# JULY 8th STORM

# ADAPTING TO NEW WEATHER REALITIES

## "the future isn't what it used to be"

Presentation to General Committee of Council
City of Mississauga

September 11, 2013

# Presentation Outline

- Our weather is changing
- July 8th storm and its impacts
- Flood risk and vulnerability
- Flood adaption and mitigation



# Conservation Authorities Role

- Watershed management and protection per the Conservation Authorities Act
- Flood forecast and warning
- Floodplain regulation
- Assist municipalities and other first responders during events
- Assist municipalities in evaluating expected changes in community and infrastructure vulnerability resulting from climate change and in developing appropriate flood risk reduction and adaptation plans

QEW & N. Service Road at Cooksville Ck

Mississauga Valley Blvd at Lolita Gardens

Paisley Blvd East

Dixie Rd north of Lakeshore Rd

Photo by Fred Loek, Mississauga News

# Weather Outlook is Changing

- ✓ We are seeing a dramatic increase in the number and intensity of summer storms across the GTA. Most come in from the west
- ✓ Return periods of high intensity summer rainfall events have significantly shortened
- ✓ Predicting the timing, location and areal extent of extreme rainfall is difficult
- ✓ Southern Ontario will continue to be subject to occasional remnant hurricane activity

- ✓ Recent and ongoing investments in real-time gauge networks and flood vulnerability analyses are enhancing our collective ability to identify and evaluate adaptation and mitigation strategies

