



Pelee Coastal Resilience Committee

Open House Presentation

Pete Zuzek, Linda Mortsch, Janice Forsyth, Larry Hildebrand

June 23, 24, & 25, 2026



Land Acknowledgement

We acknowledge the land on which the County of Essex is located is the traditional territory of the Three Fires Confederacy of First Nations, comprised of the Ojibway, Odawa and Potawatomie Peoples.

We specifically recognize Caldwell First Nation and other First Nations which have provided significant historical and contemporary contributions to this region.

We also value the contributions of all Original Peoples of Turtle Island, who have been living and working on this land from time immemorial.



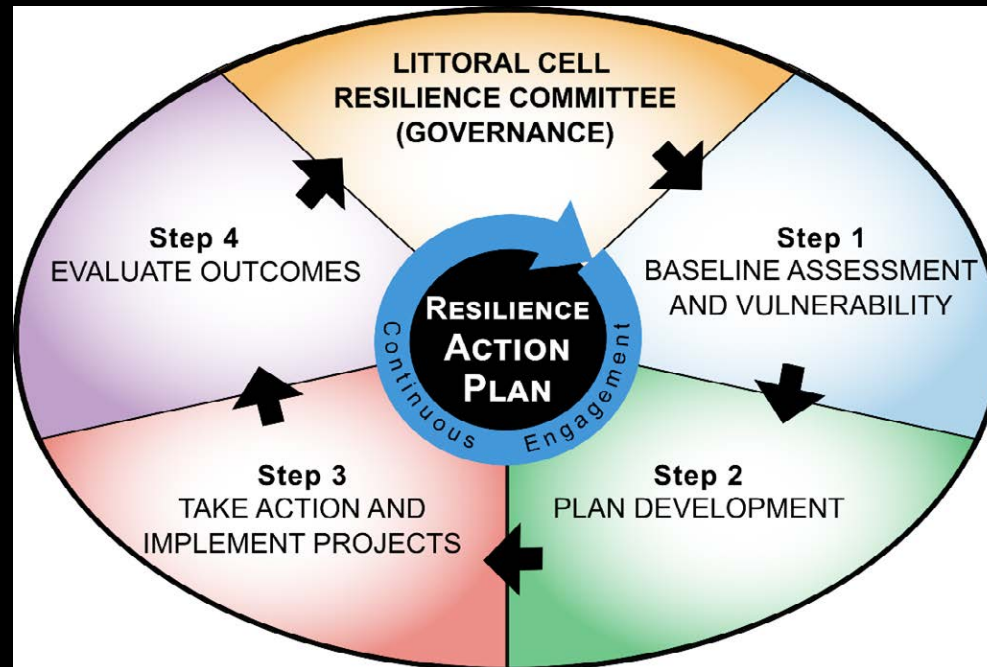


AGENDA



- Pelee Coastal Resilience Action Plan and Area of Study
- Overview of workplan with general timelines
- Update for Adaptation Concepts progress
- Question and answer
- Informal discussion with posters and exchange of information

I – PELEE COASTAL RESILIENCE ACTION PLAN

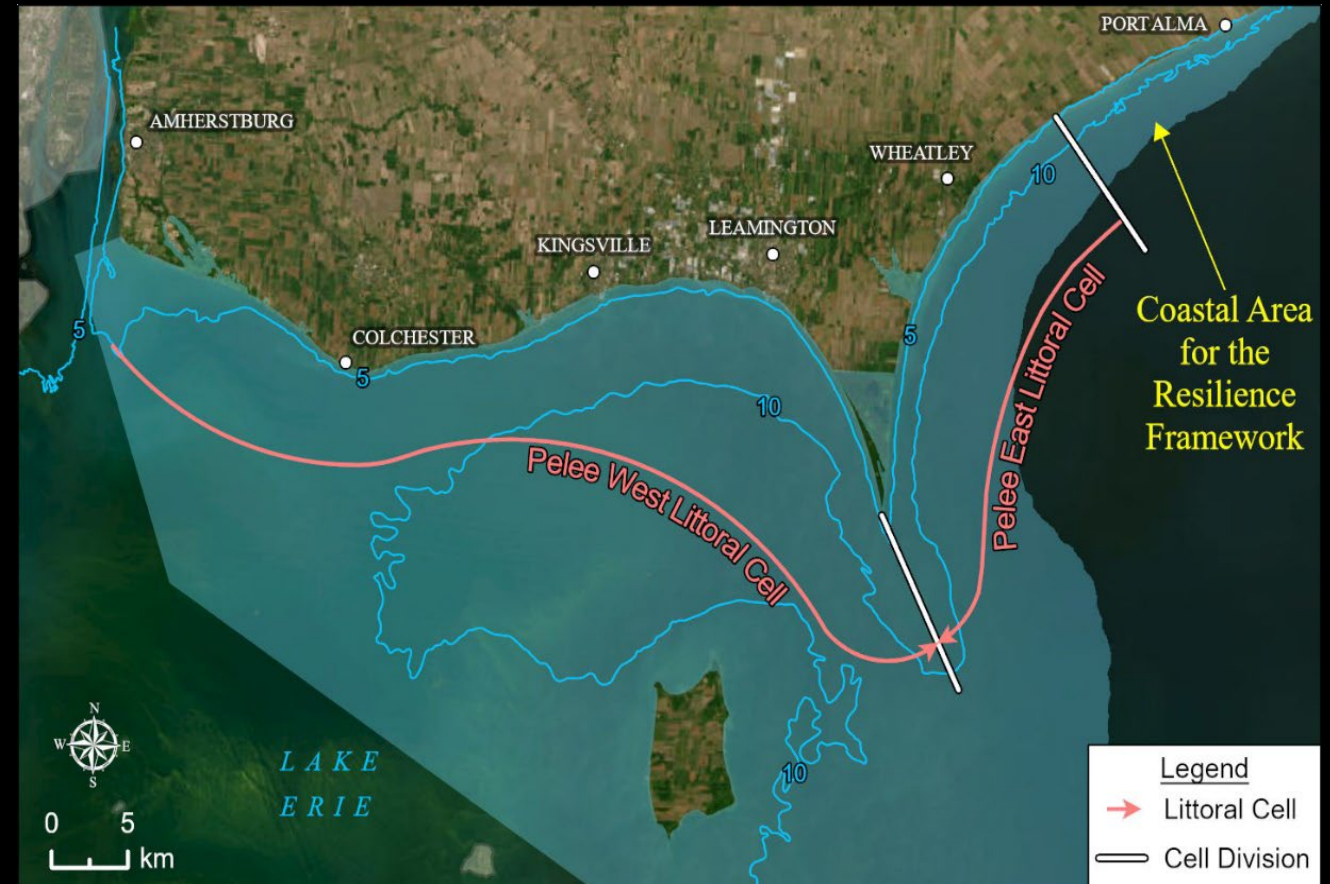




Our Vision for Resilience and Study Area Limits



- The ability of communities and ecosystems to bounce back from damaging storm events
- Coast stretches from Amherstburg to Port Alma
- Unique approach that uses boundaries set by littoral cells – Pelee West and Pelee East

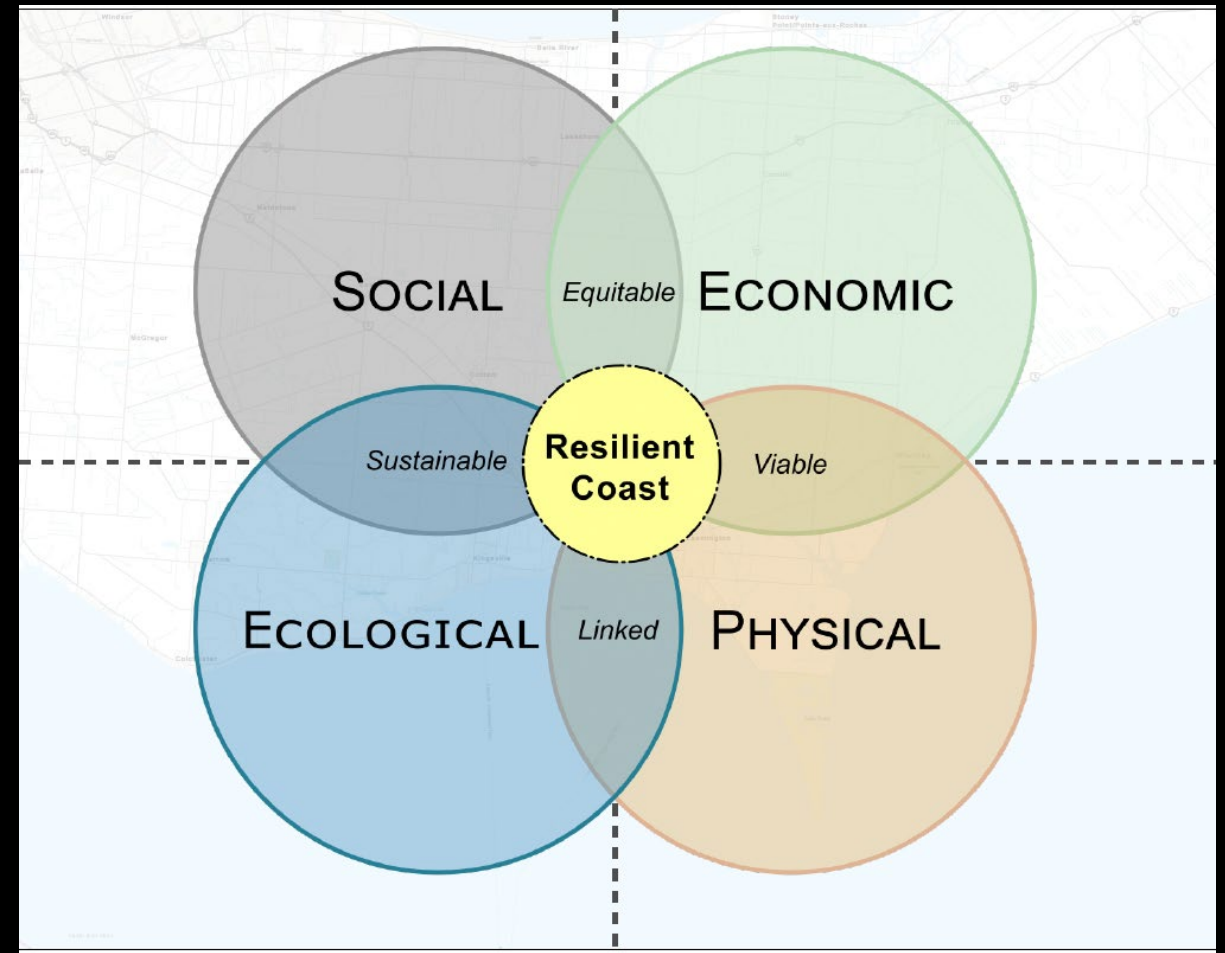




Many Partners Advancing the Action Plan

Lead by Pelee Coastal Resilience Committee, including:

- Citizens Associations
- First Nations
- Businesses and Chamber of Commerce
- Environmental groups
- Conservation Authorities
- Towns, Municipalities, County
- Provincial and federal agencies





Work Plan Until December 2027

SUMMARY PROJECT SCHEDULE	STEP 1 - FY24/25				STEP 2 - FY25/26				STEP 3 - FY26/27				STEP 4 - FY27		
	May '24 to Mar. '25				Apr. '25 to Mar. '26				Apr. '26 to Mar. '27				Ending Dec.'27		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
GOVERNANCE (COMMITTEE MEETINGS, ETC.)	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	as required		
STEP 1 - BASELINE ASSESSMENT AND VULNERABILITY															
STEP 2 - RESILIENCE PLAN DEVELOPMENT															
STEP 3 - TAKE ACTION TO IMPLEMENT SELECT PROJECTS															
STEP 4 - EVALUATE OUTCOMES AND REPORTING															
LEGEND  Workshop  Consultation															

II – ADAPTATION CONCEPT UPDATES





Adaptation B: Municipal Infrastructure and Natural Capital



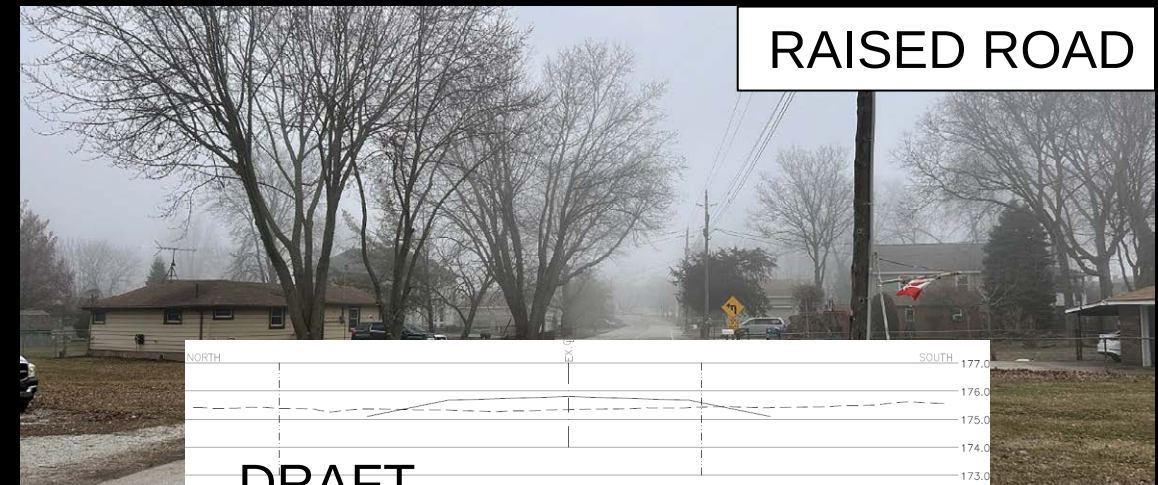


Heritage Road / County Road 50 in Cedar Beach, Kingsville

- >1 m of water over the road for CC 100-year Flood Level
- Conceptual design looking at raising elevation with wider footprint



