flood-prone areas were a bit more likely to apply for subsidies than those in areas with a lower flood risk.

**Use flooding complaint information to inform whether the Program is effective**

Toronto Water also does not regularly analyze reported basement flooding data against subsidy applications, which makes it difficult to assess if the Subsidy Program has played an effective role in preventing basement flooding.

### **Compliance with Program Eligibility Conditions**

**Compliance with eligibility conditions can be improved**

Toronto Water has controls in place and has made continuous improvements in the administration and processing of subsidy applications over the years. However, as part of our review of subsidy applications, we identified a few areas where verification of certain eligibility conditions need to be improved and made clearer.

### **Conclusion**

**A formal review of the Program is needed**

Awareness and participation in the Basement Flooding Protection Subsidy Program can be improved. The Subsidy Program has been available City-wide for more than ten years. Therefore, the City should consider two key, but competing, options:

1. Continue to offer the Subsidy Program but clearly define the Program's intended and expected objectives and outcomes, including measurable targets for the Subsidy Program, or
2. Evaluate the Program's sustainability and determine whether the Subsidy Program should continue on an ongoing basis or whether the funds and resources needed to administer the Program should instead be strategically repurposed to allow for an accelerated investment in the storm water infrastructure.

**This report contains eight recommendations**

Through this report, we provide eight recommendations to improve controls, administration and performance monitoring of the Basement Flooding Protection Subsidy Program. Implementation of these recommendations will lay the foundation for the Subsidy Program to achieve its objectives in the short and long term.

We express our sincere appreciation for the co-operation and assistance we received from management and staff of the Toronto Water Division.

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## **BACKGROUND**

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**Multi-year capital program aimed at reducing the risk of future flooding events**

Since 2003, the City has spent over \$337 million on the Basement Flooding Protection Program. As part of this major capital program, the City has engaged in various activities to improve storm and wastewater infrastructure, and is undertaking Environmental Assessment Studies to evaluate the capacities of existing drainage systems.

**\$1.659 billion in storm water infrastructure improvements have been recommended to date**

As of the end of 2016, an estimated \$1.659 billion of infrastructure improvements have been recommended from the 31 completed Environmental Assessment Studies. Approximately \$551 million of infrastructure improvements under the Basement Flooding Protection Program are in the design process and approximately \$247 million of infrastructure improvements have been constructed. The purpose of these investments is to improve the City's sewer system and overland drainage routes to protect the City and its residents from destructive flooding events in the future.

While the City is working to make improvements to the system of underground pipes, sewers and catch basins, these improvements alone cannot completely protect a home from basement flooding.

A component of the Basement Flooding Protection Program is the Basement Flooding Protection Subsidy Program.

**Eligible homeowners can receive up to \$3,400 to install flood protection devices**

Over the years, the Subsidy Program has undergone various changes in subsidy limits and eligibility conditions. The eligibility requirements of the current Subsidy Program can be found in Exhibit 1. The current Program offers eligible homeowners a subsidy of up to \$3,400 to install flood protection devices. The average subsidy paid is \$1,700 per household. Eligible devices include a backwater valve (maximum subsidy of \$1,250), a sump pump (maximum subsidy of \$1,750) and capping (maximum subsidy of \$400). A description of the flood protection devices that are subsidized can be found in Exhibit 2.

**\$36.5 million in subsidies have been paid to the end of 2016**

Since the inception of the Subsidy Program to December 2016, over \$36.5 million in subsidies has been paid to approximately 21,500 homeowners for the installation of nearly 26,200 devices. Over the past five years, the volume of subsidies has increased significantly (see Table 1); in particular, there were over \$13 million in subsidies paid out after the major storm event in 2013.

**Table 1: Total Subsidies Paid Between 2012-2016**

	2012	2013	2014	2015	2016	Total
<b>Subsidies Paid</b>	\$2,422,386	\$3,191,806	\$13,981,649	\$8,161,931	\$5,683,620	<b>\$33,441,392</b>
<b>Number of Devices Installed</b>	1,698	2,416	10,619	6,078	4,724	<b>25,535</b>

Source: Toronto Water Internal Report

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## AUDIT RESULTS

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This section of the report contains the findings from our audit work followed by specific recommendations.

### A. ENHANCE MONITORING OF SUBSIDY PROGRAM OBJECTIVES AND OUTCOMES

#### A.1. Determine the Longer-Term Direction of the Subsidy Program

**A review of the Subsidy Program's future sustainability and potential end date is required**

The original intent of the Subsidy Program was to provide relief to homeowners while the City was making infrastructure improvements to reduce the risk of future flooding.

The Subsidy Program has been in place for over ten years as a City-wide program. During this time, Toronto Water has made, and continues to make, significant investments in improving storm water infrastructure. However, a formal review has not been completed to consider whether the Program continues to be needed and how long to continue the Program.

Toronto Water needs to ensure that the long term infrastructure plan and the Subsidy Program are appropriately integrated to fulfill the City's overall strategy for basement flooding protection.

**Subsidy Program should be reviewed in light of current fiscal constraints and competing demands for funding**

To date<sup>1</sup>, seven per cent of eligible homes have received a subsidy for installing flood prevention devices. In light of this participation rate and the ongoing administration costs, it is essential to assess whether the Subsidy Program is having the desired impact and is still a worthwhile investment of the City's funds on an ongoing basis, given the current fiscal constraints and competing demands for funding.

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<sup>1</sup> End of 2016



**Consider a strategic phase-out of the Subsidy Program where infrastructure improvements are complete**

The City has invested, and continues to invest, significantly in refurbishing and upgrading the storm water infrastructure. The strategic phase out of the Subsidy Program in areas of the City where infrastructure improvements have been completed will free up funds and administrative resources that can be repurposed to other areas needing Toronto Water's attention.