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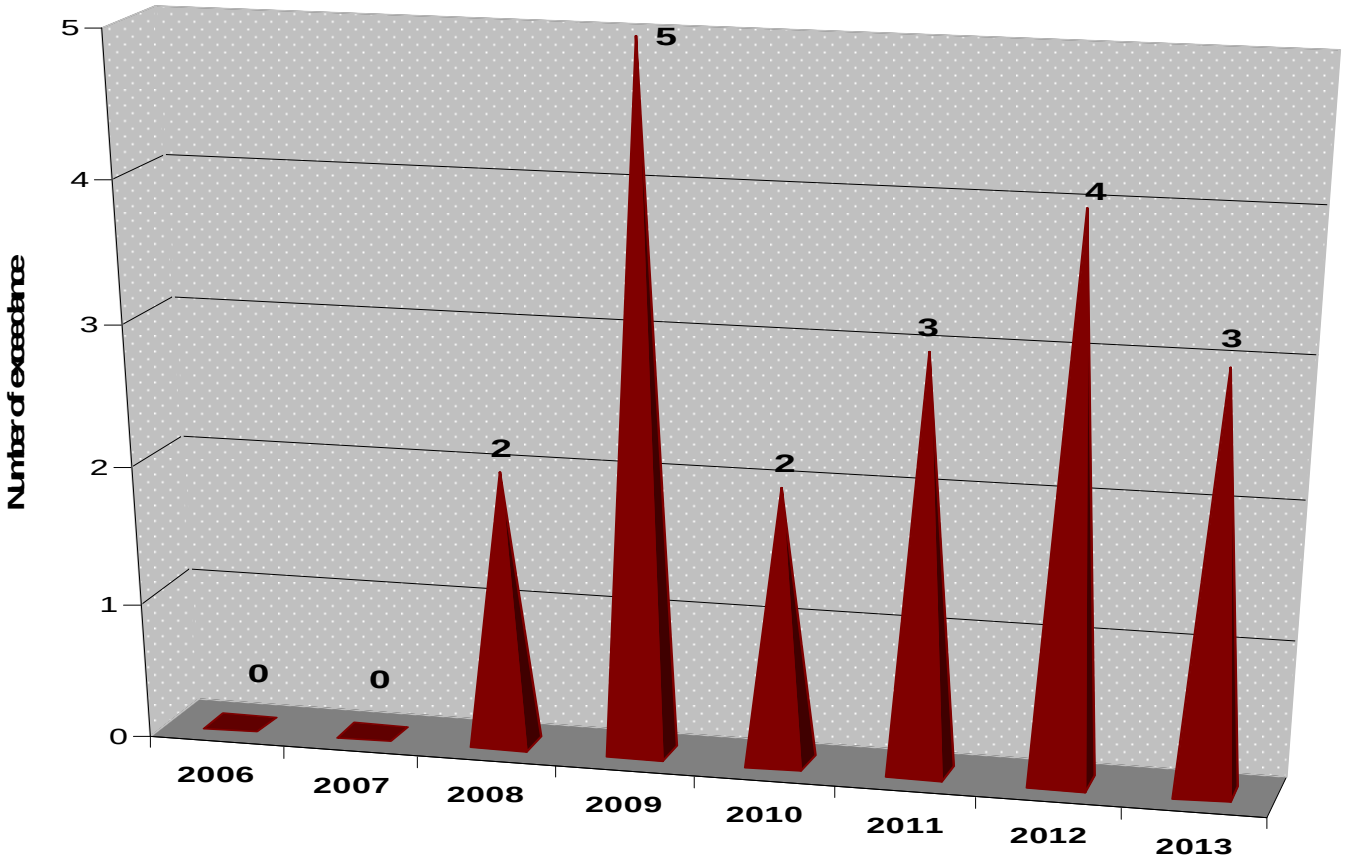
