



Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Public Information Centre #2

April 4th, 2018

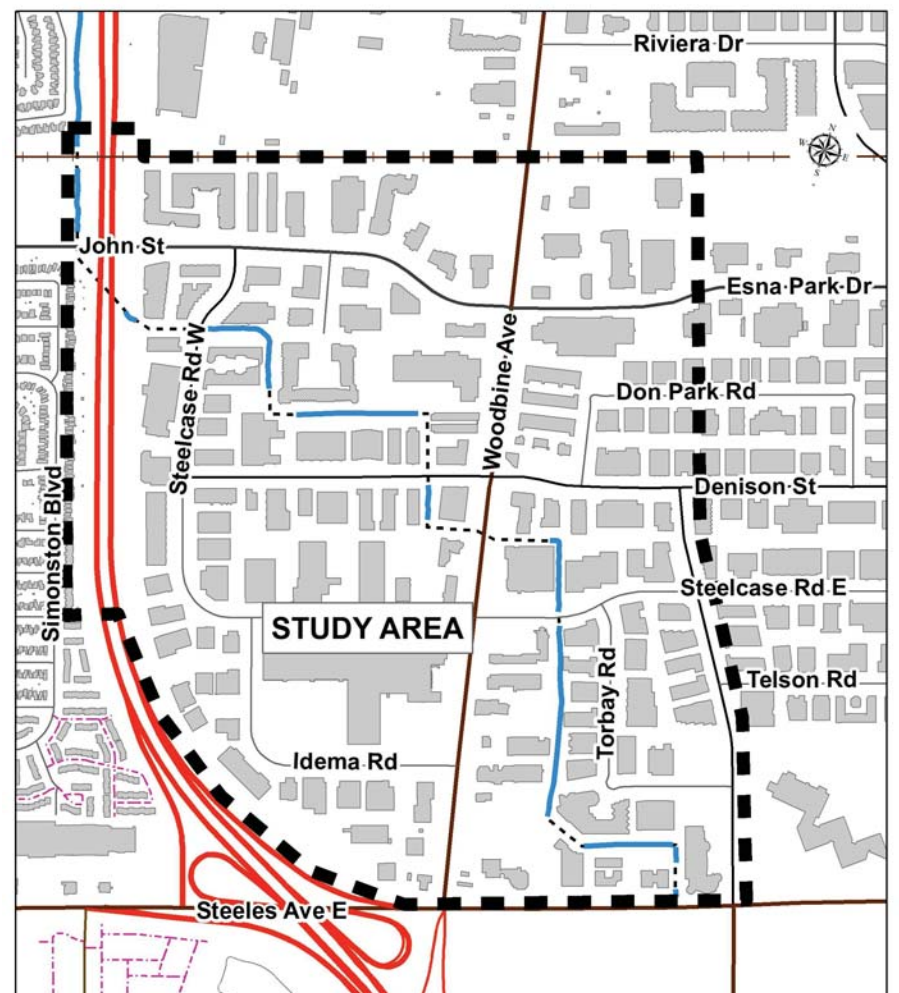
3:00 pm to 7:00 pm

Please sign in on the sheet provided. Then feel free to walk around, view the displays and fill out a comment sheet.

The purpose of this Public Information Centre (PIC) is to introduce you to this project, inform you of our progress to date, and obtain your comments.

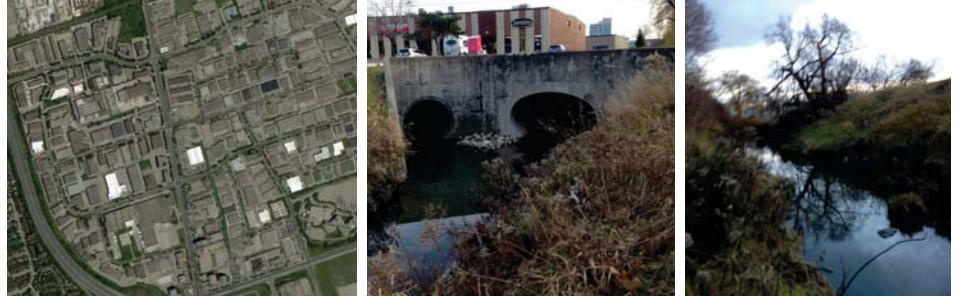
If you have any questions, our representatives will be pleased to discuss the project with you.

We are interested in receiving any comments that you may have about the project. Should you have any questions, comments, require further information or wish to be added to the project mailing list, please contact either Steve or Rob.



