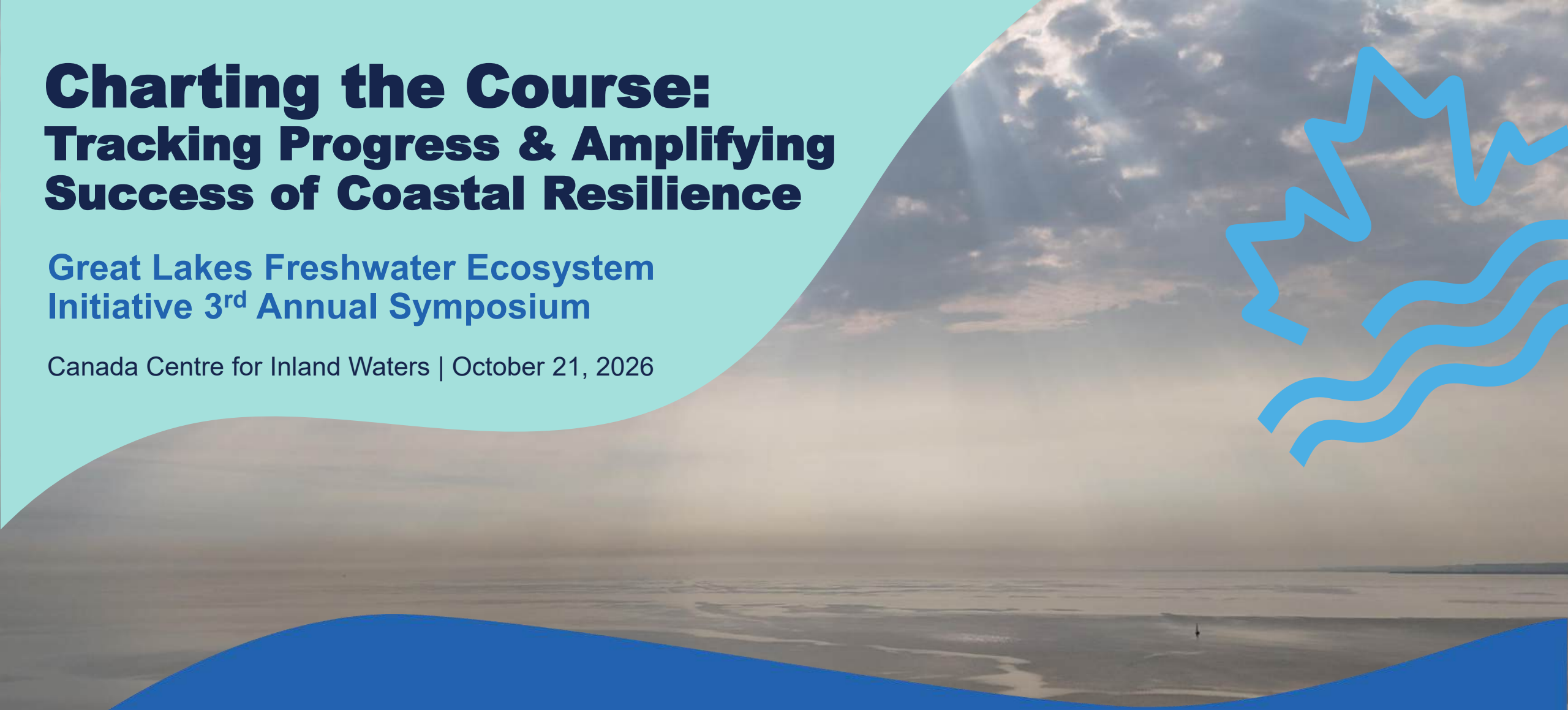
Charting the Course:
Tracking Progress & Amplifying Success of Coastal Resilience

Great Lakes Freshwater Ecosystem Initiative 3rd Annual Symposium

Canada Centre for Inland Waters | October 21, 2026



Canada Water Agency | Agence de l'eau du Canada

Canada

Land Acknowledgement

We respectfully acknowledge the lands we are situated on are Traditional Territories and Treaty Lands, in particular those of the Mississaugas of the Credit, the Anishinaabe, the Haudenosaunee, and are now home to many diverse First Nations, Inuit, and Métis peoples.

It is mutually covered by the Dish with One Spoon Wampum Belt Covenant and is part of the Treaty Lands and Territory of the Mississaugas of the Credit.

We appreciate and respect the history and diversity of the land and are grateful to have the opportunity to work and meet in this territory.

CANADA WATER AGENCY

Great Lakes Freshwater Ecosystem Initiative

Annual Coastal Symposium



Sean Backus
Manager, Great Lakes Ecosystem Management Section

21 October 2026
Canada Centre for Inland Waters
Burlington, Ontario

2026



A shared ecosystem at an extraordinary scale

Communities, jurisdictions and generations are connected by the same waters.

GREAT LAKES BASIN

WHERE GREAT LAKES HEALTH BECOMES VISIBLE

The shoreline reveals what the basin needs

A wetland holding water after a storm.

A shoreline absorbing energy.

Natural processes functioning again.



Lynde Shores Conservation Area

Science meets lived experience at the water’s edge.

PROJECT STORY 01



Restoring ecological connections

Water flow

Habitat connectivity

Invasive carp exclusion

Restoration renews relationships between water, land, habitat and species.



Local solutions. Shared learning.

Each site must respond to its own coastal processes and community context.

The value grows when the lessons travel.

PROJECT STORY 02

Partnership is part of the infrastructure

Different mandates and forms of knowledge can strengthen the same outcome.

Progress grows through shared evidence and trust.



Hillman Marsh wetland restoration

COASTAL AREAS STREAM

$420 million over 10 years for the Great Lakes

19

funded coastal projects

$17.2M

approximately in federal funding

Funding enables the work. Healthier ecosystems and better decisions are the outcomes.



Hillman Marsh physical modelling
Nature-based and engineered approaches tested together

THREE QUESTIONS FOR THE DAY

What should we carry forward?

01

What are we learning that can improve decisions?

02

What becomes possible when organizations and communities work together?

03

How can successful ideas move from one shoreline to another?



A SHARED OPPORTUNITY

Local action becomes Great Lakes progress

when we connect it,
learn from it
and build upon it.

Restoring and protecting critically important coastal areas

A funding stream under the Great Lakes Freshwater Ecosystem Initiative (GLFEI)

- To support and promote local-level action to enhance water quality, ecosystem health, and the resilience of coastal areas experiencing stress due to climate risks and impacts
- Nine projects were awarded multi-year funding in fiscal year 2024/25
- Ten projects were awarded funding in fiscal year 2025/26
- **The next round of applications is now accepting applications until November 26 (3pm ET)!**

Symposium Objectives

FOSTER LEARNING through shared experiences and applied examples that enhance water quality, ecosystem health, and coastal resilience

DEMONSTRATE EFFECFTIVE PARTNERSHIPS that contribute to both scientific understanding and practical action in coastal systems

PROMOTE COLLABORATION by creating space for open dialogue on resilience principles and effective approaches to restoration and adaptation

PROVIDE NETWORKING OPPORTUNITIES with other researchers and practitioners who are working to improve Great Lakes water quality and ecosystem health

Keynote

Yvonne Drebert
Inspired Planet Productions



Credit: Inspired Planet Productions



Canada Water Agency | Agence de l'eau du Canada

Are We Counting What Counts?

What the numbers tell us about Great Lakes coastal action

Jody McKenna

Great Lakes Freshwater Ecosystem Initiative

COASTAL SYMPOSIUM · OCTOBER 21, 2026

NUMBERS AND CONTEXT

A Number Changes the Story

NUMBERS HELP US DECIDE HOW TO RESPOND

100 km/h
winds

2 m
waves

40 mm
rain

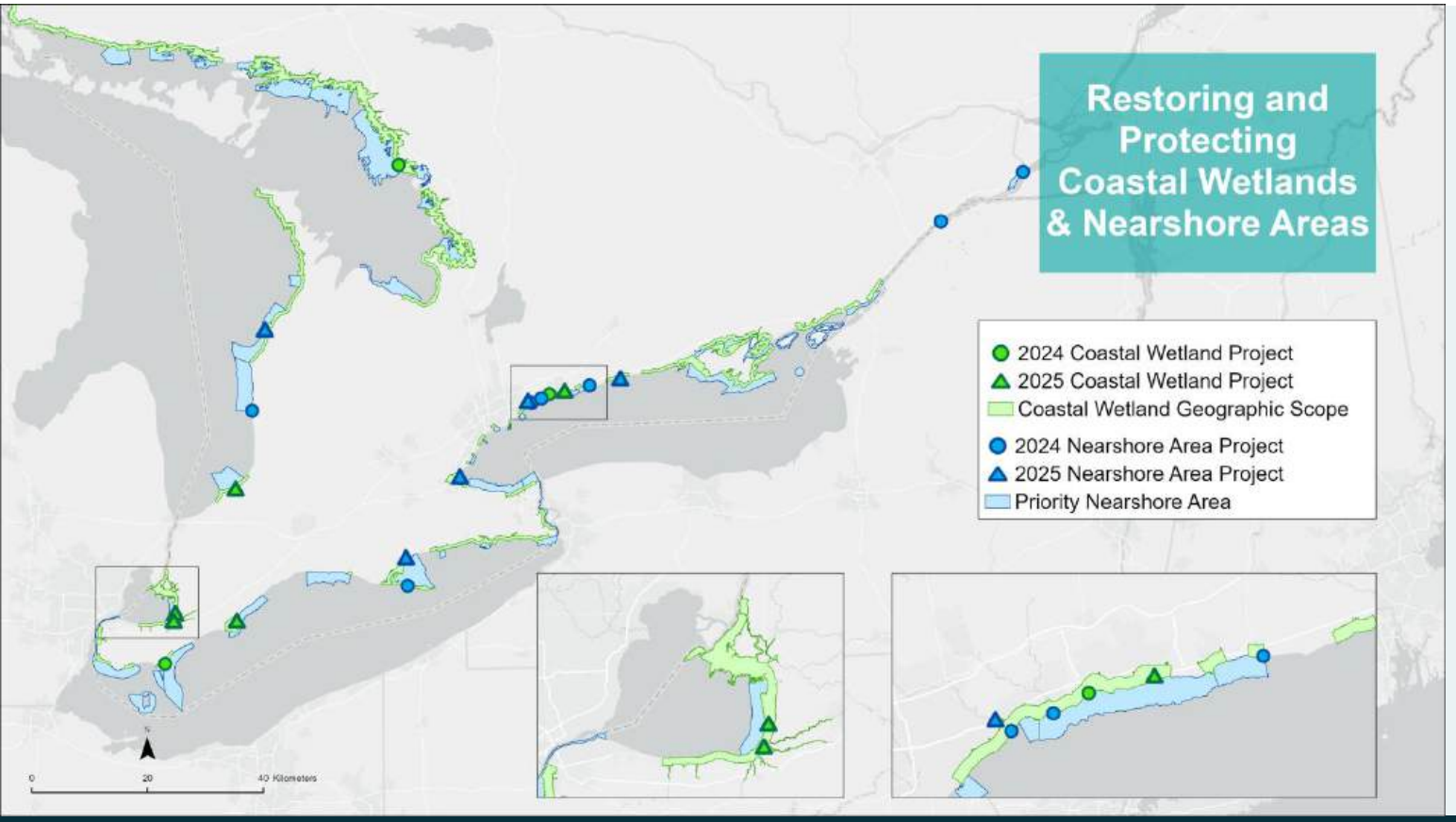
The number gives scale. Context tells us where, when and why it matters.



Long Point, 2018, Lake Erie

COLLECTIVE SCIENCE

Science Made the Need Visible



64

nearshore regional units

20

coastal wetlands assessed for climate vulnerability and resilience

COLLECTIVE SCIENCE

The evidence made the need visible

It also showed why locally informed, place-based responses are required.

PROGRAM DIRECTION

Shared Goals, Locally Shaped Action

10

priority nearshore units by 2034

500 ha

coastal wetlands by 2034

Targets provide a shared direction. The pathway depends on the science, needs and constraints of each coastal system.



SHARED DIRECTION

One shared direction. Many locally appropriate pathways.

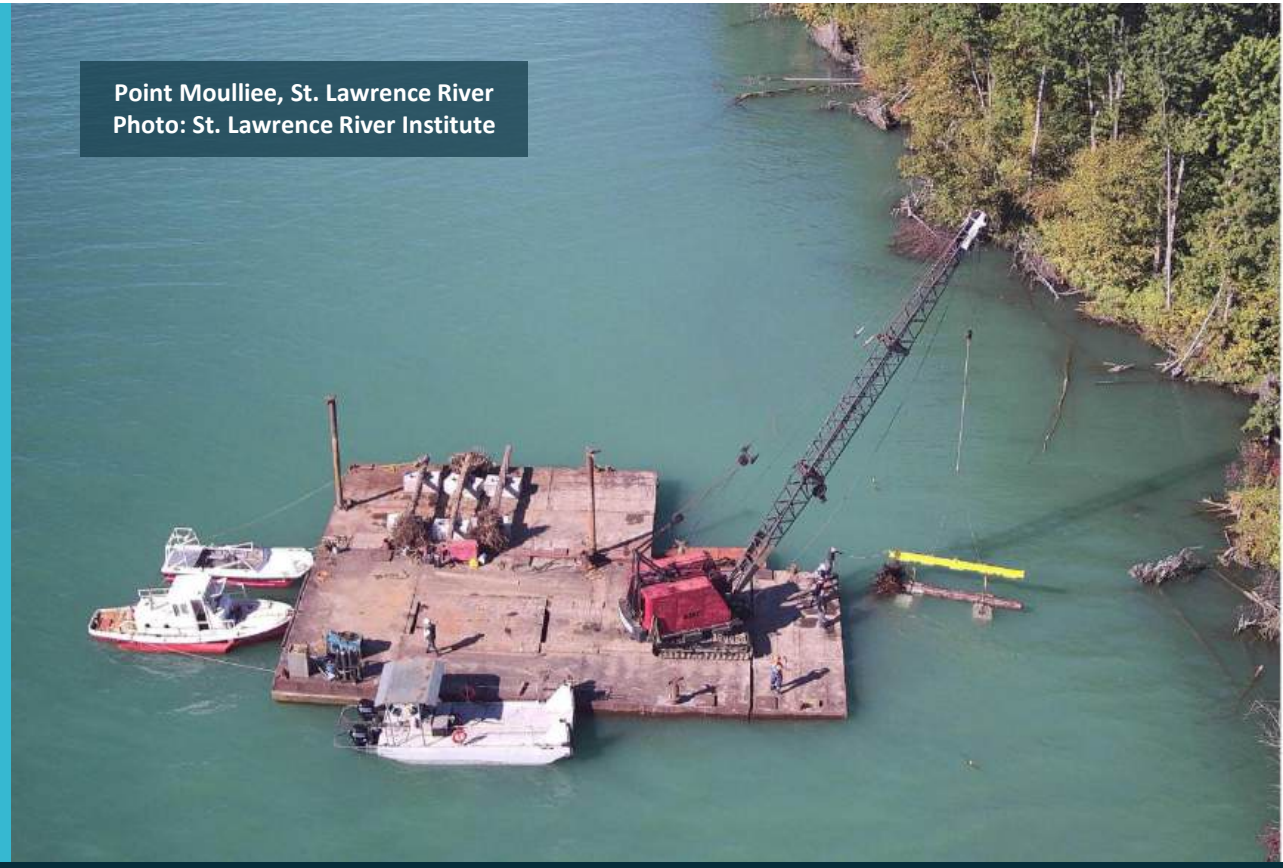
GLFEI supports locally led action through partners who understand their coastal systems.

LOCAL DELIVERY

Numbers Do Not Restore a Shoreline



Long Point, Lake Erie
Photo: Long Point Biosphere Region



Point Moulliee, St. Lawrence River
Photo: St. Lawrence River Institute

LOCAL ACTION

Numbers do not restore a shoreline. People do.

Partners turn science and funding into assessment, planning and restoration.

PROGRAM REACH

Partnerships Make Local Action Possible

10

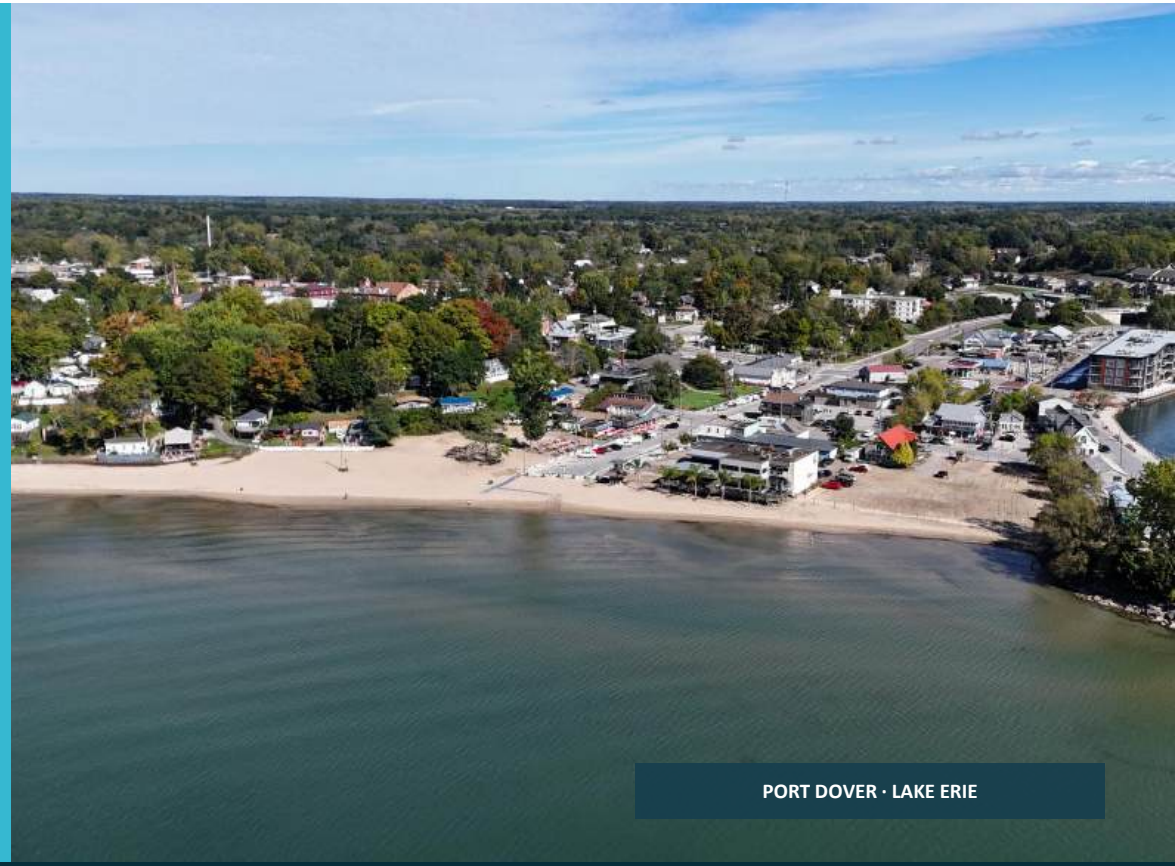
governance networks

1,893

conference and event attendees

467

community and stakeholder attendees



PORT DOVER · LAKE ERIE

PARTICIPATION

Participation creates opportunities to share knowledge and inform local action

Project reporting provides the context for how engagement helped work move forward.

PARTNER CONTRIBUTIONS

A Number We Can Stand Behind

73

partner organizations reported across projects and years

Stronger networks, new science, better-informed decisions and restoration on the ground



PARTNERS EXTEND THE REACH AND IMPACT OF FEDERAL FUNDING

Relationships | **Evidence** | **Action** | **Outcomes**

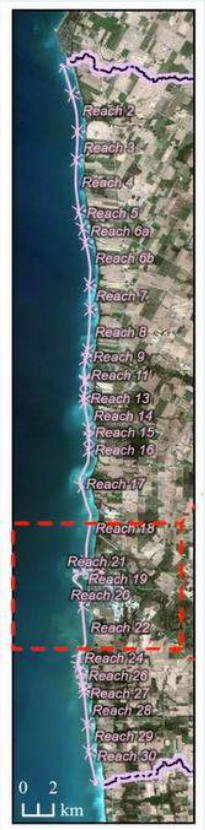
EVIDENCE FOR LOCAL DECISIONS

Building the Evidence to Act

414 km

of shoreline and nearshore assessed or modelled

4 project-level risk and vulnerability assessments





Goderich Harbour
Lake Huron

SOUTHERN LAKE HURON

Evidence is informing coastal planning

Shoreline-change and sediment-pathway analyses are helping partners consider sediment bypassing, feeder beaches and nearshore restoration.

REPORTED COASTAL ACTION

Evidence Reaching the Ground

27.4 ha

wetland or aquatic habitat enhanced, restored, conserved or created

5 nearshore units with nature-based action underway

1.07 km

shoreline naturalized with native plantings



Lynde Shores Coastal Wetland
Lake Ontario

ACTION UNDERWAY

The figures document work delivered on the ground

Monitoring over time will help partners understand the ecological response.

REPORTED INVESTMENT · 2024–2026

Shared Investment and Co-Delivery

$6.4M

Canada Water Agency contributions

\+

$4.1M

partner cash and in-kind contributions

= **$10.5M**

combined coastal investment



Hillman Marsh, Lake Erie
Photo: Seth Logan

CO-DELIVERY

Federal funding provides a foundation. Partner investment expands delivery capacity.

Contributions include cash, staff time, technical expertise, equipment, materials and long-term stewardship.

PARTNER REPORTING

Data Collected Once, Used Many Times

Your reporting provides the evidence behind every result shared today.

THE SAME INFORMATION SUPPORTS

- Project oversight
- Annual reporting
- Program learning
- Public communication
- Future investment decisions
- Broader Great Lakes reporting



THANK YOU

Careful reporting turns local results into shared evidence

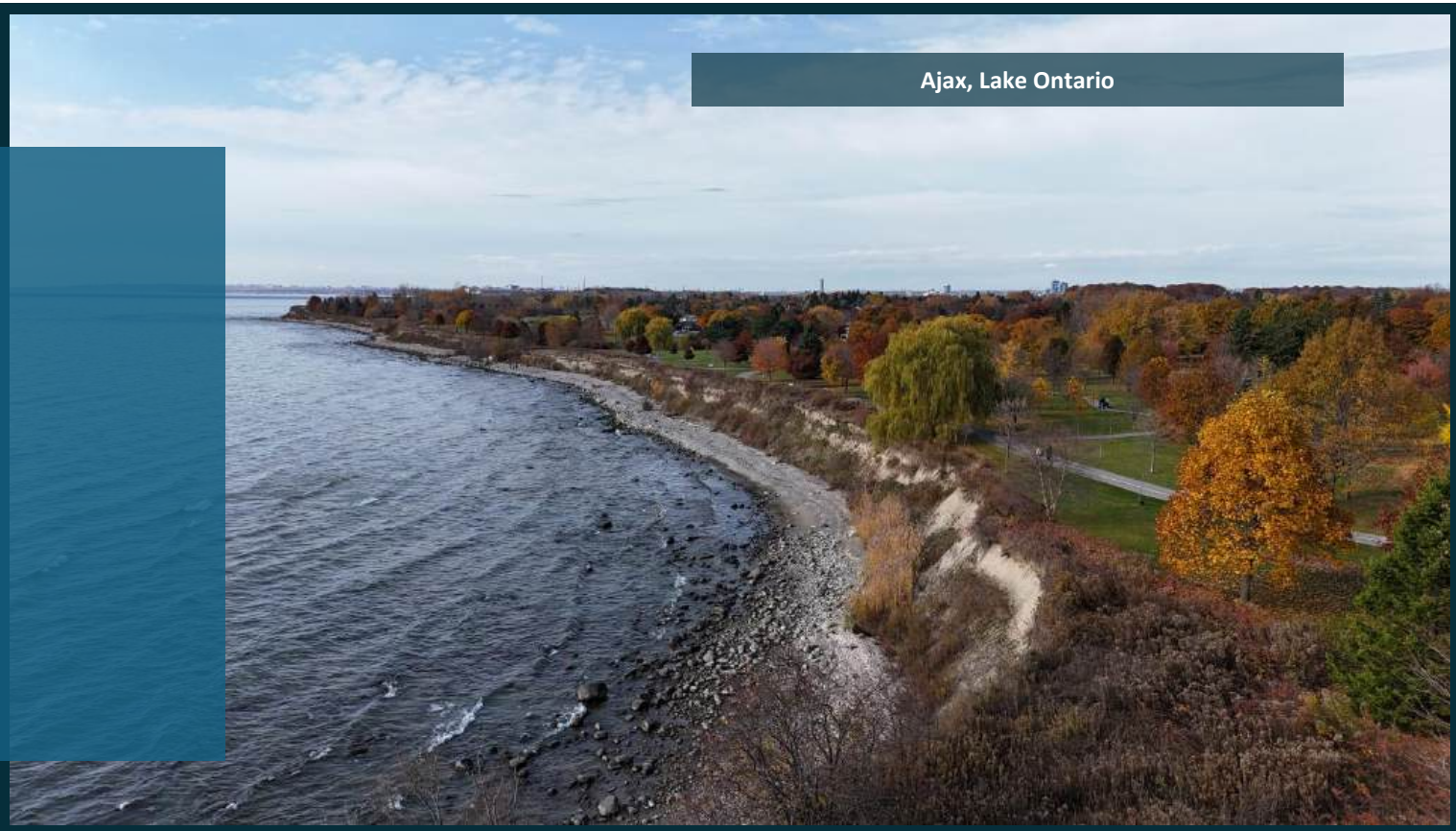
The goal is to use information once for several purposes and share useful findings back with partners.

From Local Action to a Collective Story

LOOKING TO 2034

What evidence will we need to show progress?

Are we collecting it today?



Ajax, Lake Ontario

Local partners create the results.

The numbers reveal their collective reach.

The evidence helps us learn, strengthen the program and continue supporting coastal action.

GREAT LAKES FRESHWATER ECOSYSTEM INITIATIVE · FALL 2026

Next Coastal Funding Intake

Canada Water Agency | Agence de l'eau du Canada

APPLICATION WINDOW

Mid-October to end of November 2026

2–4 years
project duration

Up to $3M
CWA funding per project

Two objectives
nearshore + coastal wetlands



PORT DOVER · LAKE ERIE

RESTORING AND PROTECTING CRITICALLY IMPORTANT COASTAL AREAS, INCLUDING WETLANDS

COASTAL NEARSHORE

Local action in high-stress or high-value areas affected by impaired coastal processes

COASTAL WETLANDS

Increase resilience to climate-related impacts and other stressors

Application details will be posted by the Canada Water Agency

Morning break and networking

See you back at 11am!

Project Highlight

Collaborative Conservation: Oshawa Second Marsh and Partner Perspectives



FSM Supporting the Second Marsh Restoration & Resilience Project

GLFEI Coastal Symposium

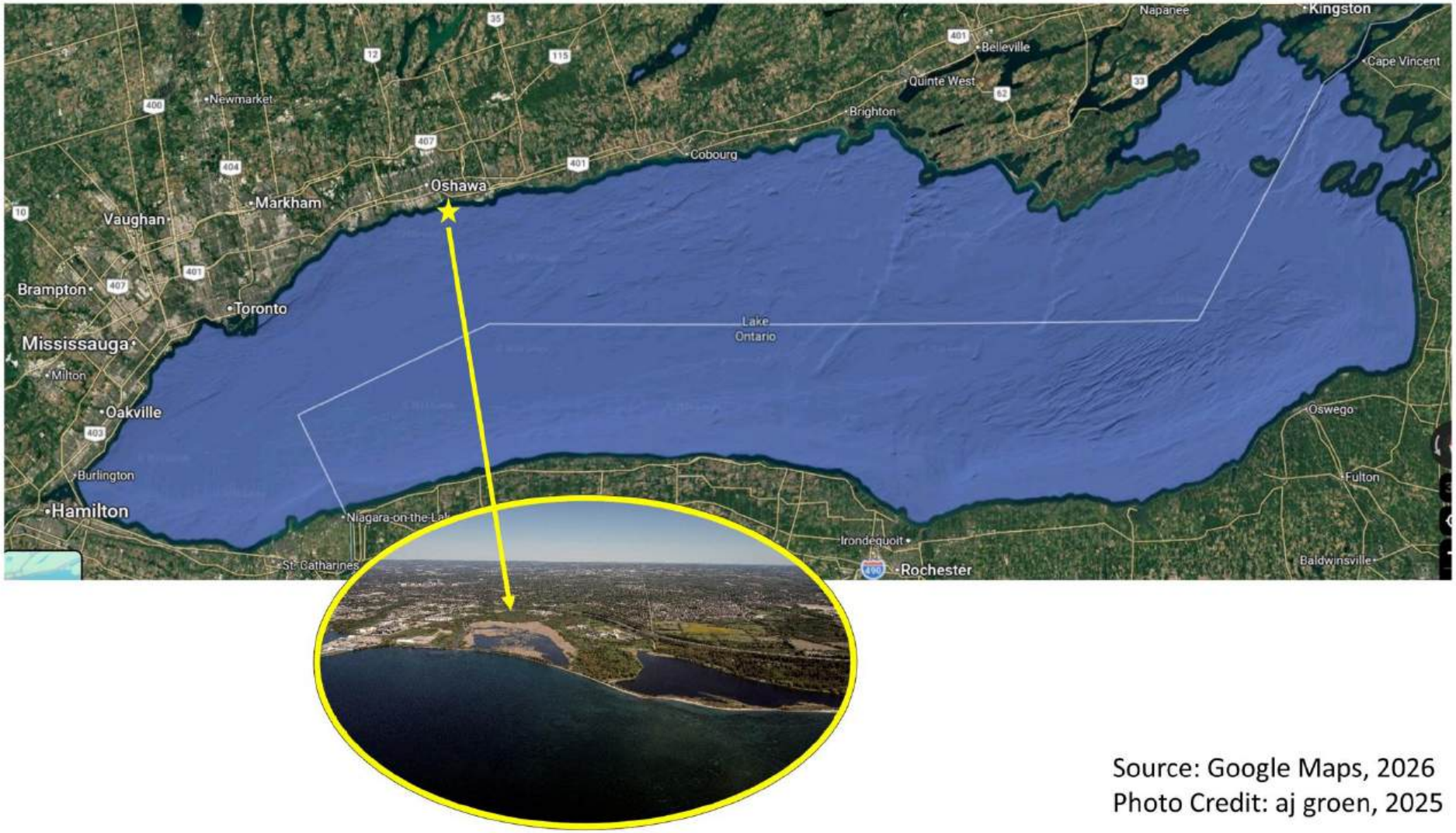
October 21, 2026

aj groen

Friends of Second Marsh

Wioletta Walancik, MES
Administrative & Programs Director

Location of Oshawa Second Marsh



Source: Google Maps, 2026
Photo Credit: aj groen, 2025

Oshawa Second Marsh – Past & Present





Friends of Second Marsh

Oshawa Second Marsh & Adjacent Areas



Second Marsh Defense Association

- **1960**: Second Marsh was proposed as a site for a deep water port
- **1970**: City of Oshawa transfers Second Marsh to the Harbour Commission
- **1972**: Formation of Second Marsh Defense Association (SMDA)
- **1972-1984**: SMDA fights to save Second Marsh from development
- **1984-1991**: SMDA supports transfer of Second Marsh back to the City of Oshawa and rehabilitation efforts



Friends of Second Marsh

Second Marsh Defense Association

- **1992**: Transfer of Second Marsh from the Harbour Commission to the City of Oshawa; Second Marsh Management Plan - Phase 1
  - Re-opening of western outlet and closure of eastern outlet
  - Protection of areas from Carp damage
  - Creation of floating habitat and flow deflection islands
  - Improving fish habitat
  - Propagation and planting of native aquatic plants

- **1993**: SMDA changes name to Friends of Second Marsh

Friends of Second Marsh



Friends of Second Marsh

- **Vision**: Connecting people with nature at a thriving Oshawa Second Marsh and the McLaughlin Bay Wildlife Reserve.

- **Mission**: The protection and restoration of Oshawa Second Marsh and the McLaughlin Bay Wildlife Reserve for present and future generations through education, interpretation and stewardship.

- **Project Alignment with Strategic Plan Goals**
  - Protecting and restoring the ecology of Second Marsh and the McLaughlin Bay Wildlife Reserve
  - Engaging the community through education, interpretation and stewardship services

How is FSM Supporting the Project?

- Let's De-Phrag the Marsh! Project
- Plant Stewardship Program
- Participation on the OSM Technical Team
- Community stewardship at Second Marsh
- Community engagement and education



Friends of Second Marsh

Let's De-Phrag the Marsh! Project

- Management of Invasive Phragmites on the McLaughlin Bay Wildlife Reserve
- Number of Phragmites units managed: 34
- Total area of Phragmites managed: ~2.7 hectares (6.5 acres)
- Total funds raised since 2020: ~$124,000
- Dr. J. Murray Speirs Restoration Award for the restoration of the natural environment and supporting climate adaptation - Durham Environment & Climate Advisory Committee (DECAC) 2023 Durham Environmental Achievement Award Recipient



Let’s De-Phrag the Marsh! Project

Invasive Phragmites management units located on the McLaughlin Bay Wildlife Reserve

previously mapped and treated areas

newly mapped areas & managed in 2026

Friends of Second Marsh



Before and After Dogwood Pond







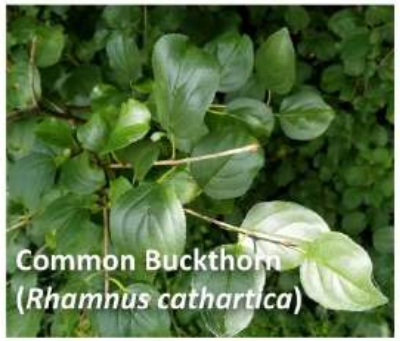
Plant Stewardship Program

- Management of dominant introduced (invasive) plant species (DIPS) and restoration initiatives with eco-region specific native species
- May to October
- Use trained staff and supervised volunteers
- Use hand tools or no tools
- Use above ground techniques to respect First Nation request to protect potential archeology of the area until an archeological assessment can be completed
- Management actions include: clipping, girdling, smothering
- Restoration actions include: seeding, creation of no-till planting beds and planting into new soil materials

Friends of Second Marsh


Management Units
Dogwood Pond MU
Greg's Pond MU
Beaton Hill MU
Forest MU
Colonel Sam Dr
Hwy of Heroes
Autoroute Mac
Ontario Power Generation (Corporate...
McLaughlin Bay Trails Public Parking
McLaughlin Bay Wildlife Reserve
McLaughlin Bay Wildlife Reserve
Park Intersect
Second Marsh
Second Marsh
McLaughlin Bay
Lake Ontario

Dominant Introduced Plant Species (DIPS)


Common Buckthorn
(*Rhamnus cathartica*)


Common Burdock
(*Arctium minus*)


Cow Parsley
(*Anthriscus sylvestris*)


Dog-Strangling Vine
(*Vincetoxicum rossicum*)


Flowering Rush
(*Butomus umbellatus*)


Garlic Mustard
(*Alliaria petiolata*)


Goutweed
(*Aegopodium podagraria*)


Himalayan Balsam
(*Impatiens glandulifera*)


Multiflora Rose
(*Rosa multiflora*)


Purple Loosestrife
(*Lythrum salicaria*)


Wild Parsnip
(*Pastinaca sativa*)


Woodland Angelica
(*Angelica sylvestris*)


Yellow Iris
(*Iris pseudacorus*)

Friends of Second Marsh

Plant Stewardship Program

Management of DIPS



Garlic Mustard



Dog-strangling Vine

Plant Stewardship Program

Restoration: No-till Bed Creation and Planting



Before



After – planted with trees, shrubs and herbaceous plants

Volunteers in Action











Friends of Second Marsh

Plant Stewardship by the Numbers
May to September 2026



23 Events



251 Volunteer Engagements



438 Volunteer Hours



13 DIPS Managed



1000 sq.ft. Total Area of No-Till Garden Bed Created



193 Trees/Shrubs Planted



677 Herbaceous Planted

Friends of Second Marsh

Community Stewardship – Second Marsh







Community Engagement & Education



Friends of Second Marsh

Connect With Us

Website: www.secondmarsh.ca

Facebook, Instagram, LinkedIn

Wioletta Walancik
Administrative & Programs Director
wwalancik@secondmarsh.ca
905.723.5047

Friends of Second Marsh

SCAN ME



Oshawa Second Marsh

CWA Coastal Symposium
October 21, 2026

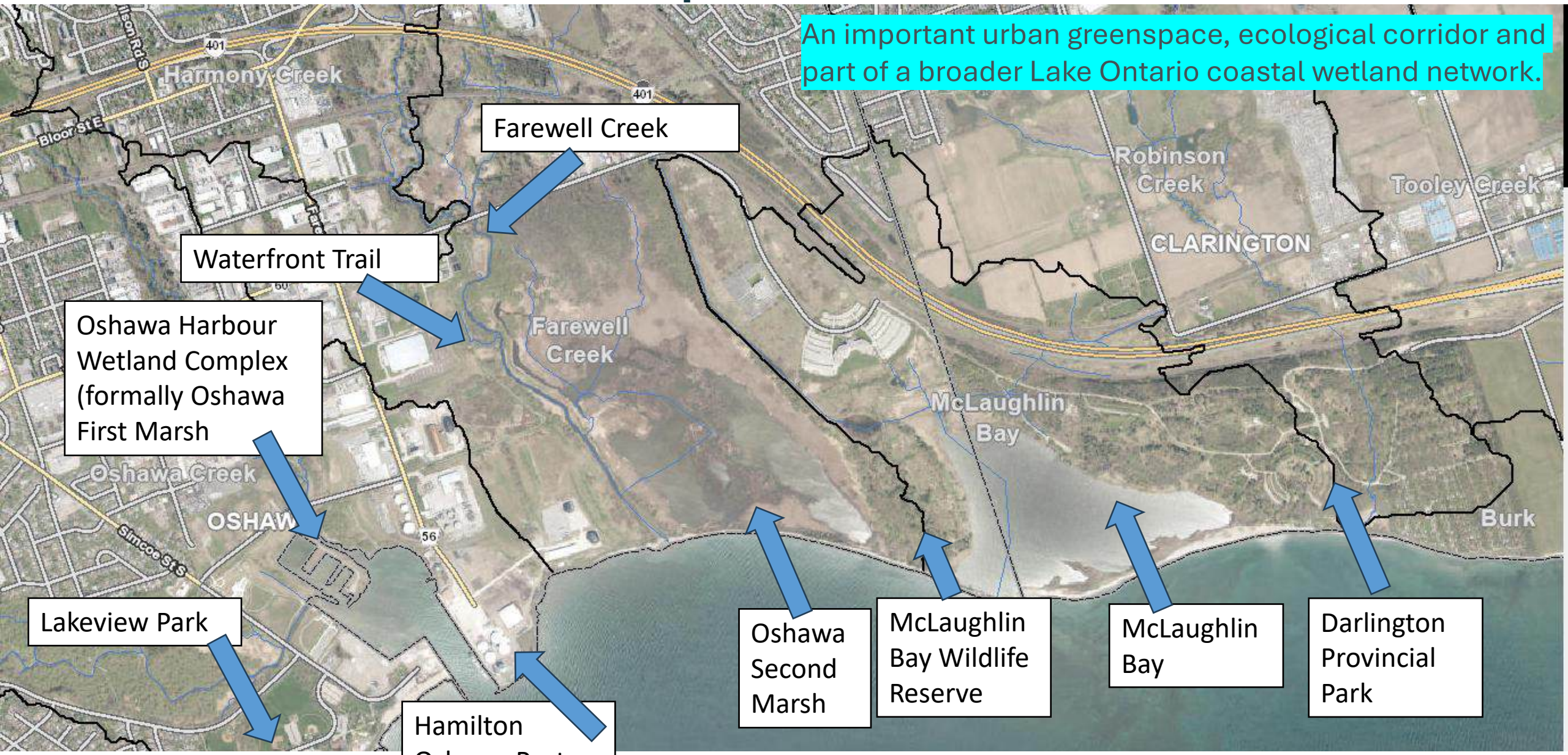
Oshawa Second Marsh | Learning from restoration

A coastal wetland shaped by history, people, and changing conditions

- A Wetland Worth Protecting
- How we got here
- Understanding the challenges
- Find a path forward together
- The next chapter of restoration



A connected coastal landscape

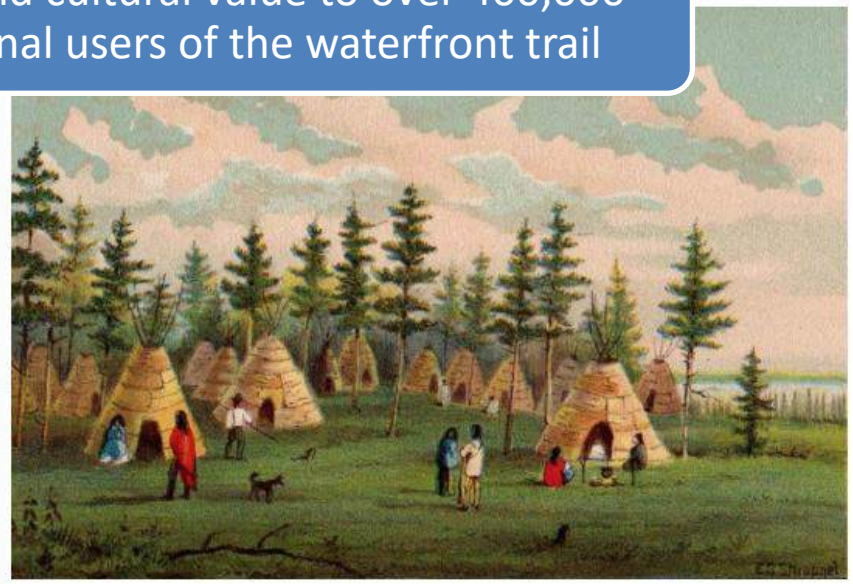


A landscape of cultural importance

The southern end of the Scugog Carrying Place connects Lake Ontario to inland travel, trade and resource-use routes.

