	AN IIALAND WARS
Ganaraska Region Conser	vation Authority (GRCA)
LEGEND:	DEFINITIONS:
Hazard Mapping:	<u>100 Year Flood Level</u> The 100 Year Combined Flood Level considers both static lake level and
// 100 Year Flood Level	storm surge, having a combined probability of being equalled or exceeded during any year of 1% (i.e., probability, $P = 0.01$). The 100
Solution Flood Hazard Limit	Year Combined Flood Level elevation for GRCA is +76.01 m IGLD85 (+75.55 m to+75.60 m CGVD2013).
Constant Erosion Hazard Limit	Flood Hazard Limit
Dynamic Beach Setback	The Flood Hazard Limit is defined as the 100-Year Flood Level plus an allowance for wave runup and uprush. For the exposed shoreline, wave effects are calculated based on localized nearshore conditions and waves. For embayments, the standardized 15 m setback is applied. Refer to the Lake Ontario Shoreline Management Plan for additional details.
Base Mapping:	Toe of Bluff
Geographical Names	The Toe of Bluff is the transition from the gently sloping beach to the steep portion of the bank or bluff slope.
• Dynamic Beach (Start Pt)	
• Dynamic Beach (End Pt)	<u>Stable Slope Allowance</u> The Stable Slope Allowance is defined as a horizontal setback
∼ Road Network	equivalent to 3.0 times the height of the bank or bluff.
 GRCA Administrative Boundary 	Erosion Hazard Limit The landward extent of the Erosion Hazard is the sum of the 100 year erosion rate plus the Stable Slope Allowance, measured horizontally from the toe of the bank or bluff.
INTERPRETATION OF THE HAZARD MAPS: The hazard maps were prepared to support the Lake Ontario Shoreline Management Plan. Wetland and riverine floodplains are not included on these hazard maps. The Dynamic Beach Setback is the onshore limit of the shaded pink polygon. The offshore limit in the lake highlights the linkages between overall beach stability and health, nearshore sediment resources, and longshore sediment transport. The hazard limit(s) are not the official regulatory limits of the Conservation Authority. Please contact the Conservation Authority for details on the regulatory limit and implications for any proposed work.	 The Erosion Hazard Limit is not mapped in sheltered waters, however, localized shoreline/riverine erosion may occur and is subject to review by the Conservation Authority. <u>Dynamic Beach Hazard Limit</u> The Dynamic Beach Hazard Limit is defined as the sum of the Flood Hazard plus 30 metres measured horizontally. If the dynamic beach is eroding, an additional erosion allowance is included and a separate Erosion Hazard Limit is not shown. Refer to the Lake Ontario Shoreline Management Plan report for additional details.
DATA SOURCES: 2018 Orthophotography and Digital Surface Model (DSM) provided by the Ministry of Natural Resources and Forestry	Datums: Horizontal: UTM 17N NAD1983, metres. Vertical: CGVD2013, metresDatum Conversion: IGLD1985 - CGVD2013 = 0.42 m (average) To convert from IGLD85 to CGVD2013, subtract 0.42 m.
2016-2017 LiDAR Digital Terrain Model obtained from the Ministry of Natural Resources and Forestry. Contains information licensed under the Open Government Licence – Ontario.	Note: There are local variations along the reaches within GRCA. Refer to the Lake Ontario SMP for additional details.
Geographical Names obtained from Natural Resources Canada Road Network File, 2016 Census. Statistics Canada Catalogue no. 92-500-X	$0 50 100 200 \dots N$
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PREPARED BY: <u>Zuzek inc.</u> ONE WORLD	S. J. LOGAN 100189144 HAR 31, 2020 DUMCE OF OWTHING
This map was published March 2020 for the Ganaraska Region Conservation Authority (GRCA). The mapping of hazardous lands, including erosion, flooding, and dynamic beach areas, is subject to change. The proponent of a proposed development on or adjacent to the hazardous lands should contact GRCA to discuss permit requirements.	Every reasonable effort has been made to ensure the accuracy of this map. However, neither GRCA, Zuzek Inc., SJL Engineering, or any other affiliated party assume any liability arising from its use. This map is provided without warranty of any kind, either expressed or implied.