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Study Purpose

The Don Mills Channel through the study area was realigned and confined to a relatively narrow channel corridor through historic urban development. Significant portions of the Don Mills Channel were also piped through some of the older development sites in the study area

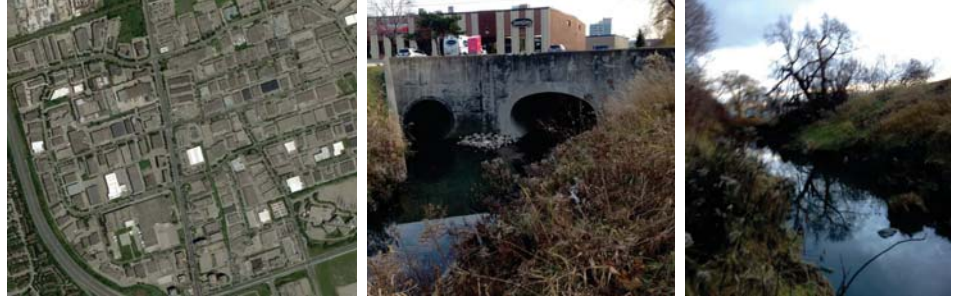


The current system of open channels and culverts does not have adequate capacity to convey storm runoff from large storm events. Businesses surrounding the Don Mills Channel have been flooded numerous times since the lands developed in the 1970's, and major roads in the study area such as Woodbine Avenue can be impassable during severe storms.



The Don Mills Channel Flood Reduction Study has been initiated to:

- Identify and understand the key causes of flooding through the study area
- Develop a range of alternative solutions to reduce flooding and flood damages from the Don Mills Channel
- Recommend the preferred solution or suite of solutions to best reduce flooding and flood damages
- Establish the funding, approvals and other activities needed for implementation of the recommended works.



Flood Management History

1972-1984

- The area develops and Highway 404 is constructed (1978)
- Several properties enclose portions of the channel and expand parking areas

1985-1989

- A storm on August 26, 1985 causes flooding in the area
- The City completes studies to assess the capacity of the channel
- Stormwater management policies are instituted for new development and re-development in the drainage area
- Culvert enclosures are no longer permitted

2005-2009

- The storm of August 19, 2005 causes significant damages
- The City commissions a study to identify mitigation alternatives and consult with the public
- The study projected costs of \$50M to provide 5 year level of service, >\$100M for 100 year solution estimated;
- Channel maintenance activities were expanded to include annual vegetation removal from the channel

2009-2015

- The City consults with residents and businesses and implements a stormwater fee to fund flood mitigation projects
- Storms in July and August 2014 cause flooding
- Collection of the residential stormwater fee commences in 2015, non-residential in 2016