EXISTING



RAISED ROAD

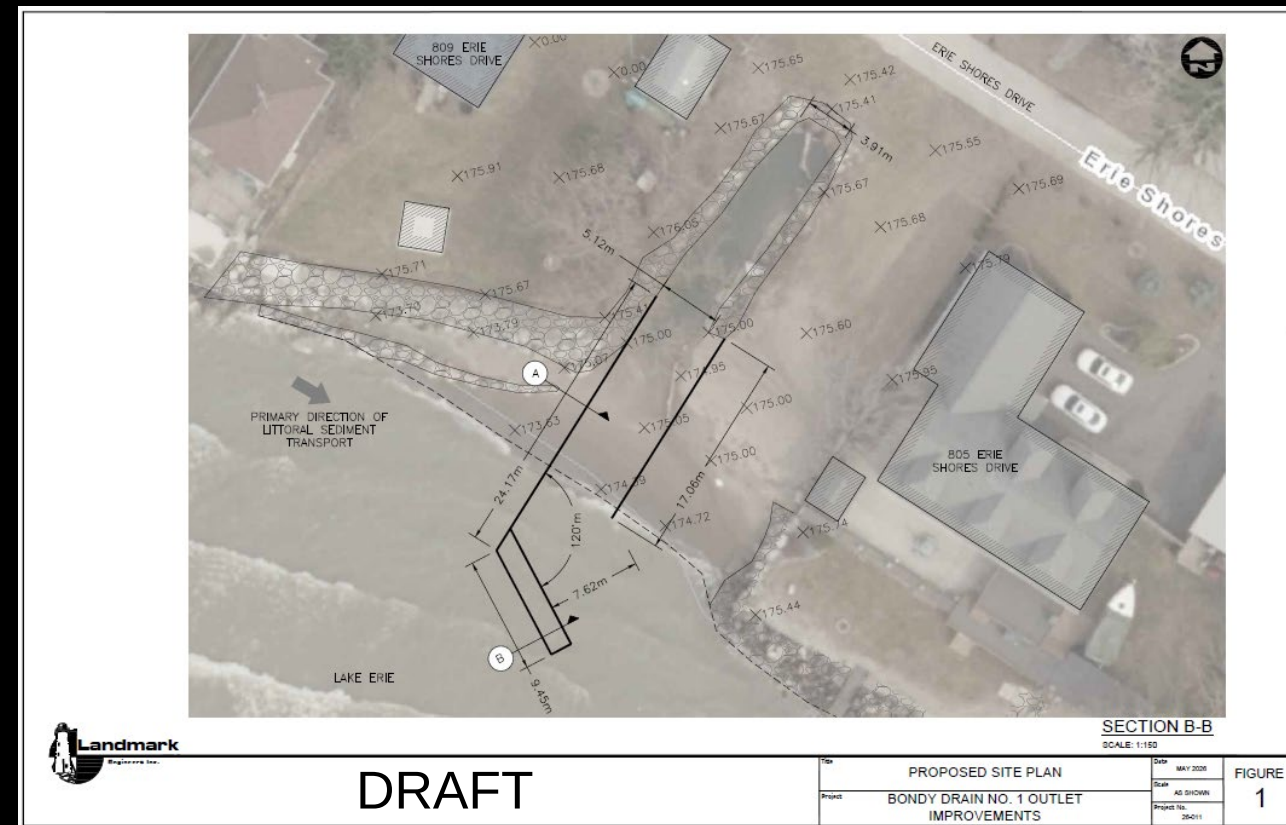
DRAFT

SECTION 11
SCALE: 1:100



Drain Outlets to Lake Erie Town of Essex

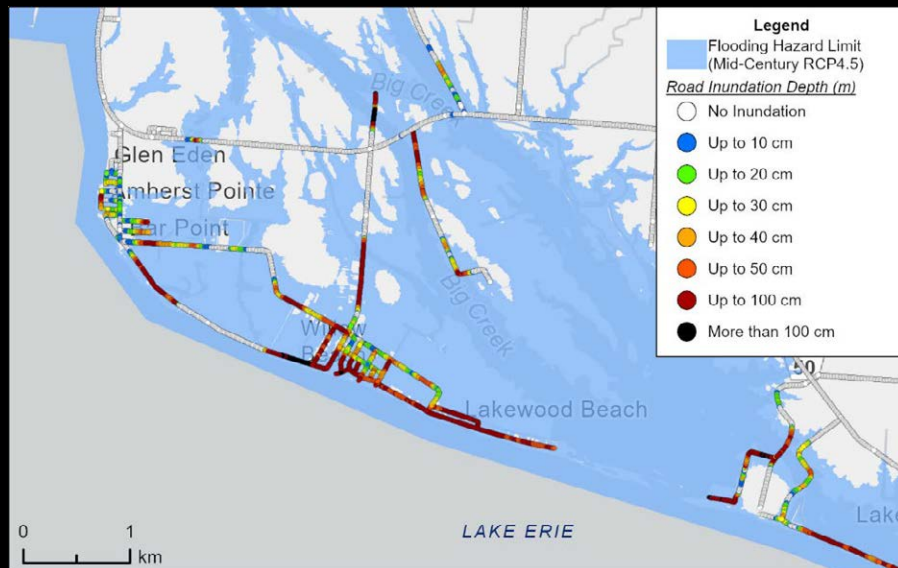
- Investigating potential remediation solutions to sedimentation in drainage outlets, which reduces the flow of water to the lake during floods
 - Bondy No. 1
 - Bondy No. 2 – Townline Drain
 - Lipps Drain





Floodproofing for Sanitary Pump Stations in the Town of Amherstburg

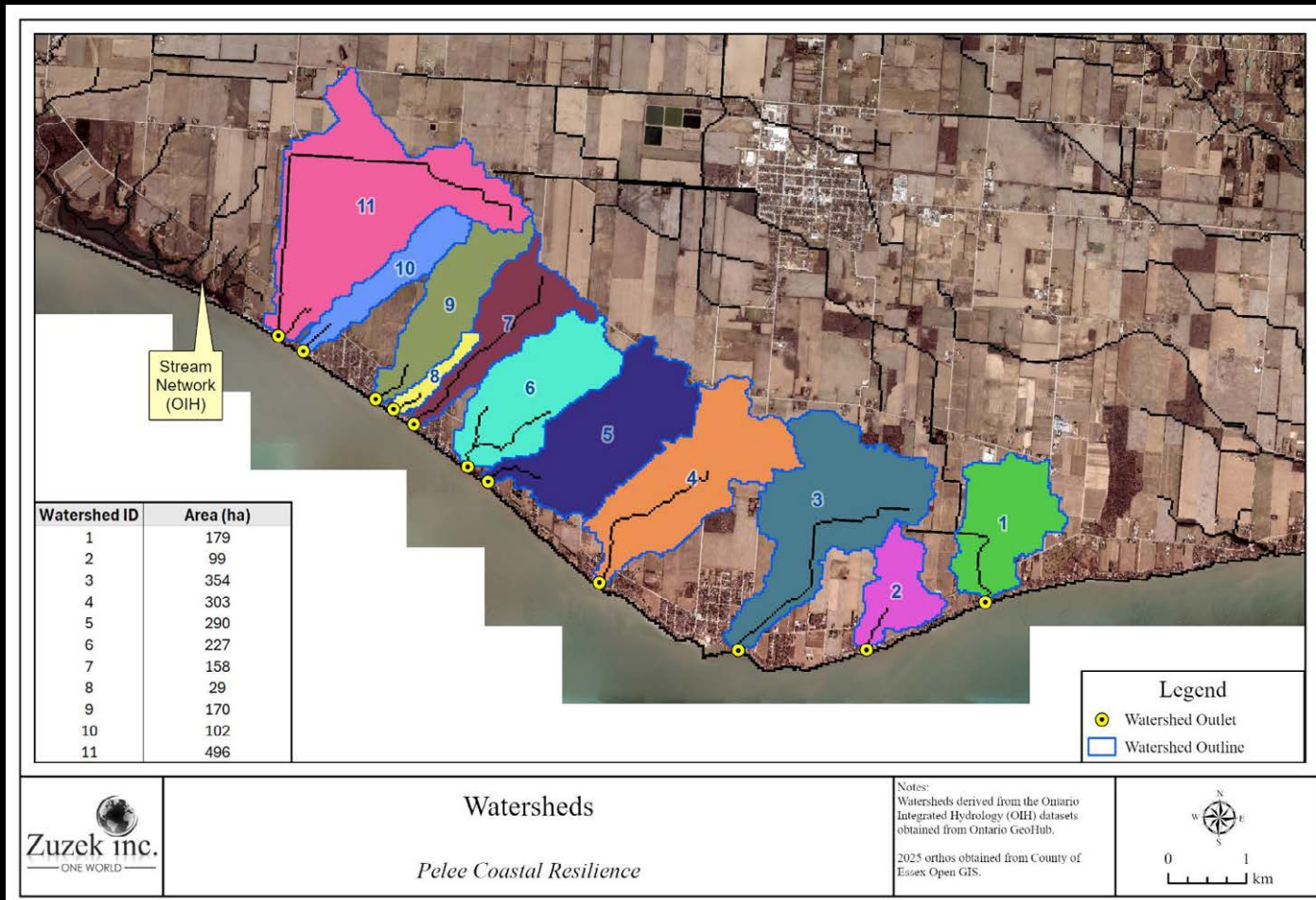
- Lakewood, McCloud, and Erie Ave.
- Pumping systems located in the sanitary drains, vulnerable to inundation during the 100-year flood
- Proposing a riser for the manhole to protect against flood waters inundating the pumps





Watershed Flood Risks Due to Rainfall and High Lake Levels, Town of Essex

- Using models that simulate overland flow and conveyance in rivers/ditches





Adaptation C Task Team: Newsletter and Fact Sheets

DRAFT ADAPTATION CONCEPT C Newsletter and Fact Sheets

Newsletter

PELEE COASTAL NEWSLETTER

PELEE COASTAL NEWSLETTER

PELEE COASTAL NEWSLETTER

PELEE COASTAL NEWSLETTER

Fact Sheets

FLOODING

Coastal Flood Hazards in Great Lakes Communities

EROSION

Coastal Erosion Hazards in Great Lakes Communities

Seasonal Impacts

KEY MESSAGE

Future Newsletters will be produced, along with more Fact Sheets.

Timeline:

2026 2027 2028

Newsletters and Fact Sheets will be produced throughout the project



Working on Spring Newsletter and More Fact Sheets

PELEE COASTAL RESILIENCE
NEWSLETTER



Volume 1 – Update on Adaptation Planning

Fall 2025

ADAPTATION B

Screening Assessment of Municipal Infrastructure and Natural Capital

The vulnerability assessment completed for the project to date identified 4,000 buildings valued at over 800 million dollars located in the coastal floodplain when climate change impacts were considered. The value of buildings vulnerable to erosion over the next 100 years is over \$1 Billion.

Adaptation B expands the vulnerability assessment to include flood risk for municipal infrastructure such as roads, drinking water intakes and plants, wastewater treatment plants, buildings for first responders, and natural assets. The initial screening identified 92 km of roads that are vulnerable to flooding from a Lake Erie 100-year climate-change event.



Coastal Floodplain for the Lake Erie 100-year Climate Change Event in Amherstburg



Cedar Beach Flooding on August 24, 2023 Following Record Setting Rainfall During High Lake Levels (Photo credit: Windsor Star)



Road Flooding at Creek Outlet, Town of Essex (Photo credit: Windsor Star)

Meetings are continuing with the local Town, Municipal, and County Engineering Staff to refine the assessment and identify potential projects for an engineering scoping investigation into alternatives to make the infrastructure more resilient to natural hazards and changing climate.



www.peleecoastal.ca

Page 1 of 3

PELEE COASTAL RESILIENCE
NEWSLETTER



Volume 1 – Update on Adaptation Planning

Fall 2025

ADAPTATION D

Develop In-situ and Greenhouse Nurseries to Grow Native Dune Plants for Restoration

The Caldwell First Nation and Point Pelee National Park are leading Adaptation D with support from the Consulting Team. After several months of planning over the summer, the Task Team met at Point Pelee National Park on October 7, 2025 to collect seeds from native dune plants. Seeds from beachgrass plants were separated and counted at the Visitors Centre inside the National Park. Over the winter, members of the Caldwell First Nation and staff from the National Park will grow the beachgrass seeds in indoor grow-light micro nurseries.



Grow-light Micro Nursery



Dune Grass Seed Collection at Point Pelee



Processing and Separating Dune Grass Seeds by Volunteers

In the spring of 2026, the beachgrass will be planted into dune environments to strengthen resilience to coastal hazards and climate change. The experience gained from growing the native plants from seeds will be used to generate plant material for future restoration projects in the two littoral cells.

“Yesterday was just amazing to be involved and witness people of all ages and cultures come together towards a greater cause. The unity and collaboration was astounding and formed instant bonds. I am grateful to have been part of this unique assembly.” Shelley Birch, Junior Water Guardian, Caldwell First Nation



www.peleecoastal.ca

Page 2 of 3

Coastal Flood Hazards
in Great Lakes
Communities



Flooding is the leading cause of public emergencies in Ontario, and communities across the region are the most vulnerable to its impacts.

Coastal floods are worsened by wave uprush, overtopping, ice spray, and periods of high water levels. These hazards threaten homes, businesses, infrastructure, recreational areas, public safety, and access for first responders.

Lower Thames Conservation monitors areas that are prone to coastal flooding across the region and regulates development in hazardous areas to reduce risks to communities.



Coastal Flooding can occur at any time of the year during extreme weather, high water levels, storm surges, heavy rainfall, and ice or snowmelt events.



Wave Uprush and Overtopping occur when intense wind-driven waves hit the coastline, pushing lake water onto low-lying areas. This hazard is intensified during periods of high water levels, leading to destructive flood events.



Ice Spray occurs during winter storms when intense wind-driven waves cover infrastructure and homes in thick ice. The ice is often mixed with beach sediments, adding weight to the coating.



High Water Levels occur when water levels rise significantly above the normal range, leading to the flooding of low-lying areas.



