Lower Thames Valley Conservation Authority

Policies and Procedures to Support Administration of the Conservation Authorities Act Part VI and Ontario Regulation 41/24

01 April 2024

PREFACE

This document provides general policies to assist the Lower Thames Valley Conservation Authority (LTVCA) in interpreting the Conservation Authorities Act and Ontario Regulation 41/24 (O. Reg. 41/24). This document is based on numerous existing provincial Technical and Implementation Guidelines developed and approved by the Ministry of Natural Resources (now Ministry of Natural Resources and Forestry). This document references provincial policies, regulations, and legislation and is a tool for implementing provisions and standards in O. Reg. 41/24 and associated sections of the Conservation Authorities Act.

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Appendix A LTVCA Dock Policy, Lower Thames River & Lighthouse Cove

1.0 INTRODUCTION

1.1 Objective

The preparation of a comprehensive policy and procedures manual for the Lower Thames Valley Conservation Authority (LTVCA) was in response to numerous recent (2017, 2019, 2020, and 2022) amendments of the Conservation Authorities Act as well as the repealing O. Reg. 152/06 and the implementation of a new regulation, O. Reg. 41/24.

The purpose of this document, taking guidance from Provincial Policy, is to provide local watershed policies which will guide development and site alteration away from natural hazards.

This document, approved by the Lower Thames Valley Conservation Authority's Board of Directors, will guide LTVCA staff in implementation of the Conservation Authority's Regulations program. It is envisioned that this document will be a valuable tool for the LTVCA Board of Directors and staff as well as for the watershed municipalities, the land development industry, and the public.

1.2 The Lower Thames Valley Conservation Authority

The LTVCA was formed in 1961. The LTVCA's original water resources mandate and programs have evolved in response to the issues of our watershed municipalities, greater scientific understanding, Provincial Policy and Legislation, and best management practices (BMPs). This includes developing a broad range of watershed management programs and services that engage the community in responding to watershed issues.

The LTVCA continues to strive towards implementing a watershed approach to planning. This approach is consistent with Section 2.2.1 a) of the 2020 Provincial Policy Statement (PPS), which encourages the use of the watershed "as the ecologically meaningful scale for integrated and long-term planning, which can be a foundation for considering cumulative impacts of development". It is considered to be the most effective and comprehensive systems-based approach for ecosystem planning. This concept has been incorporated into the PPS for a while and the Conservation Authority has a long legacy of planning, implementing and monitoring using watershed and subwatershed management components. Through the application of this approach, the implications of local management actions and municipal decisions can be evaluated in a watershed context. The watershed approach addresses the fact that water does not respect political boundaries, with the riparian rights of downstream communities being considered.

1.2.1 Our Watershed

The LTVCA has developed a program to protect and improve the watersheds and subwatersheds of the Lower Thames Valley and portions of the Lake Erie and Lake St. Clair shoreline watersheds within its jurisdiction. The LTVCA has jurisdiction over more than 3,275 square kilometers and serves a population of approximately 120,000 across the watershed. Mainstays of the region's economy include agriculture, manufacturing, and tourism. The lower portion of the Thames River is approximately 186 km long consisting of deeply incised faster flowing waters in the easterly portion of the watershed and slower moving waters in the lower westerly reaches of the system. The LTVCA also has approximately 17 kilometres of shoreline along Lake St. Clair containing low beach areas, for the most part protected by an extensive dyking system, and approximately 121 km of shoreline along Lake Erie, having several beach areas (Wheatley, Erie Shore Drive, Erieau, Bates Subdivision, Rose Beach Line, etc.), and low to moderate bluffs in Chatham-Kent in the west to high bluffs in Elgin County to the east.

The area of jurisdiction for the LTVCA includes:

1) St. Clair Watershed - The streams entering Lake St. Clair extending northerly from the Thames River to include the Boyle Drain watershed where it outlets into Lake St. Clair;

2) Thames River Watershed - All streams entering the Thames River from the community of Delaware down to the mouth of the Thames River including Lighthouse Cove and ~1 km west of the cove; and,

3) Lake Erie Watershed - The streams entering Lake Erie inclusive from just east of the Wheatley harbour in the west to the Talbot Creek watershed in the east.

The LTVCA's jurisdiction (see Figure 1 below) includes the following ten municipal members: Lakeshore, Leamington, Chatham-Kent, Southwest Middlesex, West Elgin, Dutton Dunwich, Strathroy-Caradoc, Southwold, Middlesex Centre, and London.

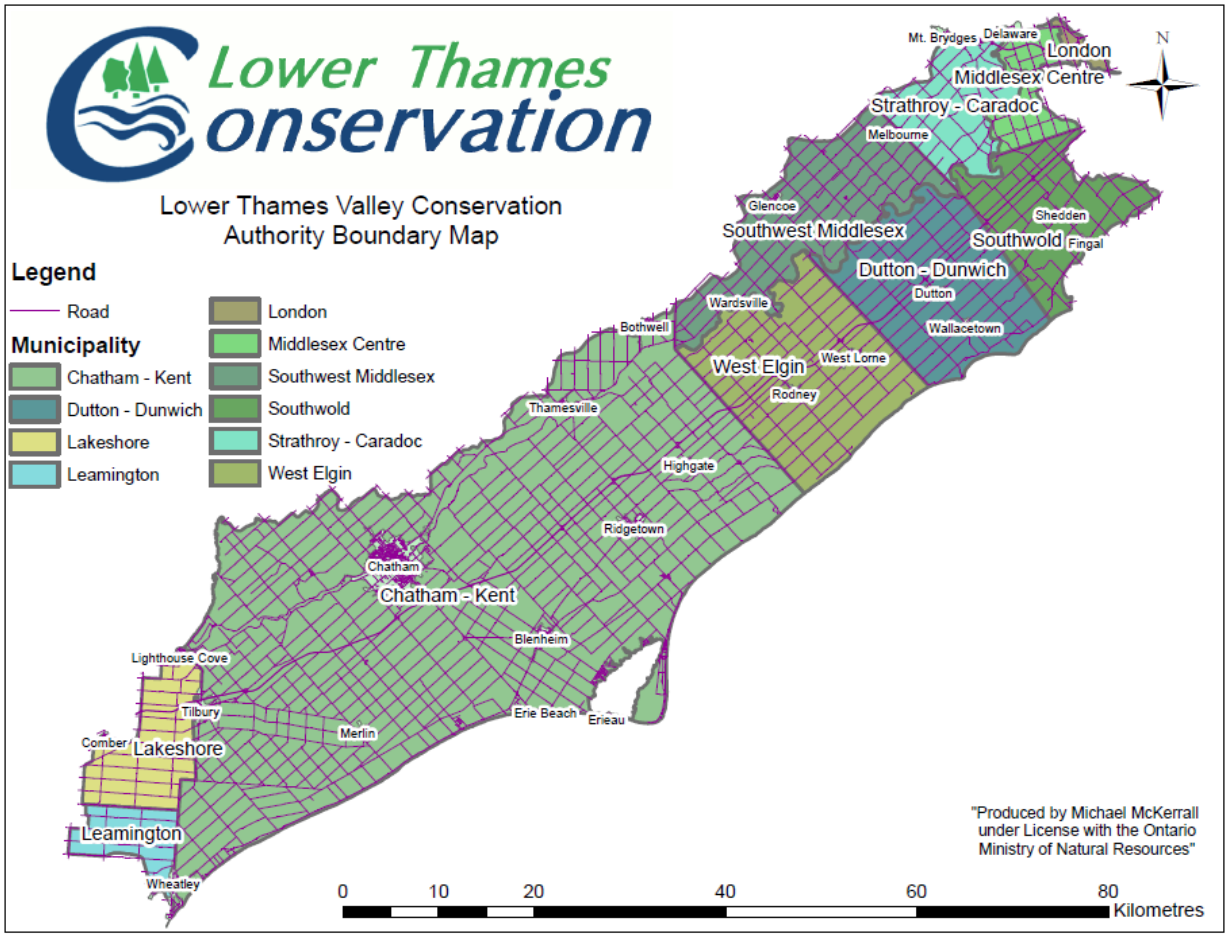

Figure 1: LTVCA's Area of Jurisdiction

1.2.2 Our Planning Approach

The LTVCA's approach is to direct development away from natural hazards, protect the remaining natural resources and, where possible, work with landowners to undertake the restoration and enhancement of additional areas for future generations. The LTVCA is committed to achieving the authority's Vision Statement, which states:

> The LTVCA….for a balanced and healthy watershed.

Protecting and improving the watershed is a process which occurs through long range, comprehensive policy development and review; plan review activities; and regular research and monitoring. It is imperative to involve the community including municipal partners, landowners, technical professionals, other government agencies and advocacy groups.

1.2.3 Regulatory Activities

The LTVCA is involved with the implementation of several statutes and regulations. This document focuses on administering Section 28 of the Conservation Authorities Act and Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits.

Natural hazards include:

- Flood plain management;
- Hazardous slopes;
- Great Lakes shorelines; and,
- Unstable soils and erosion.

These natural hazards are all encompassed by Section 3.1 “Natural Hazards” of the PPS. In keeping with Section 3(5) of the Planning Act, decisions of Municipal Council, Local Boards, Planning Boards, Ministers of the Crown, Agencies, Boards and Commissions shall be consistent with provincial policy statements in effect and, further, that decisions conform to established provincial plans.

The guidance provided in this document for the implementation of the Conservation Authorities Act and O. Reg. 41/24 is applicable to all other Acts and Regulations that the LTVCA may be asked to comment on subject to agreements.

1.3 Overview of Legislative Framework – Conservation Authorities Act

1.3.1 Background

The Conservation Authorities Act was created in 1946 in response to erosion and drought concerns, recognizing that these and other natural resource initiatives are best managed on a watershed basis.

In 1956, in response to the severe economic and human losses associated with Hurricane Hazel (1954), amendments to the Conservation Authorities Act first empowered Conservation Authorities (CAs) to make Regulations to prohibit filling in floodplains. These Regulations were broadened in 1960 to prohibit or regulate the placing or dumping of fill in defined areas where, in the opinion of the CA, the control of flooding, pollution or the conservation of land may be affected. In 1968, amendments to the Conservation Authorities Act further extended the Regulations to prohibit or control construction and alteration to waterways, in addition to filling.

In 1998, the Conservation Authorities Act was amended as part of the Red Tape Reduction Act (Bill 25), to ensure that Regulations under the Act were consistent across

the province and complementary to provincial policies. Significant revisions were made to Section 28, which led to the replacement of the "Fill, Construction and Alteration to Waterways" Regulation with the Content of Conservation Authority Regulations under Subsection 28 (1) of the Act, O. Reg. 97/04 which was followed by each CAs' individual "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses" Regulation. While some CAs had been regulating wetlands, shorelines and inter-connecting channels for years, the amendments required all CAs to regulate Great Lakes shorelines, inter-connecting channels[1], inland lakes and wetlands in addition to the areas and features each CA historically regulated.

In subsequent years, numerous amendments had been made to Section 28 of the Conservation Authorities Act and associated Regulations. Ontario Regulation 686/21, among other provisions, requires that an Authority shall provide programs and services to ensure that the Authority satisfies its duties, functions and responsibilities to administer and enforce the provisions of Parts VI and VII of the Act and any regulations made under those Parts." O. Reg. 686/21, s. 16.

In 2024, a new Regulation was developed, Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits. This regulation replaces the 36 individual Regulations that each of the CAs had which were approved in 2006.

The current legislative structure includes requirements for the administration of PART VI of the Conservation Authorities Act in both the Act and O. Reg. 41/24.

1.3.2 Prohibited Activities

Section 28 of the *Conservation Authorities Act*, includes the following section:

> ***28** (1) Subject to subsections (2), (3) and (4) and section 28.1, no person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority:*
>
> 1. *Activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland.*
> 2. *Development activities in areas that are within the authority's area of jurisdiction and are,*
>   - *i. hazardous lands,*
>   - *ii. wetlands,*
>   - *iii. river or stream valleys the limits of which shall be determined in accordance with the regulations,*

[1] With the exception of the Niagara River which is governed federally for hydro production at Niagara Falls.

iv. areas that are adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to an inland lake and that may be affected by flooding, erosion or dynamic beach hazards, such areas to be further determined or specified in accordance with the regulations; or,

v. other areas in which development should be prohibited or regulated, as may be determined by the regulations. 2017, c. 23, Sched. 4, s. 25.

1.3.3 Exceptions under the Conservation Authorities Act

Section 28 of the *Conservation Authorities Act* includes the following sections dealing with exceptions to the prohibition on development activities, alterations or interference in regulated areas.

Exception, aggregates

Subsection 28 (2); The prohibitions in subsection (1) do not apply to an activity approved under the Aggregate Resources Act after December 18, 1998, the date the Red Tape Reduction Act, 1998 received Royal Assent. 2017, c. 23, Sched. 4,s. 25.

Same, prescribed activities

Subsection 28 (3); The prohibitions in subsection (1) do not apply to an activity or a type of activity that is prescribed by regulation and is carried out in accordance with the regulations. 2017, c. 23, Sched. 4, s. 25.

Same, prescribed areas

Subsection 28(4); The prohibitions in subsection (1) do not apply to any activity described in that subsection if it is carried out,

(a) in an area that is within an authority's area of jurisdiction and specified in the regulations; and,

(b) in accordance with any conditions specified in the regulations. 2017, c. 23, Sched. 4,s. 25.

Ontario Regulation 41/24 includes "Exceptions" for a limited number of activities in areas that are regulated by the LTVCA (e.g., seasonal or floating dock, tile drains, and ponds for watering livestock). The LTVCA shall not require a permit for these activities provided the activities meet the requirements outlined in the Regulation. Exceptions are discussed in further detail later in this document.

1.3.4 Crown Activities

It is noted that the *Conservation Authorities Act* does not contain a subsection that specifically "binds the Crown". Therefore, activities of Provincial Ministries, Federal Departments and Crown Agencies or "Crown Corporations" are not bound by the Act and these entities are not legally required to obtain a permit under the *Conservation Authorities Act*.

Determining whether a particular body is an agent of the Crown depends on the specific functions of the body and the degree of control exercised over that body by the Crown. In some circumstances, changes to a corporation's ownership may result in the corporation's status changing from a crown corporation to a private entity. For example, Hydro One and its affiliates no longer hold status as crown corporations. Conservation Ontario and Hydro One developed an updated Memorandum Of Understanding (2021), acknowledging the new requirement for Hydro One and its affiliates (Hydro One Telecom Inc. and Hydro One Sault Ste. Marie LP) to obtain a CA permit under Section 28 of the Conservation Authorities Act for their work. This MOU outlines protocols and best practices that streamline the review process.

While the Conservation Authorities Act does not bind Crown proponents for activities taking place on Crown land, a third-party proponent, not acting on behalf of the Crown would be subject to the Act and Section 28 regulations. Similarly, exemptions cease when a third party undertaking activities for the Crown are on lands no longer under Crown control (e.g. removing fill from Crown land and brought off-site and placed in a regulated area).

Voluntary compliance with the review process requirement is always a possibility for the Crown and its Agencies. Although best practice suggests they comply to ensure sufficient technical review of their activity, they are within their legal rights to refuse to participate in the voluntary review process.

1.3.5 Permits

Section 28.1 of the CA Act outlines the legal requirements for LTVCA decisions for a permit application. The Act includes two subsections that provide the 'tests' or criteria that a permit application must meet to the satisfaction of the LTVCA. These include:

> *28.1 (1) An authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority,*
>
> *(a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;*
> *(b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; and*

(c) any other requirements that may be prescribed by the regulations are met. 2017, c. 23, Sched. 4, s. 25."

Currently, there are no additional requirements under 28.1(1)(c).

Below is a summary of the clauses in s. 28.1 (2) to (26).

Application/Hearing

Sections 28.1 (2) to (5) include sections that relate to: the requirement to apply for a permit, enabling the LTVCA to include conditions in a permit, and the right to a hearing where an application may be refused, or conditions are being contested.

Renewable Energy Projects

Renewable energy projects (28.1 (6)) limit the 'tests' that may be applied to a LTVCA consideration of a permit application and the conditions that can be attached to these permits. The LTVCA shall not refuse an application unless it is of the opinion that it is necessary to do so to control flooding, erosion, dynamic beaches or unstable soil or bedrock; and the LTVCA shall not attach conditions to the permit unless the conditions relate to controlling flooding, erosion, dynamic beaches or unstable soil or bedrock. In other words, the test broadly related to health or safety and found in 28.1 (1) (b) does not apply to these permits. As with similar applications, the applicant has a right to a hearing where an application may be refused, or conditions are being contested. After a hearing the LTVCA shall provide an applicant with written reasons for the decision.

Request for Minister's Review

Sections 28.1 (8) to (19) outline, in detail, the steps and requirements in the process if an applicant appeals the decision of the LTVCA or conditions attached to a permit. In general, these sections outline the hearing process, appeal timelines, the Minister's review process and timelines associated with that review (includes requirements for the LTVCA and the applicant). The Minister is required to publish on the Environmental Registry a notice of the Minister's intention to review a decision made by an authority and shall do so within 30 days of giving a reply that a review will be undertaken. Upon the completion of the review, the Minister may confirm or vary the authority's decision or make any decision that the Minister considers appropriate, including issuing the permit subject to conditions. The decision made by the Minister in this process is final.

Appeal to Tribunal

Sections 28.1 (20) to (26) outline, in detail, the steps, requirements and timelines associated with appeals to the Minister and the Ontario Land Tribunal (OLT).

Figure 1 below provides a high-level summary of the potential Permit processes including the Minister's Review and Ontario Land Tribunal.