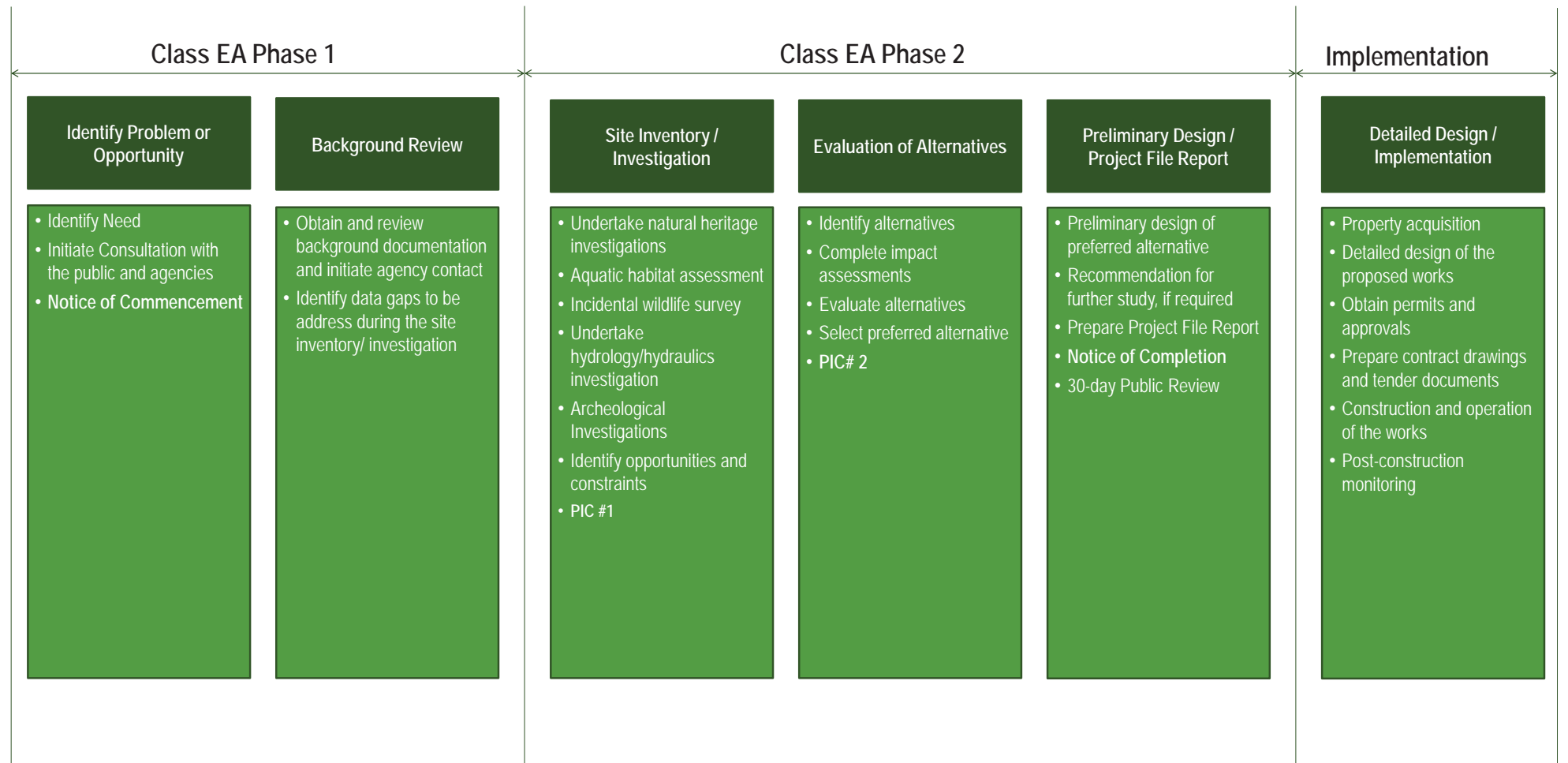
2015-Present

- In 2016, the City initiates the Don Mills Channel Flood Reduction EA study
- TMIG is hired as a project consultant to complete the Environmental Assessment Study to identify and evaluate flood mitigation alternatives
- Private property owners institute flood proofing measures

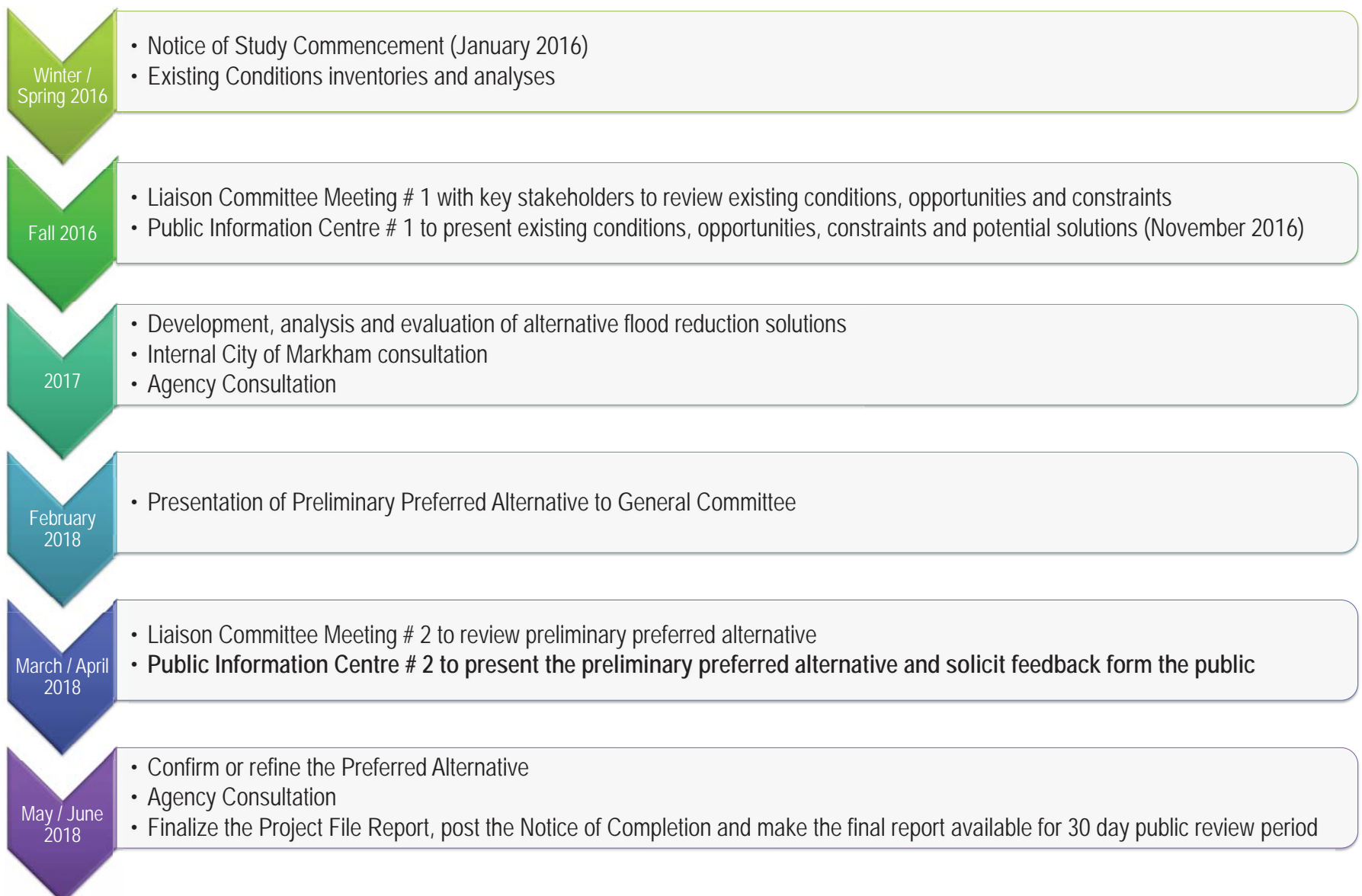


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Municipal Class Environmental Assessment (EA) Process



