

City of Mississauga Corporate Report



<p>Date: September 6, 2024</p> <p>To: Chair and Members of General Committee</p>	<p>Originator's files:</p>
<p>From: Sam Rogers, MBA, Acting Commissioner of Transportation and Works</p>	<p>Meeting date: September 18, 2024</p>

Subject

July and August 2024 Extreme Rainfall Events Update

Recommendation

That the action plan detailed in the report entitled “July and August 2024 Extreme Rainfall Events Update” dated September 6, 2024 from the Commissioner of Transportation & Works be approved.

- Executive Summary**
- On July 16, 2024 and August 17 and 18, 2024, extreme rainfall events occurred over the Greater Toronto Area including a large area of Mississauga, causing flooding related issues in the City.
 - City of Mississauga, Region of Peel, Toronto and Region Conservation Authority and Credit Valley Conservation staff are working in partnership to assess and respond to water related issues in various neighbourhoods of the City as a result of the July and August extreme rainfall events and will continue to collaborate and look for new opportunities to help protect residents and businesses from flooding.
 - In addition to the City's existing 10-year Stormwater Capital Plan, an Action Plan has been prepared to further address immediate, short-term, mid-term and long-term actions to mitigate flood related impacts.
 - An initial summary of grants and subsidies that are available in neighbouring municipalities has been provided and staff will report back to Council on recommendations for a financial assistance program and a basement flooding subsidy program.
 - Staff will accelerate the design and construction of the Dixie-Dundas Flood Mitigation Project in collaboration with the Region of Peel, Toronto and Region Conservation Authority and the Dundas Bus Rapid Transit project team.
 - The City, in partnership with the Region of Peel and local conservation authorities, will hold a public information session which will include details related to the July and August

extreme rainfall events along with information to assist residents and businesses prepare for future severe weather events.

Background

On July 16, 2024, an extreme rainfall event impacted the Greater Toronto Area, causing localized flooding. The total rainfall amount was highly variable across the City of Mississauga where 106 mm of rainfall fell between 8:00 a.m. and 12:00 p.m. on this day, with a two-day total from July 15 to 16, 2024 being approximately 133 mm. However, some areas received as low as 7.6 mm. This event exceeded the 100-year design storm in areas of the City; an event that has a one percent probability of occurring in any given year.

On July 31, 2024, Council Resolution 0148-2024 directed staff to report back in September based on the findings related to the July 16, 2024 storm event and provide commentary on immediate, short-term, mid-term and long-term action the City should consider. The resolution also included other staff directions related to flood mitigation, financial support from higher levels of government and public education (Appendix 1).

On August 17 and 18, 2024, the City was again impacted by intense rainfall causing localized flooding and related damages. Similar to the July 16, 2024 event, the rainfall amount was highly variable where between 6.2 mm and 172 mm of rain fell across the City. On August 17, 2024, Pearson Airport recorded 128 mm of rainfall, making it the rainiest day ever recorded; with the July 8, 2013 storm being the second rainiest. This event again exceeded the 100-year design storm in areas of the City.

The July and August storms caused flooding related incidents and associated damage to private properties and municipal infrastructure including road closures, watercourse erosion and trail damage. Impacted areas included neighbourhoods in Malton, Applewood, Cooksville and Lisgar, as well as the Dixie Road and Dundas Street community. Based on available information compiled for the July 16, 2024 and August 17 and 18, 2024 storms, the City estimated the overall cost of downtime in services/programs and damage to municipal infrastructure to be over \$3 million and \$0.9 million respectively.

Comments

Incident Response

In the lead up, and during the severe weather events, the City of Mississauga adhered to, and activated its Severe Weather Plan. Staff from the City's Office of Emergency Management (OEM) monitored weather and watershed alerts being issued by partners such as Environment Canada, Credit Valley Conservation (CVC), and the Toronto & Region Conservation Authority (TRCA). These alerts, and the additional information being provided by these agencies, were escalated to members of the Incident Management Team (IMT), and other supporting City Divisions. Once it became apparent that rainfall amounts would be significant, the City's IMT

was activated to coordinate City response efforts and to provide cross-departmental support where needed.

In addition to Environment Canada and local conservation authorities, the IMT liaised with regional partners including neighbouring municipalities, Trillium Health Partners, William Osler Health System, Alectra Utilities, Region of Peel, and Emergency Management Ontario. This level of communication ensured that up-to-date information was shared among all agencies and partners involved in the response. A synopsis of weather warnings and actions undertaken by the City is provided in Appendix 2.

The City's 3-1-1 Call Centre had over 3,700 interactions between July 15 and 16, 2024. Through various channels, the City received approximately 1,000 reports of residential property flooding related to the July 16, 2024 severe rainfall event. For the August 17 and 18, 2024 events, the City received approximately 125 calls, with the 3-1-1 Call Centre receiving approximately 105 additional interactions in the week following the event. It should be noted that the actual number of homes and businesses affected is anticipated to be much higher and, as such, the above quoted numbers should be viewed as estimates only. The general locations of interactions resulting from the July and August storm events are provided in Appendix 3. These maps are intended to only provide a geographical representation of interactions and are not comprehensive.

Many other City teams were mobilized during the July and August extreme rainfall events. They included WOM, Mississauga Fire and Emergency Services (MFES), Parks, Facilities & Property Management and Stormwater. An overview of each team's engagement is briefly highlighted in Appendix 2.

Action Plan

The introduction of the Stormwater Charge in 2016 reinforced the City's commitment to continually invest in stormwater infrastructure improvements. Since 2016, the City has invested \$231 million in stormwater infrastructure and the 10-year capital plan includes an additional \$308 million. Many of the recently constructed projects, such as Lake Saigon and Cooksville Creek underground storage facilities, mitigated the impacts of both storm events. Future initiatives, such as the Dixie-Dundas Flood Mitigation Project will continue to add resilience to the City's stormwater system. However, as a result of the flooding incidents, the existing stormwater capital, operations and maintenance programs were reviewed over the immediate, short-, medium- and long-term in order to identify other potential actions that could be taken in response to these events. This review was supported by post-storm inspections, input received from residents and businesses through service requests, e-mail inquiries, communication through Councillors' offices and community meetings.

It should be noted that while flooding affected many homeowners and businesses throughout the City as a result of the July and August extreme rainfall events, several neighbourhoods were impacted particularly hard, including Malton, Lisgar, Applewood and the Dixie-Dundas area.

Accordingly, some of the actions listed below are specifically identified to address these communities. However, many other communities across the City were impacted to varying degrees; including, but not limited to, those in the Cooksville Creek, Mullet Creek (Streetsville) and Sawmill Creek watersheds. Investigations and maintenance activities are ongoing and these areas will continue to be assessed for potential improvements and prioritized accordingly in the Stormwater 10-year Capital Plan.

