

# Stouffville Site Specific Flood Risk and Dam Emergency Preparedness Plan

Reducing risk through effective response planning

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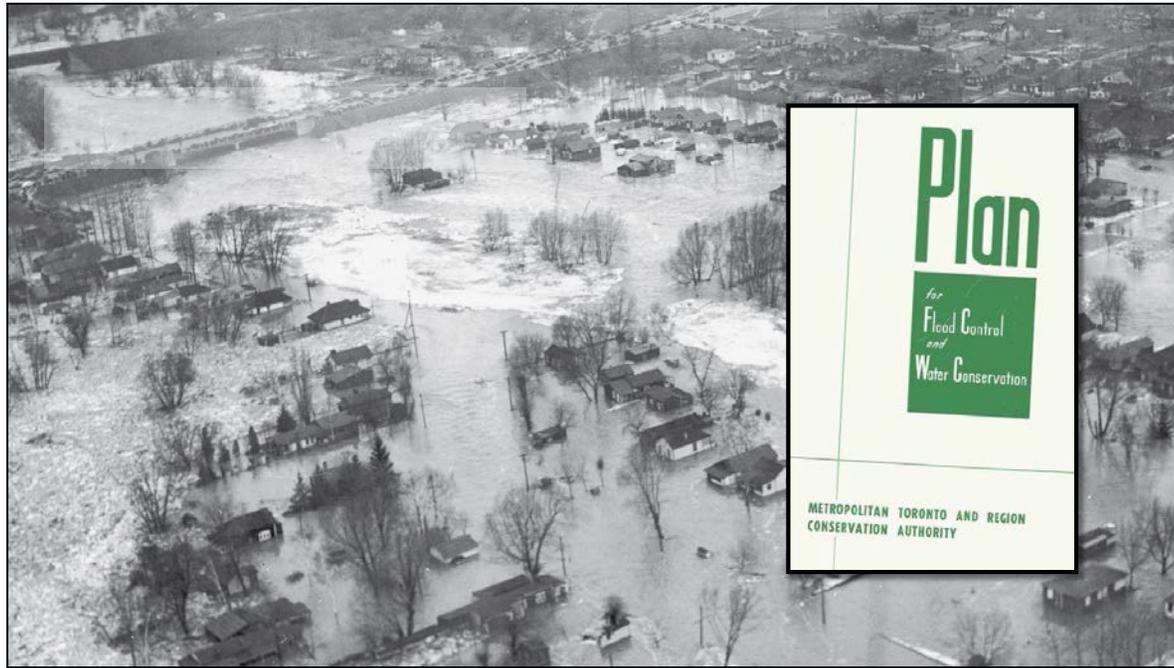


## Presentation Outline

- Introduction, about the program, why we are here today
- TRCA monitoring system and study results
- About the dam and potential flooding in Stouffville
- Roles and Responsibilities
- Dam emergency preparedness
- Individual flood preparedness

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Slide 3



Hurricane Hazel devastated Toronto and the surrounding area in October 1954. 81 lives were lost in Ontario and thousands were left homeless. Toronto's west end was hardest hit – particularly the Etobicoke and Humber watersheds. Key amendments were made to the Conservation Act that helped standardize and improve flood management practices in Ontario following Hazel. The Metro Toronto Region Conservation Authority approved the Plan for Flood Control in 1959, identifying a suite of measures to manage future flooding.



The Stouffville flood vulnerable area is located near Stouffville Reservoir and runs south, down Stouffville Creek to Hoover Park Drive between Thicketwood Boulevard and Harpers Gate Way. It is on Duffins Creek

Historically, the downtown Whitchurch-Stouffville area has been susceptible to flooding. The Stouffville Dam is designed to provide 100-year flood protection. However, there are a small number of properties (mostly municipal parkland) located on Burkholder Street that could see impacts during a 2-year storm event.

# Flooding can happen any time of year

## Summer

- **Thunderstorms with significant rainfall** – within a short period of time, intense localized downpours from thunderstorms can produce flash flooding.