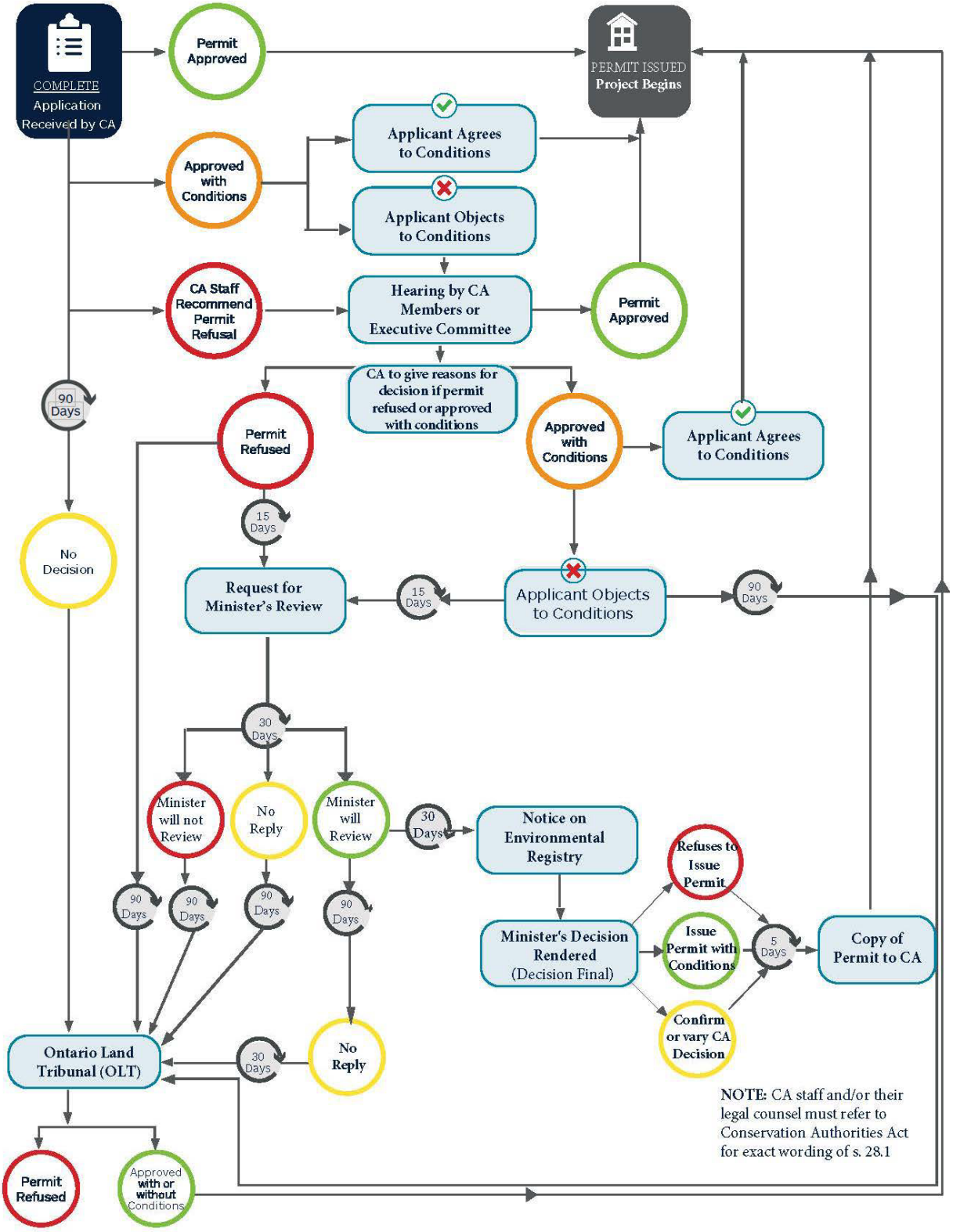

Figure 2: Permit process including potential Minister's Review and Ontario Land Tribunal (Section 28.1)

1.3.6 Permits Issued by Minister

Section 28.1.1 of the Conservation Authorities Act outlines the powers of the Minister to issue an Order related to Section 28 permits. A general summary of this portion of the Conservation Authorities Act is included in this document.

The Minister may, by order, direct the LTVCA not to issue a permit to a person [28.1.1(1)(a)]. In addition, the Minister may direct the LTVCA not to issue a permit for a type or class of activities for a specified period of time [28.1.1(1)(b)]. If an order is made, the Minister can issue a permit for any activity in the order "if, in the Minister's opinion, the criteria described in clauses 28.1 (1) (a), (b) and (c) are satisfied…." The order(s) apply before or after applications have been received by the LTVCA and decisions are pending. Section 28.1.1 (5) outlines the notice provisions i.e., notice will be given to the LTVCA, applicants who submitted an application before the order was made and a decision is pending, and that it will be posted on the Environmental Registry within 30 days of being made.

Sections 28.1.1 (6) to (11) outline, in detail, the steps and requirements which generally include responsibilities of the LTVCA and the applicant with respect to the order and information that they may have that will be provided to the Minister within the timelines specified by the Minister. It also includes application requirements and consultation process for permits to be considered by the Minister, conditions of an approval, and written reasons for a decision of the Minister. The LTVCA shall receive a copy of the permit that includes the date of validity.

Sections 28.1.1 (12) to (14) identify the decision and appeal process. The Minister's decision is final. The application must comply with other sections of the Conservation Authorities Act (s. 28.1 (3) or clause 28.1.1 (7) (a)) and the applicable Regulation e.g., complete application. However, in specific circumstances the decision may be appealed to the Ontario Land Tribunal (i.e., no notice of a decision from the Minister within 90 days of the application being made). Subsections 28.1 (24), (25) and (26) apply with necessary modifications to an appeal to the Tribunal. These sections include an appeal of non-decision by the Minister, notice of appeal and hearing requirements of the Tribunal.

1.3.7 Mandatory Permits, Zoning Orders

The Planning Act (s. 34.1) gives the Minister of Municipal Affairs and Housing the authority to control the use of any land in the Province. Zoning orders can be used to protect a provincial interest or to help overcome potential barriers or delays to critical projects. This includes an order for Community Infrastructure and Housing accelerator projects.

The Conservation Authorities Act requires the implementation of a Zoning Order as outlined in Section 28.1.2. (1).

A general summary of this section of the Conservation Authorities Act is included in this document.

The zoning order received by the LTVCA will apply to a 'development project' as defined by the Conservation Authorities Act. The LTVCA shall issue the permit if all of the requirements in Section 28.1.2 (1) (a)-(c) are satisfied. The LTVCA shall not refuse a permit despite the prohibitions a. 28(1) or the 'tests' or criteria in s. 28.1.(1). The LTVCA may include conditions of approval on the permit as outlined in s. 28.1.2 below:

> *(6) Subject to subsection (7), an authority may attach conditions to the permit, including conditions to mitigate,*
>
> *(a) any effects the development project is likely to have on the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;*
> *(b) any conditions or circumstances created by the development project that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; or*
> *(c) any other matters that may be prescribed by regulation. 2020, c. 36, Sched. 6, s. 17.*

Sections 28.1.2 (7) to (13) outline the process and timeline associated with attaching any conditions to a permit associated with a zoning order. In general, these clauses require the LTVCA to provide a Hearing before the Authority and the applicant may appeal the LTVCA's decision on a condition(s) to the Minister. The permit holder must submit their request for the Minister to conduct a review of the LTVCA conditions within 15 days of the reasons being given under subsection (8). The Minister may amend the conditions and will consider the same mitigation criteria or tests noted above in their review. In the case of this review, the Minister's decision is final.

Alternatively, or in addition, Sections 28.1.2 (14) to (16) outline, in detail, the appeal process to the Ontario Land Tribunal and criteria and timelines required in this process.

Subsection (14) states:

> *A permit holder who objects to any conditions attached to the permit by an authority may, within 90 days of the reasons being given under subsection (8), appeal to the Ontario Land Tribunal to review the conditions if,*
>
> *(a) the permit holder has not submitted a request under subsection (9) to the Minister to review the conditions; or*
> *(b) the permit holder has submitted a request to the Minister to review the conditions under subsection (9) and,*
> *i. 30 days have elapsed following the day the permit holder submitted the request and the Minister did not make a reply in accordance with subsection 28.1 (9), or*

ii. the Minister made a reply in accordance with subsection 28.1 (9) indicating that the Minister refused to conduct the review. 2020, c. 36, Sched. 6, s. 17.

If the Minister is conducting a review of the conditions as outlined in earlier sections [28.1.2(9)], and the Minister's decision has not been provided within 90 days of the start of that review, the permit holder may, within 30 days, appeal this non-decision on the LTVCA conditions directly to the Ontario Land Tribunal. The permit holder and the Tribunal are required to follow the notice requirements in s. 28.1 (24) and (25). The powers of the tribunal include the authority to take evidence, to refuse the permit or to order the authority to issue the permit, with or without conditions [Subsection 28.1 (26)].

Subsections (17) to (18) outline the Agreement requirements. The LTVCA shall enter into an agreement with the permit holder for the development project and they may add other parties to this agreement. The agreement under subsection (17) shall set out actions or requirements that the permit holder must complete or satisfy in order to compensate for ecological impacts and any other impacts that may result from the development project.

Subsections (19) and (19.1) outline the timing of the implementation of the 'development project' and the agreement with the LTVCA. Subsection (19) includes "No person shall begin a development project until an agreement required under subsection (17) has been entered into. 2020, c. 36, Sched. 6, s. 17." However, subsection (19.1) includes "If a regulation made under subsection 40 (4) provides that a development project may begin prior to entering into an agreement under subsection (17), but an agreement is not entered into by the date identified in the regulation, no person shall carry out the development project until such time the agreement is entered into. 2022, c. 21, Sched. 2, s. 10 (10)." It is anticipated that the regulation for a 'development project' will be limited to a specific project. The Province has the ability to create a regulation that permits the development project to begin prior to entering into an agreement.

Figure 2 provides a general overview of the permit process related to Mandatory Permits or a Zoning Order outlined in s. 28.1.2.

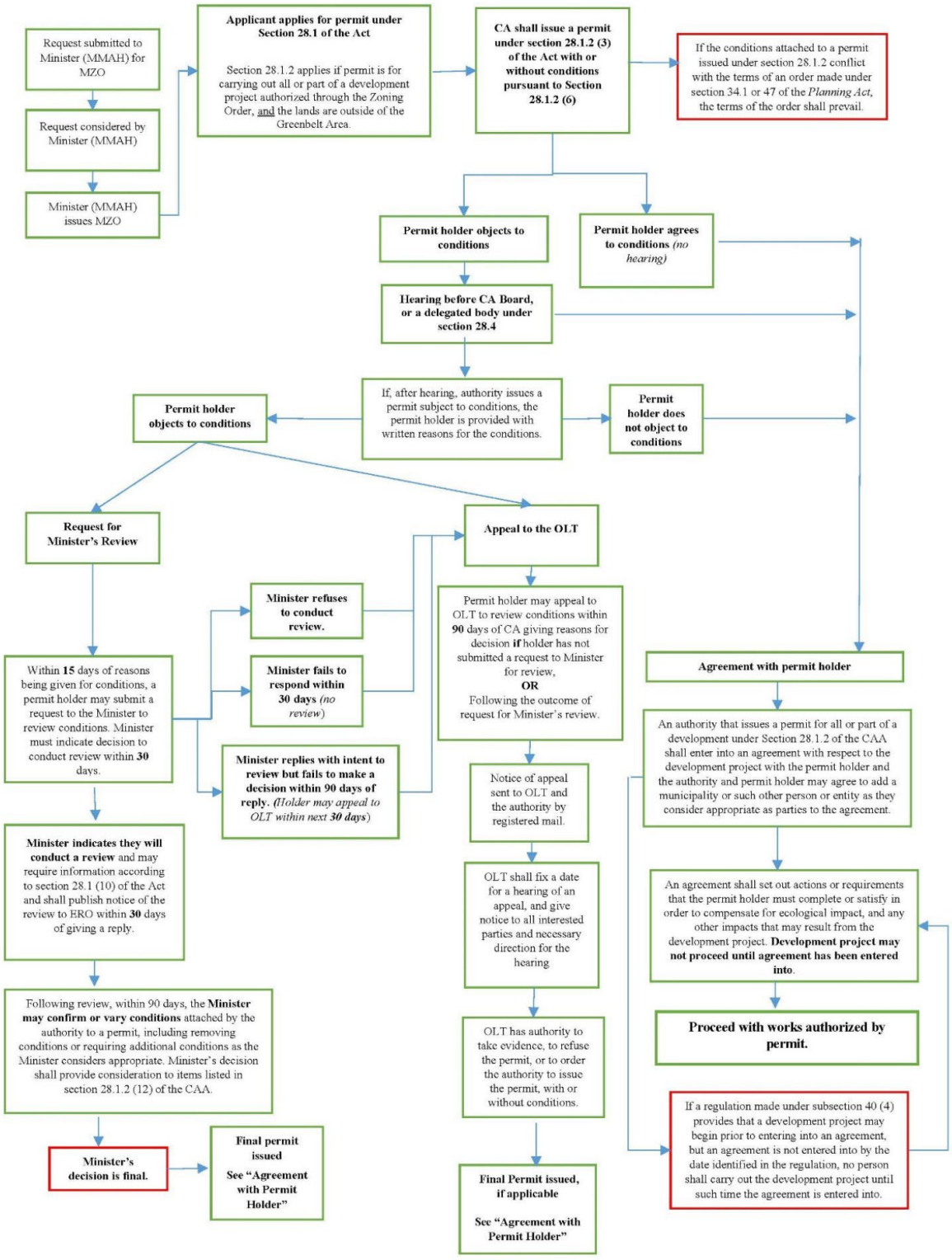

Figure 3: Mandatory Permits, Zoning Order, Ontario Land Tribunal (Section 28.1.2)

1.3.8 Cancellation of Permits

Section 28.3 enables the LTVCA with the option to cancel a permit issued if it is the LTVCA's opinion that the conditions of the permit have not been met or that the circumstances that are prescribed by regulation exist. This section outlines the process the LTVCA shall follow to cancel a permit. This includes notice requirements (intent to cancel, specified date, permit holder hearing request). Within 15 days of receiving the LTVCA notice of intent to cancel, the permit holder must submit a written request for a hearing. The hearing will be scheduled within a reasonable time frame. The LTVCA may confirm, rescind or vary the decision to cancel the permit. If the LTVCA confirms the cancellation of the permit or varies the permit in such a way that the permit holder objects, the permit holder may, within 90 days of receiving notice of the authority's decision, appeal the decision to the Ontario Land Tribunal. The permit holder is required to send their notice of appeal to the Tribunal and the LTVCA by registered mail.

1.3.9 Delegation of Power

Section 28.4 of the Conservation Authorities Act states:

> *An authority may delegate any of its powers relating to the issuance or cancellation of permits under this Act or the regulations, or to the holding of hearings in relation to the permits, to the authority's executive committee or to any other person or body, subject to any limitations or requirements that may be prescribed by regulation. …*

To streamline permit approvals, the LTVCA has delegated the approval and issuance of routine permits to select LTVCA staff. A routine permit is an application that meets Board-approved policies and there is agreement on any conditions of that approval. If an application doesn't comply with LTVCA board-approved policies, the applicant has a right to a hearing which may be held with either the full LTVCA Board or its Executive Committee. LTVCA by-laws and/or other policies outline which person or body has a delegated responsibility to make decisions.

1.3.10 LTVCA Board Approved Policies

Board-approved policies are required as outlined in the Conservation Authorities Act and in s. 12 of O. Reg. 41/24 to provide a decision-making framework for the review of applications. In general, policies ensure a consistent, timely and fair approach to the review of applications, staff recommendations and Board decisions. They also facilitate the effective and efficient use and allocation of available resources.

This document forms the Board-approved policies.

1.4 Regulations under the Conservation Authorities Act

1.4.1 Mandatory Programs and Services – Ontario Regulation 686/21

Further to the Conservation Authorities Act s, 21.1, Ontario Regulation 686/21 requires CAs to provide mandatory programs and services related to the risk of natural hazards (see s. 1-8) (Category 1 Program or Service). CAs are required to satisfy their duties, functions, and responsibilities to administer and enforce the provisions of Part VI and VII of the Conservation Authorities Act and any regulations made under those Parts. Programs and services related to the risk of natural hazards include:

- Comment re applications, proposals [ss. 6. (1) and ss. 6. (2)];
- Plan Review, comments [ss. 7 (1) and ss. 7 (2)]; and,
- Administering and enforcing the Act (s 8).

Applications or projects under other legislation may be the earliest opportunity for the LTVCA to provide input on natural hazards. In the review of these applications or proposals, the LTVCA shall attempt to identify known natural hazards and attempt to resolve any issues with the proposal that may arise due to natural hazards. This will result in a streamlined LTVCA permit application or remove the need for a permit.

Under s. 6. (1), the LTVCA shall provide programs and services to enable the authority to review applications or proposals to comment on the risks related to natural hazards arising from the proposal made under the Acts noted below:

1. The Aggregate Resources Act
2. The Drainage Act
3. The Environmental Assessment Act
4. The Niagara Escarpment Planning and Development Act

Subsection 7 (1) of Ontario Regulation 686/21 outlines the requirements for CAs to review and provide comments on policy documents (e.g., Official Plans and comprehensive Zoning By-laws) and applications submitted pursuant to the Planning Act in accordance with the Mandatory Programs and Services Regulation.

The LTVCA provides technical support and advisory services to municipalities for planning applications for natural hazards (not including hazardous forest types for wildland fire). In this capacity, LTVCA staff provide technical input regarding potential natural hazard impacts and advice about how negative impacts can be avoided or minimized.

Subsection 7 (2) 1 to ss. 7 (2) outline additional responsibilities of CAs (including the LTVCA) for natural hazard land use planning related matters. These include providing comments, technical support, information, notice and/or training to municipalities or

planning boards, as well as providing comments and other support to the Ministry of Municipal Affairs and Housing and MNRF when requested to do so.

1.4.2 Prescribed Acts – Ontario Regulation 596/22

In 2022, the Conservation Authorities Act was amended and the Province included an exception to the services a CA may provide.

Municipal programs and services

> *Subsection 21.1.1 (1); Subject to subsection (1.1), an authority may provide, within its area of jurisdiction, municipal programs and services that it agrees to provide on behalf of a municipality situated in whole or in part within its area of jurisdiction under a memorandum of understanding, or such other agreement as may be entered into with the municipality, in respect of the programs and services. 2020, c. 36, Sched. 6, s. 8 (1). 2022, c. 21, Sched. 2, s. 3 (1).*

Exception, prescribed Acts

> *Subsection 21.1.1(1.1); An authority shall not provide under subsection (1), within its area of jurisdiction, a municipal program or service related to reviewing and commenting on a proposal, application or other matter made under a prescribed Act. 2022, c. 21, Sched. 2, s. 3 (2).*

Ontario Regulation 596/22: Prescribed Acts enabled under the Conservation Authorities Act [s. 21.1.1 (1.1) and s. 21.1.2 (1.1)] came into effect on January 01, 2023. This regulation stipulates that CAs shall not provide a Municipal (Category 2) or Other (Category 3) program or service related to reviewing and commenting on proposals, applications, or other matters under a prescribed Act.