Immediate Action

In response to both storm events, the following immediate actions are in progress:

- Repairs to damaged stormwater infrastructure and the removal of debris which is impacting the function of the stormwater infrastructure.
- Coordination with TRCA for expansion of the Emergency Management Plan to include the Applewood area, in regard to the Little Etobicoke Creek spill.
- Capacity assessment of the trunk storm sewer system in the vicinity of Harvest Drive in the Applewood area.
- Accelerate the design and construction of the Dixie-Dundas Flood Mitigation Project
- Advance the planned design of storm sewer upgrades for Malton Village to 2024, with a focus on, but not necessarily exclusive to, Hull Street and Cattrick Street.
- Review flooding concerns in Swanhurst Blvd./Ellesboro Dr./Suburban Dr./Joymar Dr. communities in Streetsville for potential causes and mitigation opportunities.
- Hold a public information session, in partnership with the Region of Peel and local conservation authorities, which will include information related to the July and August extreme weather events along with information to assist residents and businesses prepare for future severe weather events.

Short Term Action

A number of capital projects that support flood relief are already underway or planned to be initiated in the short term (1 – 3 years), including:

- Malton Drainage Improvements – Etude Dr. to Justine Dr. (in-progress)
- Dixie-Dundas Flood Mitigation Project (in-progress)
- Lisgar Pumping Station – Smoke Tree Road (in-progress)
- Cooksville Flood Storage Facility - McKenzie Park (in-progress)
- Lisgar Pumping Station - Doug Leavens Blvd. (construction in 2024)
- Cooksville Creek Improvement, Flood Protection and Replacement of King & Paisley Bridge (in-progress)
- Dredging Osprey Marsh Stormwater Management Pond
- Streetsville and City Centre Overland Flow Assessment
- Cooksville Flood Storage Facility - Huron Heights
- Cooksville Flood Storage Facility - Greyshale Park
- Port Credit Storm Drainage Improvements

In addition, the following short-term actions are recommended:

- Staff will report back to Council with details and recommendations on a basement flooding subsidy program and a financial assistance program (preliminary information is provided further in this report and in Appendix 4).
- The City in partnership with local conservation authorities will look for opportunities to improve the weather alert system where warnings can reach a wider audience (i.e. through text messages), including opportunities to enhance weather forecasting, flood detection and flood response.
- Accelerate the inspection of the foundation drain collector trunk sewer system in the Lisgar area and undertake a feasibility analysis on constructing a stormwater management facility north of the Lisgar area.
- Undertake a review of feasible mitigation opportunities to lessen the impact of riverine flooding of Little Etobicoke Creek, upstream of the Dixie-Dundas neighbourhood
- Enhance the information collection process for flood events in order to assist with post-storm analysis.
- Re-assess the condition of storm sewers for rehabilitation, and include a review of the frequency of stormwater infrastructure inspections for potential gaps and level of service enhancements.

Medium Term Action

A number of capital projects that support flood relief will continue or be initiated in the medium term (3 – 5 years), including:

- Dixie-Dundas Flood Mitigation Project (continued)
- Little Etobicoke Creek Neighbourhood Drainage Improvements
- Storm Sewers Improvements - Applewood Watershed
- Malton Drainage Improvements - Various Locations (continued)

In addition, the following medium-term actions are recommended:

- To support the performance of the stormwater system and limit impacts to residents, staff will undertake a detailed assessment of overland flow routes in the City, prioritize critical areas and place an added focus during the Stormwater capital planning process to retrofit identified locations.
- Staff will review its storm drainage related development standards, such as private storm service connections, to look for opportunities to add protection and limit potential back-up into foundation drains (e.g. basement floor is to be 1m above storm sewer obvert standard) in residential homes, including whether these types of requirements can be mandatory and not just best practices.

Long Term Action

A number of capital projects that support flood relief will continue or be initiated in the long term (5+ years), including:

- Dixie-Dundas Flood Mitigation Project (continued)
- Cooksville Flood Storage Facility – Heritage Hills Park
- Culvert Capacity Analysis - Various Locations

Dixie-Dundas Flood Mitigation Project

The flooding in the Dixie-Dundas and Applewood neighbourhoods has heightened interest in the City's ongoing Dixie-Dundas Flood Mitigation Project. As such, a brief commentary on the need and timing of this project is provided below.

The primary cause of flooding in the Dixie-Dundas and Applewood neighbourhoods is associated with the Little Etobicoke Creek (LEC) spill upstream of Dixie Road near Queen Frederica Drive, where flood water flows southerly through over 1,000 commercial, industrial, and residential properties. The City intends to remove this spill to protect flood-vulnerable residences and businesses and is currently undertaking the Dixie-Dundas Flood Mitigation Project.

This expansive and highly complicated project includes floodplain widening, regrading and erosion control works along LEC, replacement of the Dixie Road bridge at LEC, sanitary sewer relocations at Dixie Road and Jarrow Avenue along with watermain works (to be undertaken by the Region of Peel) and replacement of the Dundas Street bridge at LEC and associated sanitary sewer relocation (to be undertaken as a part of the Dundas BRT project). The acquisition of private lands is also a necessary component of the works. The Municipal Class Environmental Assessment has been completed and preliminary design is currently underway.

The project is planned over a number of years given its complexity and is fully funded in the proposed 2025 to 2034 Capital Plan. However, staff recognize the critical importance of this flood mitigation project and are actively working to accelerate its design and construction.

Municipal Financial Relief Programs and Basement Flooding Subsidy Programs

Further to the discussion at Council on July 31, 2024, staff have received a number of inquiries about the City's existing sump pump subsidy program, as well as requests for additional financial support. The following provides a preliminary overview of the issue.

Under Section 107 of the Municipal Act, 2001, municipalities may provide grants to persons for any purposes that the Council considers to be in the interests of the municipality. Section 106 of the Municipal Act, 2001; however, prevents municipalities from providing grants to manufacturing businesses, industrial or commercial enterprises.

Staff conducted a preliminary benchmarking of municipalities offering compassionate or ex-gratia financial assistance for flood related damages as well as of municipalities offering

grants/subsidies to assist homeowners with reducing the risk of basement flooding. A summary of the benchmarking is provided in Appendix 4.

There is no standard financial assistance program and no consistency on subsidy or grant programs to assist homeowners and tenants of residential properties who have suffered losses related to flooding. In addition, the eligibility criteria for each program, grant or subsidy varies among the municipalities.

There are several factors that need to be considered for any grant or subsidy program, including:

- Scale of the program - City-wide or specific to certain areas
- Eligible time frame - past and future rainfall events
- The grant/subsidy amount and criteria for eligibility
- The budget for any program(s)
- Cost to administer the program(s), including staff resource requirements

As a result, and as noted previously in the report, one of the proposed short-term actions is for staff to report back to Council with details and recommendations on a financial relief program and/or basement flooding subsidy program.

Additional Information Related to Council Resolution 0148-2024

In response to the discussion that took place at Council, Appendix 5 provides additional information related to public education and community engagement and information on flood insurance for tenants.

Collaboration Efforts with Other Agencies

The City continues to work together with the Region of Peel, TRCA, CVC, Conservation Halton (CH) and other stakeholders on all shared interests including flood mitigation and protection initiatives.

