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# Holding Back the Floodwaters

Design and Implementation of a  
Temporary Riverine Floodwall Along  
Little Etobicoke Creek

Chris Denich, B.Sc., B.Eng. WRE, M.Sc. WRE, P.Eng., CAN-CISEC, GIP  
Chad Cota, BASc., CAN-CISEC, PMP



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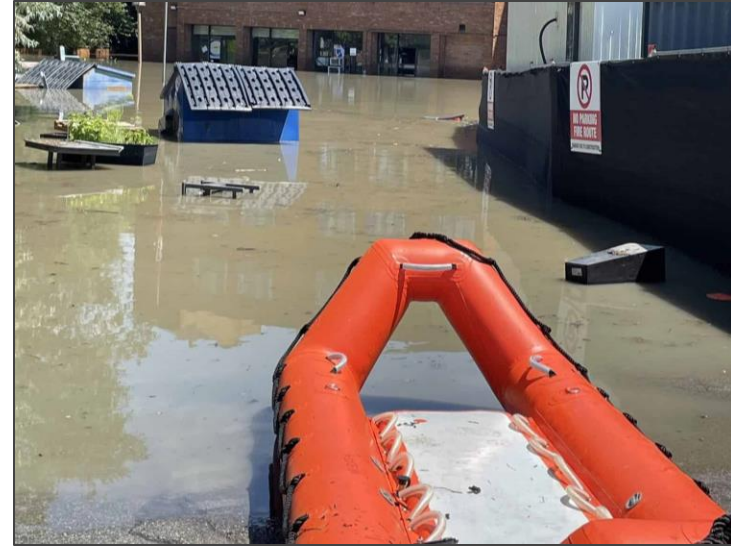
PROJECT OUTCOMES

# Project Background

- The City of Mississauga recently experienced extreme rainfall events on July 16<sup>th</sup>, 2024 and August 17<sup>th</sup> and 18<sup>th</sup>, 2024, causing flooding related issues across the City, including the areas surrounding Little Etobicoke Creek



*Extreme Flooding within Little Etobicoke  
Creek*



*Emergency Building Evacuation in Response  
to Flooding*

# Rainfall Events



- 97.8 mm of rainfall fell on July 16<sup>th</sup>, 2024
- 128.4 mm of rainfall fell on August 17<sup>th</sup>, 2024 (highest recorded single-day rainfall at Pearson)
- These flooding resulting from the storm events received increased public concerns, leading to Council direction to develop and implement flooding solutions

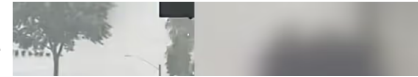
NEWS

## WHAT HAPPENED? 5 take-aways from latest '100-year storm'

11 years, 2 destructive floods, millions in damages: why hasn't Mississauga moved quicker to protect