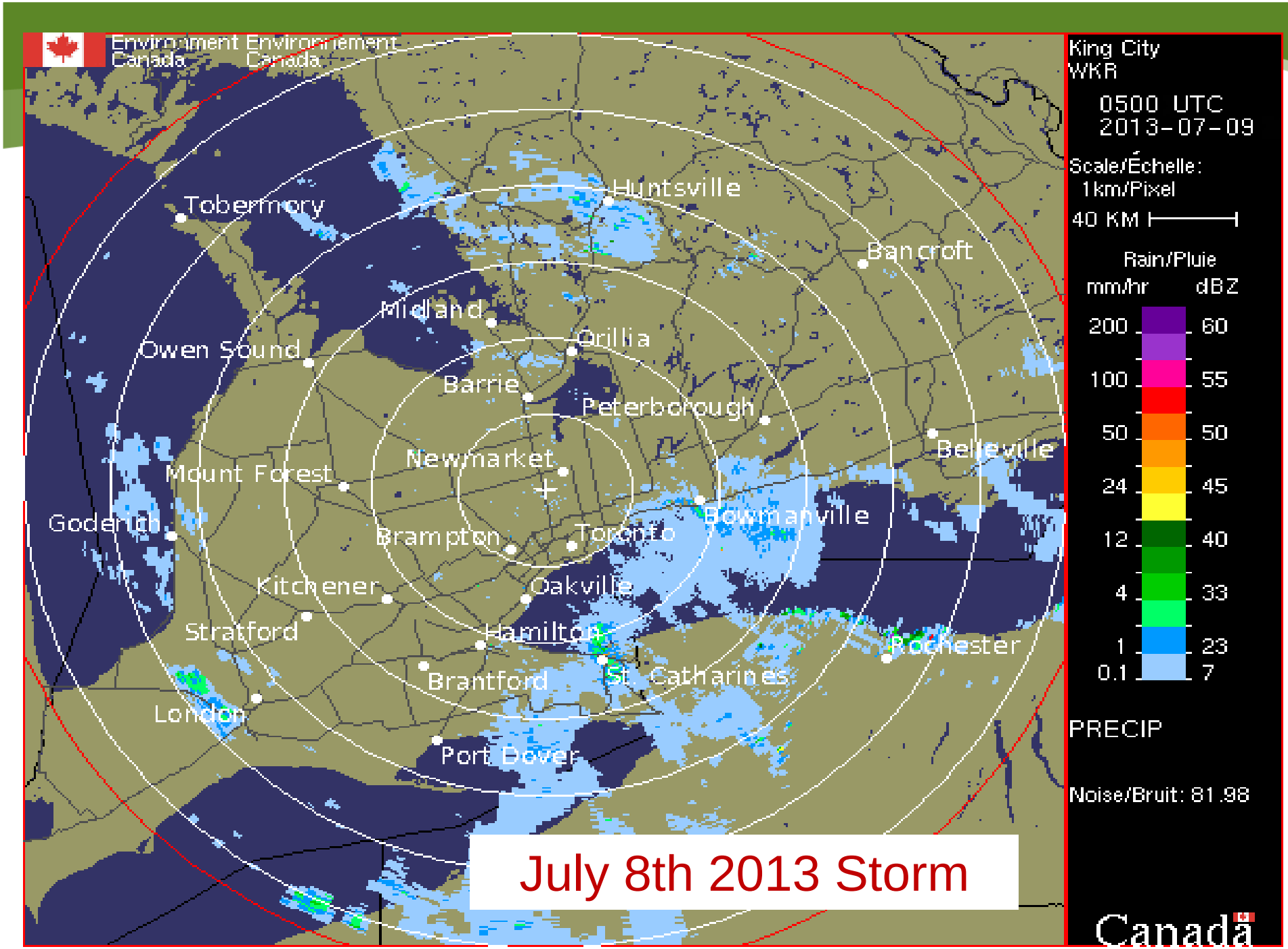
# Recent Extreme Rainfall Events in GTA