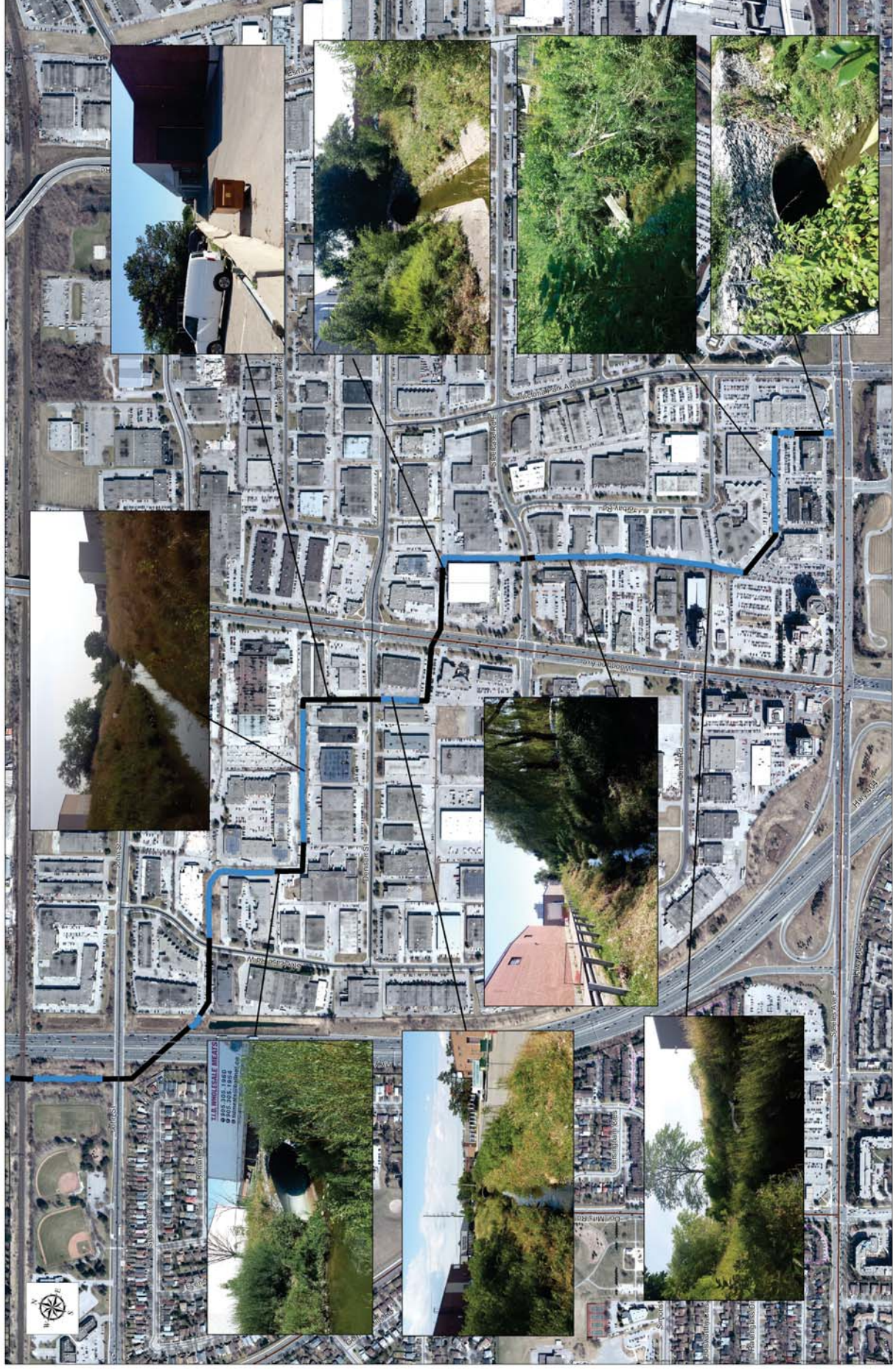
Project Schedule





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Existing Conditions

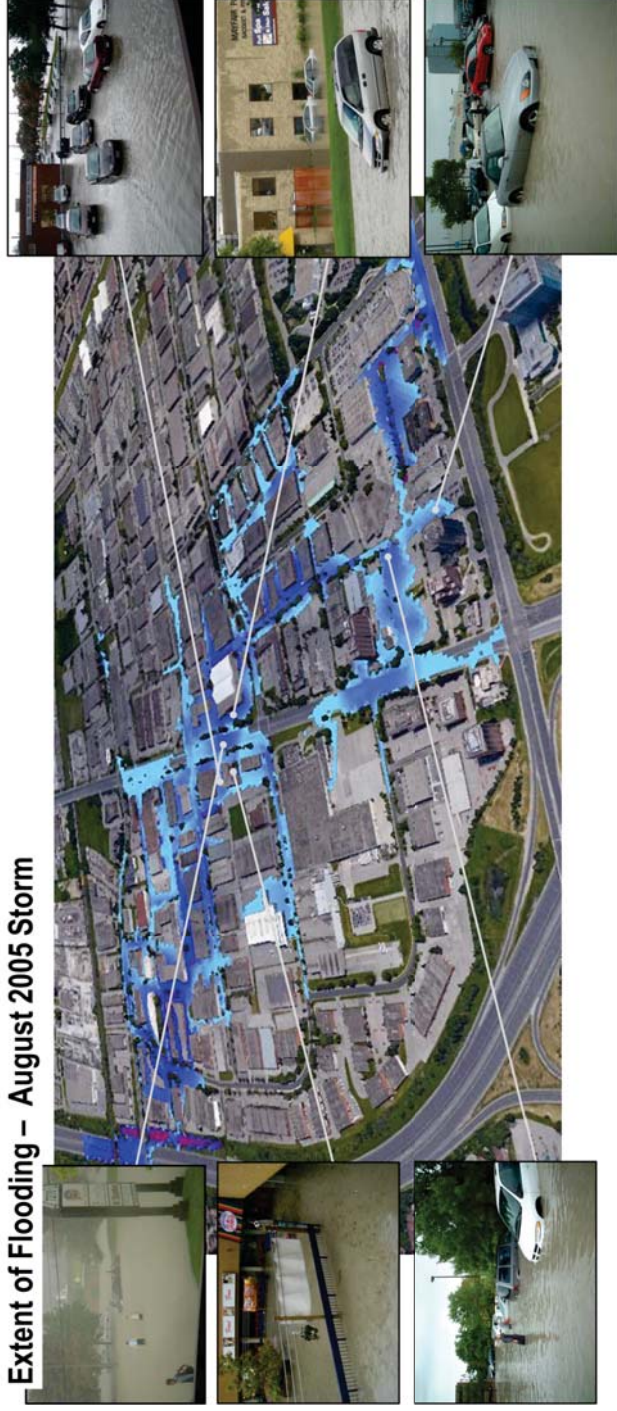




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Predicted and Observed Flooding from Previous Severe Storm Events

Extent of Flooding – August 2005 Storm



Depth and extent of flooding predicted by detailed hydrologic model developed for this study

Extent of Flooding – July 2014 Storm



Extent of Flooding – August 2014 Storm





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Alternative Solution: Enhanced Channel Maintenance

Clear all woody vegetation from the channel and maintain the system as a manicured grass-lined channel



Alternative Solution: Acquisition of Flood Prone Properties

Acquire all properties at risk of flooding during a 5 year return period storm event



Alternative Solution: Central Municipal Flood Storage

Acquire one or more properties adjacent the Don Mills Channel to construct a single large flood storage facility.

The facility would need to be located in a low-lying area upstream of the most flood vulnerable areas



Alternative Solution: Channel Widening / Improvements