Indigenous cultural connections and knowledge are essential to understanding this changing landscape.

Currently, provides recreational and cultural value to over 400,000 residents and numerous recreational users of the waterfront trail



This 1898 painting shows the First Nations population of the Oshawa region in transition, living in traditional bark wigwams, but wearing European-style clothing and cooking in European-made metal pots.



A landscape of ecological importance

133 ha
Coastal wetland

305
Bird species recorded

380+
Plant species recorded

~400 ha
Connected waterfront landscape




Ryan Hodnett, CC BY-SA 4.0.

To know where you're going, you have to know where you've been

Historical mapping documents a much more open coastal setting.

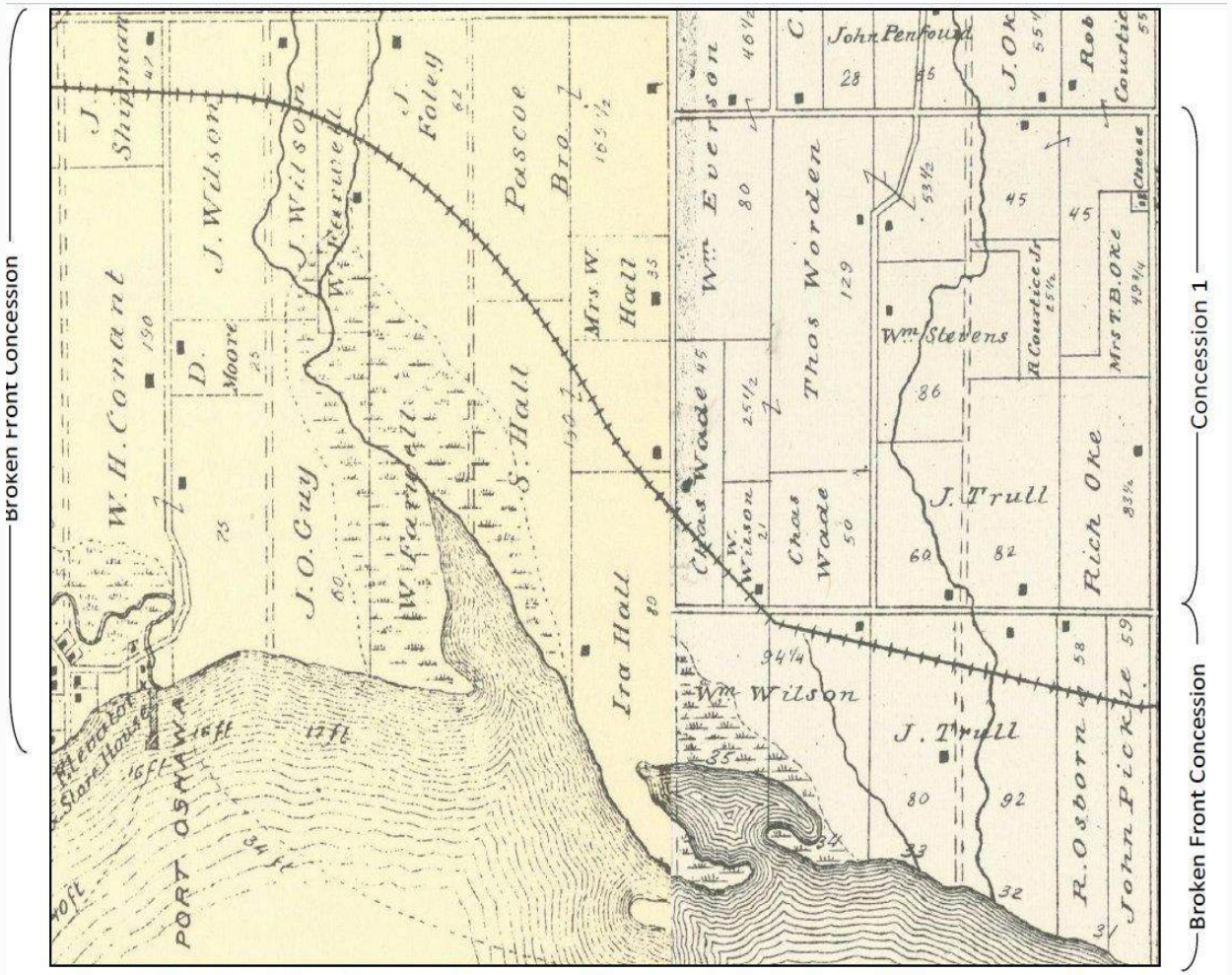


Figure 7. East Whitby Township map (left) extracted from Beers & Co. (1877) and Darlington Township map (right) extracted from Belden & Co. (1878). Scans courtesy of Oshawa Archives.

HOW THE MARSH FORMED

From open embayment to coastal marsh

The present-day wetland reflects centuries of shoreline and watershed change.

Before the mid-1800s

An embayment wetland

OSM was an open embayment, between two drumlins.

1800s

Sediment reshaped the bay

Land clearing and agriculture increased watershed erosion. Sediment accumulated, water depths decreased and a barrier beach developed.

1933 · 1938 · 1948

Harbour dredgeate added

Material excavated from Oshawa Harbour was deposited in the marsh, reportedly 35–70 cm deep, further reducing water depth and degrading habitat.

Historical summary adapted from Reid (1999), as presented in the OSM background materials

INCREASING PRESSURES

Industrial impacts and altered connections

Water quality impacts and engineering decisions further changed the marsh's ecology.

1952–1971

Water quality deteriorated

Periodic overflows from the Harmony Creek Water Pollution Control Facility introduced nutrients, organic waste and heavy metals.

1974

Lake Ontario outlet diked

The Harbour Commission diked the outlet. Historical interpretations link the change to increased sediment deposition and altered Farewell Creek flows.

1972: The Second Marsh Defence Association formed to advocate for marsh protection.

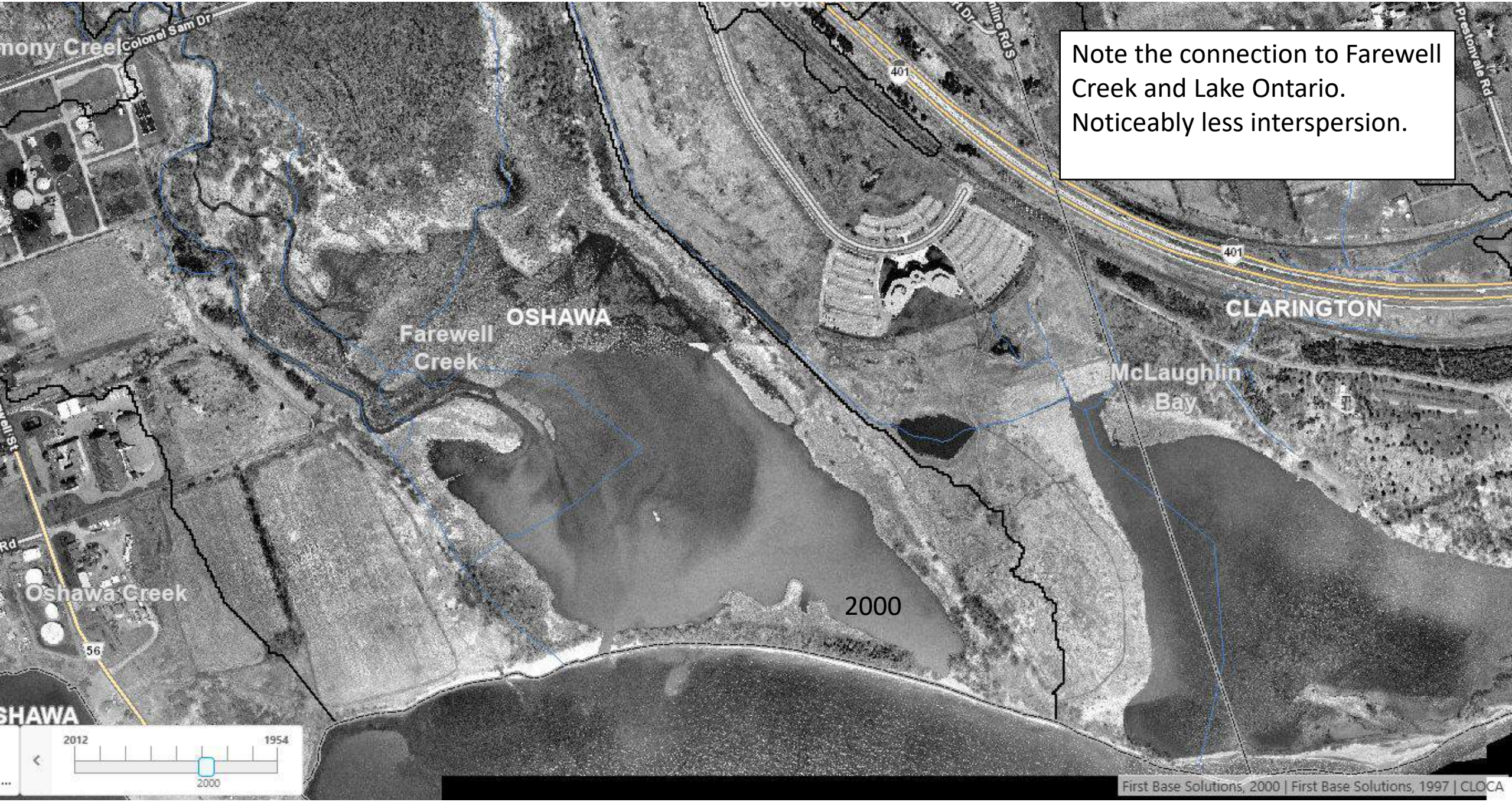
Historical summary adapted from Reid (1999), as presented in the OSM background materials

To know where you're going, you have to know where you've been

The embayment became shallower and the barrier beach developed, progressively separating it from Lake Ontario.



1954


Note the connection to Farewell Creek and Lake Ontario. Noticeably less interspersion.
Colonel Sam Dr
401
Preston vale Rd
OSHAWA
Farewell Creek
CLARINGTON
McLaughlin Bay
Oshawa Creek
56
2000
2012
1954
2000
First Base Solutions, 2000 | First Base Solutions, 1997 | CLOCA

To know where you're going, you have to know where you've been

Wetland Stressors

- Water quality
- Invasive species
- Lake Ontario water level regulation





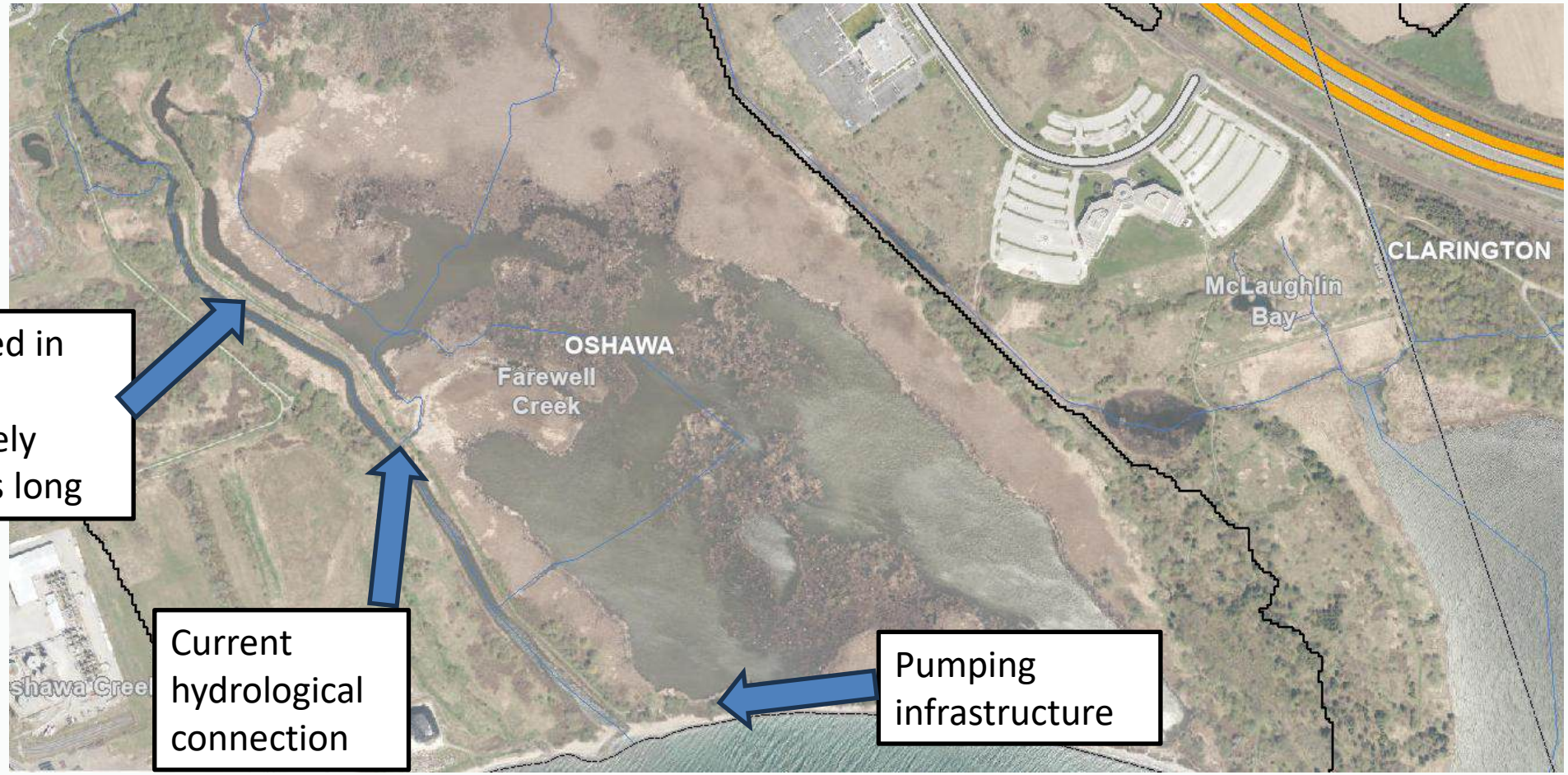
To know where you're going, you have to know where you've been

The Oshawa Second Marsh Management Strategy (1992) was presented in two phases:

Phase I: Among other measures, this Phase proposed 12 "Physical Rehabilitation" measures, which in concert were expected to rehabilitate the Marsh; and

- Construction of trails, bridges, boardwalks and viewing towers;
- Installation, repair and alter removal of a chain-link carp barrier across the Marsh;
- Construction of flow deflection islands at the creek entrance to the Marsh;
- Re-opening of the western outlet, and closure of the eastern outlet;
- Construction of brush-fill and floating habitat islands;
- Construction of root-wad and crib fish habitats;
- Installation of log barriers (later removed);
- Removal of log jams on Harmony/Farewell Creek;
- Propagation of aquatic plants in local classrooms;
- Planting of wetland species and construction of exclosures;
- Construction of cell structures for carp protection, some with silt screens;
- Installation of Christmas trees in cells to discourage herbivory and reduce fetch effects;
- Dredging of the channel from flow deflection islands towards the western outlets; and
- Extensive monitoring of vegetation and wildlife in and around the Marsh.

To know where you're going, you have to know where you've been



Phase II: This Phase proposed the diking of the Marsh in the event that Phase I did not succeed in the rehabilitation of the Marsh.

To know where you're going, you have to know where you've been







To know where you're going, you have to know where you've been



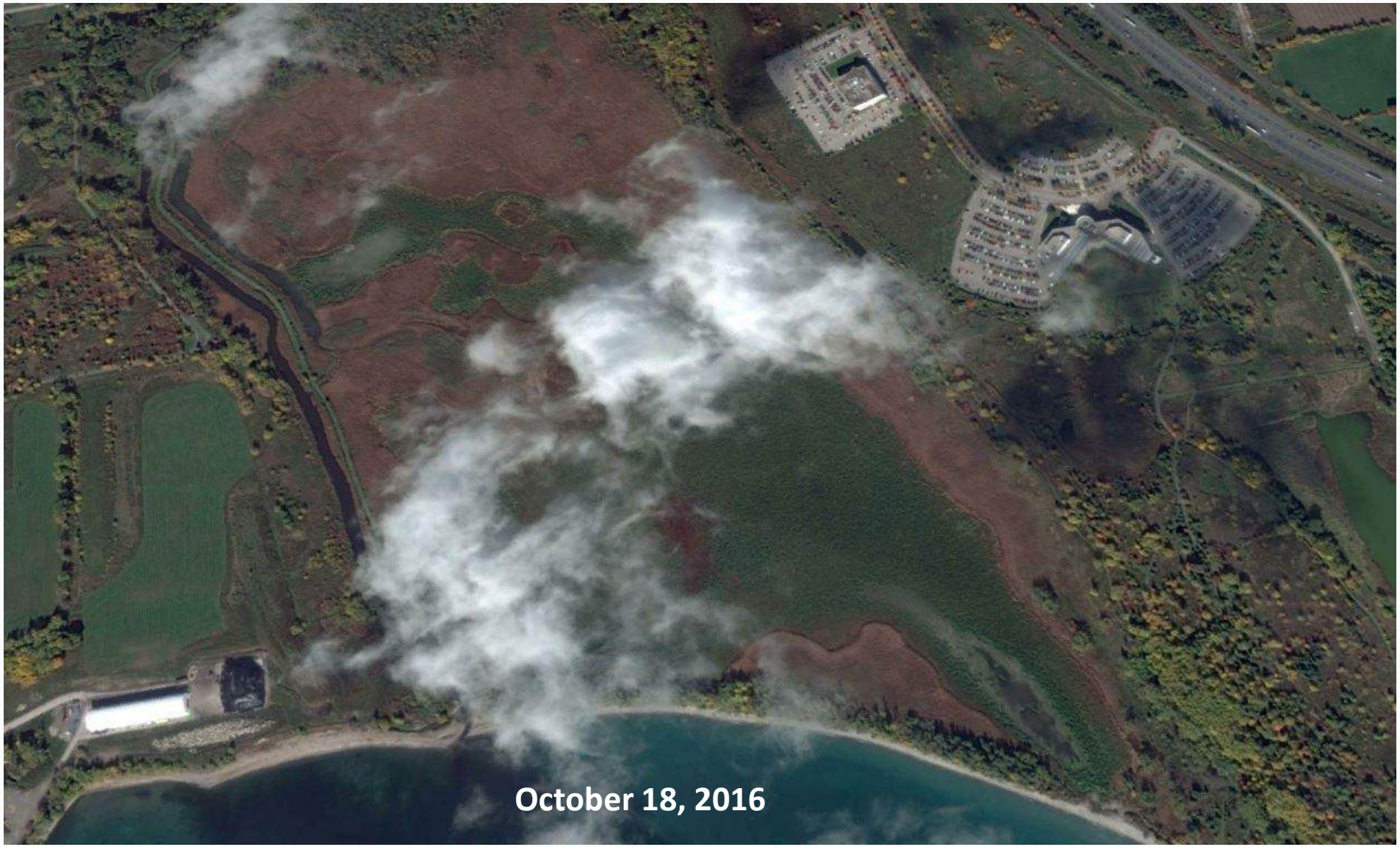
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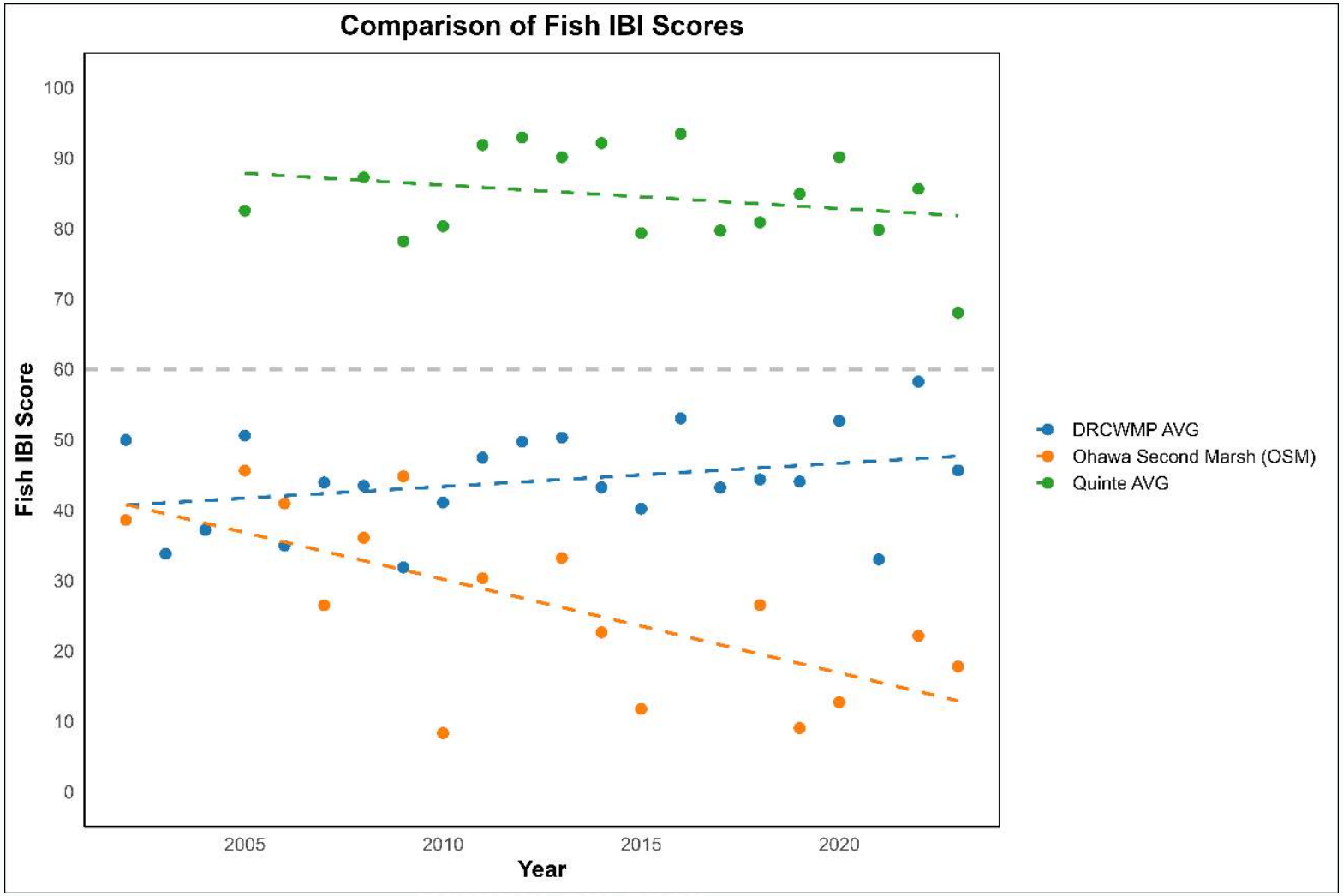
To know where you're going, you have to know where you've been



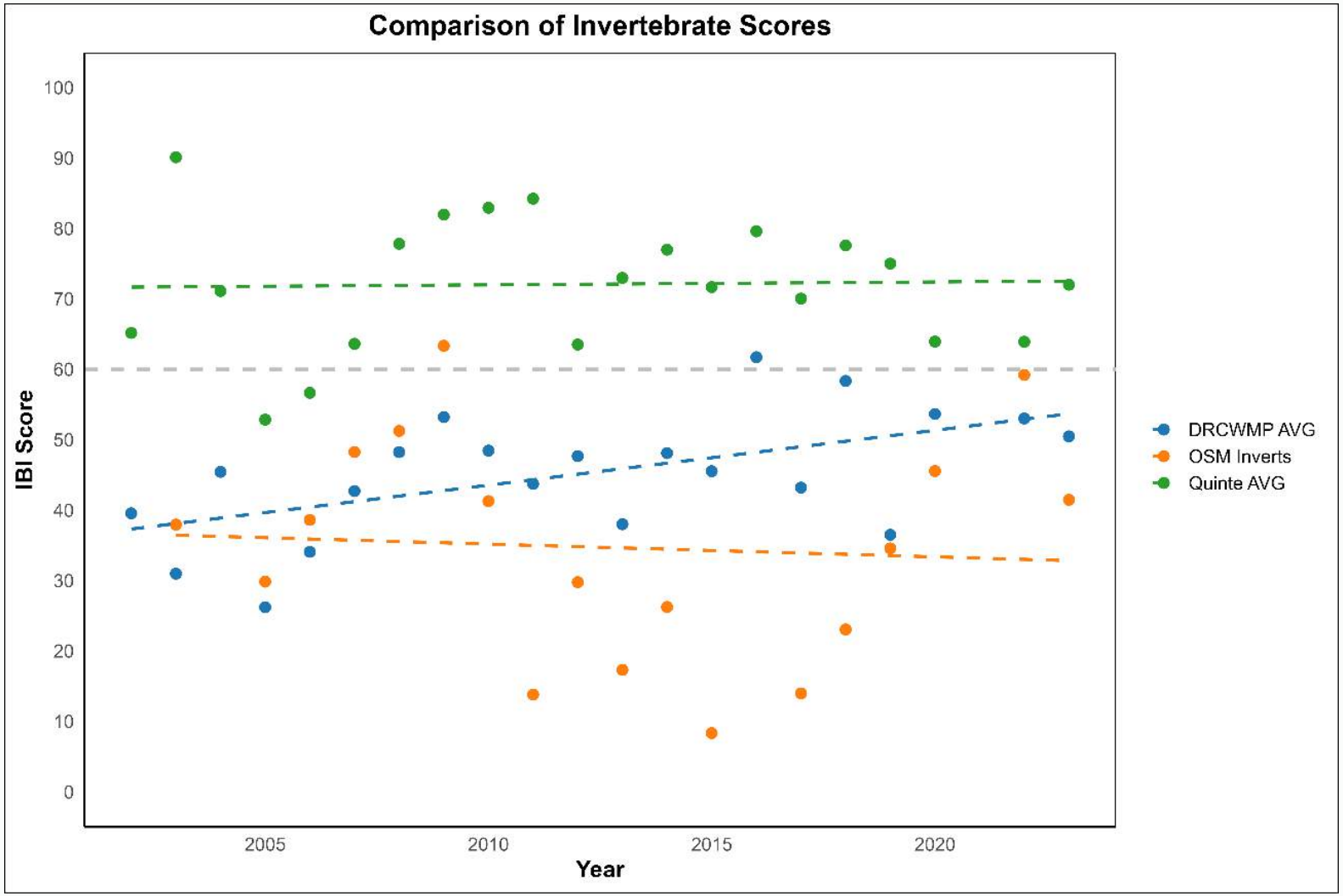
To know where you're going, you have to know where you've been



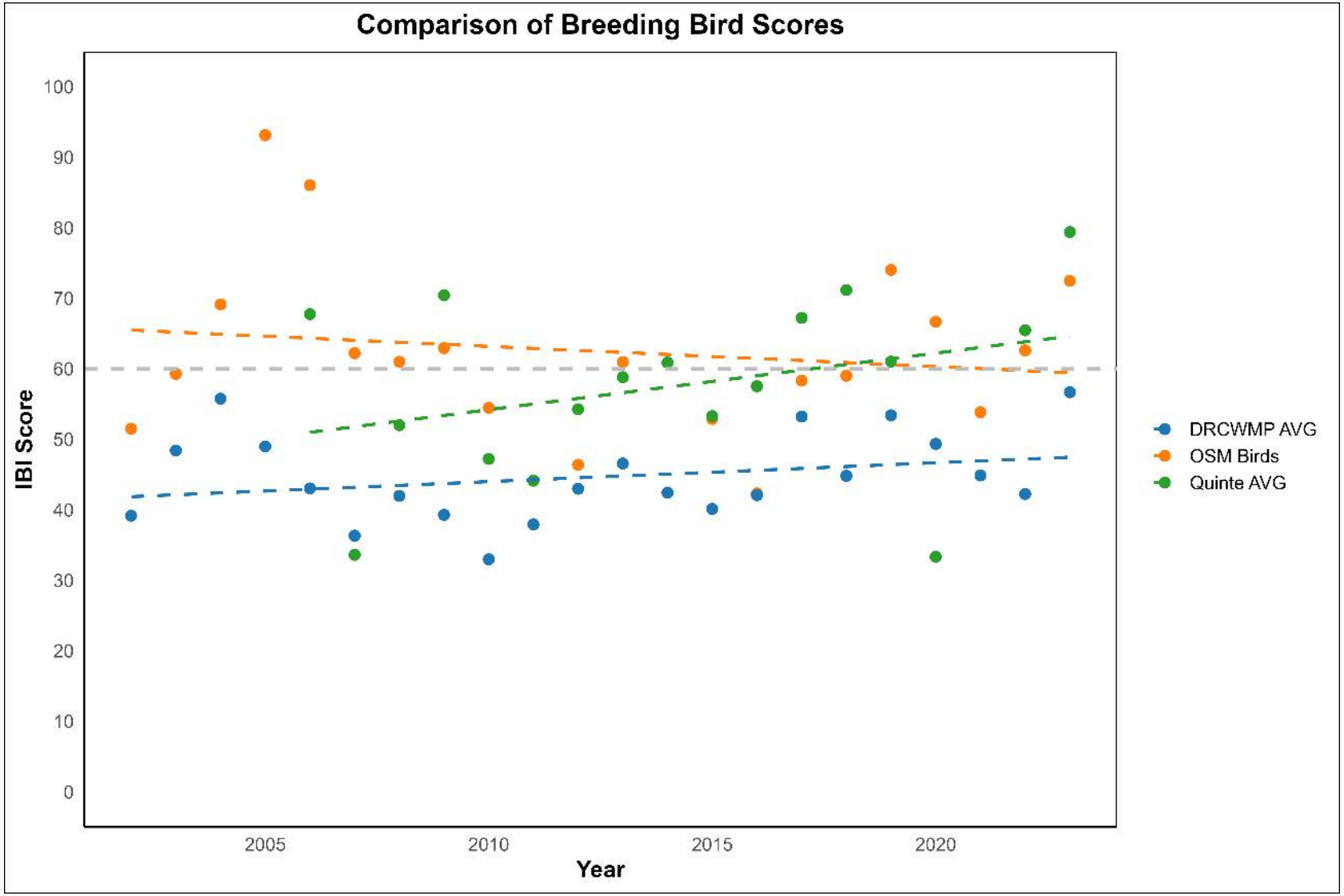
What have we learned?



What have we learned?



What have we learned?

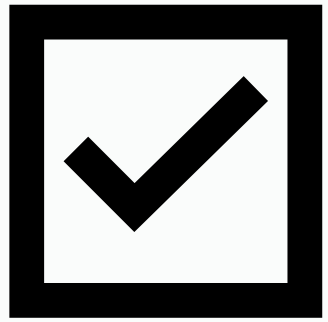


What have we learned?

Common carp management: largely successful.

Managed drawdowns: strong vegetation responses.

These achievements are worth retaining as we rethink the system.



October 18, 2016

What have we learned?

Limited **hydrological connectivity** and declining bathymetric diversity continue to constrain recovery

Connectivity challenges

Other invasive species

- Phragmites
- Goldfish

Future restoration needs to address the broader wetland system, not just individual symptoms.



What have we learned?