| Extreme Rainfall Event | Total Rainfall Amount (mm) | Duration (hr) | 1 Hr Max. Intensity (mm/hr) |
|---|---|---|---|
| Peterborough (Trent U), July 14-15, 2004 | 250.0 | 16.5 | 87.2 |
| Toronto (Finch Ave), August 19, 2005 | 153.4 | 12.5 | 116.6 |
| Hamilton (Stoney Creek), July 25-26, 2009 | 135.5 | 35.0 | 60.8 |
| Mississauga (Cooksville), August 4, 2009 | 68.0 | 1.0 | 68.0 |
| Westcentral GTA (Pearson), July 8, 2013 | 126.0 | 3.0 | 96.0 |
| Hurricane Hazel, 15 October, 1954 | 285.0 | 48.0 | 52.5 |
| 100 Year Design Storm | 118.0 | 24.0 | 50.0 |

# CVC high-water alarm notifications on Cooksville Creek




Environment Canada
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King City
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0500 UTC
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Scale/Échelle:
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200
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50
24
12
4
1
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55
50
45
40
33
23
7
PRECIP
Noise/Bruit: 81.98
Huntsville
Tobermory
Bancroft
Midland
Orillia
Owen Sound
Barrie
Peterborough
Belleville
Newmarket
Mount Forest
Bowmanville
Goderich
Brampton
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Stratford
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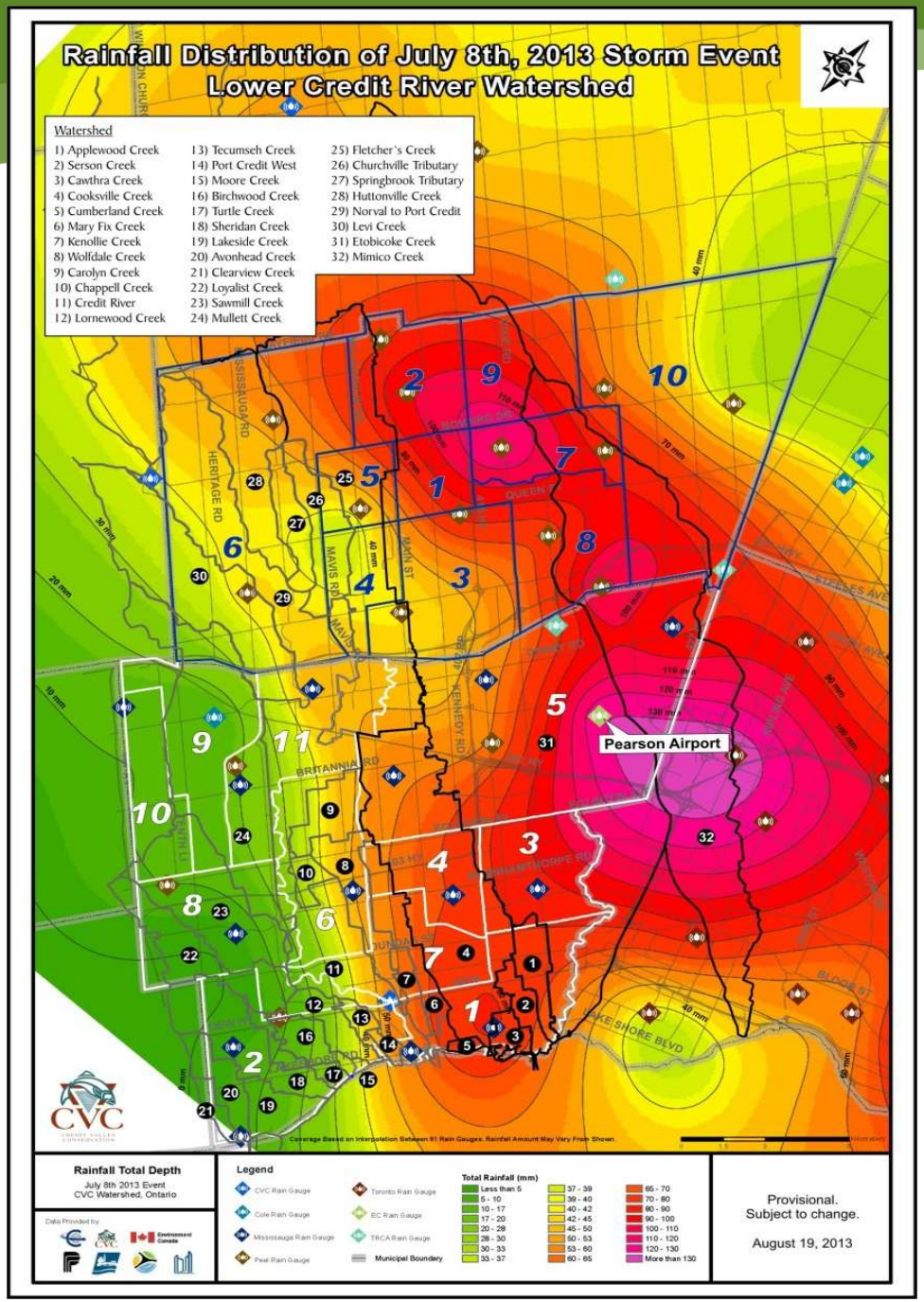
Rochester
Brantford
St. Catharines
London
Port Dover
July 8th 2013 Storm
Canada