## Spring

- **Spring freshet** – accumulation of snow during the winter season can lead to flooding during the early spring, if conditions are right. When temperatures rise, snow melts and turns to runoff.

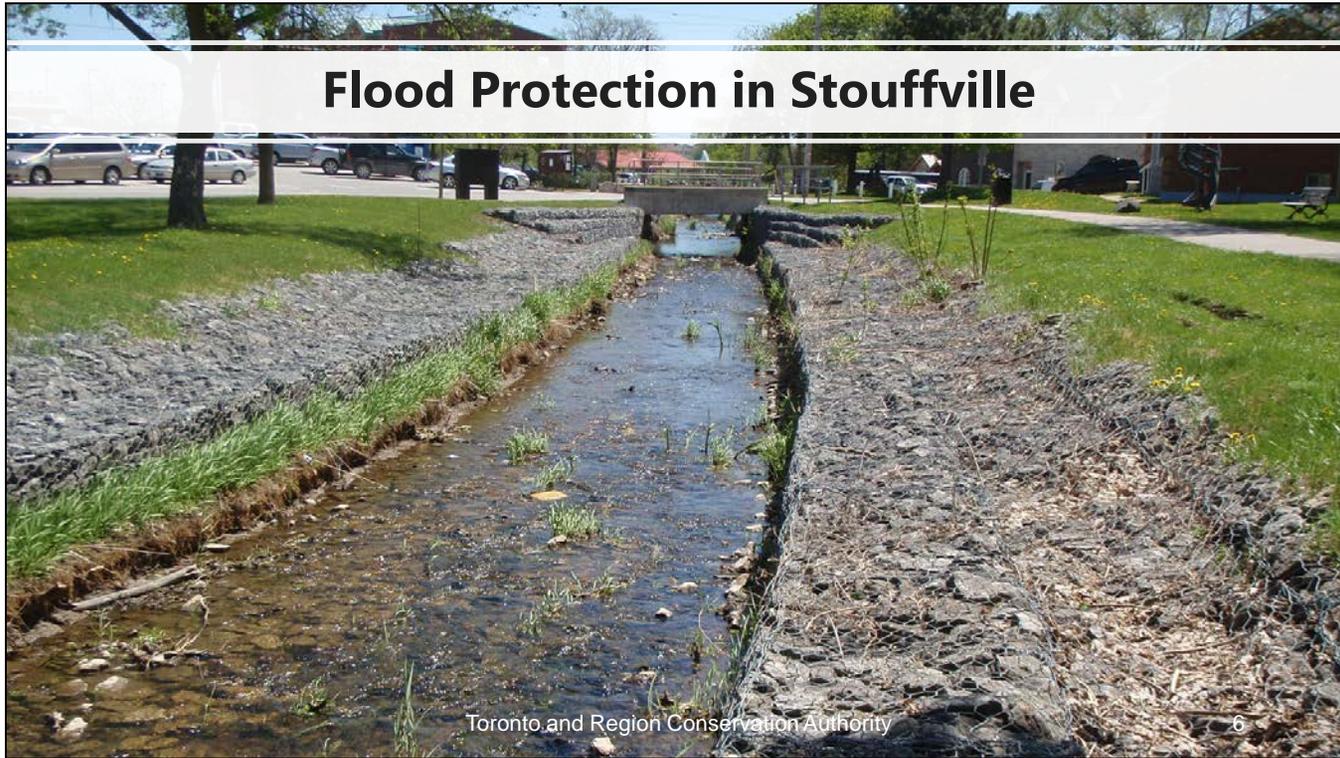
## Fall

- **Seasonal weather systems** – large wet weather such as tropical storms, can last several days. Prolonged and heavy precipitation on top of already saturated soils causes rivers to rise.

## Winter

- **Ice jams** – when a rise in water level or a thaw in the ice breaks into large chunks, these chunks can become jammed at bridges or other obstructions. The rise will become backed up and can overflow its banks.