Major storm on Tuesday saw nearly 100 millimet

## Flooding in Mississauga is so bad that people are being rescued by boat



## A year after two 'Once in a Century Storms': Where does Mississauga stand today?

Jul 25, 2025 | ONTARIO, PROVINCES

**MISSISSAUGA**  
ONTARIO LOCAL NEWS

CHANGE  
CITY

Dark



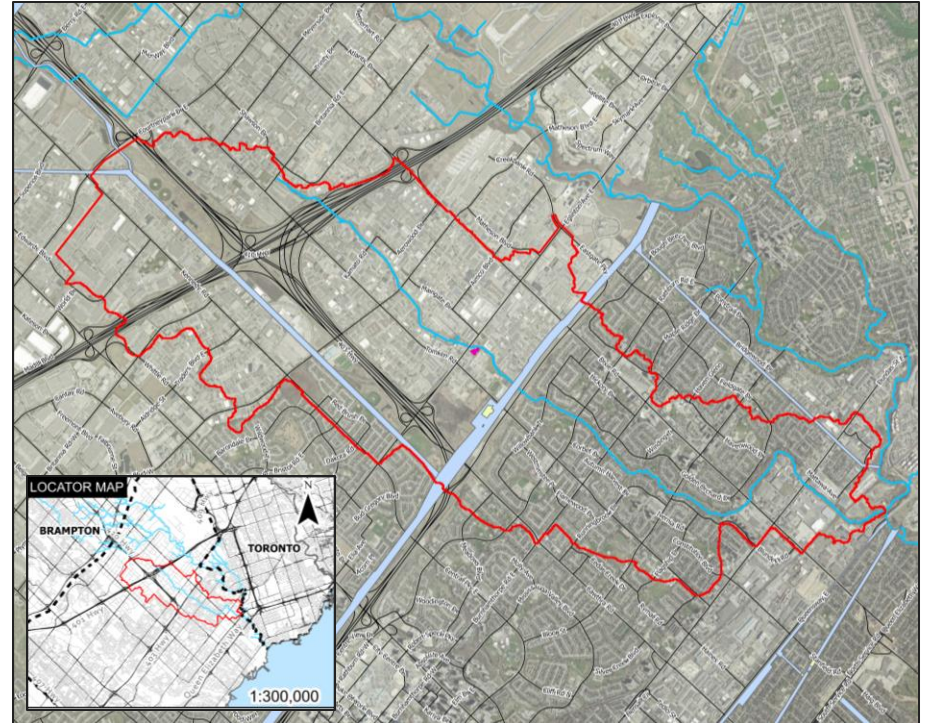
**HISTORIC FLOODS: Skies opened up to leave parts of Mississauga underwater one year ago**

Mississauga | Brampton | Caledon | Durham | Halton | Hamilton | Ontario | Toronto | Community | History | Weather

# Project Overview

In response, the City of Mississauga initiated various city-wide initiatives, including a watershed-wide study for Little Etobicoke Creek to reduce flooding

The City of Mississauga retained Aquafor Beech Limited to investigate mid-long term and near-term flooding mitigation solutions