If the Subsidy Program is necessary, it is then important to periodically review the ongoing and long-term sustainability of the Subsidy Program. Reviews of the Subsidy Program's objectives, intended outcomes, the value of the Program, as well as the reasonability of the subsidy amount and the eligibility conditions should be performed.

**Recommendation:**

- 1. City Council request the General Manager, Toronto Water, to periodically review:**
  - a. The Basement Flooding Protection Subsidy Program's objectives, intended outcomes and the value of the Program**
  - b. How long the Subsidy Program should continue to be made available to the public and whether the funds and administrative resources should be repurposed to fund other areas of high priority for Toronto Water**
  - c. Whether potential changes to the subsidy amount and the eligibility conditions are required**

**A.2. Clarify Expected Outcomes and Measure Performance**

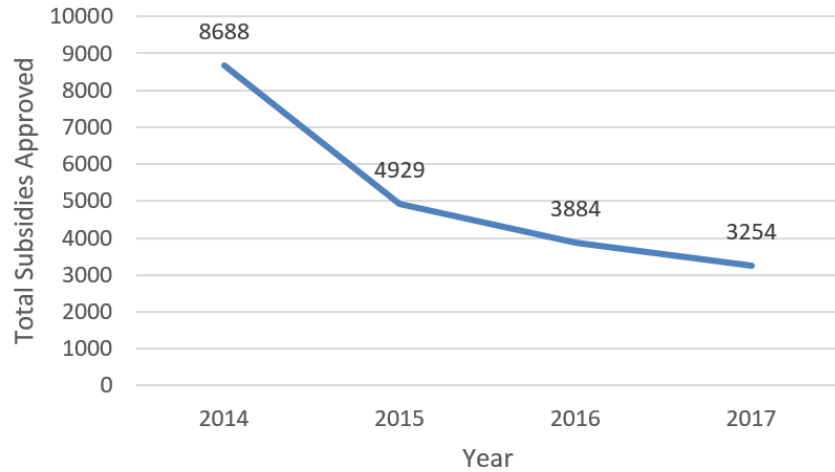
**Homeowners are not taking advantage of the available subsidies**

Although the intent of the Subsidy Program is to assist homeowners to protect their homes from basement flooding by subsidizing the cost to install flood prevention devices, relatively few homeowners are currently taking advantage of the \$3,400 subsidy available.

**Subsidies granted have declined since 2014**

As shown in Figure 1, the actual number of subsidies granted annually has declined since it peaked in 2014 in the aftermath of the July 8, 2013 major storm event.

**Figure 1: Number of Subsidies Approved 2014-2017**



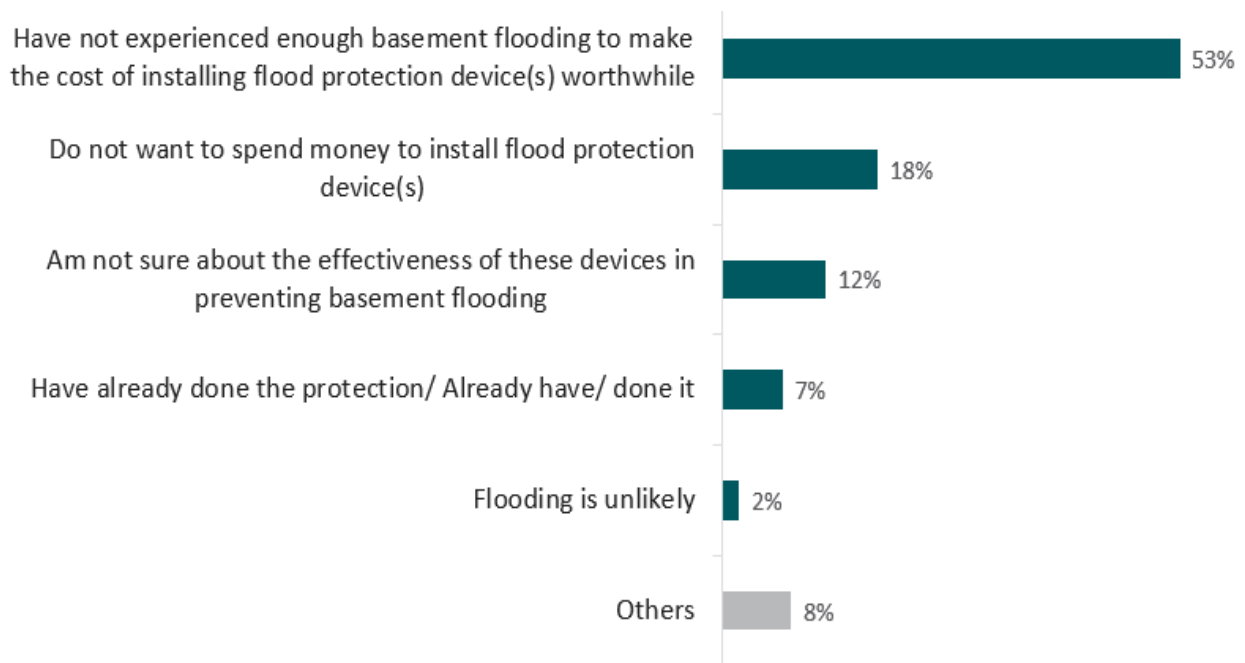
The availability of the Subsidy Program alone is not sufficient to encourage homeowners to reduce their risk of basement flooding on their own private property.

Cost is a Barrier to the Installation of Devices

**Homeowners who have not experienced flooding are less likely to incur the cost to install flood protection devices**

Even with the availability of the subsidy, cost appears to be a barrier in a homeowner's decision to install flood prevention devices. A survey of homeowners, as summarized in Figure 2, indicated that they have not experienced enough basement flooding for the cost of installing protection devices to be worthwhile (53 per cent); others simply do not want to spend the money (18 per cent).