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.







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GRCA Map 11 of 43

	AN IIALAND MAIS
Ganaraska Region Conser	vation Authority (GRCA)
LEGEND:	DEFINITIONS:
<u>Hazard Mapping:</u>	100 Year Flood LevelThe 100 Year Combined Flood Level considers both static lake level and
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Frosion Hazard Limit	Flood Hazard Limit
Dynamic Beach Setback	The Flood Hazard Limit is defined as the 100-Year Flood Level plus an allowance for wave runup and uprush. For the exposed shoreline, wave effects are calculated based on localized nearshore conditions and waves. For embayments, the standardized 15 m setback is applied. Refer to the Lake Ontario Shoreline Management Plan for additional details.
Base Mapping:	
Geographical Names	<u>Toe of Bluff</u> The Toe of Bluff is the transition from the gently sloping beach to the steep parties of the bank or bluff slope
 Dynamic Beach (Start Pt) 	steep portion of the bank or bluff slope.
• Dynamic Beach (End Pt)	Stable Slope Allowance The Stable Slope Allowance is defined as a horizontal setback
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PREPARED BY: <u>Zuzek inc.</u> ONE WORLD	S. J. LOGAN 100189144 WAR 31, 2020 MAR 31, 2020 BUILTING
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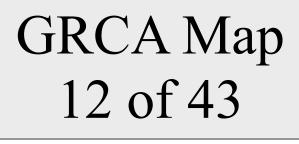
GRCA Main Office 2216 County Road 28 Port Hope, Ontario L1A 3V8 Phone: (905) 885-8173 Web: www.grca.on.ca



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	AN IIALAND WAIS
Ganaraska Region Conser	cvation Authority (GRCA)
LEGEND:	DEFINITIONS:
<u>Hazard Mapping:</u>	100 Year Flood Level The 100 Year Combined Flood Level considers both static lake level and
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Flood Hazard Limit	(+75.55 m to+75.60 m CGVD2013).
Erosion Hazard Limit	Flood Hazard Limit
Dynamic Beach Setback	 The Flood Hazard Limit is defined as the 100-Year Flood Level plus an allowance for wave runup and uprush. For the exposed shoreline, wave effects are calculated based on localized nearshore conditions and waves. For embayments, the standardized 15 m setback is applied. Refer to the Lake Ontario Shoreline Management Plan for additional details. Toe of Bluff
Base Mapping:	
Geographical Names	The Toe of Bluff is the transition from the gently sloping beach to the
• Dynamic Beach (Start Pt)	steep portion of the bank or bluff slope.