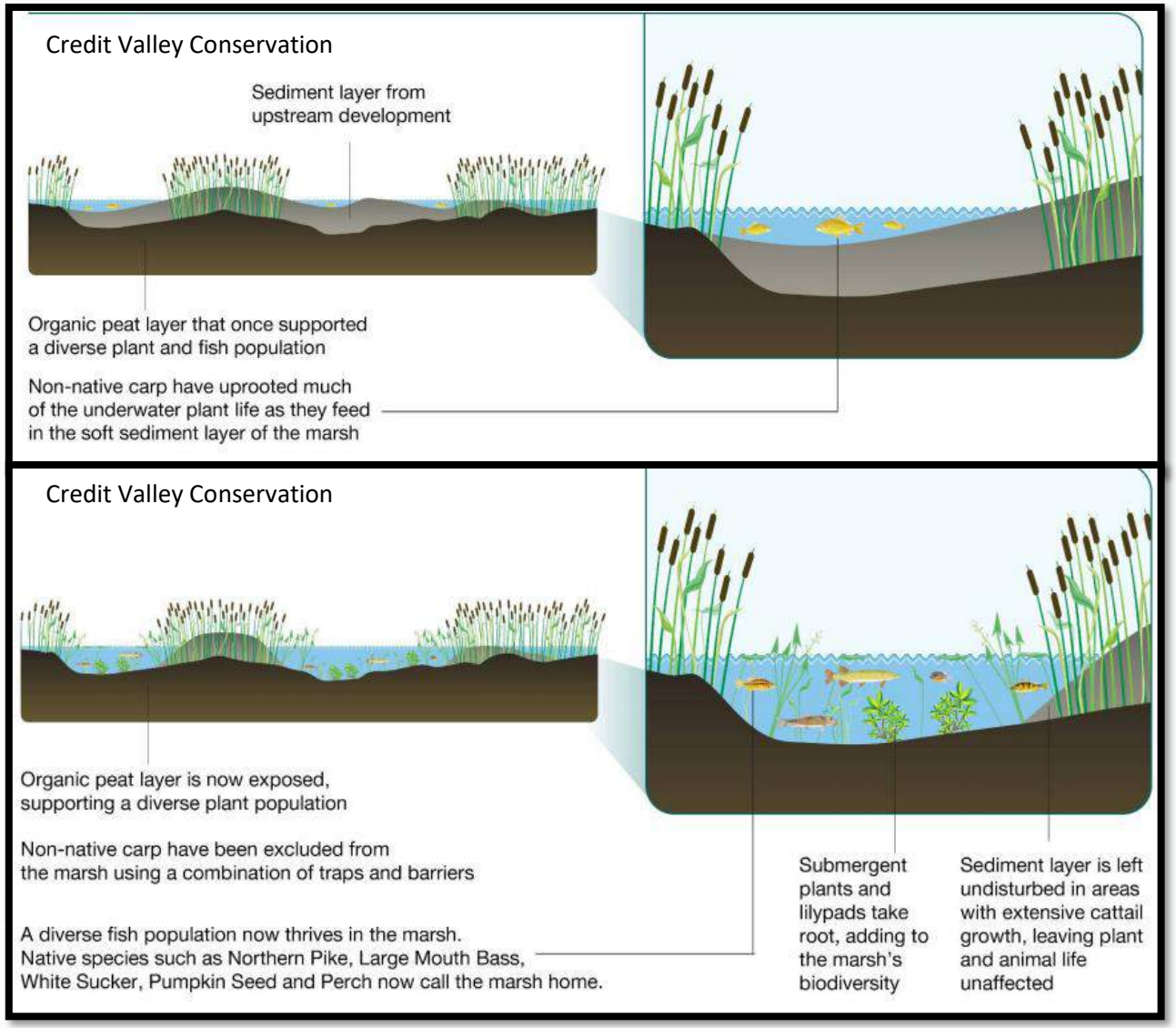
Limited hydrological connectivity and declining **bathymetric diversity** continue to constrain recovery

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What have we learned?

Limited hydrological connectivity and declining bathymetric diversity continue to constrain recovery

Connectivity challenges

Other invasive species

- **Phragmites**
- **Goldfish**

Future restoration needs to address the broader wetland system, not just individual symptoms.





October 18, 2016

A partnership, not just a project

They say it takes a village to raise a child. Well, it turns out it takes a village to restore a wetland, too

Partners:

- Canada Water Agency
- City of Oshawa
- Friends of Second Marsh,
- CLOCA,
- Hamilton Oshawa Port Authority,
- Ducks Unlimited Canada,
- Alderville FN,
- Mississaugas of Scugog Island FN,
- Hiawatha FN
- Curve Lake FN,
- Ministry of Environment, Conservation, and Parks,
- Zuzek Inc.,
- SJL Engineering,
- DHI,
- National Hydrological Services of Canada
- Invasive Phragmites Control Centre



A partnership, not just a project

OSM Technical Team: More voices, better restoration decisions



Diverse perspectives



Open discussion



Multiple ways to contribute



Better restoration decisions

Site walks, surveys, virtual meetings, breakout groups, technical meetings, and First Nations discussions encourage feedback.

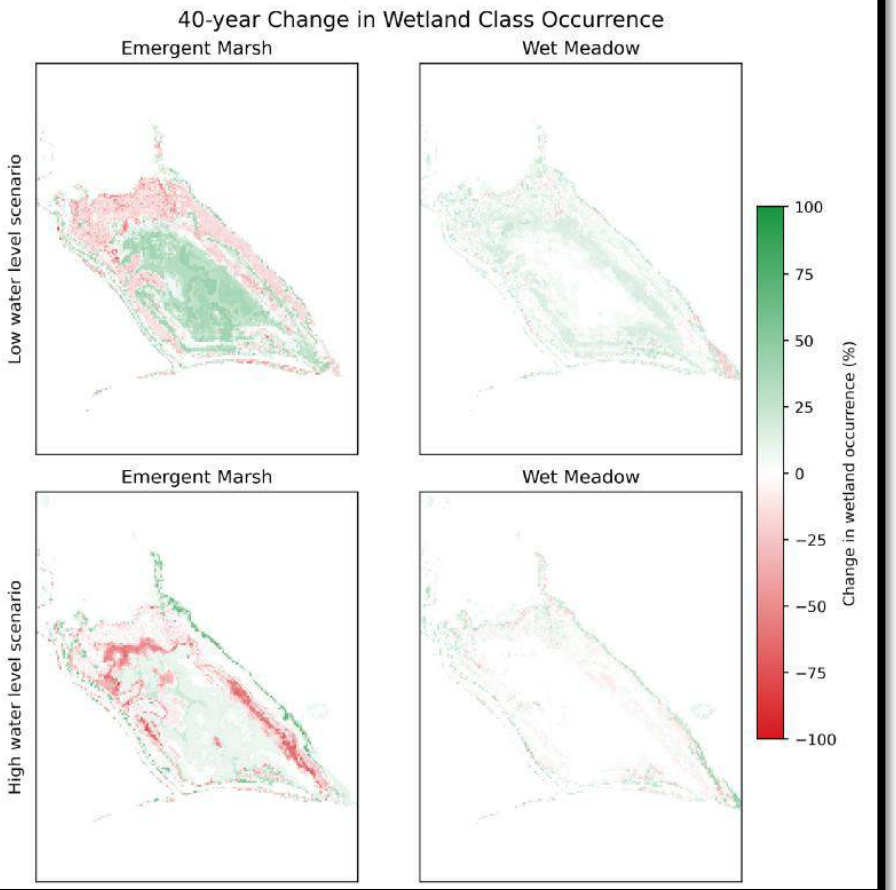
Bringing in the right people

National Hydrological Services used the Coastal Wetland Response Model to examine how changing lake levels could affect coastal wetlands.

Scenarios reinforce the need for site-specific, adaptable restoration.

Variaton of occurrence for Emergent Marsh and Wet Meadow in Oshawa Second Marsh under Low and High water level scenario





Antoine Maranda
Marianne Bachand
Dominic Thériault
National Hydrological Services

Bringing in the right people

Exploring Options to Enhance the Resilience of Barrier-Protected Wetlands

Oshawa Second Marsh

Summary of Work Completed For:

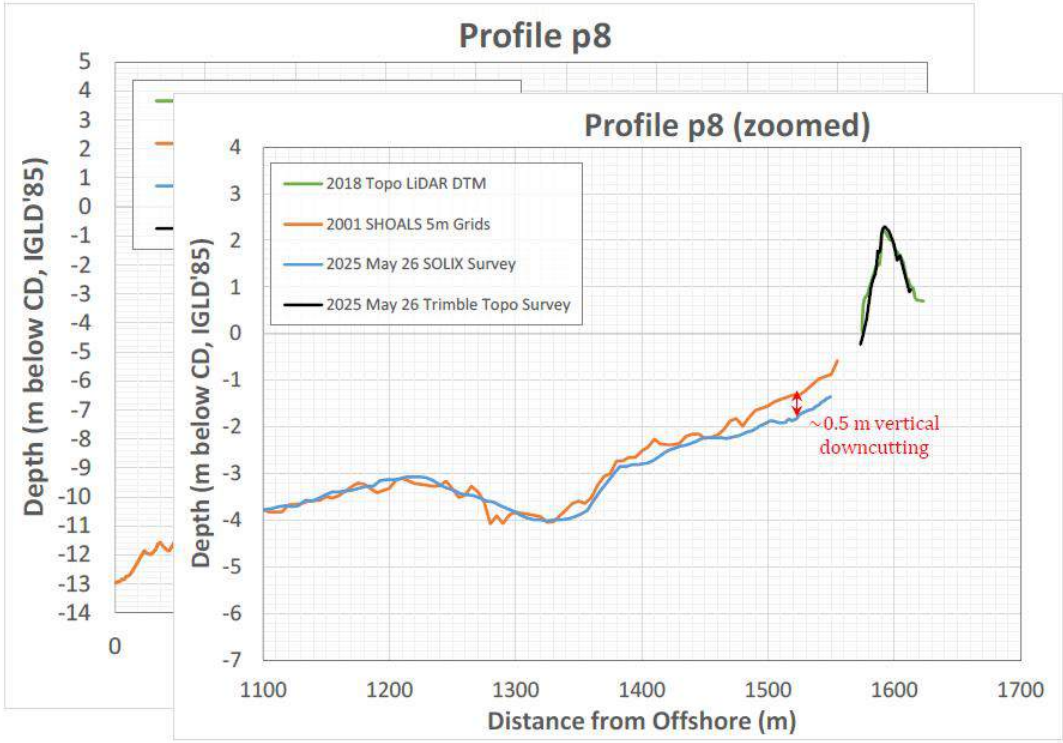
Canada Water Agency | Agence de l'eau du Canada

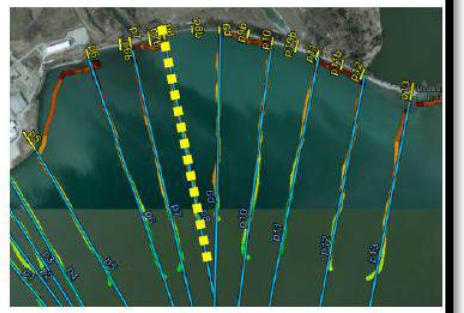
Seth Logan, P.Eng.[1], Patrick Joynt, P.Eng.[2]

DHI [2] SJL Engineering [1] Zuzek inc. One World

Shoreline Change Assessment

Nearshore Profile Evolution





Bringing in the right people

Exploring Options to Enhance the Resilience of Barrier-Protected Wetlands

Oshawa Second Marsh

Summary of Work Completed For:

Canada Water Agency | Agence de l'eau du Canada

Seth Logan, P.Eng.[1], Patrick Joynt, P.Eng.[2]

DHI [2] SJL Engineering [1] Zuzek inc. One World

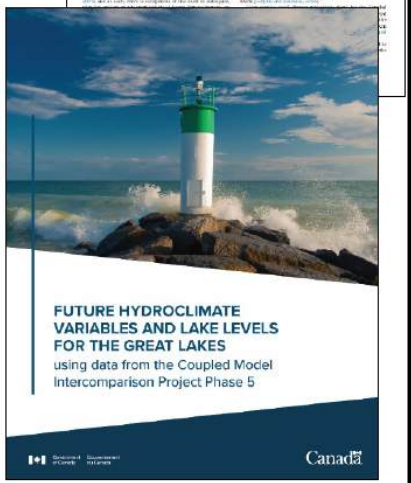
Water Levels

Climate Change Projections

- Climate change projections from 13 combinations of regional and global climate models were used to drive water supply in the Coordinated Great Lakes Regulation and Routing Model until 2100 (Seglenieks & Temgoua, 2022)

Percentage Exceedance	Measured (1961 – 2000)	Year 2050 30-Year Time Slice		Year 2080 30-Year Time Slice	
		RCP 4.5	RCP 8.5	RCP 4.5	RCP 8.5
1	0.79	1.31	1.25	1.41	1.45
5	0.49	0.96	0.88	0.99	1.08
50	**0.00**	**0.25**	**0.17**	**0.26**	**0.33**
95	-0.43	-0.31	-0.37	-0.32	-0.26
99	-0.79	-0.44	-0.56	-0.46	-0.37





Bringing in the right people

EXPLORING OPTIONS TO ENHANCE THE RESILIENCE OF BARRIER-PROTECTED WETLANDS

OSHAWA SECOND MARSH

SUMMARY OF WORK COMPLETED FOR:

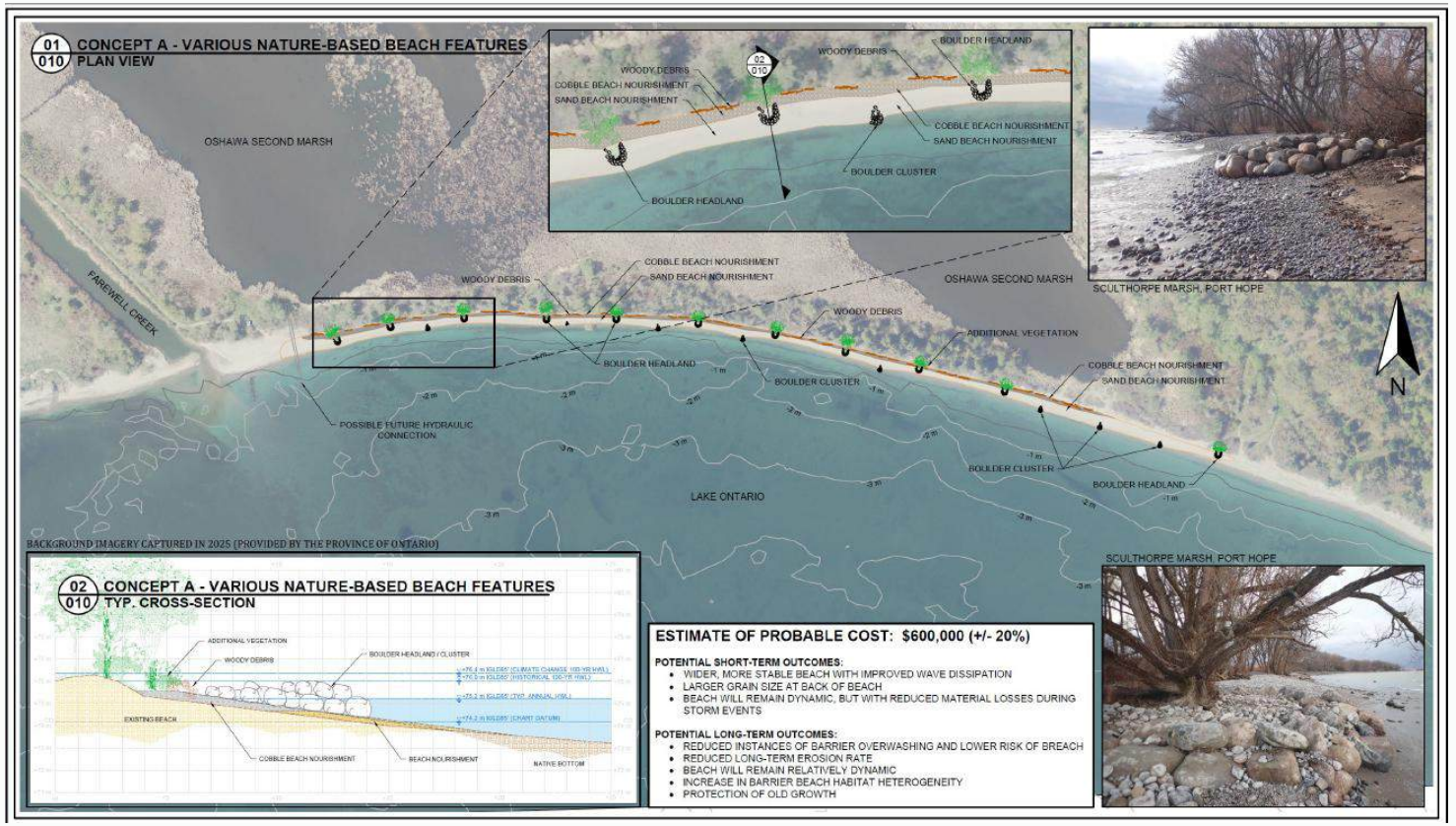
Canada Water Agency | Agence de l'eau du Canada

Seth Logan, P.Eng.[1], Patrick Joynt, P.Eng.[2]

[2] DHI

[1] SJL ENGINEERING

Zuzek inc. ONE WORLD



Incorporating Traditional Knowledge

- Approach with humility
- Think long-term
- Protect processes
- Utilize nature-based approaches when necessary
- Caution against high levels of management
- Consider culturally significant species
- Respect the past, above and below water
- Understand what worked pre-European settlement



Collaborative approach to Archaeology

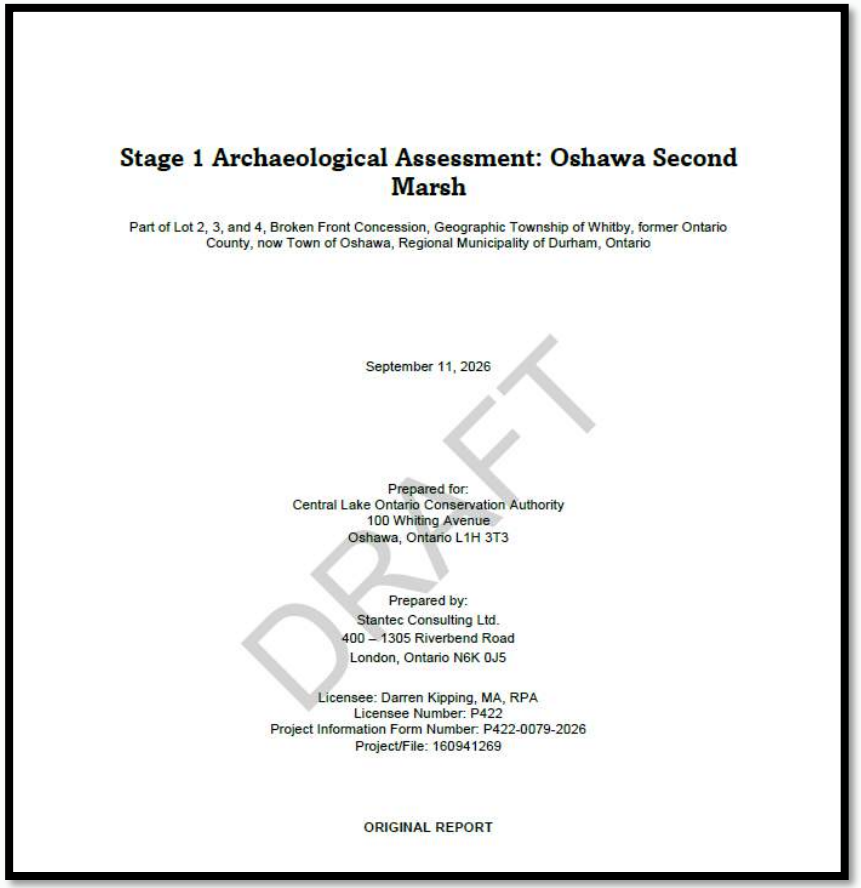
Engagement includes scope, procurement, site walks and review of draft findings.

Archaeology is being considered early, while restoration concepts are still being developed.

Opted for an Enhanced Stage 1 given the sensitivity of this area and because it is a large, complex wetland landscape where conventional methods were more challenging to apply

Work included:

- archaeological, historical and environmental background research;
- review of historic mapping and aerial photography;
- registered archaeological sites and previous assessments;
- LiDAR/DEM and topographic analysis;
- **field inspection;**
- **drone investigation because much of the marsh cannot practically be inspected on foot.**
- **incorporation of oral history/traditional knowledge into the historical context provided by WTFN**



Stage 1 Archaeological Assessment: Oshawa Second Marsh

Part of Lot 2, 3, and 4, Broken Front Concession, Geographic Township of Whitby, former Ontario County, now Town of Oshawa, Regional Municipality of Durham, Ontario

September 11, 2026

DRAFT

Prepared for:
Central Lake Ontario Conservation Authority
100 Whiting Avenue
Oshawa, Ontario L1H 3T3

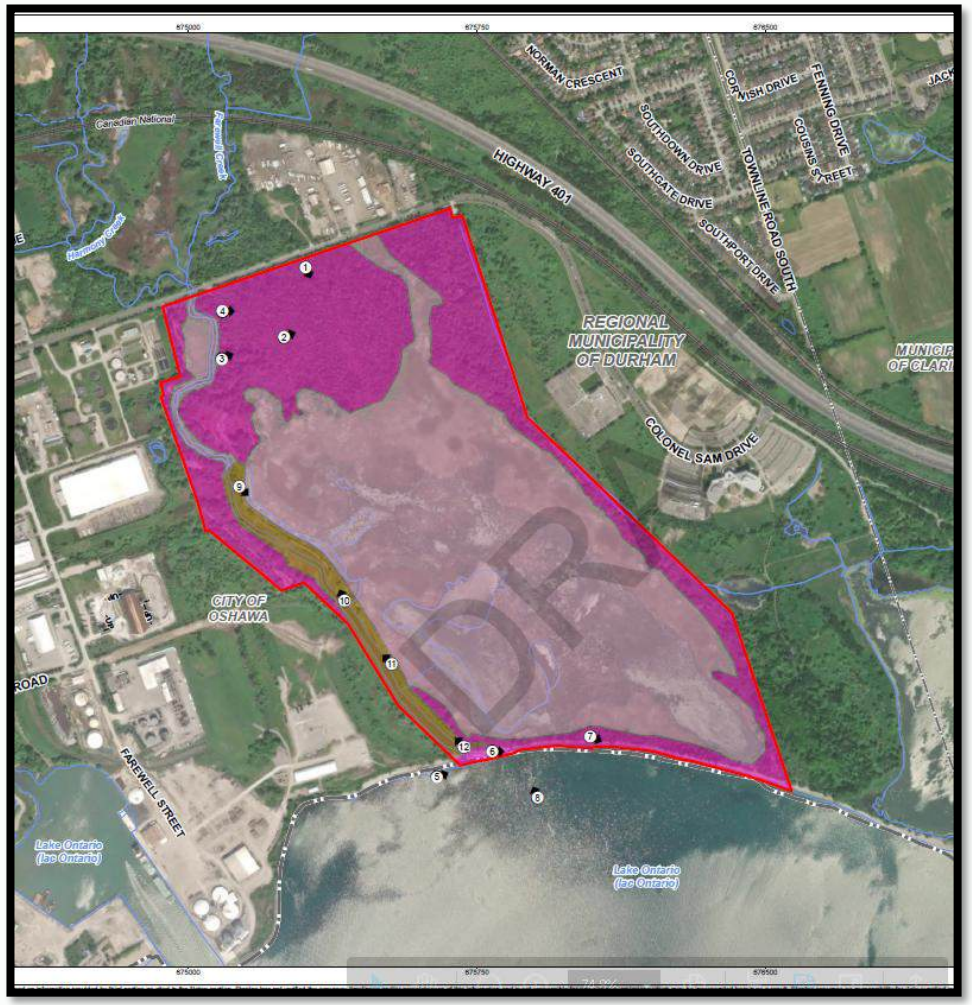
Prepared by:
Stantec Consulting Ltd.
400 – 1305 Riverbend Road
London, Ontario N6K 0J5

Licensee: Darren Kipping, MA, RPA
Licensee Number: P422
Project Information Form Number: P422-0079-2026
Project/File: 160941269

ORIGINAL REPORT

Collaborative approach to Archaeology

- The three categories are:
  - Elevated / better-drained areas → archaeological potential remains; Stage 2 recommended.
  - Wet/inundated marsh → archaeological potential cannot simply be ruled out, but conventional Stage 2 methods aren't practical or effective; Archaeological Management Plan and/or Chance Find Protocol recommended.
  - Clearly disturbed areas — notably the engineered berm and dredged/channelized Farewell Creek areas → low/no archaeological potential; no further work recommended.



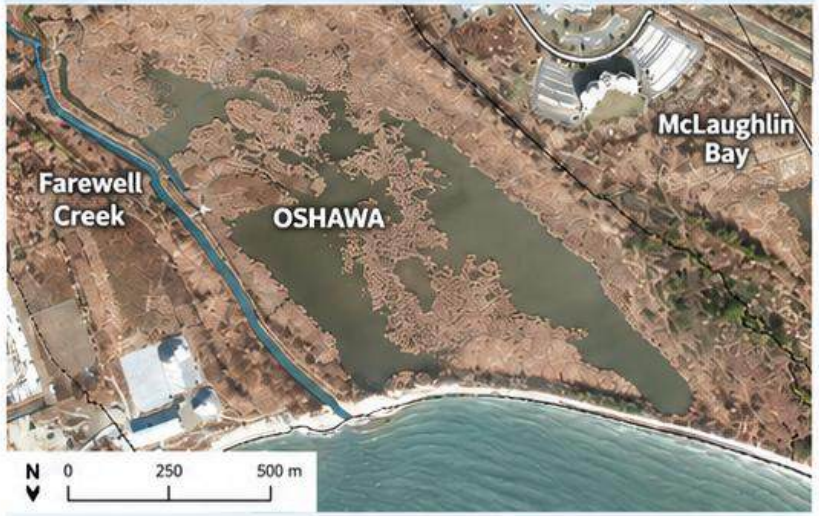
The next chapter of restoration

Three restoration approaches were considered

Each option offered different opportunities and trade-offs. The Technical Team explored all options in detail through modelling, technical review and extensive discussion.

1 Stay on course

Maintain existing controls



Opportunities

- Lower initial cost
- Maintain ability to exclude carp
- Retain water level management

Key trade-offs

- Existing ecological limitations remain
- Water chemistry concerns
- Continued loss of natural hydrology

2 Increase connection

Improve hydrology while retaining controls



Opportunities

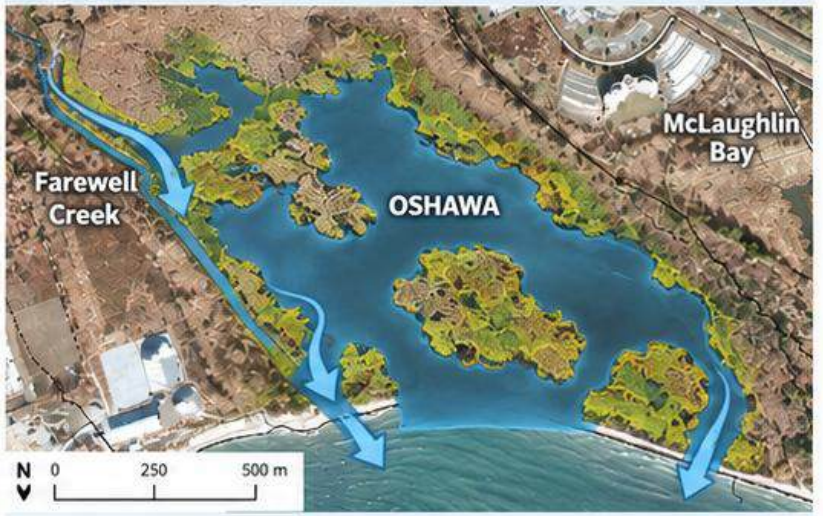
- Improve hydrology and habitat diversity
- Potential for improved water chemistry
- More resilient to future high water levels
- Maintain ability to control carp and water levels

Key trade-offs

- More complex and higher initial cost
- Some watershed water quality inputs remain
- Hydrology improved but not fully natural

3 Open water embayment

Restore more natural conditions



Opportunities

- Restore more natural hydrology
- Natural bathymetry and habitat diversity
- Greater resilience to climate change

Key trade-offs

- Watershed impacts fully on wetland
- No ability to control common carp
- No ability to manually control water levels
- Highest initial cost

Through technical review, discussion and consideration of ecological benefits, risks and feasibility,
Option 2 emerged as the preferred direction for further design.

A hybrid approach for Oshawa Second Marsh

Through technical review and extensive discussion, a hybrid approach emerged that builds on Options 2 and 3 to increase hydrological recovery while retaining key management tools.



Hybrid approach (Option 2/3)

Increase hydrological recovery while retaining key management tools

Full hydrological recovery

Allow Farewell Creek to flow into the marsh and connect to Lake Ontario, restoring natural hydrology.

Improved habitat diversity

Increased interspersion and bathymetry to create a mix of open water, emergent vegetation and submerged habitats.

Retain key management tools

Maintain the ability to control carp and water levels (if needed). Existing creek channel retained as a backup option for water movement during management (e.g., drawdown).

Build long-term resilience

Designed to function naturally most of the time, with minimal day-to-day management, while retaining flexibility to intervene when necessary.

The objective is a wetland that functions **naturally most of the time,** with the ability to intervene when necessary – not a wetland that depends on constant management.

Actions

475 meters of new channels and 3 new open areas restoring historical aquatic hemi-marsh conditions

3 hectares of bathymetry improvements to restore diversity and provide thermal refuge

Restoring hydrology and increasing connectivity by reconnecting Farewell Creek

8.5 hectares of phragmites removal

Coastal engineering assessment

Interspersion and hemi-marsh conditions



Monoculture, no interspersion

Interspersion







Actions

475 meters of new channels and 3 new open areas restoring historical aquatic hemi-marsh conditions

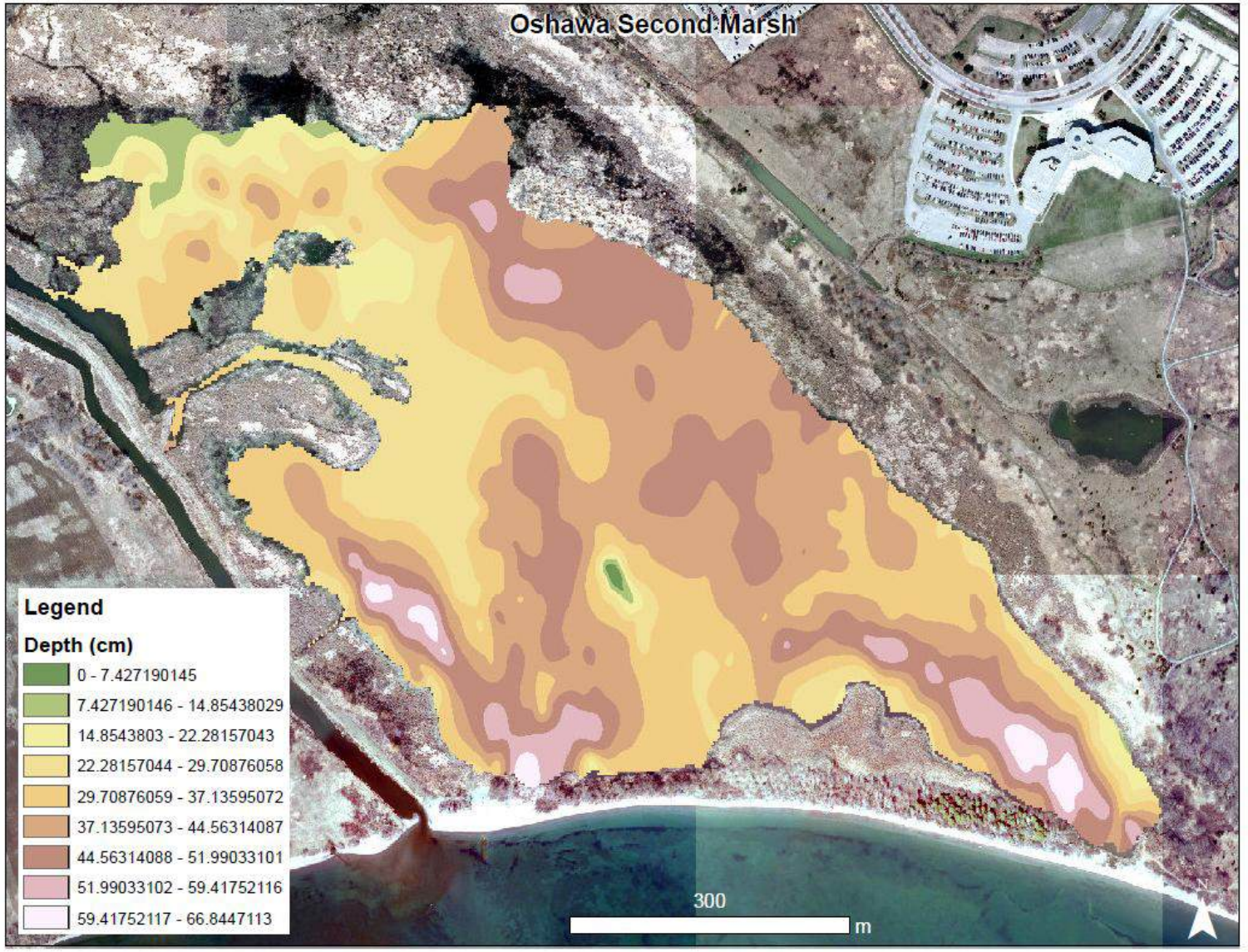
3 hectares of bathymetry improvements to restore diversity and provide thermal refuge

Restoring hydrology and increasing connectivity by reconnecting Farewell Creek

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Coastal engineering assessment

Bathymetry



Actions

475 meters of new channels and 3 new open areas restoring historical aquatic hemi-marsh conditions

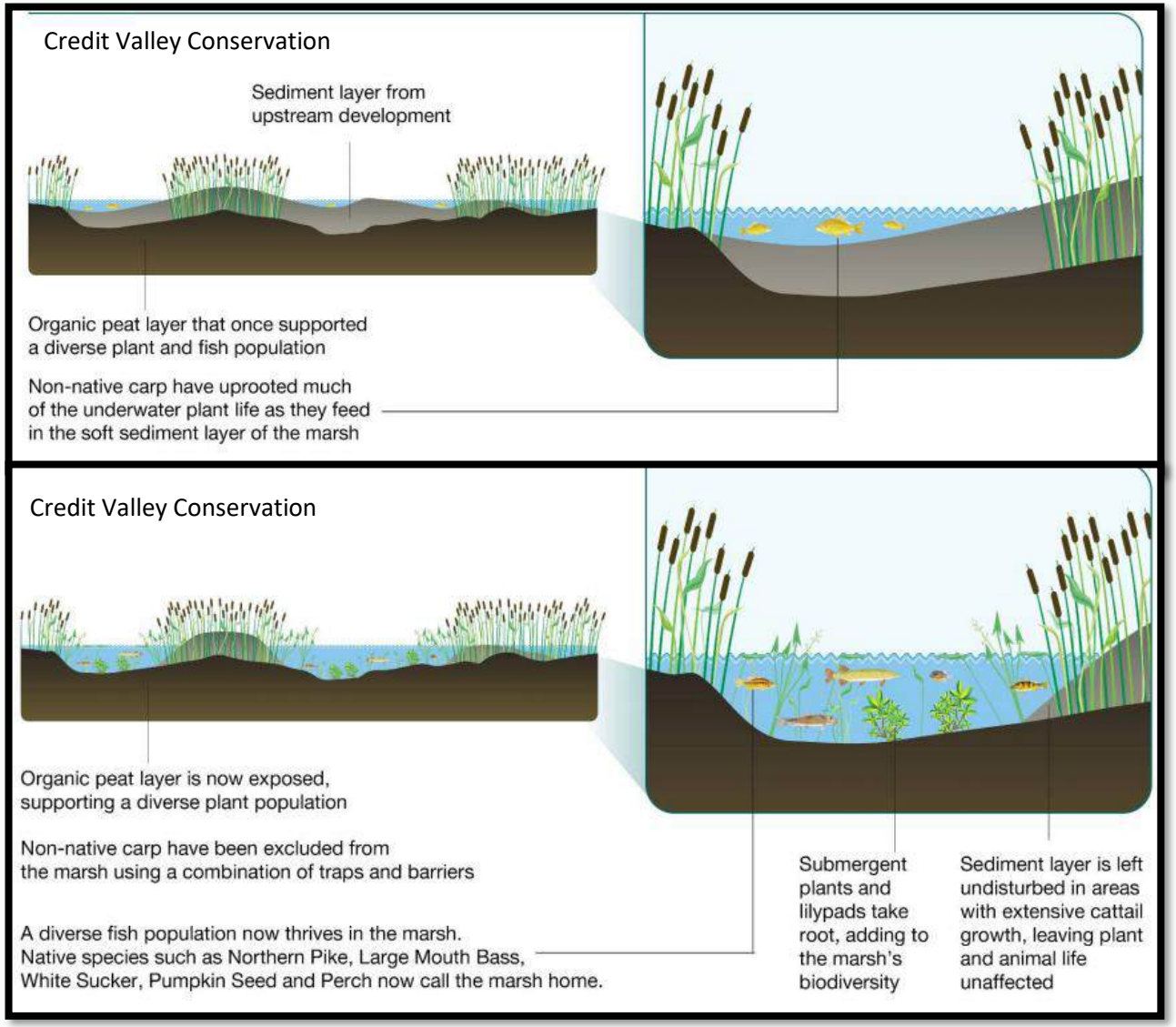
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Coastal engineering assessment

