Attachment 1 - Example of a Lake Ontario Shoreline Hazard Map Sheet Toronto and Region Conservation Authority Lake Ontario Shoreline Flooding and Erosion Hazards

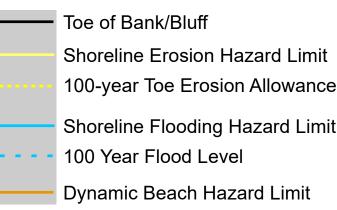


Toronto and Region Conservation Authority Head Office 5 Shoreham Drive Toronto M3N 1S4 https://trca.ca

This map presents the Lake Ontario shoreline hazard mapping completed on a reach-based assessment. The Lake Ontario shoreline within the TRCA jurisdiction was segmented into 49 reaches based on common features such as wave exposure, bank/bluff height, shoreline composition, etc.

The 1:2,000 scale digital terrain model from 2015 and orthoimagery from 2020 have been used to produce and map the shoreline flooding, erosion and dynamic beach hazard limits. Local irregularities and physical shoreline conditions affecting the hazard limits may not have been apparent in the terrain model or orthoimagery. The hazard mapping is a living document and reflects the potential hazard conditions using the most recent available shoreline data. Hazard limits will change over time, for example as the shoreline retreats or as large municipal shore protection projects are added or damaged. Where development is proposed on a property or properties within the study area, the location and extent of hazard limits should be reviewed with regard to the most current and detailed site information available, with due consideration to the effect of shoreline conditions on adjacent properties and their associated shoreline and non-shoreline hazards. This map does not include non-shoreline hazards, i.e., those hazards not pertaining to coastal processes, such as valley and stream corridor flood and erosion hazards.

Hazard Mapping



Toe of Bank/Bluf

The toe of bank/bluff is the transition from the gently sloping the steep portion of the bank or bluff slope. The Toe of Ba was defined by interpretation of the 2020 aerial photographs 2015 elevation contour data.

Shoreline Erosion Hazard Limit

The landward limit of the Shoreline Erosion Hazard Limit is th the Stable Slope Allowance plus a 100-year Toe Erosion Al measured landward from the toe of the shoreline bank or bluff The Stable Slope Allowance is defined as a horizontal al measured landward from the toe of the shoreline ba determined on a reach basis using borehole data and a geot analysis.

100-year Toe Erosion Allowance

The 100-tear Toe Erosion Allowance reflects the average erosion/recession rate that would be expected to occur of years, and was assessed for each reach.

Shoreline Flooding Hazard Limit

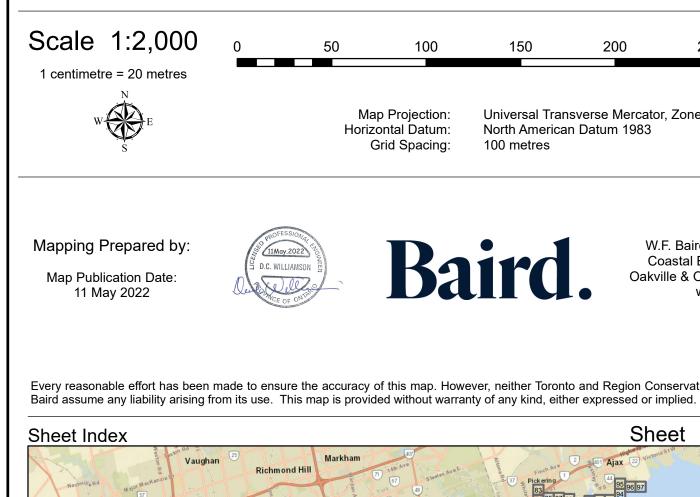
The Shoreline Flooding Hazard Limit is defined as the 100 Ye Level plus an allowance for Wave Uprush and other water hazards. The allowance for Wave Uprush was determined or basis using a representative profile for each of the 49 reacher shoreline.