Following the July 16, 2024 storm, staff from the City, Region of Peel, CVC, CH and TRCA remained engaged in our commitment to work collaboratively with respect to investigations and studies that are being or will be undertaken in the storm's aftermath. A debrief session with TRCA, CH, CVC and Region of Peel was held on August 26, 2024 to cover a host of topics including an overview of the July and August extreme rainfall events, impacts on watersheds, identify opportunities to improve flood forecasting and monitoring, reduce flood risks as well as coordination and format of a public information session for residents and businesses. City staff received valuable input from these agencies and many recommendations have been incorporated into the Action Plan section above.

Following the July and August extreme rainfall events, City staff also debriefed with staff from neighbouring municipalities who were also impacted by the recent storm events, including the Cities of Toronto, Burlington, Markham and Halton Region. These debrief sessions allowed staff

to identify common responses and recovery actions, successes, and challenges among municipalities to help collectively inform areas of improvement in response to future severe weather events.

Public Information Session

Subsequent to the July 31, 2024 motion where staff were directed to hold a City-wide public information session, several Wards have held Ward specific meetings related to the extreme weather events. These meetings, which included staff from the City, Region of Peel and local conservation authorities, were well attended and provided valuable feedback on Ward related issues. City, Region of Peel and local conservation authorities staff will continue to support these Ward specific engagements.

In addition, a City-wide information meeting will be conducted and will include information tables that will allow the public to access information that they may be most interested in. For example, one table may have a representative from the Insurance Bureau of Canada who can share their insurance knowledge with the residents while another booth may be staffed by OEM to assist with emergency preparedness.

Higher Governmental Financial Support

The City has been engaged with the Ministry of Municipal Affairs and Housing (MMAH), who is responsible for the Disaster Recovery Assistance for Ontarians (DRAO) program and the Municipal Disaster Recovery Assistance (MDRA) program. DRAO is a program that can help residents of Ontario recover costs after a natural disaster. The Province of Ontario may activate DRAO for damage to private property if there's a sudden unexpected natural event that causes costly and widespread damage in an area. DRAO is not intended to replace insurance coverage. MDRA helps municipalities recover from extraordinary costs after a natural disaster based on evidence that the event meets the eligibility criteria. Eligible municipal costs for MDRA must be at least equal to three percent of a municipality's own purpose taxation levy. The City of Mississauga's 2024 Net Tax Levy was \$682 million. Three percent of this amount would be \$20.5 million. Given this amount in comparison to the costs from the July and August extreme rainfall events, it is unlikely that the City will be eligible for MDRA.

Based on initial flood impact data provided to MMAH, the Ministry selected the 16 Mile Creek (Lisgar, Churchill Meadows), Mimico Creek (Malton), and Mullet Creek (Central Erin Mills) areas for assessment. A Provincial Disaster Assessment Team (PDAT) was deployed in Mississauga on August 27, 2024, accompanied by the OEM team, and conducted short interviews/assessments with a sample of residents who were impacted by the July 16, 2024 extreme rainfall event. Through these assessments, MMAH will determine whether criteria had been met to activate the DRAO program.

At the writing of this report, no decision has been made as to whether MMAH intends to activate the DRAO program in Mississauga. City staff have been advised that assessments of

municipalities impacted by the July 16, 2024 extreme rainfall event, including Burlington, Brampton and Toronto, will be completed and presented to the Minister for a decision.

Housing-Enabling Water Systems Fund (HEWSF)

In this year's budget, the Ontario government announced more than \$1.8 billion in housing-enabling infrastructure funding. This funding includes \$1 billion for the new Municipal Housing Infrastructure Program (MHIP) and \$825 million for the Housing-Enabling Water Systems Fund (HEWSF).

In response to the significant demand for investments in water and wastewater infrastructure to enable the construction of more homes, the province is transferring an additional \$275 million from MHIP to the HEWSF to meet this demand.

The government is also allocating an additional \$250 million for a second intake of applications through the HEWSF, bringing the province's total investment in the fund to \$1.2 billion.

Staff reviewed the HEWSF opportunity prior to the first application intake deadline in April 2024. No suitable project was identified that would satisfy the eligibility requirements for the funding. The City's stormwater projects in the current Capital Plan primarily relate to 'State of Good Repair' projects and did not meet the criteria for being related to enabling housing. The projects that could be proposed were either on the exclusion list or could not be completed by the March 31, 2027 project completion deadline, in accordance with the funding guidelines. However, as part of the first round of funding, the province is providing the Region with \$35 million to support the expansion of the G.E. Booth Water Resource Recovery Facility.

Staff will review eligibility for the second intake of applications with the intention to make a submission by the November 1, 2024 deadline. Staff will update Council once the submission has been developed.

Disaster Mitigation and Adaptation Fund (DMAF)

In 2018, the Government of Canada launched the Disaster Mitigation and Adaptation Fund (DMAF) to invest in structural and natural infrastructure projects to increase the resilience of communities that are impacted by natural disasters triggered by climate change. Through DMAF, the federal government covers up to a maximum of 40 per cent of the cost of a municipal project.

The City applied to DMAF for the first two rounds of funding – once in 2018/2019 (for a bundle of Cooksville Creek watershed projects) and again in 2021 (including the Dixie-Dundas Flood Mitigation Project). In both instances, the applications were unsuccessful due to projects not aligning with DMAF parameters or as a result of insufficient data. The City did not apply to round three in 2023 given that there was no substantial change.

Now that the Dixie-Dundas Flood Mitigation environmental assessment has been completed and the project is currently in preliminary design, this project would now be considered a suitable candidate for DMAF. Staff will be meeting with the DMAF program leads/director at Infrastructure Canada to review the opportunity to revisit the City's application.

Climate Change Action Plan Adaptation Measures

Through the City's Climate Change Action Plan, the City continues to advance and accelerate actions that reduce greenhouse gas emissions in an effort to stave off the worst effects of climate change, while at the same time committing to making our community more resilient to changes in climate and extreme events.

Within the context of asset management, climate change is a threat to sustainable service delivery as it amplifies the risk of asset failure, reduces asset service life, and can increase the cost of managing risk and delivering levels of service. The City's 2024 Corporate Asset Management Plan integrates climate change within the context of other asset risks, costs, and service objectives with the intention of developing an integrated and cost-effective set of actions to maintain and enhance levels of service as a result of changing climate conditions. As staff continue to quantify the effects of climate change and determine the costs associated with managing those climate change hazards/risks, they will integrate the outcomes into their asset management programs and levels of service framework going forward.

Mississauga's green infrastructure also plays a critical role in making the City more resilient, safe, equitable and livable. The supply of parks, woodlands and natural areas, how they are designed, what features are included (such as low-impact developments) and the City's tree canopy cover and how invasive species are managed will directly impact the City's ability to withstand more intense climate-related events. These efforts can reduce the heat island effect to keep residents cool and reduce electricity usage and they can also help manage stormwater to minimize flooding and erosion.

