

PORT DARLINGTON INFORMATION SHARING

SHORELINE FLOODING AND EROSION HAZARDS

HISTORICAL DEVELOPMENT AND REGULATION TIMELINES

Healthy watersheds for today and tomorrow



OVERVIEW

- Environmental Setting
- Natural Hazards
- Development Timeline
- Regulation Timeline



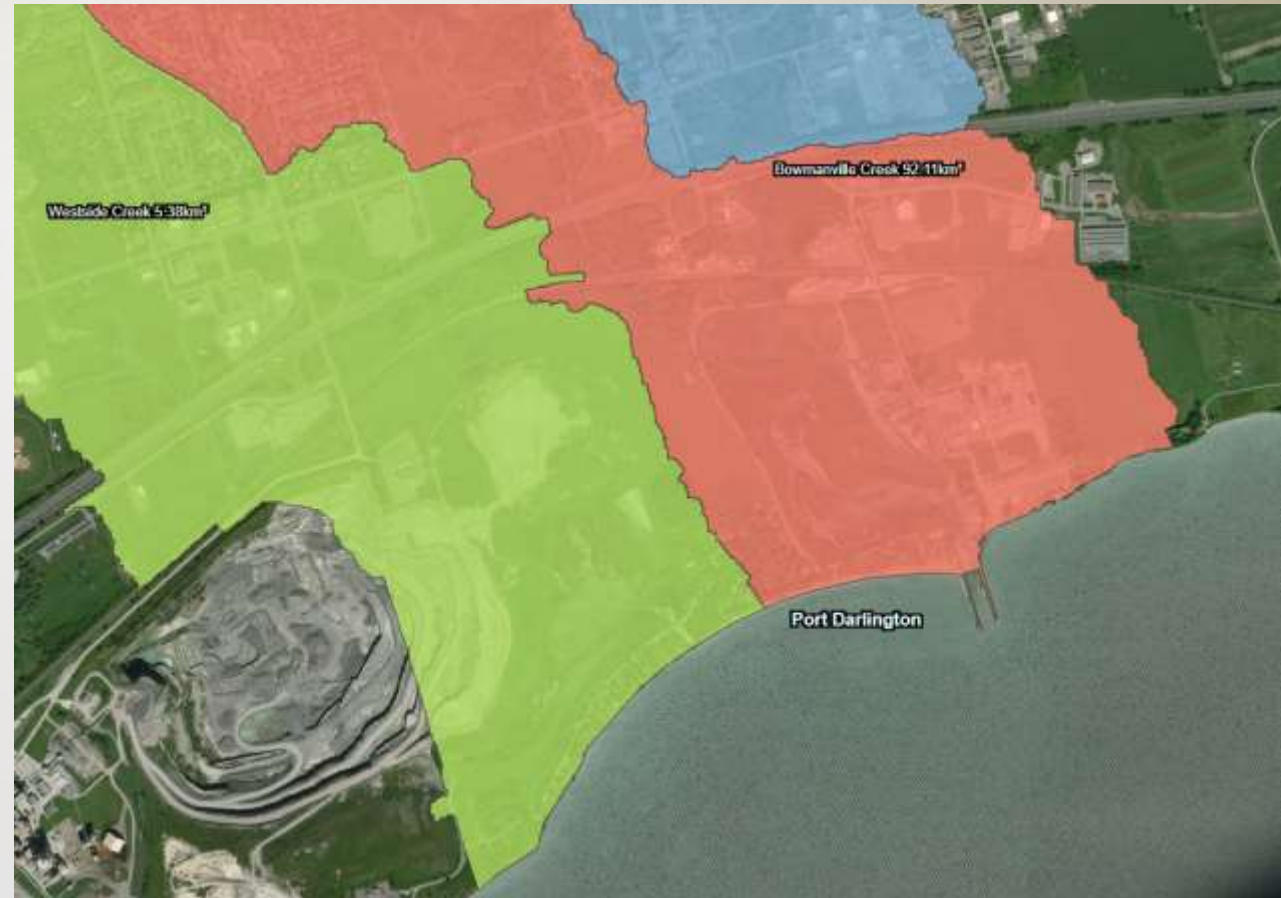
ENVIRONMENTAL SETTING: WATERSHEDS

- **Three Watersheds**
- Bowmanville Creek 92.1 km²
- Soper Creek 77.2 km²
 - Total **169.3** km²
- Westside Creek 5.38 km²