The prescribed Acts include:

- Planning Act
- Aggregate Resources Act
- Condominium Act
- Drainage Act
- Endangered Species Act
- Environmental Assessment Act
- Environmental Protection Act
- Niagara Escarpment Planning and Development Act
- Ontario Heritage Act
- Ontario Water Resources Act

Under the Mandatory Programs and Services Regulation (O. Reg. 686/21) which includes natural hazards, the CAs continue to provide review and comments on

applications related to natural hazards and regulatory requirements. O. Reg. 596/22 does not affect the LTVCA provision of mandatory (Category 1) programs or services related to the prescribed Acts. Subject to the individual legislative and regulatory requirements, applications made under Acts including the *Planning Act, Environmental Assessment Act, Drainage Act, Niagara Escarpment Planning and Development Act* etc. must continue to be circulated for mandatory program and service delivery for CAs to review and provide comments.

1.4.3 Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits

Ontario Regulation 41/24 came into effect on April 01, 2024.

In order to properly implement CA permitting activities, both the Conservation Authorities Act and the Regulation need to be considered. The LTVCA shall use the Conservation Authorities Act as well as Ontario Regulation 41/24 in the administration of the permit process.

There are many legal requirements for the administration of Ontario Regulation 41/24 and associated sections of the Conservation Authorities Act, including:

- Definitions for the purposes of Section 28
- Prohibited Activities
- Flood Event Standards
- Maps of Regulated Areas
- Regulation Text Prevails Over Mapping
- Exceptions
- Pre-Submission Consultation
- Application for Permit
- Conditions of Permits
- Lake Simcoe Protection Requirements
- Request for Review
- Period of Validity of Permits and Extensions
- Guidance and Policy Documents re Permits
- Schedule 1

Additional information and guidance on Ontario Regulation 41/24 are included in further sections.

1.5 Other Related Legislation

It is important to note that CA Section 28.1 permission, if granted for work, does not exempt the applicant from complying with any or all other approvals, laws, statutes,

ordinances, directives, regulations, etc. that may affect the property or the use of same. Alternatively, complying with or obtaining all other approvals, laws, statutes, ordinances, directives, regulations, etc. does not exempt the applicant from obtaining permission under Section 28.1 of the Conservation Authorities Act.

1.5.1 Planning Act

The LTVCA is involved in the review of planning applications under the Planning Act primarily in three ways: as an agency with legislated responsibilities for the review of natural hazards; acting on behalf of the Ministry of Natural Resources and Forestry to ensure conformity with natural hazard policies (excluding hazardous forest types for wildland fire) and as a public body. See Ontario Regulation 686/21 (s. 7) for further information related to Mandatory programs and Services related to the Planning Act.

Ontario Regulation 41/24 complements the natural hazard policies in policy statements issued under the Planning Act including policies of the Provincial Policy Statement (PPS). The legislated and regulatory responsibility for reviewing applications or other matters under the Planning Act is limited to Natural Hazards. This responsibility requires the LTVCA to review and provide comments on policy documents (e.g., Official Plans and comprehensive Zoning By-laws) and applications submitted pursuant to the Planning Act in accordance with the Mandatory Programs and Services Regulation.

The LTVCA provides technical support and advisory services to municipalities for planning applications. In this capacity, LTVCA staff provide technical input regarding potential natural hazard impacts and advice about how negative impacts can be avoided or minimized.

In addition, the Planning Act limits conservation authority input on appeal unless it is related to natural hazard policies as outlined in s. 1 (4.1). Regulations under this Act (e.g., O. Reg. 545/06, 543/06 and 200/96) require municipalities to give notice to CAs regarding planning applications and changes to policy documents. The LTVCA may comment on natural hazard matters as outlined in the Conservation Authorities Act and Planning Act. Consistent with its watershed-based resource management strategy, a CA may provide observations which relate to its goals and objectives for watershed management.

One of the main differences between the PPS and the Ontario Regulation 41/24 is that the Planning Act establishes the principle of development and the LTVCA regulation, like a building permit, identifies specific site requirements prior to activities taking place. Prior to the review of a Regulation application, the LTVCA often sees the proposal through its Plan Review process including applications under the Planning Act (e.g., severances, site plan, subdivision applications, etc.) and the Environmental Assessment Act. Although a permit may not be issued for many years after the planning application, the LTVCA needs to ensure during the Planning Act or other legislative review

processes that the requirements under the Regulation process can likely be fulfilled at the time an application under the Regulation is received.

If an application under the Planning Act does not meet the Board-approved LTVCA policies, the LTVCA will work with the municipality and the applicant to modify the application. Potential issues associated with the future issuance of a permit needs to be identified as part of the review of the Planning Act application. If an issue remains unresolved, the LTVCA will not recommend approval of the Planning Act application and has the option of making an appeal to the Ontario Land Tribunal.

Alternatively, it is also recognized that there may be historic planning approval decisions that were made in the absence of current technical information which would now preclude development. In these situations, innovative efforts may be necessary to address the site constraints and accommodate the development or approval may not be granted.

In general, LTVCA Section 28 permit applications which comply with board-approved policies won't be processed until all related planning matters (e.g. zoning, minor variance, etc.) are in place.

1.5.2 Environmental Assessment Act

Through the Mandatory Program and Service Regulation, the LTVCA reviews proposals under the Environmental Assessment Act (EA) for the purpose of commenting on the risks related to natural hazards. Where an EA was approved and the LTVCA was satisfied with the natural hazard evaluation(s) and the preferred alternative in the EA, the LTVCA may consider evaluations completed through this process as part of their review of a permit application. In some cases, the text or recommendations included in the EA may outline additional studies that may be required as part of the final design process.

1.5.2 Drainage Act

The Drainage Act provides a procedure whereby municipalities may, with a valid petition of landowners in the "area requiring drainage" for agricultural practices, provide a legal outlet for surface and subsurface waters not attainable under common law. The municipality is considered the applicant per the Conservation Authorities Act submission. In return, the landowners within the defined drainage watershed can pay for drainage outlet. Provisions for the distribution of future maintenance and repair costs are included as part of the drainage report.

The Ministry of Agriculture, Food and Rural Affairs (OMAFRA) is responsible for the Drainage Act with implementation activities occurring at the municipal level. The LTVCA is provided the opportunity to comment in accordance with notification

requirements outlined in the Drainage Act for certain types of activities. As approval under the Drainage Act does not supersede the Conservation Authorities Act, permission is required from the Conservation Authority for the works (other than those exempt through the Regulation). It is therefore recommended that the appointed Drainage Engineer consult with the Conservation Authority during the preparation of the Drainage Report to ensure the Conservation Authority's concerns are addressed. LTVCA input is guided by the policies in this document.

The Conservation Authority provides comments on both new drainage proposals and drain maintenance (in accordance with approved policies and procedures, and other than those works which are exempt under the Regulation). Under the review process of drainage works, the engineers report and/or drain maintenance forms are viewed as the submission of the 'application' package. All studies, plans and profiles for the works will be required in order for the Conservation Authority to view the submission as complete. If information is missing, the Drainage Superintendent will be contacted and informed of the missing information.

In 2008, the inter-agency Drainage Act & Section 28 Regulations Team (DART) was established by the Ministry of Natural Resources (MNR) and the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) to explore the options and propose solutions to the legal liability issues for municipalities and conservation authorities arising from provisions in the Drainage Act and the Conservation Authorities Act. DART includes representatives from MNR, OMAFRA, Conservation Ontario, conservation authorities, the Drainage Superintendents Association of Ontario, the Ontario Society of Professional Engineers Land Drainage Committee, Ontario Federation of Agriculture, Ontario Farm Environmental Coalition, and the Rural Ontario Municipal Association.

The goal of DART was to develop a means for municipalities and conservation authorities to fulfill their responsibilities under the Drainage Act and Conservation Authorities Act respectively without compromising the intent of either statute. The Team developed a draft Drainage Act and Conservation Authorities Act Protocol. Included in the Protocol is a joint Drain Maintenance or Repair Notification Form which may be used to apply for permissions from conservation authorities, MNDMNRF, and Fisheries and Oceans Canada. After public consultation, the Protocol and Notification Form were approved by the Ministers of Natural Resources and Agriculture, Food and Rural Affairs and are now Provincial policy. These documents are intended for internal use by municipal and conservation authority staff. The LTVCA follows the DART Protocol for municipal drain maintenance and repair. Permits will not be required for specific Drainage Act works as outlined in the Exemptions section of O. Reg. 41/24.

1.5.3 The Clean Water Act

Source water protection planning is a province wide initiative in which the LTVCA participates. Protecting water at the source is the first barrier in a multi-barrier approach in protecting surface and groundwater resources. While the technical work

(Assessment Reports and Source Protection Plan) was developed with extensive support from the local Conservation Authorities, implementation and administration of the Source Protection Plan is the responsibility of the Municipalities. LTCVA staff and the broader Thames-Sydenham & Region Drinking Water Source Protection staff are available for technical support regarding implementation. The plan and associated mapping can be found here: http://www.sourcewaterprotection.on.ca/.

1.5.4 Other Legislation

In addition to the legislation outlined in this document, there are many other pieces of legislation that address various water and related resource management activities. Examples of some of the other key pieces of legislation include:

- Fisheries Act (Fisheries and Oceans Canada);
- Species at Risk Act (Fisheries and Oceans Canada);
- Lakes and Rivers Improvement Act (MNRF);
- Public Lands Act (MNRF);
- Endangered Species Act (MECP)
- Environmental Assessment Act (MECP); and,
- Water Resources Act (MECP).

It is the applicant's responsibility to ensure that they obtain all approvals that may be required for their development activity under other applicable law. Wherever possible, application requirements should be coordinated amongst the various approval agencies to assist the applicant.

1.6 Definitions and Interpretations

The following sections outline the key definitions and interpretations used for implementing the Regulation. Section 28 of the Conservation Authorities Act and the Regulation allows the LTVCA to prohibit or restrict activities as noted above. The Conservation Authorities Act and the Regulations do not provide definitions for many of these terms. Therefore, other relevant documents were reviewed to establish interpretations for those terms not defined in the Conservation Authorities Act and Regulation. It is important to note that where definitions are provided in the Conservation Authorities Act and Regulation these definitions (e.g., "development activity") prevail for the implementation of the Regulation, even if other definitions exist in other relevant documents.

In addition to this section there are definitions of common terms throughout the document and in the Glossary section.

1.6.1 Conservation Authorities Act

Section 28.1.2 (2)) of the Conservation Authorities Act provides the following definition in relation to Mandatory Permits Zoning Orders:

> *Development project" means development activity as defined in subsection 28 (5) or any other act or activity that, without a permit issued under this section or section 28.1, would be prohibited under section 28.*

Therefore 'development activity' is used throughout this document.

1.5.2 Ontario Regulation 41/24

Ontario Regulation 41/24 includes, for the purposes of Section 28 of the Act, the following terms which have the following meanings:

Definitions

1. *(1) In section 28 of the Act and in this Regulation,*

   *"**development activity**" means,*

   (a) the construction, reconstruction, erection or placing of a building or structure of any kind,
   (b) any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure,
   (c) site grading, or
   (d) the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.

   ***"hazardous land"** means land that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock;*

   ***"watercourse"** means a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs;*

   ***"wetland"** means land that,*

   (a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,
   (b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,

(c) has hydric soils, the formation of which has been caused by the presence of abundant water, and

(d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water,

(2) The definition of "wetland" in subsection (1) does not include periodically soaked or wet land used for agricultural purposes which no longer exhibits a wetland characteristic referred to in clause (c) or (d) of that definition.

Although each of the natural hazards included in the 'hazardous land' definition are not included in the definition section of the regulation, the regulated area of some of these terms are included in other sections of the Regulation such as the River and Stream Valley or Shoreline (e.g., flooding, erosion, dynamic beaches).

1.5.3 Provincial Policy Statement

Note: It is recognized that the 2020 Provincial Policy Statement is currently under review (see ERO #019-6813). The definitions referenced below are consistent with both the 2020 PPS and the 2023 consultation document.

The 2020 PPS provides the following definitions:

Erosion Hazard means:

the loss of land, due to human or natural processes, that poses a threat to life and property. The erosion hazard limit is determined using considerations that include the 100 year erosion rate (the average annual rate of recession extended over a one hundred year time span), an allowance for slope stability, and an erosion/erosion access allowance.

Flooding Hazard means:

the inundation, under the conditions specified below, of areas adjacent to a shoreline or a river or stream system and not ordinarily covered by water:

a) Along the shorelines of the Great Lakes - St. Lawrence River System and large inland lakes, the flooding hazard limit is based on the one-hundred year flood level plus an allowance for wave uprush and other water-related hazards;

b) Along river, stream and small inland lake systems, the flooding hazard limit is the greater of:

1) *the flood resulting from the rainfall actually experienced during a major storm such as the Hurricane Hazel storm (1954) or the Timmins storm (1961), transposed over a specific watershed and combined with the local conditions, where evidence suggests that the storm event could have potentially occurred over watersheds in the general area;*

2) *the one-hundred year flood; and,*

3) *a flood which is greater than 1) or 2) which was actually experienced in a particular watershed or portion thereof as a result of ice jams and which has been approved as the standard for that specific area by the Minister of Natural Resources and Forestry; except where the use of the one hundred year flood or the actually experienced event has been approved by the Minister of Natural Resources and Forestry as the standard for a specific watershed (where the past history of flooding supports the lowering of the standard).*

Dynamic Beach Hazard means:

> *areas of inherently unstable accumulations of shoreline sediments along the Great Lakes – St. Lawrence River System and large inland lakes, as identified by provincial standards, as amended from time to time. The dynamic beach hazard limit consists of the flooding hazard limit plus a dynamic beach allowance.*

1.5.4 Additional Definitions and Interpretations

The Conservation Authorities Act and Ontario Regulation 41/24 do not define "Interference" nor has any definition been found in any other technical guide or planning document; hence, the interpretation below was developed by the Ministry of Natural Resources and Forestry and Conservation Ontario for the 2008 version of this document. Under the Regulation, "interference" only applies to projects within watercourses and wetlands.

Interference in any way is interpreted as:

> "any anthropogenic act or instance which hinders, disrupts, degrades or impedes in any way the natural features or hydrologic and ecologic functions of a wetland or watercourse" (March 2008).
>
> The common uses of words in this interpretation are as follows:
>
> **Hinder** means: to delay or impede
> **Disrupt** means: to interrupt or disturb (an activity or process)
> **Degrade** means: lower the character or quality of

Impede means: delay or block the progress or action of

1.5.5 Health or Safety

Conservation Authorities have historically considered the health or safety of people and emergency responders in the evaluation of permits. Typically, this included the evaluation of an application under the 'tests' of flooding, erosion, dynamic beach etc. and may have included other tests that are no longer part of the Conservation Authorities Act (e.g., pollution, conservation of land). In addition to the current tests of: "the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock;" the province has included an additional test of "the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property;" [CA Act S. 28 (1) (a)-(b)]. The latter section reflects the decision of the Court of Appeal for Ontario that confirms CAs consider health or safety and damage or destruction of property in their decisions (Gilmor v. Nottawasaga Valley Conservation Authority).

The sections below outline some factors that address the health and/or safety of people and the potential for damage or destruction of property. These factors will also be considered relative to, and building upon, the sections of this document which speak to specific natural hazards. Currently, there is no legislative or regulatory definition or legal interpretation of the scope of 'health' as it relates to the Conservation Authorities Act.

Health may include the physical health of people such as injury and/or the potential for loss of life/fatality. Under the test of 'health', the LTVCA may consider detrimental social disruption or short- and long-term mental health effects on people in the event of a natural hazard, and the potential for injury to a landowner, future landowner/occupant, or an emergency responder. The potential loss of life is more commonly considered under the 'safety' test but the LTVCA may consider it under 'health' as well. Factors that may be considered include direct impacts (e.g., a fatality due to flooding in a basement or elevator, vehicle submerged in flood waters) or indirect factors (e.g., a fatality due to the inability for emergency responders to reach a person in a medical emergency during a natural hazard).

It is important to note that the LTVCA relies on the best available information at the time of reviewing a permit application. This may include technical studies and plans prepared by a qualified professional and LTVCA staff technical and policy opinions. The final decision is determined when, in the opinion of the LTVCA, they have 'reasonable grounds' to approve, approve with conditions, or recommend refusal of a permit application.

1.5.5.1 Consideration of Access (Ingress/Egress)

The ability for the landowner, future landowners/occupants, public and emergency operations staff (police, firefighters, ambulance, municipal flood response teams etc.) to safely access a site during an emergency, such as a flooding or erosion event, is an important factor when considering any application for development activities. A permit application must be reviewed to ensure access to the proposed development is safe and appropriate for the proposed use. The applicant shall provide to the satisfaction of the CA, studies and/or plans that demonstrate how pedestrians, vehicles, emergency responders and equipment can gain access to and from the regulated feature in the event of a natural hazard. This includes ingress/egress that meets the access standards in these circumstances: during an event, for maintenance or repair, and/or construction of new remedial works.

In the context of new development activities, the risks should be controlled by prohibiting development in potentially dangerous or inaccessible portions of the regulated feature.

For existing development, safety risks are a function of the occupancy of structures, the susceptibility of the structure and the access routes to the structure. For existing development, the following factors should be considered:

- The degree of risk with the use of the existing access;
- The ability to modify the existing private or public access or construct a new safe access;
- The ability to find and use the access during an emergency;
- The ability and willingness of the municipality to allow staff and emergency vehicles to use the access (confirmation in writing may be considered); and,
- The access will be in place prior to the completion of the development activity.

The risk can also be controlled by limiting the size (and therefore limiting the occupancy) of additions or reconstruction projects. If the risk is determined to be too great, no modifications/alterations/reconstructions of existing structures should be considered.

Where applications propose development within areas that have ingress/egress issues, the LTVCA will work with the applicant to ensure that safe access is achieved. Where safe access is not demonstrated or is not possible based on the proposed permit application, the LTVCA will advise the applicant and try to work with the applicant to identify alternative options (if available).

If safe access cannot be ensured to the satisfaction of the LTVCA, the LTVCA may refuse the permit.

The MNRF Technical Guide: River & Stream Systems: Flooding Hazard Limit (2002) and Technical Guide: River &Stream Systems: Erosion Hazard Limit (2002) include further guidance regarding access. Note: CO and CAs have identified the need for clarification and additional technical guidance from the province regarding safe access (ingress/egress).

1.5.5.2 Floodproofing

The PPS provides a definition of floodproofing standard.

> *Floodproofing standard: means the combination of measures incorporated into the basic design and/or construction of buildings, structures, or properties to reduce or eliminate flooding hazards, wave uprush and other water related hazards along the shorelines of the Great Lakes-St. Lawrence River System and large inland lakes and flooding hazards along river, stream and small inland lake systems.*

Floodproofing includes alteration to the design of specific buildings, raising of ingress and egress roadways and driveways, the construction of dykes, flood control channels, etc. The variety of floodproofing options and requirements are too detailed and extensive to include in a policy and procedures guideline. For more guidance, please consult Appendix 6: “Floodproofing” of the “Technical Guide – River and Stream Systems: Flooding Hazard limit” (MNR, 2002a).