Adaptation D Task Team: Beachgrass Nurseries





Beachgrass is the Pioneer Species for Building Foredunes





Fall 2025 Beachgrass Seed Collection at PPNP

- Attempted seed collection last fall at PPNP
- Goal is to grow plants from seeds to maximize genetic diversity for restoration projects





Caldwell First Nation and PPNP Growers



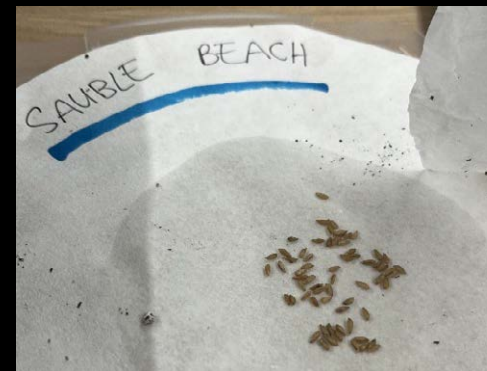


Verbinnen's Nursery

<https://verbinnens.com/>

- 500 Sauble and 500 Long Point seeds
- Dissect seeds to evaluate embryo and endosperm health
- Testing alternating day-night temperatures to increase seed germination
- Eight trials:

	Long Point (n = 200)		Sauble Beach (n = 200)	
	No stratification	30-day cold stratification	No stratification	30-day cold stratification
Alternating chamber (18C/29C)	50 seeds	50 seeds	50 seeds	50 seeds
Stable temp. (~24C)	50 seeds	50 seeds	50 seeds	50 seeds





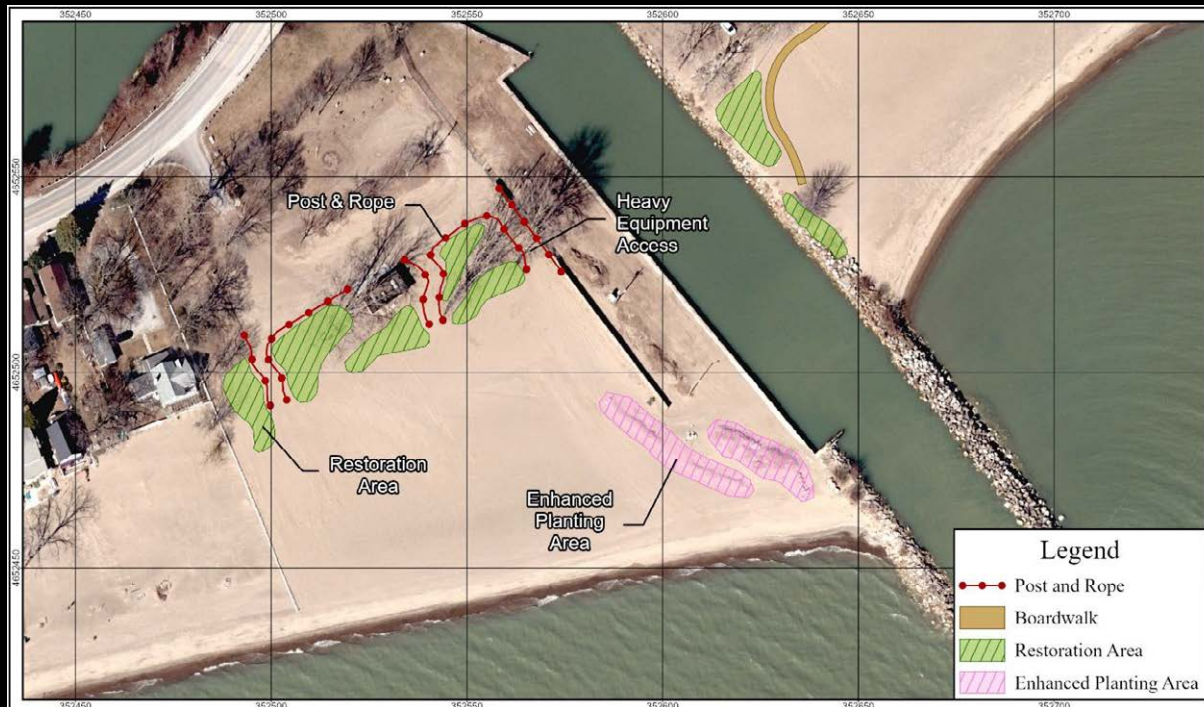
2025 Long Point Seed Collection, Winter Germination, Spring Planting





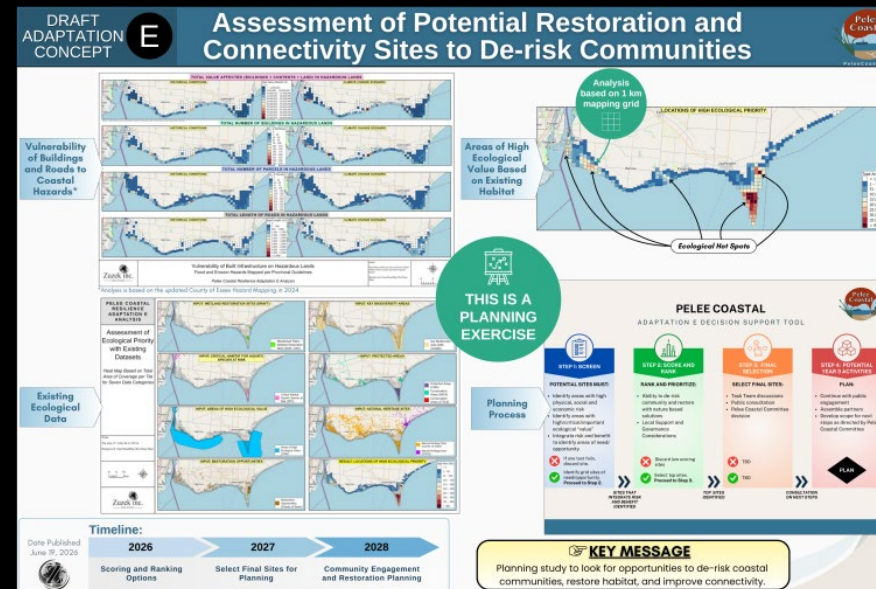
Potential Cedar Beach In-situ Nursery (draft – pending council/staff approval)

- West Side Concept: post and rope walkways from the parking lot to beach
- Dune restoration with native plants to create in-situ nursery/seed source
- Capital costs funded by 'Building Beach Resilience' (*another Zuzek Inc. project*)

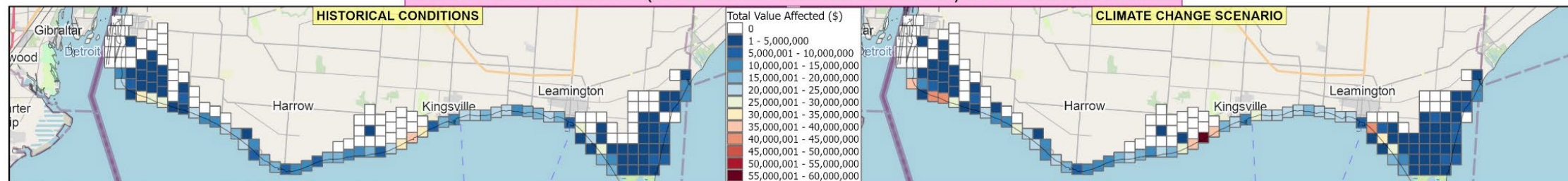




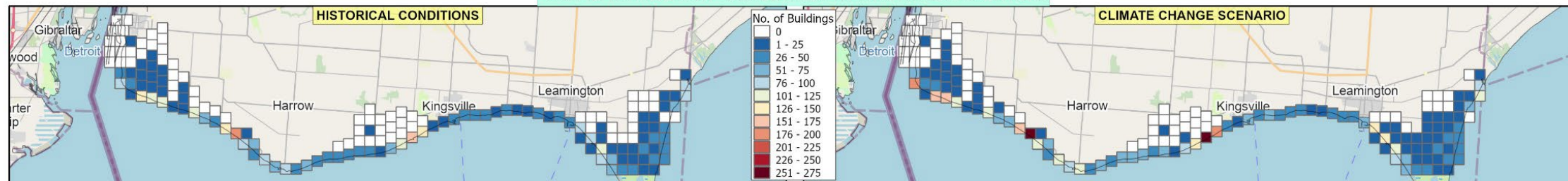
Adaptation E Task Team: Evaluate Needs and Opportunities for NbS Restoration and Connectivity Projects



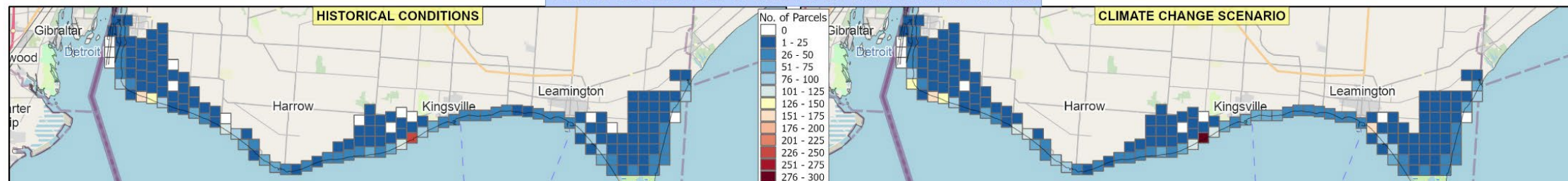
TOTAL VALUE AFFECTED (BUILDINGS + CONTENTS + LAND) IN HAZARDOUS LANDS



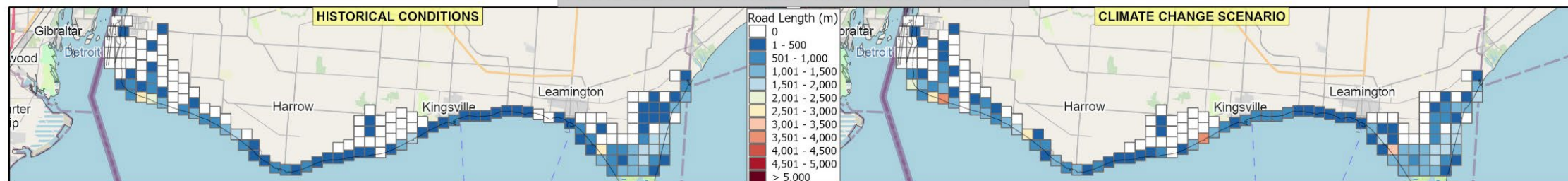
TOTAL NUMBER OF BUILDINGS IN HAZARDOUS LANDS



TOTAL NUMBER OF PARCELS IN HAZARDOUS LANDS



TOTAL LENGTH OF ROADS IN HAZARDOUS LANDS



PELEE COASTAL RESILIENCE ADAPTATION E ANALYSIS

Assessment of Ecological Priority with Existing Datasets

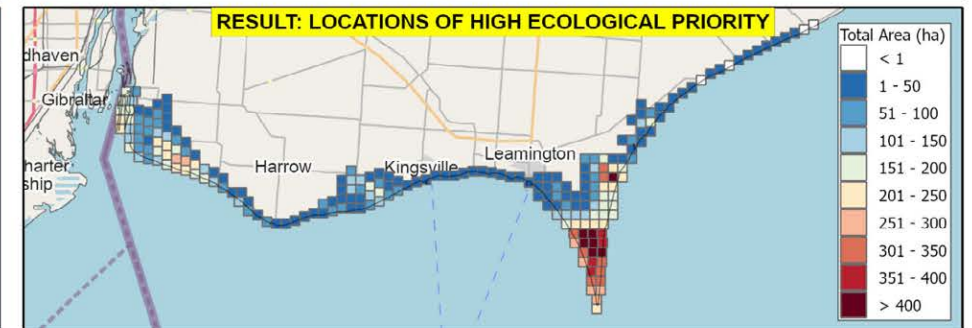
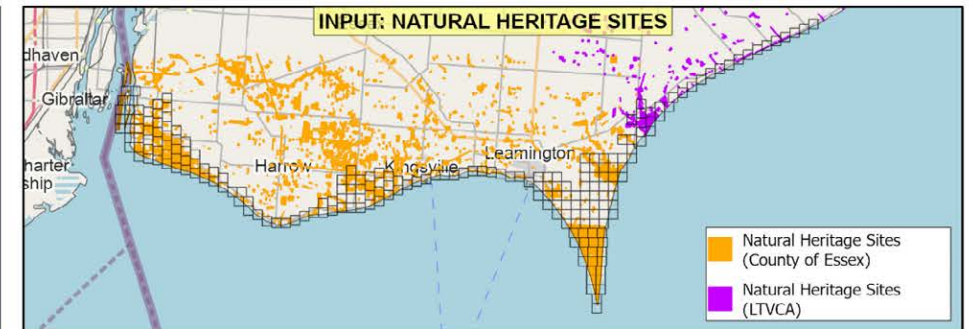
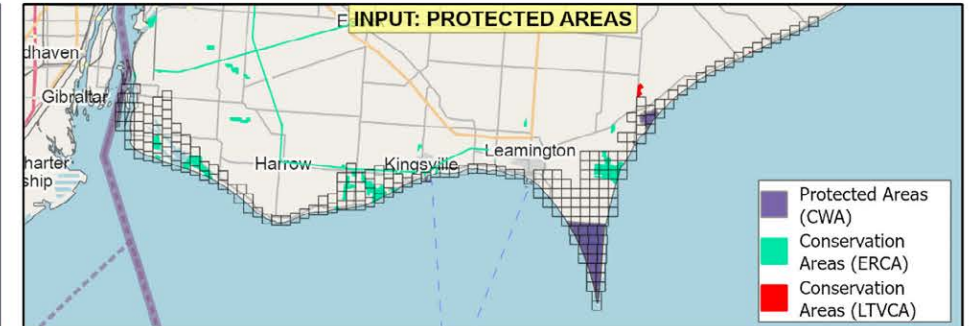
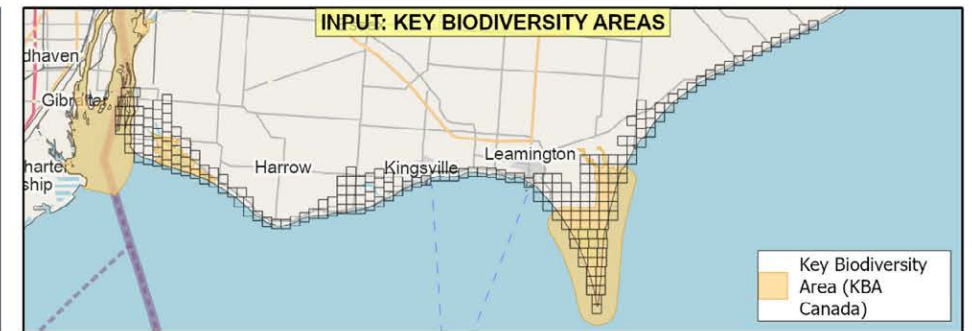
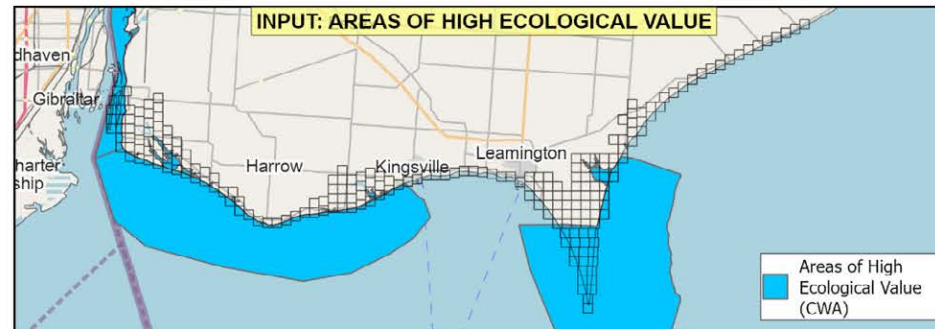
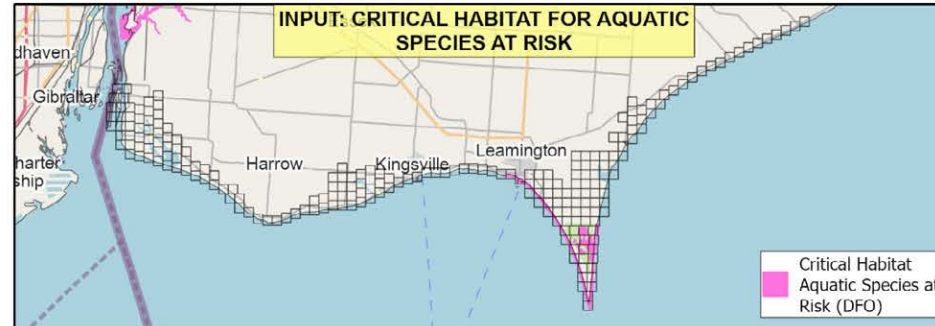
Heat Map Based on Total
Area of Coverage per Tile
for Seven Data Categories

Notes:

The area of 1 index tile is 100 ha.

