# Toronto Islands Flooding and Mitigation

## RE: IE8.5

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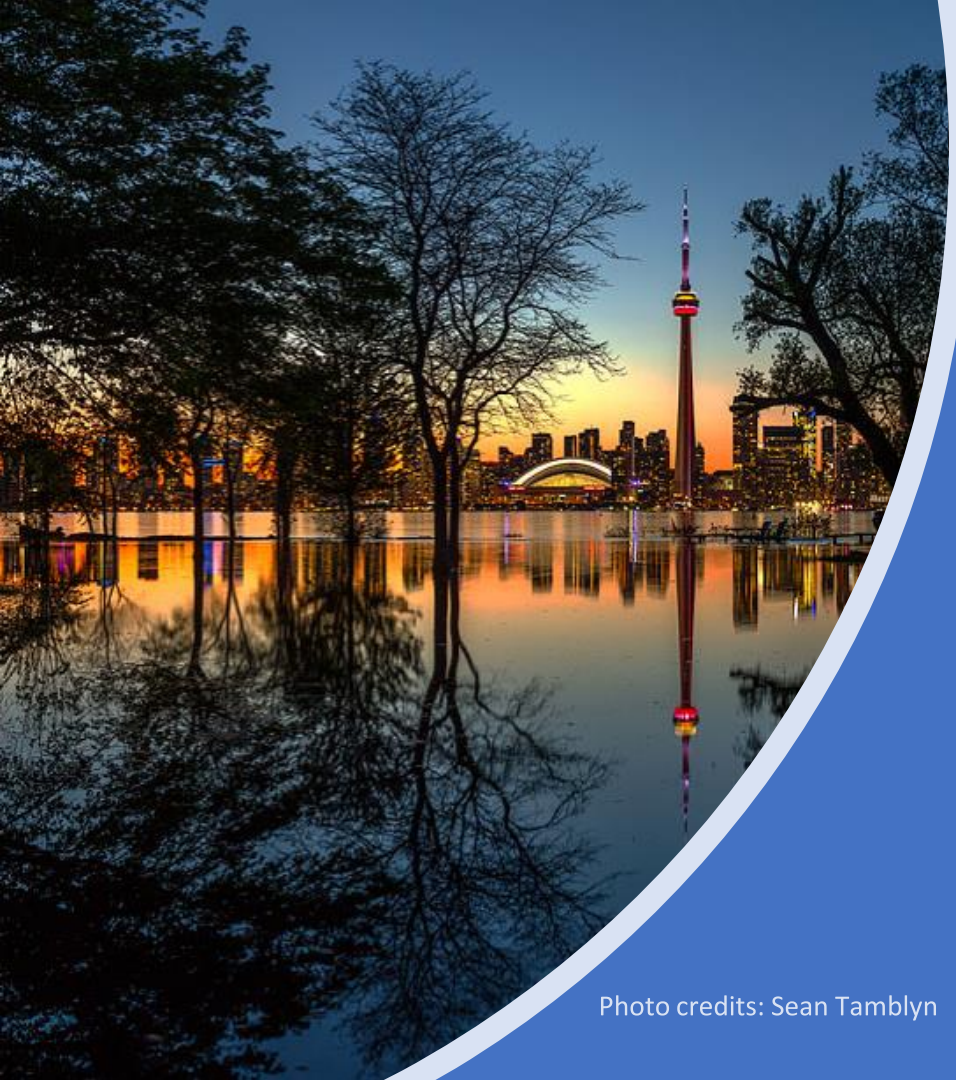
Toronto and Region Conservation Authority