Bathymetry



Actions

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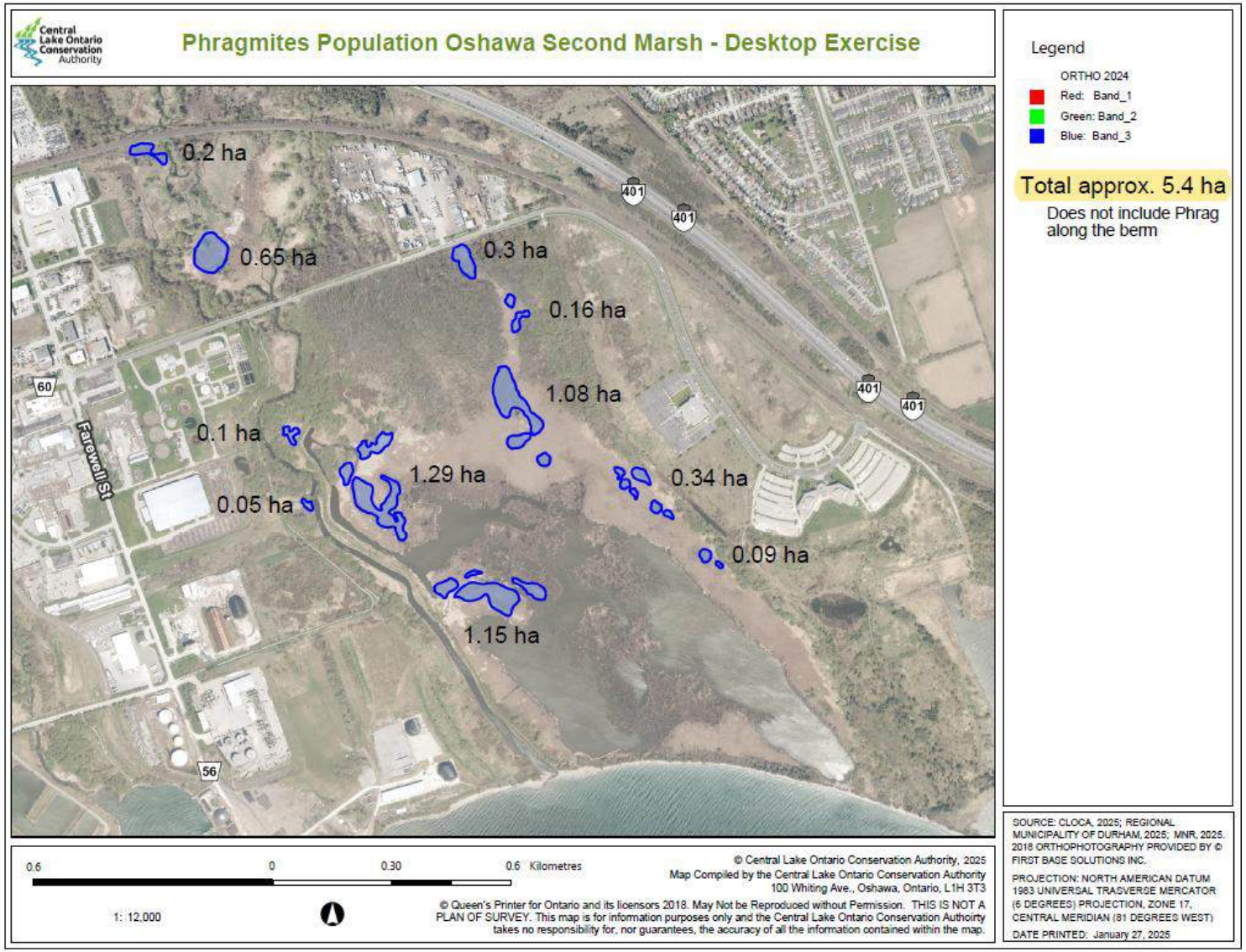
3 hectares of bathymetry improvements to restore diversity and provide thermal refuge

Restoring hydrology and increasing connectivity by reconnecting Farewell Creek

8.5 hectares of phragmites removal

Coastal engineering assessment

Invasive Species Management



Actions

475 meters of new channels and 3 new open areas restoring historical aquatic hemi-marsh conditions

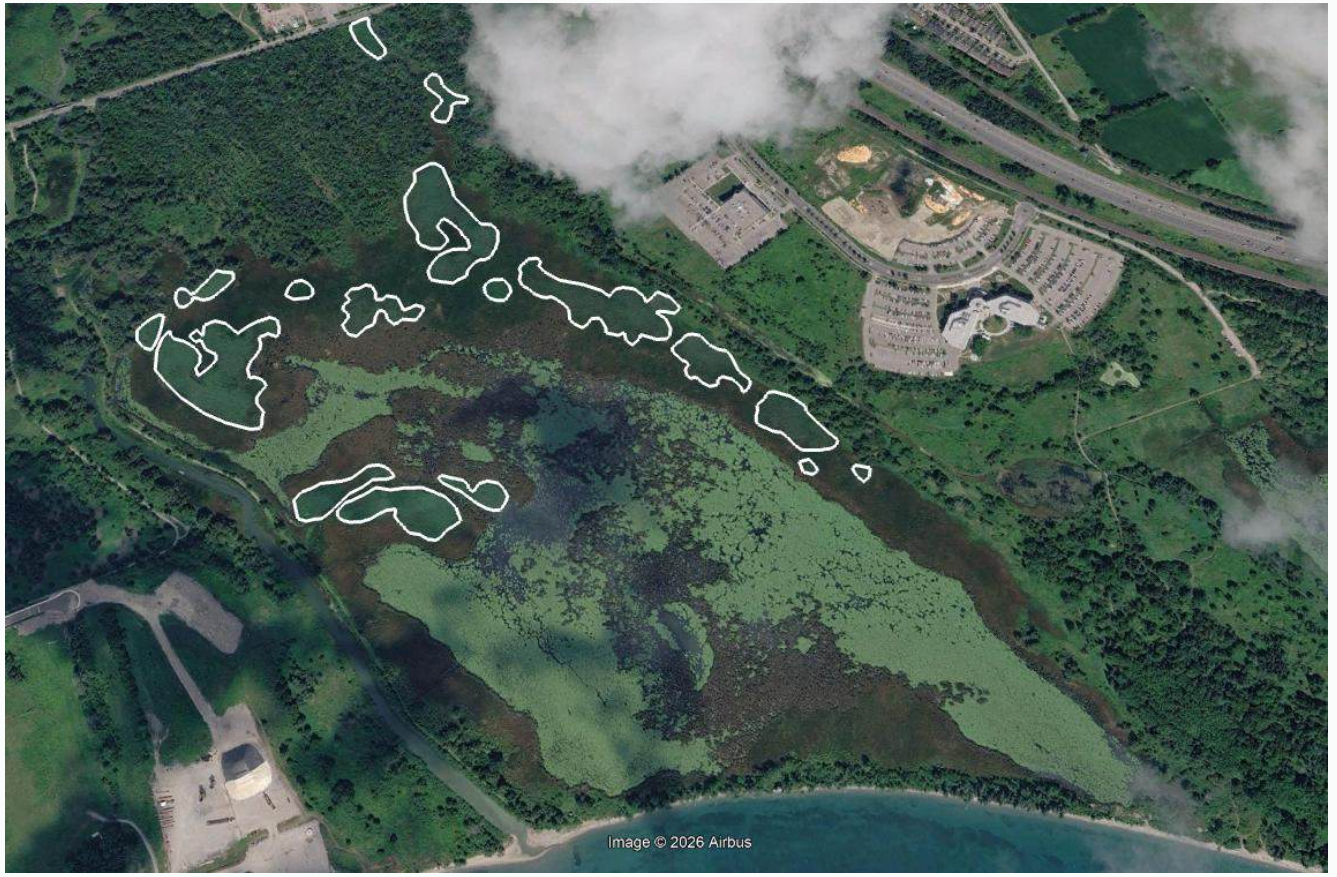
3 hectares of bathymetry improvements to restore diversity and provide thermal refuge

Restoring hydrology and increasing connectivity by reconnecting Farewell Creek

8.5 hectares of phragmites removal

Coastal engineering assessment

Invasive Species Management



Actions

Biocontrol

Mechanical

Chemical

- Large infestation
- Contractor (IPCC)
- Habitat Aqua – Aquatic Application Permit
- Drone treatment
- Reduces impact/ inaccessible sites

Invasive Species Management



Actions

475 meters of new channels and 3 new open areas restoring historical aquatic hemi-marsh conditions

3 hectares of bathymetry improvements to restore diversity and provide thermal refuge

Restoring hydrology and increasing connectivity by reconnecting Farewell Creek

8.5 hectares of phragmites removal

Coastal engineering assessment



Actions

475 meters of new channels and 3 new open areas restoring historical aquatic hemi-marsh conditions

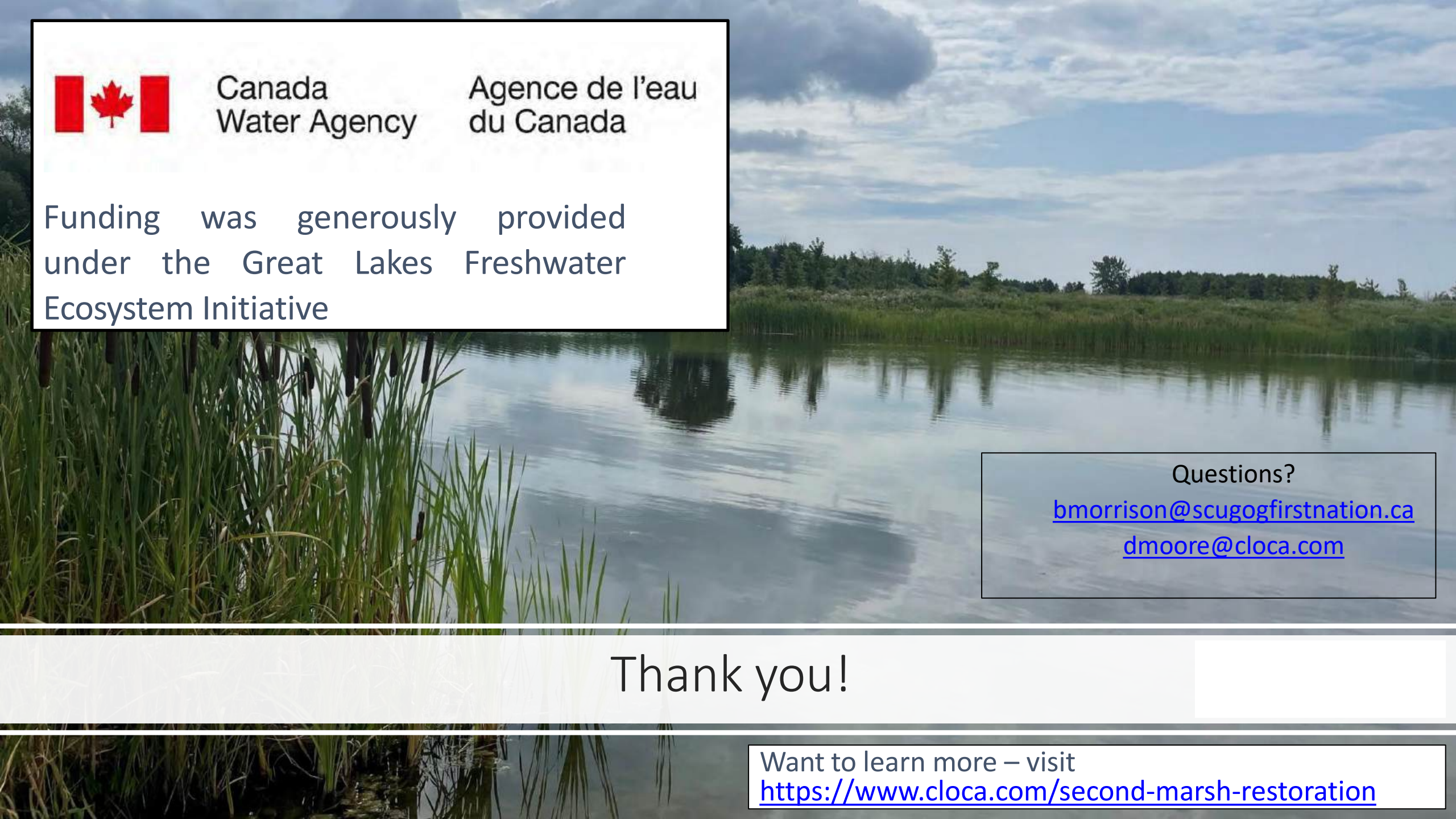
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Coastal engineering assessment





Canada Water Agency | Agence de l'eau du Canada

Funding was generously provided under the Great Lakes Freshwater Ecosystem Initiative

Questions?
bmorrison@scugogfirstnation.ca
dmoore@cloca.com

Thank you!

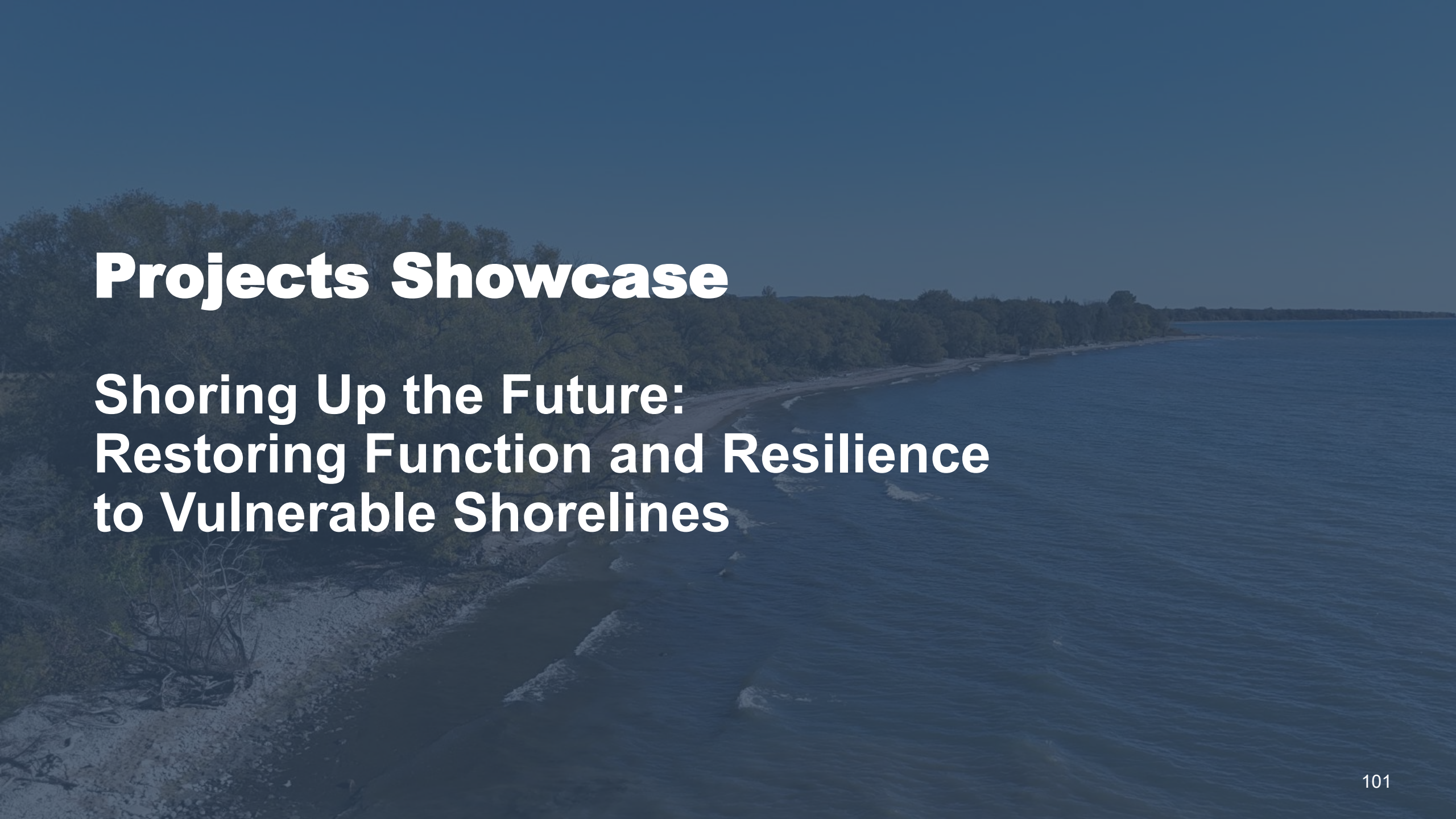
Want to learn more – visit
https://www.cloca.com/second-marsh-restoration

Project Highlight Q&A

Collaborative Conservation: Oshawa Second Marsh and Partner Perspectives

Lunch and networking

See you back at 1pm!



Projects Showcase

Shoring Up the Future: Restoring Function and Resilience to Vulnerable Shorelines



Developing and Evaluating Nature-Based Solutions to Protect and Stabilize Shorelines in the Upper St. Lawrence River

Matt Windle[1*], Colin Rennie[2] Arman Haghighi[2], Greg Courtice[3], Chris Moran[4], Claire McFaul[5], Ioan Nistor[2], Jeff Ridal[1]

[1]River Institute, Cornwall
[2]University of Ottawa, Ottawa
[3]Applied Ecohydraulics, Kelowna
[4]Great River Network
[5]Mohawk Council of Akwesasne, Akwesasne

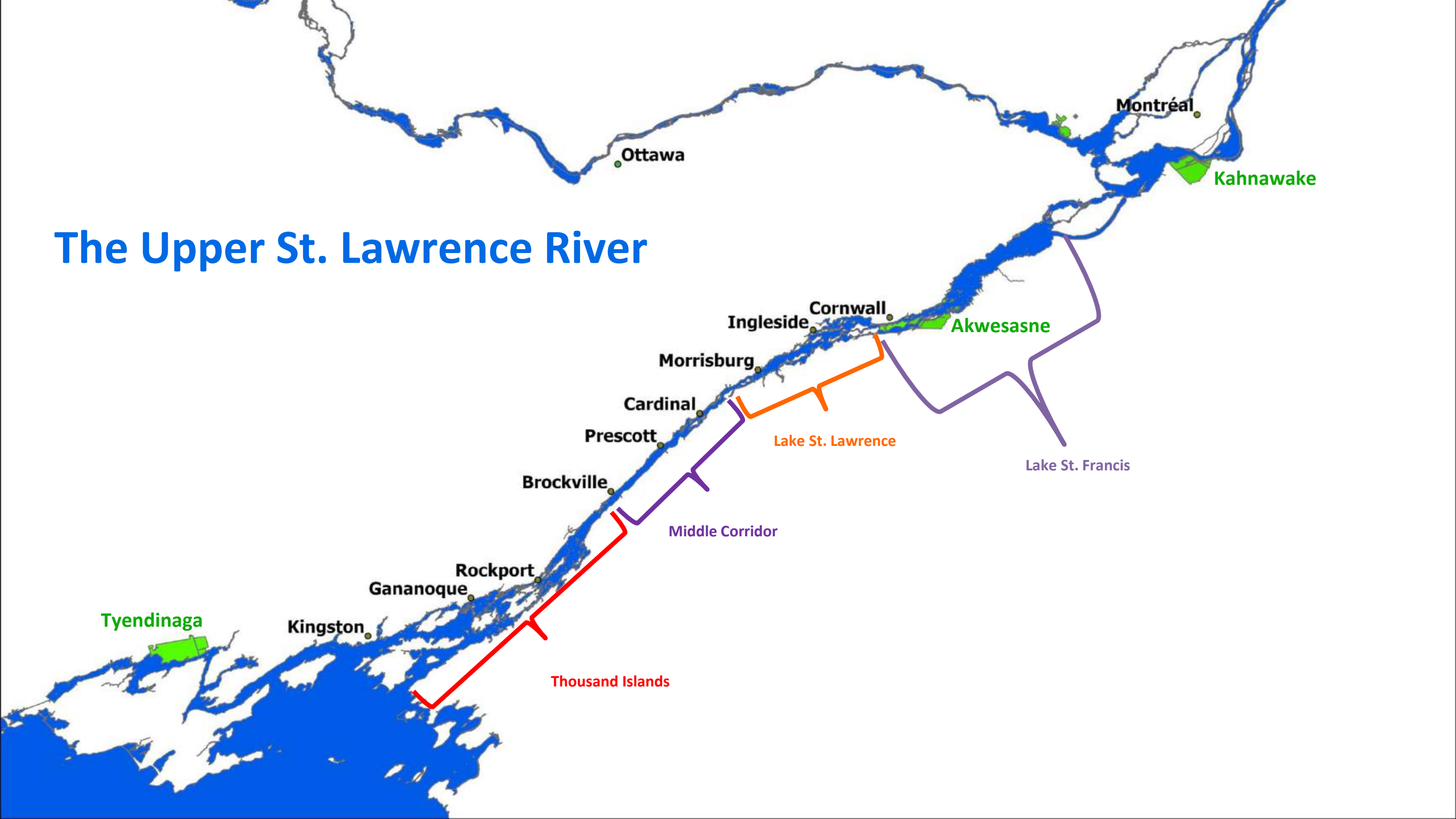
| October 21, 2026

***CONTACT:**
Research Scientist
Program Lead, Research & Technical Services
River Institute
mwindle@riverinstitute.ca

The Great Lakes / St. Lawrence River



The Upper St. Lawrence River



Complex jurisdictional considerations

- Federal: Canada/US
- Provincial: Ontario/Quebec
- State: NY
- Indigenous: Akwesasne





River Stressors – Navigation & infrastructure

- Commercial shipping and Seaway operations
- Port and industrial shoreline hardening
- Causeways, bridges, and shoreline armoring

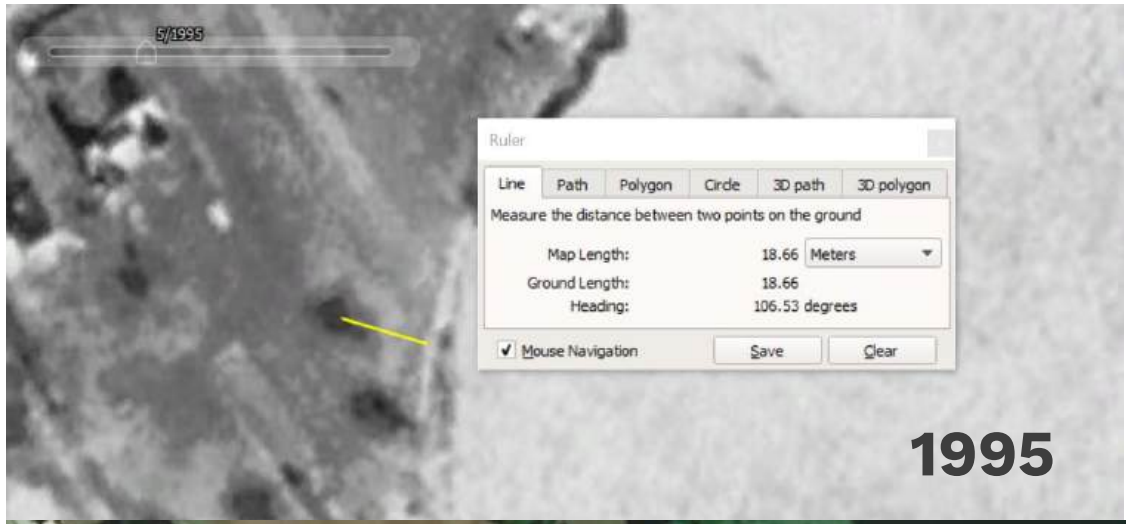
Mariatown Shoreline

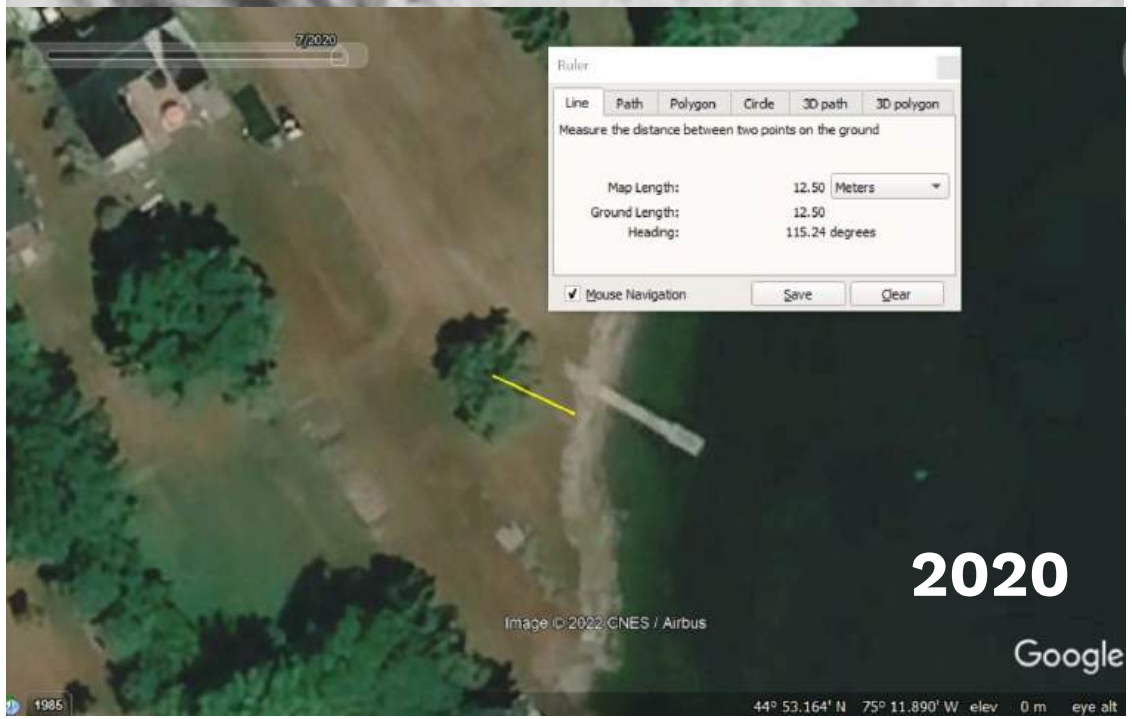
Average Recession ~ 0.25 m / year



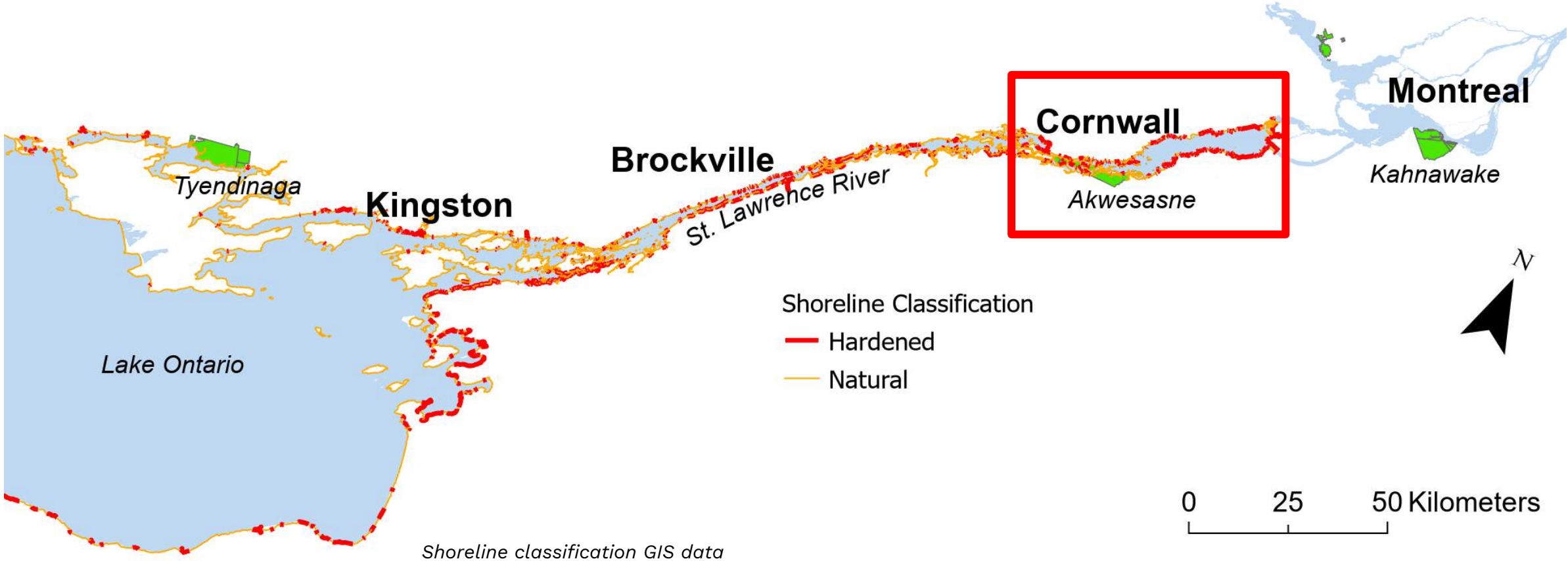
Shoreline recession due to wind event, Dec 2022

Distance from top of bank to existing tree



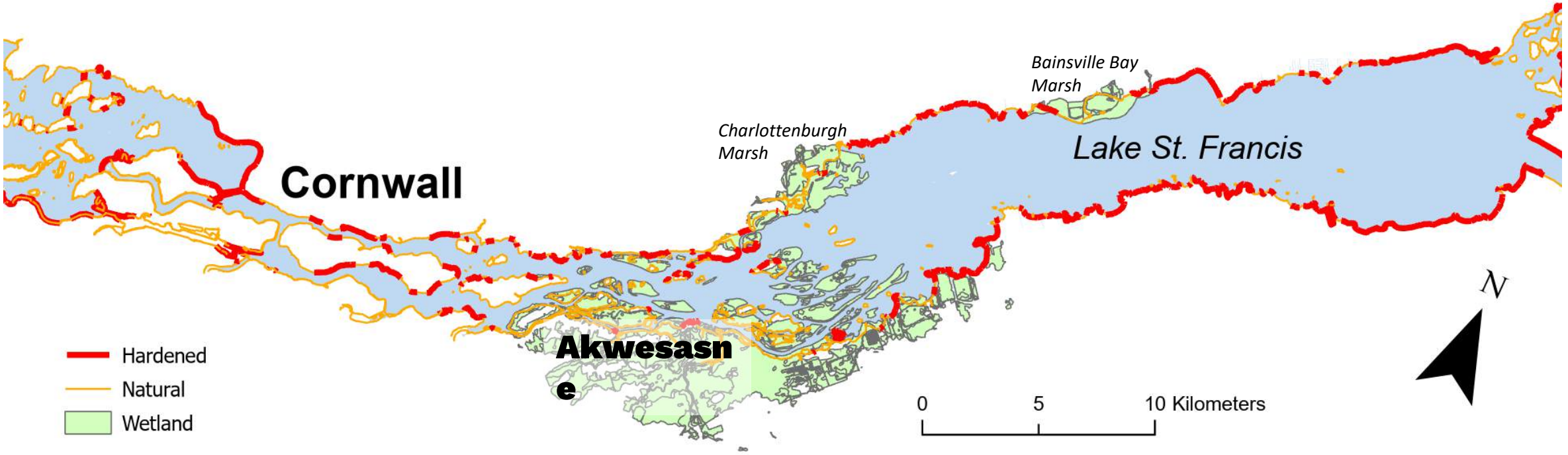


25-30% of shorelines hardened in Upper St. Lawrence River



Shoreline classification GIS data source: Great Lakes Aquatic Habitat Framework (GLAHF)

% hardened shoreline higher in some river sections (Lake St. Francis)



Shoreline classification GIS data source: Great Lakes Aquatic Habitat Framework (GLAHF)

Shoreline hardening approaches





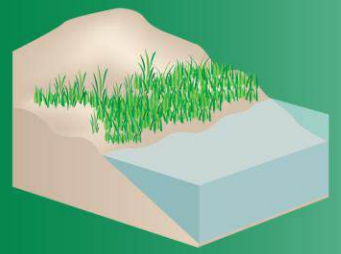




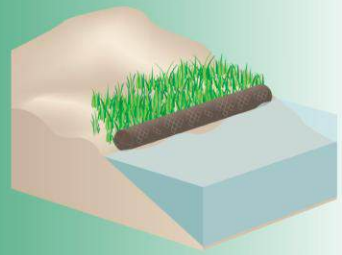
HOW GREEN OR GRAY SHOULD YOUR SHORELINE SOLUTION BE?

GREEN - SOFTER TECHNIQUES ← → **GRAY - HARDER TECHNIQUES**

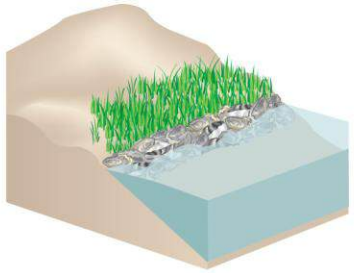
Living Shorelines



VEGETATION ONLY - Provides a buffer to upland areas and breaks small waves. Suitable for low wave energy environments.

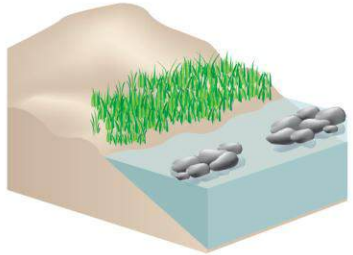


EDGING - Added structure holds the toe of existing or vegetated slope in place. Suitable for most areas except high wave energy environments.

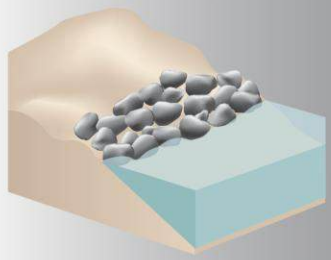


SILLS - Parallel to vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.

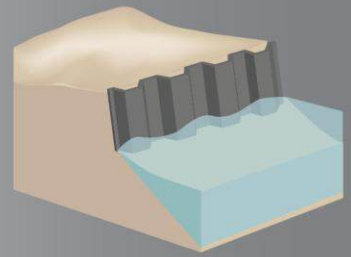
Coastal Structures



BREAKWATER - (vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.



REVETMENT - Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with existing hardened shoreline structures.



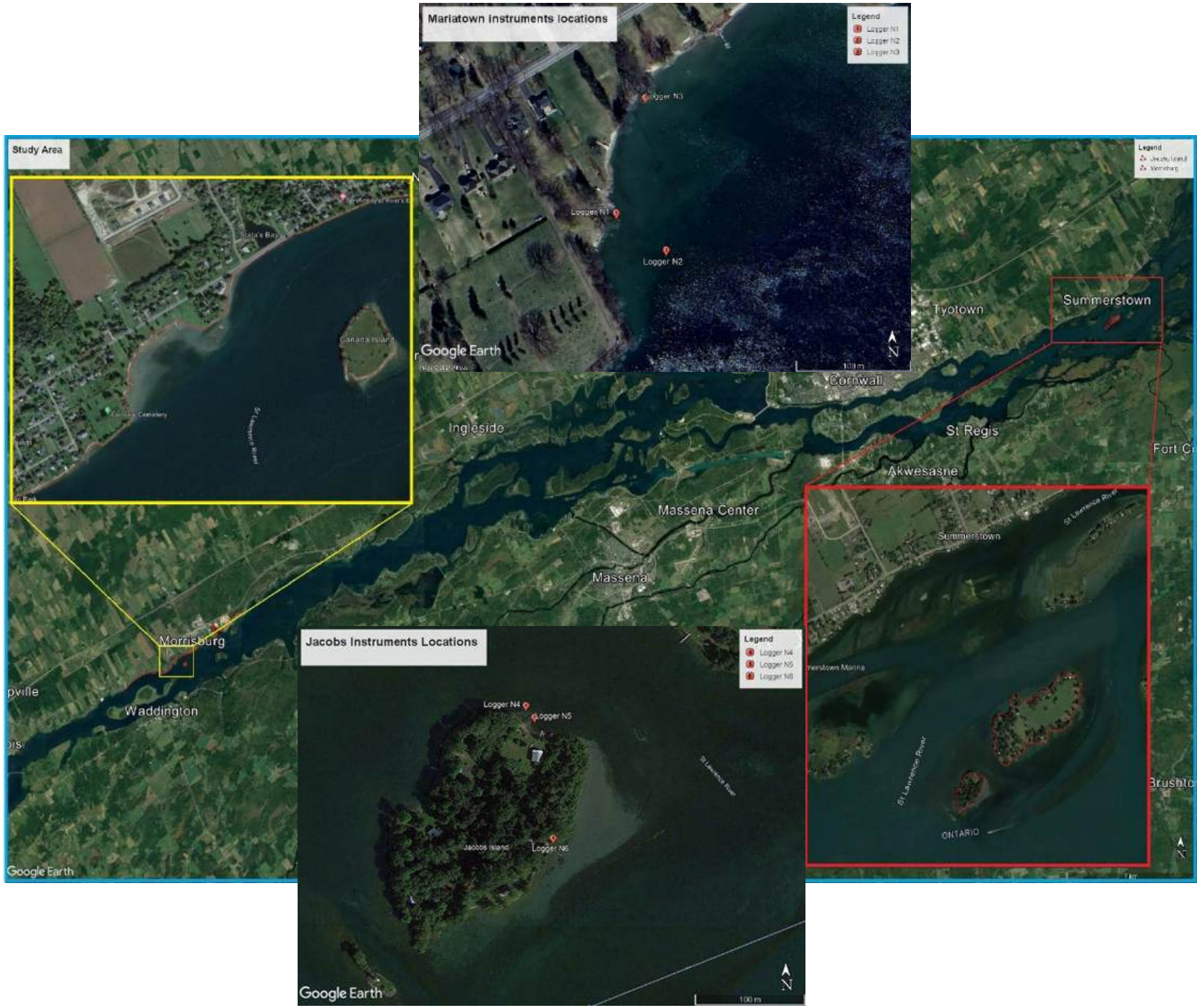
BULKHEAD - Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for high energy settings and sites with existing hard shoreline structures.