WATERSHEDS AT PORT DARLINGTON

- Bowmanville Creek and Soper Creek enter Lake Ontario at Port Darlington Harbour
- Westside Creek enters Lake Ontario after passing beneath Cedar Crest Beach Road



PROVINCIALY SIGNIFICANT COASTAL WETLANDS

- **Bowmanville Coastal Wetland Complex** at Bowmanville/Soper Creeks
- **Westside Coastal Wetland Complex** at Westside Creek



AREA OF NATURAL AND SCIENTIFIC INTEREST

- **Bowmanville Coastal Marsh and Fen**
- Candidate Area of Natural and Scientific Interest (ANSI)
- Life Science Category



CONSERVATION AREA LANDS

- ***Bowmanville/Westside Conservation Area***
- Lands owned by the Central Lake Ontario Conservation Authority



BARRIER DYNAMIC BEACHES



Healthy watersheds for today and tomorrow

BARRIER DYNAMIC BEACHES (SANDY POND N.Y.)



Healthy watersheds for today and tomorrow

BARRIER DYNAMIC BEACHES (SAND BANKS, PRINCE EDWARD COUNTY)



Healthy watersheds for today and tomorrow

BARRIER DYNAMIC BEACHES (FRENCHMAN'S BAY, CITY OF PICKERING)



Healthy watersheds for today and tomorrow

BARRIER DYNAMIC BEACHES (LYNDE CREEK MOUTH, TOWN OF WHITBY)



Healthy watersheds for today and tomorrow

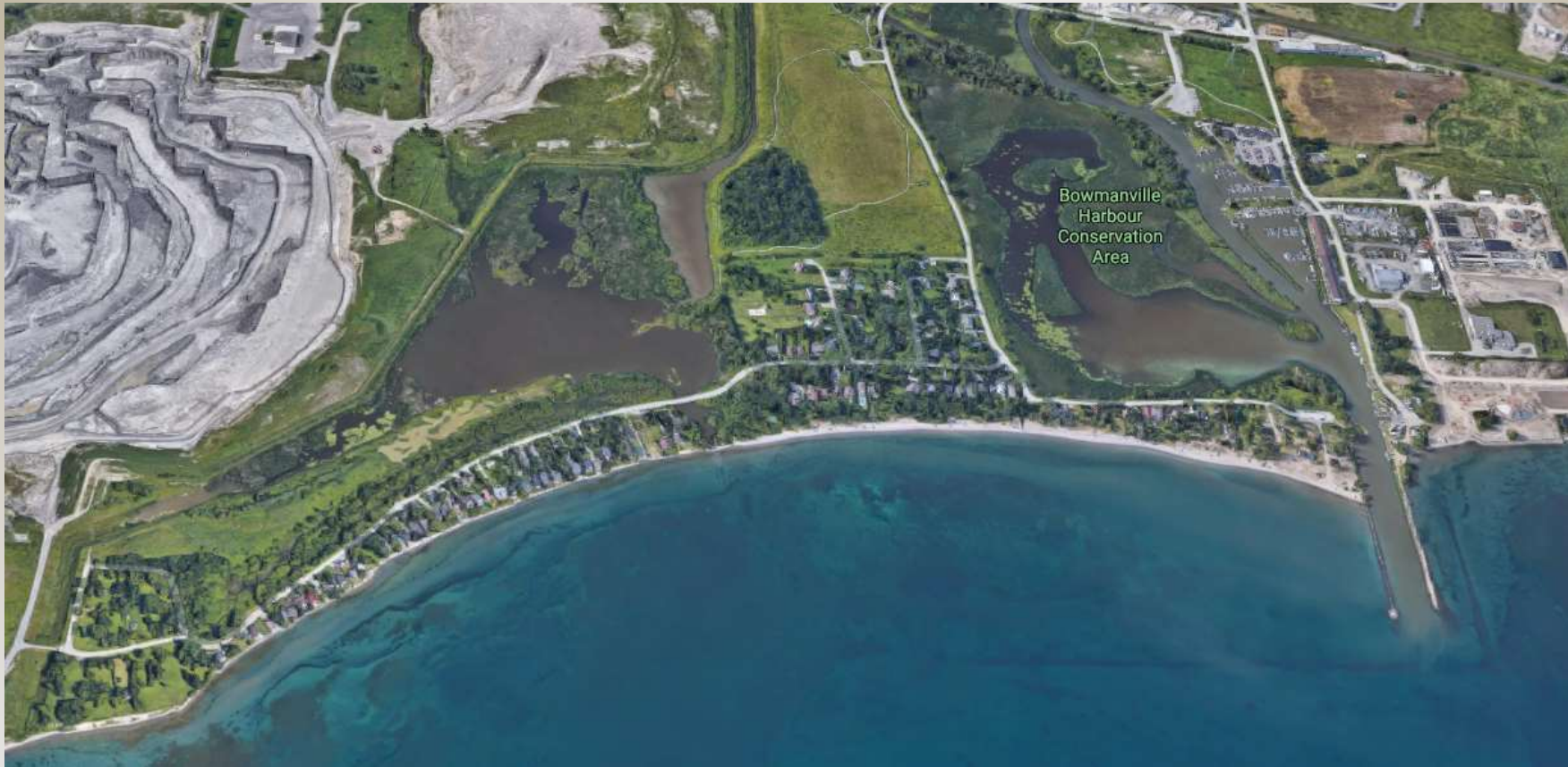
BARRIER DYNAMIC BEACHES (SECOND MARSH/MCLAUGHIN BAY, OSHAWA/CLARINGTON)