**Figure 2: Reasons for not Applying for a Subsidy**



Source: Survey of 500 homeowners conducted in 2016 by Ipsos Public Affairs on behalf of the City of Toronto

In 2013, the total subsidy available under the Subsidy Program was increased from \$3,200 to \$3,400 after Toronto Water reviewed the subsidy amount at the request of City Council. Since that time, the subsidy amount have remained unchanged. Exhibit 3 provides a comparison of the City's Subsidy Program to those offered by other jurisdictions.

Insufficient Awareness is a Barrier to Subsidy Uptake

**City Council requested Toronto Water to increase awareness of basement flooding prevention measures**

In 2013, City Council requested Toronto Water to increase public awareness and subsidy uptake in order to encourage homeowners to take action to protect themselves from basement flooding. At the time, there was a three per cent participation rate in the Subsidy Program.

**A City-wide campaign to improve awareness of the Subsidy Program was implemented**

A City-wide campaign to improve awareness of the Subsidy Program has been implemented. Also, as Environmental Assessments are carried out, Subsidy Program information is provided to residents in the area.

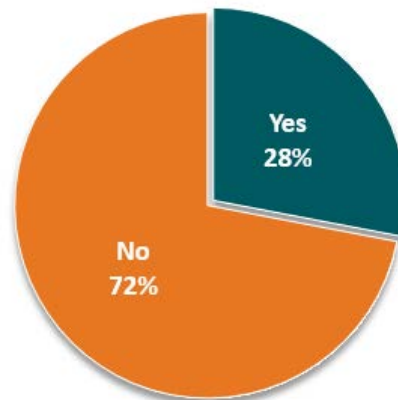
In addition, Management advised that a basement flooding information package, including a Subsidy Program application, is provided whenever Toronto Water staff inspect a home where a basement flooding incident has been reported.

**7% of eligible homes have received a subsidy to date**

To date<sup>2</sup>, seven per cent of eligible homes have received a subsidy for installing flood prevention devices. A survey of homeowners (results shown in Figure 3) indicates that awareness of the Subsidy Program remains low.

**Only 28% of homeowners are aware of the Subsidy Program**

**Figure 3: Awareness of the Basement Flooding Protection Subsidy Program**



*Source: Survey of 500 homeowners conducted in 2016 by Ipsos Public Affairs on behalf of the City of Toronto*

**Awareness and likelihood of participation in the Program are linked**

Awareness and likelihood of participation in the Subsidy Program are linked. For example, the survey indicated that the majority (59 per cent) of homeowners who were previously unaware of the Subsidy Program would likely apply for the Program upon learning more about the subsidy.

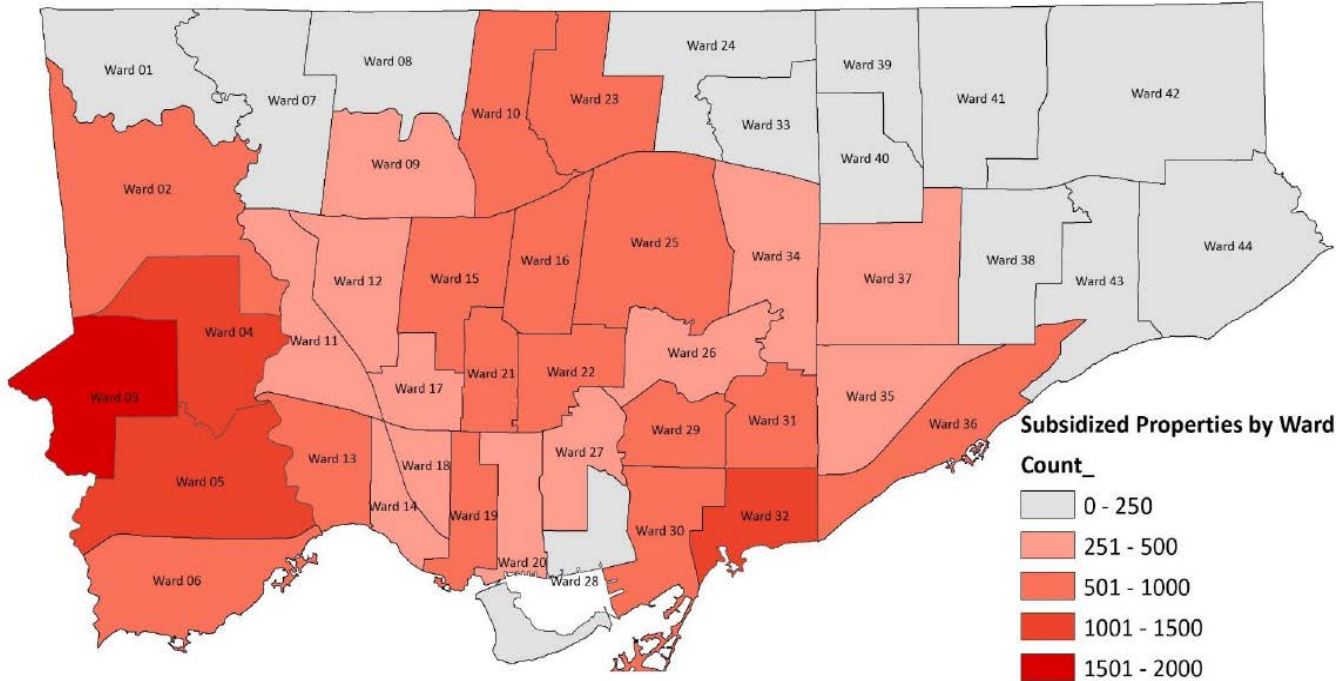
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<sup>2</sup> End of 2016