Source: https://www.habitatblueprint.noaa.gov/living-shorelines/

Physical Erosion Study (2021-2024)

Evaluating the impact of waves and shoreline erosion on nearshore habitat in the St. Lawrence River

DFO Grant (2021-2024)



A Collaborative Research Team

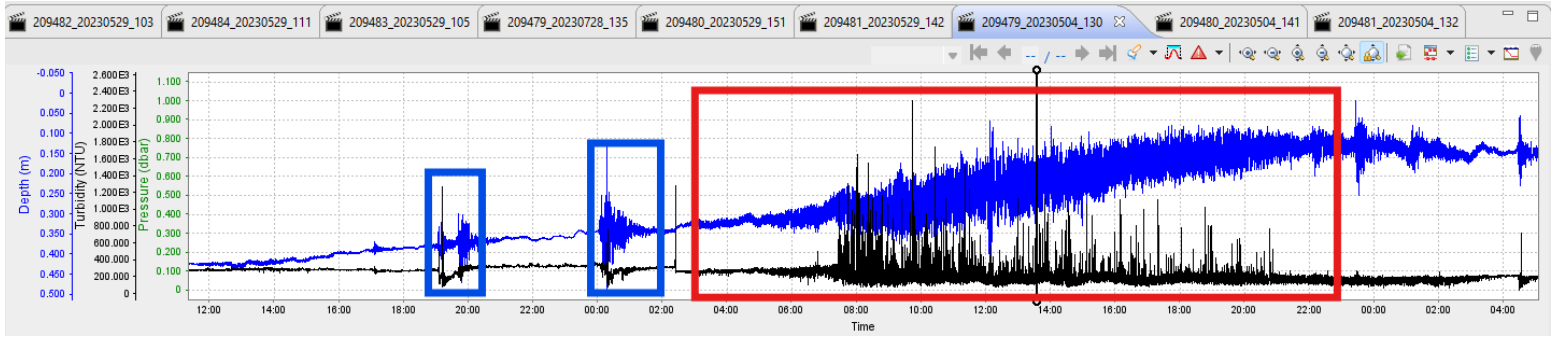
- River Institute
- University of Ottawa
- Applied Ecohydraulics
- Great River Network
- Akwesasne
- (South Nation Conservation)
- (Raisin Region Conservation)



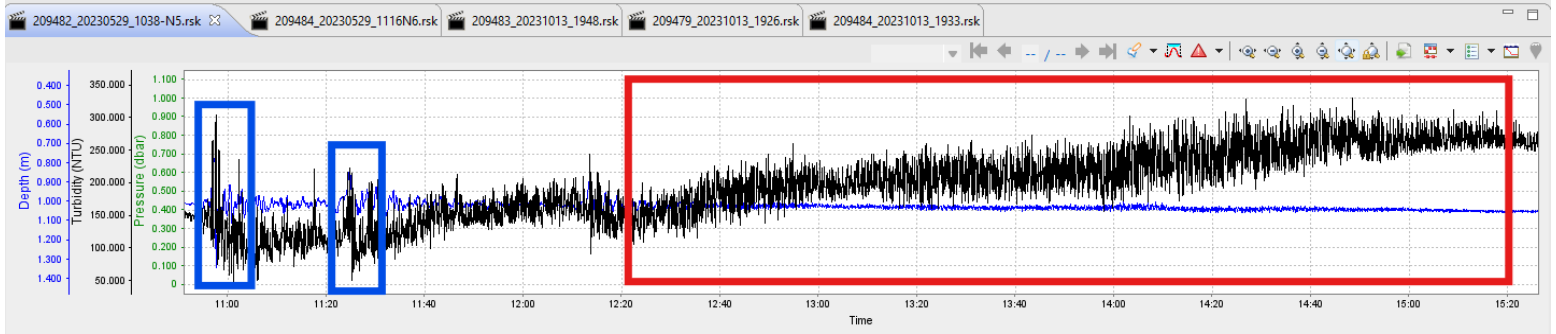
Wave Loggers & Mounting System

- 6 Loggers
- RBR Duo3 D.TU: (Deployed)
- 2Hz Sampling rate, Turbidity Sensor, Depth Sensor & Pressure sensor





Water level and turbidity data recorded by loggers N1 at Mariatown on April 21, 2023, visualized using RBR's Ruskin software. The blue boxes show two ship passages, and the red box marks a wind event.



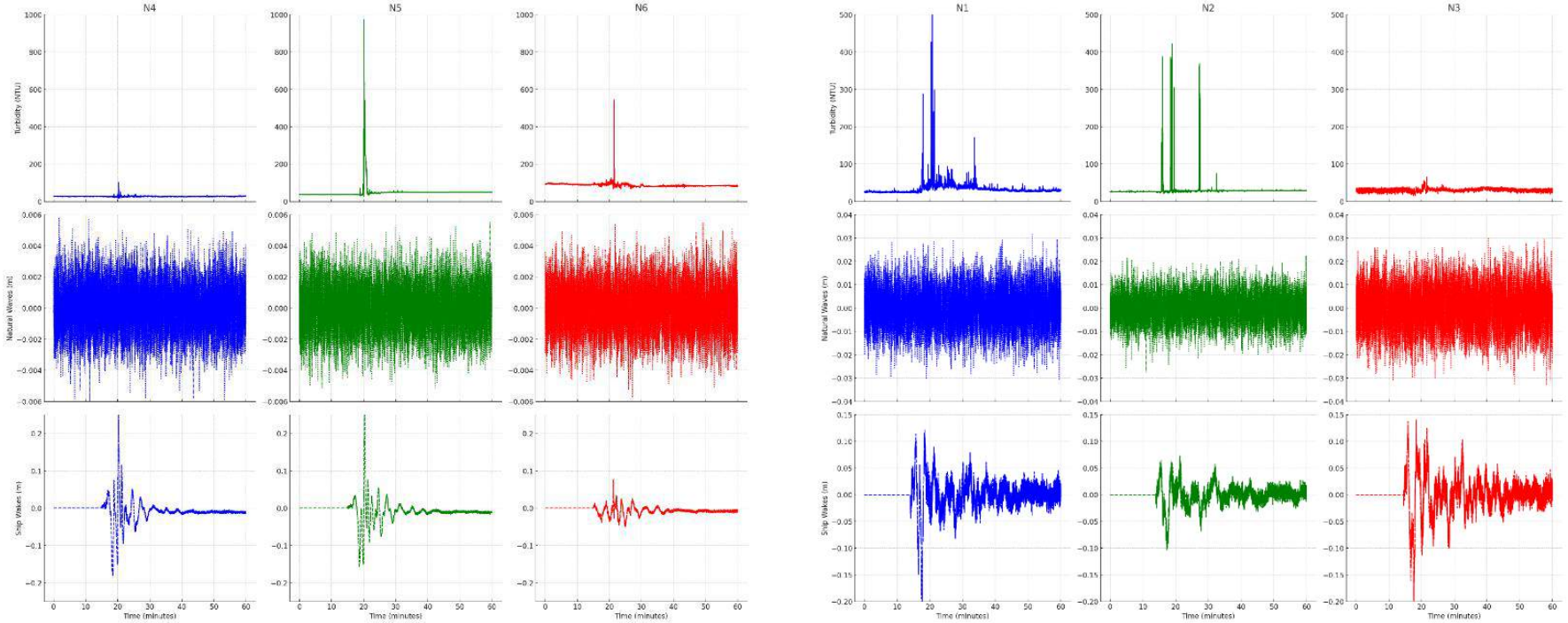
Water level and turbidity data recorded by loggers N5 at Jacobs Island on May 24, 2023, visualized using RBR's Ruskin software. The blue boxes show two ship passages, and the red box marks a wind event.

Signal Analysis

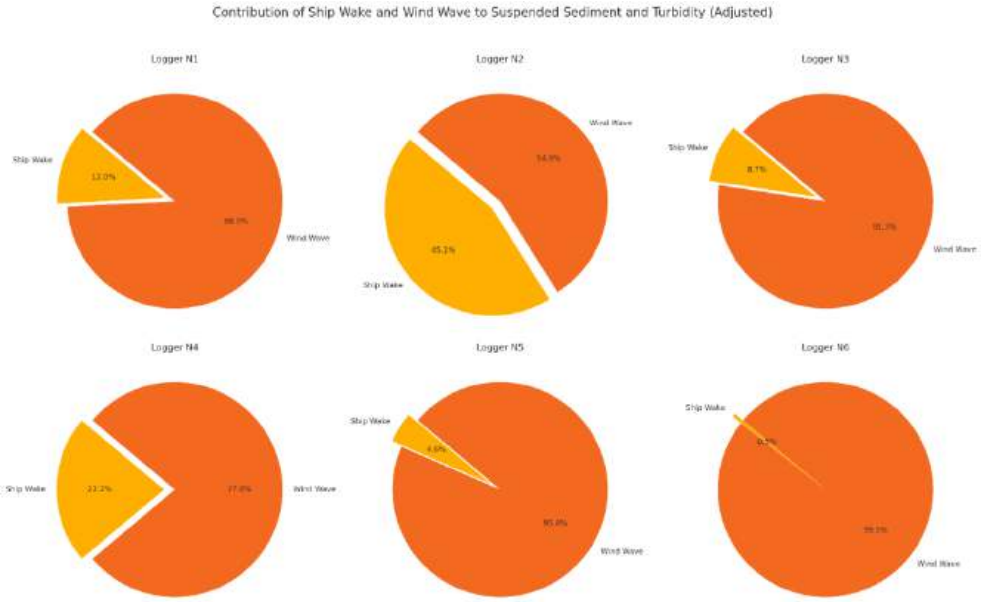
Turbidity (NTU)

Natural waves (m)

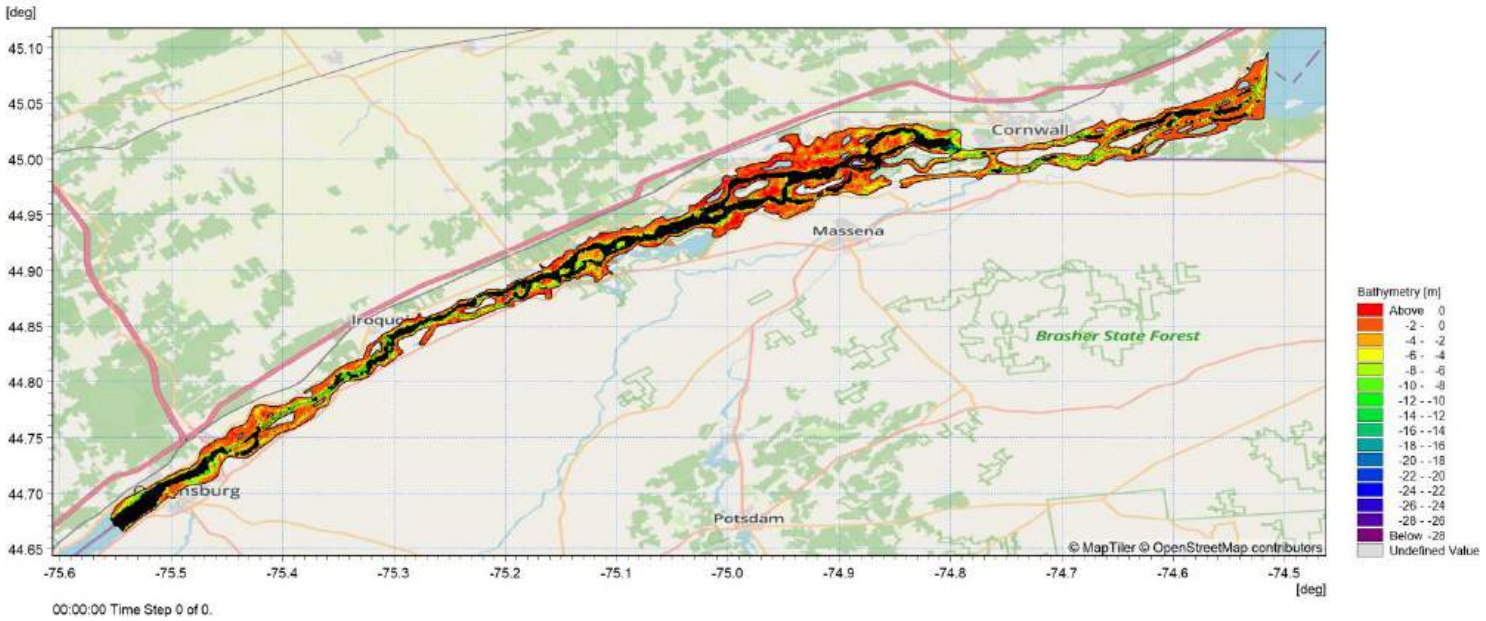
Ship waves (m)

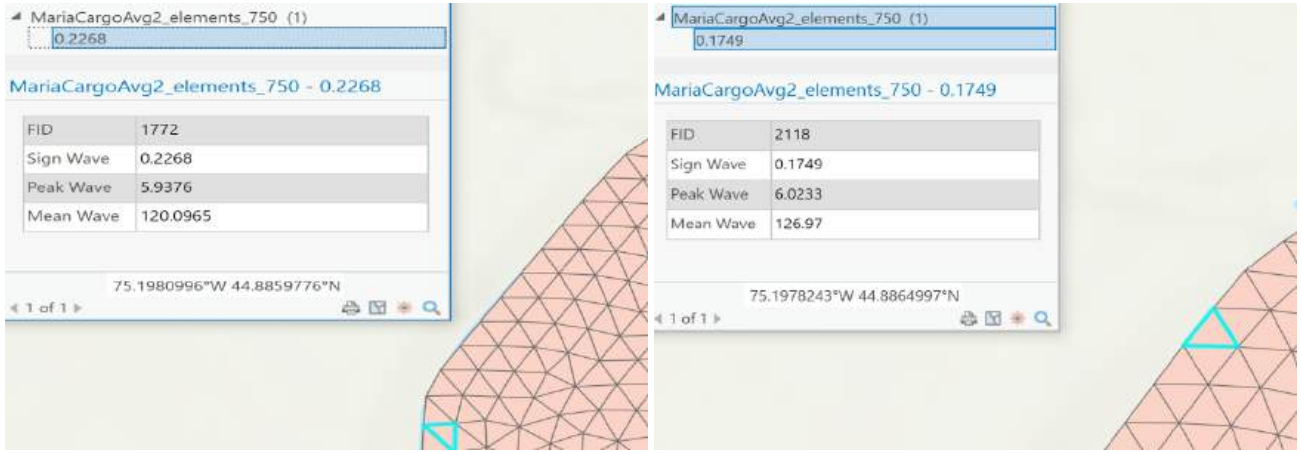


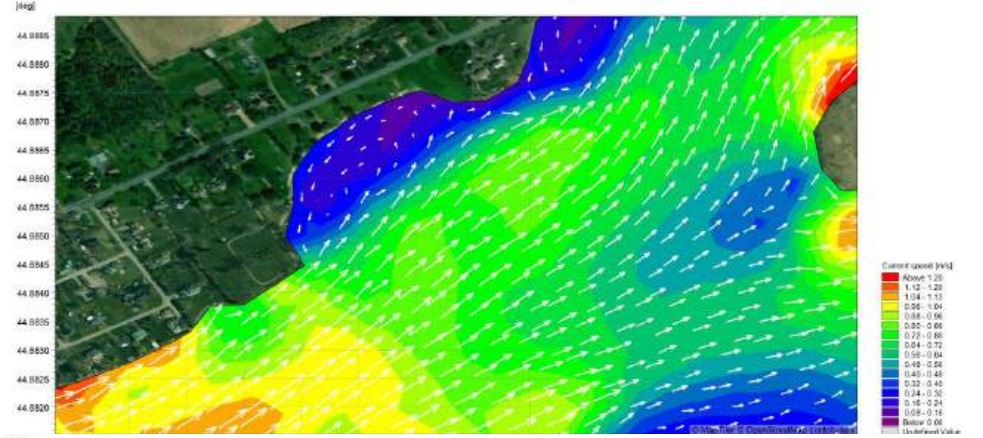
Turbidity due to ship wake and wind wave

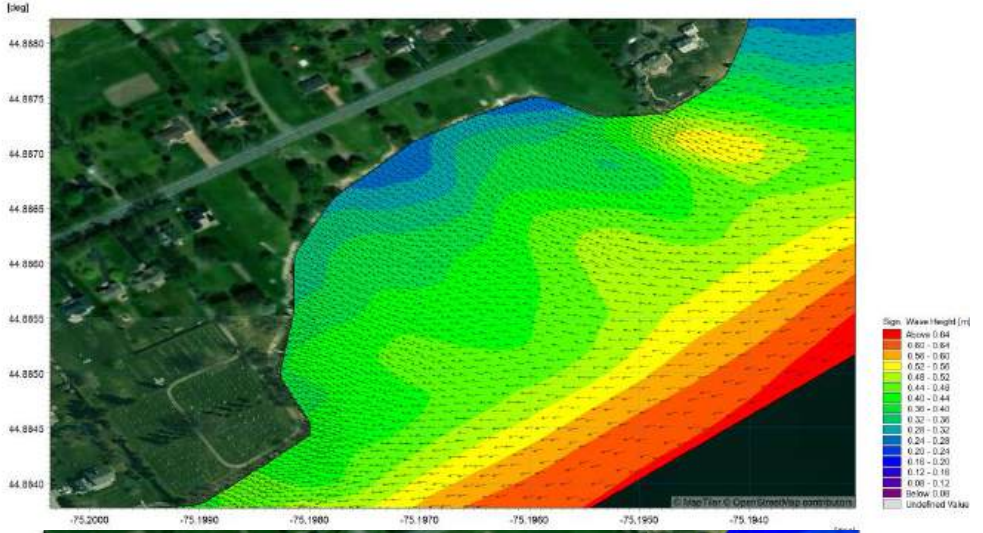


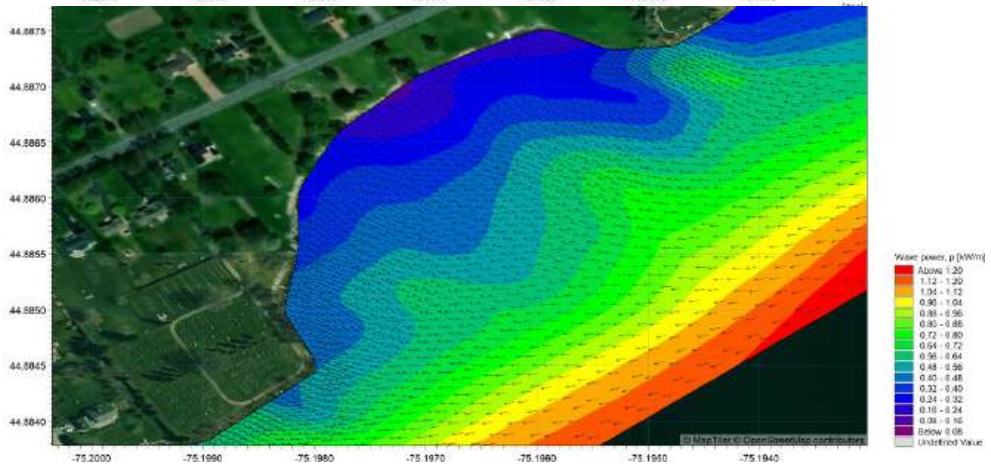
Numerical Modeling & Erosive Energy











Aquatic Habitat Surveys

Conducted surveys at 2 study sites for Erosion Project

Compared results to similar sites (n=25) surveyed by River Institute FINS Project

- Fish surveys
- Plant surveys
- Water quality
- Habitat measurements
- Environmental DNA
- Aerial drone surveys

Do study sites meet predicted fish, plant, water quality values?







FINS Project

Large unique database available as reference

>230
Sites

>600
Surveys

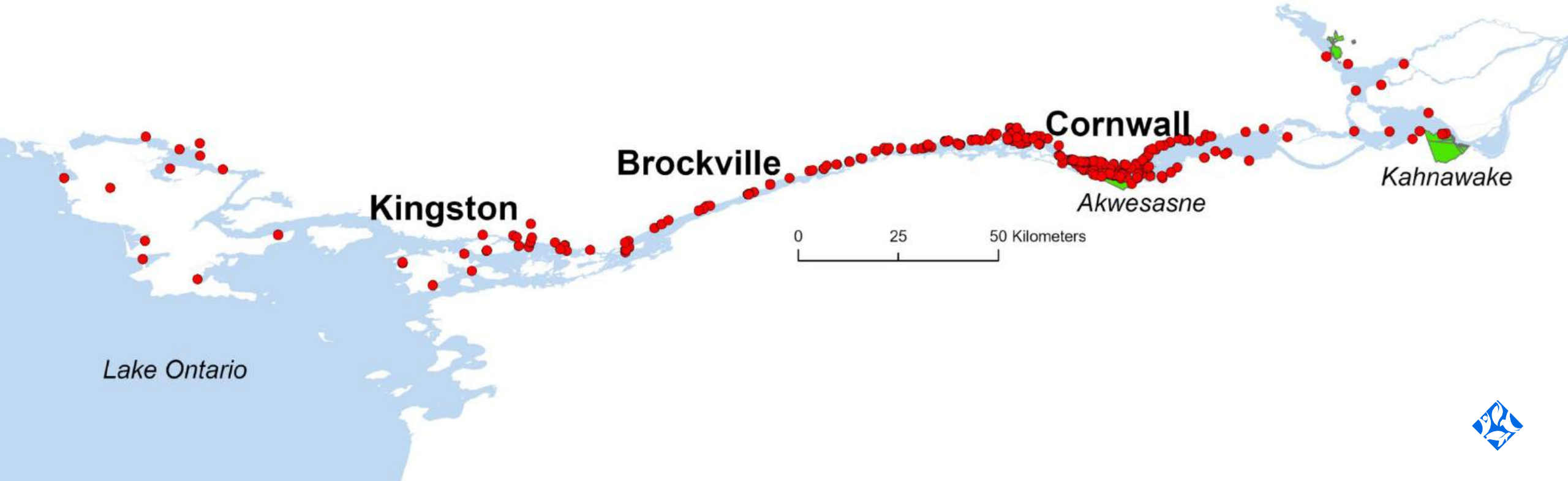
>200,000
Fish documented

67
Fish species

>100
eDNA sites

>200
Drone surveys

1000s
Water quality measurements



Akwesasne perspectives on shoreline changes





Conclusions

- Recession of unprotected shoreline is occurring adjacent to the shipping channel.
- Ship wake waves in the upper St Lawrence resuspend nearshore sediments, resulting in large increases in turbidity for short periods.
- Nearshore habitats exposed to the shipping channel have reduced aquatic vegetation and lower fish abundance and diversity compared to similar habitats elsewhere in the upper St Lawrence.



Outcome

Colin Rennie (uOttawa) and Jeff Ridal (River Institute) were summoned to appear before parliamentary Standing Committee on Transport, Infrastructure and Communities on the topic of Impact of Commercial Shipping on Shoreline Erosion November 16, 2022

The Committee report recommended investing in research on nature-based solutions (NBS) for shoreline stabilization (Schiefke 2023)



https://parlvu.parl.gc.ca/Harmony/en/PowerBrowser/PowerBrowserV2/20221116/-1/38052

Nature-based solutions (NBS)

- Incorporate natural materials to mimic nature
- Can mitigate erosion while maintaining ecosystem function and resiliency
- Lack of established guidelines

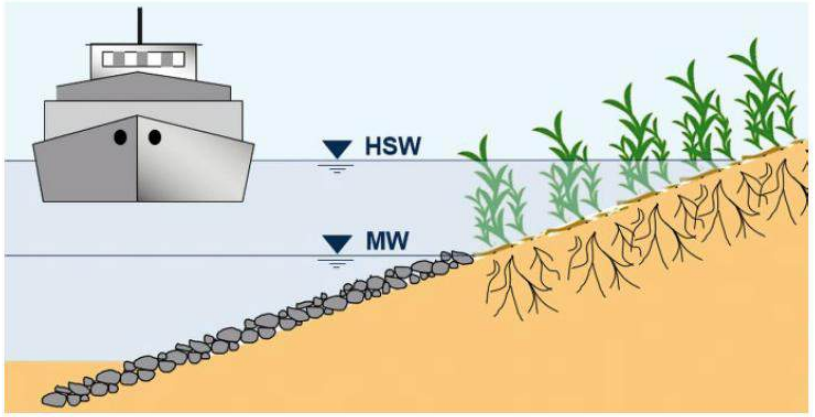
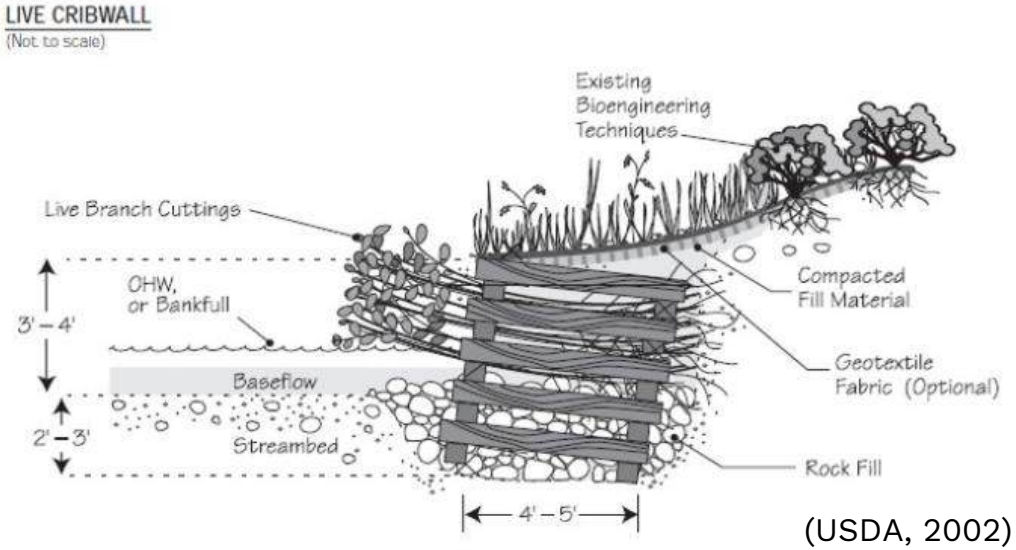


Bild 3 Schematischer Querschnitt einer Uferböschung mit prinzipieller Darstellung einer technisch-biologischen Ufersicherung oberhalb und einer technischen Sicherung unterhalb MW (Mittelwasserstand), HSW = Höchster Schifffahrtswasserstand
Schematic cross-section of a bank slope with principle depiction of technical-biological bank protection above and technical protection below MW (mean water level), HSW = Highest navigable water level

(Fleischer et al, Geotechnik, 2021)



(USDA, 2002)

Project Goals (GLFEI 2024-2027)

- Stabilize shoreline to protect and conserve aquatic habitat in a Canadian Great Lakes priority nearshore area of high ecological value
- Support the development of optimized nature-based solutions (NBS) for protecting shorelines subjected to combined currents, wind waves, and boat wake waves.
- Generate new knowledge on the relative importance of ship waves on bank erosion processes in navigable rivers.
- Improve understanding of the impacts of shoreline erosion and nature-based solutions on nearshore aquatic ecosystems.
- Engage diverse community partners in work planning, implementation, and decision-making toward restoring critically important nearshore areas.



GLFEI 2024-2027

Project Activities

- Design and install nature-based solutions at two eroding shorelines
- Monitor using wave logger instruments, field-based fish and habitat surveys, aerial imagery and elevation data
- Model boat wake waves, wind waves, river currents, and shoreline erosion
- Provide recommendations for design guidelines for nature-based solutions for protection of shorelines



GLFEI 2024-2027

Project Timeline

- 2024 – Permitting, design, planning, pre-NBS monitoring
- 2025 – Installation of NBS at 2 locations, monitoring
- 2026 – Monitoring and modelling of NBS
- 2027 – Monitoring, modelling, recommendations

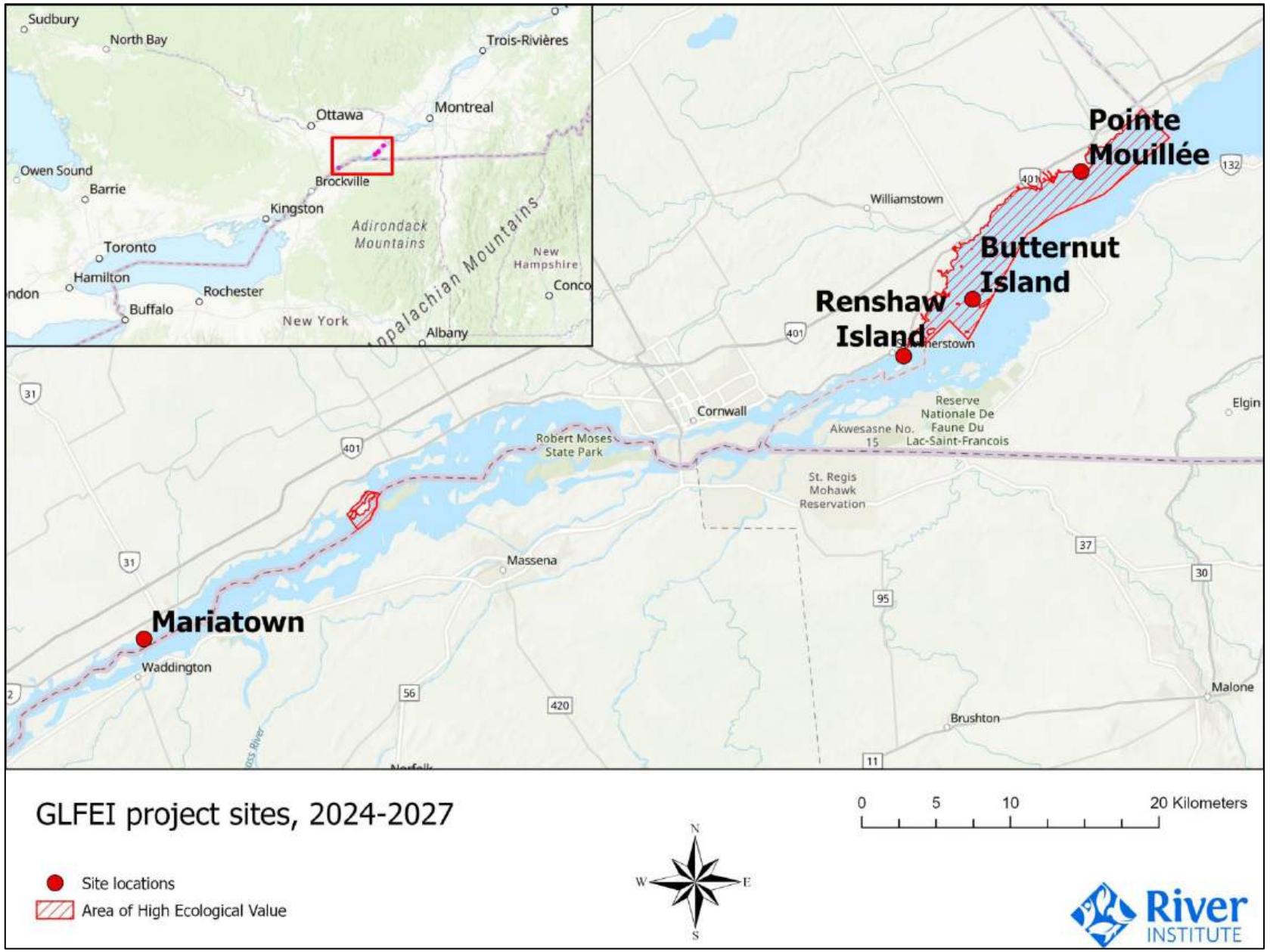


Geographic Scope

Four project locations:

1. Pointe Mouillée*
2. Mariatown*
3. Butternut Island
4. Renshaw Island

Selected areas of high ecological value, proximity to shipping lane, importance to Akwesasne



Mariatown

- Located in Lake St. Lawrence
- Experiencing significant erosion
- Close proximity to Seaway shipping lane
- Previous monitoring and modelling (2022-2023) to quantify wave energy and sediment suspension
- Construction of NBS live crib wall



Pointe Mouillée

- Located within area of high ecological value (ECCC)
- Part of Bainsville Bay Marsh complex (PSW)
- Swamp-covered sand point
- Significant erosion since construction of Seaway, 1950s
- Construction of NBS ballasted woody debris structures



Renshaw & Butternut Islands

- Located within area of high ecological value (ECCC)
- Akwesasne Islands
- Close proximity to Seaway shipping lane
- Experiencing erosion
- Existing control structure on Renshaw (rocky reef)
- Monitoring activities



Ship wake erosion event, Renshaw Island, July 15, 2024

Pre NBS Monitoring

Drone surveys, installation of wave action and turbidity sensors, nearshore fish and aquatic vegetation surveys



Drone imagery: Pointe Mouillee shoreline, November 14, 2024



Mariatown

- NBS: live crib wall design, construction, and evaluation
- Plantings include shrubs (dogwood, sweetgale)
- East and West crib walls along shore
- March 2025 construction
- Monitoring activities in 2026




Mariatown – West Crib location – Pre-installation
July 4, 2024


Mariatown – West Crib location – Initial installation
March 7, 2025


Mariatown – West Crib location – Initial installation
March 13, 2025


Mariatown – West Crib location – Second installation
April 28, 2025

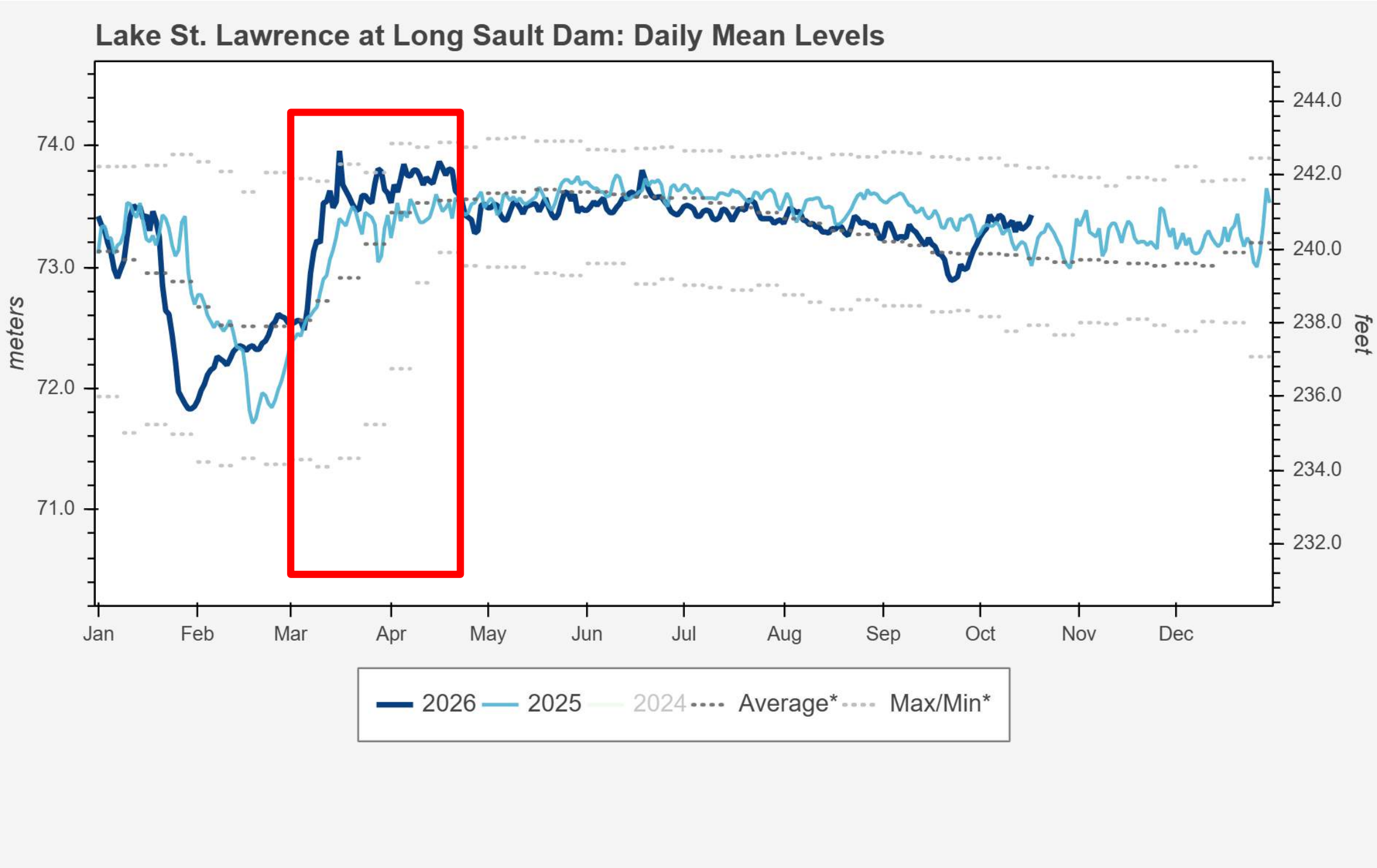

Mariatown – West Crib location – Second installation
May 16, 2025

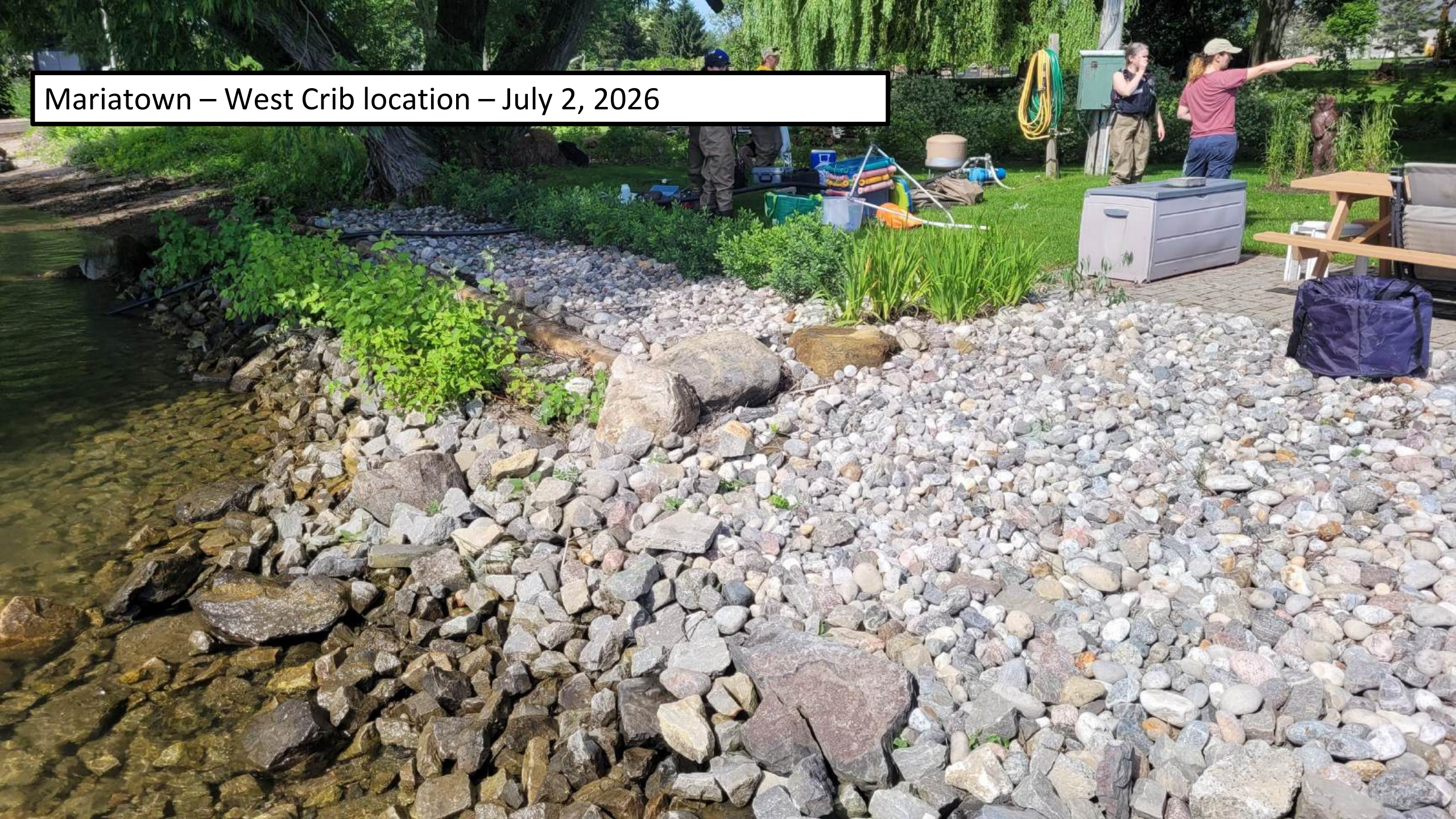

Mariatown – West Crib location – Second installation
May 16, 2025


Mariatown – West Crib location – Post-planting
October 21, 2025


Mariatown – West Crib location – April 21, 2026


Mariatown – West Crib location – April 21, 2026
Peak height of waves in 2026


Lake St. Lawrence at Long Sault Dam: Daily Mean Levels
meters
74.0
73.0
72.0
71.0
feet
244.0
242.0
240.0
238.0
236.0
234.0
232.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2026
2025
2024
Average*
Max/Min*