Healthy watersheds for today and tomorrow



BARRIER DYNAMIC BEACHES PORT DARLINGTON (WESTSIDE CREEK AND BOWMANVILLE CREEK)



Healthy watersheds for today and tomorrow

BARRIER DYNAMIC BEACH (MOUTH OF WESTSIDE CREEK)



Healthy watersheds for today and tomorrow

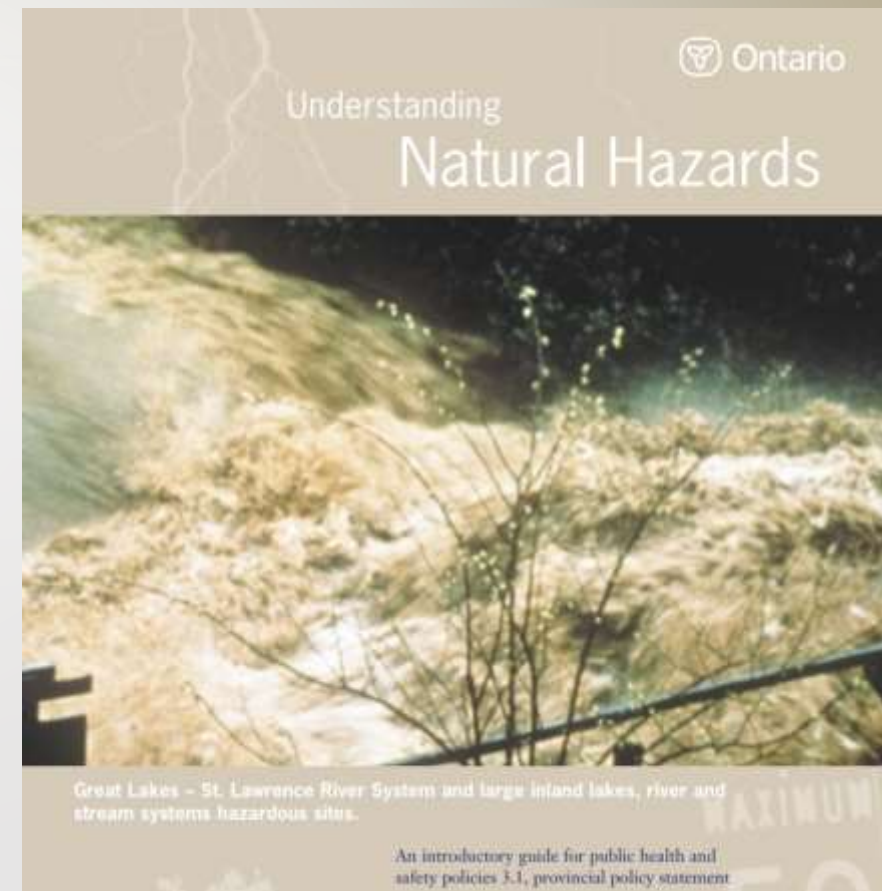
BARRIER DYNAMIC BEACH (MOUTH OF BOWMANVILLE CREEK)