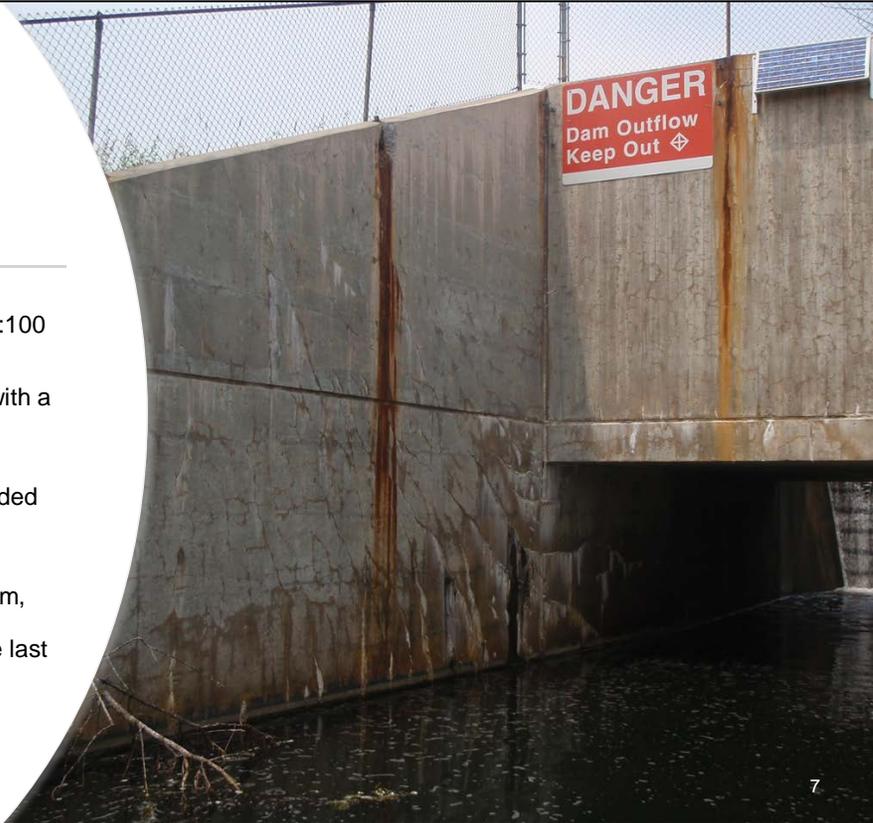




## Stouffville Dam

- Built in 1969 to provide flood protection to 1:100 year (1% chance any year) event
- Dam consists of an earthen embankment with a concrete box type spillway
- The dam is considered safe under normal conditions; some capital improvements needed to meet current dam safety requirements – TRCA is preparing a workplan for these
- No change to the risk with respect to the dam, BUT the best practices around emergency preparedness planning have changed in the last 5 years.

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Stouffville Dam is located on Stouffville Creek, in the Duffins Creek watershed, on Millard St. at the Stouffville Conservation Area. The dam was constructed in conjunction with the Stouffville Channel to provide flood protection to the Town of Stouffville. Stouffville Dam was designed to provide 1 in-100-year flood protection (1% chance of this type of flood in a given year).

## Stouffville Flood Control Channel

- Gabion lined channel
- Constructed in 1980 to work in conjunction with Stouffville Dam to provide protection to the Town of Stouffville
- TRCA dredged the channel in 2012 to restore capacity
- The gabion baskets are approaching their end of life.
- Future upgrades to the channel could incorporate improvement of natural features and habitat, in partnership with York Region and the Town of Whitchurch-Stouffville.

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Because there is runoff that comes into the creek downstream of the dam, the Stouffville Channel was constructed in 1980 to work in conjunction with the dam to provide protection to the Town Of Stouffville.

## Stouffville Dam Remediation

TRCA investigated level of protection that the dam provides; some maintenance and repair work will be required for the dam.