# Toronto Islands Flooding and Mitigation

Photo credits: Sean Tamblyn

# Presentation Outline

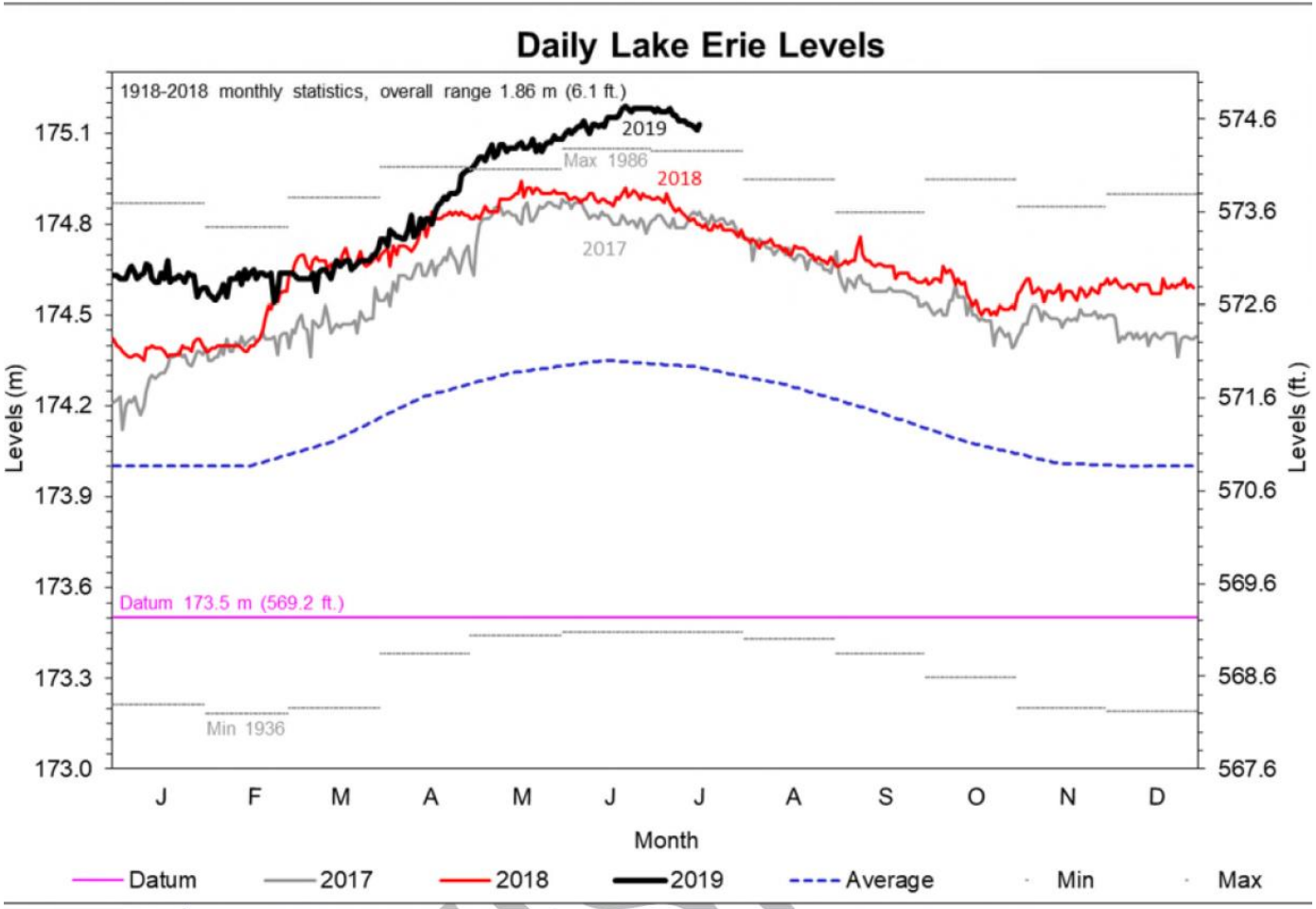
- Great lakes watersheds
- Factors that influence Lake Ontario levels
- Comparison of 2017 and 2019 conditions
- Lessons learned in the interim
- Highlights from Flood Mitigation Report