Background: OpenStreetMap (Esri Base Map)

0 5 10
km



PELEE COASTAL RESILIENCE ADAPTATION E ANALYSIS

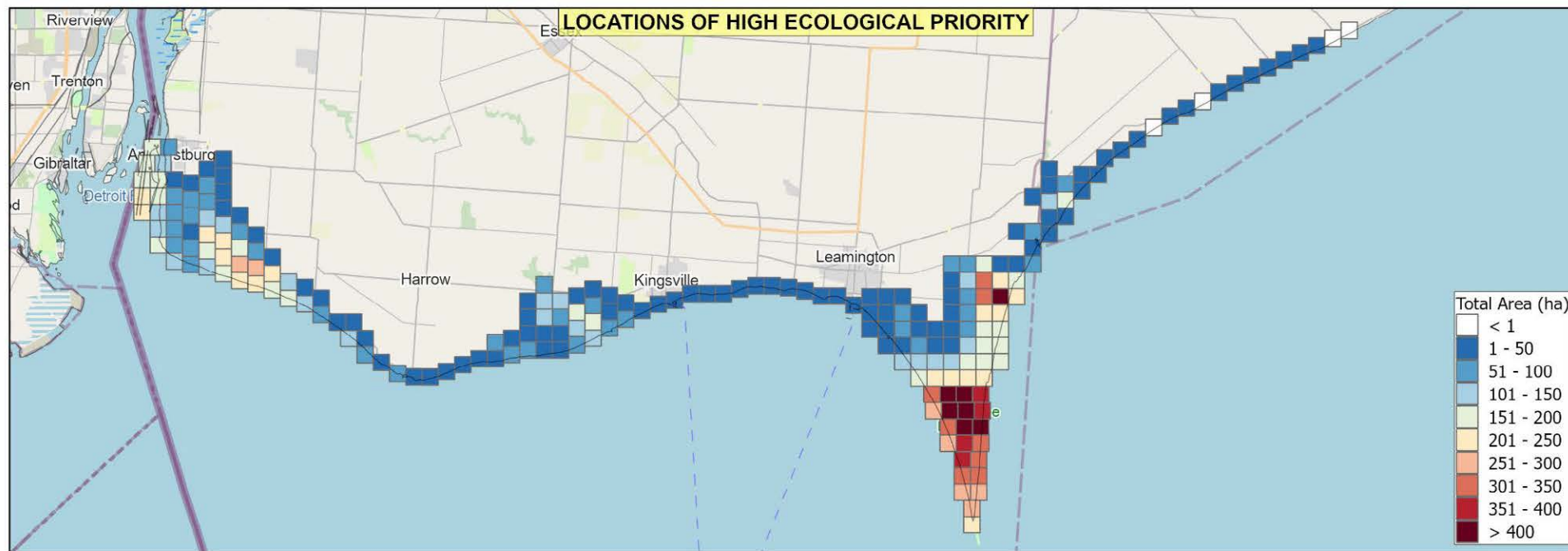
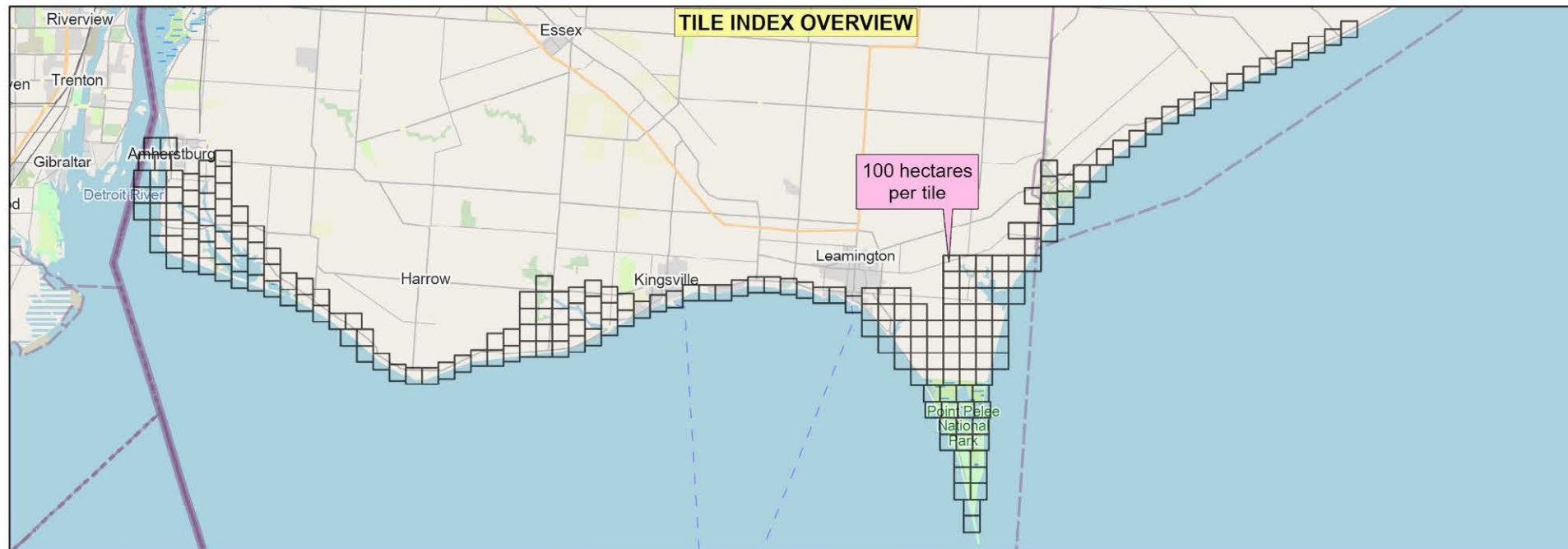
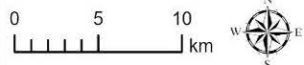
Assessment of Ecological Priority with Existing Datasets

Heat Map Based on Total
Area of Coverage per Tile
for Seven Data Categories

Notes:

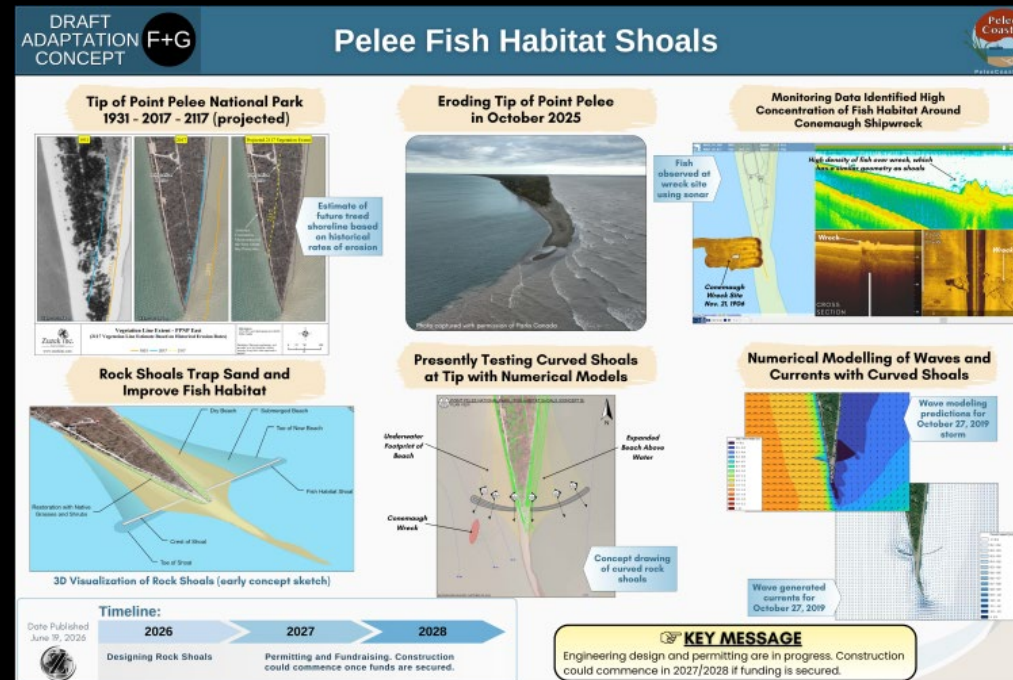
The area of 1 index tile is 100 ha.

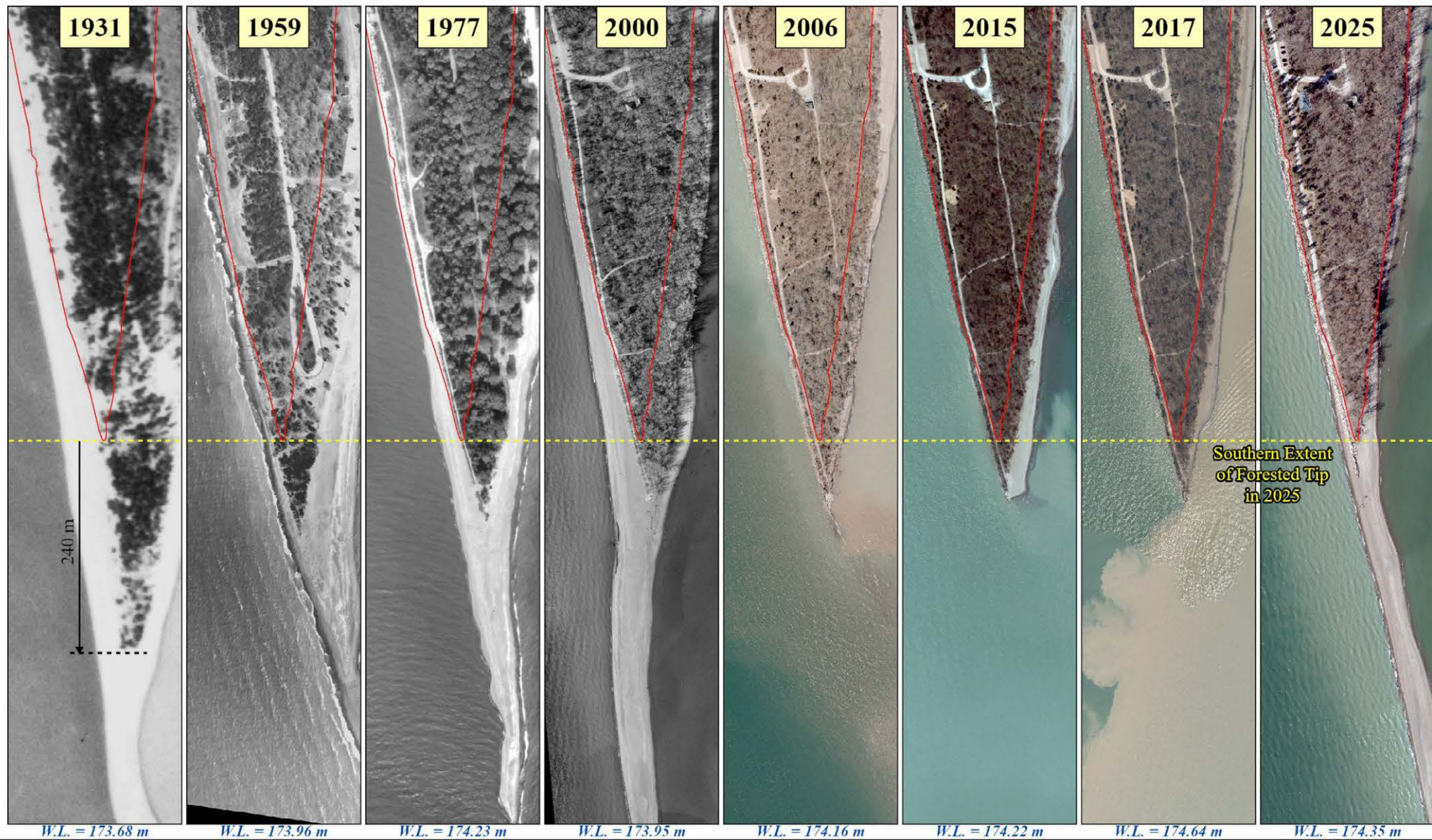
Background: OpenStreetMap (Esri Base Map)





Adaptation F&G Task Team: Pelee Fish Habitat Shoals





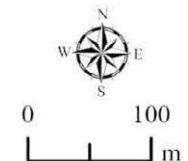
1931 to 2025 Evolution of the Forested Tip