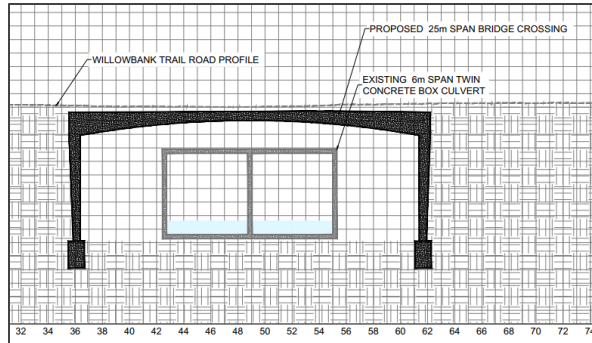


*Little Etobicoke Creek Watershed Boundary*

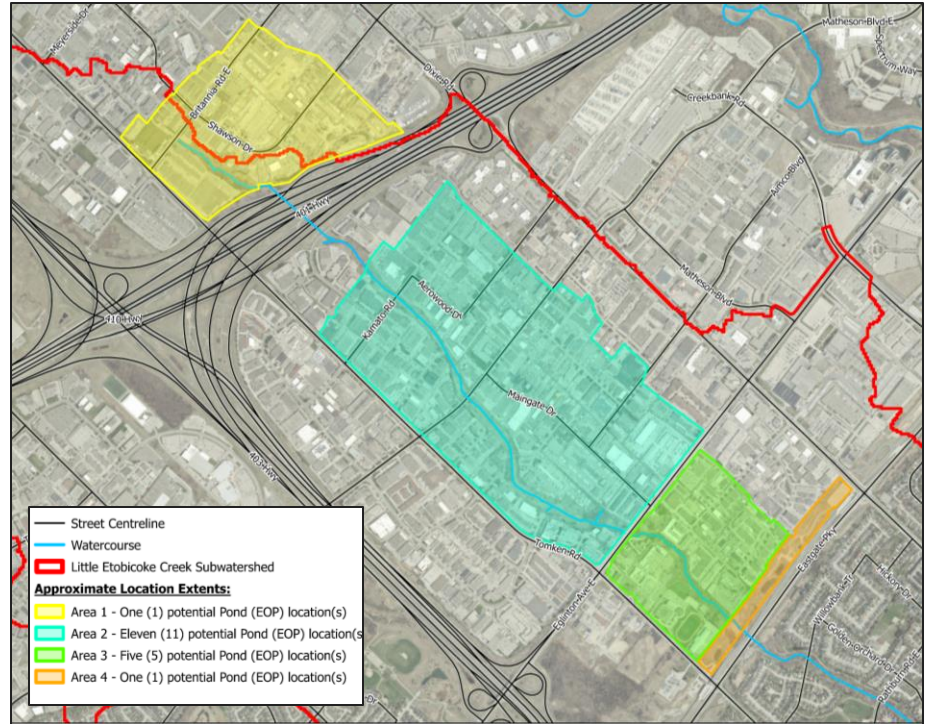
# Long Term Initiatives

The City's mid-long term flood reduction initiatives include:

- Stormwater retention facilities within upstream watershed
- Creek conveyance improvements at targeted areas



*Example of Structure Upsizing*



*Potential SWM Pond Locations*

# Near Term Initiatives

The City's near term flood reduction initiatives include:

- Basement Flooding Prevention Rebate and City Flood Resilience Rebate
- Increased inspection and maintenance activities
- **Temporary floodwall structures to alleviate localized riverine flooding**



*Concentrated Flooding Complaints within Study Area*



*Residential Scale Flood Barrier Systems*

# Flooding Impacts

- Information was gathered from first hand reports, photos, videos, City records, and news articles

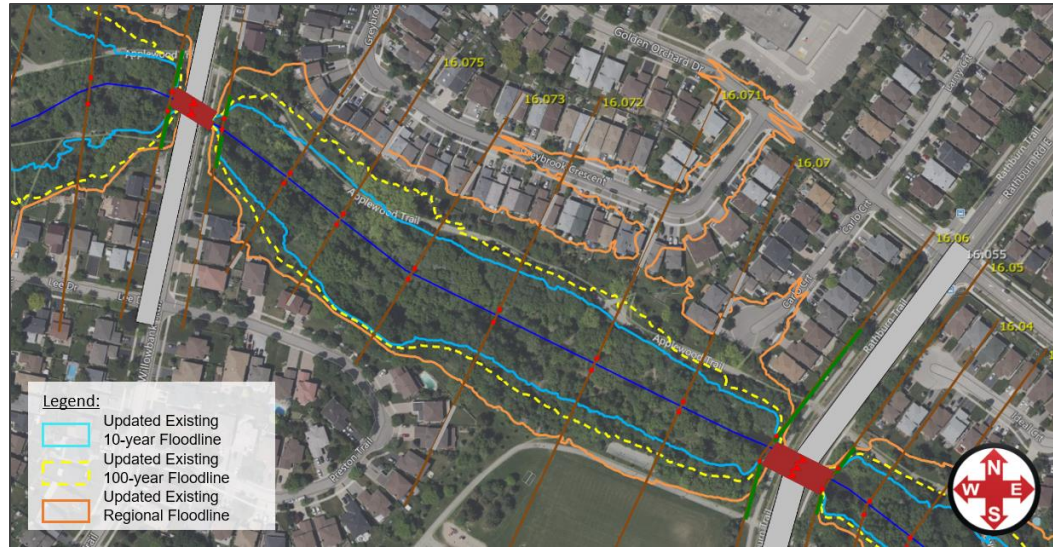
“At 10:22 a.m. water rose to the edge of the creek and by 10:47 a.m. it overwhelmed the paved trail. It rapidly rose and moved toward their backyard. It receded momentarily, bringing a short sense of relief, before a second wave inundated the entire yard within 30 minutes. It flowed into the house, covered the basement.”