Healthy watersheds for today and tomorrow

NATURAL HAZARDS

- **Great Lakes Related Hazards**
 - **Flooding Hazards**
 - **Erosion Hazards**
 - **Dynamic Beach Hazards**
- **River and Stream Related Hazards**
 - **Flooding Hazards**
 - **Erosion Hazards**



NATURAL HAZARDS DEFINED

- “**Natural, physical environmental processes** that occur near or at the surface of the earth can **produce unexpected events of unusual magnitude or severity.**”
- Natural hazards damage property, cause injury to people and even loss of life.
- Natural hazards cause natural disasters.



GREAT LAKES RELATED NATURAL HAZARDS

- **Flooding Hazard**

- How far will water go during a flood in a particular area?
- What will make it worse?
 - Components include:
 - *The 100-year flood level*
 - *A Flood Allowance for Wave Uprush*
 - *A Flood Allowance for Other Water Related Hazards (Ice Piling, Ice Jamming, Ship-generated waves)*



GREAT LAKES RELATED NATURAL HAZARDS

- **Erosion Hazards**

- All shorelines are erosion prone
- How far will shorelines erode?
- What will increase erosion?
 - Components include:
 - *The 100-year erosion rate (average annual rate of recession extended over a 100 year time span)*
 - *An Allowance for Slope Stability*
 - *An Erosion Allowance*



GREAT LAKES RELATED NATURAL HAZARDS

- **Dynamic Beach Hazards**

- Beaches that are constantly changing due to wave and water level conditions.
- What is the extent of the dynamic beach?
 - Components include:
 - *The combined Flooding Hazard Limit*
 - *A Horizontal Distance representing 100 times the Average Annual Recession Rate of the Beach*
 - *A Dynamic Beach Allowance of 30 metres*



RIVER AND STREAM RELATED NATURAL HAZARDS

- **Flooding Hazards**

- How far will water go during a flood in a particular area?
- What will make it worse?
 - Components include:
 - *The Area Adjacent to a Watercourse which would be inundated by a flood resulting from Hurricane Hazel*
 - *“The Regulatory Flood Standard”*
 - *A One-Zone area covering the entire flood plain.*



RIVER AND STREAM RELATED NATURAL HAZARDS

- **Erosion Hazards**
 - How far will valleys and stream banks erode?
 - What will increase erosion?
 - Components to produce an Erosion Hazard Limit include:
 - *Toe Erosion Allowance*
 - *Stable Slope Allowance*
 - *Meander Belt Allowance*
 - *Erosion Access Allowance.*



HISTORIC DEVELOPMENT TIMELINE

- Various Plans of Subdivision were Registered to Subdivide the Original Township Lots between 1917 and 1962



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 106,
Registered on March 31, 1917
- First part of Cove Road.
- Beach reserve block provided.



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 150,
Registered on October 18, 1921
- “Crystal Beach Plan”.
- Beach lands not subdivided.



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 171,
Registered on December 13,
1922
- Beach reserve bock provided.



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 198, Registered 1924
- Exiting lots at Cove Rd. from Plan .171 extended towards beach.
- Beach reserve block provided.