The LTVCA “standard” for floodproofing habitable structures (including attached garages) involves dry passive techniques:

1) Raising the ground elevation to a height at or above the regulatory flood datum for a minimum of 2 m around the entirety of the structure.
2) Keeping all openings into the structure at or above the regulatory flood datum.
3) Given the above, basement window sills can be below the regulatory flood datum provided that there is a permanent poured concrete window well (poured at the same time as the main foundation) whose top is set to an elevation at or above the regulatory flood datum and where the window well(s’) drainage utilizes a backflow check valve.

The LTVCA “standard” for floodproofing non-habitable structures (e.g. detached garages, sheds, barns, etc.) involves:

1) All structural building material utilized below the regulatory flood datum must be such that they aren’t susceptible to flood damage (e.g. concrete, steel, pressure treated wood, etc.).
2) All mechanical, electrical, and heating equipment must located at or above the regulatory flood datum. In areas where the regulatory flood datum is 1.5 m or more above the proposed floor elevation of the structure, the mechanical,

electrical and heating equipment can be below the regulatory flood datum but must be at least 1.5 m above the proposed floor elevation of the structure.

1.5.5.3 Internal Renovations

The definition of development in Ontario Regulation 41/24 includes: ... 1. (1) (b) any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure".

Repairs and renovations to an existing building within the existing roofline and exterior walls and above the existing foundation within a hazard area would generally not require a permit of the LTVCA, unless the proposal is associated with a change in use or increases the number of dwelling units (see definition of 'development activity'). When reviewing internal renovation proposals the LTVCA will need to consider other changes that may be associated with an internal renovation e.g., upgrades or replacement of a septic system, new openings for doors or windows etc. These additional activities may meet the definition of development activity and may be considered under the health or safety tests (e.g., increase to the risk of injury or fatalities, social disruption, or result in damages from the hazard).

1.5.6 Cumulative Impacts

The LTVCA review of permit applications and the assessment of impacts will include the potential for cumulative impacts of applications in the watershed or drainage system. Where necessary, the LTVCA may restrict development that may, singularly or cumulatively, affect the natural hazards or impact other properties. Examples of cumulative impact are: development activities that restrict riverine channel capacities to pass flood flows or reduce storage capacity in floodplains and wetlands resulting in increased flood levels and creation of a potential danger to upstream and downstream landowners, and alterations to shorelines and watercourses to address erosion that may disrupt the channel or shoreline natural processes for erosion and deposition of material.

1.6 Provincial Perspective on Natural Hazards

The Ministry of Natural Resources and Forestry (MNRF) is responsible for natural hazard management in Ontario. Where CAs have been established, the responsibility for natural hazard management has been delegated to them as outlined in the Conservation Authorities Act and associated Regulations. The Province, however, continues to provide the overall direction, guidance and technical standards with respect to natural hazard management. The following is an executive summary of the Province's approach to natural hazard management in Ontario (Understanding Natural Hazards, 2001).

> *Natural, physical environmental processes that occur near or at the surface of the earth can produce unexpected events of unusual magnitude or severity. Such occurrences are generally regarded as natural hazards. The outcome can be catastrophic, frequently resulting in damage to property, injury to humans and other organisms, and tragically even loss of life. In these cases, natural hazards are considered natural disasters.*
> (Excerpt from MNR (2001) – p. 4)

The management of natural hazards involves a combination of four main program components:

1. Prevention – of new development locating within areas subject to loss of life and property damage from natural hazards; and
2. Protection – of existing development from natural hazards through the application of structural and non-structural measures/acquisition; and
3. Emergency Response – to evacuate and mitigate existing residents through flood forecasting and warning including disaster relief; and
4. Co-ordination – between natural hazard management and planning and development.

Details related to natural hazard management applications are contained in the Natural Hazards Technical Guides (MNR, 2002a; MNR, 2002b; MNR, 1996a; MNR, 1996b; and MNR 1996c).

There are two reports that provide an overview of the perspective of the Province on flooding, one of the natural hazards. In 2019 the Province released “Protecting people and property: Ontario’s flooding strategy” (Flooding Strategy). Prior to this strategy, they released a commissioned report “Ontario’s Special Advisor on Flooding Report to Government An Independent Review of the 2019 Flood Events in Ontario” which also provides an overview of the provincial perspective on flooding hazards (see Chapter 5). Although these reports are focused on flooding hazards in general, the principles may be considered for other natural hazards.

1.6.1 Ontario’s Flooding Strategy

The flooding strategy includes the following provincial goals, priorities and objectives. As noted above, these are focused on flooding, however they generally align with CA regulation of activities in all natural hazards. It’s important to note that CAs are focused on the hazard areas and environmental damage is limited to the scope of the Conservation Authorities Act and Ontario Regulation 41/24. The key areas that align well are shown using *italic font* below.

Goals

1) Increase public health and safety;

2) *Reduce property* and environmental *damage;*
3) Reduce economic losses;
4) Reduce social disruption;
5) Reduce public and private expenditures; and,
6) Reduce critical infrastructure disruption

Priorities

1) Understand flood risks;
2) Strengthen governance of flood risks;
3) Enhance flood preparedness;
4) Enhance flood response and recovery; and,
5) Invest in flood risk reduction.

Objectives

1) Keeping people and property out of high-risk areas and not creating new, or aggravating existing, flood risks;
2) Reducing the impacts of flooding on existing communities;
3) Ensuring Ontarians are aware of flood risks and are taking steps to prepare for them;
4) Ensuring efficient and effective services are in place to respond to flood-related emergencies when they occur; and,
5) Ensuring Ontarians impacted by flooding can get back on their feet as soon as possible.

The Strategy also includes an info-graphic on the core components of emergency management which outlines the CA role in mitigation:

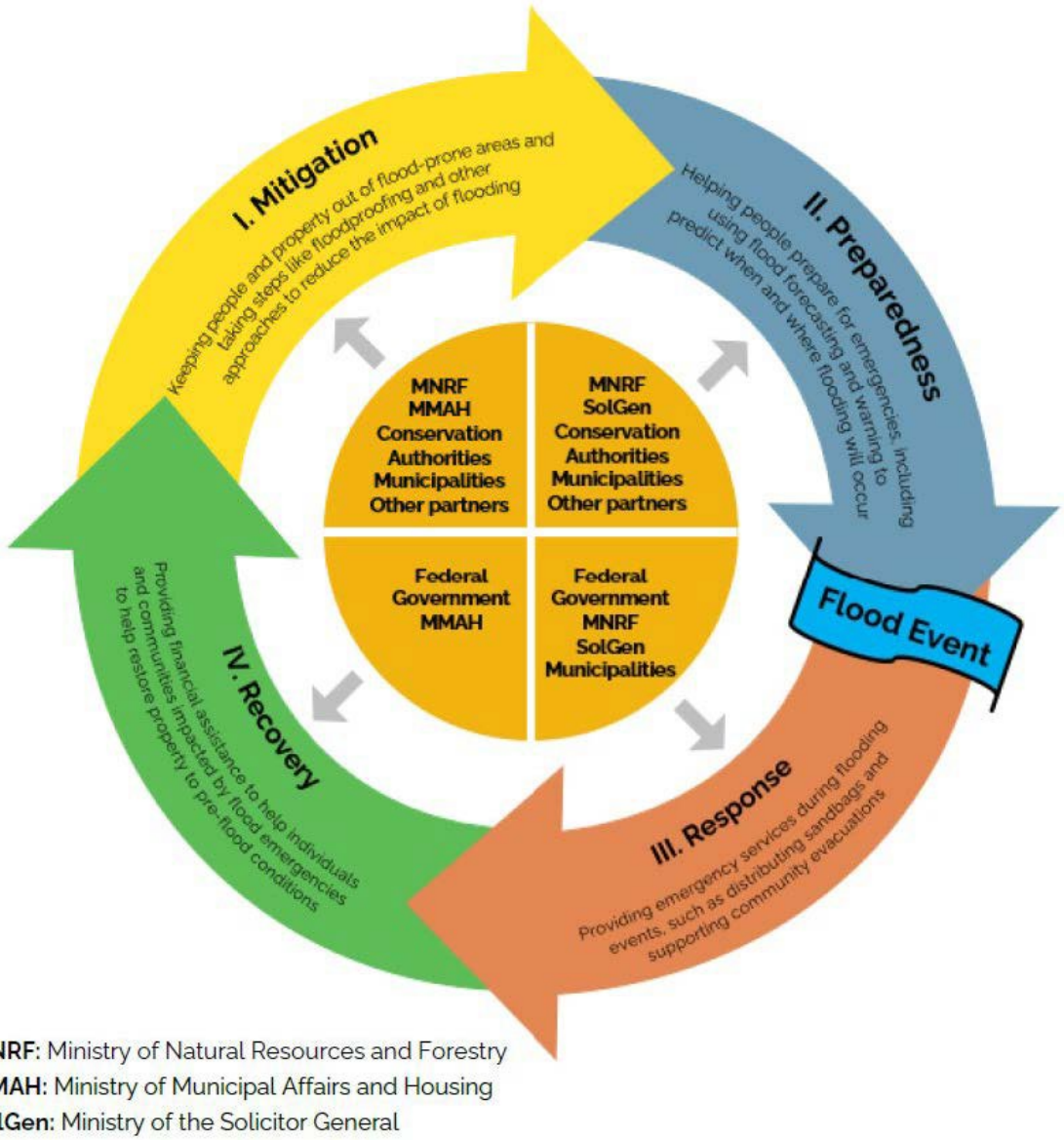

Figure 4: Core Components of Emergency Management

1.6.2 Climate Change

The Ontario's Flooding Strategy, Priority # 2 - Strengthen Governance of Flood Risks, includes an activity to update existing (provincial) technical guidelines (see page 21). Conservation Ontario and CAs have provided input to the province that the series of technical guidelines for natural hazards should be updated, and it's anticipated any update would include information regarding the impacts of climate change and guidance on the provincial approach to address this significant issue. When the updated guidelines or bulletins are completed for each natural hazard, they will inform CA policies and technical review of permits in relation to climate change. Individual CAs

may also develop policies and technical criteria for the review of a permit to address climate change considerations.

1.6.3 Ontario's Special Advisor on Flooding Report

Chapter 5 of the Special Advisor report outlines in more detail Ontario's approach to managing flood risk. The section below is an excerpt from this report and CA staff should review the text in the original document. Note: the original report Section numbers have been removed. An important element of this report is the inclusion of 'Prevention' in managing flood risks: This report includes the following information:

"Ontario's current approach to managing risks associated with flooding is based on the five core components of emergency management: 1) Prevention; 2) Mitigation; 3) Preparedness; 4) Response; and 5) Recovery. Management is achieved through the use of a series of provincial acts, regulations, policies and technical guides that are implemented through partnerships with a number of provincial ministries, municipalities, First Nations and conservation authorities.

The objectives with this approach are to save lives and money, protect property, public health and the environment, maintain economic stability, help assure the continuance of critical infrastructure, and reduce social disruption associated with emergencies.

Prevention

Prevention includes actions taken to prevent flood-related emergencies or disasters from occurring, and includes land use planning and regulatory restrictions to keep development out of the floodplains and other hazardous areas. While we cannot prevent flooding from occurring, keeping people and property out of flood-prone areas helps ensure naturally occurring flood events do not result in local emergencies.

As an overall principle for flood management, the MNRF prioritizes the use of non-structural and land use planning measures as its preferred approach to manage flood risks. This includes the identification of hazardous areas, including floodplains. Municipalities can then plan to prohibit/limit activities, including development, in these areas. The main legislative tools used to support this approach include the Planning Act together with the Provincial Policy Statement and the Conservation Authorities Act.

Mitigation

Mitigation includes actions taken to reduce the effects of flooding, and includes the use of structural measures and floodproofing standards to protect development. Structural measures can include dams, dikes, channels, diversions and other flood control works. Floodproofing standards can include a combination of measures incorporated into the basic design and/or construction of buildings, structures or properties to reduce or

eliminate flooding hazards, wave uprush and other water-related hazards. Examples include constructing the lowest occupancy floor of dwellings, water shut off and electrical control panel above the design flood level and having water resistant electrical systems.

Preparedness

Preparedness includes the use of flood forecasting and warning to assess the potential for flooding, predict when and where flooding will occur, and help ensure an effective response (e.g. any required evacuations or mitigative activities).

The Province conducts flood forecasting and warning via the MNRF's Surface Water Monitoring Centre, which monitors weather, rainfall and stream flows, and provides advisories and a suite of products and tools (e.g., weather panels, snow survey reports) to conservation authorities (CAs), municipalities and MNRF district offices on flood potential. The monitoring of flood conditions occurs seven days a week, and the Province is able to contact CAs and other stakeholders immediately with updates.

Local scale flood forecasting and warning is provided by MNRF district offices and conservation authorities. Many of the CAs conduct more detailed flood forecasting and warning for their respective jurisdictions.

Response

Response includes actions taken to respond to flood emergency, such as the use of emergency services (e.g. providing sandbags, community evacuations, etc.) to protect people and property during flood events. Response can also include training for emergency response staff and meeting with stakeholders/partners to ensure an effective response. It also includes providing logistical support and social and health services.

The Emergency Management and Civil Protection Act (EMCPA) establishes Ontario's legal basis and framework for managing emergencies (see Section 5.2.4 of the Ontario's Special Advisor on Flooding Report). It does this by defining the authority, responsibilities and safeguards accorded to provincial ministries, municipalities and specific individual appointments, such as the Commissioner of Emergency Management.

Recovery

Recovery includes actions taken to recover from a flood emergency, such as the use of disaster financial assistance to restore property to pre-flood conditions.

Provincially, financial assistance is delivered through two programs—the Disaster Recovery Assistance for Ontarians (DRAO) program for homeowners, tenants, small owner-operator businesses and farms, and not-for-profit organizations; and the

Municipal Disaster Recovery Assistance (MDRA) program for municipalities. These programs provide funds for eligible expenses following a natural disaster to help Ontarians and municipalities recover from extraordinary costs. …"

Acts, Regulations, Policies and Technical Guides

"Ontario's preventative approach of directing development away from floodplains and other hazardous areas is highly effective in preventing property damage." Property damage associated with the same storm event are often exponentially lower in Ontario than they are in Great Lakes states, with the differences in losses primarily attributed to differences in floodplain management policies and approaches.

Provincial policies have been shown to reduce capital and operating costs associated with managing flooding and other natural hazards, reducing pressure on provincial and municipal infrastructure debts. The existing policies have been estimated to reduce costs associated with ongoing flood and natural hazard management, including costs associated with the operation and maintenance of flood and erosion control infrastructure by 20 to 80% depending on differences in urban density and property values.

These policies have been credited with keeping losses associated with flooding in Ontario lower than losses seen in other Canadian provinces. Responsibility for keeping development out of floodplains is a shared responsibility between municipalities (enforced through municipal planning) and Conservation Authorities (enforced through the CA Act and regulations made under ss. 40(4) of the CA Act).

These policies will be increasingly valuable in protecting Ontarians from flooding and other natural hazards. Losses associated with flooding and other natural hazards continue to increase because of increasing property values and income levels, urbanization, ongoing loss of wetlands and other green infrastructure, and the increasing frequency and intensity of extreme rainfall events. As these losses rise, so does the value of Ontario's floodplain and broader hazard management policies. …"

"These [CA] regulations are a critical component of Ontario's broader natural hazard management framework and are designed to achieve the following policy objectives:

- Preventing loss of life, minimizing property damage and social disruption;
- Reducing public and private expenditure for emergency operation, evacuation, restoration and protection measures;
- Regulating development which, singularly or collectively, impact upon existing flood levels, and increasing potential risks to upstream and downstream landowners;
- Control interference with natural storage areas such as wetlands;
- Conserving land through the control of development on existing or potentially unstable valley slopes or shoreline bluffs; and

- Controlling development impacts as they relate to pollution (including erosion & sedimentation) or other degradation of existing and water resources, including groundwater."

The provincial natural hazards technical guides available on the Conservation Ontario Section 28 program webpage includes, but is not limited to, the following documents:

a) Understanding Natural Hazards (2001), which provides the planning concepts to address natural hazards.
b) Technical Guide – River & Stream Systems: Flooding Hazard Limit (2002), which documents standardized approaches to manage flood susceptible lands across the province. It outlines the three flood event standards used in Ontario and outlines hydrologic and hydraulic work needed to conduct floodplain analysis and delineate flood-prone areas.
c) Procedures for Approval of New Special Policy Areas (SPAs) and Modifications to Existing SPAs Under the Provincial Policy Statement, 2005 (PPS, 2005), Policy 3.1.3 – Natural Hazards – Special Policy Areas. The procedural document that supersedes and replaces the information in Part B of Appendix 5 of the Technical Guide – River & Streams: Flooding Hazard Limit (2002).
d) Technical Guide – River & Stream Systems: Erosion Hazard Limit (2002) which has the purpose of providing a consistent and standardized procedure for the identification and management of riverine erosion hazards in Ontario.
e) Great Lakes-St. Lawrence River Shorelines: Flooding, Erosion and Dynamic Beaches (2001), which focuses on documenting standardized approaches to shoreline management and land use planning and management to address shoreline flooding, erosion and dynamic beaches, with a focus on the need to better understand the system, particularly its formation, evolution and potential impacts.
f) Technical Guide for Large Inland Lakes Shorelines: Flooding, Erosion and Dynamic Beaches (1996), which addresses effective shoreline management and land use management approach for addressing shoreline natural hazards.
g) Hazardous Sites – Technical Guide (1996), which provides technical support in identifying areas of unstable soils, including sensitive marine clays and organic soils as well as unstable bedrock, including karst bedrock.

1.7 Principles of Natural Hazard Management

The guiding principles behind natural hazard management are:

- Proper natural hazard management requires that natural hazards (flooding, erosion, leda clay, organic soils, karst bedrock, dynamic beaches) be simultaneously recognized and addressed in a manner that is integrated with land use planning and maintains environmental and ecosystem integrity;

- Effective floodplain management can only occur on a watershed and littoral reach basis with due consideration given to development effects and associated environmental and ecosystem impacts;

- Local conditions vary along floodplains and shorelines including depth, velocity, littoral drift, seiche, fetch, accretion, deposition, valleyland characteristics etc. and accordingly must be taken into account in the planning and management of natural hazards;

- New development which is susceptible to natural hazards or which will cause or aggravate the hazards to existing and approved land uses or which will cause adverse environmental impacts must not be permitted to occur unless the natural hazard and environmental impacts have been addressed; and,

- Natural hazard management and land use planning are distinct yet related activities that require overall co-ordination on the part of Municipalities, CAs, the Ministry of Natural Resources and Forestry and the Ministry of Municipal Affairs and Housing.