Financial Impact

Based on available information compiled for the July 16, 2024 and August 17 and 18, 2024 extreme rainfall events, the City estimated the overall cost of downtime in services/programs and damage to municipal infrastructure to be over \$3 million and \$0.9 million respectively.

Financial impacts related to the implementation of a residential financial grants and/or a flood mitigation subsidy are not known at this time. Staff will report back to Council with recommendations under a separate report.

Conclusion

The City of Mississauga, in partnership with the Region of Peel and local conservation authorities, will continue with investigative work to fully understand the flooding related issues associated with the July and August extreme rainfall events, and identify actions to address

flooding risks. Inspections and critical maintenance and repair works are well underway and staff will continue to program, initiate and expedite studies and capital projects where possible.

The recommended action plan outlined in this report highlights the City's continued efforts and commitment to help mitigate the impacts of extreme weather events.

Attachments

Appendix 1:	July 31, 2024 Council Motion
Appendix 2:	Weather Warnings and City Responses
Appendix 3:	Maps – Rainfall Related Interactions Documented by the City of Mississauga (July 16, 2024 and August 17 and 18, 2024)
Appendix 4:	Compassionate Grants and Subsidy Programs Offered by Other Municipalities
Appendix 5:	Additional Information in Response to Motion and Discussion



Sam Rogers, MBA, Acting Commissioner of Transportation and Works

Prepared by: Lincoln Kan, P.Eng., Manager, Environmental Services

WHEREAS, extreme weather, such as short-duration high-intensity storm events, have been predicted to increase as a result of climate change;

AND WHEREAS, a 100-year storm event passed through Mississauga on July 16th, 2024 delivering 106mm of total rainfall;

AND WHEREAS, the total rainfall from the July 16th event is equivalent to the average total rainfall within the month of July, but fell within two hours;

AND WHEREAS, considerable flooding occurred throughout the City, both on public lands but also substantively on private lands;

AND WHEREAS, hazardous conditions were created due to flooding, such as at the Tyndall Seniors Village where emergency services were required to utilize rafts to evacuate the residents;

AND WHEREAS, in the past 20 years, there have been three other 100-year storm events striking Mississauga causing extensive flooding and damage to both public and private lands, including on August 19th, 2005 delivering 130mm of total rainfall, and approximately \$500 million in damages, August 20th, 2009 delivering 120mm of total rainfall, and approximately \$500 million in damages, July 8th, 2013 delivering 121mm of total rainfall and approximately \$1 billion in damages;

AND WHEREAS, the City has and continues to invest strategically and heavily in storm water management and climate mitigation through funding of the Capital Plan by the Storm water Charge for initiatives such as Cooksville Flood Mitigation projects, Lisgar Storm water Pumping Stations, the Little Etobicoke Creek Flood Evaluation Study and the Dixie-Dundas Flood Mitigation project;

AND WHEREAS, there are many potential strategic investments that can be made for storm water mitigation.

LET IT BE RESOLVED THAT, Staff report back to Council in September based on the findings related to the July 16th storm event and provide commentary on immediate, short term, mid-term and long-term actions the City should consider in regard to matters in and outside the Capital Plan;

AND FURTHER THAT, the City will continue to collaborate with the Region of Peel, the Toronto Region Conservation Authority, the Credit Valley Conservation Authority, Conservation Halton and any other stakeholders committed to actions and solutions that will mitigate flooding and provide flood protection to residences, businesses and public and private lands;

AND FURTHER THAT, the City hold debrief sessions together with the above-captioned stakeholders regarding the flood event on July 16, 2024 which includes exploring opportunities/measures to reduce flood risk and minimize flood impacts and associated costs such as, for example, improved flood forecasting and monitoring systems, flood detection and emergency operations alert and emergency management;

AND FURTHER THAT, the City hold a public information session in September to provide a review of the July 16, 2024 storm and to educate residents and business owners on the City's stormwater infrastructure and how it is intended to function, investments made and planned,

flood prevention tips, programs and subsidies that are available, and related information to equip residents in mitigating impacts of potential future flood events;

AND FURTHER THAT the City will pursue all lines of appeal to higher levels of government for financial support for flood mitigation, response and emergency planning.

Chris Faneq

Weather Warnings and Actions by the City for July 16, 2024 Storm

July 10 – 14th, 2024

In the days leading up to the July 16th severe weather event, the City of Mississauga received alerts from Environment Canada (EC), and localized rainfall during events on July 10th (Hurricane Beryl remnants), July 12th, and July 14th. These events resulted in saturated soils throughout the City's watersheds leading into July 15th and July 16th.

July 15th, 2024

On July 15th, 2024, the Office of Emergency Management (OEM) in Mississauga received a notification from Credit Valley Conservation Authority (CVC) advising of the risk of strong thunderstorms occurring over the next two days, with rainfall expected to range between 20 to 50 mm. This initial alert was soon followed by a Water Safety Statement from Toronto and Region Conservation Authority (TRCA) and a more urgent Rainfall Warning from EC, predicting rainfall amounts of 40 to 60 mm. In response, CVC issued a Flood Outlook Statement, prompting the OEM Duty Officer to connect with the Works Operations and Maintenance (WOM) Incident Management Team (IMT) to prepare for potential flooding.

As the day progressed, the situation appeared to temporarily stabilize when EC rescinded the Rainfall Warning in the early afternoon. However, subsequent updates from CVC and TRCA indicated rising water levels in local creeks, particularly Serson Creek and Little Etobicoke Creek near Dixie and Dundas. These updates suggested the possibility of minor flooding, leading OEM to reconnect with the WOM team, which then dispatched a Road Patrol Supervisor to monitor the affected areas. By early evening, TRCA advised the OEM Duty Officer that water levels were receding, and the earlier flooding concerns were attributed to a malfunctioning water gauge, resulting in no confirmed incidents of flooding.

July 16th, 2024

The following day, July 16th, began with EC issuing a Severe Thunderstorm Watch early in the morning, with the possibility of up to 50 mm of rain. This was later downgraded to an expected range of 25 to 30 mm, with the storm expected to be brief, lasting 30 minutes to an hour. As the morning continued, the situation escalated with a Severe Thunderstorm Warning and a subsequent Rainfall Warning forecasting up to 75 mm of rain at a rate of 40 mm per hour. TRCA responded by issuing a Flood Watch, with reports of rising water levels in Little Etobicoke Creek and Cooksville Creek. By mid-morning, the OEM was notified that Cooksville Creek reached bank full status, indicating imminent flooding. Soon after, TRCA advised OEM that Little Etobicoke Creek had begun flooding.

These events prompted the WOM IMT Commander and Manager of OEM to fully activate the IMT and convene a meeting to assess the situation and develop a response plan. The rainfall intensity increased into the later morning, with Environment Canada extending the warning to 125mm of rain. Both CVC and TRCA escalated their advisories, issuing a Flood Watch and Flood Warning. Although the rain subsided by midday, the IMT and City Divisions continued to respond to various incidents throughout the afternoon and evening. An IMT briefing meeting was held in the early afternoon to reassess the situation and adjust the response strategy as needed.