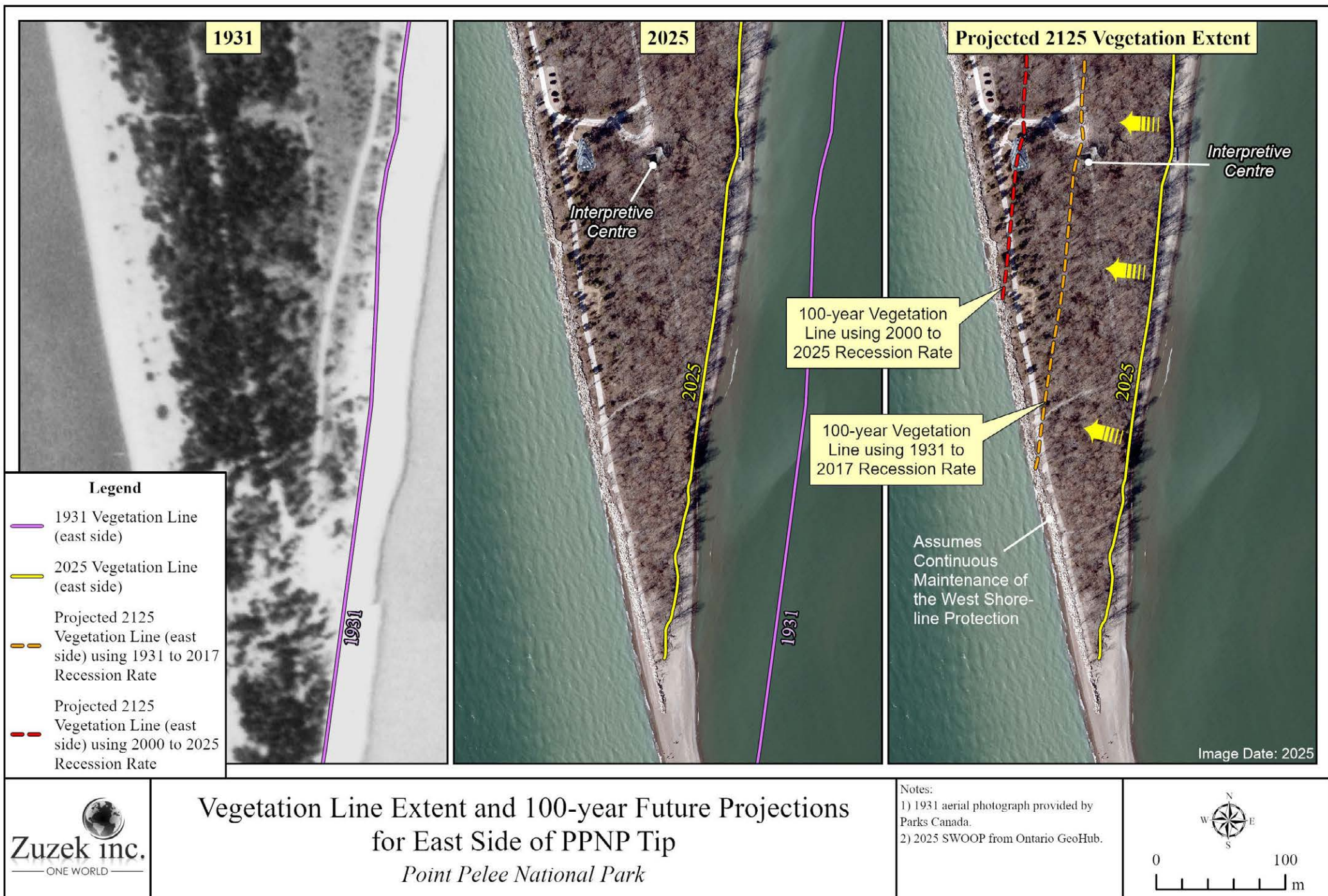
Point Pelee National Park

— 2025 Edge of Vegetation

Notes:

- 1) 1931 to 2006, 2017 aerial photographs provided by Parks Canada.
 - 2) 2015 aerial from Essex County.
 - 3) 2025 SWOOP from Ontario GeoHub.
- W.L. = Monthly Mean Water Level (m, IGLD'85)

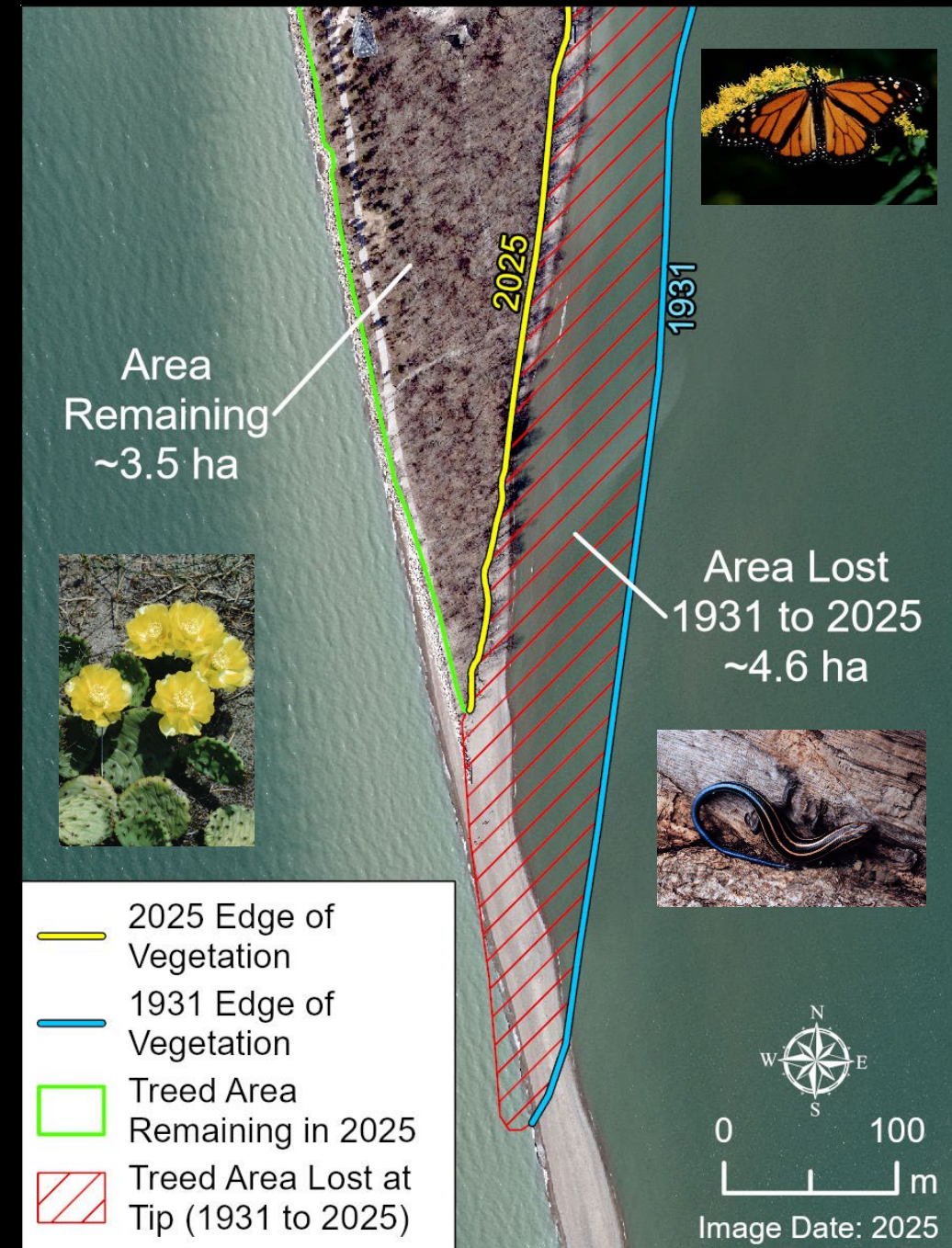
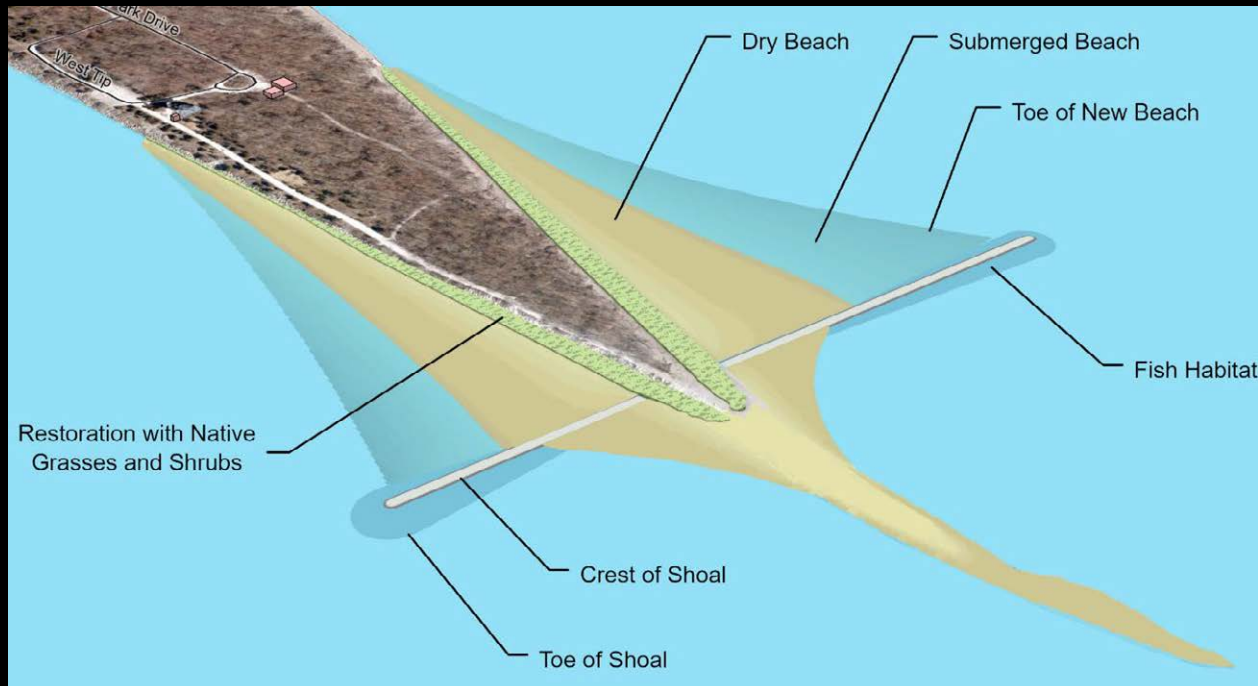