2.0 RIVER OR STREAM VALLEYS

The current legislative structure embeds requirements for administration of s. 28 in both the Conservation Authorities Act and Ontario Regulation 41/24.

2.1 Conservation Authorities Act – River or Stream Valleys

The CA Act contains the following sections dealing with river or stream valleys:

> ***Activities prohibited (Prohibited activities re watercourses, wetlands, etc.)***
>
> ***28*** *(1) No person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority: …*
>
> > *2. Development activities in areas that are within the authority's area of jurisdiction and are, …*
> >
> > *iii. river or stream valleys the limits of which shall be determined in accordance with the regulations, …"*
>
> ***Permits***
>
> ***28.1*** *(1) An Authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by s. 28, if, in the opinion of the authority,*
>
> > *a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and*
> > *b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; …*

The permit shall be given in writing, with or without conditions.

2.2 Ontario Regulation 41/24 – River or Stream Valleys

The following section identifies how the extent of river or stream valleys are determined for the purpose of administering the Regulation. Inland lakes that do not meet the definition of a "large inland lake" (a waterbody that has a surface area equal to or greater than 100 square kilometers where there is no measurable or predictable response to a single runoff event) should be treated in a manner similar to a river or stream valley. The Regulation contains the following sections dealing with river or stream valleys.

Prohibited activities, subparagraph 2 of ss. 28 (1) of the Act

2*. (1) For the purposes of subparagraph 2 iii of subsection 28 (1) of the Act, river or stream valleys include river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse, the limits are determined as follows:*

1. *where the river or stream valley is apparent and has stable slopes, the valley extends from the stable top of bank, plus 15 metres, to a similar point on the opposite side,*

2. *where the river or stream valley is apparent and has unstable slopes, the valley extends from the predicted long term stable slope projected from the existing stable slope or, if the toe of the slope is unstable, from the predicted location of the toe of the slope as a result of stream erosion over a projected 100-year period, plus 15 metres, to a similar point on the opposite side,*

3. *Where the river or stream valley is not apparent, the valley extends,*

   (i) to the furthest of the following distances:
   A. the distance from a point outside the edge of the maximum extent of the flood plain under the applicable flood event standard to a similar point on the opposite side; and
   B. the distance from the predicted meander belt of a watercourse, expanded as required to convey the flood flows under the applicable flood event standard to a similar point on the opposite side; and

   (ii) an allowance of 15 metres on each side, except in areas under the jurisdiction of the Niagara Peninsula Conservation Authority.

Schedule 1: Flood Event Standards

13. For the Lower Thames Valley Conservation Authority, the applicable flood event standards are those specified in Table 13 below:

Item	*Areas*	*Applicable Flood Event Standards*
1.	*All areas*	*The 1937 Regulatory Flood Event Standard and the 100-year flood level plus wave uprush*

Schedule 2: Description of Standards

7. The 1937 Regulatory Flood Event Standard means the historical observed 1937 flood on the Thames River. This event is equivalent to a flow of 1,540 cubic metres per second (cms) commencing at Delaware and proportionately reducing until 1,160 cms at Thamesville and 1,125 cms at Chatham. The 1937 flood event is estimated to be equivalent to a 1 in 250-year return flood.

Permits

The Authority may grant a permit for development activity in or on a river or stream valley subject to the tests or criteria in the Conservation Authorities Act. The permit from the Authority shall be given in writing, with or without conditions.

2.3 Additional Definitions

The following section outlines additional definitions to those previously defined in this document.

To define the Regulation Limits for river and stream valleys, it is important to understand the landforms through which they flow. While there are many different types of systems, the application of the Regulation Limit for rivers and stream systems is based on two simplified landforms, as explained in the Technical Guides for River and Stream Systems (MNR, 2002a; and MNR, 2002b):

> ***Apparent[2] (confined) river and stream valleys****: are ones in which the physical presence of a valley corridor containing a river or stream channel, which may or may not contain flowing water, is visibly discernible (i.e. valley walls are clearly definable) from the surrounding landscape by either field investigations, aerial photography and/or map interpretation. The location of the river or stream channel may be located at the base of the valley slope, in close proximity to the toe of the valley slope (i.e. within 15 metres), or removed from the toe of the valley slope (i.e. greater than 15 metres)."*
>
> ***Not Apparent (unconfined) river and stream valleys:*** *are ones in which a river or stream is present but there is no discernible valley slope or bank that can be detected from the surrounding landscape. For the most part, unconfined systems are found in fairly flat or gently rolling landscapes and may be located within the headwater areas of drainage basins. The river or stream channels contain either perennial (i.e., year round) or ephemeral (i.e. seasonal or intermittent) flow and range in channel configuration from seepage and natural channels to detectable channels.*

Development associated with existing uses in river or stream valleys such as non-habitable structures and minor additions to existing buildings or structures is often

[2] The LTVCA Regulation describes river or stream valleys as "apparent" and "not apparent". Provincial Technical Guides utilize the terminology "confined" and "unconfined", respectively.

differentiated from new development to allow landowners to maintain, and to a limited extent, improve their properties.

2.4 Discussion of River or Stream Valleys

To provide guidance in regulating river and stream valleys, it is necessary to highlight their hydrological functions.

2.4.1 Processes and Functions of River or Stream Valleys

River or stream valleys are shaped and re-shaped by the natural processes of erosion, slope stability and flooding. Erosion and slope stability are two natural processes that are quite different in nature yet often linked together. Erosion is essentially the continual loss of earth material (i.e. soil or sediment) over time as a result of the influence of water or wind. Slope stability, usually described in terms of the potential for slope failure, refers to a mass movement of earth material, or soil, sliding down a bank or slope face as a result of a single event in time.

The degree and frequency with which the physical change will occur in these systems depends on the interaction of a number of interrelated factors including hydraulic flow, channel configuration, sediment load in the system, storage and recharge functions, and the stability of banks, bed and adjacent slopes. The constant shaping and re-shaping of the river and stream systems by the physical processes results in hazardous conditions which pose a risk to life and cause property damages.

Erosion hazards pose a threat to life and property through the loss of land due to human or natural processes. The erosion hazard limit is determined using the 100 year erosion rate (the average annual rate of recession extended over a hundred year time span), and includes allowances for toe erosion, meander belt, and slope stability. The erosion hazard component of river and stream systems is intended to address both erosion potential of the actual river and stream bank, as well as erosion or potential slope stability issues related to valley walls.

Flooding of river or stream systems typically occurs following the spring freshet and may occur again as a result of extreme rainfall events. Rivers naturally accommodate flooding within their valleys. Historically, development occurred in floodplain areas because of the availability of water for power, transportation, energy, waste assimilation, and domestic and industrial consumption. However, floodplain development is susceptible to flooding which can result in property damage and/or loss of life.

In Ontario, either storm-centred events, observed events, or a flood frequency based event may be used to determine the extent of the Regulatory floodplain, as prescribed in the Regulation.

River or stream systems may contain lands that are not subject to flooding or erosion. Examples of these non-hazardous lands include isolated flat plateau areas or areas of gentle slopes (see Figure 6). In these situations, the LTVCA shall determine the applicability of the Regulation. High points of land not subject to flooding but surrounded by floodplain or "flooded land" are considered to be within the flood hazard and part of the regulated floodplain.

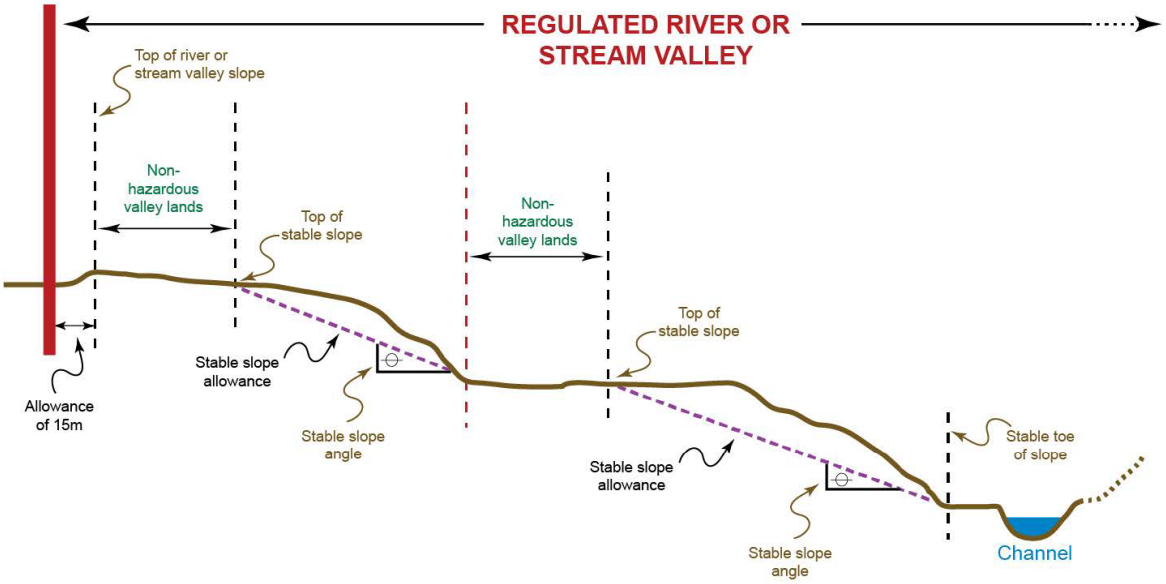

Figure 5: Regulated River or Stream Valley (containing non-hazardous valley lands)

Although the regulation is focused on natural hazards, river and stream systems also provide physical, biological and chemical support functions for sustaining ecosystems. These functions are directly associated with the physical processes of discharge, erosion, deposition and transport which are inherent in any river and stream system. The interplay between surface and ground water and the linkages, interactions and inter-dependence of aquatic environments with terrestrial environments supply hydrologic and ecological functions critical to sustaining watershed ecosystems.

2.4.2 Defining River or Stream Valleys

The limit of the river or stream valley is the furthest extent of the erosion hazard or flooding hazard plus a 15 m allowance. The following sections describe how the various components of a river or stream valley are determined.

2.4.2.1 Erosion Hazard

For the purpose of defining the regulated area, the extent of the erosion hazard is based on whether or not a valley is apparent (confined) or not apparent (unconfined) and whether or not the valley slopes are stable, unstable, and/or subject to toe erosion.

Apparent (Confined) River or Stream Valley where the valley slopes are stable and not subject to the potential of toe erosion for the next 100 years (see Figure 7):

The Regulation Limit associated with the erosion hazard consists of:

- the river or stream valley extending to the stable top of slope; and,
- an allowance of 15 m measured from the stable top of slope.

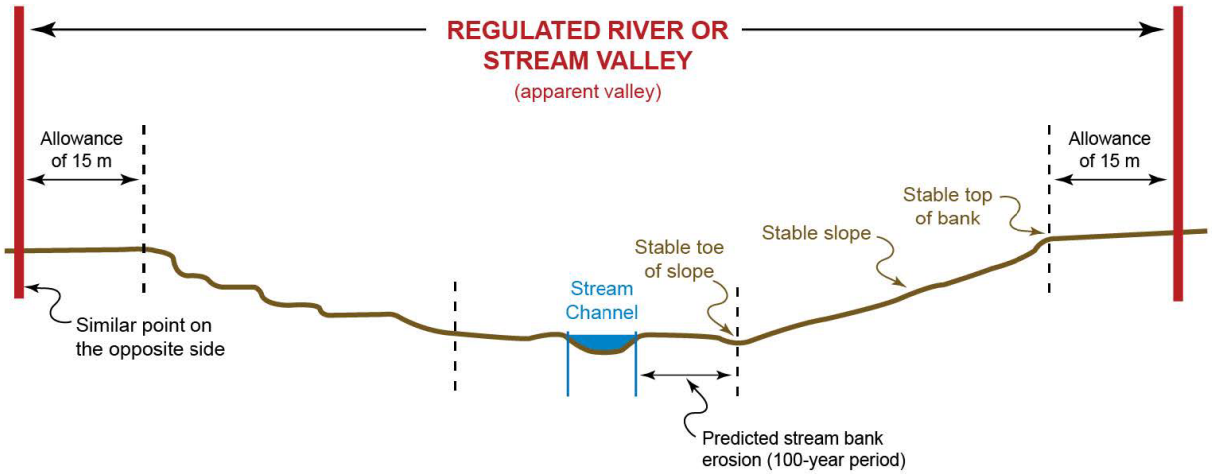

Figure 6: Apparent River or Stream Valley (with stable slopes and stable toe)

Apparent (Confined) River or Stream Valley associated with unstable slopes and a stable toe (not subject to the potential of toe erosion for the next 100 years) (see Figure 8):

The Regulation Limit associated with the erosion hazard consists of:

- the river or stream valley including the predicted long term stable slope projected from the existing stable toe of slope; and,
- an allowance of 15 m measured from the stable top of slope.

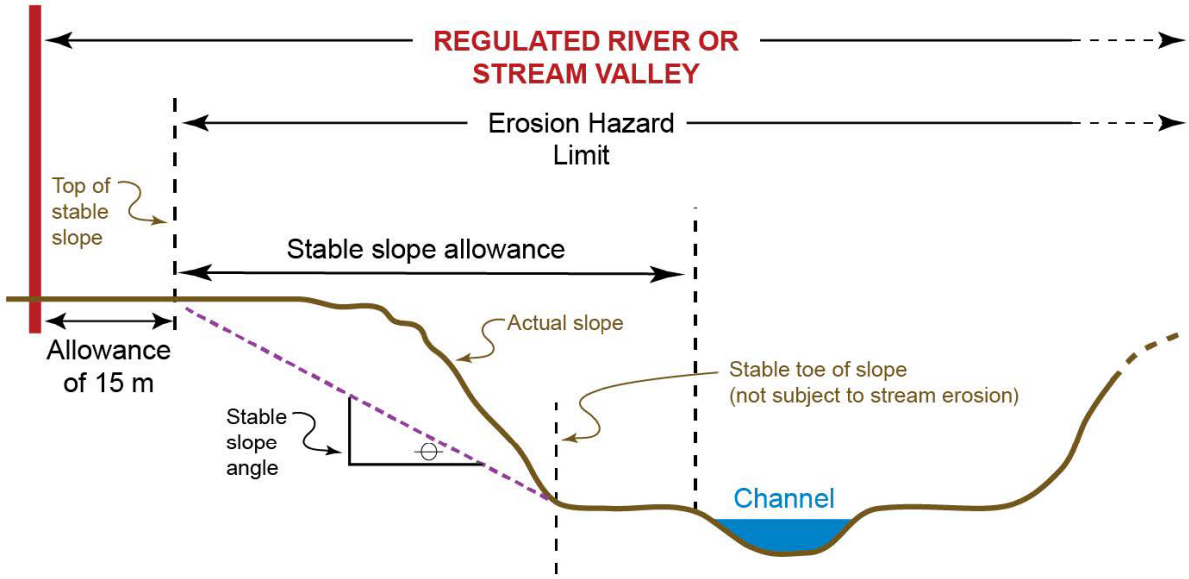

Figure 7: Apparent River or Stream Valley (with unstable slopes and stable toe)

Apparent (Confined) River or Stream Valley with unstable slopes and active (or the potential to be active in the next 100 years) toe erosion (see Figure 9):

The Regulation Limit associated with the erosion hazard consists of:

- the river or stream valley including the long term stable slope projected from the predicted stable toe of slope (considering a planning horizon of 100 years); and,
- an allowance of 15 m from the stable top of slope.

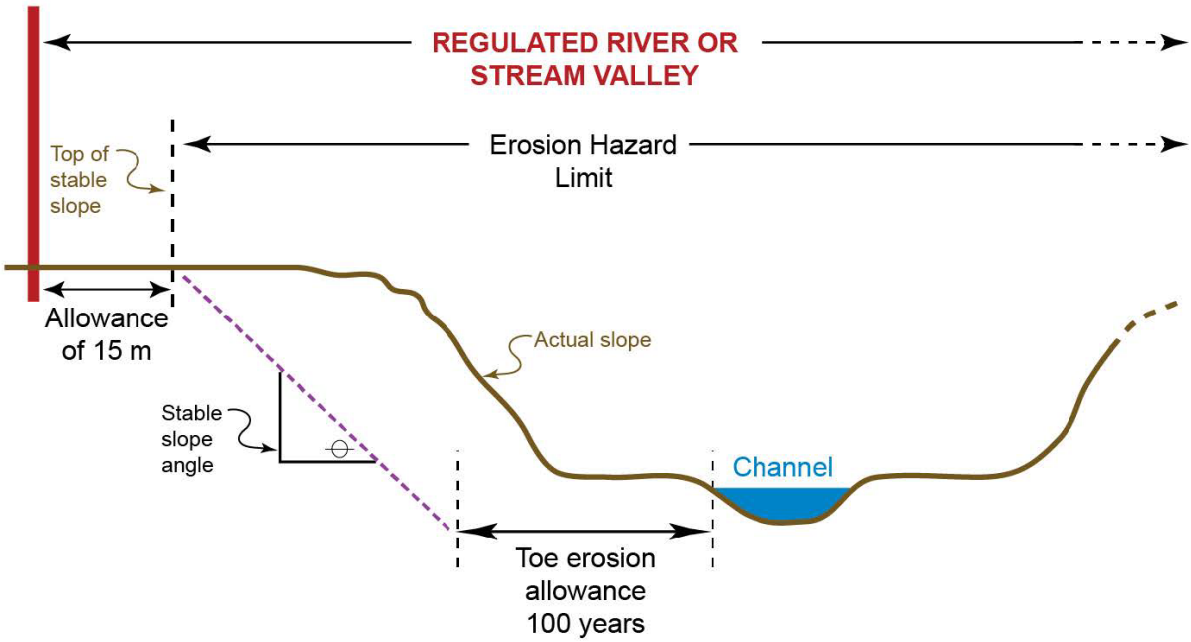

Figure 8: Apparent River or Stream Valley (with unstable slopes and toe erosion)

Not Apparent (Unconfined) River or Stream Valley (see Figure 10):

The Regulation Limit associated with the erosion hazard consists of[3]:

- the maximum extent of the predicted meander belt of the river or stream; and,
- an allowance of 15 m from the edge of the predicted meander belt.