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Ganaraska Region Conser	vation Authority (GRCA)
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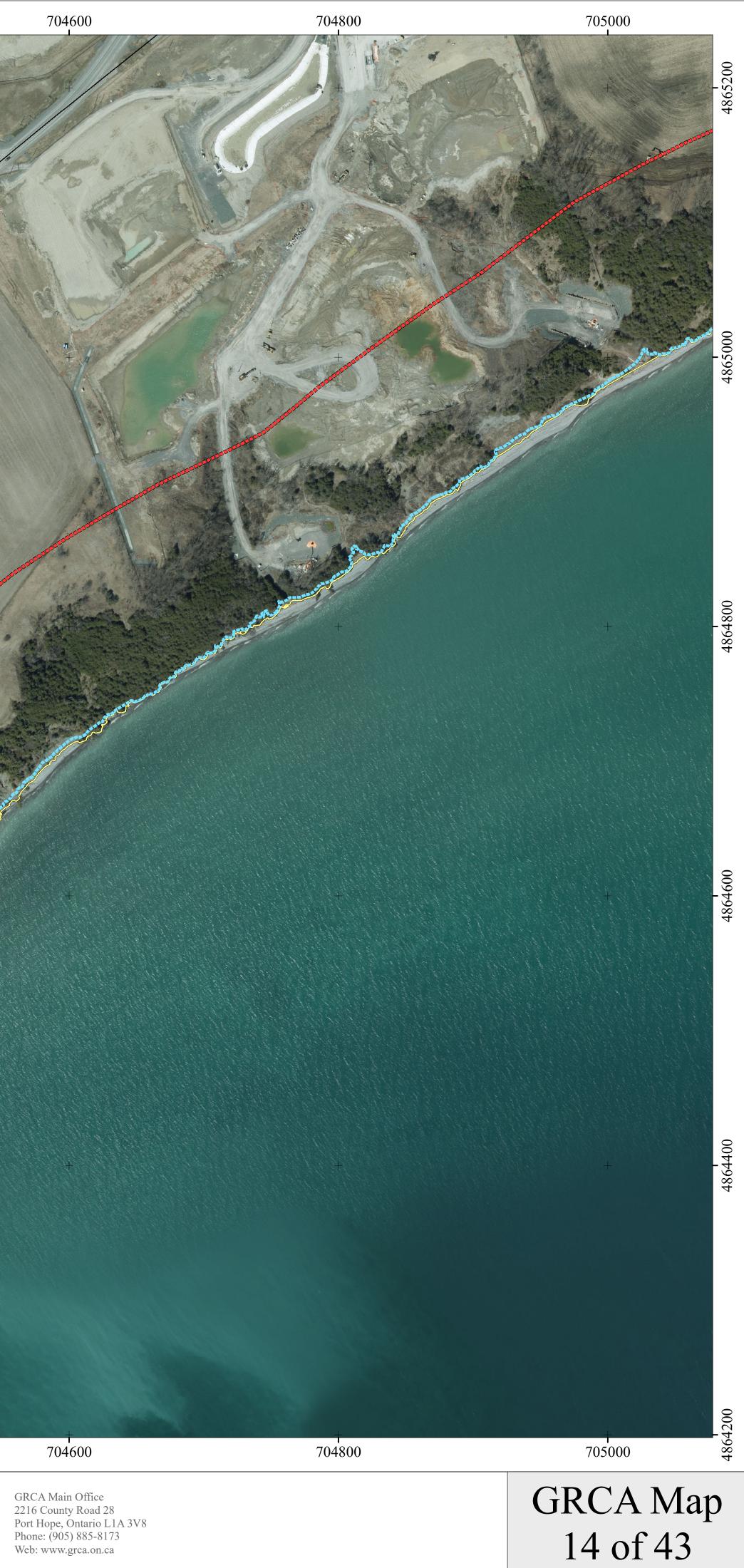
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Mapping prepared by Zuzek Inc. for the





Ganaraska Region Conser	vation Authority (GRCA)
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Inset Map: © OpenStreetMap contributors	$\begin{bmatrix} 0 & 50 & 100 & 200 \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\$
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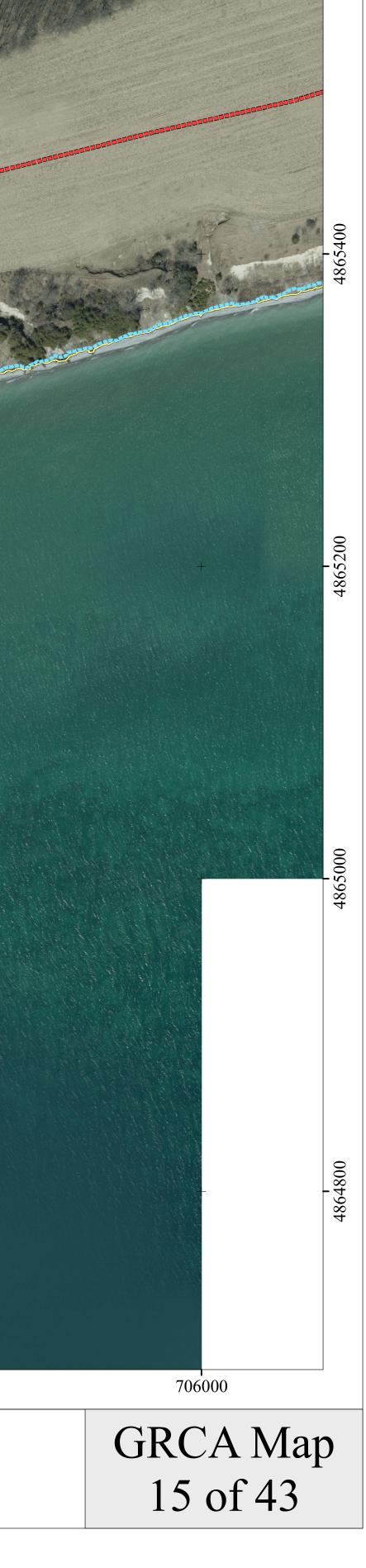
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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.



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	AN HALAND WAIS
Ganaraska Region Conser	vation Authority (GRCA)
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✓ Road Network	Erosion Hazard Limit
 GRCA Administrative Boundary 	The landward extent of the Erosion Hazard is the sum of the 100 year erosion rate plus the Stable Slope Allowance, measured horizontally from the toe of the bank or bluff.
INTERPRETATION OF THE HAZARD MAPS: The hazard maps were prepared to support the Lake Ontario Shoreline Management Plan. Wetland and riverine floodplains are not included on these hazard maps. The Dynamic Beach Setback is the onshore limit of the shaded pink polygon. The offshore limit in the lake highlights the linkages between overall beach stability and health, nearshore sediment resources, and longshore sediment transport. The hazard limit(s) are not the official regulatory limits of the Conservation Authority. Please contact the Conservation Authority for details on the regulatory limit and implications for any proposed work.	The Erosion Hazard Limit is not mapped in sheltered waters, however, localized shoreline/riverine erosion may occur and is subject to review by the Conservation Authority. <u>Dynamic Beach Hazard Limit</u> The Dynamic Beach Hazard Limit is defined as the sum of the Flood Hazard plus 30 metres measured horizontally. If the dynamic beach is eroding, an additional erosion allowance is included and a separate Erosion Hazard Limit is not shown. Refer to the Lake Ontario Shorelin Management Plan report for additional details.