**Awareness campaigns should be targeted to flood prone areas**

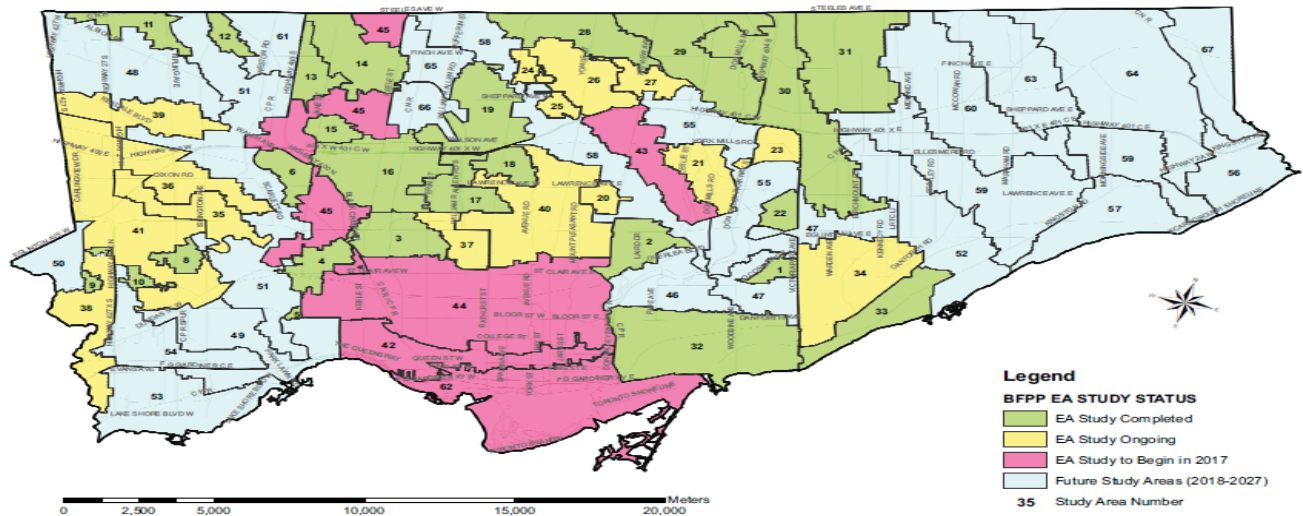
In certain flood prone areas, participation in the Subsidy Program has not grown significantly. For example, Don Valley East (in Wards 33 and 34) has been identified as an area at risk of flooding. In 2013, only 41 households or 0.4 per cent of the 10,810 homes in these wards, had received subsidies through the Program. In three years, this number has grown by 325 homes. Map 1 shows that Wards 33 and 34 have a relatively low uptake of subsidies even though Map 2 shows the Wards were prioritized for Environmental Assessments based on past flooding experiences. Additional targeted awareness building activities in flood prone areas may be needed.

**Map 1: Number of Subsidies by Ward (2016)**



Source: Toronto Water – Building Resilience Presentation 2016

**Map 2: Basement Flooding Protection Program – Environmental Assessment Study Status by Ward (2017)**



Note: Completion of environmental assessments are prioritized based on past flooding experiences.

Source: Toronto Water – Basement Flooding Study Areas (2017)

**Targets for Program uptake are not established**

Unlike the Mandatory Downspout Disconnection Program<sup>3</sup>, installation of flood prevention devices is voluntary. Because participation in the Program is voluntary, Toronto Water does not establish targets for Program uptake. Therefore, it is difficult to determine whether the Subsidy Program is working effectively, if it should be offered going forward, and if it is the optimal use of the City's money.

**Establish objectives for the Subsidy Program within the context of the broader Basement Flooding Protection Program**

Where measurable targets for uptake by homeowners cannot be easily set, Management should look to the broader objectives of the Basement Flooding Protection Program to define key milestones for the Subsidy Program. In particular, where the aim of the Subsidy Program is to assist homeowners while the larger City infrastructure becomes available, Program milestones and performance measures can be based on the level of subsidy awareness achieved or expected timelines for phasing out the Subsidy Program as stages of infrastructure projects are completed.

<sup>3</sup> Toronto City Council has approved a bylaw making it mandatory for property owners to disconnect their downspouts to reduce the risk of basement flooding and releasing polluted rainwater into the local waterways.

**Recommendation:**

- 2. City Council request the General Manager, Toronto Water, to establish Program milestones and performance measures based on the level of subsidy awareness achieved or expected timelines for phasing out the Subsidy Program as stages of infrastructure projects are completed.**

**A.3. Use Available Data to Analyze the Subsidy Program's Effectiveness**

**Flood complaint information is not used to inform whether the Program is effective**

Toronto Water does not regularly analyze reported basement flooding data against subsidies granted, which makes it difficult to assess if the Subsidy Program has played an effective role in preventing basement flooding.

Our analysis of basement flooding reported to the City against all subsidy applications identified that over 80 per cent of households who reported basement flooding from 2012 to 2016 had not taken advantage of the Subsidy Program.

**Toronto Water should use data from multiple sources to evaluate the outcomes of the Subsidy Program**

Currently, basement flooding events and Subsidy Program information are recorded in different systems. Basement flooding complaints are recorded by 311 and added to Toronto Water's incident database.

**Improved integration between data sources can help to identify unprotected homes at risk for basement flooding**

Integrating and analyzing data from Toronto Water's incident and customer care systems will help the Division do a better job of identifying homes which are at risk, and where to focus efforts to promote the Subsidy Program. Furthermore, the Division can assess if the Subsidy Program has played a worthwhile and effective role in preventing basement flooding in the City.

Improving the quality of data in the system will also better support Toronto Water's ability to perform analysis to identify areas of concern, unclear conditions, and customer service performance issues across the entire Subsidy Program rather than on a case-by-case basis.