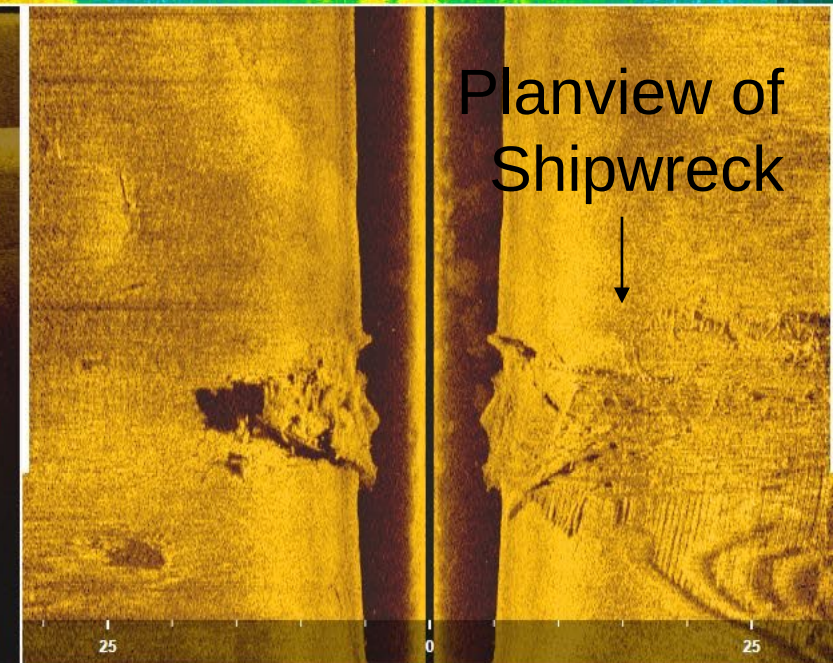
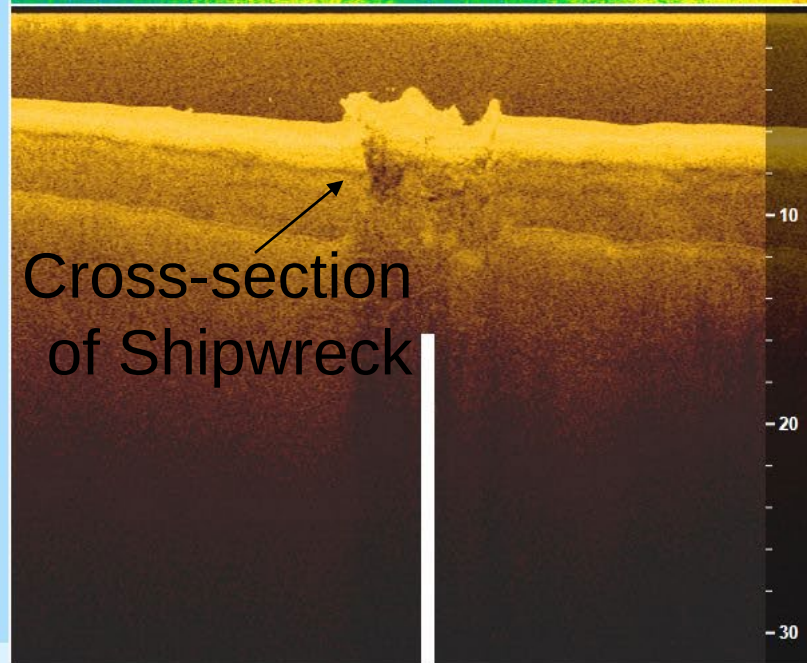
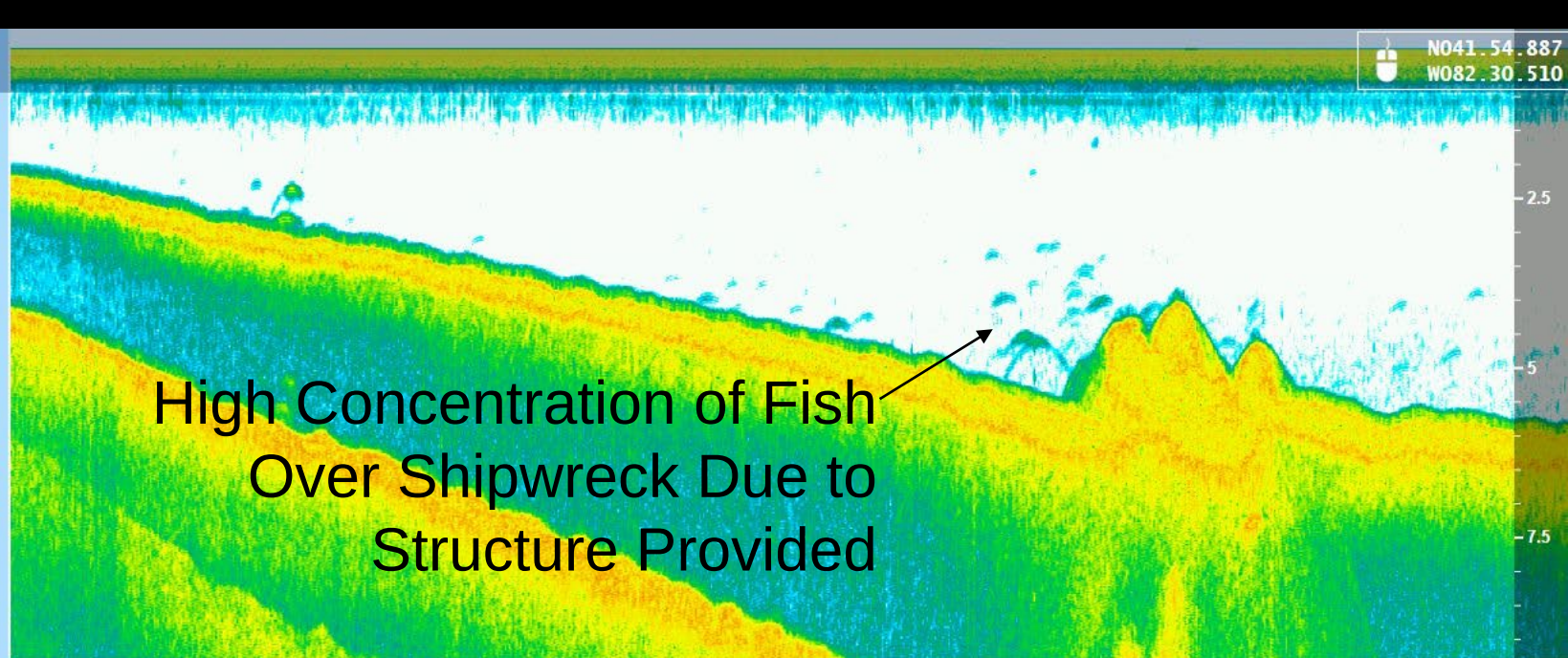
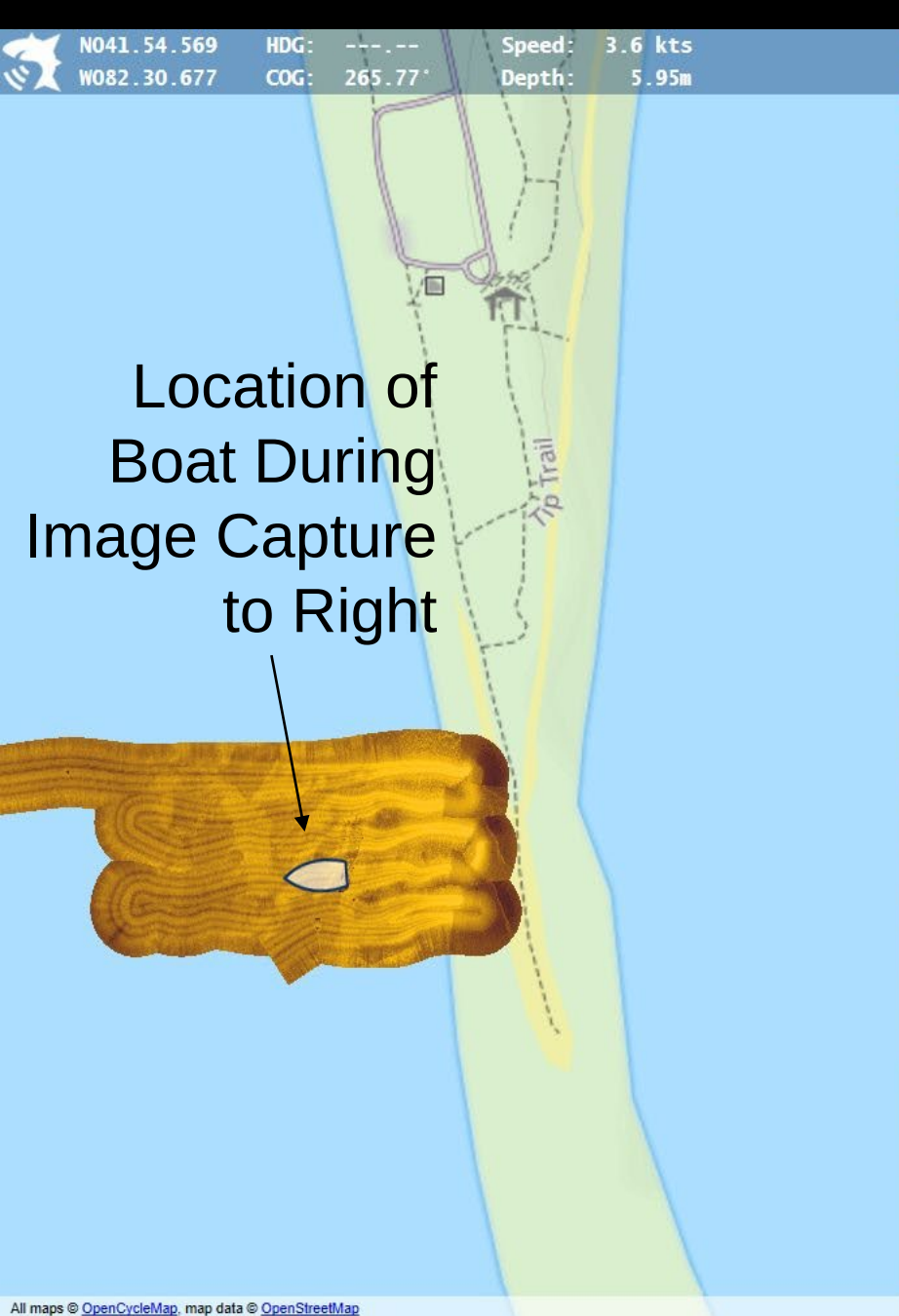


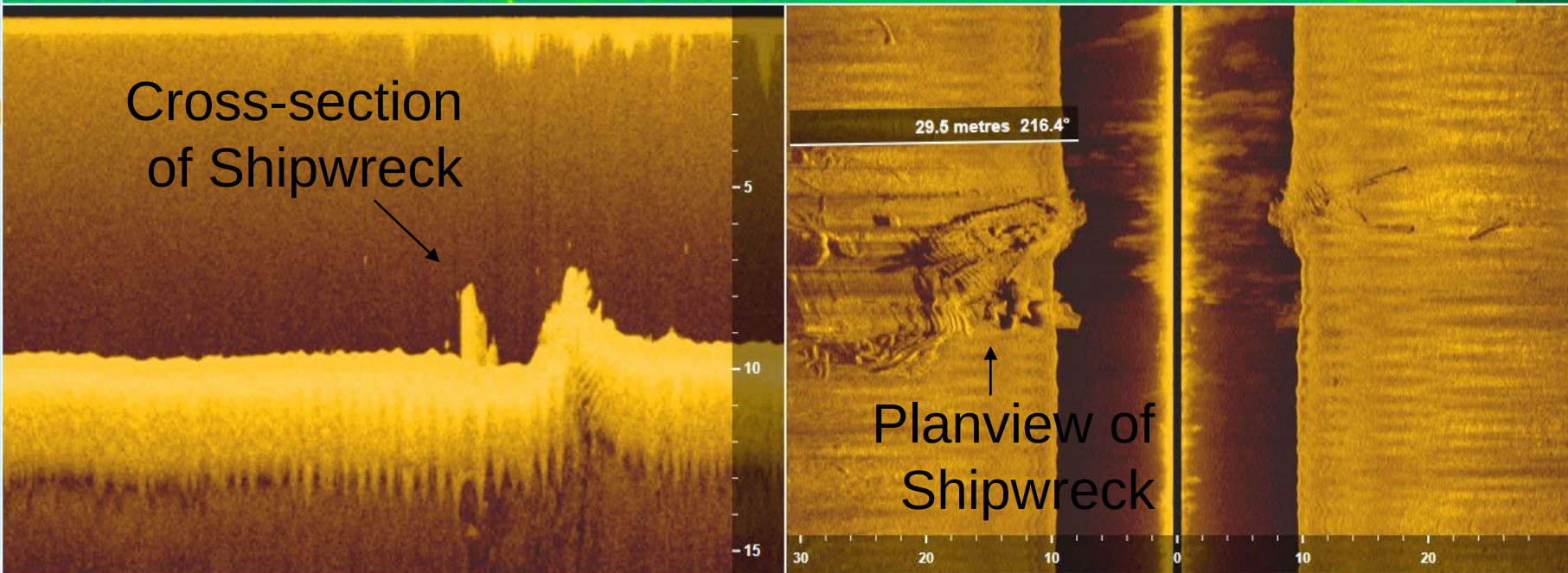
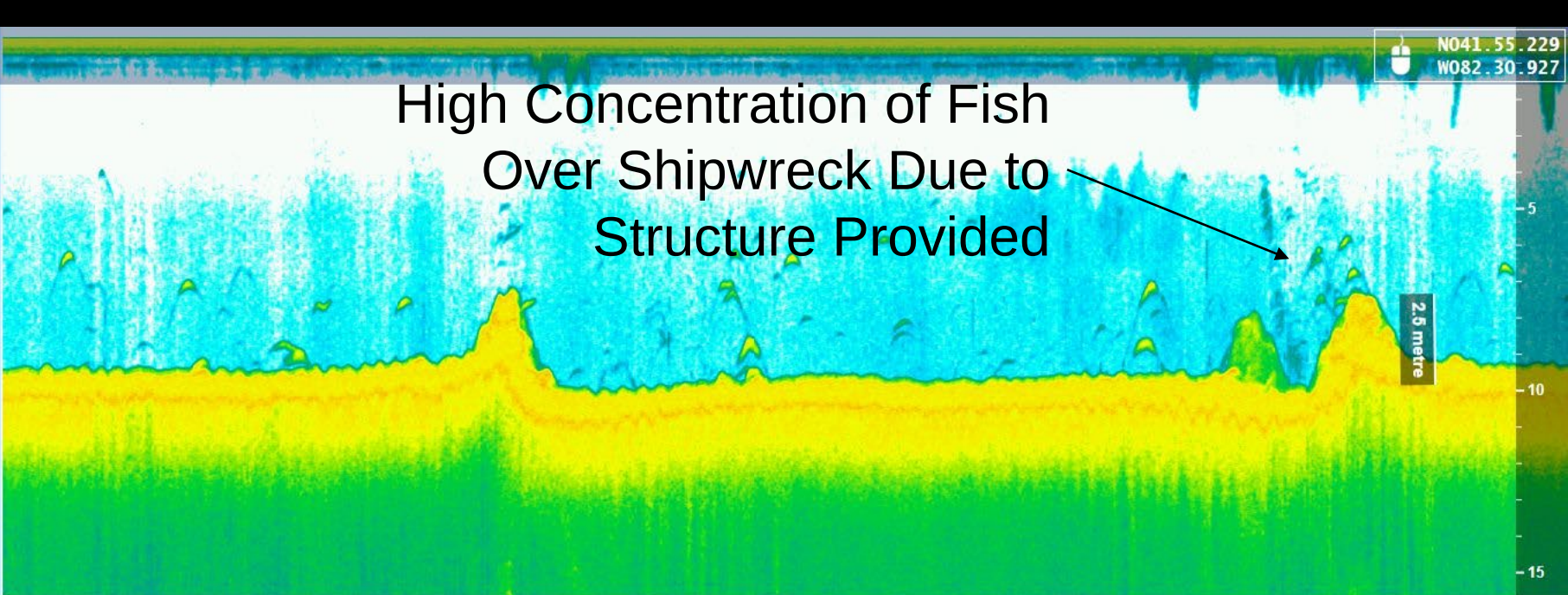


Habitat Loss and Draft Footprint of Shoals

- Habitat loss since 1931
- Draft footprint of shoals







Numerical Modelling Objectives and Scope of Work

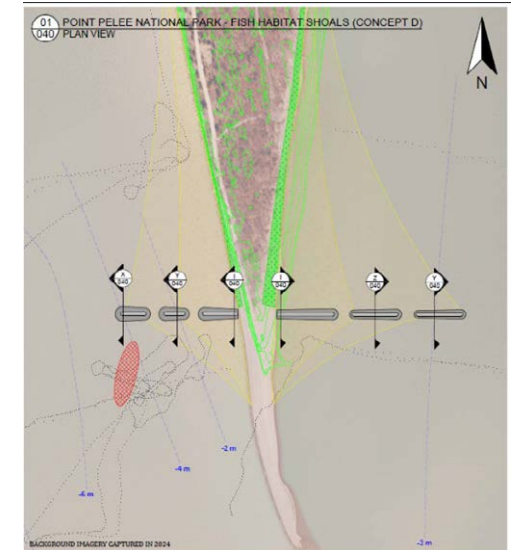
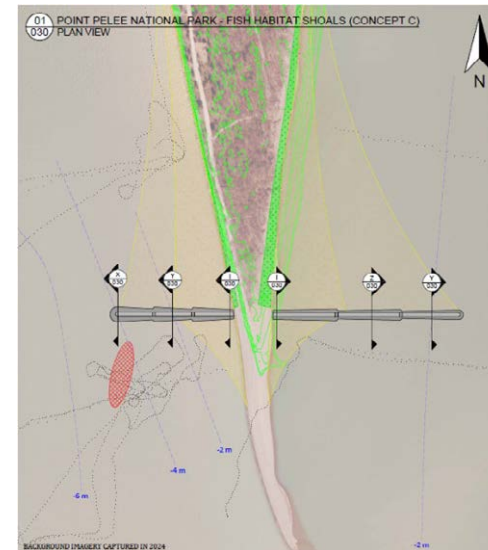
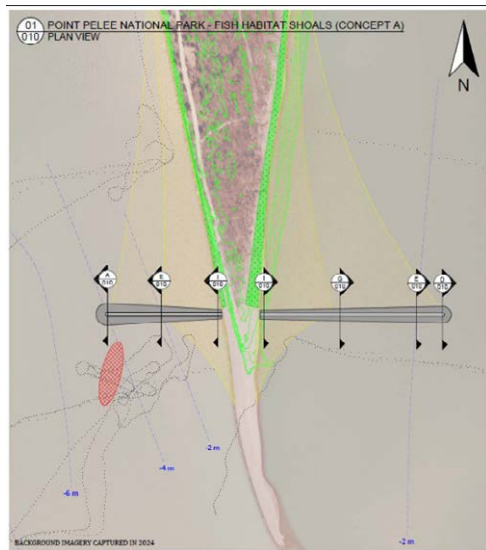
To depict the hydrodynamics (wave-currents-water level) and sediment transport potential patterns considering current conditions and rock shoal designs to inform discussions for the design options.