*Impacted Properties Within Study Area*


# Flooding Impacts

- Delineation of existing floodlines within study area was completed
- Confirmation of project objective (i.e., ensure floodwaters from 100-year storm are excluded from residential properties along Greybrook Crescent



*Modelled Floodlines within Study Area*

# Selection of Floodwall Product

- Technical feasibility (ability to negotiate steep slopes and sharp bends) 
- Footprint (depth) of the wall 
- Fabrication and delivery timeline 
- Temporary in nature with reuse potential 
- Susceptibility to vandalism 
- Cost considerations (capital and maintenance) 



# Selected Floodwall (MuscleWall)

## Overview of Selected Product (MuscleWall):

- Low Density Polyethylene (6 mm thick) covered with impermeable RPP Liner
- 1.2 metres high, 0.8 metres deep, 1.8 metres wide









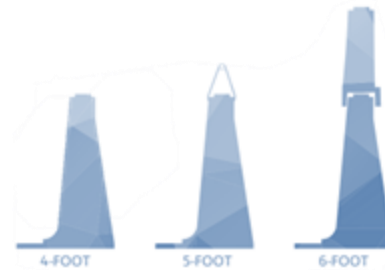
*Example of Floodwall Deployment*



*MuscleWall Product Design*

# Selected Floodwall (MuscleWall)

- Ability to negotiate steep slopes and sharp bends – 22-degree range of motion, can withstand 15% grades 
- Footprint (depth) of the wall - Minimal, less than 1 metre 
- Fabrication and delivery timeline - Delivery within 1 week 
- Temporary with reuse potential - Highly transferable to other applications 
- Susceptibility to vandalism - Low 
- Cost considerations - Approximately \$500 per metre 
- Modular design – able to add on 1- or 2-foot extensions

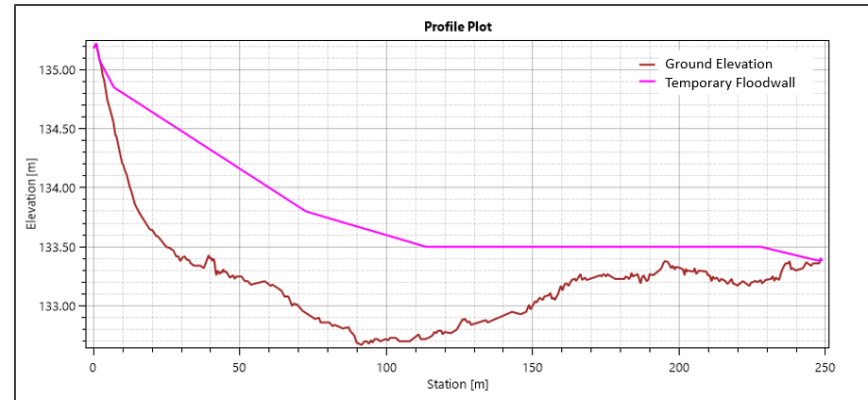


# Floodwall Design

- Floodwall length (250 metres) and height (1.2 metres) selected to achieve project objectives (excluding floodwaters from residential properties along Greybrook Crescent)
- Hydraulic modelling of the proposed floodwall confirmed project objectives were met with this wall configuration



*Selected Floodwall Alignment*



*Profile Along Floodwall*

# Floodwall Design

Detailed Design of the floodwall system included:

- 250 metres of 1.2-metre-high floodwall, complete with trenched in impermeable liner
- Wall alignment was selected to optimize results and minimize disruption to properties and parkland
- Extension of trail drainage culvert and installation of backflow preventer
- Relocation of various park infrastructure including memorial benches, trail signage etc.
- Removal of 13 trees and injury to 19 trees