Acquire properties adjacent the existing open and piped sections and construct a 60 m wide natural channel corridor. The culverts at Steelcase Road West, Denison Street, Woodbine Avenue and Steelcase Road East would also be replaced with much larger structures



Alternative Solution: Flood Proofing and Education

Implement physical works where possible to prevent water from entering flood prone buildings

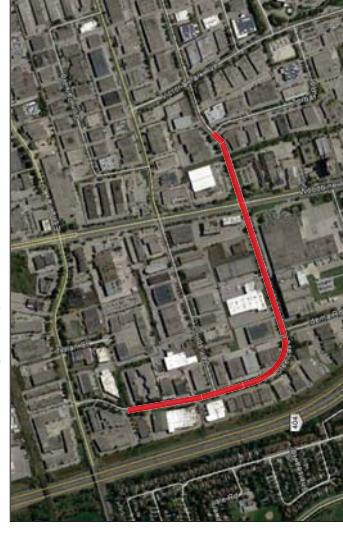
Educate business owners to minimize damages during flood events (i.e. storing materials and finished goods off the floor, moving equipment and vehicles out of the flood plain ahead of severe storm events)



Alternative Solution: Flow Diversion

Intercept high flows in the Don Mills Channel and safely convey them around the most flood prone areas before returning flows to the system

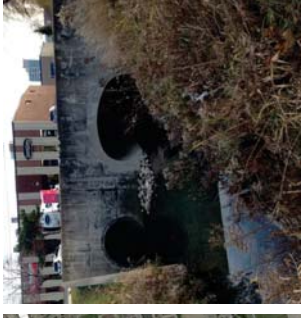
A 3.0 m x 1.8 m concrete box sewer could be installed on Steelcase Road to intercept flows at Steelcase Road East and discharge upstream of Highway 404



Alternative Solution: Central Municipal Flood Storage, Flood Proofing & Education and Culvert Upgrades

A combination involving the centralized municipal flood storage facility, replacing the culverts at municipal road crossings and flood proofing and education.