DATA SOURCES: 2018 Orthophotography and Digital Surface Model (DSM) provided by the Ministry of Natural Resources and Forestry	Datums: Horizontal: UTM 17N NAD1983, metres. Vertical: CGVD2013, metresDatum Conversion: IGLD1985 - CGVD2013 = 0.42 m (average) To convert from IGLD85 to CGVD2013, subtract 0.42 m.
2016-2017 LiDAR Digital Terrain Model obtained from the Ministry of Natural Resources and Forestry. Contains information licensed under the Open Government Licence – Ontario.	Note: There are local variations along the reaches within GRCA. Refer to the Lake Ontario SMP for additional details.
Geographical Names obtained from Natural Resources Canada Road Network File, 2016 Census. Statistics Canada Catalogue no. 92-500-X	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Inset Map: © OpenStreetMap contributors	$\begin{bmatrix} 0 & 30 & 100 & 200 \\ \vdots & \vdots & \vdots & \vdots \\ S \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ S \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ S \end{bmatrix} = \begin{bmatrix} 0$
PREPARED BY: <u>Zuzek inc.</u> ONE WORLD	S. J. LOGAN 100189144 MAR 31, 2020 MAR 31, 2
This map was published March 2020 for the Ganaraska Region Conservation Authority (GRCA). The mapping of hazardous lands, including erosion, flooding, and dynamic beach areas, is subject to change. The proponent of a proposed development on or adjacent to the hazardous lands should contact GRCA to discuss permit requirements.	Every reasonable effort has been made to ensure the accuracy of this map. However, neither GRCA, Zuzek Inc., SJL Engineering, or any other affiliated party assume any liability arising from its use. This map is provided without warranty of any kind, either expressed or implied.