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# July 8th Storm

- Extreme rainfall, prolonged power outages, transit delays, flooded highways and streets
- Extensive basement flooding in parts of Mississauga and Toronto
- Bank erosion damages in affected watercourses
- $850+ million in property damages
- Impacts more widespread and severe than Aug 4, 2009 Cooksville flood event

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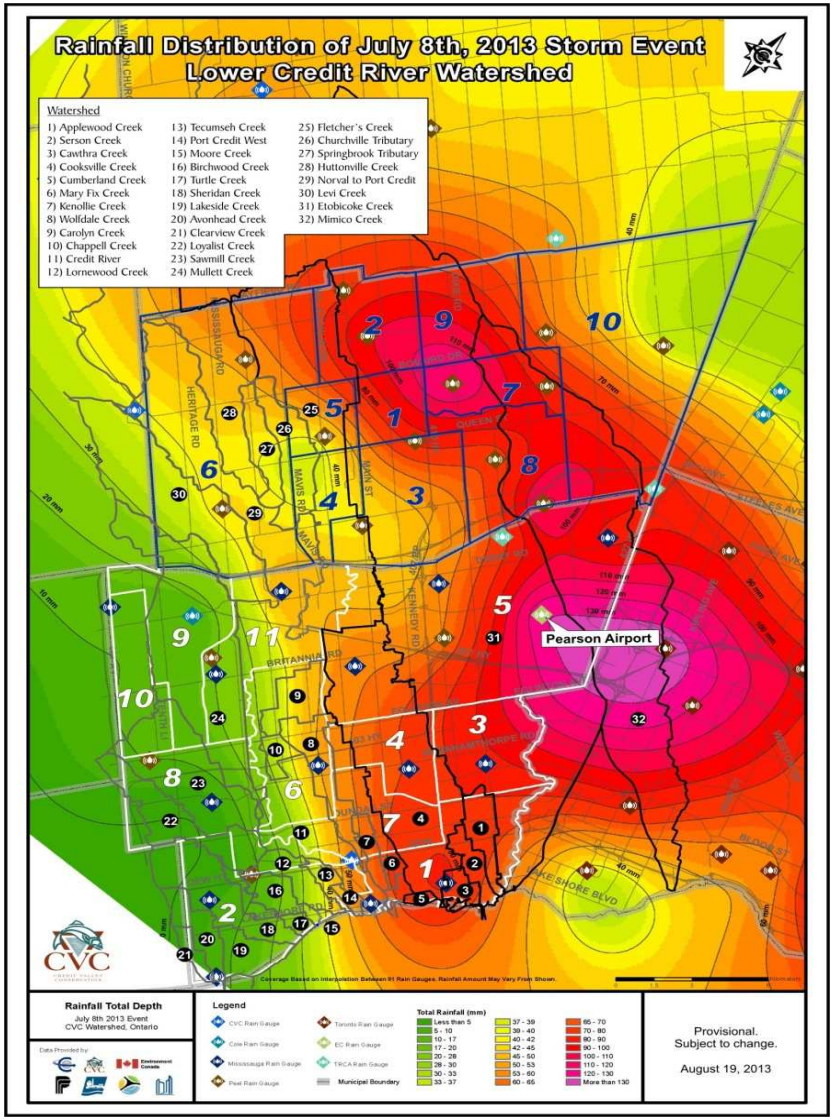
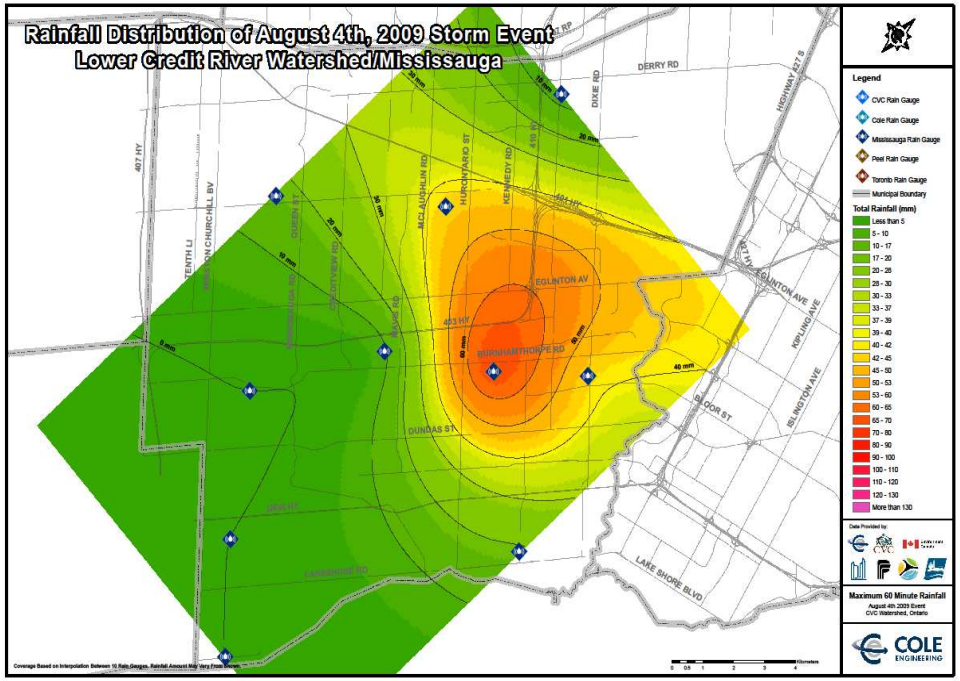
# July 8th Storm