Digital Elevation Model
Development

Select Representative
Modelling Year

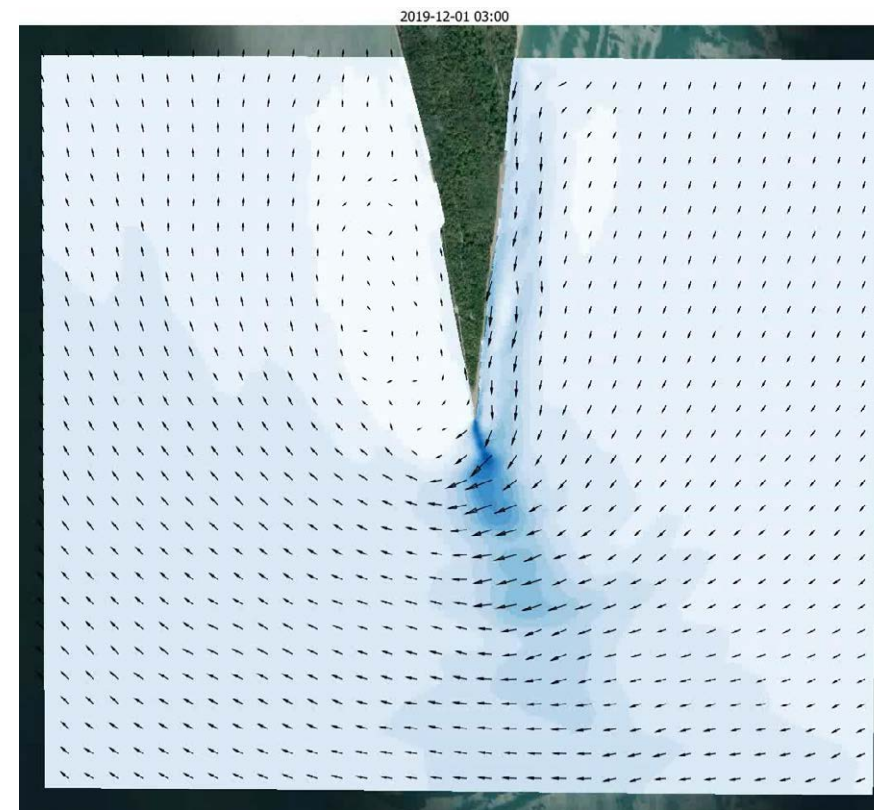
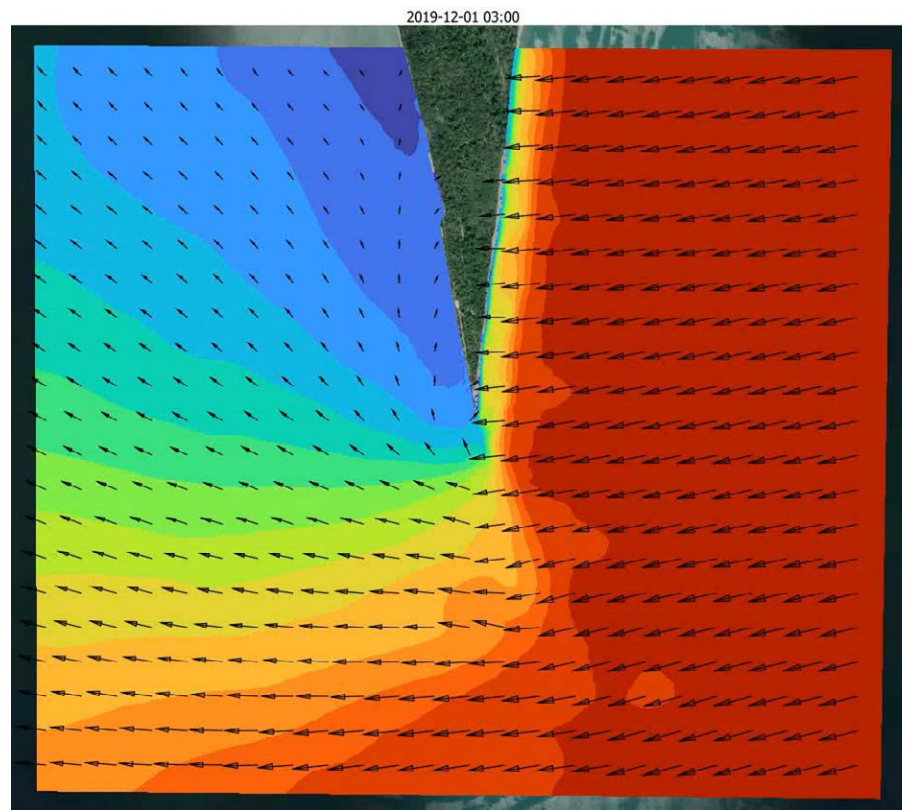
Develop a high-
resolution, coupled
model

Simulate Sediment
Transport Potential





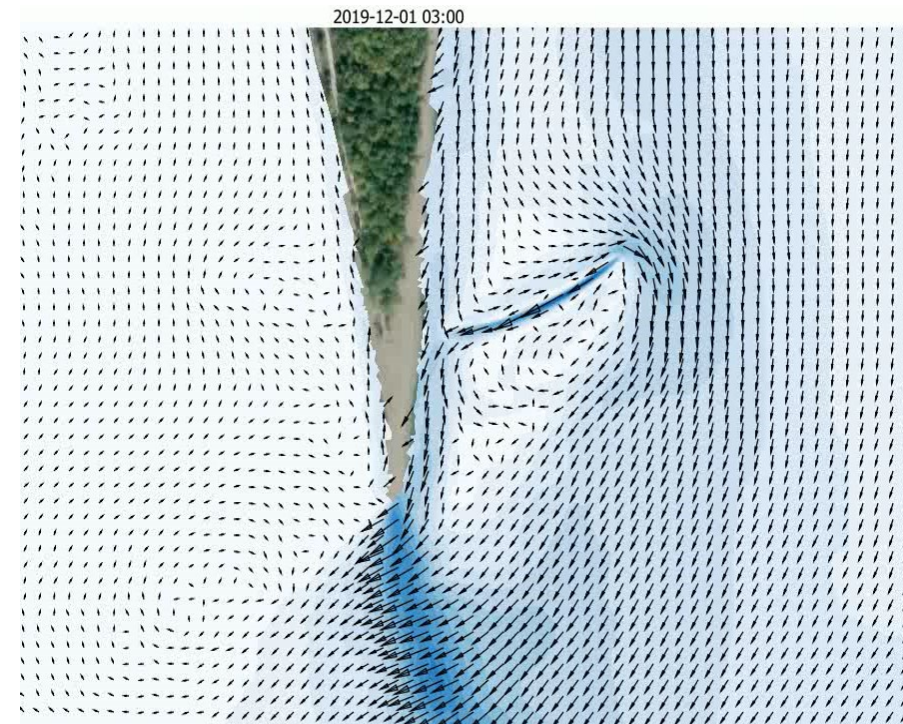
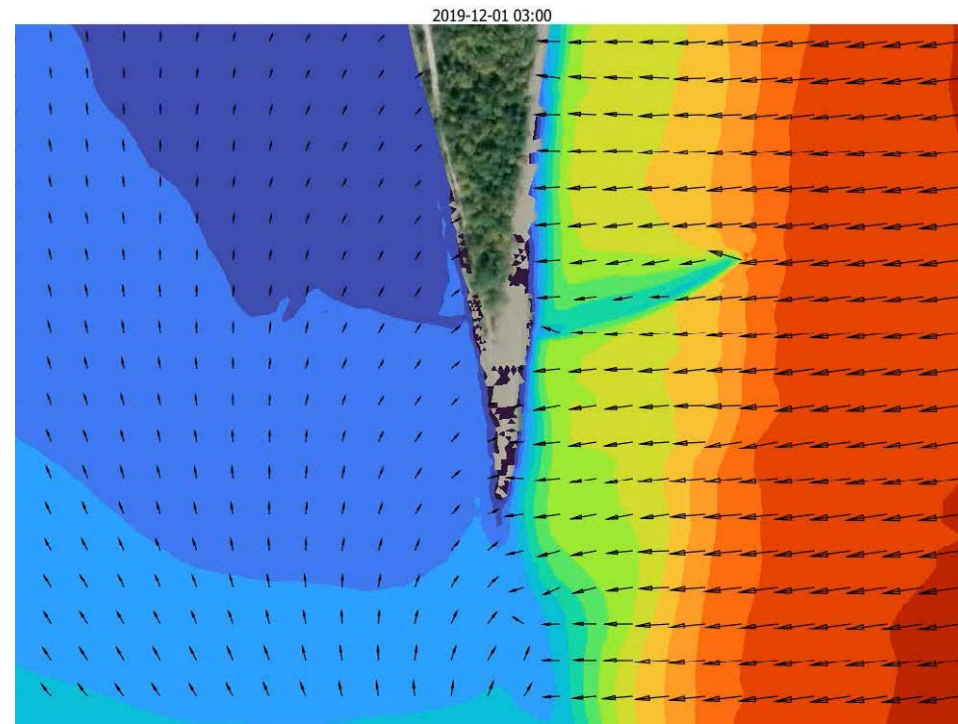
Physical drivers for sediment transport: Storm surge and wave driven currents
A coupled model simulates the interaction between waves, currents and water level for existing conditions



East storm event - January 12, 2019

Physical drivers for sediment transport: Storm surge and wave driven currents

A coupled model simulates the interaction between waves, currents and water level with curved fish habitat shoals constructed



East storm event - January 12, 2019

Benefitting SAR species



Shoal Benefit	Species
Low to None	Lake Sturgeon, Spotted Sucker
Moderate	Warmouth*, Grass Pickerel*, Spotted Gar*, Silver Chub**, Silver Lamprey, Eastern Pond Musse; Purple Wartyback
High	

*Provided vegetation is able to establish

**Prefers greater depths than found in the Study Area



Benefitting NAR species



Shoal Benefit	Species
Low	Gizzard Shad, White Perch , Freshwater Drum, White Sucker, Shorthead Redhorse, Quillback, Goldfish , Common Carp , Pink Salmon
Moderate	White Bass, Round Goby , <u>Spottail Shiner</u> , Trout-perch, Walleye, Alewife , Logperch, Channel Catfish, Rock Bass, Rainbow Smelt , Smallmouth Bass
High	Yellow Perch*, Emerald Shiner

*Provided vegetation is able to establish
Species in **red** are **introduced/invasive** in Ontario

Based on species captured on sampling transects near to the Study Area or at relatively shallow depths. Additional species may be drawn to these shoals that were not identified nearby though not likely.

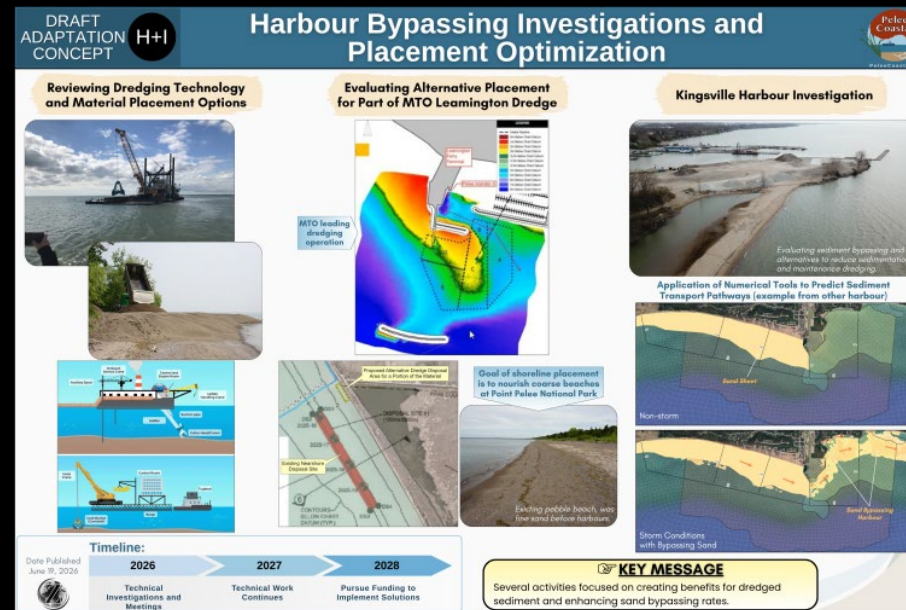


Next Steps for Year 3

- Meeting with CWA and DFO Integrated Planning/Coastal Unit/Regulations staff:
 - Discussed options to integrate woody debris, modify sand substrate with cobbles
 - If crest of structure is below 80th percentile lake level, no harmful alteration of fish habitat. Will diversify nearshore habitat
- Engaging with Transport Canada
 - Navigable Waters Protection Act
- Engaging with Ministry of Natural Resources:
 - Public Lands Act
- Continue with numerical modelling, engineering design, and permitting
 - Design could be complete by end of Year 3, leaving permitting and funding



Adaptation H&I: Harbours





Wheatley Harbour Navigation Channel Managed by Small Craft Harbours

- Small Craft Harbours coordinates dredging
- Agreed to stockpile sand at North Hillman parking lot for barrier beach restoration
- Recent funding announcement for continued dredging and repair of east jetty



