Fourteen Mile and McCraney Creek Flood Mitigation Opportunities Study

(Riverine Study)

Council Meeting – January 27, 2025

Study Purpose

- The Fourteen Mile and McCraney Creeks Flood Mitigation Opportunities Study (14Mile/McCraney Study) builds upon the 2008 Town-Wide Flood Study which quantified the magnitude of creek flood exposure in Oakville
- The 14Mile/McCraney Study assessed flood risks for properties along the creek to recommend municipality-led capital works to reduce flood risks
- The Town undertook a Class Environmental Assessment (Class EA) Study as a Master Plan to determine preferred flood mitigation opportunities along Fourteen Mile Creek and McCraney Creek

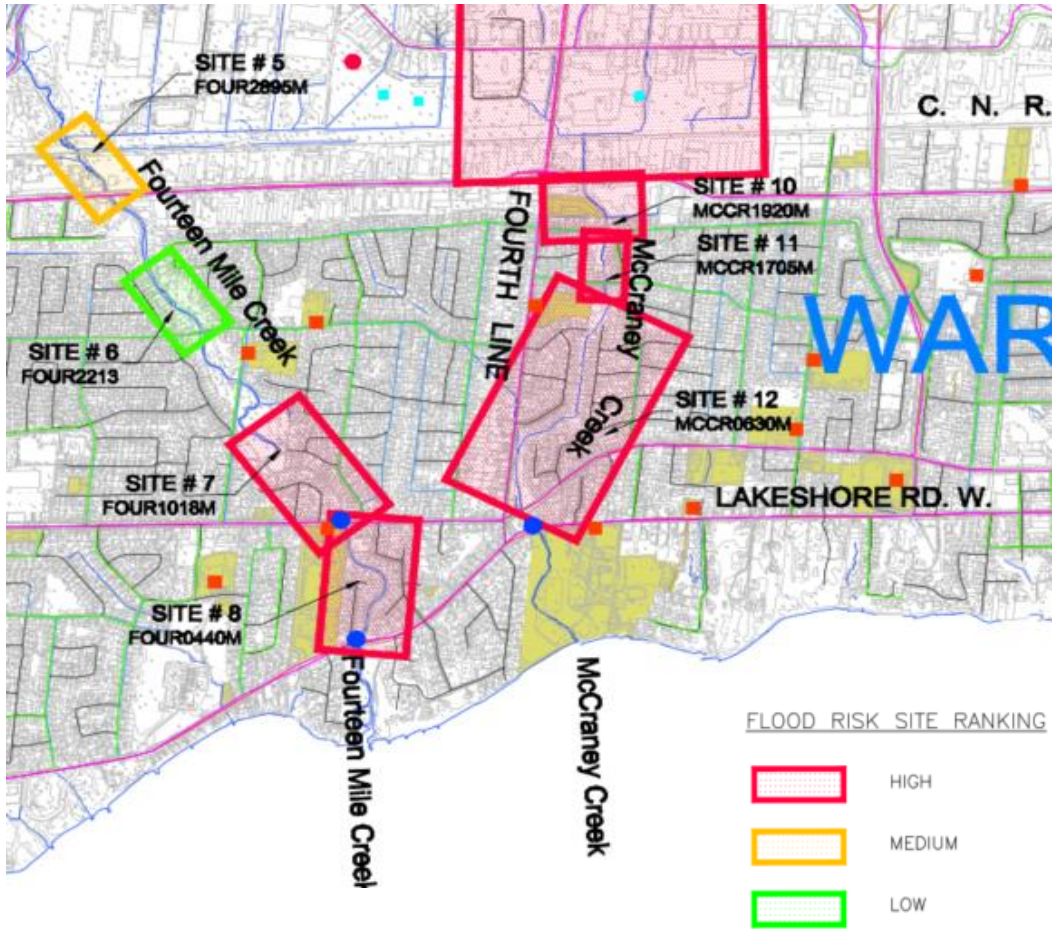


Figure 1: Excerpt from 2008 Town-Wide Flood Study

Types of Flooding

CREEK FLOODING

Creek flooding happens when creek channels spill over their banks into nearby areas during heavy rain or melting snow events

LAKE ONTARIO FLOODING

Lake Ontario flooding happens when high water levels from precipitation, runoff from the surrounding basin and the Niagara River and changes in the outflows to the St. Lawrence river cause the lake to overflow along the shoreline.

URBAN FLOODING

(STORMWATER)

Stormwater flooding happens when too much rain or melting snow overwhelms drainage systems, causing water to back up on roads, sidewalks and in parks, and may also seep into buildings.