Mariatown – West Crib location – July 2, 2026


Mariatown – East Crib location – Pre-installation
July 4, 2024


Mariatown – East Crib location – Initial installation
March 5, 2025


Mariatown – East Crib location – Initial installation
March 11, 2025


Mariatown – East Crib location – Second installation
April 28, 2025


Mariatown – East Crib location – Second installation
May 16, 2025


Mariatown – East Crib location – Post-planting
October 21, 2025


Mariatown – East Crib location – Post-planting
April 21, 2026


Mariatown – East Crib location – Post-planting
July 2, 2026

Mariatown 2026 monitoring activities

- Fish and aquatic habitat surveys
- Drone and lidar surveys
- RBR wave and turbidity sensor
- Biotactic underwater camera







Biotactic camera
Wave and turbidity event – August 12, 2026

Pointe Mouillee

NBS: Ballasted Woody Debris

- Cedar trees with root wads
- Arranged at shallow depths in two lines along shore
- Designed to dampen wave energy causing erosion
- Fish habitat plates attached to concrete to create additional complexity
- Installation October 2025







Pointe Mouillee
Ballasted Woody Debris

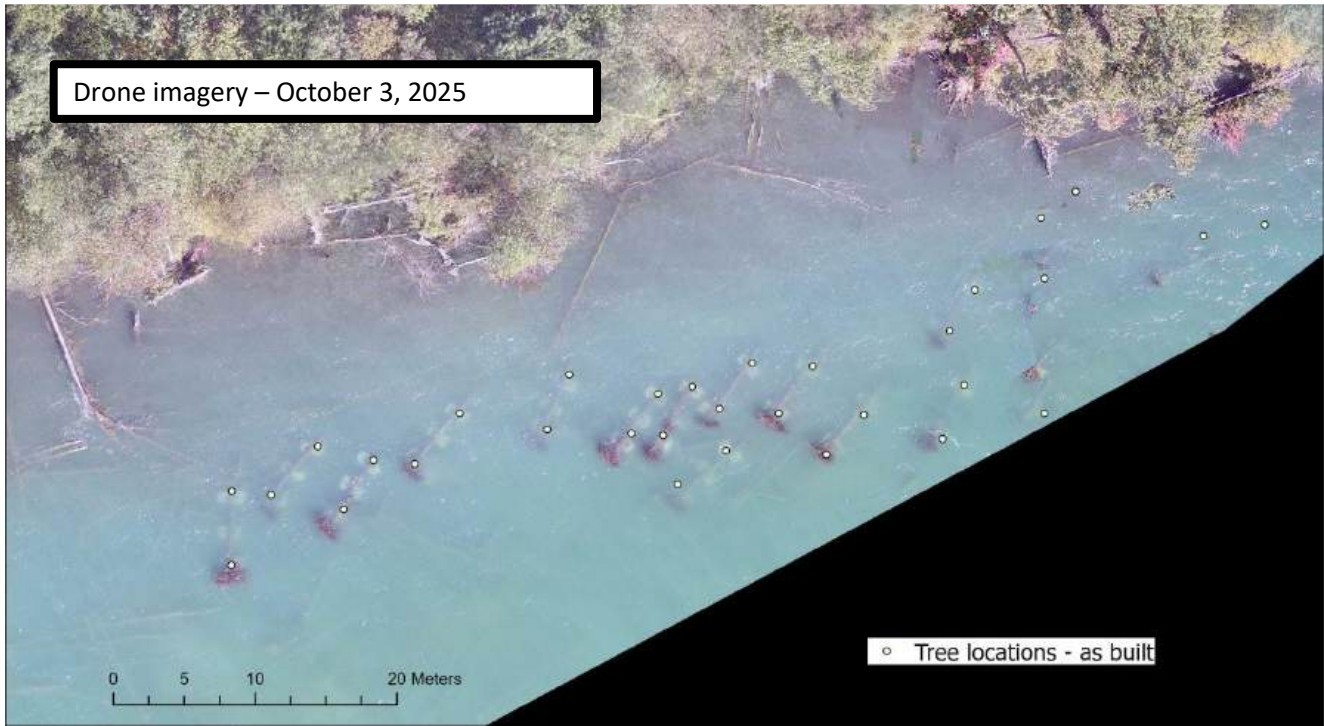
- Floating markers deployed prior to installation
- Cedar trees installed with crane and barge
- Installations occurred September 30-October 2, 2025



Pointe Mouillee
Ballasted Woody Debris

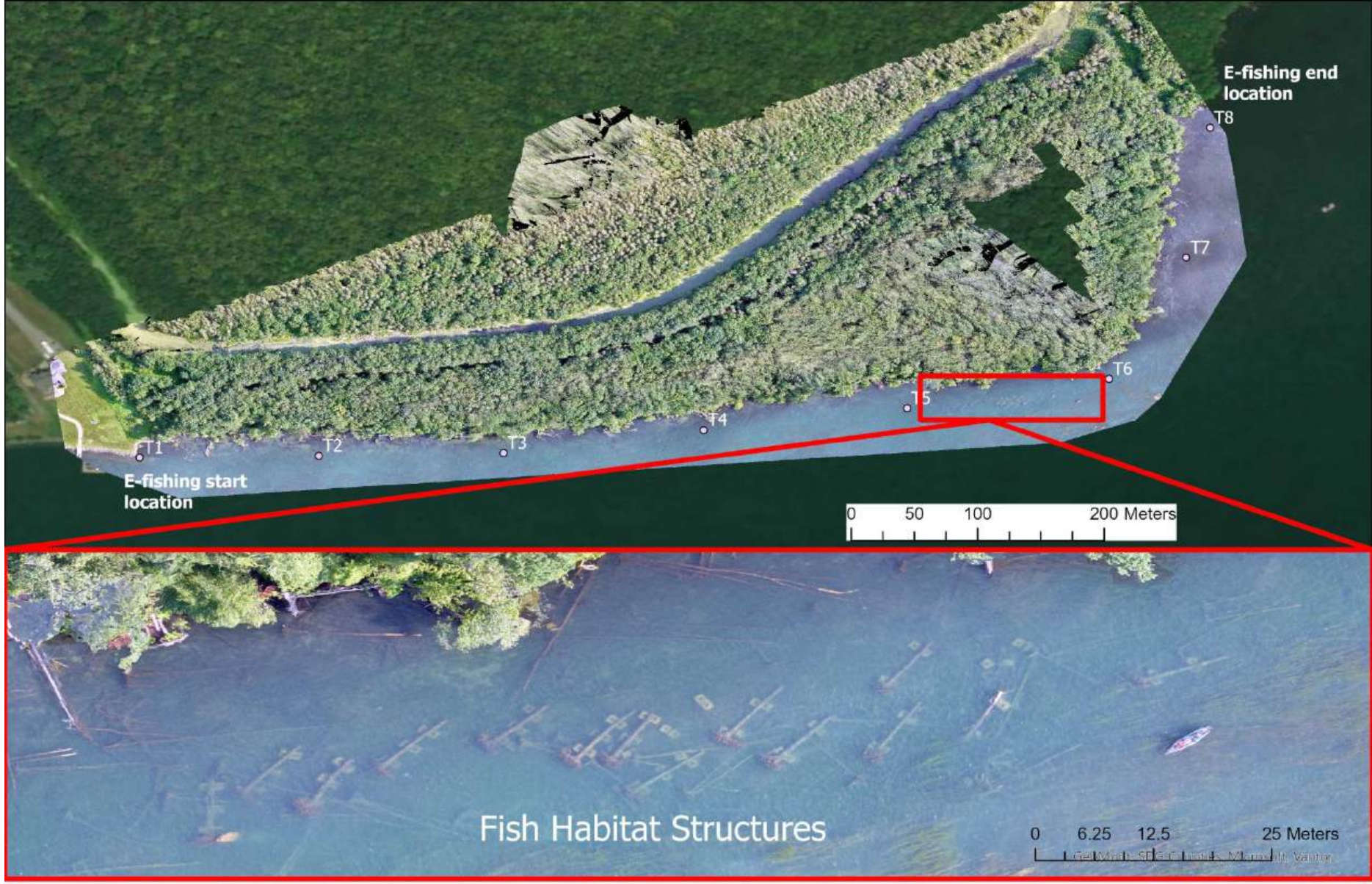
- Tree locations marked with high-resolution RTK GPS, drone survey
- Pre-and post-restoration monitoring





Boat electro-fishing

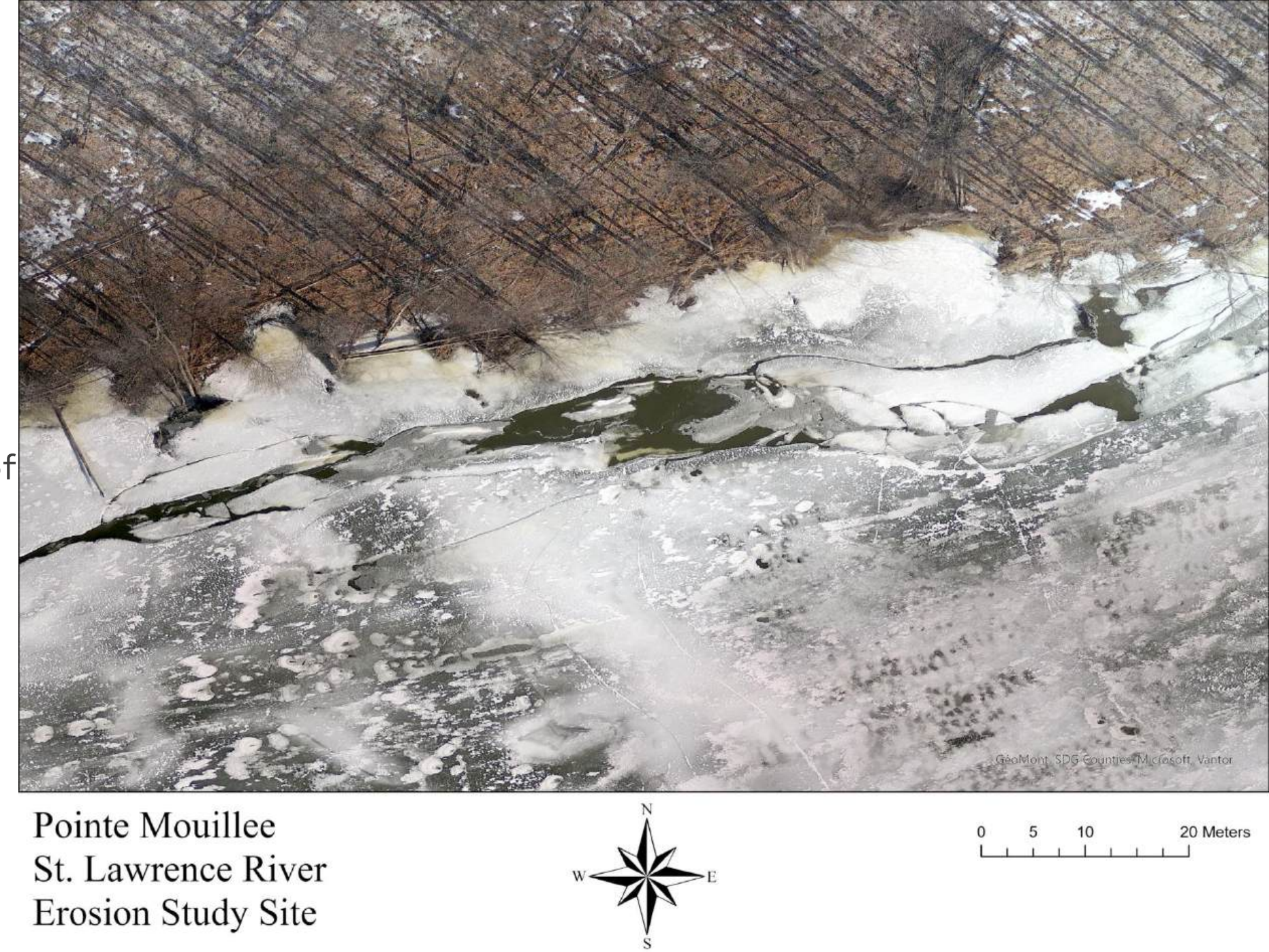
- September 2026
- Relatively low fish abundance and richness at all transects along exposed shore



Drone surveys

March 13, 2026

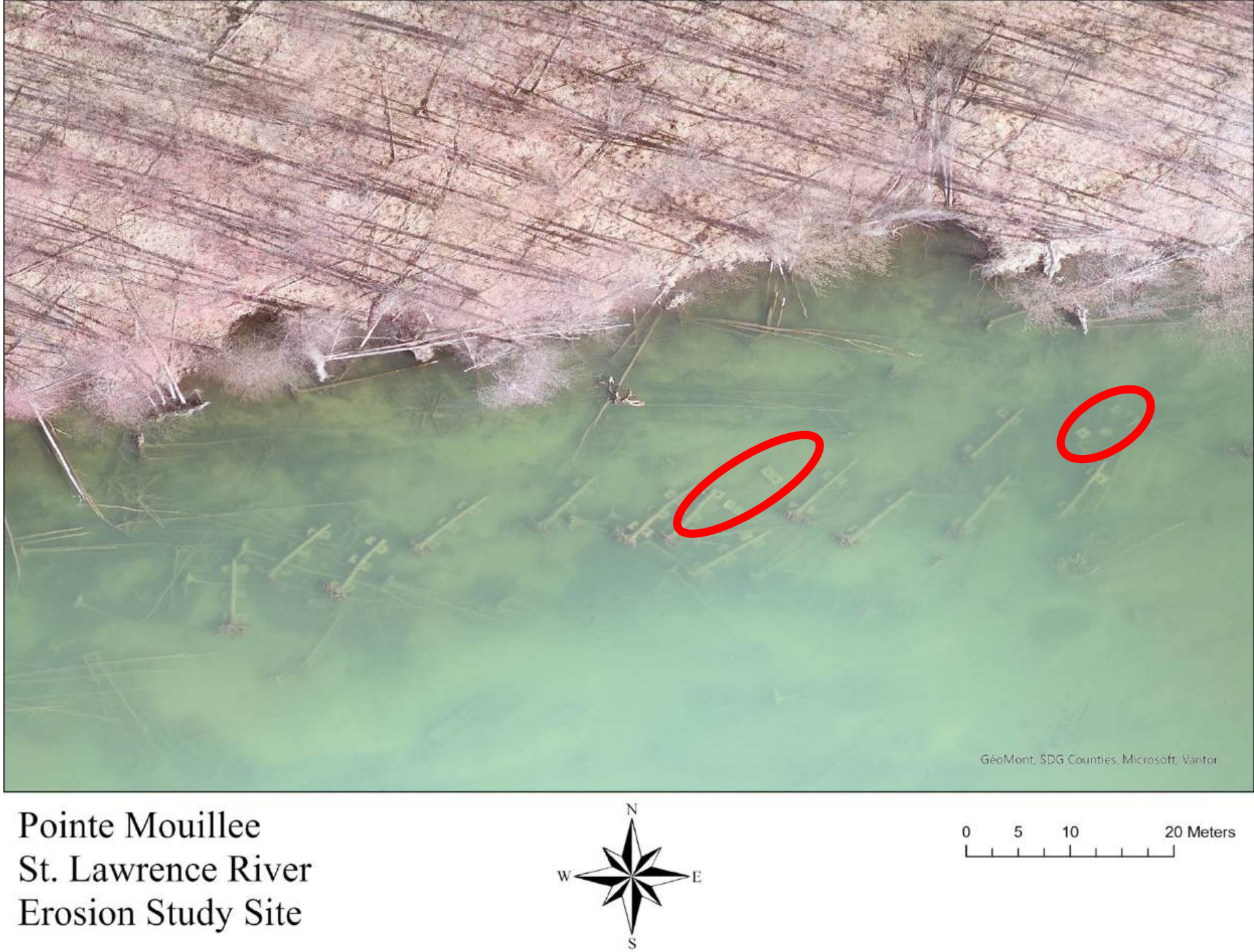
- Complete ice cover of structures



Drone surveys

April 27, 2026

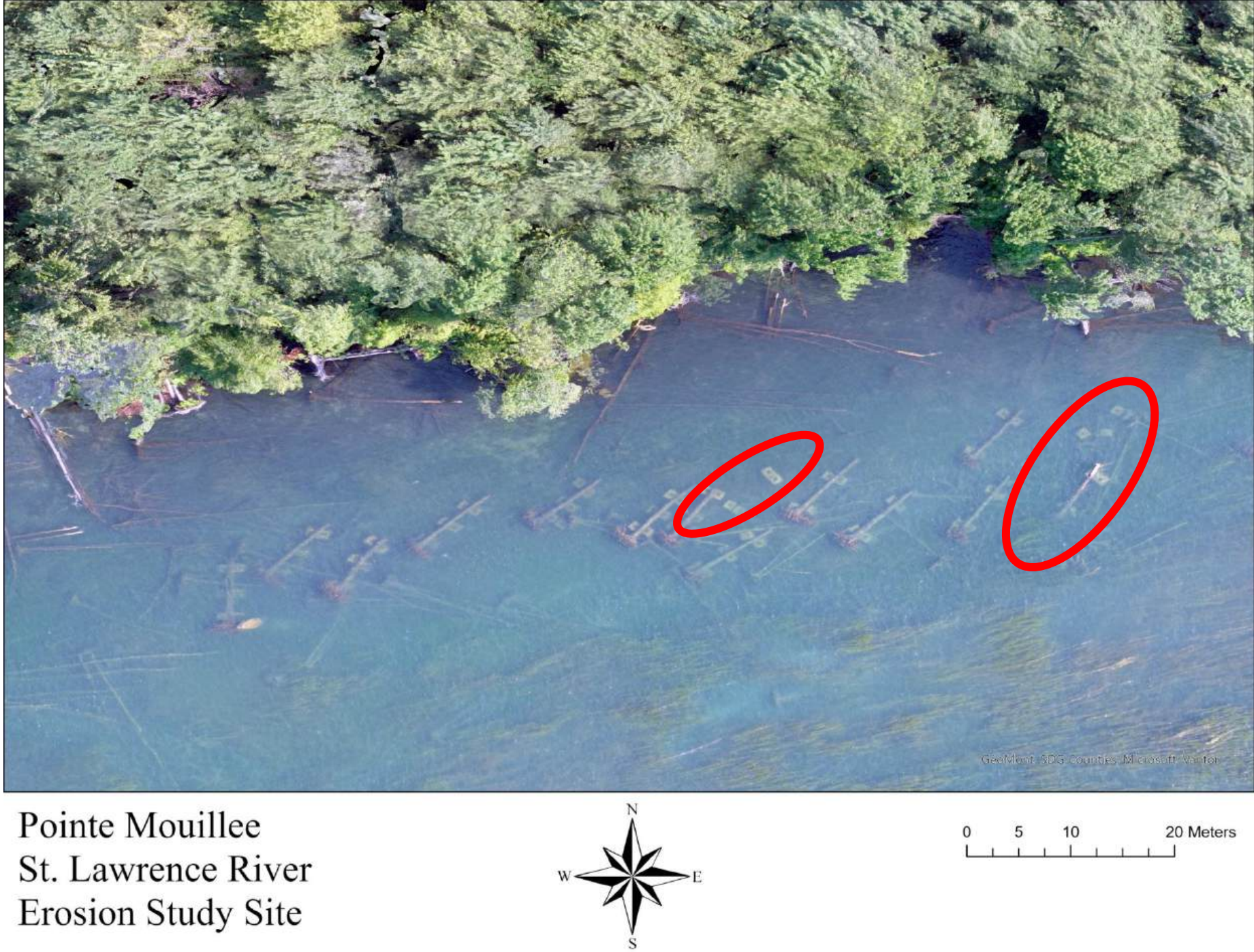
- Several tree structures detached from anchors over winter



Drone surveys

July 10, 2026

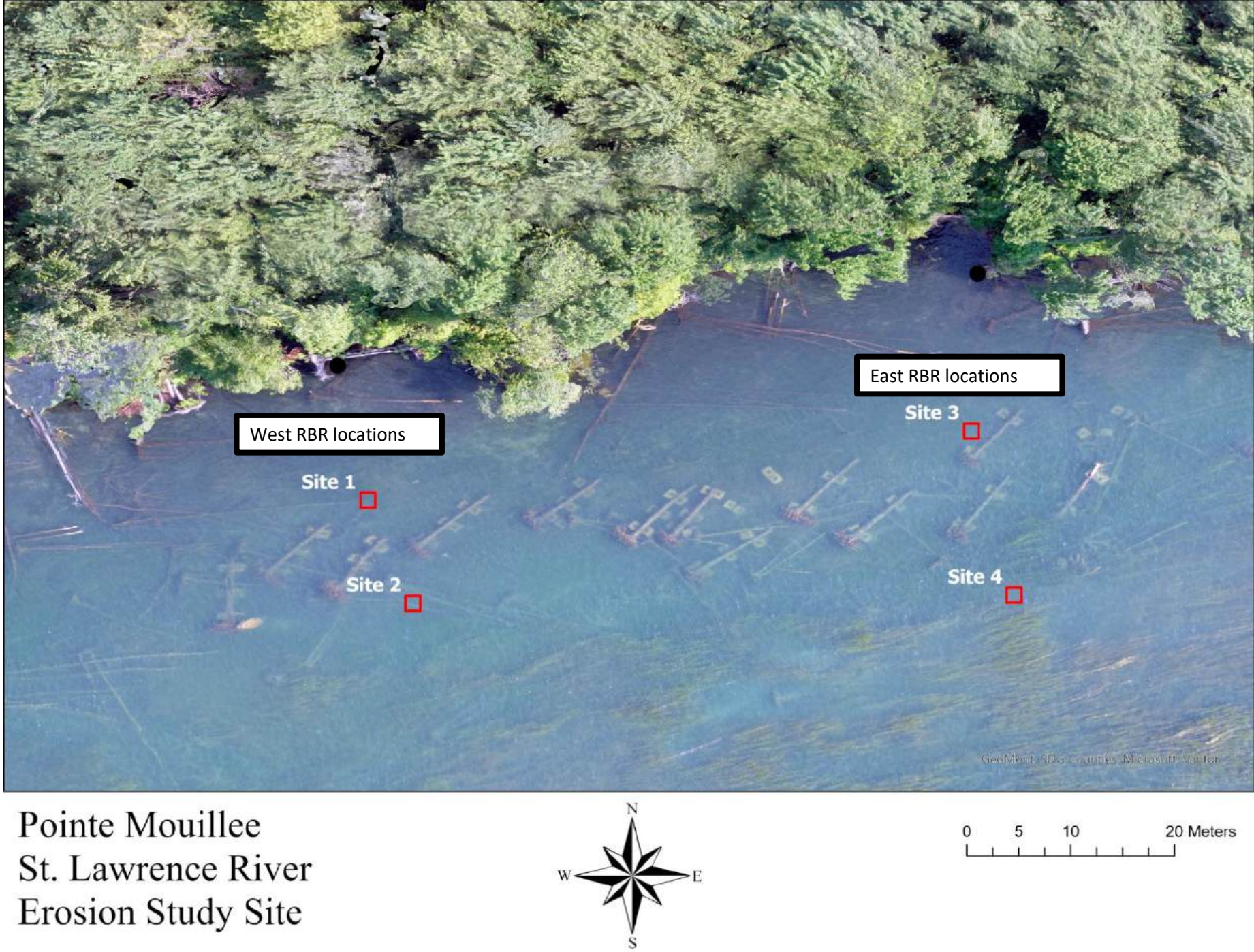
- Several tree structures detached from anchors over winter



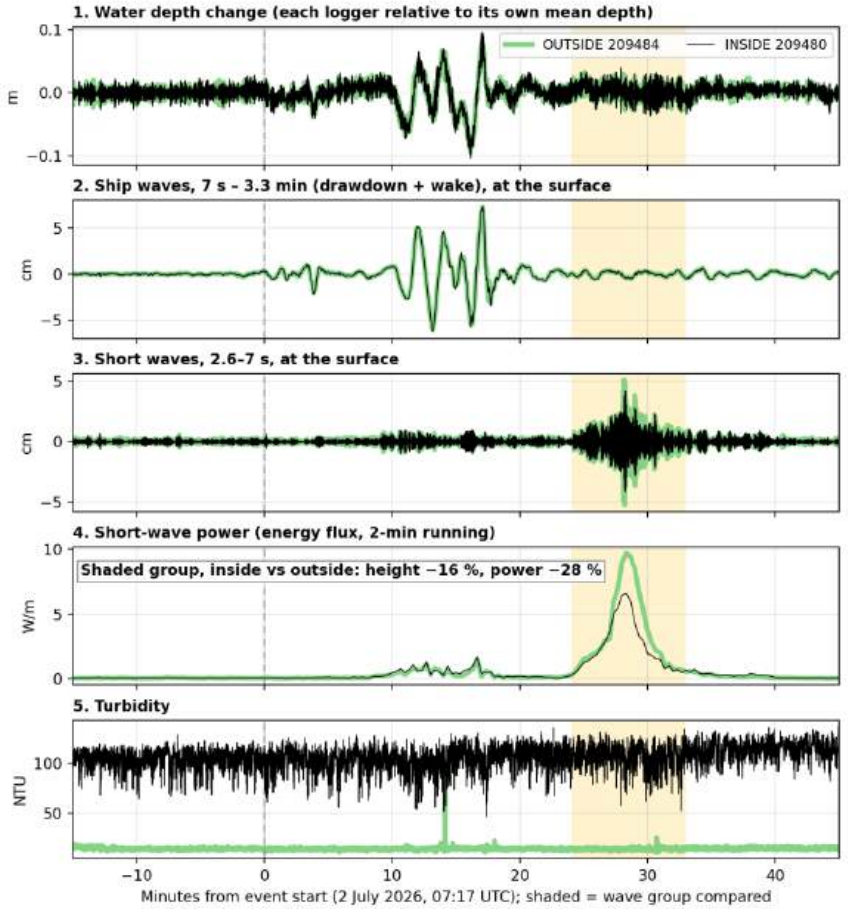
Wave/ Turbidity Logger Deployment

June-October 2026

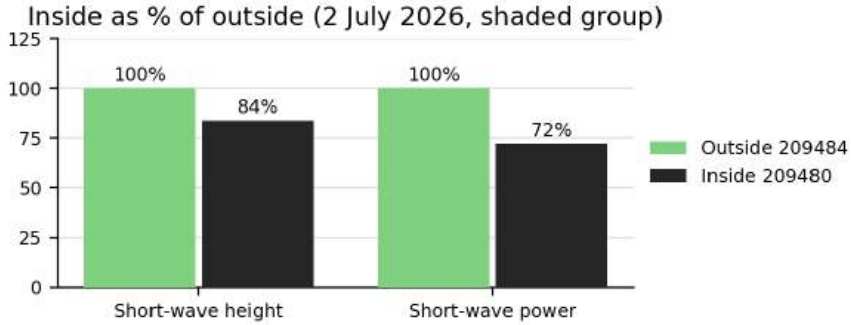
- 4 RBR Duo3 D.TU sensors
- Deployed on exposed and sheltered sides of NBS structures

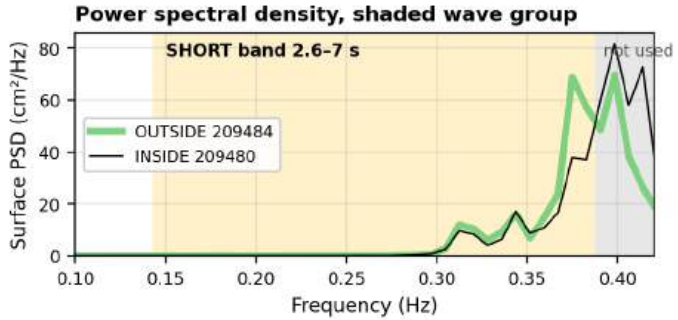


PM West Example: Logs Fully Submerged

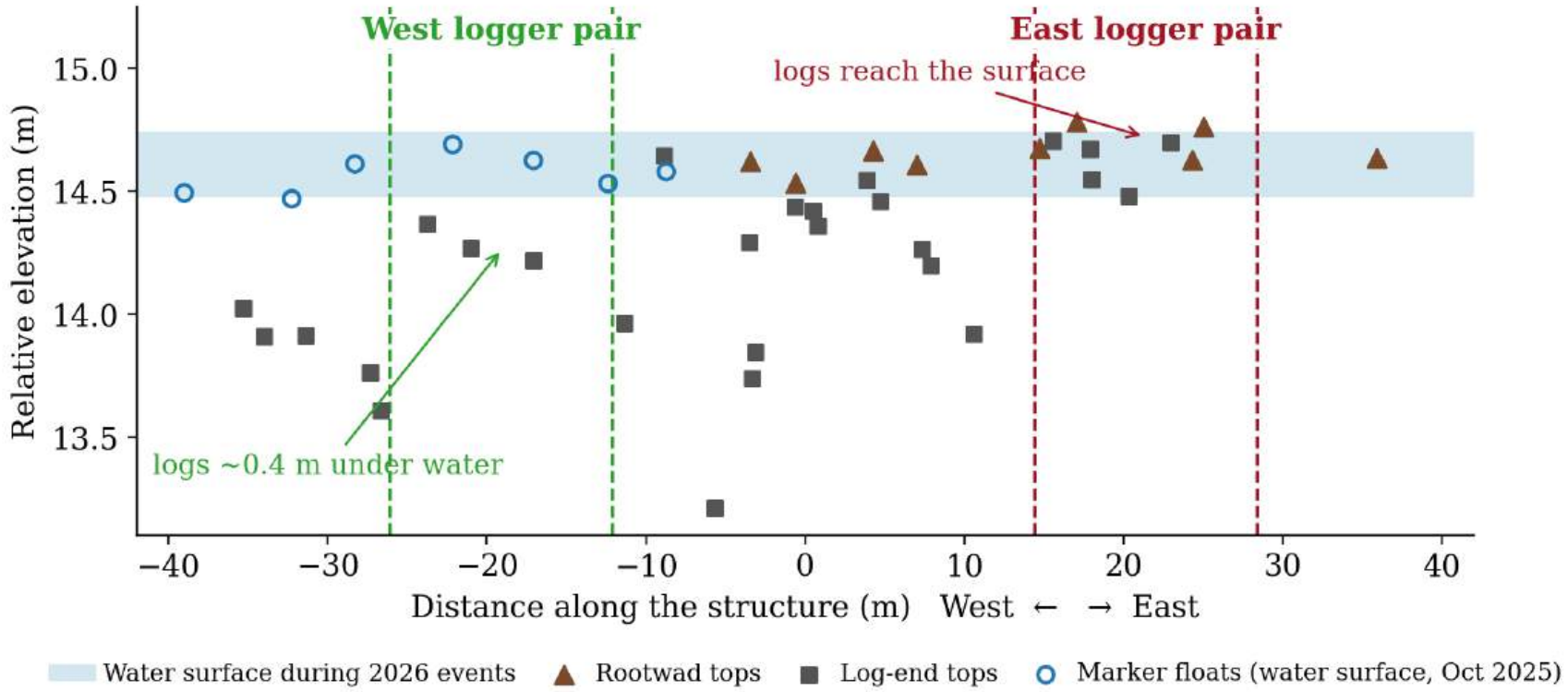


Structure fully submerged
Log tops about 0.3–0.4 m under water (as in all West events)

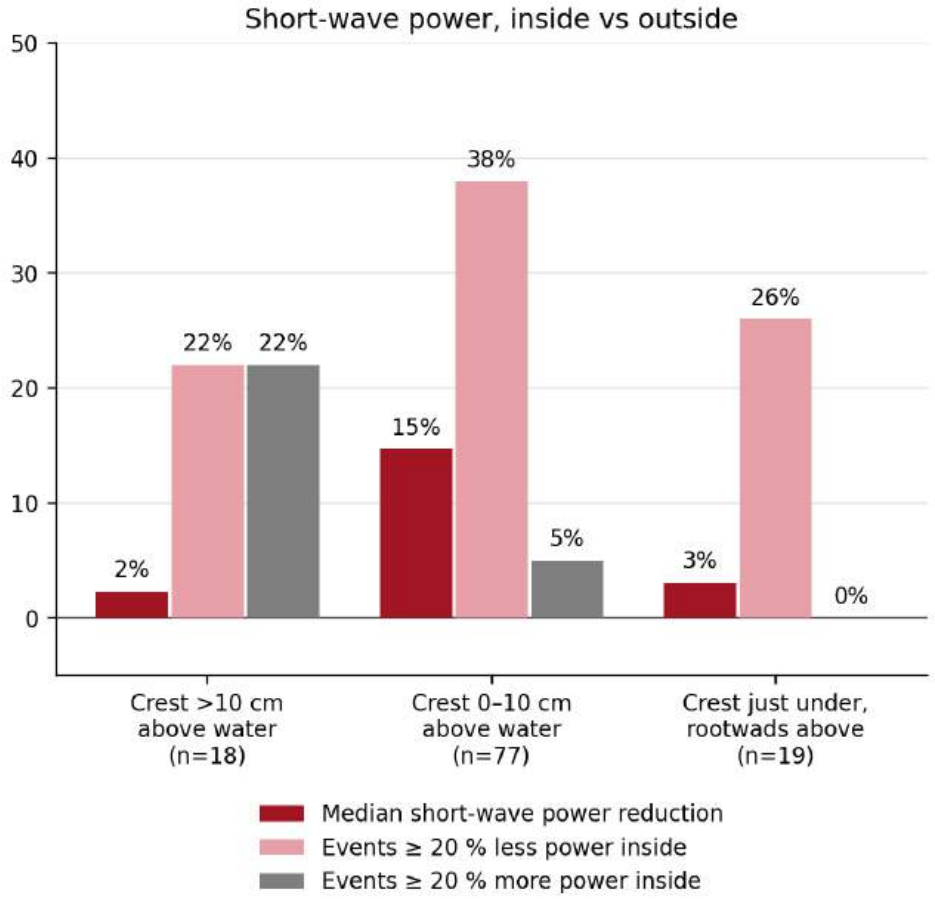




Were the Logs at the Water Surface?