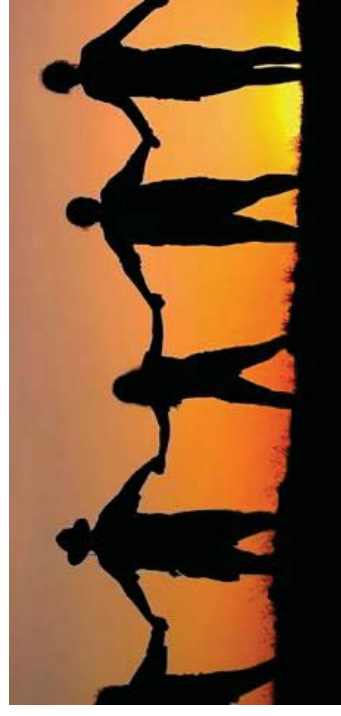
Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Evaluation of Alternatives



Natural Environment

- Potential impact on terrestrial system (vegetation, trees and wildlife)
- Potential impact on aquatic systems (aquatic life, surface water and groundwater)
- Potential to improve natural environmental conditions



Social Environment

- Disruption to existing community during construction (business disturbance, traffic, noise)
- Impacts to community in the long term (emergency access, land acquisition, aesthetics)
- Ability to reduce risks to public safety
- Impacts to Archaeological resources and First Nations
- Timeliness of Implementation



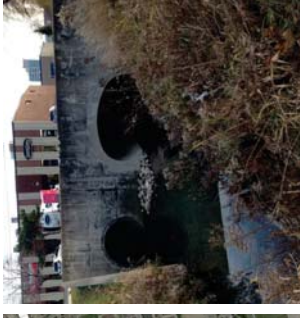
Technical

- Effectiveness of solution in reducing flood risk (based on 5 year level of service target)
- Impacts on upstream and downstream landowners
- Long term operations and maintenance
- Constructability
- Ability to meet regulatory requirements



Economic

- Estimated costs to implement project
- Estimated costs of long term operations and maintenance
- Estimated reduction in flood damages



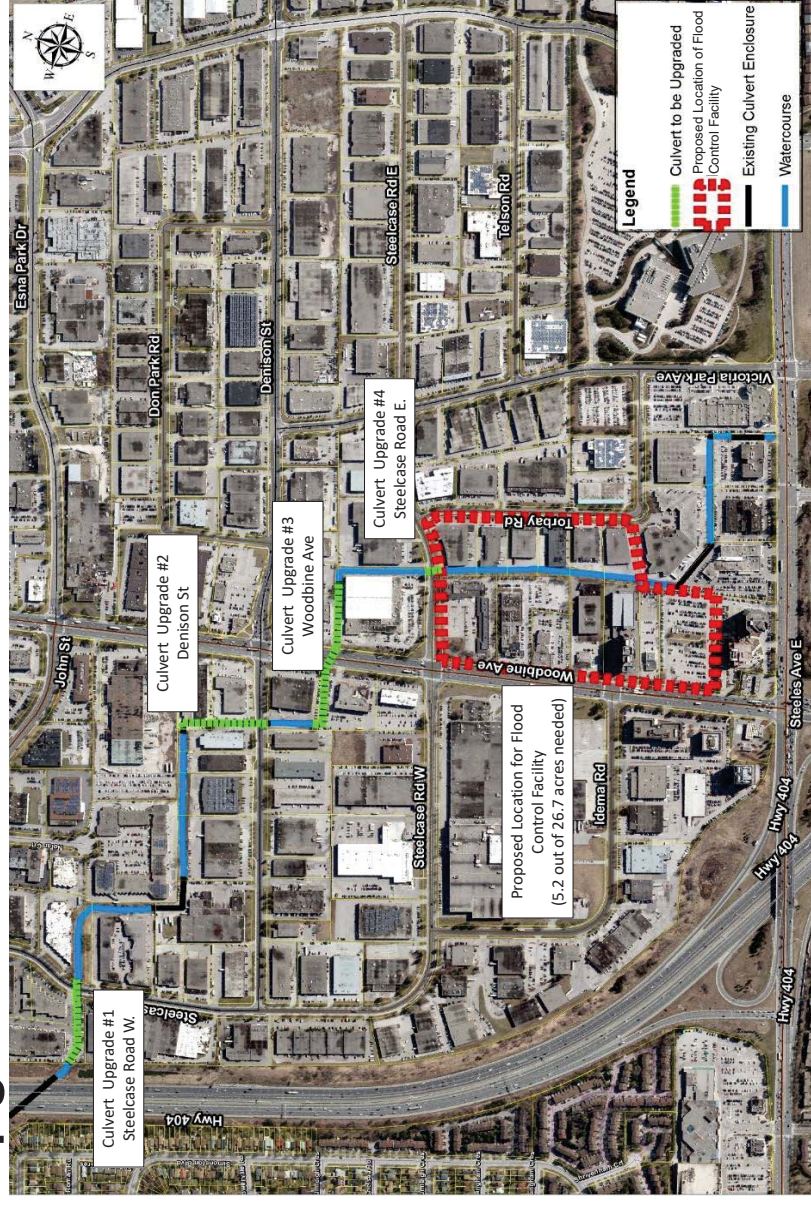
Don Mills Channel Flood Reduction Municipal Class Environmental Assessment Evaluation of Alternatives