# 3 factors that influence Lake Ontario levels

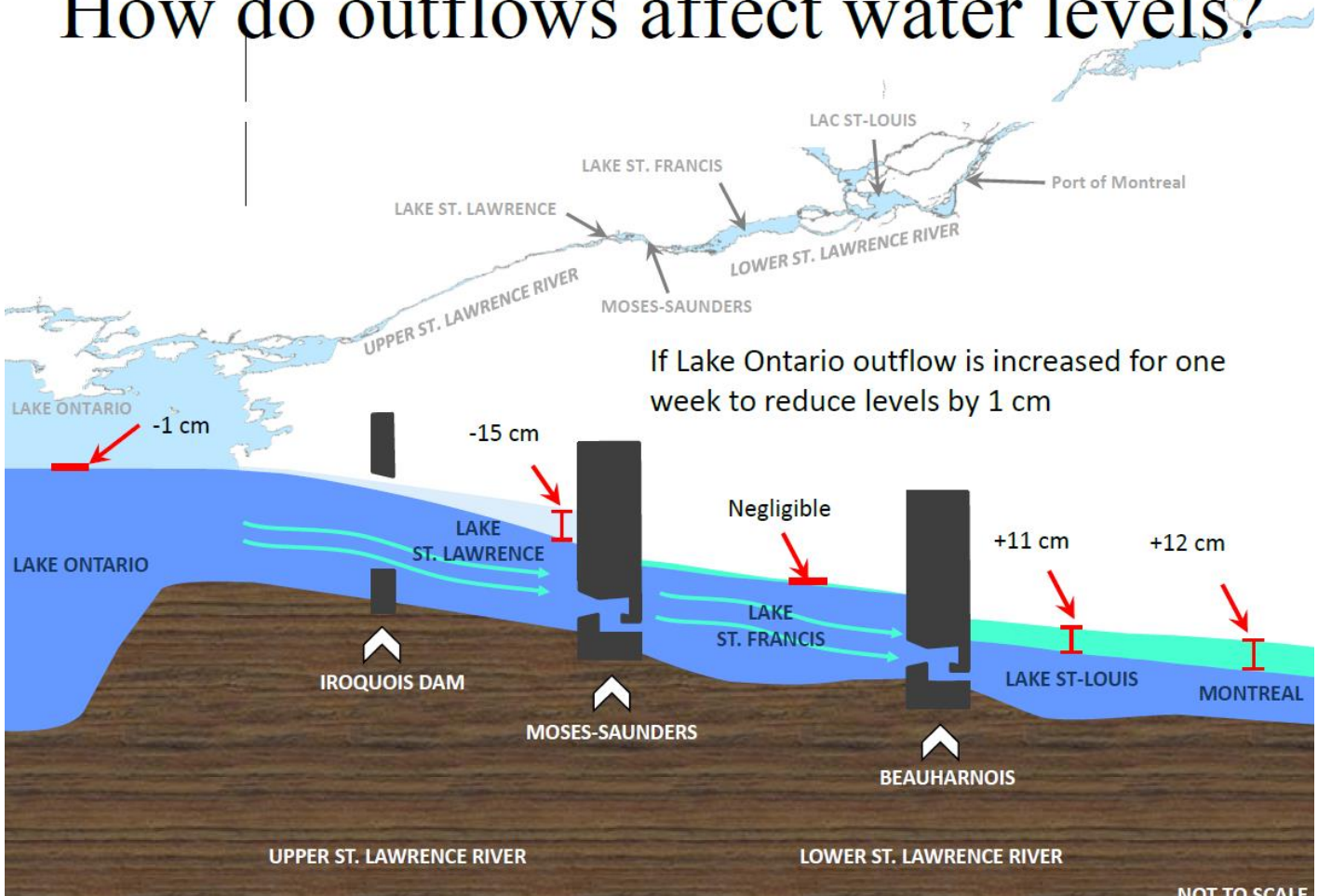
1. Inflow from Lake Erie (uncontrolled)

2. Precipitation (rain or snowmelt) in the Lake Ontario watershed

3. Outflow from Lake Ontario (controlled by IJC at Moses Saunders Dam to balance upstream and downstream risks. Downstream risks influenced by Ottawa River flows.