(WASTEWATER)

Wastewater sewer flooding occurs when heavy rain overwhelms the sewer system, causing wastewater to back up into basements and streets.

Study Area

- Both Fourteen Mile Creek and McCraney Creek watersheds originate north of Dundas Street and include small portions of lands within Burlington and Milton.
- McCraney Creek has two main tributaries north of the CNR tracks: Taplow Creek and Glen Oak Creek.
- Land use is predominantly residential north of the QEW, commercial along the QEW corridor and residential south of Speers Road down to Lake Ontario.

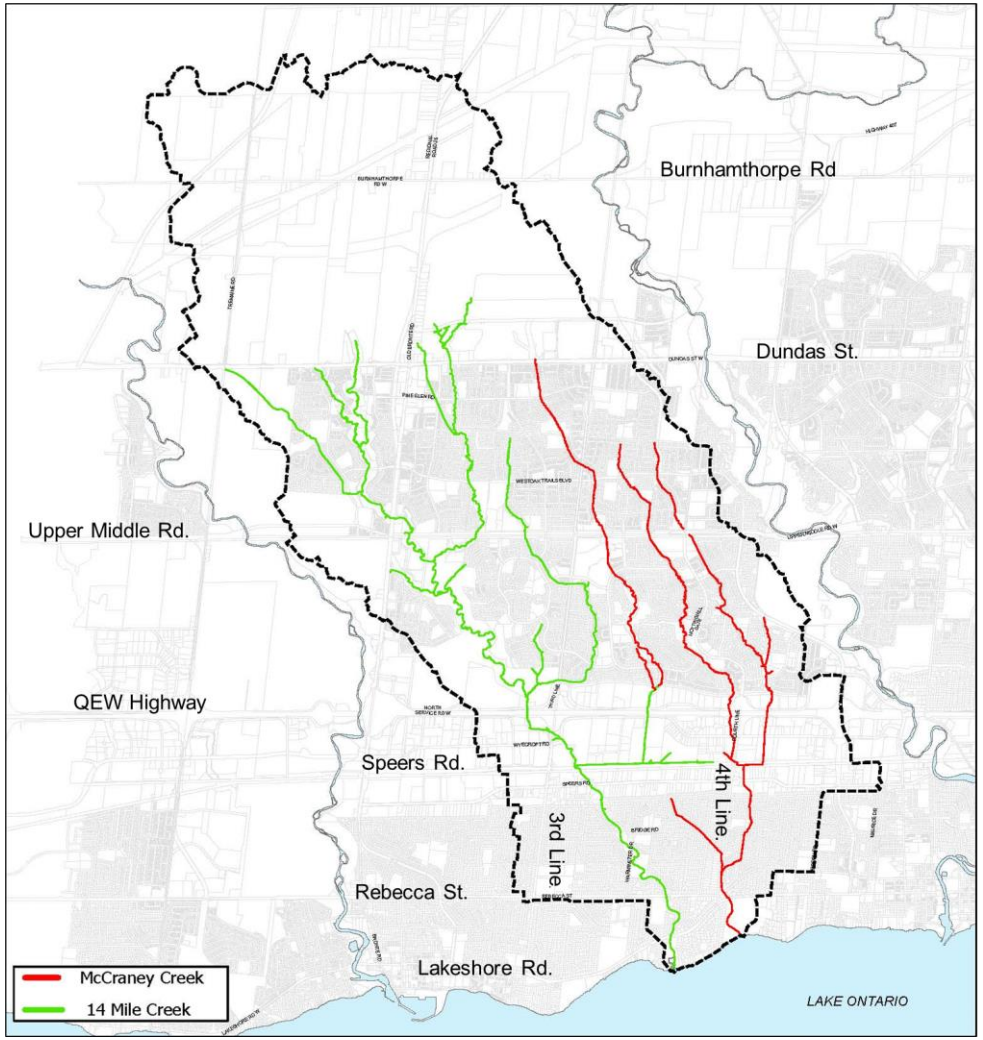
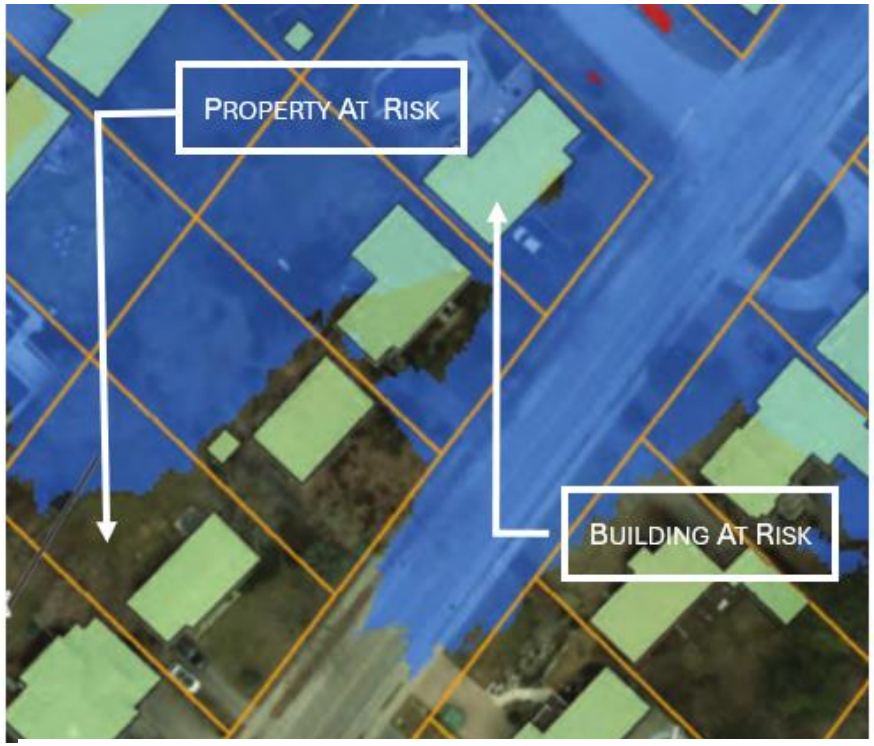