TRCA initiated the Stouffville Dam Downstream Flood Remediation and Feasibility Study to understand the level of protection the dam provides. Specifically, if it was feasible to remove the dam and maintain existing flood protection by installing passive, low - risk structures downstream. The study concluded that the construction of the passive structures downstream of the dam was not feasible due to property constraints and cost. A cost/benefit analysis determined that the lowest cost option for flood protection in Stouffville was to maintain and repair the dam and maintain the flood control channel. TRCA will proceed with developing a workplan to address the dam's deficiencies and to improve the channel.

Ontario Ministry of Natural Resources and Forestry	Canadian Dam Association	OFMEM	Local and Regional Municipality	TRCA	Individuals
<ul style="list-style-type: none"> <li>•Lakes and Rivers Improvement Act (LRIA) – governs construction, maintenance, and operations of dams</li> <li>•Conservation Authority Act gives Conservation Authorities the right and responsibility to construct flood infrastructure, must follow LRIA</li> <li>•Flood Forecasting and Warning – delegates this responsibility to Conservation Authorities where they exist</li> </ul>	<ul style="list-style-type: none"> <li>•National industry association that sets best practice standards for Dam management</li> <li>•Is in the process of releasing updated guidelines for Dam Emergency Preparedness Planning</li> </ul>	<ul style="list-style-type: none"> <li>•Emergency Management and Civil Protection Act</li> <li>•Delegates responsibility of emergency planning and emergency response to municipalities</li> <li>•Public alerting, including AlertReady messaging to broadcast media, as well as Wireless Public Alerting</li> </ul>	<ul style="list-style-type: none"> <li>•CEMC: Maintain emergency response plans, co-ordinate, convene, and communicate</li> <li>•Town of WS Fire Department: Implement evacuations as per Emergency Plans</li> <li>•Road closures</li> <li>•Emergency Social Services</li> <li>•‘On the ground’ response</li> </ul>	<ul style="list-style-type: none"> <li>•Own, maintain, and operate dams</li> <li>•In conjunction with other parties, prepare the Emergency Preparedness Plan</li> <li>•Undertake flood forecasting and warning, as delegated by MNRF</li> <li>•Apply development regulations</li> <li>•Provide technical expertise to support municipal response</li> </ul>	<ul style="list-style-type: none"> <li>•Personal risk awareness</li> <li>•Home-level flood readiness or reduction measures</li> <li>•Understanding and arranging applicable insurance coverage</li> <li>•Personal preparedness, including family emergency planning, 72-hour emergency go-bags, etc.</li> <li>•Taking protective action</li> </ul>

**Shared Roles and Responsibilities for Dam Emergencies**



# Dam emergency preparedness

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# Flood Response

### Conservation Authorities

- **Monitor** watershed and weather conditions and operate a **flood forecasting and warning system**
- **Issue** Flood Messages
- **Operate** Conservation Authority dams and flood control structures
- Provide **technical advice** to municipalities
- Maintain communications with municipalities and other agencies

### Municipal Role

- **Notify** appropriate municipal officials, departments and agencies.
- Determine the appropriate response and **deploy municipal resources** to protect life and property.
- If required, **declare a flood emergency** and implement their emergency response plan.
- **Request provincial assistance** if needed

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## Site-Specific Response Plans & Maps

- There is no change to the risk associated with the dam – the dam is regularly inspected and maintained, and remains safe
- Dam Emergency Preparedness Plan (EPP) covers dam-failure scenarios – it has been updated to conform to the new (2016) Technical Guidelines for Dam Emergency Management by the Canadian Dam Association.
- The Site-Specific Flood Response Plan (SSFRP) covers river flooding scenarios that do not involve dam-failure.