# August 4th 2009 Storm



**“If this strange and severe weather was once hard to imagine, it’s now hard to ignore.”**

**Maclean’s Magazine**

# Forms of Flooding

## Riverine Flooding

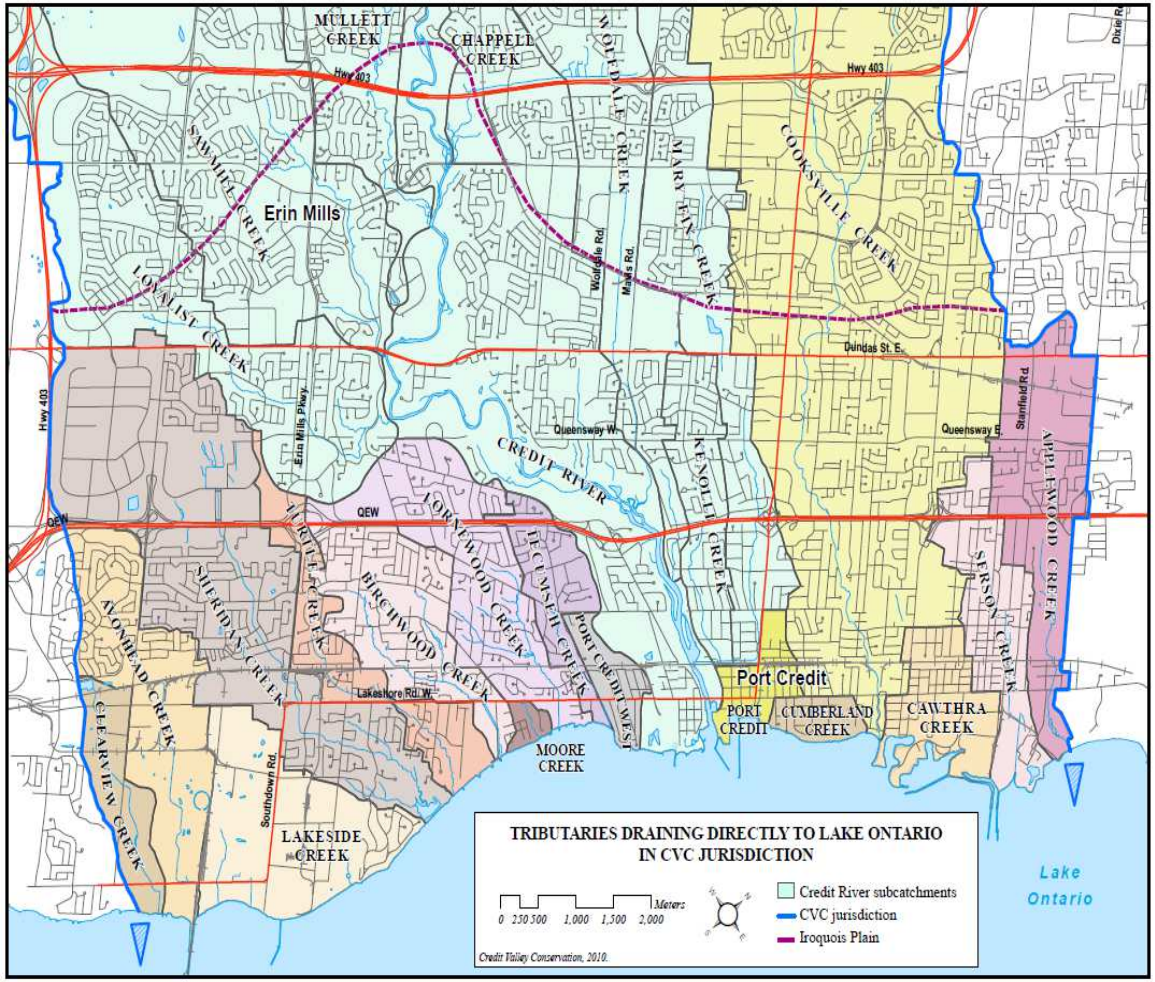
- Structures located in the floodplain are vulnerable to flooding under extreme rain events