**Recommendation:**

- 3. City Council request the General Manager, Toronto Water, to periodically track and analyze data on reported basement flooding incidents against data related to the Basement Flooding Protection Subsidy Program to:**
  - a. Identify whether homeowners directly impacted by basement flooding are participating in the Subsidy Program**
  - b. Assess if the Subsidy Program has played a worthwhile and effective role in preventing basement flooding in the City**
  - c. Determine recurring trends, emerging issues and training needs**

**B. IMPROVE THE EFFICIENCY AND EFFECTIVENESS OF APPLICATION PROCESSING**

**B.1. Quality of Data Input into the Subsidy Database Should be Improved**

**Changeover in system led to errors and omissions of historical data in the current database**

Toronto Water changed the system it uses to process and record subsidy applications in December 2014. When historical records were copied over to the new system, some records did not transfer over accurately and completely. As a result, the system contains errors and omissions relating to dates, invoice amounts, contractor information and previous claims for certain subsidies processed before December 2014.

Similar errors and omissions exist for more recent applications as well. Many of these problems are caused by inaccurate data entry. Also, certain key fields in the system are not protected and can be overridden.



**Processes are largely paper-based**

The largely paper-based review and approval processes are inefficient and prone to data input errors and omissions. An electronic application process will:

- Reduce input errors and identify incomplete information through system checks
- Allow for more efficient and effective tracking of processing times and compliance with eligibility conditions
- Improve customer service which can lead to increased program uptake
- Enhance the opportunity for the use of data analytics

Improving the reliability of data entered into the system is important for decision making, trend analysis, monitoring of compliance with eligibility conditions and ensuring that City funds are distributed correctly.

**Recommendations:**

- 4. City Council request the General Manager, Toronto Water, to establish an ongoing quality control process to identify and correct errors and omissions including system-based controls to validate data entry and protect key fields in the Residential Database.**
- 5. City Council request the General Manager, Toronto Water, to evaluate the costs and benefits of implementing an online application process for the Basement Flooding Protection Subsidy Program and maintaining electronic copies of subsidy application documentation in the Database.**

**B.2. Improve Compliance and Assessment of Eligibility Conditions**

**Toronto Water has made continuous improvements in processing applications**

From our review of a sample of 180 subsidy applications, we noted few instances of non-compliance with the eligibility conditions summarized in Exhibit 1. Toronto Water has controls in place and has made continuous improvements in the administration and processing of subsidy applications over the years.

**Most applications complied with the eligibility requirements**

However, we identified a few areas where steps taken to verify compliance with eligibility conditions should be strengthened. There are also certain areas where the eligibility conditions could be made clearer.

Strengthen Review of Eligibility Conditions

**Subsidies should have been denied where work was performed by a contractor who was not appropriately licensed**

In our sample, there were 115 unique contractors. Of these, five contractors performed work without having a valid licence (i.e., contractor was not licensed) *at the time of the installation*. For these five contractors, ten subsidies totaling \$13,878 were approved, even though they did not meet the eligibility condition. This is an important eligibility requirement because it reduces the risk that devices are incorrectly installed and therefore fail to prevent basement flooding.

**Subsidies are approved where a contractor licence is validated retroactively**

Toronto Water staff did not identify these issues because, by the time the subsidy application was submitted or re-submitted, the contractor had subsequently obtained a valid licence. Toronto Water Management advised that they allow a six-month grace period where an application will be approved if the contractor, not licensed at the time of installation as required by the eligibility criteria, subsequently obtains a valid licence.

Where Toronto Water has identified installation work performed by an unlicensed contractor, the Division appropriately denies the subsidy application and communicates these exceptions to the Municipal Licensing & Standards Division for review and enforcement.

**Reliance placed on homeowner declarations**

We also noted that for most subsidy applications we reviewed, when a homeowner answered 'yes' for the following conditions, there was no evidence that Toronto Water staff verified that:

- The downspouts from the property's eavestrough are disconnected from the City's sewer system or the homeowner has applied to the City for an exemption
- Where applicable, all front yard paved areas of the property, including parking pads, comply with the City's Zoning By-law requirements

For these eligibility requirements, Toronto Water generally relies on the declaration by the homeowner that "the information, statements and representations given in this application and any accompanying materials are true, accurate and complete in all respects".

Toronto Water needs to review whether all eligibility conditions are still relevant and if so, ensure they are appropriately verified.

#### Clarify How Certain Eligibility Conditions Should Be Applied

#### **Eligibility conditions require clarification**

There are a few areas where eligibility criteria should be clarified to ensure that they are applied correctly and consistently for all subsidy applicants. In particular, Toronto Water should clarify whether:

- Devices installed by contractors with expired licences at the time of installation are eligible for the subsidy where the contractor has subsequently renewed their licence
- Applications re-submitted more than one year after installation are eligible as long as the original application was submitted within one year of the installation
- An authorized representative, who is not the homeowner, can apply for the subsidy (for example, an executor of estate)

#### **Some applicants have been allowed to resubmit their application more than one year after the device was installed**

In some cases, Toronto Water is approving applications that were previously denied because the mandatory eligibility requirements were not met, but were subsequently corrected.

We also noted a number of applications were approved even though they were submitted more than one year after the device installation. Although homeowners are required to submit their application within one year, Management advised that if it is submitted on time, but has missing information, the homeowner can resubmit their application at a later date and it will still be accepted.

When an application requires follow up, the homeowner is granted two weeks to provide this information. In certain cases, we noted that homeowners provide the outstanding information much later, sometimes up to a year later, and their applications are still approved. To ensure consistent assessment of all applications, files should not be kept in 'pending' status indefinitely.