Weather Warnings and Actions by the City for August 17 & 18, 2024 Storm**Friday August 16, 2024**

In the afternoon of Friday August 16, 2024, Environment Canada issued a Special Weather Statement for Mississauga advising of local rainfall amounts of 30 to 60 mm, with rainfall rates up to 40 mm in an hour. Both the TRCA and CVC would each issue a Water Safety Statement shortly after. The duration of the event was anticipated to be from Friday evening through Sunday.

Saturday August 17, 2024

In the late morning of Saturday August 17th, EC issued a Severe Thunderstorm Watch, advising of winds up to 90km/h and rainfall rates of 40mm. Upon receiving the notification from Environment Canada, the OEM Duty Officer contacted the EC Canada Ontario Storm Prediction Centre (OSPC) to confirm event details and notified the WOM IMT. In the early afternoon, EC upgraded the alert to a Severe Thunderstorm Warning, advising of wind gusts of up to 90 km/h, and rainfall rates of up to 50 mm per hour. An email update was provided to the Mayor and Members of Council from the IMT Commander advising of the Severe Thunderstorm warning issued by EC.

Throughout the early afternoon, EC would continue to issue alerts with updated forecasted weather impacts. As updated alerts were issued, the OEM Duty Officer remained in consistent communication with the OSPC, providing additional weather details to the WOM IMT. The OEM Duty Officer was also in consistent communication with both the TRCA and CVC who advised of potential flood impacts. As it became apparent that rainfall amounts would exceed initial estimates and flooding was possible, the WOM IMT was activated to coordinate the Corporate response to the event. The WOM IMT and various additional City Divisions would continue to respond to various storm impacts throughout the afternoon and into the evening.

Sunday August 18, 2024

On the morning of August 18, 2024, EC advised that potential rainfall rates of up to 30-40 mm were likely to begin in the afternoon. EC would continue to issue updated weather forecasts throughout the day, with the OEM Duty Officer remaining in consistent communication with EC, the TRCA, and CVC. The WOM IMT convened early in the morning of Sunday August 18th to discuss the coordinated response to potential flooding that could occur later in the day.

Later in the afternoon, the WOM IMT met again to identify and discuss coordinated response actions. Shortly after this meeting, TRCA notified the OEM Duty Officer that Little Etobicoke Creek was likely to flood. The OEM Duty Officer informed the WOM IMT, with staff from various City Divisions responding to flood impacts in the area. Water levels began to recede shortly afterwards. The IMT would reconvene in the evening to discuss the response to the event, with EC ending the Rainfall Warning that had been in effect for Mississauga as the group was meeting.

City Response - Rainfall Events of July 16, 2024 and August 17 and 18, 2024

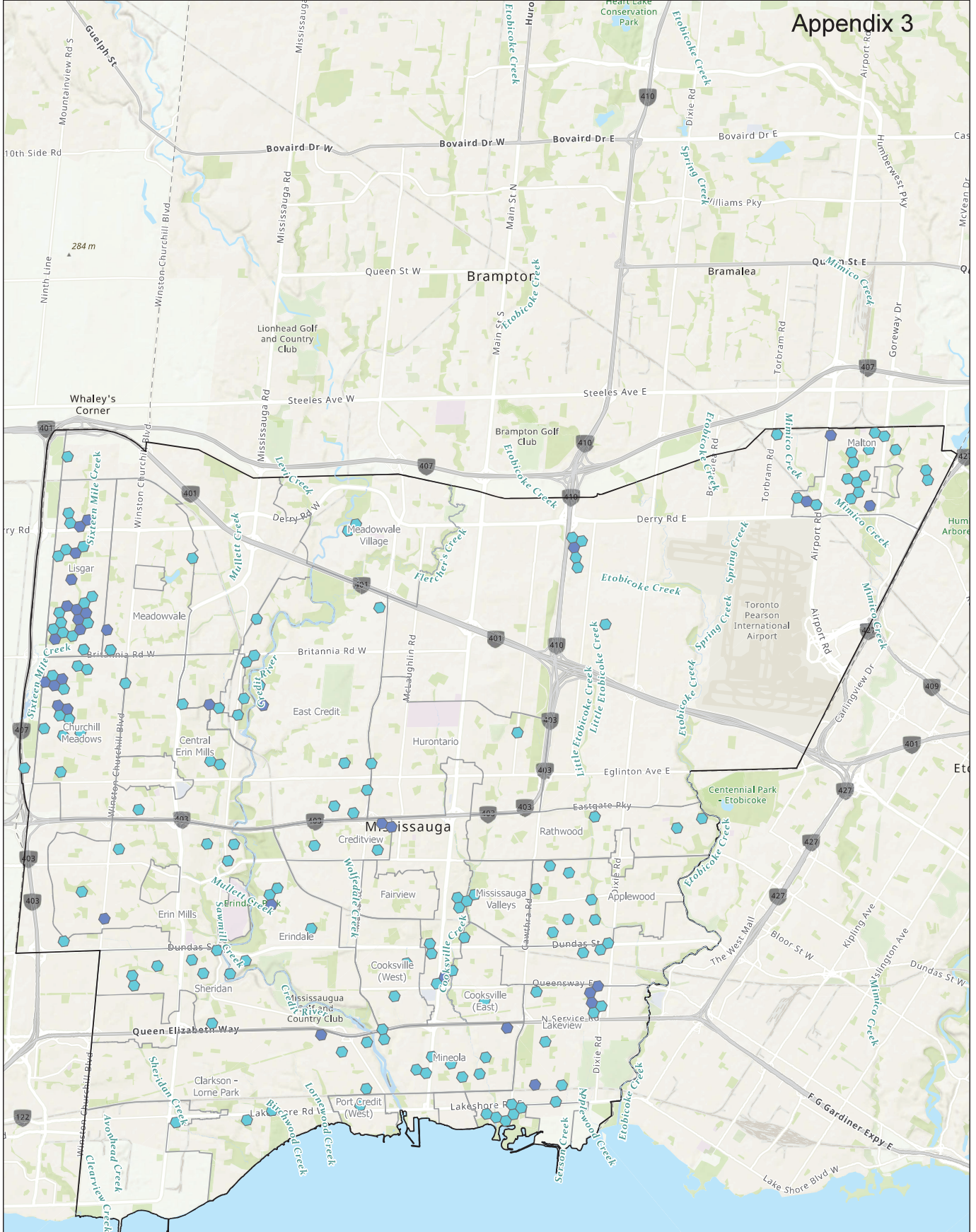
Mississauga Fire and Emergency Services (MFES) responded to numerous non-emergency and emergency calls; the majority of which were related to localized flooding. This included water rescue of cars submerged in flooded roadways and the evacuation of 114 residents from Tyndall Seniors Village Long-Term Care.

Parks assets and trail systems experienced significant damages during the July and August severe weather events. Numerous Park areas and trails flooded and were closed during and following the July and August rainfall events along with cancellation of sports field permits. For example, the sports field at Fred Halliday Memorial Park had extensive damage resulting from the July 16, 2024 storm while Streetsville Memorial Park flooded, with the parking lot also experiencing flood impacts from the August 17, 2024 storm. Parks staff were redeployed to support the various parks, trail, and sports fields.