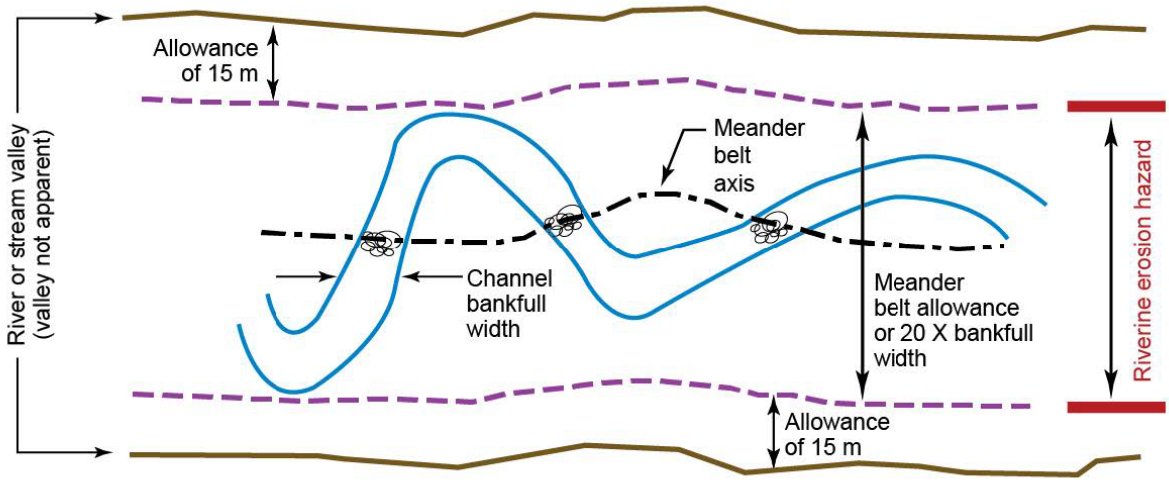

Figure 9: Not Apparent River or Stream Valley (Meander Belt)

2.4.2.2 Technical Analysis for Erosion Hazards

Frequently, technical analysis is required to determine the appropriate toe erosion, slope stability, and meander belt allowances. Technical studies should be carried out by a qualified professional with recognized expertise in the appropriate discipline and should be prepared using established procedures and recognized methodologies to the satisfaction of the LTVCA. With respect to riverine erosion hazards, technical studies should be in keeping with the Technical Guide – River and Stream Systems: Erosion Hazard Limit, (MNR, 2002b) and must demonstrate that there is no increased risk to life or property.

The Technical Guide provides four methods of determining the toe erosion allowance. The technical guide also states that toe erosion rates are best determined through long-term measurements and that a minimum of 25 years of data is recommended for erosion assessment rates. Sections 3.0, 3.1, 4.1, and 4.3 of the Technical Guide are particularly relevant in this regard. It is essential that qualified professionals properly

[3] In river or stream valleys that are not apparent (unconfined), the regulated area is the greater of the maximum extent of the Regulatory floodplain or the maximum extent of the predicted meander belt plus an allowance not to exceed 15 metres.

characterize the watercourse in question to identify what processes are occurring. For channels where processes indicative of instability, such as downcutting, are identified, very detailed fluvial geomorphic analyses would likely be required to predict erosion rates. As well, watercourses in catchments experiencing rapid land use change where the sediment and hydrologic regimes are changing could be experiencing erosion rates that are shifting in response, and that rate of change may not be quantifiable without significant detailed analysis.

Sections 3.0, 3.2, 4.1, and 4.3 of the Technical Guide provide important direction with respect slope stability analysis. Slope stability analysis should also be undertaken in accordance with the Geotechnical Principles for Stable Slopes (Terraprobe Limited and Aqua Solutions, 1998). Recognized analytical methods should be utilized. An appropriate Factor of Safety should be incorporated into all designs/analysis based on the consequences or risks to land use or life in the event of a slope failure. Recommended minimum Factors of Safety are provided in the Technical Guide based on land use above or below the slope (Table 4.3, Page 60, Technical Guide – River and Stream Systems: Erosion Hazard Limit (MNR, 2002b)). These Factors of Safety should also be increased when necessary to account for the reliability of the information available for the technical analysis due to aspects such as natural soil variability in the subject area, limited site work due to constraints, etc.

The determination of the appropriate meander belt allowance usually involves a wide range of study areas such as geomorphology, engineering, ecology and biology. The existing and the ultimate configuration of the channel in the future must be considered. Due to the challenges in assessing meander belt widths, more than one method of determining the meander belt width may be required for any given application. Sections 3.0, 3.3 and 4.4 of the Technical Guide and the supporting documentation entitled “Belt Width Delineation Procedures” (Prent and Parish, 2001) provide further details.

Within not apparent valleys, there may be on occasion areas within the meander belt allowance that are not actually susceptible to erosion within a 100 year planning horizon. These areas may arise for a variety of reasons such as, but not limited to, soil type, hydraulic regime changes, implementation of publicly owned erosion protection works, etc. In these areas, some development, particularly development associated with existing uses, may be considered as the development would not be susceptible to actual stream erosion over the 100 year planning horizon (assuming that the lands are not subject to a flooding hazard and related policies).

When assessing an application for development within any type of valley system, consideration must be given to the ability for the public and emergency operations personnel to safely access through the valley system for emergency purposes, regular maintenance to existing structures or to repair failed structures.

2.4.2.3 Flooding Hazard

The Regulatory floodplain for river or stream valley systems is defined as the area adjacent to the watercourse which would be inundated by a flood event resulting from the greater of Hurricane Hazel, the Timmins Storm, an observed event, or by the 100 year frequency based event.

The LTVCA has adopted an observed event flood standard for the Thames River. The regulatory free flow flood event is based off of a historical event that occurred in April of 1937 in the Thames River system. This event is defined in the Regulation based on the following flows which decrease linearly down the system:

Location	Flow (cms)
Delaware	1,540
Thamesville	1,160
Chatham	1,125

In the area downstream of Chatham, which is protected by a series of dykes, the regulatory flood event for the Thames River is based on historic ice jam flooding.

For creeks, streams and watercourses other than the main channel of the Thames River, the regulatory flood event is a 1:250 year event where the probability of occurrence in any given year is 0.4%.

The regulated area includes the floodplain and, for non-apparent valley systems, an allowance of 15 m beyond the floodplain (Figure 11).

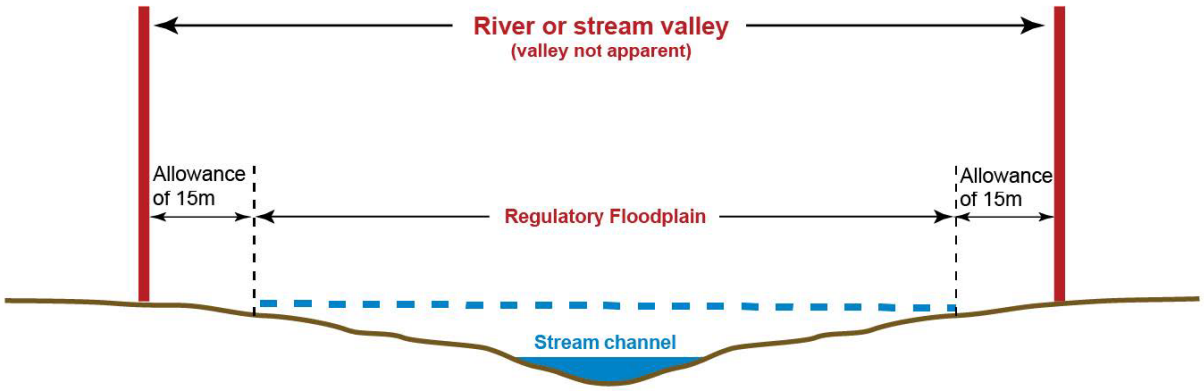

Figure 10: Regulated Area of Floodplain for a Not Apparent Valley

Within the LTVCA, a 0.3 m increase in elevation (*freeboard*) is added to the calculated or historical flood level to produce the minimum *flood proofing* elevation required in all areas identified as flood prone (with the exception of defined areas in the Chatham Special Policy Area where the freeboard is 0.1 m above the flood elevation). This provides protection from vehicle/boat generated waves and effects of ice jamming; maintains floor joists above the known flood level; and ensures that *development* is protected and is not negatively impacted on by flooding.

The LTVCA considers the threshold for Provincial Interest flooding to be a 125 hectare *drainage area*. In this regard, the policies for Watercourse Flood Hazards that are discussed in this Manual are generally only applied to those cases where the *drainage area* of the *watershed* exceeds 125 hectares. Flooding from smaller *drainage areas* is generally considered to be a localized drainage issue and the management of these areas is left to the local municipalities. It should be noted that no minimum *drainage area* is applied to *erosion* hazards, watercourse interferences, or *wetlands*.

Within Ontario, there are three policy concepts for floodplain management: One Zone, Two Zone, and Special Policy Area (SPA). In most river or stream valleys in Ontario, a One Zone concept is applied. This area encompasses the entire floodplain.

For areas adjacent to existing urban or built-up areas, where it can be demonstrated by the municipality that the One Zone approach is too restrictive, selective application of the Two Zone concept may be considered. The municipality and CA must agree to this approach and the MNRF Regional Engineer or equivalent role at the MNRF Resources Planning and Development Policy Branch (Peterborough) must be consulted. Development may be permitted within those portions of the floodplain where the depths and velocities of flooding are low (flood fringe) and provincial floodproofing and access standards can be met.

Where the One Zone or Two Zone approaches have been demonstrated to be too stringent and would likely cause significant social and economic hardships to the community, SPAs may be considered. Where an SPA is applied, the municipality, CA, and the Province of Ontario (MNRF and MMAH) must agree to relax provincial floodproofing and technical standards and accept a higher level of risk. SPA application is generally limited to areas of historic development that qualify on the basis of community and technical criteria. Two Zone and SPA concepts are discussed in more detail in Appendix 4 and 5 in the MNRF Technical Guide: River and Streams Systems: Flooding Hazard Limit (2002).

The LTVCA's watershed contains two communities which are partially covered by Special Policy Areas. Those communities include the City of Chatham and the Village of Thamesville, each within the Municipality of Chatham-Kent. The LTVCA currently practices a two zone approach for the Thames River, McGregor Creek, and Indian Creek in the Municipality of Chatham-Kent as well as Big Creek in the Municipality of Leamington. For all other areas of the Thames River and all other watercourses, the LTVCA utilizes a one zone approach. The LTVCA aims to have proper two zone designations, where desirable, in the future.

2.4.2.4 Technical Analysis for the Flooding Hazard

The ability for the public and emergency operations personnel (police, firefighters, ambulance etc.) to safely access the floodplain during regulatory flood events is a paramount consideration in any application for development within the riverine

floodplain. Ingress and egress should be "safe" pursuant to Provincial floodproofing guidelines (MNR, 2002a). Depths and velocities should be such that pedestrian and vehicular emergency evacuations are possible. For minor additions and re-development on existing lots as a minimum, access should achieve the maximum level of flood protection determined to be feasible and practical based on existing infrastructure.

In the absence of a site-specific detailed analysis, it is recommended that the depths for safe access not exceed 0.3 m and velocities not exceed 1.7 m/s consistent with the Provincial Technical Guide.

Safety risks are a function of the occupancy of structures as well as the flood susceptibility of the structures and the access routes to those structures. Risk should be controlled by limiting the size and type (and thereby limiting the occupancy) of additions or reconstruction projects in dangerous or inaccessible portions of the Regulatory floodplain. Floodproofing measures should be in keeping with the dry passive standards of the River and Stream Systems Flooding Hazard Limit, Technical Guide – Appendix 6 (MNR, 2002a). Where floodproofing standards or safe access cannot be obtained for development, generally the development should be prohibited.

Under the Conservation Authorities Act, each application will be reviewed on its own merits to determine if it can meet the ‘tests’ outlined in the Act. A permit application for a development activity may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

2.4.2.5 Regulation Allowances

River or stream valley allowances allow the LTVCA to regulate development adjacent to erosion and flooding hazards in a manner that provides protection against unforeseen or predicted external conditions that could have an adverse effect on the natural conditions or processes of the river or stream valley.

Allowances give the LTVCA the opportunity to protect access to and along a valley and/or floodplain. This access may be required for emergency purposes, regular maintenance to existing structures or to repair failed structures.

Development within the allowance must be regulated to ensure that existing erosion and flooding hazards are not aggravated, that new hazards are not created, and to ensure that the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

Regulation of development in the allowance is also required to deal with issues related to accuracy of the modeling and analysis tools utilized to establish the limits of the erosion and flooding hazards. The Regulation includes an allowance of 15 m.

To provide access and protection against unforeseen conditions, provincial guidelines recommend that development should generally be set back a minimum of 6 m adjacent to erosion and flooding hazards (Sections 3.0 and 3.4, Erosion Access Allowance, Technical Guide – River and Stream Systems: Erosion Hazard Limit (MNRF, 2002b)). MNRF recommends that this setback not only be applied to the erosion hazards discussed in the sections above, but also adjacent to the flooding hazard because of the potential for erosion throughout the flooding hazard as a result of the flow of water during significant runoff events. For those situations where additional study is warranted to determine the development setback required to provide the required public safety and access, a study should be undertaken to the satisfaction of the LTVCA by a qualified professional using accepted scientific, geotechnical, and engineering principles.

Protection of public safety and access, however, may not be sufficient to provide for all of the above noted requirements or purposes for the allowances. Additional technical studies by qualified professionals may be required to establish the appropriate extent and location of development within the allowance. The LTVCA may also determine that a reduced development setback is appropriate where the existing development already encroaches within the 15 m allowance, and where further development will not aggravate the erosion or flooding hazard.

2.5 Policies – Rivers and Stream Valleys

The following setbacks apply for new structures adjacent to rivers, stream valleys, and other watercourses (including municipal drains):

a) Near a slope or embankment which may be subject to instability and/or erosion, the minimum setback would be the sum of an erosion allowance plus a stable slope allowance.

   An outside bend of the Thames River has an erosion allowance of 20 m. An inside bend of the Thames River has an erosion allowance of 10 m. A straight section of the Thames River has an erosion allowance of 15 m. For all other watercourses beyond the Thames River, the erosion allowance is a minimum of 10 m.

   In the absence of a site-specific study, a stable slope is assumed to be a 3:1 inclination (horizontal to vertical). The minimum stable slope to be considered through a supporting qualified engineer's report is 2.5:1. The minimum setback from the Thames River is 25 m from water's edge.

b) Where a bank on a natural watercourse has been determined to be stable by a qualified engineer with no erosion potential in the next 100 years, the horizontal setback requirement from the top-of-bank would be the lesser of either i) 8 m plus the depth of the watercourse, or, ii) 15 m.

c) For the majority of shallow municipal drains, the setback is 15 m from the top-of-bank of the drain but should be verified with the LTVCA planning and regulations staff in consultation with the municipal drainage superintendent (whom have their own municipal setback requirements). Consideration may be given to allow a reduced setback of 8 m plus the depth of the drain as measured from the top of the bank.

d) For inland canal systems, the minimum setback is 7.6 m from the top of the bank provided that there is sufficient *erosion* protection along the canal. If no *erosion* protection is in place, the setback requirement is 10 m from the toe of the bank and/or not less than 7.6 m from the top of the bank. In Lighthouse Cove, the minimum setback for a pool adjacent to a canal is 3 m measured from the top-of-bank of the canal or from the top of the erosion protection.

e) The setback from a dyke is a minimum of 15 m measured from the landside toe of the dyke.

The following sections outline the LTVCA's policies with respect to rivers and other watercourses.

2.5.1 Development within the Erosion Hazard of an Apparent (Confined) River or Stream Valley

The following policies are focused on the erosion hazard associated with apparent river or stream valleys.

In general:

- Development activity shall be discouraged within the erosion hazard of an apparent river or stream valley.
- Development activity within the erosion hazard of an apparent river or stream valley on vacant lots of record shall not be permitted.
- Additional story's/levels to existing structures shall not be permitted in the erosion hazard of an apparent river or stream valley.
- Stabilization works within the erosion hazard of an apparent river or stream valley to allow for future/proposed development or an increase in development envelope or area shall not be permitted.
- Stormwater management facilities within the erosion hazard of an apparent river or stream valley shall not be permitted (other than for providing for outlet of such facilities).

2.5.1.1 Development shall be prohibited within the erosion hazard of an apparent river or stream valley where the use is:

a) An institutional use associated with hospitals, nursing homes, preschool, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick the elderly, persons with disabilities or the young during an emergency as a result of erosion and/or failure of protection works/measures; or,
b) An essential emergency service such as that provided by fire, police and ambulance stations and electrical substations which would be impaired during an emergency as a result of erosion, or any other hazard associated with erosion and/or as a result of failure of protection works/measures; or,
c) Uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

2.5.1.2 Public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within the erosion hazard of an apparent river or stream valley.

2.5.1.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems, etc.) may be permitted within the erosion hazard of an apparent river or stream valley.

2.5.1.4 Stream bank, slope and valley stabilization to protect existing development and conservation or restoration projects may be permitted within the erosion hazard of an apparent river or stream valley. It must be demonstrated that the works:

a) Will not result in a more unstable slope.
b) Will not result in soil movement off-site by natural processes (erosion / slumping).
c) Will not negatively impact adjacent properties / lands.
d) Will not impact flooding or erosion upstream or downstream of its location.

e) Are only comprised of clean soil, topsoil, filter fabric, rock, or in the case of the replacement of a concrete or steel breakwall or groyne, concrete (free of exposed rebar) and steel.

For new protection works, the works must be designed by a qualified engineer. For repairs or like-for-like replacement of protection works, the works don't have to be engineered but engineering is encouraged.

Sign-off / approval from Fisheries and Oceans Canada, the Ontario Ministry of Environment, Conservation and Parks, and the Ontario Ministry of Natural Resources and Forestry may be required as part of the application package as well as notification of adjacent and upstream and downstream property owners.

2.5.1.5 Minor removal and placement of fill associated with minor landscaping projects and minor site grading within the erosion hazard of an apparent river or stream valley may be permitted provided that it doesn't create new or aggravate flooding or erosion on the subject, adjacent, or other properties.

2.5.1.6 Development activity associated with the construction of a driveway or access way through the erosion hazard of an apparent river or stream valley in order to provide access to lands outside of the apparent river or stream valley, may be permitted. The submitted plans should demonstrate that;

a) There is no viable alternative outside of the regulated area; and,
b) The provision of safe access has been met.