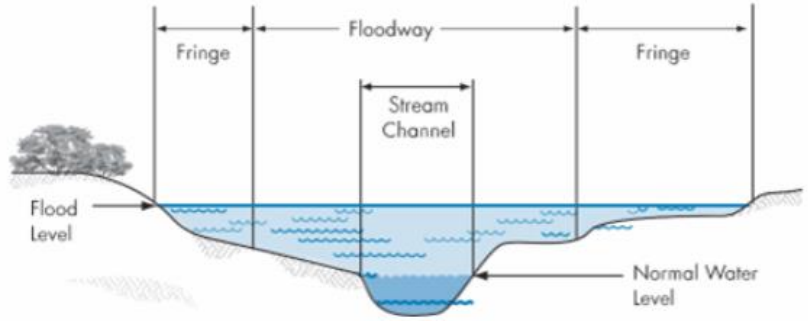
Figure 2: Map of Study Area

Study Results

- Results indicate that flood risk is possible in select loations during the more frequent flooding events along the creeks (i.e. less than a 10-year flood event); however flooding risks are greatest during the 100 year storm event
- Flood risks occur when waters spill beyond creek banks and extend into property and/or enter buildings
- Flood risk is quantified into two categories for properties (image to the right)
  - ***Property at Risk***
    - Flooding risk on property, no flooding in the building
    - Flooding risk on property, no buildings (vacant property)
  - ***Building at Risk***
    - Flooding risk on property, flooding risk in the building.

263 PROPERTIES AND 289 BUILDINGS
AT FLOOD RISK – REGIONAL STORM CONDITIONS





Study Results

- The preferred alternative to reduce flood risk along the creeks is a combination of **green infrastructure (LIDs), crossing upgrade, and berming** in the amount of approximately $8 million.
- The implementation of the preferred alternatives will benefit 110 properties by reducing flood risk or removal from flooding during the Regional storm event

Regional Storm Flood Risk				
	Locations At Flood Risk	Reduced Flood Risk	Removed from Floodplain	Remaining Properties
Property at Risk	263	32	35	196
Building at Risk	289	9	34	246

Green Infrastructure

- Low impact development (LID) measures to promote infiltration, evaporation, harvesting, filtration, and detention of stormwater are recommended as part of the Town's preferred approach to rainwater management

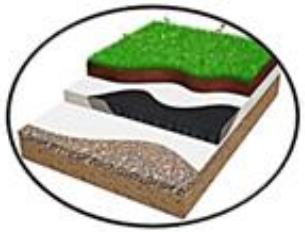
Natural Channel Design Elements

Watercourse restoration that mimics the natural physical form of a stream.

Tree Preservation

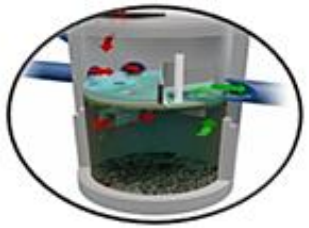
Provides long-term stormwater benefits by intercepting and absorbing rainfall.