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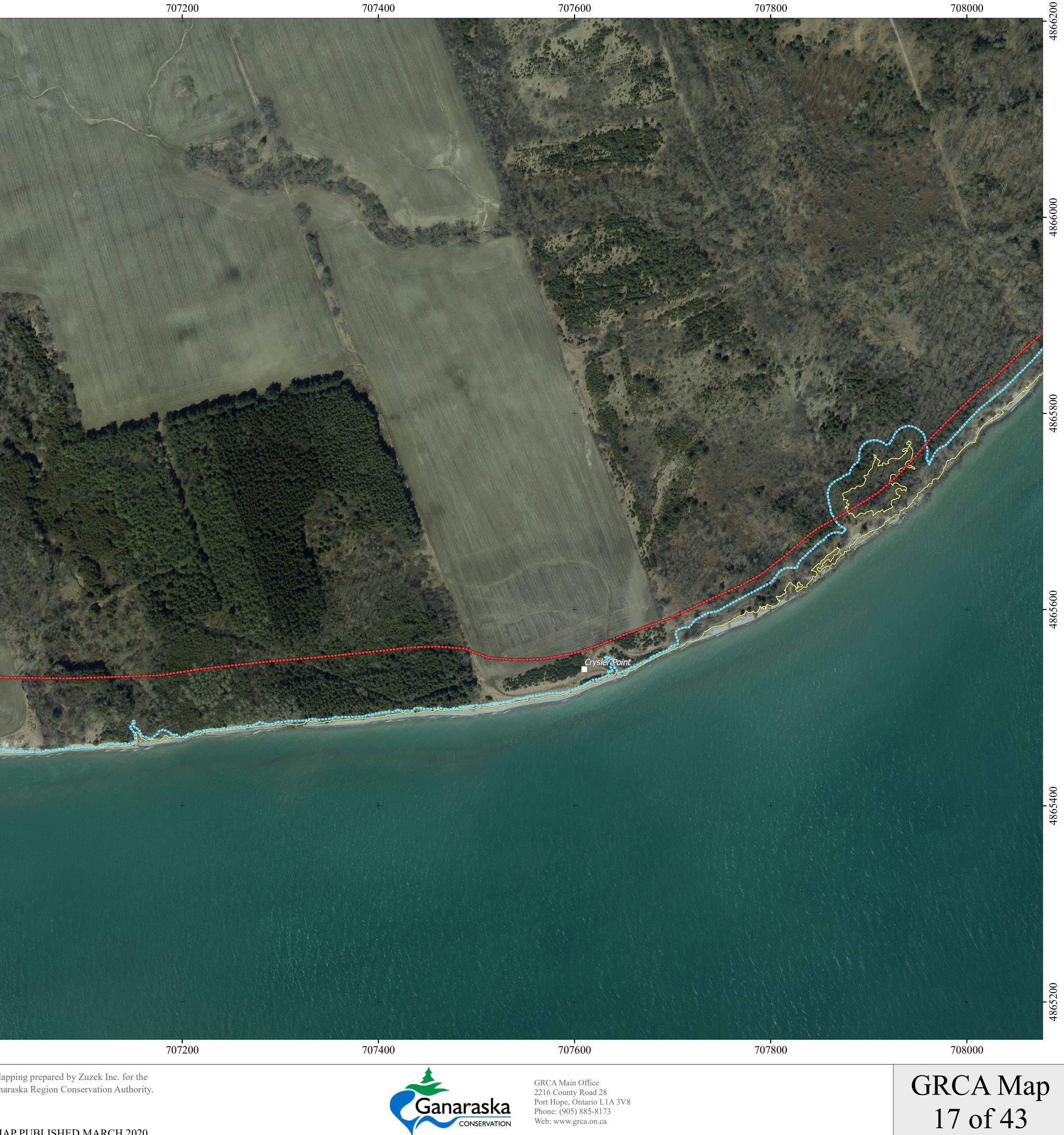
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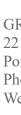


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Mapping prepared by Zuzek Inc. for the Ganaraska Region Conservation Authority.