Daily Lake Erie Levels
1918-2018 monthly statistics, overall range 1.86 m (6.1 ft.)
2019
Max 1986
2018
2017
Datum 173.5 m (569.2 ft.)
Min 1936
175.1
174.8
174.5
174.2
173.9
173.6
173.3
173.0
574.6
573.6
572.6
571.6
570.6
569.6
568.6
567.6
Levels (m)
Levels (ft.)
J F M A M J J A S O N D
Month
Datum
2017
2018
2019
Average
Min
Max

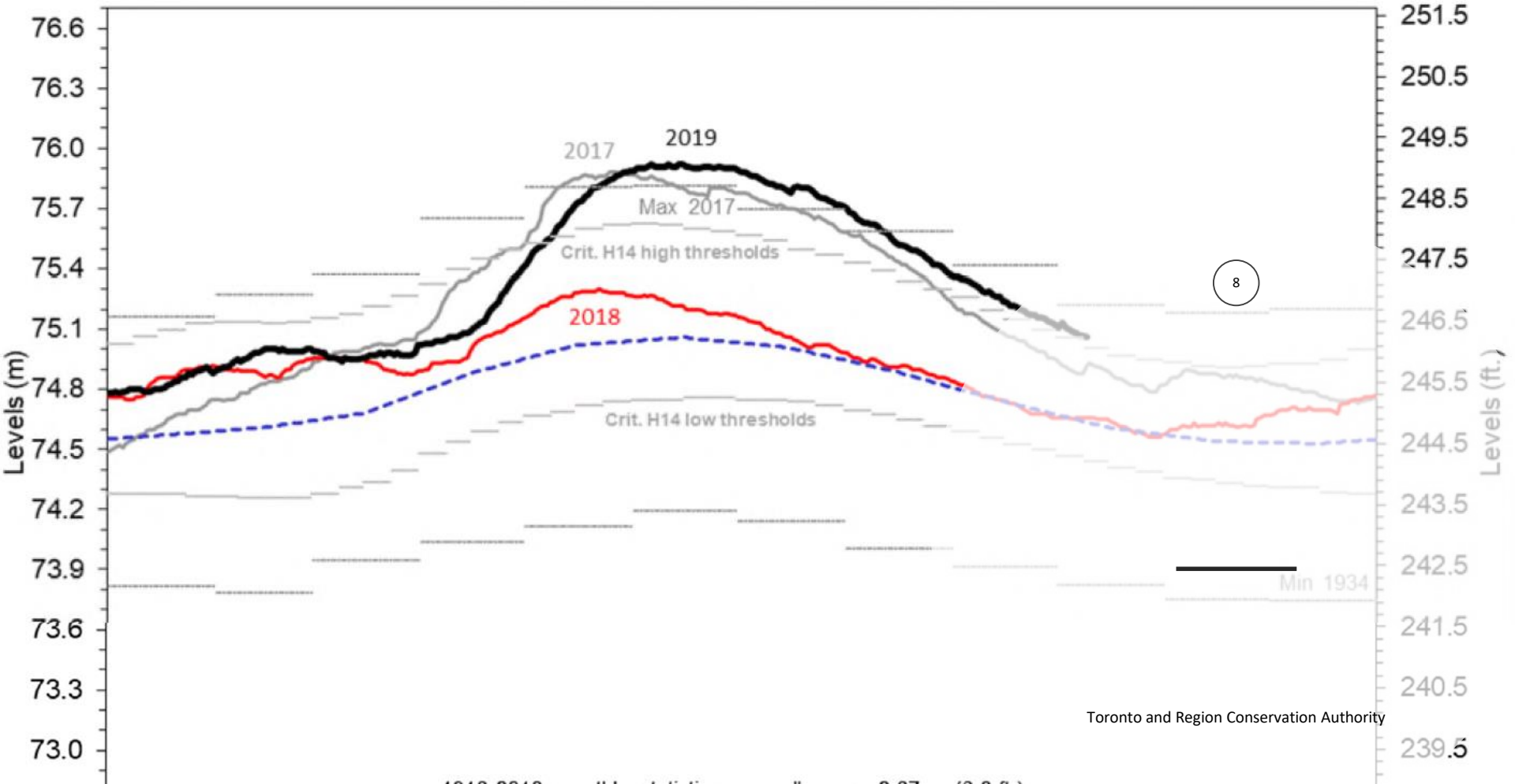
# How do outflows affect water levels?