**Recommendations:**

- 6. City Council request the General Manager, Toronto Water, to review and clarify certain eligibility conditions of the Basement Flooding Protection Subsidy Program and assessment processes and ensure staff are appropriately trained on any revisions.**
- 7. City Council request the General Manager, Toronto Water, to establish a reasonable timeframe for applicants to submit outstanding information and deny Basement Flooding Protection Subsidy Program applications not meeting this requirement.**

**B.3. Enhance Sump Pump Verification Process**

**\$11.5 million paid in sump pump subsidies without physical verification**

In the past, sump pump subsidies were approved without any inspection or physical verification. Between 2012 and 2016, \$11.5 million in sump pump subsidies were paid to homeowners.

**20% of installed sump pumps are now verified using photographs and site visits**

Starting in May 2016, Toronto Water began verifying sump pump installations for 20 percent of applications either by requesting photographs from the homeowner or performing a site visit. Toronto Water selected their sample of sump pumps to verify based on the volume of work performed by the top contractors in the prior year.

**Internal sump pump verification process can be enhanced**

Toronto Water's internal verification process can continue to be strengthened to provide greater assurance that subsidies are being paid for valid sump pump installations. In particular, Toronto Water can take a more risk-based approach to selecting applications for verification, taking into consideration a broader geographical dispersion of installations and including any new or low volume contractors in the sample.

**Recommendation:**

- 8. City Council request the General Manager, Toronto Water, to:**
  - a. Implement a risk-based approach to selecting sump pump installations for internal verification by Toronto Water staff.**
  - b. Evaluate the benefits of requesting all homeowners to submit photographs with their Basement Flooding Protection Subsidy Program applications.**

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## CONCLUSION

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**Subsidy applications are being effectively processed**

Toronto Water is effectively managing the day-to-day administration and processing of subsidy applications.

However, awareness and participation in the program can be improved. The Subsidy Program has been available City-wide for over ten years. Therefore, the City should consider two key, but competing, options:

1. Continue to offer the Subsidy Program but clearly define the Program's intended and expected objectives and outcomes, including measurable targets for the Subsidy Program, or,
2. Evaluate the Subsidy Program's sustainability and determine whether the Program should continue on an ongoing basis or whether the funds and resources needed to administer the Program should instead be strategically repurposed to allow for an accelerated investment in the storm water infrastructure.

**This report contains 8 recommendations**

Through this report, we provide eight recommendations to improve controls, administration and Program objectives of the Subsidy Program. Implementation of these recommendations will lay the foundation for the Program to achieve its objectives in the short and long term.

The Auditor General has issued a separate letter to management detailing other less significant issues that came to our attention during the audit.

We express our sincere appreciation for the co-operation and assistance we received from management and staff of the Toronto Water Division.

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## AUDIT OBJECTIVES, SCOPE AND METHODOLOGY

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**This audit was part of the Auditor General's 2017 Audit Work Plan**

The Auditor General's 2017 Audit Work Plan included an audit of basement flooding subsidies and contract management. The City of Toronto is working to address the adverse effects of storm water through a multi-year program to improve the City's sewer system and overland drainage routes. These aspects of the Basement Flooding Protection Program have not been included within the scope of this audit. Instead, infrastructure improvements will be considered as part of future audits of significant infrastructure construction projects. This audit focused on the administration of the Basement Flooding Protection Subsidy Program.

**Audit objective**

The objective of the audit was to evaluate the administration and oversight of the Subsidy Program. More specifically, we assessed:

- The design and objectives of the Program
- Compliance with Program eligibility requirements
- Controls over payment processing

**Audit scope**

The audit primarily focused on subsidy applications made during the period from January 1, 2013 to February 28, 2017, with certain data analytics performed over a broader period.

**Audit methodology**

The audit methodology included:

- Review of a sample of subsidy applications
- Analysis of subsidy and payment data
- Meetings and interviews with staff from Toronto Water and Strategic Communications Divisions
- Benchmarking with other jurisdictions
- Review of Environmental Assessment Studies

**Compliance with generally accepted government auditing standards**

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## **EXHIBIT 1: Basement Flooding Protection Subsidy Program Eligibility Conditions**

- You must be the registered owner of a single-family residential, duplex or triplex property within the City of Toronto.
- The property must not have exceeded the lifetime maximum subsidy amount for each eligible installation.
- The subsidy is available only to existing homes, not homes in the planning stages or currently under construction.
- The downspouts from your property's eavestrough must be disconnected from the City's sewer system or you must have applied to the City for an exemption.
- All front yard paved areas of the property, including parking pads, must comply with the City's Zoning By-law requirements.
- You must submit your application within one year of completion of the installation of the flood protection device.
- For backwater valve installations, a building permit must be obtained from the City and an inspection passed by a City of Toronto building inspector prior to the application being made.
- You must also agree, at the time of a building inspection of the backwater valve installation or otherwise at the request of the City:
  - a. To consent to provide the City and its personnel, concurrent with any Toronto Building inspection, access to the flood protection device(s) to verify that the installation has been completed in accordance with the requirements and conditions of the Program.
  - b. To consent to the City and its personnel taking photographs, video and digital images of the flood protection device(s) to which this subsidy applies.
- Your contractor(s) and any sub-contractor(s) who performed the installation of flood prevention device(s) must possess a valid licence from the City of Toronto for the installation work, at the time of installation.
- Original invoices from the licenced contractor(s) and any sub-contractor(s) who performed the installation of the flood prevention device(s) must be provided with your application.
- You must not have any outstanding taxes or debts owed to the City of Toronto at the time your application is processed.
- Submitting an application does not guarantee a subsidy. Subsidies are issued on a "first-come, first-serve" basis, and are subject to annual funding approved by City Council.



## EXHIBIT 2: Flood Protection Devices

Figure 4: Backwater Valve

A backwater valve is a valve installed on a sewer service line to prevent water main surcharges and backflow from entering into a home.