Alternative	Natural Environment		Social/Cultural Environment		Technical Environment		Overall		Financial Environment
	Impacts	Benefits	Impacts	Benefits	Challenges	Performance	Cumulative Impact	Cumulative Benefit	
Status Quo	● No impacts, as no works are proposed	○ No benefits, as no works are proposed	● No impacts, as no works are proposed	○ No benefits, as no works are proposed	● No challenges, as no works are proposed	○ Negligible reduction in flooding due to improved stormwater management through future redevelopment	● NOT RECOMMENDED	○ Does not reduce flooding or flood damages from Don Mills Channel	No capital costs, as no works are proposed Negligible reduction in flood damages
Enhanced Channel Maintenance	● Loss of woody vegetation and associated terrestrial habitat along the channel	○ No benefit to the natural environment	● Diminished aesthetics due to vegetation removal at rear of properties backing onto channel	○ No benefit to social or cultural environments	● Difficulties obtaining approvals for tree removals, challenges to access the channel for removals	○ Negligible reduction in flooding	● NOT RECOMMENDED	○ Does not reduce flooding or flood damages from Don Mills Channel	Very Low cost No reduction in flood damages
Channel Widening	● Temporary impacts to vegetation and aquatic habitat during construction	● The widened channel will increase and improve aquatic and terrestrial habitat through the study area	● Impacts to owners of the acquired properties and their tenants, loss of businesses and employment	● Improved recreational opportunities if a trail system is integrated into the widened channel corridor	○ Challenges to acquire up to 24 properties, difficulties in managing storm flows during channel construction	● The widened channel corridor could largely contain the flow for up to the 100 year storm event	● NOT RECOMMENDED	● Significant challenges and costs to acquire up to 24 properties and construct the widened channel, and significant impacts to the business community	Very High cost, loss of tax revenue from acquired properties Elimination of flood damages for up to the 100 year storm
Acquisition of Flood Prone Properties	● No impacts, as all works would be on existing developed sites	○ Increased green space within the area if properties are naturalized.	● Impacts to owners of the acquired properties and their tenants, loss of businesses and employment	● Improved recreational opportunities to integrate into restoration of acquired properties	● Challenges to acquire up to 18 properties	● Eliminates flood damages associated with 2 and 5 year storm events, but does not reduce flood levels	● NOT RECOMMENDED	● Does not reduce flooding, significant challenges and costs to acquire up to 18 properties	High cost, loss of tax revenue from acquired properties Elimination of flood damages for up to the 5 year storm
Underground Storage	● No impacts, as all works would be on existing developed sites	● Potentially reduced erosion and improved baseflow and water quality if the storage facilities could be designed to infiltrate the captured storm runoff	● Loss of business during construction, limitations on future redevelopment or expansion for properties with underground storage	○ No benefit to social or cultural environments	● Difficulties securing agreements for underground storage on private property, challenges to direct external storm runoff to storage facilities	● There would be no flood damages for up to the 5 year storm	● NOT RECOMMENDED	● Implementation of this alternative would be limited by the significant challenges to identify and secure agreements with appropriately located properties	Medium / High construction cost, High lifecycle maintenance / replacement cost Elimination of flood damages for up to the 5 year storm
Central Municipal Flood Control Storage	● Temporary impacts to the natural environment during construction	● The facility could potentially enhance terrestrial habitat in the study area and improve water quality	● Impacts to owners of the acquired properties and their tenants, loss of businesses and employment	● Improved recreational opportunities if a trail or other amenities are integrated into flood storage facility	● Challenges to acquire 5 acres of property for facility, challenges to design the flow control structure to prevent upstream flood increases and allow fish passage	○ Reduction in flooding and flood damages for the 2 year and 5 year storms	● RECOMMENDED	● Reduces flooding and flood damages and requires limited property for implementation	Low / Medium cost Damages reduced to \$0.9 Million per year
Flow Diversion	● Temporary impacts to aquatic habitat during construction of the inlet and outlet	○ No benefit to the natural environment	● Disruptions to traffic and businesses on Steelcase Avenue during construction	○ No benefit to social or cultural environments	● Increases in the frequency and severity of flooding on Highway 404, potential utility conflicts	○ Reduction in flooding and flood damages for the 2 year and 5 year storms	● NOT RECOMMENDED	● This alternative would have unacceptable impacts on flooding at Highway 404	Low / Medium construction and lifecycle maintenance / replacement cost
Flood Proofing and Education	● No impacts, as all works would be on existing developed sites	○ No benefit to the natural environment	● Temporary impacts to businesses during construction of flood proofing measures	○ No benefit to social or cultural environments	● Challenges to convince property owners to install and maintain flood proofing measures, limitations due to building or site configurations	● Reduction in flood damages to protected buildings, but no reduction in flooding on roadways and parking areas	● RECOMMENDED	● Not recommended as a standalone solution due to implementation challenges, but recommended to complement other flood reduction solutions	Low cost Damages reduced to \$0.9 Million per year if 5 year protection is achieved at all flood prone buildings
Combined Alternative – Central Municipal Flood Storage, Culvert Upgrades and Education Program	● Temporary impacts to the natural environment during construction of the storage facility and culvert replacements	● Potential use of the flood storage facility as terrestrial habitat, improved water quality and improved fish passage through replacement culverts	● Impacts to owners of the acquired properties, temporary impacts to businesses for flood protection works, temporary road closures for culvert replacements	● Improved recreational opportunities if a trail or other amenities are integrated into flood storage facility	● Challenges to acquire properties for flood storage facility, implement and maintain flood protection works, and replace culvert extensions on private property	● Significantly reduces flood levels and eliminates flood damages for up to the 5 year storm.	● PREFERRED	● A achieves desired minimum flood protection for the 5 year storm, requires limited property acquisition and can be reasonably implemented	Medium cost Damages reduced to \$0.2 Million per year