# 2017 vs 2019 – Same same, but different

- 2017 lack of stable ice cover in winter more significant
- 2017 early spring rainfall over Lake Ontario watershed more significant, 2019 late spring rainfall
- 2019 inflows from Lake Erie more significant
- In both cases, spring flooding on the Ottawa River and requirement to balance upstream and downstream risks a significant driver
- 2017 fewer wind events at peak level
- 2019 longer duration at peak level, later peak

# Daily Lake Ontario Levels



# Lake Ontario High Levels

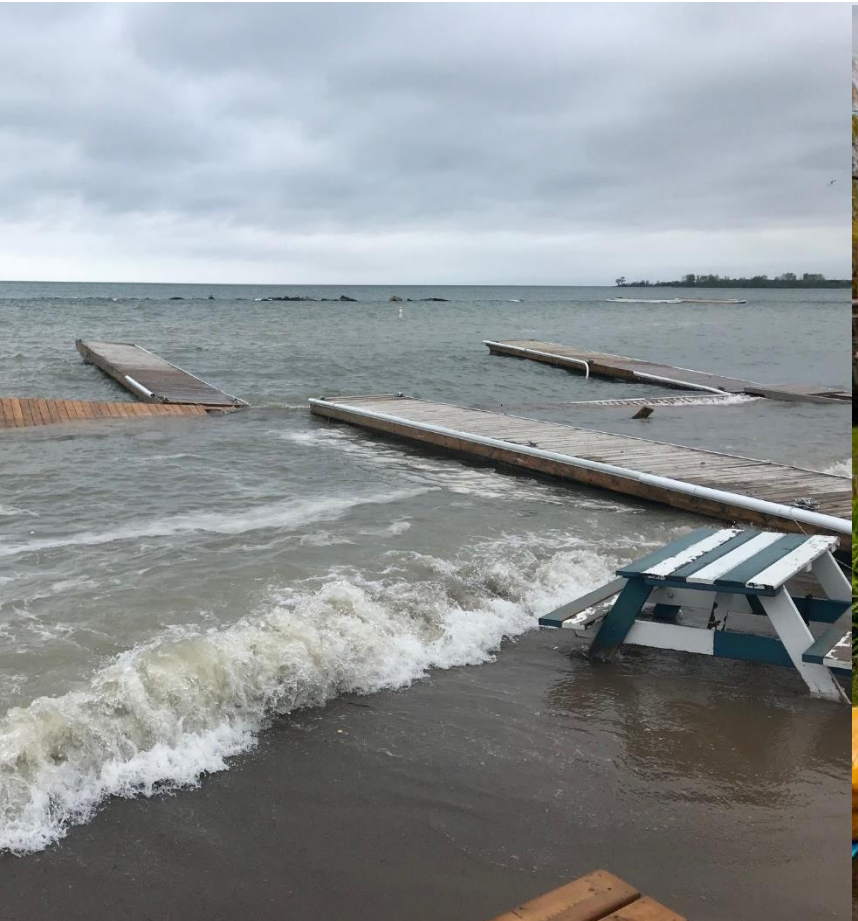
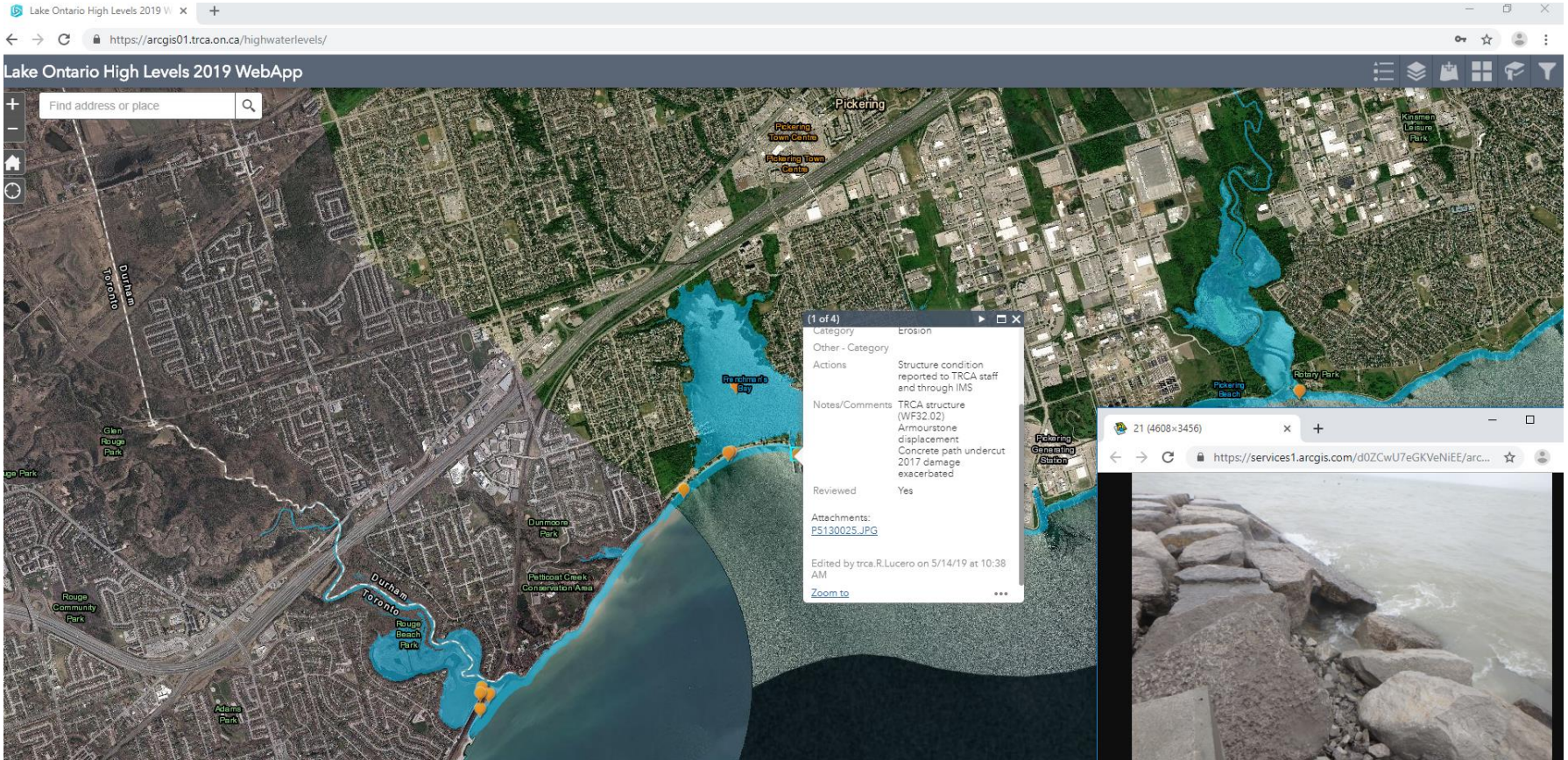
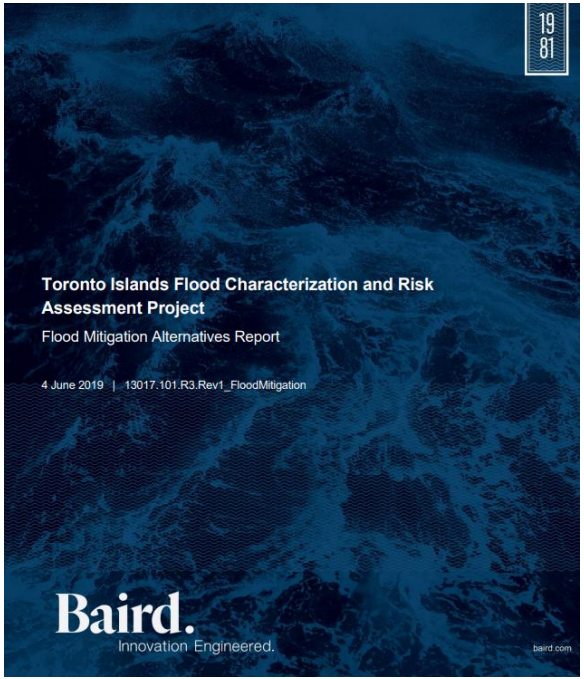