Ganaraska



MAP PUBLISHED MARCH 2020

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Ganaraska Region Conser	vation Authority (GRCA)
LEGEND:	DEFINITIONS:
Hazard Mapping:	<u>100 Year Flood Level</u> The 100 Year Combined Flood Level considers both static lake level an
✓ 100 Year Flood Level	storm surge, having a combined probability of being equalled or exceeded during any year of 1% (i.e., probability, P =0.01). The 100 Year Combined Flood Level elevation for GRCA is +76.01 m IGLD85
Flood Hazard Limit	(+75.55 m to+75.60 m CGVD2013).
Erosion Hazard Limit	Flood Hazard Limit
Dynamic Beach Setback	The Flood Hazard Limit is defined as the 100-Year Flood Level plus an allowance for wave runup and uprush. For the exposed shoreline, wave effects are calculated based on localized nearshore conditions and waves. For embayments, the standardized 15 m setback is applied. Refer to the Lake Ontario Shoreline Management Plan for additional details.
Base Mapping:	
Geographical Names	<u>Toe of Bluff</u> The Toe of Bluff is the transition from the gently sloping beach to the
• Dynamic Beach (Start Pt)	steep portion of the bank or bluff slope.
 Dynamic Beach (End Pt) 	Stable Slope AllowanceThe Stable Slope Allowance is defined as a horizontal setback
\sim Road Network	equivalent to 3.0 times the height of the bank or bluff.
 ✓ GRCA Administrative Boundary 	Erosion Hazard Limit The landward extent of the Erosion Hazard is the sum of the 100 year erosion rate plus the Stable Slope Allowance, measured horizontally from the toe of the bank or bluff.
INTERPRETATION OF THE HAZARD MAPS: The hazard maps were prepared to support the Lake Ontario Shoreline Management Plan. Wetland and riverine floodplains are not included on these hazard maps. The Dynamic Beach Setback is the onshore limit of the shaded pink polygon. The offshore limit in the lake highlights the linkages between overall beach stability and health, nearshore sediment resources, and longshore sediment transport. The hazard limit(s) are not the official regulatory limits of the Conservation Authority. Please contact the Conservation Authority for details on the regulatory limit and implications for any proposed work.	The Erosion Hazard Limit is not mapped in sheltered waters, however, localized shoreline/riverine erosion may occur and is subject to review by the Conservation Authority. <u>Dynamic Beach Hazard Limit</u> The Dynamic Beach Hazard Limit is defined as the sum of the Flood Hazard plus 30 metres measured horizontally. If the dynamic beach is eroding, an additional erosion allowance is included and a separate Erosion Hazard Limit is not shown. Refer to the Lake Ontario Shorelin Management Plan report for additional details.