2.5.1.7 Development activity associated with existing uses located within the erosion hazard of an apparent river or stream valley such as landscaping retaining walls, grading, uncovered detached decks, stairs, etc., may be permitted. The submitted plans should demonstrate that:

a) There is no feasible alternative site outside of the apparent river or stream valley or, in the event that there is no feasible alternative site, that the proposed development activity is located in an area of least (and acceptable) risk;
b) The development activity, as a minimum, is located outside of the stable slope allowance (assumed to be a 3:1 slope unless otherwise determined by a qualified engineer following a site-specific review, to a maximum inclination of 2.5:1) except for those works that, by their nature, must be located on an unstable slope such as slope stabilization works;
c) There is no impact on existing and future slope stability on the subject and neighbouring properties;
d) Bank stabilization or erosion protection works are not required;

e) Development will have no negative impacts on natural stream meandering/fluvial processes;
f) Structural development would not be susceptible to stream erosion;
g) Development will not prevent access into and through the valley in order to undertake preventative actions/maintenance or during an emergency;
h) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans (if applicable); and,
i) Flooding hazards have been adequately addressed.

Depending on the proposed development activity, the works may have to be designed by a qualified engineer.

2.5.1.8 Development activity associated with minor additions (defined as being the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation) or the construction of non-habitable detached accessory structures located within the erosion hazard of an apparent river or stream valley may be permitted. The submitted plans should demonstrate that:

a) At a minimum, the setback is 6 m beyond the stable slope allowance.
b) The development activity will not prevent access to and along the erosion hazard in order to undertake preventative actions / maintenance or during an emergency.
c) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
d) Flooding hazards have been adequately addressed.

Note that the total addition (if applicable) can't exceed the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation in 2006.

2.5.1.9 Development activity associated with pools may be permitted within the erosion hazard of an apparent river or stream valley may be permitted. The submitted plans should demonstrate that:

a) At a minimum, the setback is 6 m beyond the stable slope allowance.
b) The development activity will not prevent access to and along the erosion hazard in order to undertake preventative actions / maintenance or during an emergency.
c) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
d) Flooding hazards have been adequately addressed.

2.5.1.10 Development activity for the reconstruction of a building damaged or destroyed as a result of a fire or similar calamity not related to the natural hazard may be permitted within the erosion hazard. The submitted plans should demonstrate that the structure:

a) Cannot be relocated to an area outside the erosion hazard and, if there is no feasible alternative site, that it is located in an area of least (and acceptable) risk. As a minimum, the setback for a reconstruction shall be the greater of:
    i. The sum of the erosion allowance and stable slope allowance based on a planning horizon of 50 years; or,
    ii. 6 m or more beyond the stable slope allowance.
b) Will be protected from the erosion hazard through incorporation of appropriate building design parameters; and,
c) Will not exceed original habitable floor area nor the original footprint of the previous structure.

2.5.1.11 Development activity may be permitted for the relocation of a building within the erosion hazard. The submitted plans should demonstrate that the structure:

a) Is structurally sound and able to be lifted, moved, and placed on a new foundation. Documentation should be provided by a qualified engineer.
b) Cannot be relocated to an area outside the erosion hazard and, if there is no feasible alternative site, that it is located in an area of least (and acceptable) risk. As a minimum, the setback for a relocation shall be the greater of:
    i. The sum of the erosion allowance and stable slope allowance based on a planning horizon of 50 years; or,
    iii. 6 m or more beyond the stable slope allowance.
c) Will be protected from the erosion hazard through incorporation of appropriate building design parameters.

2.5.1.12 Structural modifications to an existing structure may be allowed where the works are necessary to address safety or structural faults. It may be necessary to have a structural engineer provide written documentation that the structure is structurally sound and able to be lifted.

2.5.1.13 Where technical assessment or studies demonstrate that lands within the erosion hazard of an apparent river or stream valley are not subject to an erosion or flooding hazard, development activity may be permitted. The submitted plans should demonstrate that:

a) No access through the erosion susceptible area is required;

b) Development activity will not prevent access into and through the valley in order to undertake preventative actions/maintenance or during an emergency;
c) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans (if applicable);
d) There is no impact on existing and future slope stability;
e) Bank stabilization or erosion protection works are not required; and,
f) Flooding hazards have been adequately addressed.

2.5.1.14 The replacement of septic systems may be permitted within the erosion hazard of an apparent river or stream valley. The replacement system should be located outside of the erosion hazard where possible, and only permitted within the erosion hazard subject to being located in the area of lowest risk.

2.5.2 Development within the Allowance Adjacent to the Erosion Hazard of an Apparent (Confined) River or Stream Valley

2.5.2.1 Development activity may be permitted within the allowance adjacent to the erosion hazard of an apparent river or stream valley if it has been demonstrated to the satisfaction of the Conservation Authority that the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property. The submitted plans should demonstrate that:

a) The development activity does not create or aggravate an erosion hazard;
b) The development activity is set back a sufficient distance from the stable top of bank to avoid increases in loading forces on the top of the slope;
c) The development activity does not change drainage or vegetation patterns that would compromise slope stability or exacerbate erosion of the slope face;
d) The development activity does not prevent access to and along the top of the valley slope;
e) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
f) Flooding hazards have been adequately addressed.

2.5.3 Development within the Erosion Hazard of a Not Apparent (Unconfined) River or Stream Valleys (Meander Belt)

In general:

- Development within the meander belt of a not apparent river or stream valley shall not be permitted.
- Development within the meander belt of a not apparent river or stream valley on vacant lots of record shall not be permitted.
- Stabilization works within the meander belt of a not apparent river or stream valley to allow for future/proposed development or an increase in development envelope or area shall not be permitted.
- Stormwater management facilities within the meander belt of a not apparent river or stream valley shall not be permitted (other than for providing for outlet of such facilities).

2.5.3.1 Development shall be prohibited in the meander belt of a not apparent river or stream valley where the use is:

a) an institutional use associated with hospitals nursing homes, preschool, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick the elderly, persons with disabilities or the young during an emergency as a result of erosion and/or failure of protection works/measures; or,
b) an essential emergency service such as that provided by fire, police and ambulance stations and electrical substations which would be impaired during an emergency as result of erosion, or any other hazard associated with erosion and/or failure of protection works/measures; or,
c) uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

2.5.3.2 Public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within the meander belt of a not apparent river or stream valley.

2.5.3.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems) may be permitted within the meander belt of a not apparent river or stream valley.

2.5.3.4 Stream bank stabilization to protect existing development and conservation or restoration projects may be permitted within the meander belt of a not apparent river or stream valley.

2.5.3.5 Minor placement and removal of fill associated with a minor landscaping project and minor site grading within the meander belt of a not apparent river or stream valley may be permitted provided that it doesn't create new or aggravate flooding on the subject, adjacent, or other properties.

2.5.3.6 Development activity associated with the construction of a driveway or access way through the meander belt of a not apparent river or stream valley in order to provide access to lands outside of the erosion hazard may be permitted subject to the provisions of safe access.

2.5.3.7 Development activity associated with existing uses located within the meander belt of a not apparent river or stream valley such minor additions (defined as being the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation), non-habitable accessory buildings, pools, landscaping retaining walls, grading, decks, etc., may be permitted. The submitted plans should demonstrate that:

a) There is no feasible alternative site outside of the meander belt of a not apparent river or stream valley or in the event that there is no feasible alternative site, that the proposed development activity is located in an area of least (and acceptable) risk;
b) Development activity will not prevent access into and through the meander belt in order to undertake preventative actions/maintenance or during an emergency;
c) Development activity will have no negative impacts on natural stream meandering/fluvial processes;
d) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans;
e) Flooding hazards have been adequately addressed;
f) Structural development would not be susceptible to stream erosion; and,
h) Minor additions would not be susceptible to stream erosion within the 100 year planning horizon.

Note that the total addition (if applicable) can't exceed the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation in 2006.

2.5.3.8 Development may be permitted for the reconstruction or relocation of a building within the meander belt of a not apparent river or stream valley,

provided that it has not been damaged or destroyed by erosion. The submitted plans should demonstrate that the building:

a) Cannot be relocated to an area outside the erosion hazard and, if there is no feasible alternative site, that it is located in an area of least (and acceptable) risk;
b) Will be protected from the erosion hazard through incorporation of appropriate building design parameters; and,
c) Will not exceed original habitable floor area nor the original footprint area of the previous structure.

2.5.4 Development within the Allowance Adjacent to the Erosion Hazard of a Not Apparent (Unconfined) River or Stream Valley (Meander Belt)

2.5.4.1 Development activity may be permitted within the allowance adjacent to the meander belt if it has been demonstrated to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property. The submitted plans should demonstrate that:

a) The development activity does not create or aggravate an erosion hazard;
b) The development activity does not prevent access to and along the meander belt;
c) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization/restoration plans (if applicable); and,
d) Flooding hazards have been adequately addressed.

2.5.5 Development Within One-Zone Regulatory Floodplain or Within Floodway of a Watercourse

In general:

- Development & redevelopment within the one-zone Regulatory floodplain or floodway shall not be permitted.
- Development within the one-zone Regulatory floodplain or floodway on vacant lots of record shall not be permitted.
- Flood hazard protection and bank stabilization works to allow for future/proposed development or an increase in development envelope or area within the one-zone Regulatory floodplain or floodway shall not be permitted.

- Development associated with new and/or the expansion of existing trailer parks/campgrounds in the one-zone Regulatory floodplain or floodway shall not be permitted.
- Stormwater management facilities within the one-zone Regulatory floodplain or floodway shall not be permitted (other than for providing for outlet of such facilities).

2.5.5.1 Development within the one-zone Regulatory floodplain or floodway shall be prohibited where the use is:

a) an institutional use associated with hospitals nursing homes, preschool, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick the elderly, persons with disabilities or the young during an emergency as a result of erosion and/or failure of protection works/measures; or,
b) an essential emergency service such as that provided by fire, police and ambulance stations and electrical substations which would be impaired during an emergency as result of erosion, or any other hazard associated with erosion and/or failure of protection works/measures; or,
c) uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

2.5.5.2 Public and private infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within the one-zone Regulatory floodplain or floodway.

2.5.5.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems) may be permitted within the one-zone Regulatory floodplain or floodway.

2.5.5.4 Minor removal or placement of fill associated with a minor landscaping project and minor site grading may be permitted within the one-zone Regulatory floodplain or floodway.

2.5.5.5 Stream, bank, slope, and valley stabilization to protect existing development and conservation or restoration projects may be permitted within the one-zone Regulatory floodplain or floodway.

2.5.5.6 Permanent docks can be permitted in areas and under the conditions specified in the LTVCA's dock policy document (see Appendix A).

2.5.5.7 Development activity associated with the construction of a driveway or access way through the one-zone Regulatory floodplain or floodway in order to provide access to lands outside of the one-zone Regulatory floodplain or floodway may be permitted subject to the provision of safe access.

2.5.5.8 The replacement of septic systems may be permitted within the one-zone Regulatory floodplain or floodway. The replacement system should be located outside of the hazard where possible, and only permitted within the hazard subject to being located in the area of lowest risk.

2.5.5.9 Above ground parking lots may be permitted within the one-zone Regulatory floodplain or floodway if it has been demonstrated to the satisfaction of the Conservation Authority that safe pedestrian and vehicular access is achieved.

2.5.6 Development Within the Allowance of the One-Zone Regulatory Floodplain or Floodway of a Watercourse

2.5.6.1 Development activity may be permitted within the allowance of a one-zone Regulatory floodplain or floodway if it has been demonstrated to the satisfaction of the Conservation Authority that the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property. The submitted plans should demonstrate that:

a) The development activity does not aggravate the flood hazard or create a new one;
b) The development activity does not impede access for emergency works, maintenance and evacuation;
c) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization/ restoration plans; and,
d) Erosion hazards have been adequately addressed.

2.5.5 Development Within Flood Fringe of a Watercourse (Two Zone)

In general:

- Hardship rebuilds, as a result of a fire or similar calamity not related to the natural hazard, must not be abandoned or derelict for a period of more than one year or the relevant new construction policies will apply.
- Structures damaged or destroyed by the hazard will be subject to re-building policies as if they were new builds.
- Fencing does not require a permit from the LTVCA within the flood fringe of a two-zone watercourse.
- Minor volumes of fill removal / placement associated with a minor landscaping project does not require a permit from the LTVCA within the flood fringe of a two-zone watercourse.

2.5.5.1 Development shall be prohibited within the flood fringe of a two-zone watercourse where the use is:

a) an institutional use associated with hospitals nursing homes pre-school, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick the elderly, persons with disabilities or the young during an emergency as a result of flooding and/or failure of floodproofing measures or protection works; or,
b) an essential emergency service such as that provided by fire, police and ambulance stations and electrical substations which would be impaired during an emergency as result of flooding, the failure of floodproofing measures and/or protection works; or,
c) uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

2.5.5.2 Public and private infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within the flood fringe.

2.5.5.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems) may be permitted within the flood fringe.

2.5.5.4 Stream, bank, slope, and valley stabilization to protect existing development and conservation or restoration projects may be permitted within the flood fringe.

2.5.5.5 Development activity associated with existing uses located within the flood fringe such as minor additions (defined as being the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation), non-habitable detached accessory buildings, pools, landscaping retaining walls, grading, decks, etc., may be permitted. The submitted plans should demonstrate that:

a) There is no feasible alternative site outside of the flood fringe for the proposed development or in the event that there is no feasible alternative site, that the proposed development is located in an area of least (and acceptable) risk;
b) The proposed works do not create new hazards or aggravate flooding on adjacent or other properties and there are no negative upstream and downstream hydraulic impacts;
c) The development is protected from the flood hazard in accordance with established floodproofing and protection techniques. For minor additions and non-habitable detached accessory buildings, the works must, at a minimum, be wet floodproofed whereby all structural building materials utilized below the Regulatory flood datum must not be susceptible to flood damage and all mechanical, electrical, and heating equipment associated with the structure must be at or above the Regulatory flood datum. Pools will be encouraged to be raised as much as feasibly possible, but they aren't required to be floodproofed (including pumps);
d) The proposed development will not prevent access for emergency works, maintenance, and evacuation;
e) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
f) Erosion hazards have been adequately addressed.

Note that the total addition can't exceed the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation in 2006 if the proposed addition isn't adequately floodproofed.

2.5.5.6 A new structure on an existing lot of record or a major addition (over 30% of the existing foundation's footprint or over 500 square feet, whichever is greater) to an existing structure or a reconstruction associated with existing uses may be permitted within the flood fringe if it has been demonstrated to the satisfaction of the Conservation Authority that:

a) There is no feasible alternative site outside of the flood fringe for the proposed development or, in the event that there is no feasible alternative site, that the proposed development is located in an area of least (and acceptable) risk;

b) The proposed works do not create new hazards or aggravate flooding on adjacent or other properties and there are no negative upstream and downstream hydraulic impacts;
c) The development is protected from the flood hazard in accordance with established floodproofing and protection techniques:
    i. New habitable structures must be dry floodproofed such that the ground elevation around the foundation of the structure must be at or above the Regulatory flood datum for a minimum distance of two meters. Minimum openings (e.g. door sills, window sills, etc.) into the structure must be at or above the Regulatory flood datum. Basement window sills may be below the Regulatory flood datum provided that there is a permanent poured concrete window well whose top is at or above the Regulatory flood datum and the window sill drainage utilizes a backflow check valve. Engineered grading plan required.
    ii. Major additions to a habitable structure must be floodproofed such that the main floor of the addition must be at or above the Regulatory flood datum. All structural building materials utilized below the Regulatory flood datum must not be susceptible to flood damage and all mechanical, electrical, and heating equipment associated with the addition must be at or above the Regulatory flood datum.
    iii. New and major additions to existing non-habitable structures must, at a minimum, be wet floodproofed whereby all structural building materials utilized below the Regulatory flood datum must not be susceptible to flood damage and all mechanical, electrical, and heating equipment associated with the structure must be at or above the Regulatory flood datum.
d) The proposed development will not prevent access for emergency works, maintenance, and evacuation;
e) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
f) Erosion hazards have been adequately addressed.

2.5.5.7 Development activity associated with the construction of a driveway or access way through the flood fringe in order to provide access to lands outside of the flood fringe may be permitted provided the provisions of safe access are met.

2.5.5.8 Removal or placement of fill and site grading may be permitted within the flood fringe.

2.5.5.9 The replacement of septic systems may be permitted within the flood fringe. The replacement system should be located outside of the flood fringe where

possible, and only permitted within the flood fringe subject to being located in the area of lowest risk.

2.5.5.10 Aboveground parking lots may be permitted within the flood fringe.

2.5.6 Development Within the Allowance of the Flood Fringe of a Watercourse (Two Zone)

2.5.6.1 Development activity may be permitted within the allowance of a flood fringe of a watercourse (two zone) if it has been demonstrated to the satisfaction of the Conservation Authority that the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property. The submitted plans should demonstrate that:

a) The development activity does not aggravate the flood hazard or create a new one;
b) The development activity does not impede access for emergency works, maintenance and evacuation;
c) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization/ restoration plans; and,
d) All natural hazards have been adequately addressed.

3.0 GREAT LAKES' AND LARGE INLAND LAKES' SHORELINES

The current legislative structure embeds requirements for the administration of s. 28 in both the Conservation Authorities Act and Ontario Regulation 41/24.

Inland lakes that do not meet the definition of a "large inland lake" (a waterbody that has a surface area equal to or greater than 100 square kilometers where there is no measurable or predictable response to a single runoff event) should be treated in a manner similar to a river or stream valley.

3.1 Conservation Authorities Act – Shorelines

The Conservation Authorities Act contains the following sections dealing with shorelines of Great Lakes and inland lakes:

Activities prohibited (Prohibited activities re watercourses, wetlands, etc.)

> ***28 (1)*** *No person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority: …*
>
> > *2. Development activities in areas that are within the authority's area of jurisdiction and are, …*
> >
> > *iv. areas that are adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to an inland lake and that may be affected by flooding, erosion or dynamic beach hazards, such areas to be further determined or specified in accordance with the regulations, or,…*

Permits

> ***28.1*** *(1) An Authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority,*
>
> *a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and*
>
> *b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; …*

The permit shall be given in writing, with or without conditions.

3.2 Ontario Regulation 41/24 – Shorelines

The following section indicates how the extent of Great Lakes' and large inland lakes' shorelines are determined for the purpose of administering the Regulation. The Regulation contains the following sections dealing with Great Lakes' and large inland lakes' shorelines.

