Collaborating to protect municipal infrastructure and restore Redside Dace habitat

Presented by
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• TRCA’s Erosion Risk Management program

• Patterson Creek – Project Introduction

• Patterson Creek – Site Overview

• Collaboration Opportunities

• Construction Challenges
30+ years monitoring & mitigating erosion hazards on public and private lands

- 1000+ erosion control structures monitored along stream corridors and the Lake Ontario Waterfront

Proficient in planning, design, and construction of in-stream and steep slope stabilization works
Infrastructure Hazard Monitoring Program formed in 2011 as a partnership between the Region’s Infrastructure Asset Management Branch and TRCA’s Engineering Projects Group

# YR infrastructure sites
TRCA is currently monitoring: 528

# of high priority sites recommended for remedial work: 47
• Approximately 700 meter section of the East Don River
• Bathurst Street & Carrville Road (Richmond Hill)
• Ravine has a mix of private/public landowners with a non-ideal easement
• Identified as highest priority site in the first monitoring year (2011)
• Geomorphic assessment and detailed design completed by Parish Aquatic Services
• TRCA led project management and construction
### GEOMORPHIC ASSESSMENT

#### Changes in Land Use

<table>
<thead>
<tr>
<th>Year</th>
<th>Changes</th>
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<tr>
<td><strong>1954</strong></td>
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  • Wooded valley  
  • Tributary to west is wooded  
  • Surrounding land use limited to fields and low residential housing |
| **1978** |  
  • Clearance of riparian zone although valley sides remain wooded  
  • Increase in residential land use  
  • Widening of Birch Ave  
  • Partial construction of housing to west |
| **2002** |  
  • Sparse tree cover in valley and sides  
  • Increase in housing density, including top-of-valley housing to west |
Collaboration opportunities

- Town of Richmond Hill – Valleyland Capital Plan
- Town of Richmond Hill – long term trail connection
- Region of York – long term access/maintenance route
- Coordinated works allows for shorter-term disturbance and comprehensive restoration to take place
Construction Challenges

- Trying a new cofferdam product (AquaBarrier) and dealing with numerous rainfall events (2015)
Construction Challenges

- Maintaining bypass pump intake and preventing debris from clogging the fish screens
Construction Challenges

- Encountering unexpected site conditions during construction requiring design modifications
Construction Challenges

- Deficiencies affecting critical infrastructure along the construction access route
Construction Challenges

- Encasements originally sized for channel conditions present in early 1970s and didn’t extend far enough based on the new channel width