Photo credit: Sean Tamblyn

# TRCA support for flood response



# Leveraging lessons learned from 2017

# Four components to this study

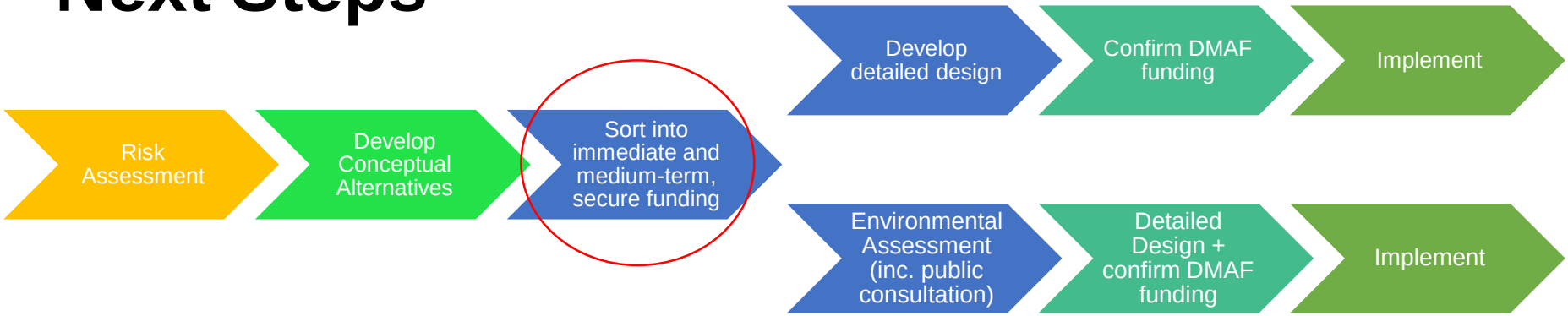
- Flood Characterization Report
- Flood Risk Assessment Report
- Flood Maps (used in 2019)
- Flood Mitigation Alternatives Report

# Long-term mitigation measures

- Establish perimeter berms plus drainage areas (primary method for residential areas)
- Raising of roads
- Critical infrastructure protection (seawall around water treatment plant)

# Multi-functional flood protection

# Next Steps




- Update Flood Characterization to account for this year's water levels (complete)
- Sort recommendations into short-term, medium-term, and long-term, and confirm whatever additional studies may be required (ie: confirmatory soils studies, Environmental Assessments, etc.)
- Work with City of Toronto to confirm funding and to move towards implementation of preferred solutions, targeting Disaster Mitigation and Adaptation Fund for capital works.

# Thank you

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