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 318, Registered March 1, 1932
- No Beach reserve block provided.



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 345,
Registered October 17, 1933
- Beach lands not subdivided.



HISTORIC DEVELOPMENT TIMELINE

- Registered Plan No. 659,
Registered 1962
- Beach and bluff in open space
block.



ST. MARYS DOCKING FACILITY

- Original facility approved by provincial and federal governments in early 1970's
- Lakefilling between 1974-79
- Expansion approved by provincial and federal governments in the 1990's



ST. MARYS QUARRY ESTABLISHMENT AND EXPANSION

- Operations began 1967-68
- ‘Principles of Understanding’ Agreement in 1990’s facilitated:
 - Expansion of Extraction Limits
 - Diversion of Westside Creek
 - Establishment of a Marsh Overflow Channel
 - Conservation of a Portion of Westside Marsh



DEVELOPMENT REGULATION TIMELINE

1959

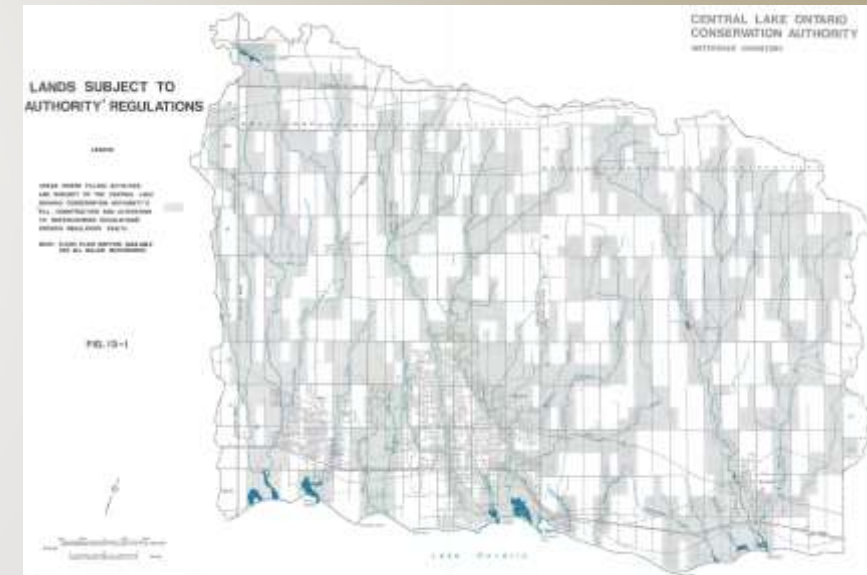
- Port Darlington Area Zoned Agriculture
- Detached dwellings/cottages permitted

1960's

- CLOCA begins regulating certain stream-based hazards with a “Fill and Construction” regulation

1973

- CLOCA's Ontario Regulation 824/73 enacted regulating *Stream-Based Flooding Hazards* in the Port Darlington Area