Facilities & Property Management responded to a number of service requests related to water damage, mitigation, and restoration calls at City facilities due to the intense storms. MiWay Transit also rerouted bus routes as a result, with buses being utilized to support evacuations, including that at Tyndall Seniors Village Long-Term Care on July 16, 2024.

During the July and August storms, WOM's priority was ensuring public safety by monitoring flood-prone areas, clearing blocked storm drains, barricading sinkholes and supporting Emergency Responders with traffic control and road closures. Immediately following the storms, WOM undertook emergency repair of damaged public infrastructure and ensured all roads were safe and passable condition. The severity of the storm minimized the effectiveness of most operations and maintenance activities as the entire system exceeded capacity at the same time throughout the City. In the Lisgar area, the high-water protocol was activated with pumping taking place on July 16, 2024 and August 17 and 18, 2024. After the storm events, WOM arranged City contractors to carry out street cleaning while WOM crews continued to engage in debris clean-up, including the clearing of catch-basins, outlets and walkways.

The City received a large number of requests on a variety of maintenance and related concerns with the City's stormwater infrastructure including blocked catchbasins, dislodged maintenance hole lids, erosion and damage to creek infrastructure and high water levels in storm ponds. Early assessment revealed that the greatest damage has been to the City's creeks.



Call Count

- 1
- 2 - 6
- 7 - 11
- 12 - 19
- 20 - 24

Municipal Boundary

River

Neighbourhood

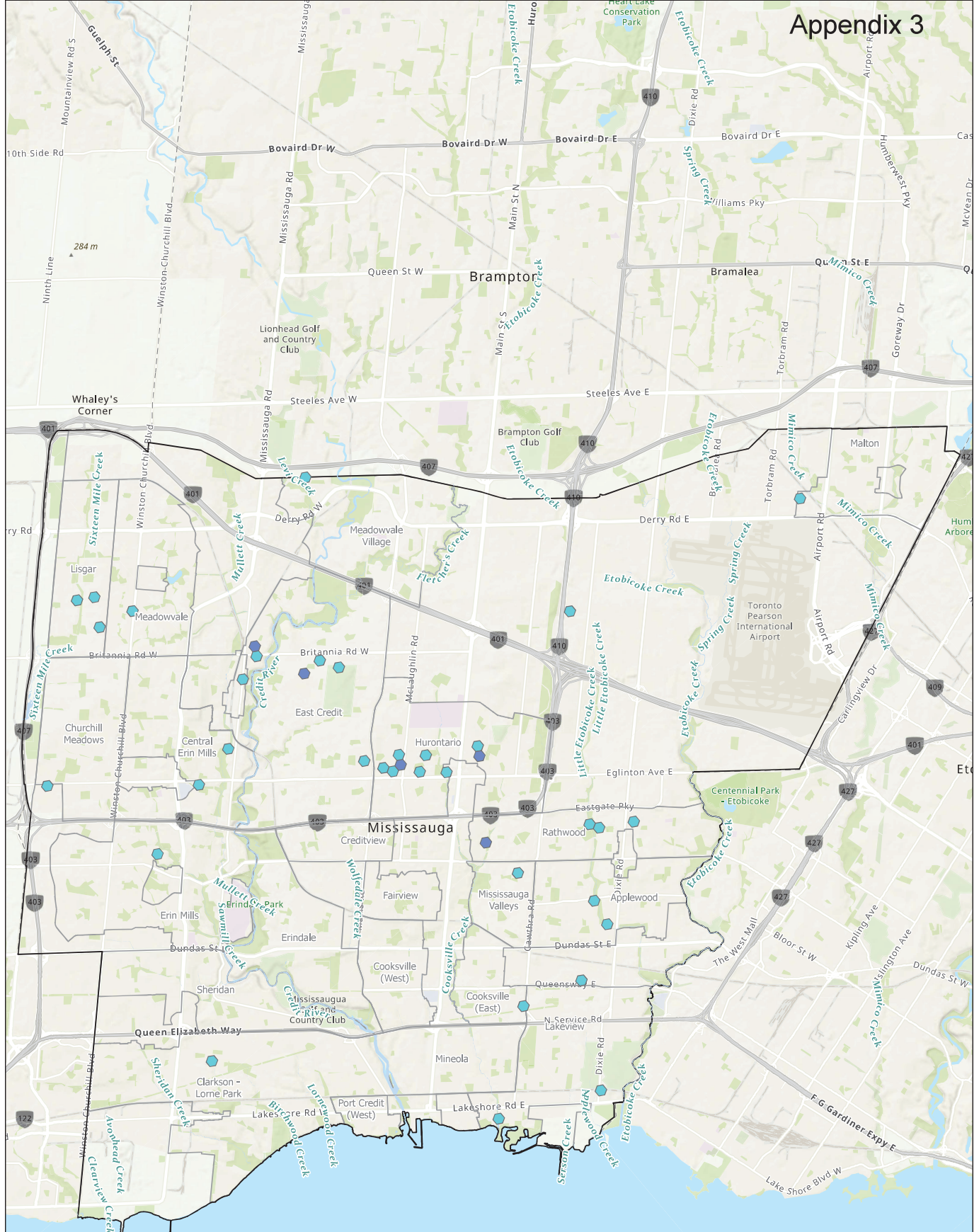


Hexbin Heat Map of 311 Flood Calls July 16th - July 25th, 2024



0 1 2 Kilometers





Call Count

- 1
- 2 - 6
- 7 - 11
- 12 - 19
- 20 - 24

Municipal Boundary

River

Neighbourhood



Hexbin Heat Map of 311 Flood Calls Aug 17th - Aug 26th, 2024



0 1 2 Kilometers



Municipalities Offering Compassionate or Ex-Gratia Financial Assistance Program

Municipality	Program Highlights
Halton Region	\$1,000 Ex-gratia Grant to assist residents with cost related to a blockage on the municipal side of the wastewater system or the wastewater backup was the result of a sewer surcharge.
City of Burlington	<p>\$1,000 Flood Relief Grant financial assistance to help owner or tenant with residential flooding-related costs associated with the flooding event of July 15 or July 16, 2024, and was reported to 311.</p> <p>Determined by a representative of the Regional Municipality of Halton that the water damage was not the result of a blockage on any part of the wastewater system or wastewater backup from sewer surcharge and that an application for the Region of Halton Ex-Gratia Grant for Public Sewer Backup was denied for the property.</p>
Region of Peel	<p>\$1,500 Ex-gratia Grant policy to assist homeowners who have experienced flooding related to a sanitary blockage or malfunction that has occurred within the public right-of-way.</p> <p>The Ex-gratia Grant excludes damage caused by surcharge of the sanitary system as a result of storm events.</p>
City of Ottawa	<p>Up to \$1,000 under the Residential Compassionate Grant policy for sewer backups where residents have been affected by flooding three or more times.</p> <p>The resident must report to the City within four months of sewer backup and show proof of three or more sewer backups during a 15-year period that are related to sewer surcharging as a result of significant rainfall. Resident must also have experienced at least \$1,000 of damage during the most recent backup.</p>
City of Hamilton	<p>Compassionate grant under the Residential Municipal Disaster Relief Assistance Program for basement flooding caused by severe rainstorms.</p> <p>Council defines the time frame and boundaries within the City that are eligible for relief for basement flooding under this program.</p>
City of Welland	Sewer Backup Compassionate Grant pays the eligible property owner's policy deductible owing up to a maximum of \$3,000, payments for any other costs are not eligible.