## Urban or Basement Flooding

- Structures outside the floodplain are susceptible to basement flooding during a storm event that exceeds the design capacity of the storm and/or sanitary drainage systems
- Inadequate lot grading, high groundwater tables, foundation cracks, and sewer blockages may also contribute to localized basement flooding

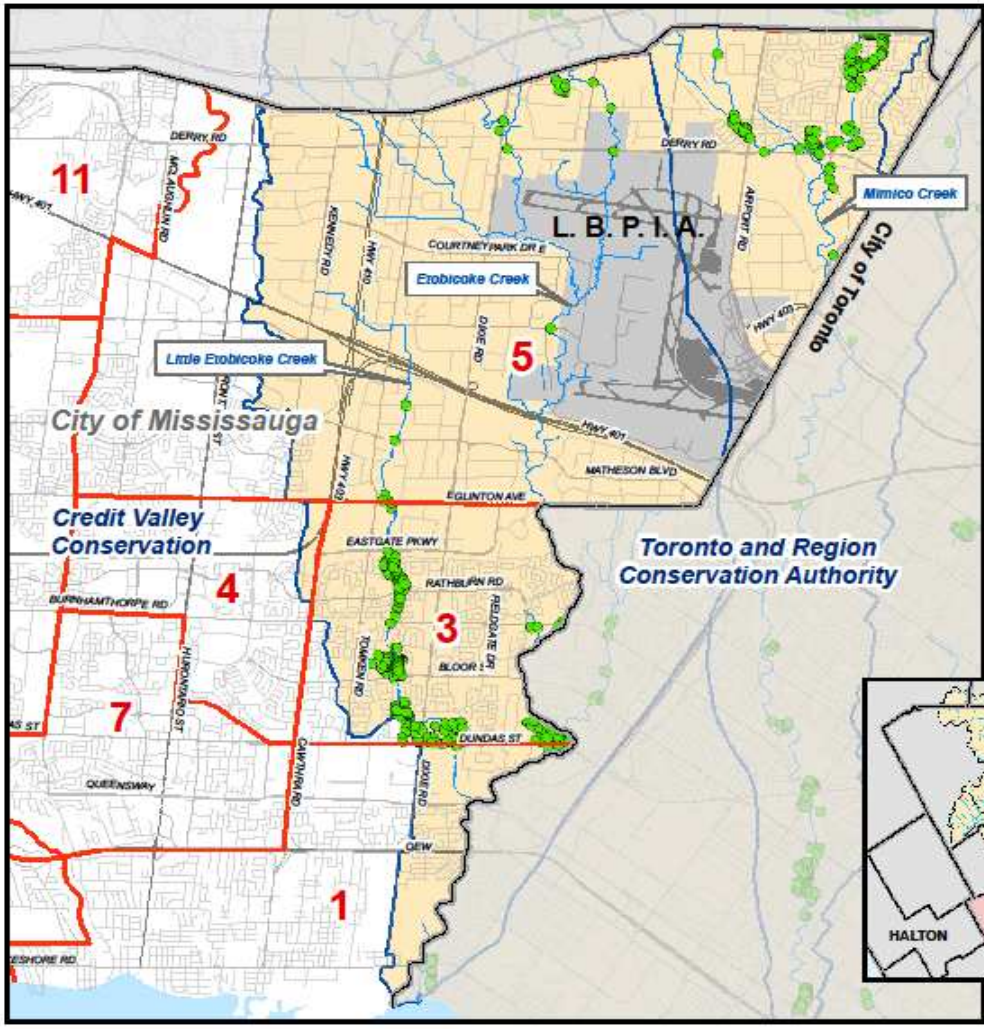
# Floodplain Vulnerability - CVC Jurisdiction