## How will I be notified if there is a dam related emergency?

Public notification of flood warnings related to dam emergencies will occur via multiple channels:



1. TRCA's usual Flood Forecasting and Warning message channels (media, e-mail, Twitter, web)
2. Exploring options to leverage the Provincial Alert Ready system (if immediate threat to life)
3. Evacuation implementation from first responders



## Individual flood preparedness

What we can do (Municipality, EMS, TRCA)	What you can do	What's next	What nature can do
Monitor	Call 911	Make a plan	<p>We cannot predict nature but we can prepare and plan.</p> <p>There will be storms, there will be ice jams.</p> <p>We can work together.</p>
Coordinate	Notify neighbours	Know who to call	
React/Address	Report & take pictures	Know your neighbours	
Advise	Stay safe (evacuate as needed)	Call insurance provider	
Educate	Track alerts	Protect your property (advance planning)	

# Flood Messages



High flows, unsafe banks, melting ice or other factors that could be dangerous for recreational

- Flooding is not expected.



Early notice of the potential for flooding based on weather forecasts



Flooding is possible in specific watercourses or municipalities.

- Flood-prone areas should prepare.



Flooding is imminent or already occurring in specific watercourses or municipalities.



A notice that critical high-water levels and waves.

## Flood Messages

To support our municipal partners during storm events, Toronto and Region Conservation Authority (TRCA) runs a **Flood Forecasting and Warning Program** with staff on-call, 24/7. If flooding is possible or about to occur, TRCA issues flood messages to designated individuals within municipalities, local agencies, school boards, the media, and members of the public who self-subscribe.



### Sign Up for Flood Messages

To receive flood messages, you can either:

- Subscribe to email notices at [trca.ca/floodmessages](https://trca.ca/floodmessages)
- Follow us on Twitter at [@TRCA\\_Flood](https://twitter.com/TRCA_Flood)

Flood messages are also posted on TRCA's website at [trca.ca/floodforecasting](https://trca.ca/floodforecasting)

For important Town updates, follow [@townofws](https://twitter.com/townofws)



# Be Prepared

**Know the risks** – Be aware of what types of hazards might affect your home and what kinds of emergencies might impact your family.

**Make a plan** – Having a family emergency plan will save time and make real situations less stressful.

**Get a kit** - In an emergency, you will need some basic supplies and should be prepared to be self-sufficient for 72 hours.

**Talk to your insurance provider** – Overland flood insurance is not a standard offering on most policies, talk to your broker to confirm your coverage and options.

**Protect your home** – There may be steps you can take to make your property less vulnerable from flooding in general, such as installing backflow preventers and keeping valuables on higher floors.

**Stay informed** – Be aware of circumstances that could potentially lead to flooding.



**IS YOUR FAMILY  
PREPARED?**

## Who to call during a flood?

- If you are in danger or there is a threat to life and safety call 911 immediately.
- If you see any potential property damage, call your insurance representative as soon as possible.
- For hydro-related questions, contact Hydro One at 1-800-434-1235.
- To report localized flooding on municipal roads, blocked catch basins or municipal infrastructure, Contact the Town of Whitchurch-Stouffville directly:

Customer Service Number Telephone: 905-640-1900 or 1-855-642-TOWN(8696)

- To report river flooding leave a voicemail on the TRCA floodline at 416-661-6514.

## Resources for you

**A digital handbook with information specific to Stouffville was created to help you understand and prepare for flooding: [trca.ca/flood-risk-stouffville-centre](https://trca.ca/flood-risk-stouffville-centre)**

### Know your risks

If you're not sure whether your home is in a floodplain, use TRCA's map viewer to find out. You can also download a copy of TRCA's flood risk map of the area.

### Be prepared

You can take steps to prepare; we've created custom preparedness tips for homeowners, landlords and renters/condo owners.