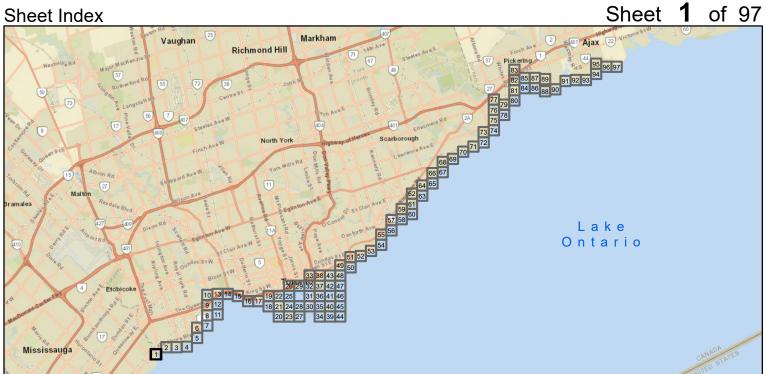
100 Year Flood Level

The 100 Year Flood Level is defined as the peak instar stillwater level (i.e., mean lake level plus storm surge) I combined probability of being equalled or exceeded during of 1% (i.e., probability, P=0.01). The 100 Year Flood Level elevation for TRCA's Lake jurisdiction is 76.17 metres IGLD1985, or 76.09 metres CGVD

Dynamic Beach Hazard Limit

Typically the Dynamic Beach Hazard Limit is defined as the the Flooding Hazard Limit plus 30 metres measured hori There may be deviations of this approach where justified I specific technical study or the application of engineering judge







Legend

Basemap Features

Elevation Contour, 1 m interval

dataset acquired by Airborne Imaging. The data was acquired

Topographic elevation contours are derived from 2015 LiDAR

	LiE gri cla	OAR Digital Terrain dded raster represen ssified LiDAR point o	Model (DTM) is ting the bare-eart	4 and April, 2015. The a 1 metre resolution n terrain derived from a ic contours are shown	
beach to ank/Bluff	at	1 metre intervals.			
and the e sum of <i>llowance</i>	Th ele At mc	vation is: 74.2 metres the time of the elev onthly mean water le	t Datum (Low Wa s. /ation data collec vel for April 2014	ter Datum, IGLD1985) tion, the Lake Ontario was 74.83 m and for	
f. lowance, ank/bluff, technical	Co the 75 Wa	E Lake Ontario month 32 metres and for M	aerial photograp aly mean water le ay 2020 was 75.3 n is provided by C	hy shown in this map, evel for April 2020 was 6 metres (IGLD1985). Canadian Hydrographic	
	<u>htt</u>	p://www.waterlevels.g	<u>gc.ca/</u>		
e annual over 100	Th dat ref	tum than that of la erenced to Intern	and. Lake Ont ational Great		
ear Flood r related a a reach es of the	dat Th arc ver do sta	(IGLD1985). Elevations on this map are referenced to a land datum, Canadian Geodetic Vertical Datum of 1928 (CGVD28). The relationship between the lake and geodetic datums varies around the lake. For the TRCA Lake Ontario shoreline the vertical datum conversion between IGLD1985 and CGVD28 is documented by Natural Resources Canada at benchmark station TORO 1-1959 (also known as 59U9526 and 59U541) established by the Canadian Hydrographic Service in Toronto			
ntaneous naving a any year	Ha	rbour at the south sic evations in IGLD1985	le of Queen's Qua	ay.	
Ontario 028.	Th Ba IN(Aerial Photography The 2020 acquired aerial imagery at 8 cm resolution by First Base Solutions. Data was collected April and May 2020. INCLUDES MATERIAL © 2020 OF THE QUEEN'S PRINTER			
e sum of izontally. by a site ement.	FC	r ontario. All r	IGHTS RESERVE	εD.	
	100	150	200	250	
				Metres	

Horizontal Datum: Grid Spacing:

Universal Transverse Mercator. Zone 17 North American Datum 1983 100 metres



W.F. Baird & Associates Coastal Engineers, Ltd. Oakville & Ottawa, Ontario www.baird.com

Every reasonable effort has been made to ensure the accuracy of this map. However, neither Toronto and Region Conservation Authority or