Grant and Subsidy Programs Offered by Other Municipalities

Municipality	Program Name	Program Highlights (Eligibility and Terms & Conditions apply)
Region of Peel	Sanitary Backwater Valve Rebate Program https://www.peelregion.ca/wastewater/backwater-valve-rebate.asp	\$700 to help homeowners cover the cost of installing a sanitary backwater valve to reduce basement flooding due to rainfall.
City of Toronto	Basement Flooding Protection Subsidy Program https://www.toronto.ca/services-payments/water-environment/managing-rain-melted-snow/basement-flooding/basement-flooding-protection-subsidy-program/	<ul style="list-style-type: none"> ▪ Backwater Valve - 80% of the invoiced cost, up to a maximum of \$1,250 ▪ Sump Pump - 80% of the invoiced cost, up to a maximum of \$1,750 ▪ Foundation drain (weeping tile) pipe severance and capping - 80% of the invoiced cost, up to a maximum of \$400
City of Burlington	Home Flood Protection Program https://www.burlington.ca/en/building-and-renovating/home-flood-prevention.aspx#Home-Flood-Protection-Program	<p>The program offers homeowners up to 50% of the cost of Home Flood Protection Assessments to find potential ways that water/sewage can enter your home.</p> <p>Subsidized in-person and virtual assessments cost \$275 + HST and \$237.50 + HST respectively. 20 assessments are available each year.</p>
Halton Region	Enhanced Basement Flooding Prevention Subsidy Program https://www.halton.ca/For-Residents/Water-and-Environment/Enhanced-Basement-Flooding-Prevention-Subsidy-Program#about	<p><u>Downspout Disconnection Program</u></p> <ul style="list-style-type: none"> ▪ Disconnection of Downspout from the sanitary sewer system ▪ 100% of costs incurred for materials and invoiced contractor labour charged to disconnect downspouts, up to a maximum of \$500 <p><u>Weeping Tile Disconnection and Sump Pump Installation Subsidy</u></p> <ul style="list-style-type: none"> ▪ Disconnection of weeping tile/foundation drain from the sanitary sewer system ▪ 100% of costs incurred for materials and labour charged to disconnect weeping tile and

Appendix 4

Municipality	Program Name	Program Highlights (Eligibility and Terms & Conditions apply)
		<p>install a sump pump, up to a maximum of \$5,000</p> <p><u>Backwater Valve Installation Subsidy</u></p> <ul style="list-style-type: none"> 50% of costs incurred for materials and labour charged to install a backwater valve, up to a maximum of \$675 <p><u>Sewer Lateral (pipe) Lining and Repair Subsidy</u></p> <ul style="list-style-type: none"> 50% of costs incurred for materials and labour charged to repair the sanitary lateral (underground sewer/wastewater pipe), up to a maximum of \$2,000
St. Catherines	<p>Flood Alleviation Program</p> <p>https://www.stcatharines.ca/en/water-utilities-and-services/basement-flooding.aspx</p>	<ul style="list-style-type: none"> \$3,500 to help cover the costs of installing protective devices, such as a sump pump and backwater valve, to homeowners who have had or are at risk of having a sanitary drain back-up from sewer surcharging
City of Markham	<p>Private Plumbing Protection Rebate Program</p> <p>https://www.markham.ca/wps/portal/home/neighborhood-services/water-sewer/sewer-backup-and-flooding/08-sewer-back-up-and-flooding</p>	<p>The City may grant rebates for each Private Plumbing Protection Measure up to the following maximum amounts. The property must be located in known flood prone areas, or demonstrate existence of flood risk in the area:</p> <ul style="list-style-type: none"> Backwater Valve – Indoor Installed on Sanitary Lateral \$1,750 Backwater Valve – Indoor Installed on Storm Lateral \$1,750 Backwater Valve – Outdoor Installed on Sanitary Lateral \$2,000 Backwater Valve – Outdoor Installed on Storm Lateral \$2,000 Weeping Tile - Disconnected from Sanitary Lateral and Redirect to Storm Lateral by gravity connection \$3,000 Weeping Tile - Disconnected from Sanitary Lateral and Sump Pump Installation \$5,000 Lateral Reline/Repair – Storm \$2,500 Lateral Reline/Repair – Sanitary \$2,500
City of London	<p>Basement Flooding Grant Program</p> <p>https://london.ca/living-london/water-environment/flooding/base</p>	<p>Provides financial assistance to property owners who experience basement flooding in their home.</p>

Appendix 4

Municipality	Program Name	Program Highlights (Eligibility and Terms & Conditions apply)
	ment-flooding-grant-program	<p>Eligible Work – Residential homes (90% of total cost to a maximum of):</p> <ul style="list-style-type: none"> ▪ Backwater valve - \$1,800 ▪ Sewage ejector and holding tank (including interior plumbing modifications) - \$6,000 ▪ Sump pit and pump: with existing weeping tile disconnection - \$4,000 ▪ Additional weeping tile disconnection - \$2,400 ▪ Storm private drain connection (storm lateral from the City sewer main to the property line) - \$7,000 ▪ Storm building sewer (storm lateral on private property from an existing storm private drain connection stub at property line to the dwelling unit) - \$3,000 ▪ Sump pump battery back-up when installed in conjunction with a new sump pump - \$1,400 ▪ Sump pit and pump for a reverse grade driveway (to replace private catchbasins or drains which collect runoff that are currently directed to a City sanitary sewer) - \$4,000
City of Welland	Sewage Water Alleviation Program https://www.welland.ca/Building/SWAP.asp	The maximum funding allocation of up to \$6,000 to assist homeowners with installing backwater valves and specified other equipment and work required for a proper installation. This would also include a sump pump with battery backup, and disconnection of the foundation drains and downspouts from the sanitary drainage system (program prerequisites).
Region of Durham	Basement Flooding Loan Program https://www.durham.ca/en/regional-government/basement-flooding.aspx	<p>An interest free loan, not to exceed \$3,000, with repayment in equal amounts added to the resident's quarterly water and sewer bill. The repayment term is not to exceed 3 years.</p> <p>Loan is for those residents who have experienced basement flooding due to a sanitary sewer backup</p>
City of Kingston	Preventative Plumbing Program	Subsidy Up to a maximum of \$3,000 per home for specific works to reduce sewer backup: <ul style="list-style-type: none"> ▪ Backwater valve - 75% of invoiced costs, up to \$1,200