*Backflow Preventer Attachment  
on Culvert*

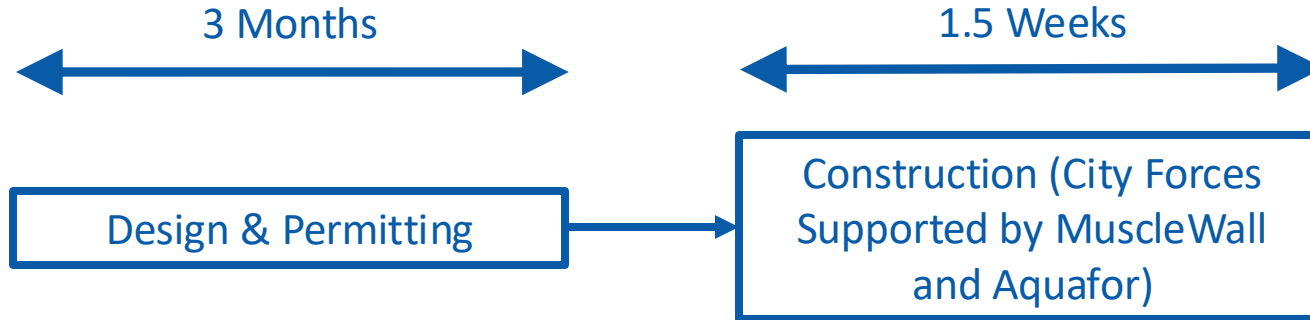


*Park Bench – To Be Relocated*

# Floodwall Implementation



- Completed 100% design package developed in 3 months, including field inventories, stakeholder consultation, and two design iterations
- Floodwall construction and restoration completed within 1.5 weeks
- Permits include City Parks Access Permit and City Tree Removal Permit



# Floodwall Deployment



*Trenching and Liner Installation*



*Floodwall Assembly*



*Completed Floodwall After  
Restoration*

# Floodwall Deployment

- City of Mississauga Works, Operations & Maintenance Staff received onsite training on installation & maintenance of floodwall
- Limited maintenance required; recommended maintenance includes:
  - Inspection of liner surfaces for irregularities
  - Confirmation of internal water levels
  - Ensure liner is fastened securely to wall
  - Inspection for vandalism



*Onsite Floodwall Installation and Maintenance Training*

# Floodwall Deployment

- The study area has not experienced significantly elevated flows since floodwall deployment
- However, this floodwall system has been rigorously tested in lab and field settings across North America, and has Flood Mitigation (FM) Approval



*Example of Successful Field Deployment*



*US Army Corps of Engineers – Lab Testing*

# Floodwall Outcomes

- Floodwall successfully designed and implemented in 3.5 months, providing 250 metres of floodwall protection to 20 residential properties for under \$200k

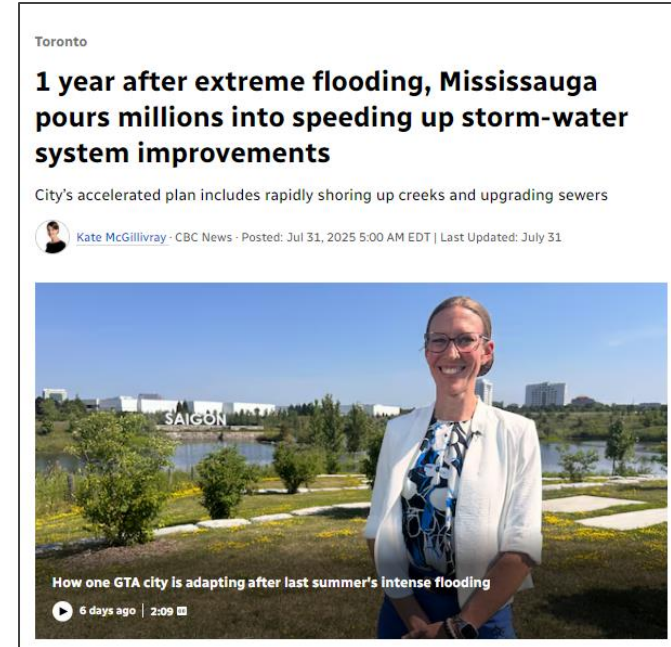


*Floodwall Protection Provided to Private Properties*

# Recent Publicity



- The design and implementation was very high-profile, with heightened attention from the nearby residents and general public
- Active involvement from councillor, with pressure to meet promised timelines
- CBC News recently published an article highlighting the City's Flooding Reduction initiatives, including this floodwall project



*Recent News Article Highlighting the City's Initiatives to Reduce Flood Impacts*

# Questions?

Chris Denich, B.Sc., B.Eng. WRE, M.Sc.  
WRE, P.Eng., CAN-CISEC, GIP  
Denich.C@Aquaforbeech.com  
647-993-2267

Chad Cota, BASc., CAN-CISEC, PMP  
Cota.C@Aquaforbeech.com  
416-771-2764

[www.aquaforbeech.com](http://www.aquaforbeech.com)





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