### Stay informed

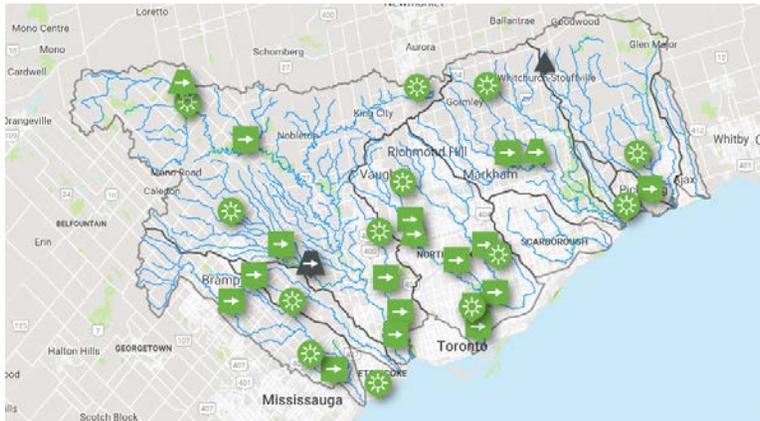
Check your local weather online, or on radio or television before you leave the house. We also have flood specific resources from industry professionals.

## Continued Flood Monitoring

TRCA has a network of real-time river and rain gauges across the GTA to:

- Monitor the water levels in specific stream and behind dams
- Measure how much precipitation has fallen

[beta.trcagauging.ca](http://beta.trcagauging.ca)



### Nearby Stream & rain gauges

#### Stream Gauge:

- HY060 – Stouffville Dam

#### Precipitation Gauge:

- HY060 – Stouffville Dam

# TRCA River Ice Monitoring Program

## WATERSHED CONDITIONS STATEMENT WATER SAFETY

**DATE:** FRIDAY, FEBRUARY 22, 2019  
**TIME:** 3:00 PM  
**ISSUED TO:** SCHOOL BOARDS, MUNICIPALITIES, LOCAL CONSERVATION AUTHORITIES, LOCAL POLICE, EMERGENCY SERVICES AND MEDIA



**Weather Conditions:**

Toronto and Region Conservation advises Environment Canada has forecasted total precipitation as high as 15-20 mm for Saturday evening through to Sunday morning in the Greater Toronto Area. There is also a potential for a quick moving convective storm delivering additional rainfall. Temperatures are expected to reach levels above freezing on Saturday and are expected to remain well above the freezing mark through to Sunday late evening. Damaging winds with gusts as high as 90 to 100 km/hr have been forecasted to develop Sunday afternoon. Given the current snowpack, expected rainfall, increased temperatures, and high winds snowmelt can be expected over the weekend. There is also a potential for ice jam break-up.

Most rivers and streams currently have partial to full ice-cover, therefore the rainfall and snowmelt may potentially lead to ice-jams and localized flooding near culverts, bridge piers, and meanders. Ice-jam conditions are difficult to predict, thus there is some uncertainty regarding the potential for ice-jams and associated flooding. Currently, ice jams and localized flooding have been observed at the Humber River at Broda Dr (Vaughan) and the Lower Humber at Old Mill (Toronto). There is also an ice jam that has been observed in Bolton at King St E and Old King Rd.

**Issues:**

Due to the total precipitation expected on Saturday and Sunday for the majority of the GTA along with snowmelt caused by increasing temperatures, and due to the potential for ice breakup, all rivers within the GTA may experience higher flows and water levels, resulting in potential flooding and hazardous conditions. Flooding may occur in low-lying areas. The combination of elevated and unstable banks, soft



## FLOOD RISK MANAGEMENT

### RIVER ICE CONDITIONS OUTLOOK Friday, March 8, 2019

This communication is intended to inform municipal staff and operational departments of present and forecasted river ice conditions within TRCA rivers and streams, and implications for ice-jams and/or flooding that may result.

Currently, forecasted weather conditions for this weekend and into next week are trending towards above zero degrees for daytime high temperatures starting on Sunday, March 10th. There is also the possibility of some rainfall for Sunday.

The current forecasted conditions indicate a MODERATE potential for ice break-up and ice-jamming. Significant ice cover persists in TRCA watercourses and active ice jams remain in the Humber River at King Street in Bolton, Broda Drive in Vaughan, and in the vicinity of Old Mill in Toronto.