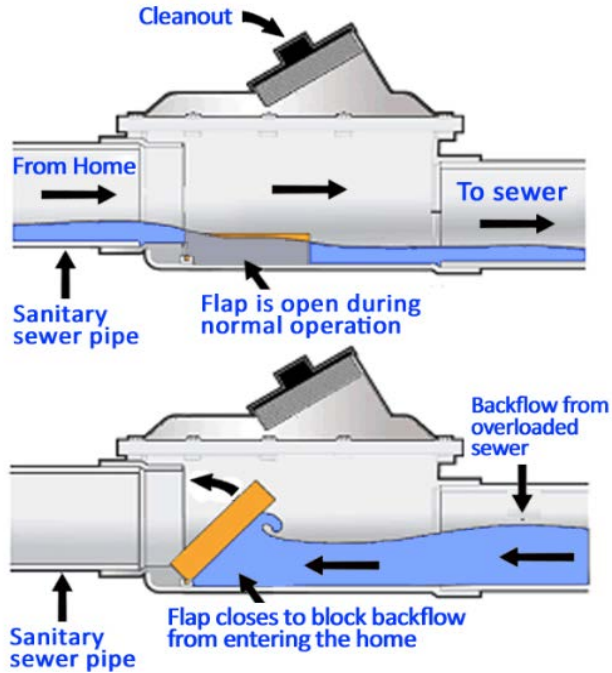
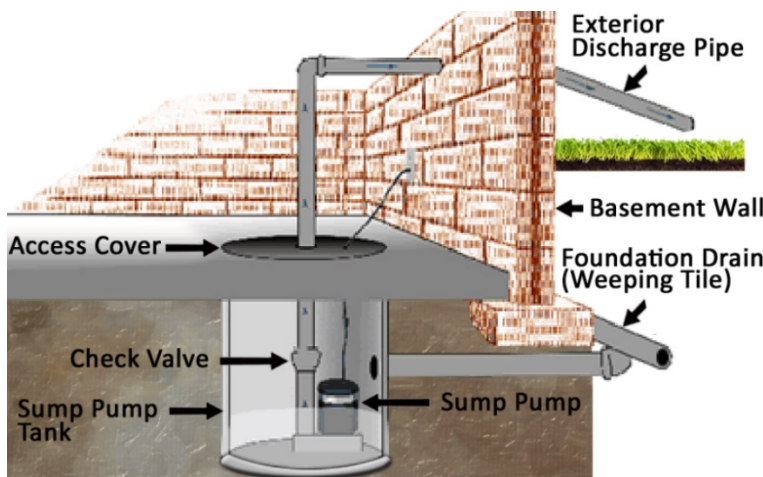


Figure 5: Sump Pump

A sump pump is a pump that is installed in a home's basement; as storm water accumulates, it propels the water away from the home to an exterior area.



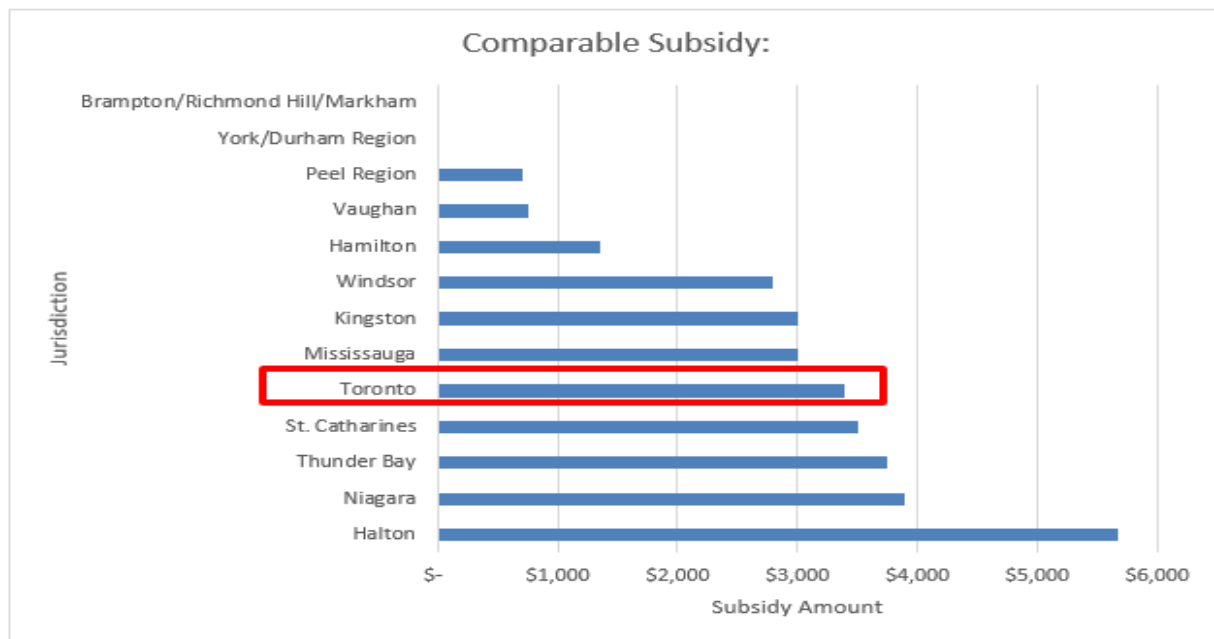
**Figure 6: Capping**

Weeping tile pipe severance and capping is a procedure whereby the service line is cut and capped if it is connected to the storm water service main, to prevent surcharges from entering into a home.