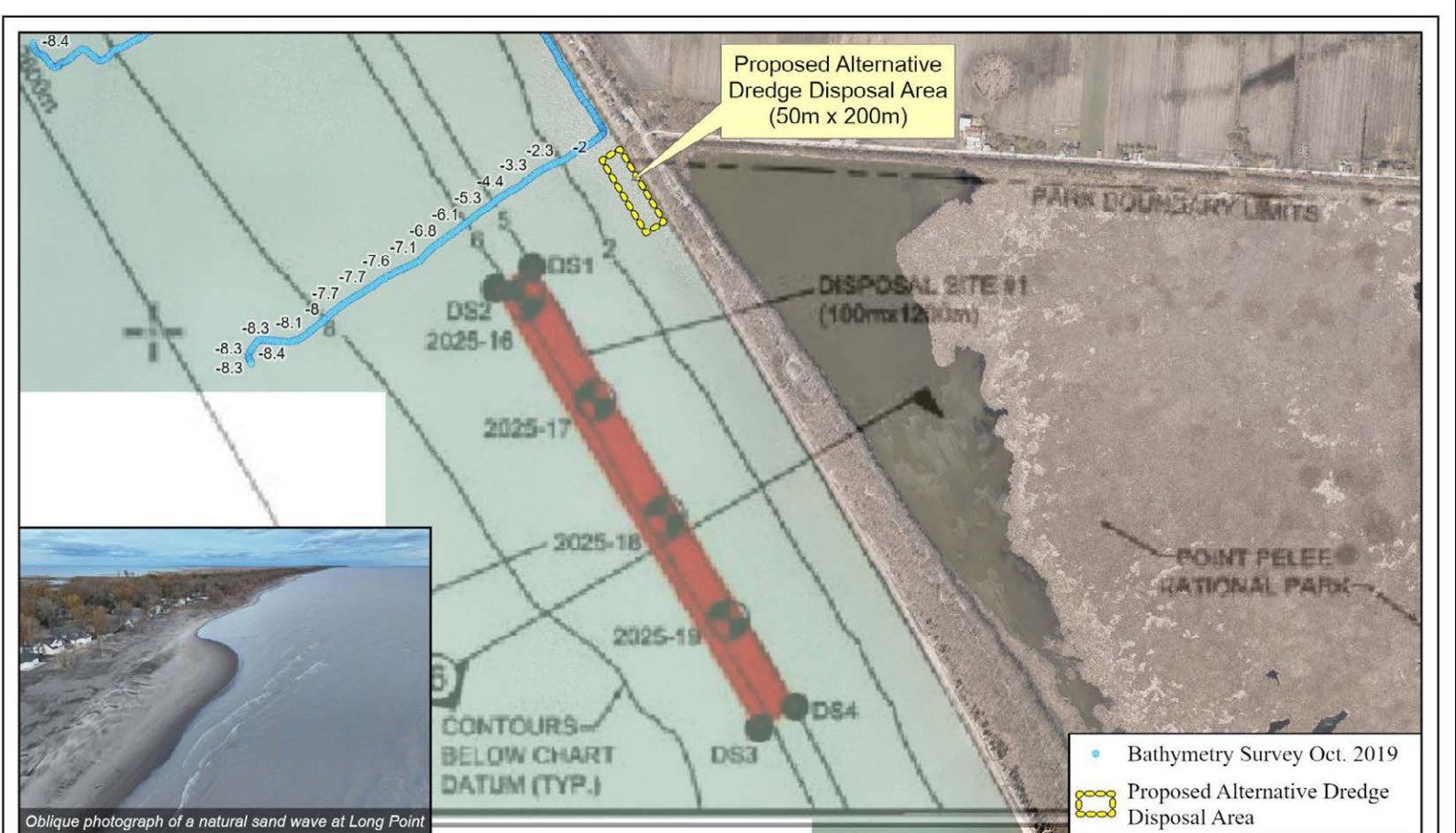
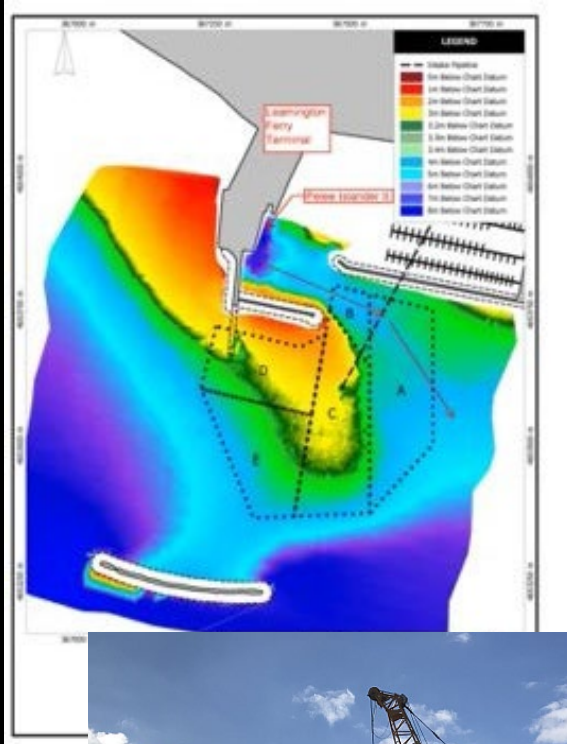




Implementation Phase 1B



Leamington Harbour Summer 2026 Dredging Program (120k m3)



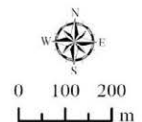
Oblique photograph of a natural sand wave at Long Point



Proposed Alternative Dredge Disposal Area

Peelee Coastal Resilience

Notes:
1) 2019 Survey depths in metres below Chart Datum (173.5 m IGLD'85).
2) Schematic courtesy of Riggs Associates.
3) 2025 imagery obtained from Essex County Open Data.





Existing Beach Conditions on the West Side of PPNP

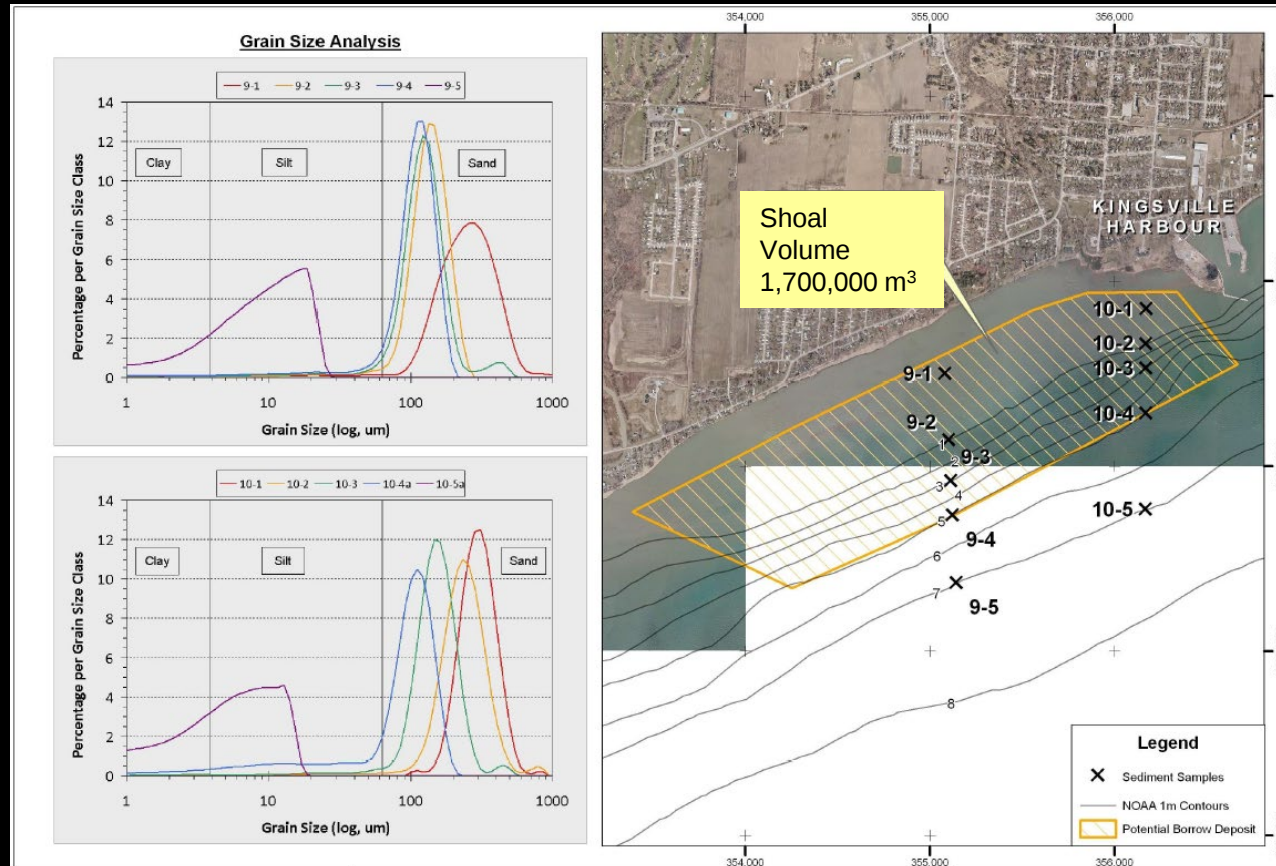
- Starved of fine sand needed to sustain dunes and natural transition to savana habitat





Kingsville Harbour Investigation

- 2010: extensive sediment cores in shoal, all sand
- 2024 volume estimate = 1.7M m³





Kingsville Harbour Investigation





Year 3 Harbour Bypassing Studies at Kingsville

- Town of Kingsville, MTO, and Southwest Sales supportive of work plan
- Evaluate bypassing rate for existing Kingsville structures
- Develop conceptual alternatives to enhance future bypassing rate and minimize sedimentation in the navigation channel:
 - Dredging nearshore to increase currents and enhance sediment bypassing
 - Modifications of harbour entrance structures
 - Will also pursue benefits for nearshore water quality and shoreline
- Continued review of dredged material placement and alternative dredging approaches/equipment

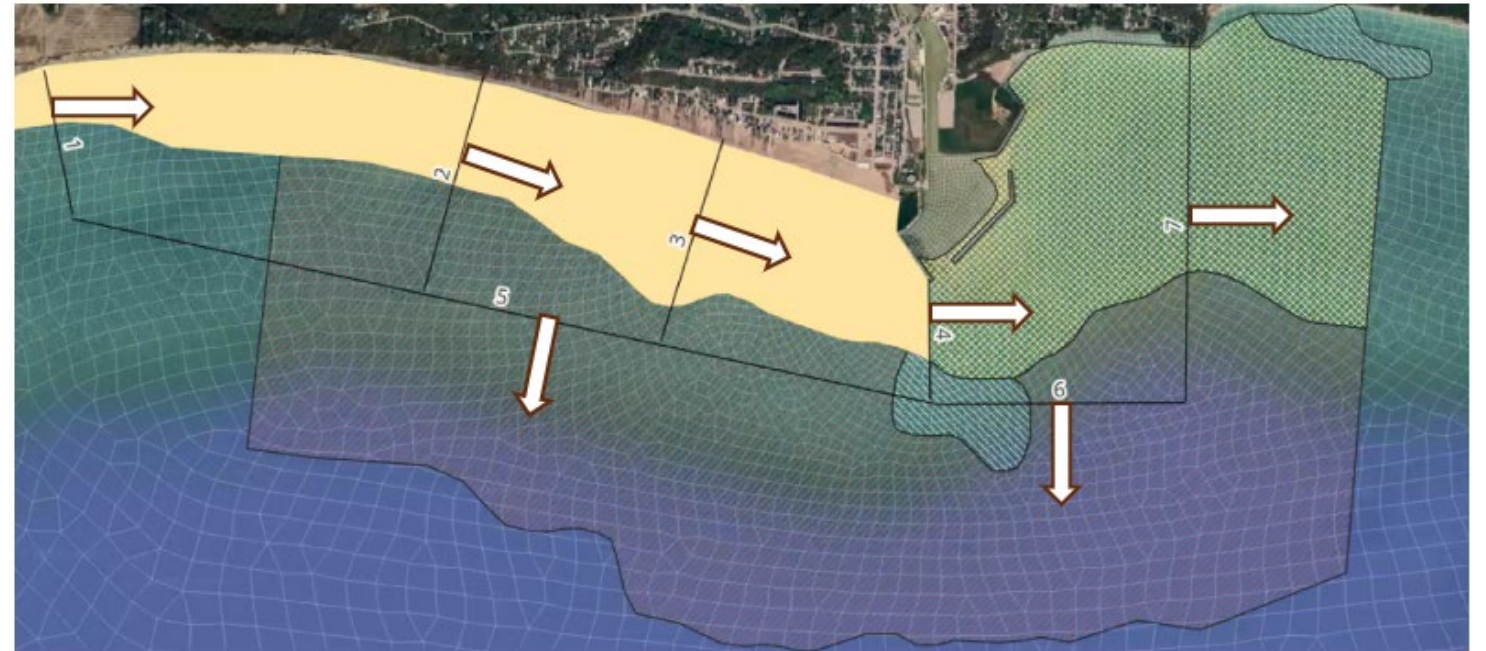
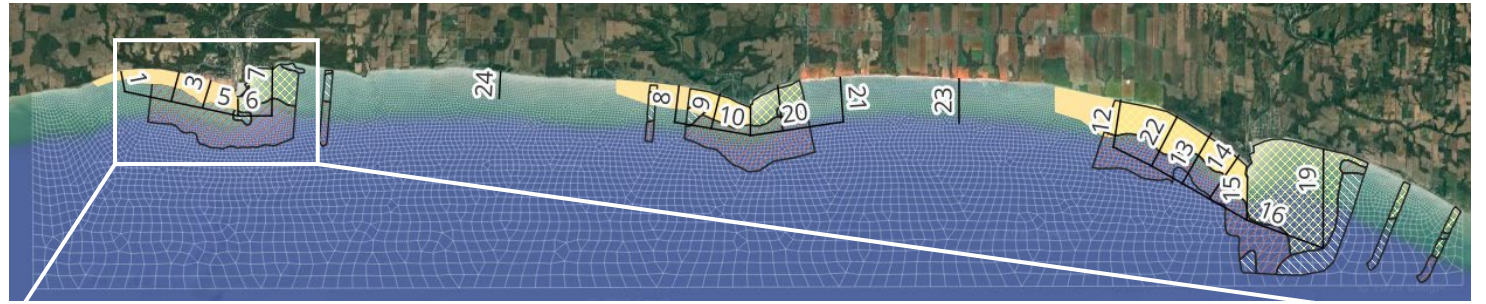


Sediment Transport Model

Sediment Bypassing Example from Port Stanley

Preliminary findings indicates

- Very high bypassing rates (>90%) for all ports are expected
- Strong interannual variability (after initial tests, a multi-year approach was needed)
- Sand (0.15 mm) export to offshore is not significant



Based on the multi-year sediment transport simulations, the percentage of net sand discharge at each transect will be calculated relative to the upstream transect.

III – Q&A





Thank you!

Stay Informed and Engaged



- <https://peleecoastal.ca/>
- Complete the Exit Survey to provide feedback

Please Complete the Exit Survey

Your opinions and feedback are important!



Scan the QR Code above using your phone camera to complete the survey online.