Soil Amendments



Allows soil to absorb and hold more moisture.

Water Quality Devices



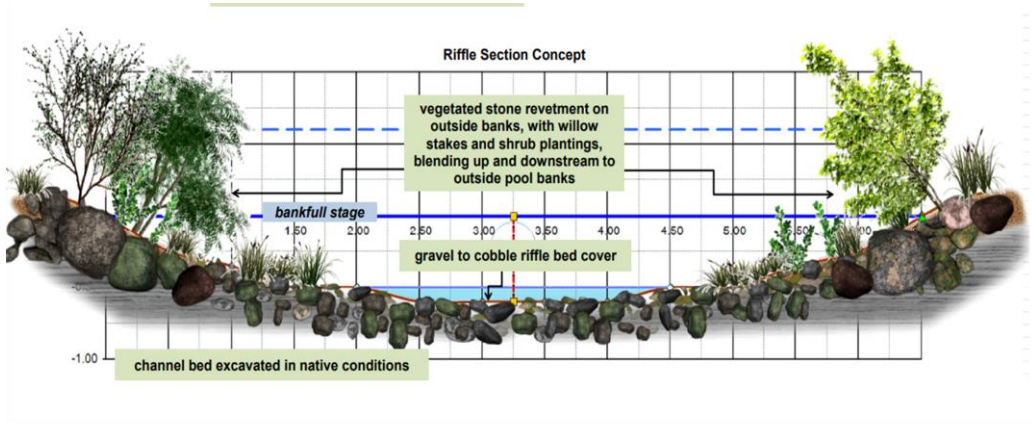
Filters stormwater runoff when installed within a pipe conveyance system.

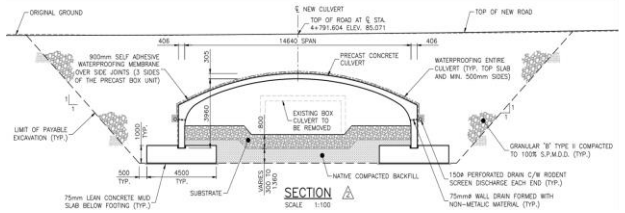
Infiltration

Allows stormwater to infiltrate into underlying native soils.

Crossing Upgrade
(McCraney Creek at Lakeshore Road)

- Increasing the crossing capacity at Lakeshore Road will help reduce upstream flooding and the overtopping of roadway during severe storm events
- At the detailed design stage, property boundaries, construction access, road design, structural design, utilities, soils, stream morphology, and natural heritage impacts will be considered.
- Timeline:
  - Design - 2025,
  - Utilities - 2028
  - Construction - 2029





Berming

- The town aims to construct berms on public lands as much as possible and seek agreements from landowners if private property is affected. Full participation from all landowners is required for berming to be effective.
- Tree impacts may be unavoidable. As such, since berming areas overlap with future potential creek erosion mitigation projects, which typically involve creek disturbance and tree removals followed by new plantings, it is recommended berming feasibility be assessed during these works.
- Currently, there is one berming area along McCraney Creek, just north of Rebecca Street, scheduled for erosion mitigation work as part of the 10-year capital plan, with design commencing in 2031 and construction in 2034.

Flood Emergency Preparedness

- After implementation of the preferred alternatives, there will be properties that will continue to experience flood risks, as there are limited engineering solutions on publicly owned lands that can assist in the mitigation of the risks.

- There are several resources available to Oakville residents to help ensure their safety and minimize property damage due to flooding. This includes the Town of Oakville's 'Flooding' webpage and the Region of Halton's Community Hazards webpage. Additional flooding resources are available through Conservation Halton's webpages and the University of Waterloo Intact Centre on Climate Adaptation.

- The town continues to inform the public about flood protection, with an awareness campaign set to launch in Spring 2025

Stay safe and informed!

Halton Region

Conservation Halton

OAKVILLE

INTACT CENTRE ON CLIMATE ADAPTATION

Conclusion

- The Fourteen Mile and McCraney Creeks Flood Mitigation Opportunities Study is complete the documentation compiling the study results is expected to be delivered in March 2025.

STAFF RECOMMENDATION

- That the Notice of Completion for the Fourteen Mile Creek and McCraney Creek Flood Mitigation Opportunities Study, Municipal Class Environmental Assessment Study be published, commencing a 30-day public review period from April 1, 2025, to April 30, 2025