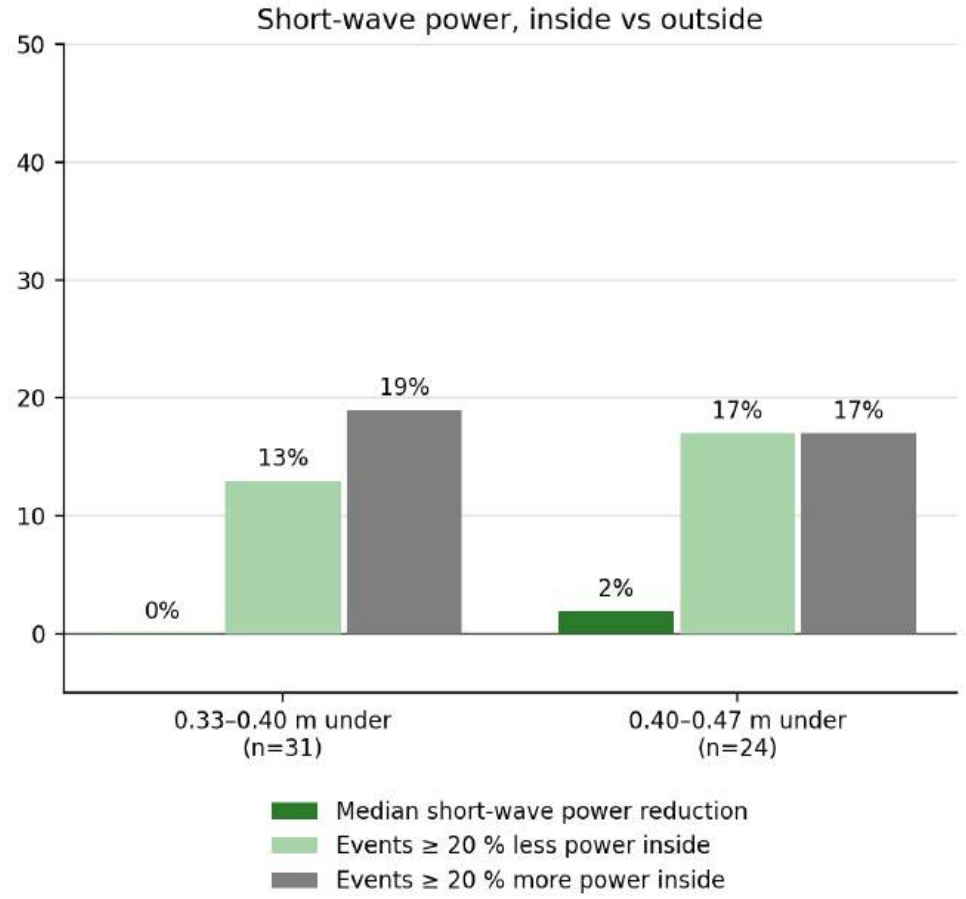
PM East: How Far the Logs Stood Above Water



East logs never fully submerged
Rootwads stayed above water in all 260 events. Groups by how high the crest stood relative to the water.

Long-wave power reduction (median)
Crest >10 cm above: 4.2 %, Crest 0–10 cm above: 4.2 %, Crest just under, rootwads above: 4.0 %

PM West: Shallower vs Deeper Submergence



West logs always fully submerged
All 69 events. Groups by how deep the log tops were below water.

Long-wave power reduction (median)
0.33–0.40 m under: 0.6 %, 0.40–0.47 m under: 0.4 %

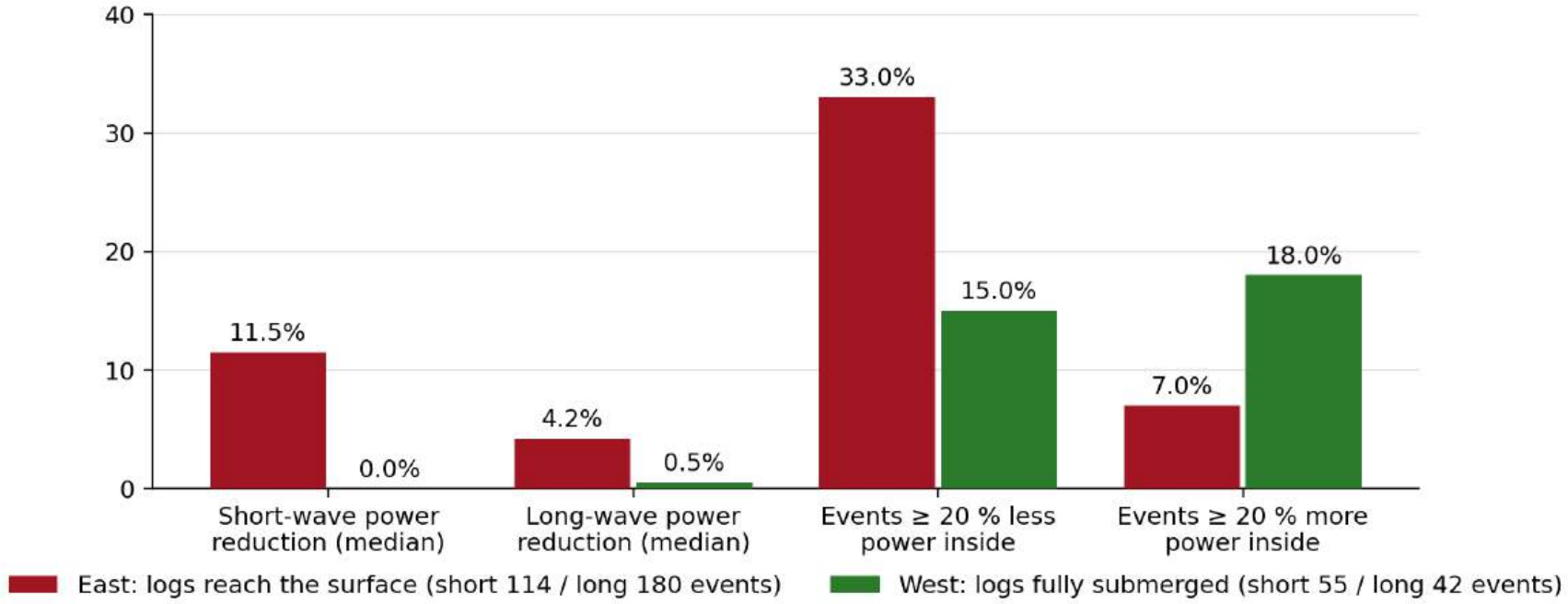
Effectiveness: East vs West

–12 %

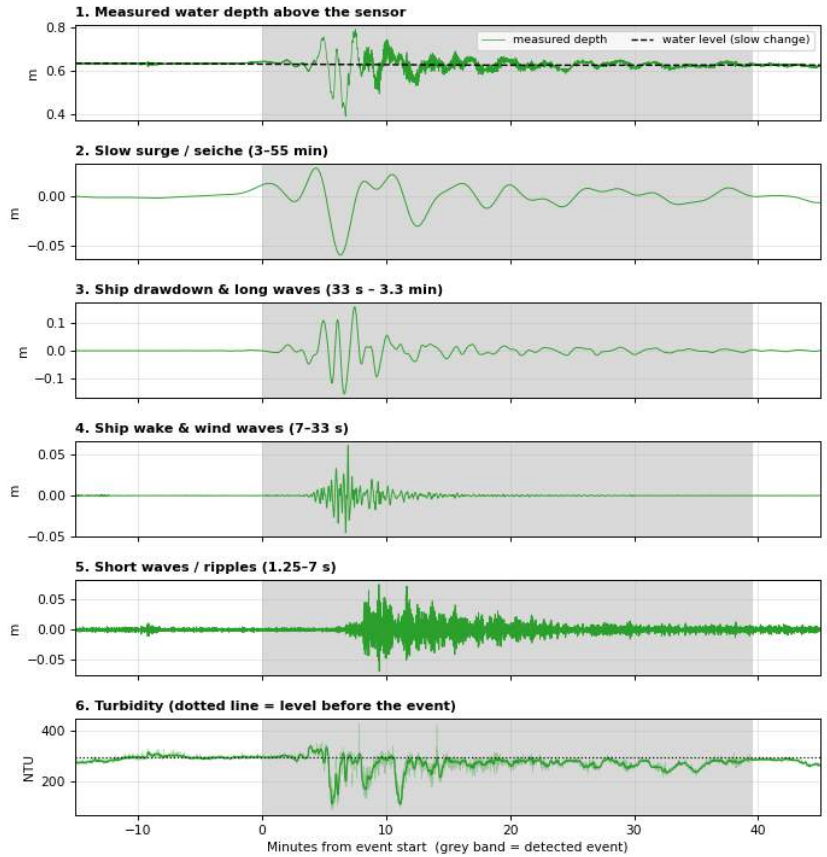
East (logs reach the surface): median short-wave power inside, 95 % range −16 to −5 %

0 %

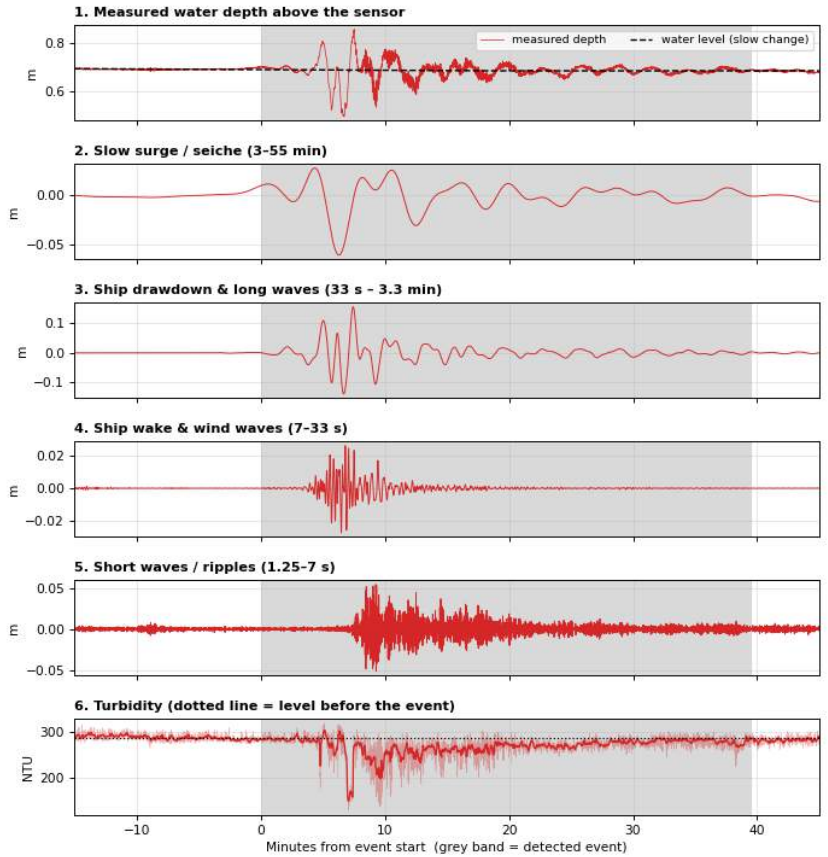
West (logs ~0.4 m under water): median short-wave power inside, 95 % range −7 to +9 %



Mariatown 2026: Same Event, Two Locations



In front of cribwall (209483, west)



Unprotected shore (214083, east)

Outcomes to date

- Determining and obtaining permitting/permissions challenging
- Pre- and post-NBS monitoring successful and ongoing
- Analysis of RBR data ongoing
- Water level impacts to live crib wall structures
- Engineering of ballasted woody debris requires re-evaluation of cable attachment to anchors
- Shorelines at both NBS sites appear to be protected to various degrees
- Monitoring and project reporting in 2027









Thank you to RI staff, volunteers, collaborators, and funders!

Thank you to Stephany Hildebrand, Anthony Wallace, Kate Schwartz, Emma Ehrenfeld, Cassey O'Connor, Matt Windle for photographs

River INSTITUTE

Great River Network
A Great River Runs Through Us

uOttawa

MOHAWK COUNCIL OF AKWESASNE

Fisheries and Oceans Canada

Canada Water Agency

Agence de l'eau du Canada

Ajax Nearshore Restoration and Shoreline Protection Project

Balancing Shoreline Erosion Protection with Natural Processes and Nearshore Restoration

October 21, 2026

Canada Water Agency

Agence de l'eau du Canada

Toronto and Region Conservation Authority

Introductions

Whitney Brennan

Senior Project Manager, Erosion Risk Management



Jet Taylor

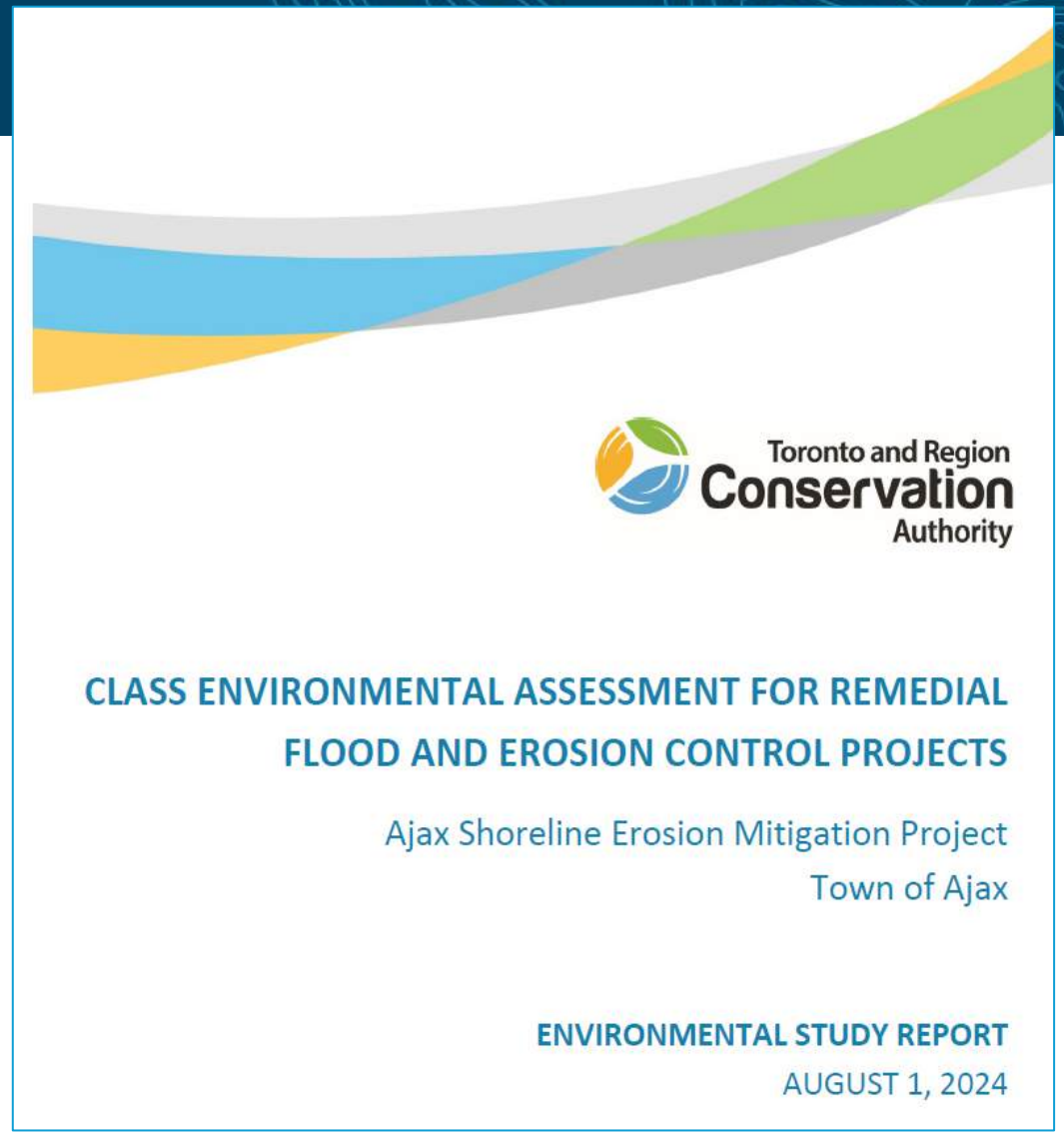
Senior Manager, Erosion Risk Management



Background of Ajax Shoreline

Project History

- Remedial Flood and Erosion Control Class Environmental Assessment (Class EA) completed in 2024
  - Baseline inventory, priority assessment and proposed solutions for twelve reaches along the Ajax shoreline
  - Included consultation with public, Town of Ajax, other agencies in design recommendations
- Reach 5 project area identified as high priority with the proximity to nearby infrastructure (0-10 years)
  - Existing conditions allowed for a softer design approach



Ajax Shoreline Reaches



High Priority	Medium Priority	Low Priority
0-10 Years	10-40 Years	40+ Years

Source: TRCA, 2020

Reach 5 Nature-Based Design Solution

Location and Phasing for Reach 5



Nearshore Restoration Goals



Restore historic shoreline conditions



Restore nearshore habitat and increase diversity



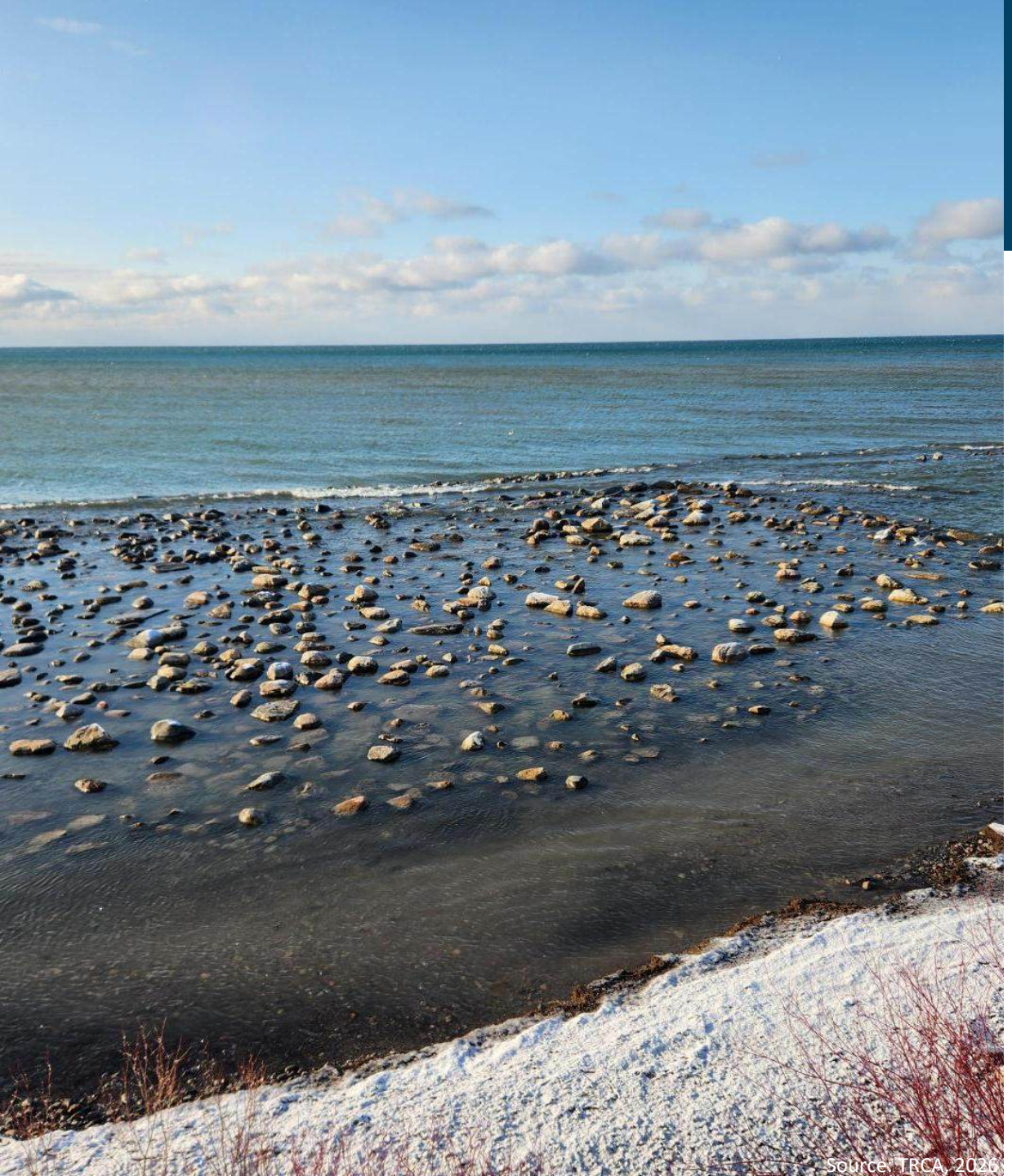
Improve shoreline resistance to climate change



Stabilize bluffs from unmitigated erosion



Promote knowledge-sharing



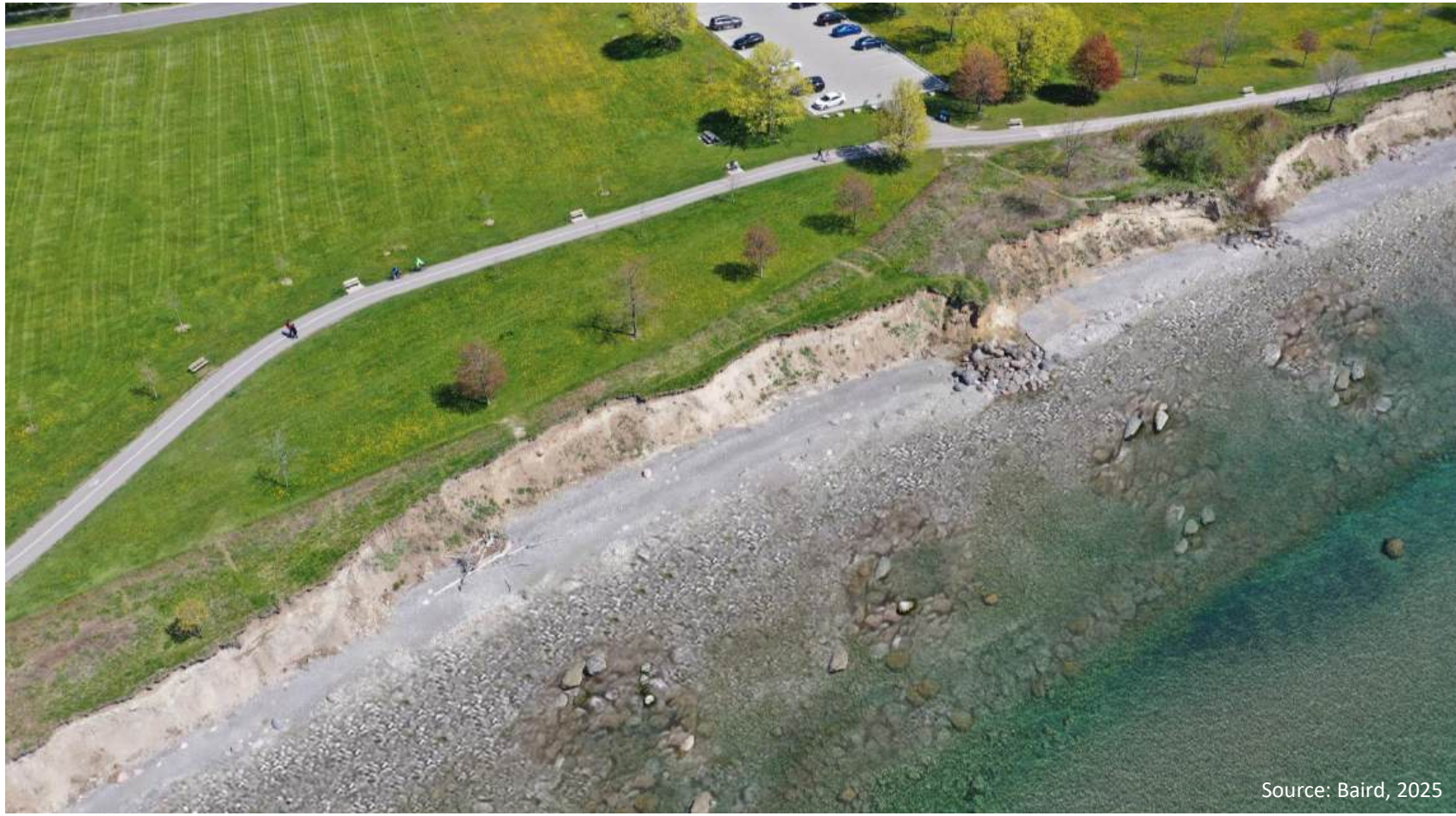
Source: TRCA, 2026

Design Benefits

- Protection for park infrastructure and greenspace
- Nature-based restoration aligned with community feedback
- Natural cobbles and boulders restore shoreline to pre-historic conditions
- Provide fish habitat and shelter
- Dynamic solution where wave action will deposit stones along the shoreline where they naturally accrue for protection
- Scalable design for flexibility

Detailed Design Amendments

- Rendering illustrates the cobble boulder treatment
- Designs amended to maximize restoration and protection with available funding
- Shoulders and rip rap toe were a priority technical design component for structure stabilization
- Cobble boulder bands vary in length as waves will transport material within the shoulders



Source: Baird, 2025

Reach 5 Implementation

Implementation Snapshot

- Total construction duration:
  - 7 months (January – July 2026)
- Total area restored:
  - 250m length
  - Approx. 11,000m2 area
- Total stone used in structure:
  - ~13k tonnes
- Total free* sourced boulders:
  - 3300 tonnes
  - $135,234.00 total value
- Collaboration with multiple agencies



Source: TRCA, 2026

Shoreline Implementation – Construction Progress



Source: TRCA, 2026 (April)



Source: TRCA, 2026 (June)

Shoreline Implementation – Before and After



Source: TRCA, 2021 (May)



Source: TRCA, 2026 (July)



Source: TRCA, 2026 (October)

Next Steps for the Future

Next Steps for Reach 5

- Restoration activities for Fall 2026
- Fish monitoring during the fall spawning season and continued seasons
- Shoreline monitoring through drone imagery
- Coast Reach Initiative to promote awareness and knowledge sharing
- Continue exploring future funding opportunities to continue shoreline protection efforts at Reach 5



Source: TRCA, 2026


Source: TRCA, 2026


Source: TRCA, 2025

2026-2027

- Continue implementation
- Site restoration (post-construction)
- Implement monitoring plan
- Continued information sharing

Thank You

For more information, please visit our project webpage at the link below, or scan the QR code.

https://trca.ca/conservation/erosion-risk-management/restore/ajax-shoreline-project/

Toronto and Region Conservation Authority



Environmental restoration fostering sustainable nearshore ecosystems

Julia Snoek, Director Parks, Recreation and Culture[1]
Seth Logan, P.Eng., Coastal Engineer[2]

Restoring Balance: Port Hope Nearshore Revitalization Project

MUNICIPALITY OF PORT HOPE [1]
Ganaraska CONSERVATION
SJL ENGINEERING [2]
Zuzek inc. ONE WORLD
DHI
Canada Water Agency
Agence de l'eau du Canada



Project Overview

Project Purpose

The project aims to understand coastal sediment disruptions such that strategies can be developed to restore shoreline resilience and wetland ecological health.

Technical Evaluation

Comprehensive analysis of sediment transport pathways, sources and sinks within the adjacent littoral cell to inform restoration plans.

Nature-Based Solutions

Future harbour, beach and sediment management modifications are anticipated to include hybrid and nature-based approaches to improve sediment flow and resilience.

Project Timeline and Impact

A two-year project aiming for sustainable, environment-friendly solutions benefiting the local and regional shoreline.

Objectives

Project Planning and Consultation

A detailed workplan and procurement to establish project milestones, scope, and stakeholder engagement.

Coastal Process Evaluation

A coastal engineering study to develop sediment transport models to evaluate shoreline dynamics and jetty impacts.

Fieldwork and Data Collection

Bathymetry, substrate surveys, sediment sampling and shoreline change analysis to be conducted to understand physical conditions and inform modelling work.

Stakeholder Collaboration and Communication

Engagement with partners and the community will be facilitated through communication schedules and joint technical reviews.



Targeted Outcomes

Environmental Restoration

The project aims to improve sediment flow and shoreline resilience, restoring barrier beaches and coastal wetlands to support biodiversity.

Strategic Coastal Management

Develops scalable nature-based solutions and shares sediment transport data to aid coastal management across the Great Lakes region.

Knowledge Sharing

Informs approaches for implementation of the Waterfront and RiverWalk Master Plan and other impacts within the reach.

Adaptation

Serves as a model for restoration and adaptation by promoting sustainable sediment management and resilient infrastructure.



Field Work

Bathymetric & Topographic Surveys

For shoreline change and nearshore profile evolution assessment and to provide accurate elevations for numerical models

Sonar Lakebed Imaging

To develop substrate map

Sediment Sampling

For gradation analysis to support sediment transport modelling

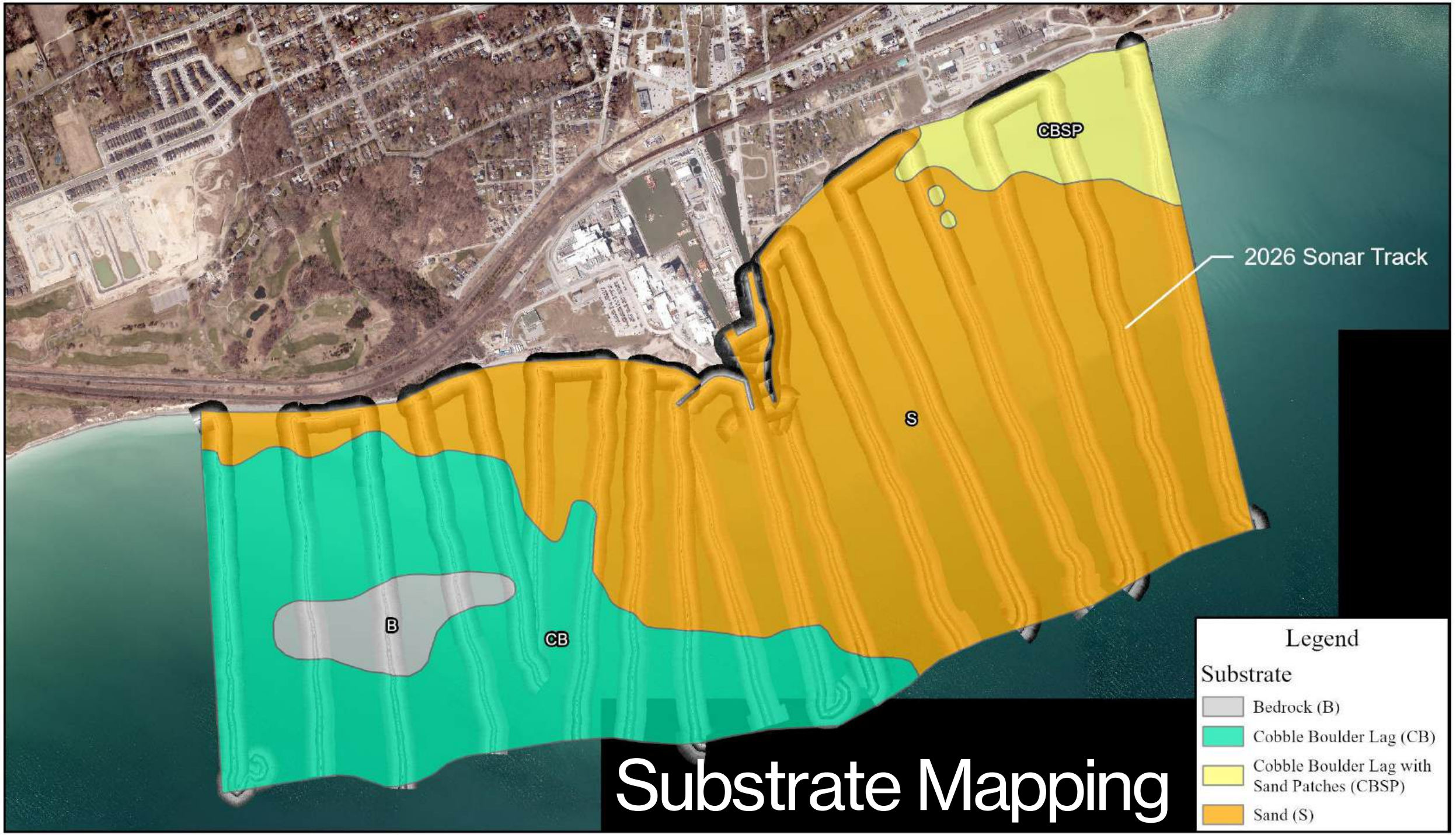
Oblique Aerial Photography

To document condition of updrift and downdrift shorelines, harbour infrastructure, and nearshore







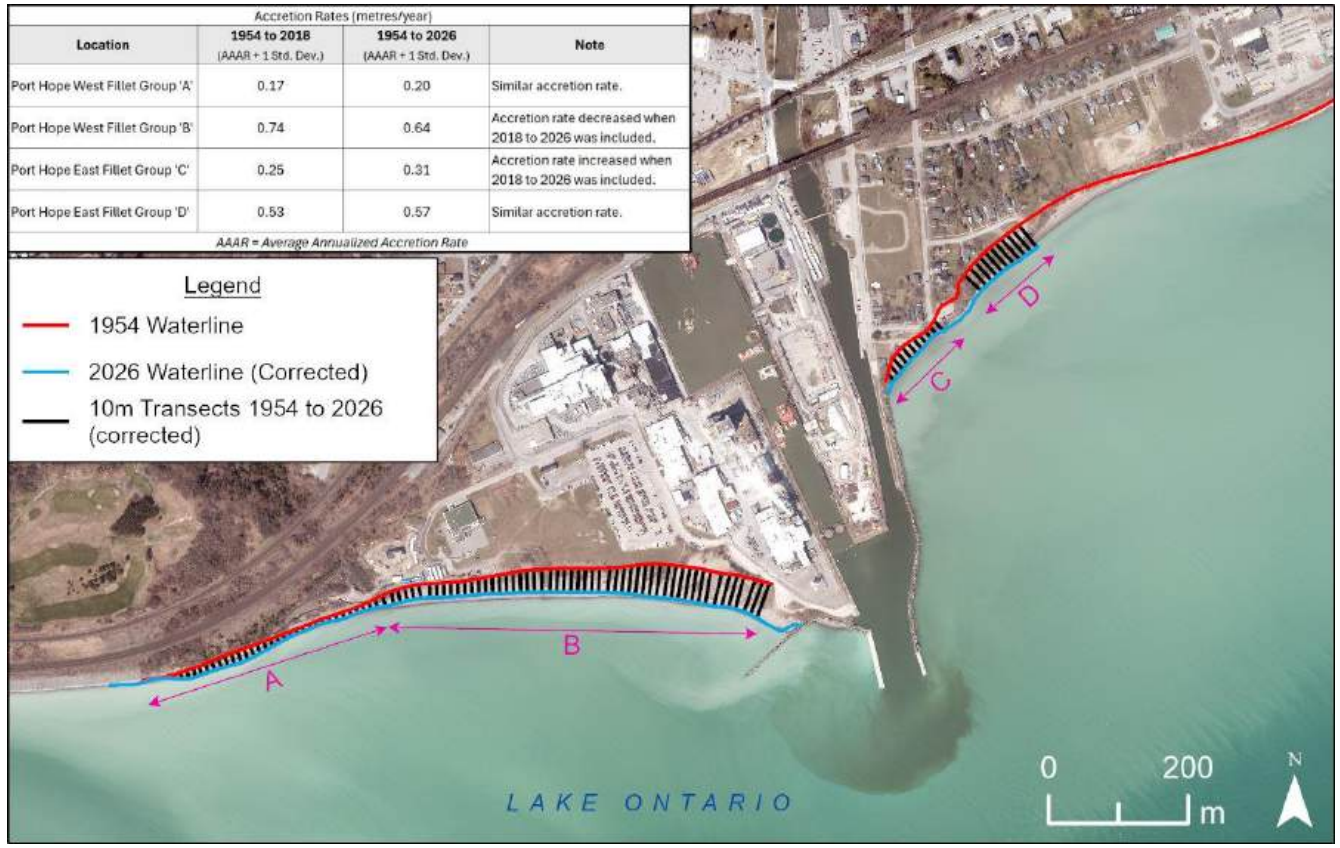


Substrate Mapping

Accretion Rates (metres/year)

Location	1954 to 2018 (AAAR + 1 Std. Dev.)	1954 to 2026 (AAAR + 1 Std. Dev.)	Note
Port Hope West Fillet Group 'A'	0.17	0.20	Similar accretion rate.
Port Hope West Fillet Group 'B'	0.74	0.64	Accretion rate decreased when 2018 to 2026 was included.
Port Hope East Fillet Group 'C'	0.25	0.31	Accretion rate increased when 2018 to 2026 was included.
Port Hope East Fillet Group 'D'	0.53	0.57	Similar accretion rate.