| Watercourse | Structures in Floodplain |
|---|---|
| Cooksville Ck | 309 |
| Serson Ck | 154 |
| Turtle Ck | 79 |
| Applewood Ck | 20 |
| Lornewood Ck | 11 |
| Avonhead Ck | 11 |
| Sheridan Ck | 8 |
| Birchwood Ck | 5 |
| Cawthra Ck | 3 |
| Tecumseh Ck | 2 |
| Lakeside Ck | 0 |
| Clearview Ck | 1 |
| Total | 603 |



# Floodplain Vulnerability - TRCA Jurisdiction

| Watercourse | Structures in Floodplain |
|---|---|
| Etobicoke Ck | |
| Ward 1 | 10 |
| Ward 3 | 275 |
| Ward 5 | 20 |
| Mimico Ck | |
| Ward 5 | 20 |
| Total | 305 |



# Residential Flooding

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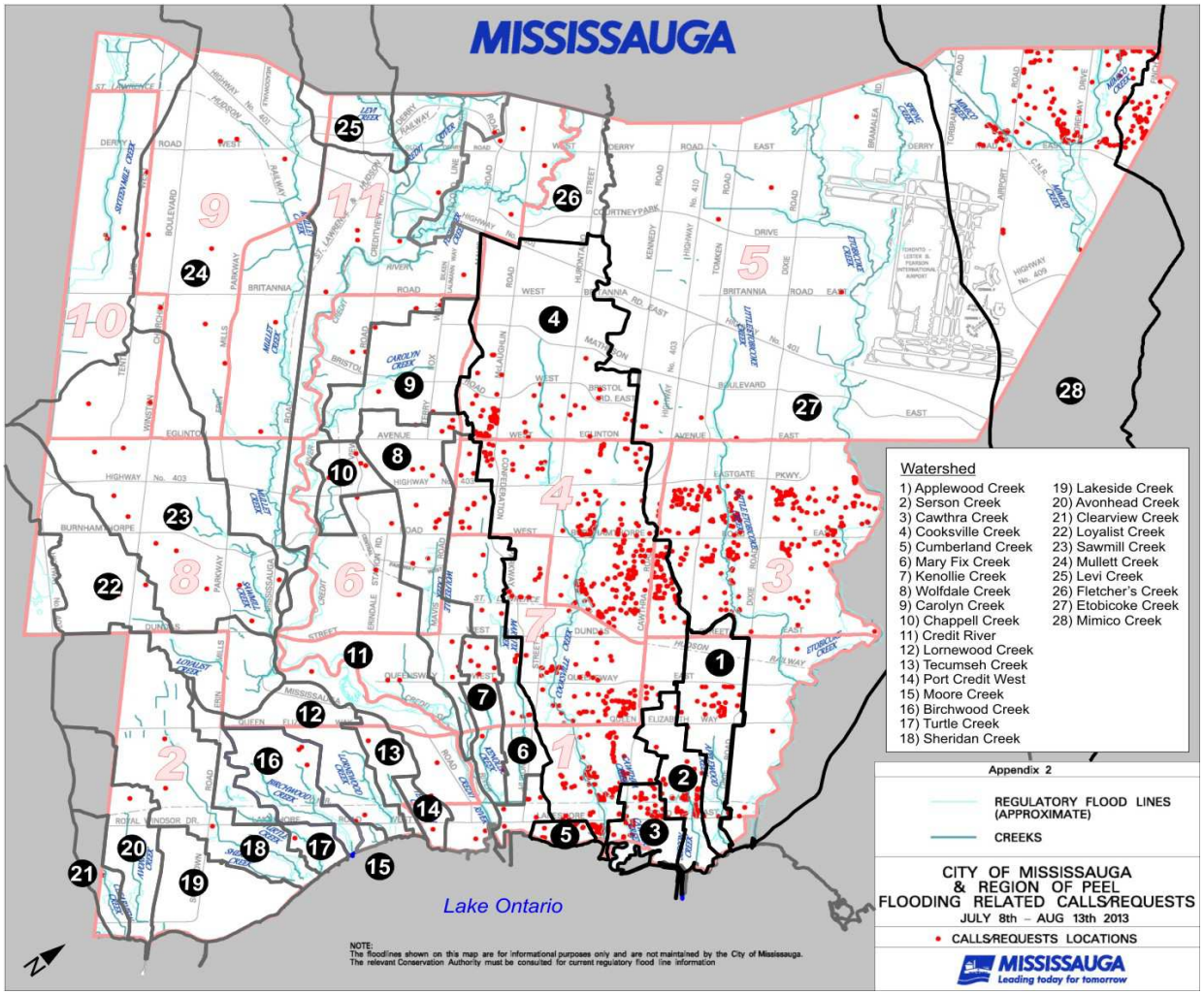
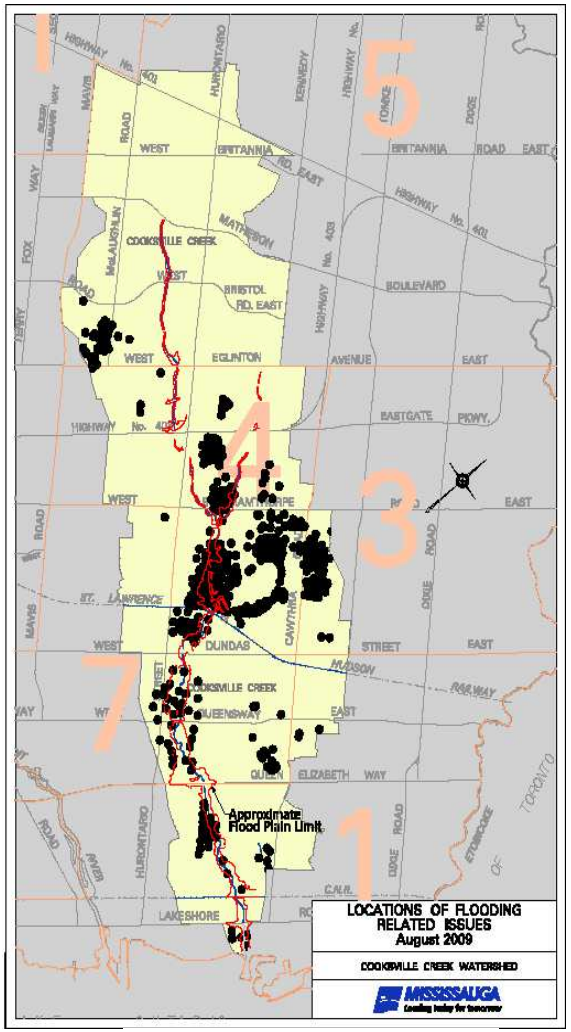



July 8, 2013




August 4, 2009

# Flood Damage Reduction – What can the property owner do?

- ✓ Limit investment in basement furnishings
- ✓ Maintain ongoing awareness of your insurance coverage
- ✓ Implement or enhance flood-proofing, e.g. install backwater valves, sump pumps, seal foundation cracks and openings …
- ✓ Disconnect downspouts and ensure proper lot grading
- ✓ Implement runoff controls e.g. rain gardens, soak-aways, swales

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# QUESTIONS