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Preferred Alternative: Central Municipal Flood Storage, Flood Proofing & Education and Culvert Upgrades

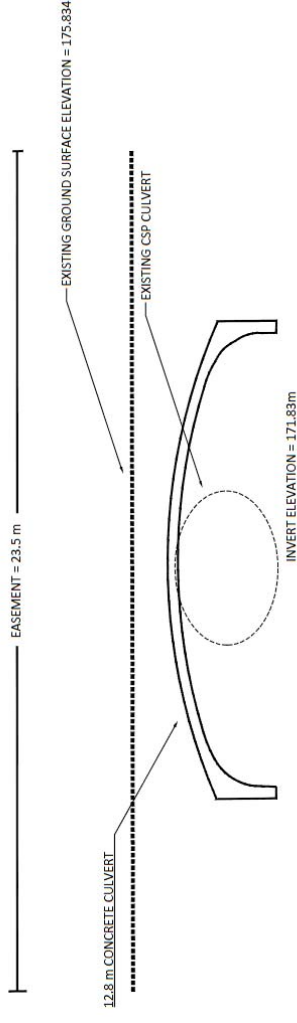
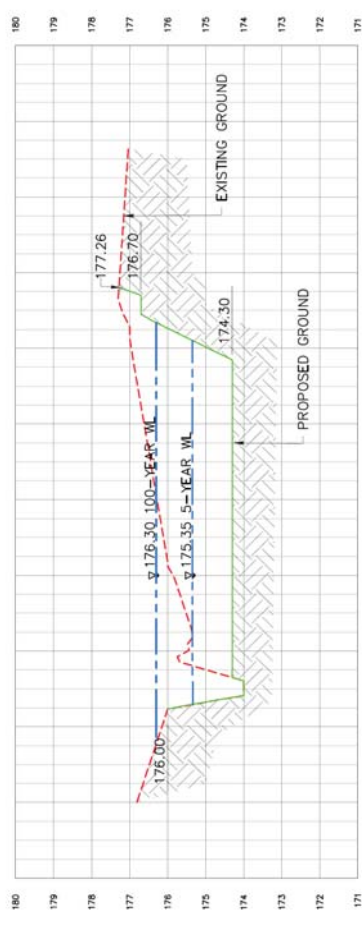


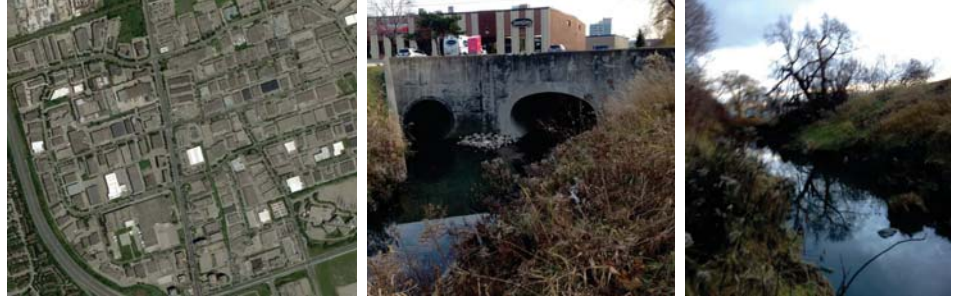
Advantages

- There would be no flood damages for up to a 5 year storm event
- Property acquisition for the flood storage facility would remove existing flood prone properties, reducing flood risk and damages during future flood events
- The facility could incorporate water quality treatment, wildlife habitat and recreation opportunities or facilitate future development
- Can be reasonably implemented in a relatively short period of time
- Expandable to provide protection on events greater than 5 year storm in the longer term
- Medium cost

Disadvantages

- Requires acquisition of properties
- Requires road closures and agreements with abutting properties for culvert replacements
- Challenges to implement and maintain flood proofing works on all private property





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Next Steps

1. Review public feedback and refine or confirm the preferred solution
2. Agency Consultation
3. Issue the Notice of Study Completion (late spring / early summer 2018)
4. Project File Report available for public review for 30 day period
5. Implementation of recommended works as part of the City's overall Flood Control Program
 - a) Property acquisition (2018-2021)
 - b) Flood proofing / education program development and implementation (2019 – 2029)
 - c) Detailed design and construction of central municipal flood storage facility (2021-2022)
 - d) Detailed design and construction of roadway culverts (2026 - 2030)



Thank You For Attending!