AAAR = Average Annualized Accretion Rate



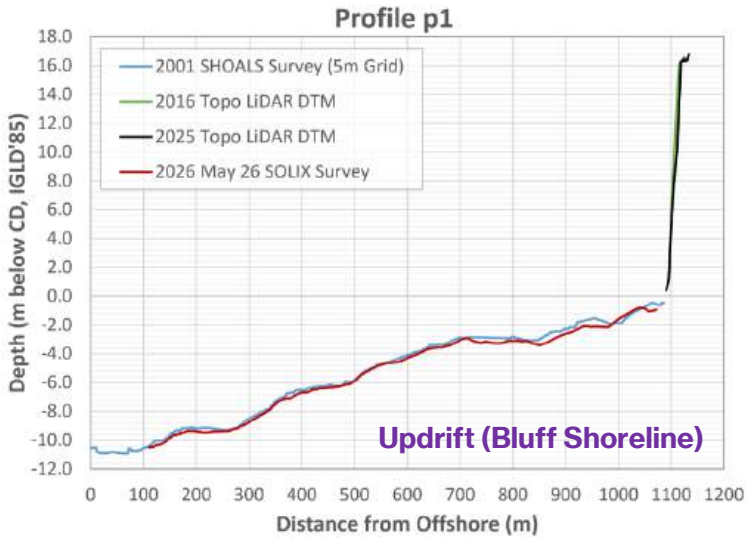
Shoreline Change

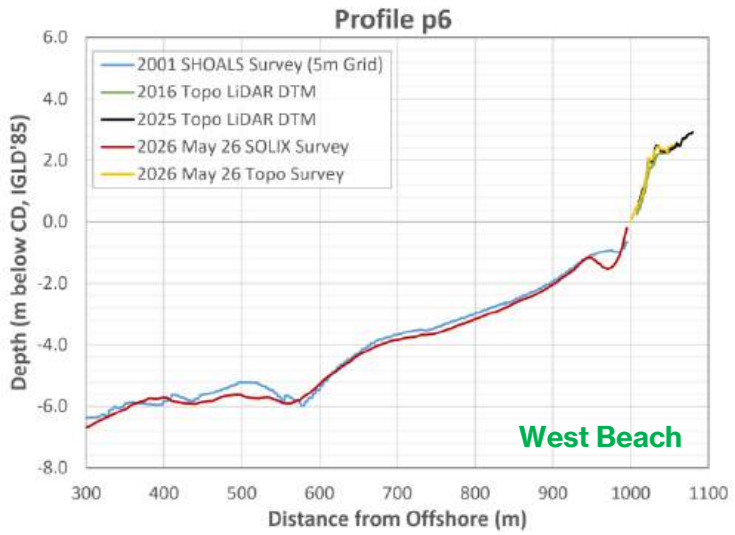
Shoreline Position

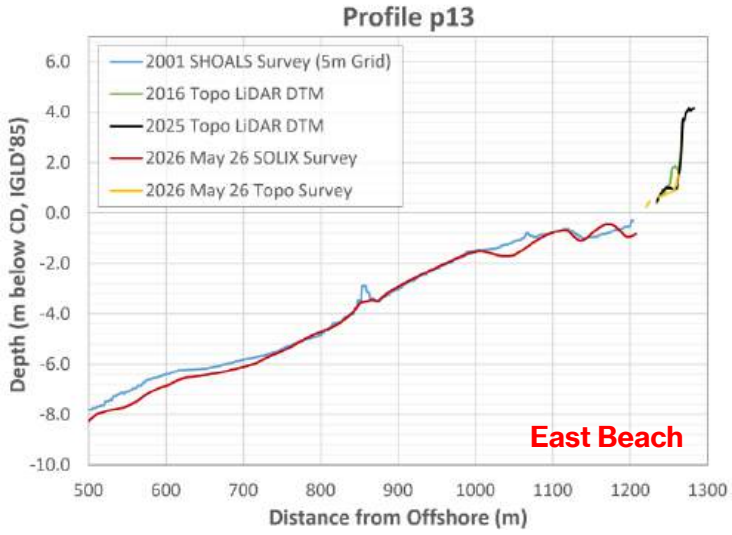
Change in waterline and bluff/bank crest position to evaluate long-term average annual recession or accretion rates for updrift and downdrift shorelines

Nearshore Profile Evolution

Change in nearshore profile of east and west beaches to evaluate long term profile changes (i.e. accretion or downcutting) and dynamic shoreline features (e.g. bars)

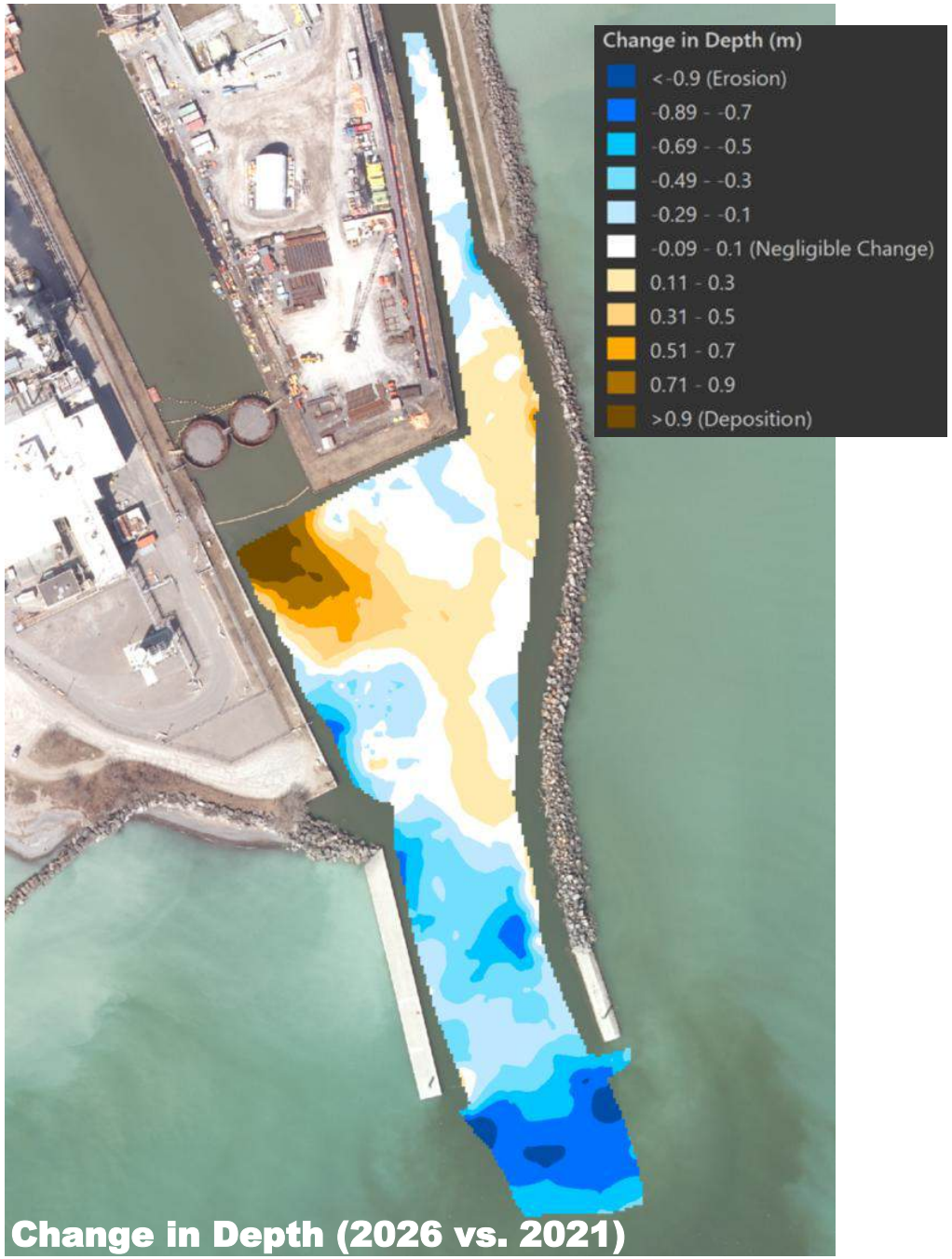


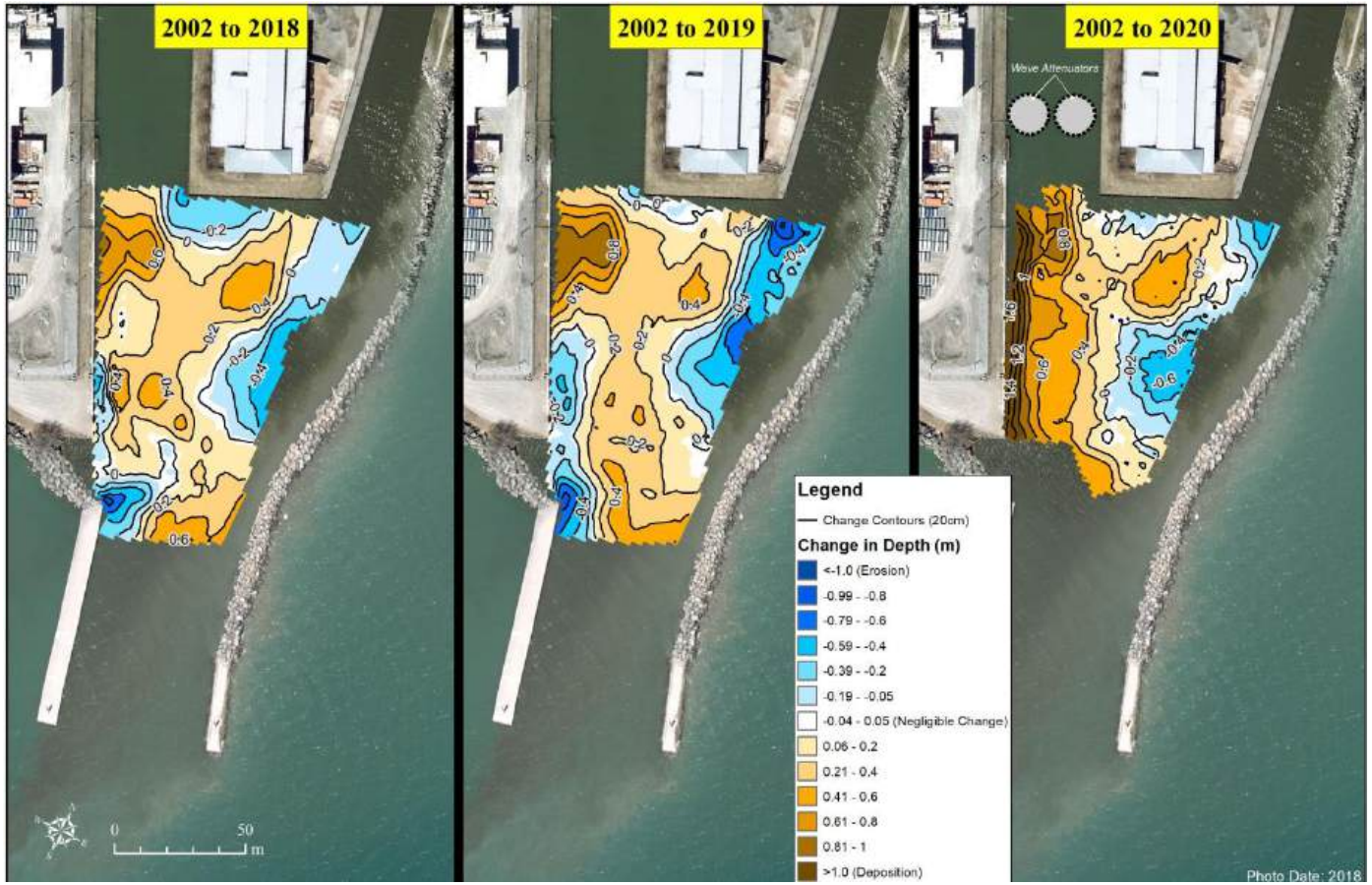




Harbour Morphology

Compare to harbour bottom elevations to prior surveys and dredge records to assess morphology trends and approximate accretion rates







DRAFT Sediment Budget

Zuzek inc.
ONE WORLD

DRAFT

Recent Past Sediment Budget: Port Darlington to Port Hope

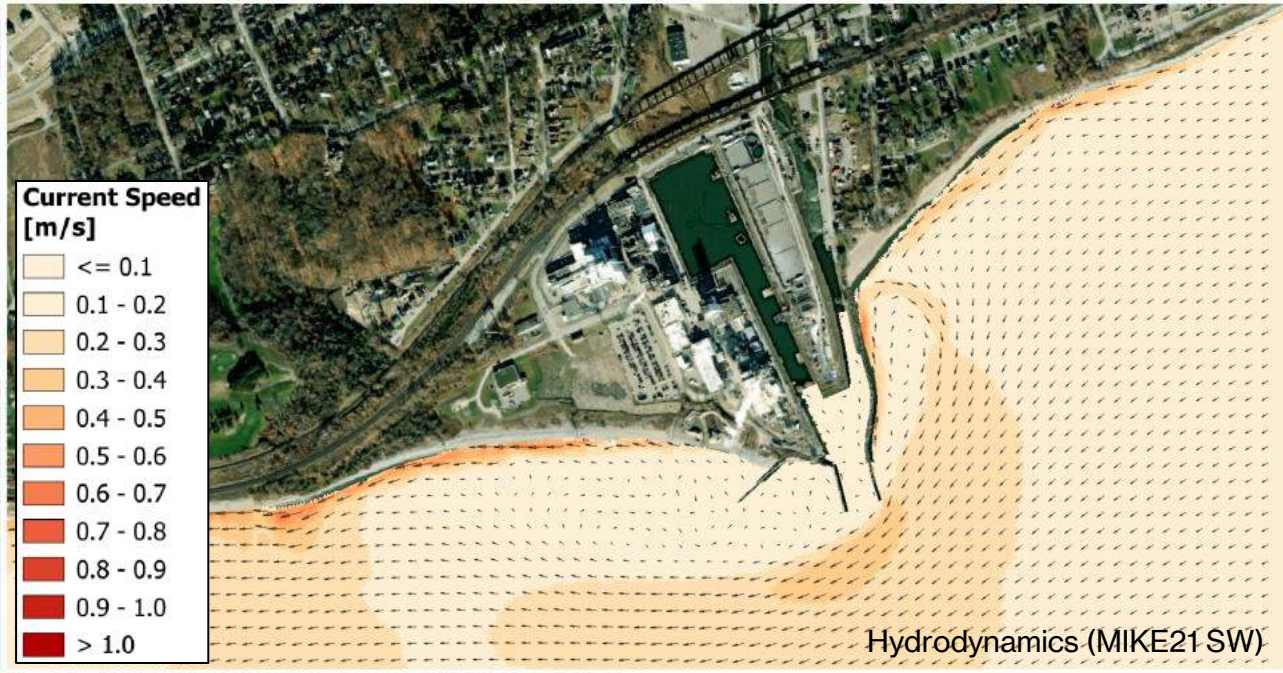
Project: Port Hope Sediment Bypassing

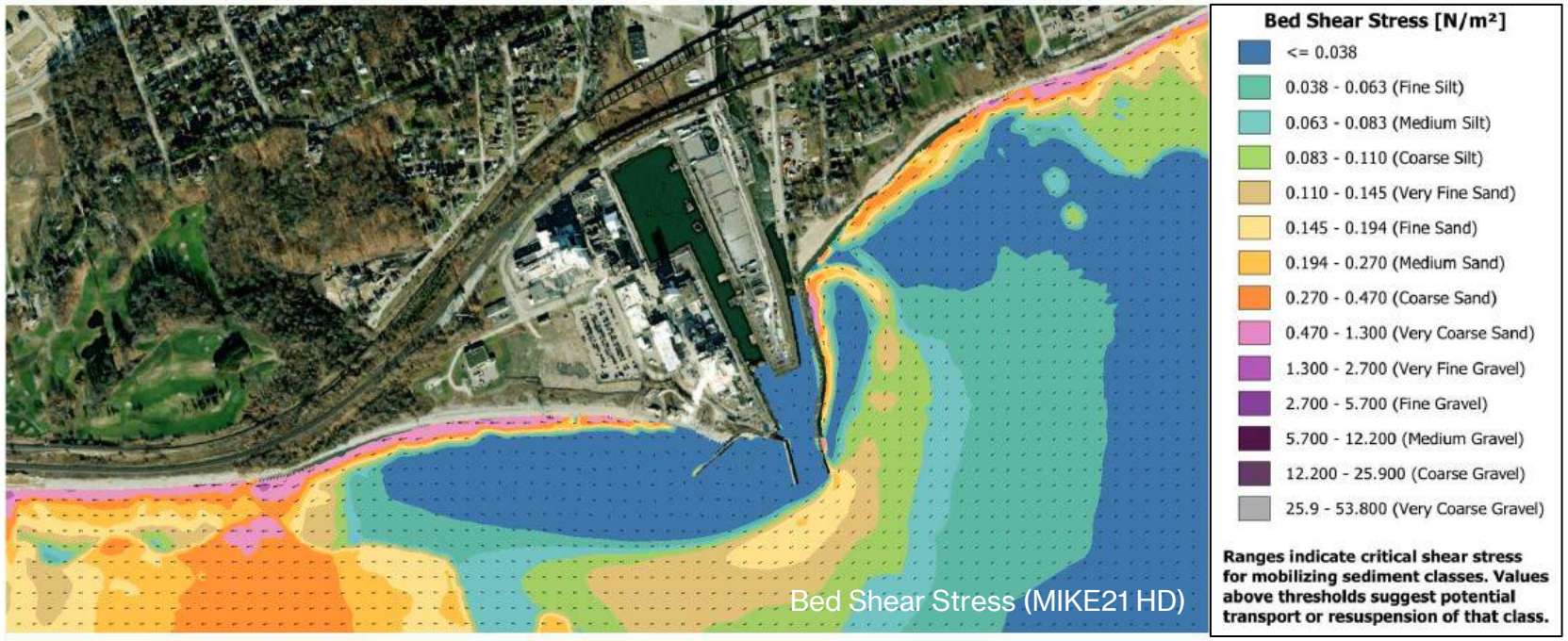
Notes:
Main Map Imagery: Esri World Imagery Basemap
Inset Map Imagery: 2023 SCOOP orthophotos obtained from Ontario GeoHub.

0 1 2 km

Numerical Modelling







04/04/2018 06:00

Next Steps

Finalize Sediment Budget

Including revisions based on numerical modelling results for representative 5-year period (2014 – 2018)

Develop Conceptual Sediment Management Interventions and Harbour Alterations

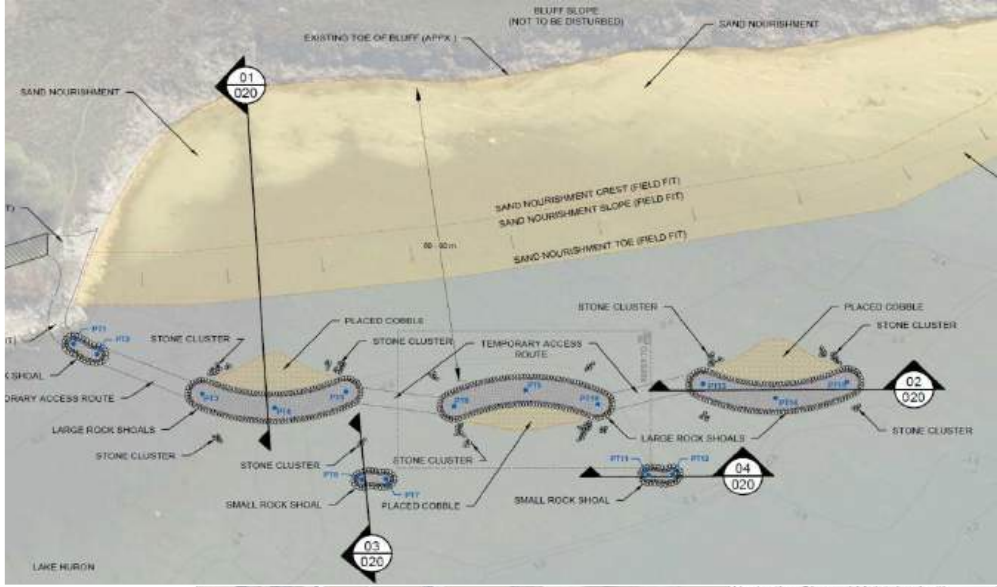
Based on knowledge gained from numerical modelling, proposed minor or major infrastructure alterations, improvements or management actions to improve sediment bypassing and mitigate harbour sedimentation

Evaluate Harbour Alteration and Management Concepts

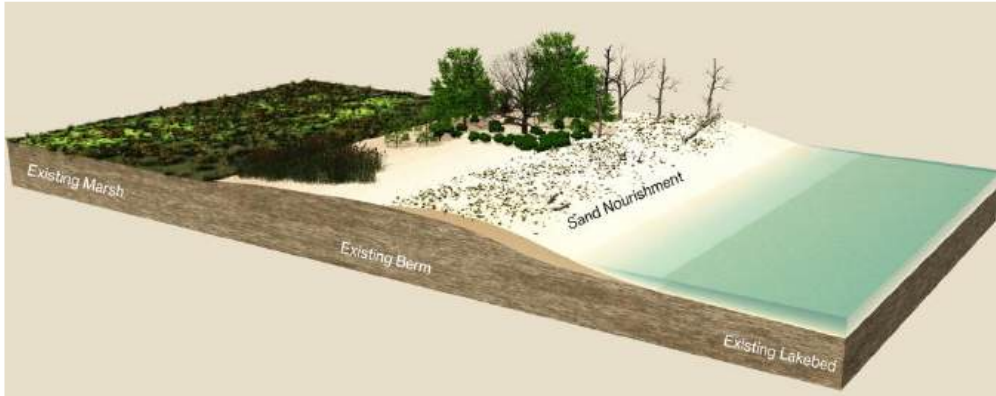
Evaluate concepts using numerical models to determine relative changes in harbour infilling rates, sediment bypassing and influence on long-term coastal resilience

Reporting & Knowledge Sharing

Technical report and presentation summarizing technical findings and likely range in costs, pros and cons, and potential outcomes for each considered high-level concept







Thank you!



MUNICIPALITY OF PORT HOPE

Ganaraska CONSERVATION

SJL ENGINEERING

Zuzek inc. ONE WORLD

DHI

Canada Water Agency

Agence de l'eau du Canada

Afternoon break and networking

See you back at 2:40pm!



Lightning Talks

Strengthening Public Partnership for Great Lakes Coastal Resilience

Green Ribbon Champion Shoreline Restoration Program

Lake Huron Coastal Centre



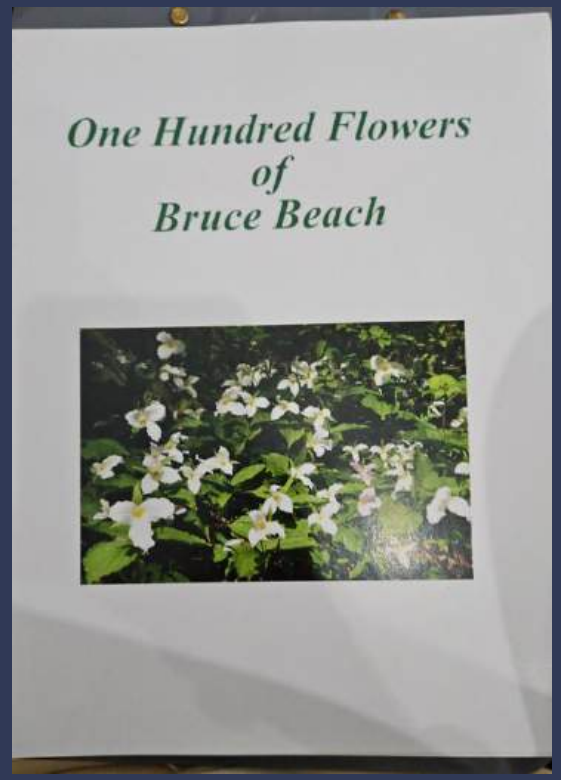
lakehuron.ca

LAKE HURON COASTAL CENTRE

GREEN RIBBON CHAMPION

WHY PUBLIC INVOLVEMENT MATTERS

- Although the shoreline is public, much of it is accessible through private property.
- To access large stretches of Lake Huron beaches and dunes, resident and landholder involvement is essential.
- Many residents and cottagers have been visiting “their” stretch of the shoreline for decades, some 70+ years, and provide valuable history – they know “their” shoreline better than we do!
- Involvement of shoreline property holders allows for long term stewardship.





PUBLIC INVOLVEMENT TO DATE







Landholders

- Site walks with participant
- Survey
- Ongoing e-mail communication
- Follow-up restoration

Community

- Youth engagement
- Collaboration with community groups, local experts
- Online discussion

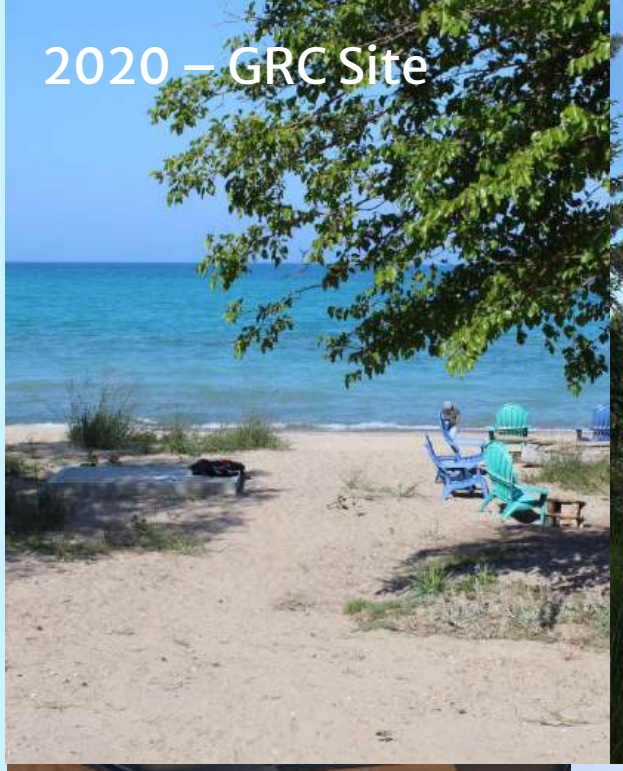
Municipalities

- Collaboration with municipal staff on projects
- Information sharing

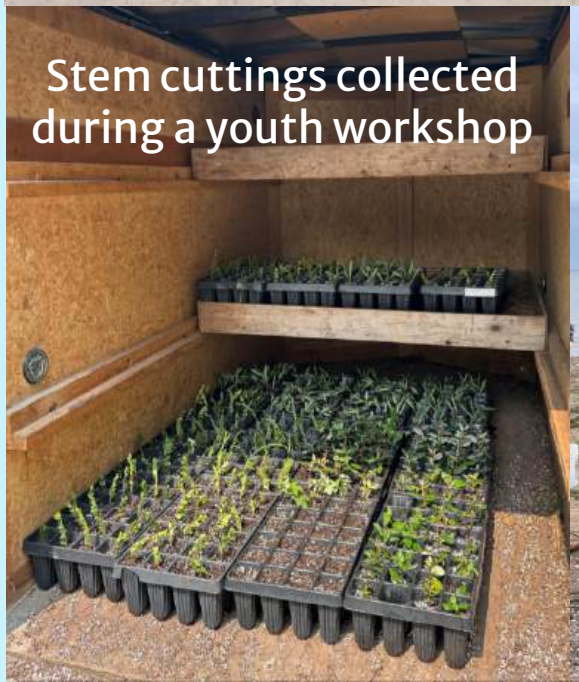
OUTCOMES & ACHIEVEMENTS

- What we hoped to achieve:
  - Long-term relationship building with shoreline stewards
  - Public education
  - Learning best practices in shoreline restoration (social side)
  - Increasing number of sites to be restored or stewarded

- What resulted:
  - Ongoing relationship building
  - Increased community knowledge, passion, and investment in shoreline health
  - Understanding on ways to approach shoreline restoration for participants with diverse perspectives
  - Evolving communication plans/strategies









KEY LESSONS & LOOKING FORWARD

- **KEY LESSONS**
  - The importance of long-term relationships and building trust – American beach grass

- **LOOKING FORWARD**
  - Connecting with 30 new shoreline landholders in 2027
  - Collaborating with local community groups on restoration events
  - Widening our network – seasonal visitors and residents, landscapers, real estate agents


Youth dune restoration workshop


LHCC staff conducting a site visit

NORTH SHORE RESILIENCE PROJECT

Long Point Biosphere Region



WHY PUBLIC INVOLVEMENT MATTERS

- Challenge: Coastal communities, especially those living on eroding bluffs or flood prone areas, can have difficult relationships with the regulations and changes imposed due to hazards
- Building relationships and trust is key to long term buy-in and community ownership
- Improved communication outcomes
- Local and diverse knowledge improves project outcomes and recommendations – the improvements in our depth of knowledge is incalculable
- There are lots of fantastic people to meet!







PUBLIC INVOLVEMENT TO DATE



Public Advisory Committee

Part of the project governance, including Working Group and Technical Advisory Committee



Public Open Houses

Drop in style, with displays, posters and informal conversations



Formal presentations to community groups

Ten organizations throughout the project geography, sometimes > 1 per group

OUTCOMES & ACHIEVEMENTS

- 25 private properties restored in Long Point, 4 in Port Bruce; 8 municipal properties
- Letters of support from 10 community organizations, including in kind commitments
- Financial commitment from at least 1 Rate Payer group, up to 3
- Secures support even when local politics change (Municipal Elections!)
- Advocacy and political pressure for projects





KEY LESSONS & LOOKING FORWARD

- Meaningful community engagement goes well beyond what is traditionally recommended

- Trust is established through relationship building, which requires reciprocal time investment

- Public partnerships for the future are deepening both with respect to financial contributions, volunteerism and in kind, collaborative project design

- **Showing up matters**



Community Protection and Enhancement of the Ausable River Estuary and Wetland

Ausable Bayfield Conservation Authority



AUSABLE BAYFIELD CONSERVATION

CREATING AWARENESS | TAKING ACTION

WHY PUBLIC INVOLVEMENT MATTERS



- A complex web of interests:
  pull one string, and many others move.

- “Island” residents need boat access; harbour managers keep channels navigable; Port Franks homeowners fear ice-jam flooding; nature groups protect biodiversity.

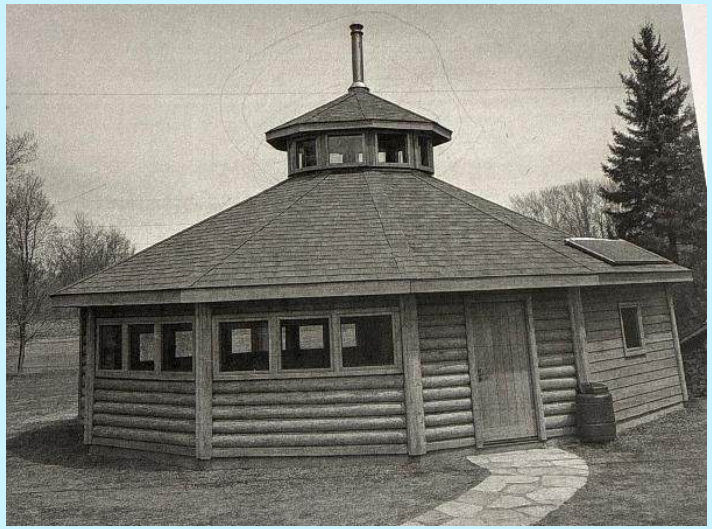
- Communities bring valid concerns. We need to understand them before proposing solutions.





PUBLIC INVOLVEMENT TO DATE







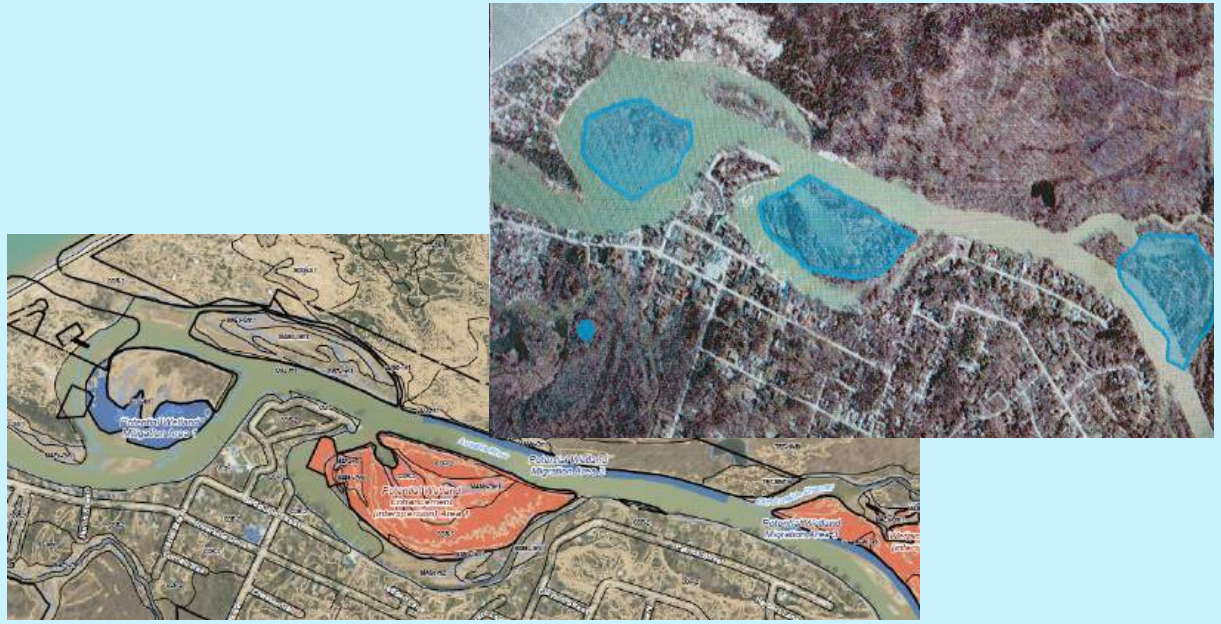
HARBOUR MASTER + BEACH HOMEOWNERS

INDIGENOUS LAND - BASED EDUCATORS

ENVIRONMENTAL GROUPS AND RESEARCERS

OUTCOMES & ACHIEVEMENTS

- Community generosity: time, boat use, land access, trail guides. This helped to make field logistics seamless.
- Early conversations identified restoration sites favorable to residents, reducing future friction.
- Those insights will guide restoration sties that protect water quality and biodiversity.







KEY LESSONS & LOOKING FORWARD

- Listen first.
- Consider socioeconomic perspectives.
- Pair community wisdom with science.

- Watershed management is a team sport!



Hillman Marsh Wetland Restoration

Essex Region Conservation Authority

Kevin Money, Director of Conservation Services

WHY PUBLIC INVOLVEMENT MATTERS

- Builds Trust and Support
- Strengthens Conservation
- Reinforces Political Support
- Personal Connections
- Reinforces Existing Partnerships
- Creates New Partnerships
- Improves Your Project
- Understanding of Knowledge Gaps
- Identify Issues Early
- Respectful Dialogue
- Perspective and Knowledge Gained







PUBLIC INVOLVEMENT TO DATE







Pre-design Consultation

Input into initial concepts and designs

On Going Communications

Website, working groups, public events

Ground Breaking Event

Education and celebration of successes

OUTCOMES & ACHIEVEMENTS

- 3 First Nation communities consulted
- 4 committees established
- 19 partner organizations with 30 representatives
- 35 volunteers for wetland restoration
- 60 participants in public consultation



KEY LESSONS & LOOKING FORWARD

- Use of a project specific website to communicate updates
- Continued public involvement and education about the project is vital
- Communications and support staff are key to proper engagement.



https://www.youtube.com/watch?v=4uq1clmoAz4

Session 3 Panel:

Strengthening Public Partnership for Great Lakes Coastal Resilience



Meredith Watson,
Lake Huron Coastal Centre



Sarah Bod,
Long Point Biosphere Region



Mari Veliz,
Ausable Bayfield Conservation Authority



Kevin Money,
Essex Region Conservation Authority

Let us know how we did!

CANADA WATER AGENCY

Thank You!

We would like to recognize the following projects coming to completion:

Leveraging Big Data to Connect Watershed Plans to Nearshore Lake Health



Toronto and Region Conservation Authority

Restoring Balance: Port Hope Revitalization Project



MUNICIPALITY OF PORT HOPE

North Shore Resilience Action Plan – Port Glasgow to Long Point



LONG POINT BIOSPHERE REGION

Ajax Nearshore Restoration and Coastal Stabilization Project



Toronto and Region Conservation Authority

Assessing Nature-Based Solutions to Restore Coastal Processes around Graham Creek & Revitalize Bond Head Beach Park



Clarington

Charting the Course:
Tracking Progress & Amplifying Success of Coastal Resilience

Great Lakes Freshwater Ecosystem Initiative 3rd Annual Symposium

Canada Centre for Inland Waters | October 21, 2026



Thank you for attending!

Canada Water Agency | Agence de l'eau du Canada

For questions, please contact:
Hailey.Adzija@cwa-aec.gc.ca or Sharon.Lam@trca.ca

Canada