Appendix 4

Municipality	Program Name	Program Highlights (Eligibility and Terms & Conditions apply)
	https://www.cityofkingston.ca/news/posts/flood-facts-and-preventative-plumbing-program/	<ul style="list-style-type: none"> ▪ New sump pit and pump - 75% of invoiced costs, up to \$1,400 ▪ Capping of foundation drain connection - 50% of invoiced costs, up to \$1,000 ▪ Disconnection of existing sump pump - 50% of invoiced costs, up to \$300
City of Cornwall	Flood Risk Reduction Rebate Program https://www.cornwall.ca/en/live-here/flood-risk-reduction.aspx	Covers 80% of invoiced costs, up to a maximum of \$3,600 for specified work to reduce flooding risk on private property. <ul style="list-style-type: none"> ▪ Downspout Disconnection – lesser of \$100 or 80% of eligible costs, to a program maximum of \$3,600 ▪ Backwater Valve (interior) - lesser of \$500 or 80%, to a program maximum of \$3,600 ▪ Backwater Valve (exterior) - lesser of \$1,000 or 80%, to a program maximum of \$3,600 ▪ Foundation Drain Disconnection - lesser of \$2,000 or 80%, to a program maximum of \$3,600 ▪ Lot Grading Improvements - lesser of \$500 or 80%, to a program maximum of \$3,600

Back in 2010, the City and Region of Peel jointly put in place a Rebate Program as a result of the August 4, 2009 major rainfall event which caused flooding-related incidents and associated damage to private and public properties and infrastructure and heavily impacted residents residing within the Cooksville Creek watershed.

The Rebate Program was initially offered to homeowners with reported basement flooding as a result of the August 4, 2009 storm. This program, which was administered by the Region, included a 50/50 cost-sharing arrangement between the City and the Region for downspout disconnections, in addition to a 50/50 cost-sharing arrangement between the Region and the homeowner for sanitary backwater valve installations. The Rebate Program was subsequently expanded to include additional homes and further enhanced to increase rebates for sanitary backwater valve installations and to provide a one-third cost-sharing arrangement among the City, the Region and the homeowner for the installation of sump pumps.

However, the uptake on the Rebate Program was very low. The Region discontinued its Rebate Program with the City in 2014 and introduced a new program targeting roof downspout disconnections and sanitary backwater valve installations. Subsequently, as a housekeeping measure, the City also discontinued this program in 2015.

The Region of Peel currently has a Sanitary Backwater Valve Rebate Program which provides \$700 to eligible homeowners to help cover the cost of installing a sanitary backwater valve to reduce basement flooding due to rainfall.

The City has a Foundation Drain Collector (FDC) Sump Pump Subsidy program established to assist homeowners whose homes are serviced by the municipal FDC system, primarily in Ward 10. The City is offering eligible homeowners a financial subsidy to install a sump pump to provide an additional safeguard against basement water infiltration. This subsidy covers up to 100 percent of the cost of installing a sump pump, to a maximum of \$6,000.

Flooding Insurance- Tenant

Every insurance policy is different, and residents should speak to their insurance representative to confirm the specifics of their policy. Damage caused by the backing up of sewers and drains is typically not covered in a standard insurance policy, however optional sewer backup is offered by most insurers. Overland flooding, which occurs when rivers or creeks overflow, is also typically not covered by a standard policy. Optional residential overland flood coverage is now offered by many insurers. Commonly, this coverage is combined with sewer backup coverage, which is also optional.

Most personal property insurance policies (homeowner, condominium unit owner and tenant) cover the cost of alternate accommodations and living expenses for people whose home has become unliveable after an insured loss. This is typically called Additional Living Expenses or ALE in an insurance policy. The categories of ALE claims include damage to your home by an insured peril, for example flood or related damage. This covers a policyholder whose home is unlivable because of damage by an insured peril. Typically, this covers additional living expenses for a reasonable amount of time needed to repair or rebuild the home or until the policy limit is reached. In a flood situation, policyholders who have purchased optional sewer backup coverage or optional overland flood insurance would have this coverage. Residents are advised to check with your insurance representative to understand the limits of your coverage.

It is always recommended for property and vehicle owners to submit their claims to their own insurer first, to expedite remediation and repairs. Their insurance company can then submit a subrogation claim against a responsible third-party if they so choose. This alleviates the need for the property or vehicle owner to try and manage the claim by themselves and will likely provide them with better coverage than if they were to make a claim against a third-party.

The *Residential Tenancies Act* also provides information on the responsibilities of landlords and tenants for repair of damage:

Landlord's responsibility to repair

20 (1) A landlord is responsible for providing and maintaining a residential complex, including the rental units in it, in a good state of repair and fit for habitation and for complying with health, safety, housing and maintenance standards. 2006, c. 17, s. 20 (1).

Tenant's responsibility for repair of damage

34 The tenant is responsible for the repair of undue damage to the rental unit or residential complex caused by the wilful or negligent conduct of the tenant, another occupant of the rental unit or a person permitted in the residential complex by the tenant. 2006, c. 17, s. 34.

At the upcoming City-wide public information session, staff will invite representatives from the Insurance Bureau of Canada to participate and share their insurance knowledge with the residents.

Public Education and Community Engagement

Various City Divisions, including the Office of Emergency Management, Environment, and Environmental Services, engage in regular public education and community outreach with residents regarding severe weather emergency preparedness, including flooding. This includes engaging with residents at community events on topics such as stormwater management, insurance, and emergency preparedness. In 2023, the City's Office of Emergency Management attended over 70 unique events to engage with residents on such topics.

City Divisions engage in various comprehensive community engagement activities to increase climate resilience within the City. The Cooksville SNAP, a collaboration between various City Divisions and CVC, aims to revitalize and retrofit the Cooksville area, preparing it for severe weather scenarios such as flooding. One of the main goals of the Cooksville Snap Action Plan, Goal 2 – Ready for Rain, includes a number of actions to manage rain and control the flow of stormwater by establishing rain gardens, increasing permeability and strengthening public education on the matter.

The City's Resilience Hub program, an action from the City's Climate Change Action Plan, aims to enhance community resilience in vulnerable areas, including those impacted by severe weather events. The Resilience Hub program aims to foster social capital within these communities, with City staff from the Office of Emergency Management and Environment teams supporting community-based organizations through information and resource sharing. The Resilience Hub program aims to incorporate community feedback into future community planning, including feedback received on topics related to severe weather, flooding, and emergency preparedness.

The OEMs's Flood Resilient Schools program is a collaboration with CVC and local schools to promote flood preparedness. This program includes presentations and interactive workshops where students are able to actively engage with hands-on education activities related to flooding and stormwater. Staff are planning to incorporate flood evacuation and drills into the next phase of the program for schools in flood-vulnerable areas.

Information on flooding, emergency preparedness, and the City's Stormwater system and program can also be found available on the City's website. Staff continuously work to ensure that the City's website, and other literature (e.g. pamphlets, brochures, etc.) are up-to-date, accessible, and have actionable information about flood risks and preparedness.