DEVELOPMENT REGULATION TIMELINE

1984

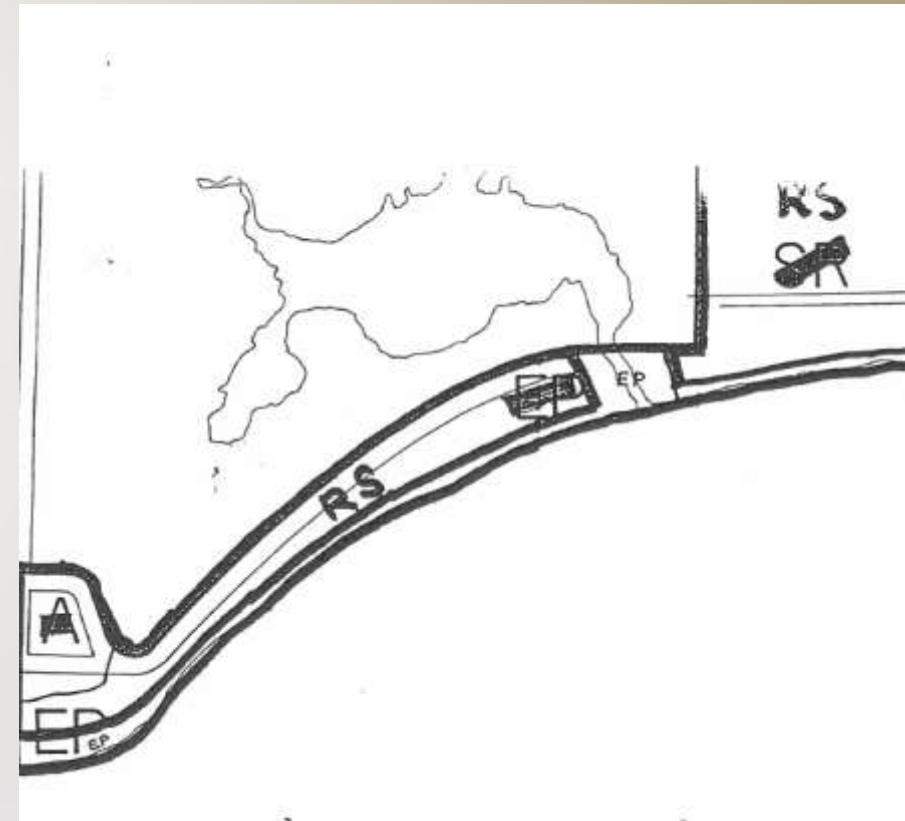
- May: New Comprehensive Zoning Proposed for municipality following amalgamation in 1974
- Cedar Crest Beach, West Beach and East Beach proposed to be zoned “Environmental protection”

1984

- Sept.: Following meetings with residents, Residential Shoreline (RS) Zoning. enacted
- Conversion of cottages to dwellings subject to street frontage and private servicing

1994

- First Provincial Great Lakes Shoreline Natural Hazard Policy introduced with a *Comprehensive Set of Policy Statements*. Development to be directed away from natural hazards, policy continued to the present via Provincial Policy Statement, 2014



DEVELOPMENT REGULATION TIMELINE

1990

- Lake Ontario Shoreline Management Plan completed (Sandwell Report)
- Lake Ontario natural hazards mapped: Lake Ontario flood plain, erosion hazards
- Port Darlington identified as a 'Damage Centre' requiring detailed study

1996

- Clarington Official Plan adopted. Official Plan policies directing development away from a "regulatory shoreline" to be implemented through future Zoning By-law(s)

2006

- Changes to the *Conservation Authorities Act* and new CLOCA Regulation (42/06) enable CLOCA to regulate Great Lakes Based Natural Hazards using mapping and data from 1990 Lake Ontario Shoreline Management Plan



DEVELOPMENT REGULATION TIMELINE

2013

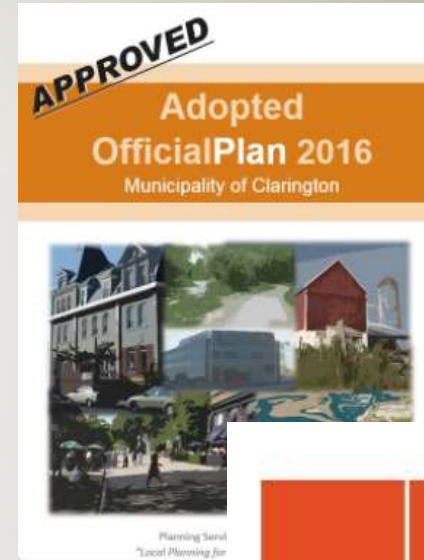
- CLOCA adopts *Policy and Procedural Document for Regulation and Plan Review*, which guides CLOCA's review, commentary and advice on development applications.
- Incorporates provincial guidance for Great Lakes shoreline hazards

2016

- Clarington Official Plan municipal comprehensive review adopted bringing planning policy in conformity with 2014 *Provincial Policy Statement*.

2017

- Zone Clarington Comprehensive Zoning By-law review launched.



STORYBOARD INTERACTIVE PRESENTATION