*Source: Toronto Water Internal Manual*

### EXHIBIT 3: Benchmarking Basement Flooding Subsidies Offered by Surrounding Jurisdictions



Jurisdiction:	Overall Program Limit for Comparable Subsidy	Individual Device Limit			Comments:
		BWV	Sump Pump	Capping	
Brampton/Richmond Hill/Markham	\$0	-	-	-	No comparable program
York/Durham Region	\$0	-	-	-	No comparable program
Peel Region	\$700	\$700	-	-	Backwater Valve only
Vaughan	\$750	\$750	-	-	Backwater Valve only
Hamilton	\$1,350	\$1,350	-	-	Backwater Valve only
Windsor*	\$2,800	\$2,800		\$400	Individual device amounts limited to overall program maximum
Kingston*	\$3,000	\$1,200	\$1,400	\$1,000	Individual device amounts limited to overall program maximum
Mississauga	\$3,000	-	\$3,000	-	Sump Pump only
Toronto	\$3,400	\$1,250	\$1,750	\$400	Overall program maximum for Backwater Valve, Sump Pump and Capping
St. Catharines	\$3,500	-	\$3,500	-	Overall program maximum for Backwater Valve, Sump Pump and Capping
Thunder Bay	\$3,750	\$1,750	\$1,500	\$500	Overall program maximum for Backwater Valve, Sump Pump and Capping

Jurisdiction:	Overall Program Limit for Comparable Subsidy	Individual Device Limit			Comments:
		BWV	Sump Pump	Capping	
Niagara	\$3,900	\$900	\$3,000		Overall program maximum for Backwater Valve, Sump Pump and Capping
Halton*	\$5,675	\$675	\$5,000		Maximum for Backwater Valve, Sump Pump and Capping

*\*Some jurisdictions offer subsidies for additional devices*

## **APPENDIX 1: Management’s Response to the Auditor General’s Report Entitled: “Improving the Effectiveness of the Basement Flooding Protection Subsidy Program”**

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**Recommendation 1:** City Council request the General Manager, Toronto Water, to periodically review:

- a. The Basement Flooding Protection Subsidy Program's objectives, intended outcomes and the value of the Program
- b. How long the Subsidy Program should continue to be made available to the public and whether the funds and administrative resources should be repurposed to fund other areas of high priority for Toronto Water
- c. Whether potential changes to the subsidy amount and the eligibility conditions are required

**Management Response:**  Agree    Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water will undertake an initial review by 2019 and determine the frequency of subsequent reviews upon completion of the initial review.

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**Recommendation 2:** City Council request the General Manager, Toronto Water, to establish Program milestones and performance measures based on the level of subsidy awareness achieved or expected timelines for phasing out the Subsidy Program as stages of infrastructure projects are completed.

**Management Response:**  Agree    Disagree

**Comments/Action Plan/Time Frame:**

The Basement Flooding Subsidy Program is a voluntary program and 100% of the benefits are accrued by the homeowner and not the City. Therefore, performance targets for awareness and update are not appropriate for this program. A performance target for processing time (service standard) is already established. Milestones for the Program (such as: re-review, structural changes or other relevant actions) will be established as part of Recommendation 1.

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**Recommendation 3:** City Council request the General Manager, Toronto Water, to periodically track and analyze data on reported basement flooding incidents against data related to the Basement Flooding Protection Subsidy Program to:

- a. Identify whether homeowners directly impacted by basement flooding are participating in the Subsidy Program
- b. Assess if the Subsidy Program has played a worthwhile and effective role in preventing basement flooding in the City
- c. Determine recurring trends, emerging issues and training needs.

**Management Response:**  Agree  Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water will include these assessments as part of the review from Recommendation 1 to be completed in 2019.

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**Recommendation 4:** City Council request the General Manager, Toronto Water, to establish an ongoing quality control process to identify and correct errors and omissions including system-based controls to validate data entry and protect key fields in the Residential Database.

**Management Response:**  Agree  Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water is part of the multi-divisional project to implement a new electronic work management system. The Basement Flooding Protection Subsidy Program is included in the scope of this project.

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**Recommendation 5:** City Council request the General Manager, Toronto Water, to evaluate the costs and benefits of implementing an online application process for the Basement Flooding Protection Subsidy Program and maintaining electronic copies of subsidy application documentation in the Database.

**Management Response:**  Agree  Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water will evaluate the feasibility of implementing an online application and data retention system. Factors which will be considered include: corporate privacy policies, industry leading practices, implementation and sustainment costs relative to projected uptake of new channel.

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**Recommendation 6:** City Council request the General Manager, Toronto Water, to review and clarify certain eligibility conditions of the Basement Flooding Protection Subsidy Program and assessment processes and ensure staff are appropriately trained on any revisions.

**Management Response:**  Agree  Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water will review the eligibility requirements as part of the program review as detailed in Recommendation 1. A process to train staff of any revisions to practices already exists.

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**Recommendation 7:** City Council request the General Manager, Toronto Water, to establish a reasonable timeframe for applicants to submit outstanding information and deny Basement Flooding Protection Subsidy Program applications not meeting this requirement.

**Management Response:**  Agree  Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water will review the two-week pending period for follow-up items and establish a more appropriate timeline. Toronto Water will continue to apply a reasonableness methodology to evaluate exceptional cases. Decisions made in these exception cases will be documented on file and approved by a Supervisor, wherever possible to minimize customer escalations and provide good customer service.

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**Recommendation 8:** City Council request the General Manager, Toronto Water, to:

- a. Implement a risk-based approach to selecting sump pump installations for internal verification by Toronto Water staff.
- b. Evaluate the benefits of requesting all homeowners to submit photographs with their Basement Flooding Protection Subsidy Program applications.

**Management Response:**  Agree  Disagree

**Comments/Action Plan/Time Frame:**

Toronto Water will review the approach to selecting sump pump installations for internal verification and the benefits of requesting all homeowners to submit photographs by 2019.

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