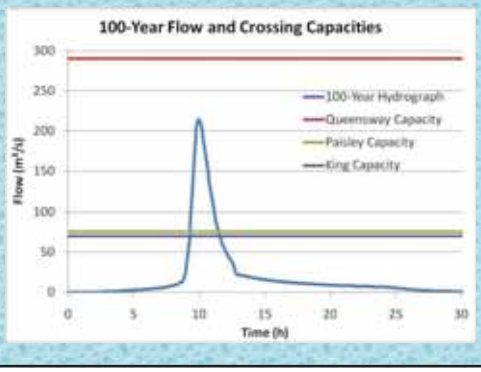
Cooksville Creek Flood Evaluation Study

Task Force Meeting

Problem Identification

- 304 buildings may flood during the Regulatory storm
- Floodplain mapping completed 1975
  - Development pre-1975 did not consider floodplain (generally south of Hwy 403)
  - Development post-1975 was outside the Regulatory floodplain (generally north of Hwy 403)
- 94% of the watershed is developed

Hydrograph – 100-Year Storm



100-Year Flows

Location	Flow (cms)
Matheson Ave. West	80
Bristol Road West	95
Eglinton Ave. West	95
Highway 403	115
Mississauga Valley Road	180
Central Parkway East	195
CPR	210
Dundas Street East	210
Queensway Ave. East	210
QEW	210
Lakeshore Ave.	210
East Branch	
Eglinton Ave. East	40
Highway 403	60

Flood Remediation Measures

- Channel and watercourse crossing upgrades
- Storage
- Source and conveyance controls

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Long List of Traditional Alternatives

- Watercourse capacity enlargement
- Crossing capacity enlargement
- Dykes/berms
- Reservoirs
- Flood proofing
- Land acquisitions

Additional Alternatives

- Storage in upstream locations
- In-channel storage
- Source control measures
- Conveyance control measures
- Site specific measures
- Tunnel
- Specialty solutions
- Approach for new development

Storage in Upstream Locations

- 2009 storm
  - 68 mm of rain
  - 1.57 million m^3 of water over Cooksville Creek subwatershed
- Assuming 10% storage, need 32 football fields with water depths of 1 m
- Storage opportunities are present north of Highway 403

Examples of Storage Facilities

Terraview Park

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PARK STORAGE – TOWN OF AURORA

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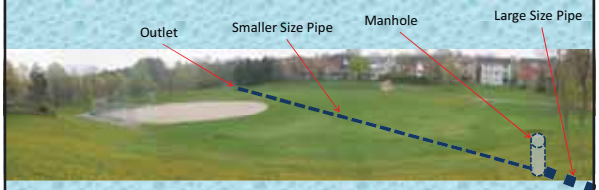


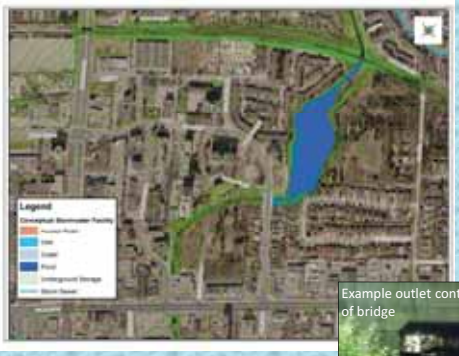
PARK STORAGE – TOWN OF AURORA

PARK STORAGE – CITY OF HAMILTON

In-Channel Storage

- Mississauga Valley Boulevard
- Kirwin Avenue

Mississauga Valley Boulevard - storage



Example outlet control – upstream end of bridge

Kirwin Avenue - storage

Source Control

- Grass Swales or Vegetated Filter Strip
- Bioretention
- Stormwater Planters
- Cisterns and Rainwater Harvesting
- Soakaways
- Rain Gardens and Bioretention
- Rain Barrels
- Permeable Driveways and Permeable Paving

MEASURES THAT HOMEOWNERS CAN UNDERTAKE – SOURCE CONTROLS

ROOF AREA

Representative Homes in Study Area

Downspout Disconnection

Rain Barrel

Soak-away Pit

ROOF AREA

For August 2009 storm, each downspout contributed about 3.5 m^3 of runoff

Construction of bioretention facility could store up to half of the runoff for the August 2009 storm

DRIVEWAYS

Representative Homes in Study Area

Home with Permeable Paver

Representative Home with Interlocking Stone

Driveway with Permeable Paver in Study Area

BACKYARDS

Traditional Backyard

Backyard Using Permeable Materials

Regraded Backyard with Rain Gardens

Rain Garden

FRONT YARD

Representative Front Yard in Study Area

Example of Home Incorporating Source Control Measures

Conveyance Control

- Bioretention

- Perforated Pipe System

MEASURES THE CITY CAN UNDERTAKE ON ROAD RIGHT OF WAYS – CONVEYANCE MEASURES

Typical Roadway in Study Area

Illustration of Road and Driveway

CONVEYANCE CONTROL PROGRAM FOR EXISTING URBAN AREAS

Bioinfiltration Unit in the Road Boulevard

CONVEYANCE CONTROL PROGRAM FOR EXISTING URBAN AREAS

Bioinfiltration Unit in the Road

CONVEYANCE CONTROL PROGRAM FOR EXISTING URBAN AREAS

CONVEYANCE CONTROL PROGRAM FOR EXISTING URBAN AREAS

Site Specific Measures

Paisley Boulevard East – berm and channel relocation

TUNNEL

APPROACH FOR NEW DEVELOPMENT

Stringent Stormwater Quantity Control Requirements:

- 100-year post-development flows controlled to 2-year pre-development levels

Green Development Standards:

- Applicable to high-density development
- LEED-NC Silver is benchmark
- Incorporate Low-Impact Development Techniques such as:

  bio-retention, rainwater harvesting, permeable pavements, grass swales, green roofs

QUESTIONS?