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2016-2017 LiDAR Digital Terrain Model obtained from the Ministry of Natural Resources and Forestry. Contains information licensed under the Open Government Licence – Ontario.	Note: There are local variations along the reache within GRCA. Refer to the Lake Ontario SMP for
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Inset Map: © OpenStreetMap contributors	$\begin{bmatrix} 0 & 50 & 100 & 200 \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\$
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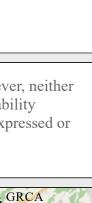


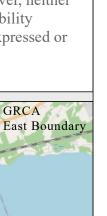
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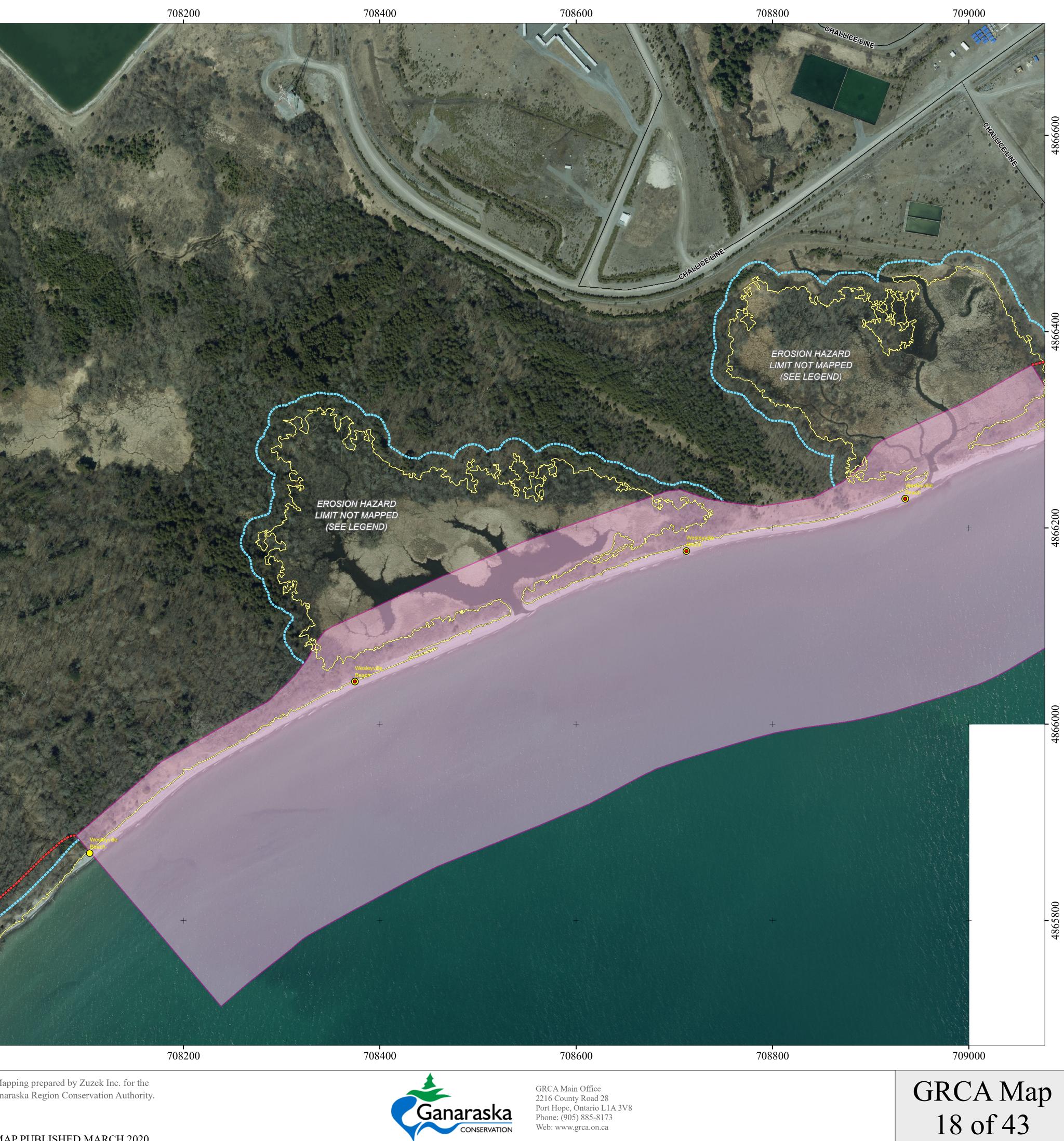
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