Prohibited activities, subparagraph 2 of ss. 28 (1) of the Act (development activity prohibited)

> ***2.*** *(2) For the purposes of subparagraph 2 iv of subsection 28 (1) of the Act, areas adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to inland lakes that may be affected by flooding, erosion or dynamic beaches include,*
>
> *a) the area starting from the furthest offshore extent of the Authority's boundary to the furthest of the following distances:*
>
> *(i) the 100-year flood level, plus the appropriate allowance for wave uprush, and, if necessary, for other water-related hazards, including ship generated waves, ice piling and ice jamming;*
>
> *(ii) the predicted long term stable slope projected from the existing stable toe of the slope or from the predicted location of the toe of the slope as that location may have shifted as a result of shoreline erosion over a 100-year period; and*
>
> *(iii) where a dynamic beach is associated with the waterfront lands, an allowance of 30 metres inland to accommodate dynamic beach movement; and*
>
> *b) the area that is an additional 15 metres allowance inland from the area described in clause (a).*

Permits

The Authority may grant a permit for development activity adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to large inland lakes subject to the tests or criteria in the Conservation Authorities Act.

3.3 Additional Definitions

The following section outlines additional definitions to those previously provided in this document.

Development activity associated with existing uses within Great Lakes' and large inland lakes' shorelines such as non-habitable structures and minor additions to existing buildings or structures is often differentiated from new development activity to allow landowners to maintain and, to a limited extent, improve their properties.

For shorelines, the LTVCA's definition of a **minor addition** is up to 30% of the footprint of the existing structure's foundation.

3.4 Discussion of Shorelines

Shorelines are comprised of three components: 1) flooding hazards, 2) erosion hazards, and 3) dynamic beach hazards.

3.4.1 Processes and Functions Along Shorelines

In general, flooding is a phenomenon influenced by and sensitive to water level fluctuations. Inundation of low-lying Great Lakes – St. Lawrence River System shorelines in and of itself does not necessarily constitute a significant hazard. The hazard is dependent on the type, design, location and density of any development in or near the flood inundated shorelines. However, where flooded lands are coupled with storm events, the cumulative impact can and frequently does pose significant degrees of risk.

Of importance in managing a potential flood susceptible shoreline is the need to understand the interrelationship between pre-storm flooding, storm setup, wave height, wave uprush and other water related hazards (i.e., wave spray, ice, etc.). If the area of inundation is a wetland or an undeveloped area, the resultant "damage" caused by a storm event may be minimal if measured in terms of human losses (i.e., property and life). Indeed, periodic flooding of wetland complexes have been found to be beneficial for the continued maintenance and enhanced diversity of wetland vegetation itself, by helping to eliminate the invasion of water sensitive upland vegetation into low-lying shorelines during periods of low water levels.

In terms of human use and occupation of the low-lying Great Lakes – St. Lawrence River System shorelines, development decisions based on or during periods of low water levels can present the most serious problem. During lower water levels, the potential flood hazard to homes, cottages and other development often goes unrecognized. Consequently, when water levels return to long-term averages or high water levels, flood damages are sustained. These damages are frequently quite significant (MNR, 1996b).

Erosion within the Great Lakes – St. Lawrence River System is a concern, particularly within the lower Great Lakes. Erosion rates are dependent upon a number of lake and land processes as well as the composition and morphology of the shore. In general terms, identification of erosion susceptible shorelines is rather simple in that erosion of

bedrock and cohesive shores involves a unidirectional process. In the absence of human intervention and/or the installation of remediation measures, once material is removed, dislodged or extracted from the shore face and near shore profile it cannot reconstitute with the original material and is essentially lost forever. Even with the installation of remedial measures (i.e., assumed to address the erosion hazard), the natural forces of erosion, storm action/attack and other naturally occurring water and erosion related forces may prove to be such that the remedial measures may only offer a limited measure of protection and may only reduce or address the erosion hazard over a temporary period of time.

Slope stability, usually described in terms of the potential for slope failure, refers to a mass movement of earth material, or soil, sliding down a bank or slope face as a result of a single event in time. The shoreline bluffs along Lake Erie are generally unstable and subject to mass movement including rotational failures.

Given the naturally complex and dynamic nature of the beach environment, determining hazard susceptibility of a given beach formation requires careful assessment of a wide range of parameters. Over the short term, beach environments, impacted by flood and erosion processes, may undergo alternating periods of erosion and accretion as they attempt to achieve a dynamic equilibrium with the forces acting upon them. Over the long term, beaches experiencing a positive sediment budget (i.e., more sand and gravel is incoming than outgoing) are generally in fact accreting shore forms while those experiencing a negative sediment budget are eroding. As such, the depiction and evaluation of the hazard susceptibility of dynamic beaches should be dependent on the level of information, knowledge and understanding of the beach sediment budget and the cross-profile width over which most of the dynamic profile changes are taking place.

3.4.2 Shoreline Flood Hazard

The variable nature of water elevations of the Great Lakes is apparent from historical records. Of the two key factors influencing long-term and short-term changes in lake levels, natural phenomena (i.e., rainfall, evaporation, wind, storms, etc.) by far, cause the greater magnitudes of changes, than does human intervention (i.e., diversions, water control structures, etc.).

The most familiar changes in lake levels are seasonal fluctuations as evidenced by average differences of about 0.6 to 1.1 m in lake levels between the summer and winter months. Superimposed on these seasonal fluctuations are some extremely short periods of significantly larger magnitudes of lake level changes. The most temporary of these are caused by storm winds which blow over the lake surfaces pushing the water to the opposite side or end of the lake. These “wind setups”, or “storm surges” have frequently caused total differences of more than 4 m and occasionally as high as 5 m in lake levels at opposite ends of some of the Great Lakes.

The shoreline refers to the furthest landward limit bordering a large body of water. Factors to be addressed in the areas susceptible to flooding along the shoreline include the 100 year flood level and flood allowances for wave uprush and/or other water related hazards (Figure 12).

The 100 year flood level is the water level due to the combined occurrences of mean monthly lake levels and wind set up having a 1% chance of occurring during any year.

The 100 year wave uprush level is based on mean monthly lake levels, wind setup and wind generated waves.

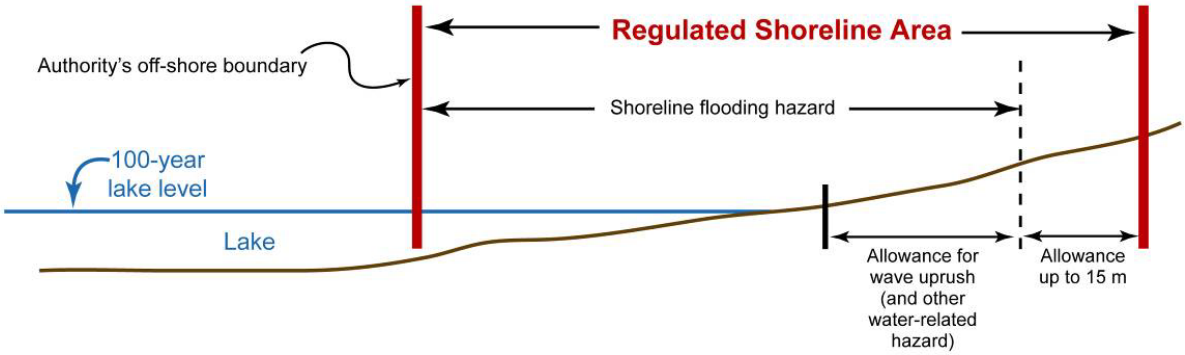

Figure 11: Lake Flooding – Regulation Limits

In areas susceptible to wave action, shoreline flood hazards extend landward beyond the 100 year flood level to the limit of wave action. All shorelines should be considered susceptible to wave action unless site specific studies using accepted engineering principles demonstrate that wave action is not significant.

Wave action includes wave uprush, wind setup, wave overtopping and/or wave spray. Wave setup is the mean increase in the water level caused by the onshore transport of water due to waves breaking at the shoreline, while wave uprush is the distance that the water will run-up on the shoreline. For straight, uniform shoreline reaches without protection works, the landward limit of wave action can be represented by the maximum sum of wave setup and wave uprush.

In areas where waves act on shore protection works and other structures, and in areas with irregular shorelines, the wave action may include wave overtopping and wave spray which are more difficult to determine and may require detailed study.

Shoreline flood hazards include, but are not limited to:

- Wave overtopping;
- Wave spray;
- Ice piling;
- Ice jamming; and,
- Ship generated waves.

Wave overtopping essentially occurs when the height of the natural shoreline, or of the protection work, above the still water line is less than the limit of the wave uprush. As a result, wave overtopping the shoreline or protection work can cause flooding of the onshore area and can threaten the structural stability of protection works.

Wave spray has been observed passing over structures (houses) and well past them. The landward extent and quantity of wave spray depends on such factors as the type of shore, nearshore bathymetry, type of protection works, size of incident waves and wind conditions. Generally, during storms a significant amount of wave spray will occur behind structures that are near vertical and subjected to large breaking waves.

All shoreline areas and connecting channels form an ice cover. There are two types of ice which impact on shoreline features: drift ice (slush, frazil, pancake, floe and composite ice) and shorefast ice (anchor ice). The impact on the shoreline by drift ice is dependent on the physical orientation and composition of the shoreline, wave action, wind setup and duration of ice action as the ice is transported alongshore and thrown onshore and then drawn offshore by wave action. Anchor or shorefast ice action on a shoreline has a horizontal and vertical impact on shoreline features as the stationary ice grows or diminishes in response to the temperature fluctuations over the winter period.

Ice piling results from wind blowing over the ice, pushing the ice landward. This can produce ridging and a large build–up of ice at the shore. This shore ice can then scour sections of the beach and nearshore as well as destroy structures close to the shore. The moving ice can also remove boulders from the shallow areas, thereby reducing the level of shore protection provided by the boulders.

Ice jamming, the build-up of ice at the outlets of the lakes into the connecting channels, can cause extensive damage to shore structures and nearshore profiles. At the same time, ice jams frequently pose problems by impeding water flows outletting from the lakes and into the connecting channels causing varying magnitudes in lake level increases depending on the size and duration of the ice jam blockage.

Depending on the shoreline configuration and slope characteristics, ship generated waves can rush up the shoreline past the 100 year flood level. In addition to ship generated wave uprush, the subsequent ship generated wave drawdown can scour and damage a shoreline or protection work.

High points of land not subject to flooding but surrounded by the shoreline flood hazard or “flooded land” are considered to be within the flood hazard and part of the shoreline flood hazard.

3.4.3 Shoreline Erosion Hazard

Many geological, topographical and meteorological factors determine the erodibility of a shoreline. These include soil type, surface and groundwater, bluff height, vegetation

cover, shoreline orientation, shoreline processes, wind and wave climate and lake level fluctuations. Erosion over the long-term is a continuous process influenced by these lakeside (i.e. wave action, water levels) and landside factors (i.e., surface/subsurface drainage, loading/weight of buildings, removal of surface vegetation).

The rate of erosion may be heightened during high lake levels and/or severe storm events, resulting in large losses of land over a very short period of time. These large losses, which are more readily visible immediately following major storm events, at times can obscure the more continuing long-term processes.

Additionally, slope stability, usually described in terms of the potential for slope failure, refers to a mass movement of earth material, or soil, sliding down a bank or slope face as a result of a single event in time. The shoreline bluffs along Lake Erie are generally unstable and subject to mass movement including rotational failures.

The risk of erosion is managed by using a 100 year planning horizon for erosion. The extent of the shoreline erosion hazard limit depends on the shoreline type: bluff or beach.

The shoreline erosion hazard (bluff) limit includes the following (Figure 13):

- Stable toe of slope (as may be shifted as a result of erosion over a 100 year period);
- Predicted long term stable slope projected from the stable toe of slope; and,
- An allowance inland of 15 m.

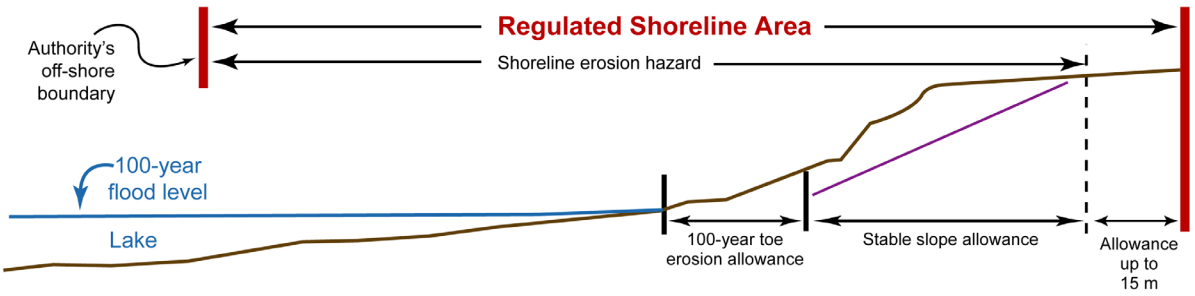

Figure 12: Lake Erosion – Regulation Limits

To slow the erosion of shorelines, structures such as breakwaters, seawalls and revetments have been used. Technical Guidelines- Great Lakes – St. Lawrence River Shorelines – Part 7 – Addressing the Hazard (MNR, 1996b) provide guidance for considering how such structures may be considered to modify the Shoreline Erosion Hazard. Specifically a Protection Works Standard – Erosion Hazard is provided to illustrate how shoreline erosion prevention structures should be evaluated.

However, even with the installation of remedial measures (i.e., assumed to address the erosion hazard), the natural forces of erosion, storm action/attack and other naturally occurring water and erosion related forces may prove to be such that the remedial measures may only offer a limited measure of protection and may only reduce or address the erosion hazard over a temporary period of time.

Even if the shoreline is successfully armoured, the near shore lake bottom continues to erode or down cut eventually on all shorelines. This process is more active typically on cohesive shorelines. Eventually the lakebed downcutting will undermine the shoreline armouring causing the structure present to ultimately fail (Figure 14). The failure and ultimate property loss may extend back to the point at which the natural shoreline occurs. The natural shoreline position is typically not the present waterline or break wall interface, but actually some point inland from the armoured shoreline position.

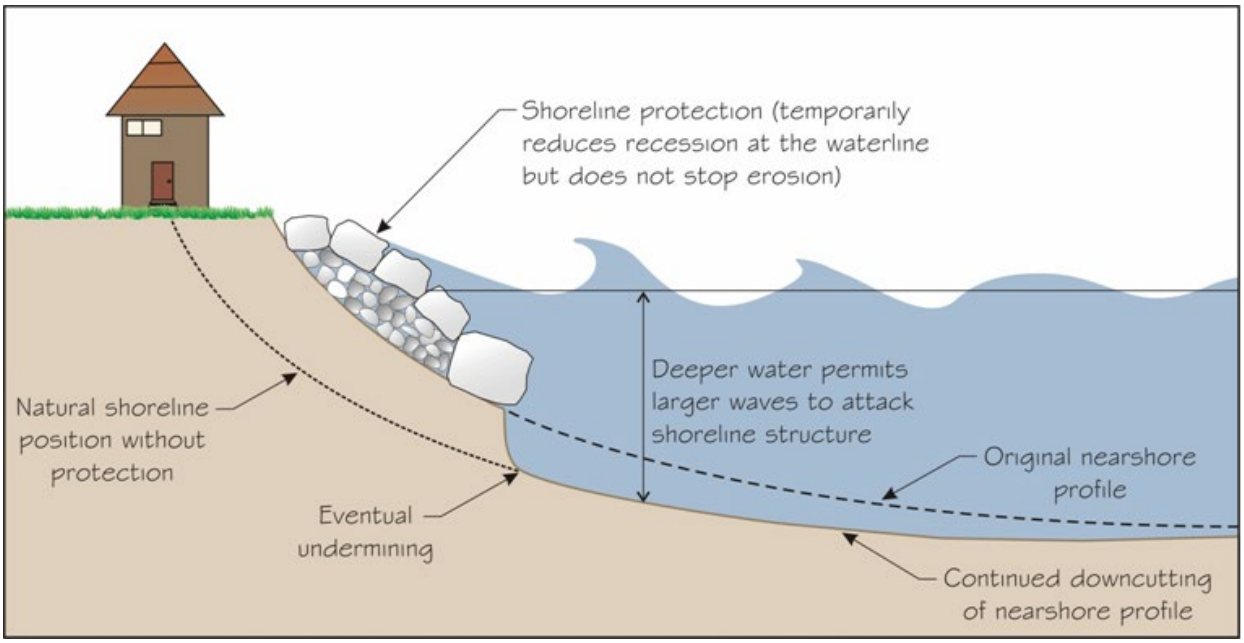

Figure 13: Lake Erosion Downcutting

These problems usually occur on updrift and/or downdrift properties, aggravating existing off-site hazards, and/or posing unacceptable detrimental impacts on a wide array of environmental components of the shoreline ecosystem (e.g., fisheries, wetlands, water quality, etc.). The natural movement of the shoreline due to erosion can be aggravated by these human activities and the impact of the activity can be transferred some distance from the impact site.

Therefore, it is recommended as a general principle, that measures which harden the shoreline be avoided. **For the Lake Erie shoreline in the LTVCA's jurisdiction, the implementation of erosion protection structures (e.g. revetments, seawalls, etc.) are not considered to reduce the applicable 100 year erosion allowance.**

3.4.4 Dynamic Beach Hazard

To define a dynamic beach, the flood hazard limit must be known. The flood hazard limit combines the 100 year flood elevation plus wave uprush. In dynamic beach areas, elevations can change quite dramatically from season to season and year to year due to build up and erosion of sand, cobbles and other beach deposits. A dynamic beach is considered an unstable accumulation of shoreline sediments generally along the Great Lakes – St. Lawrence River System and large inland lakes. In dynamic beach areas, topographic elevations can change quite rapidly due to the accumulation or loss of beach materials through the effects of wind and wave action. These changes can occur seasonally or yearly and, at times, quite rapidly and dramatically.

To determine the limit of a dynamic beach, the flood hazard must be established. The flooding hazard is defined as the aggregate of the 100 year lake level plus a landward allowance to accommodate wave uprush and other water related hazards.

It is important that the 100 year lake level be established as a historic location rather than as an elevation.

If considered as an elevation, the location of the 100 year lake level will move with the accretion or loss of beach materials. For example, during a period of low lake levels, it is expected that the accretion of beach materials would occur. If established as an elevation, the 100 year lake level (and the subsequent flood hazard) would move lakeward. Under this approach the Regulation Limit could be construed as also moving lakeward. This area of accretion could rapidly be lost during a storm or when lake levels return to normal. Development activity permitted under this standard would be at risk.

Historic information about the location of the farthest landward extent of the 100 year lake level will be an important consideration for the long term management of dynamic beach hazards. In the absence of accurate historical mapping for the landward extent of the 100 year lake level, the LTVCA utilizes the 2017 Lidar elevation dataset collected and provided by the Province of Ontario to determine the location of this line.

When topographic elevations change, so does the location of the flooding hazard limit. This is an especially important consideration, because in times of low lake levels the near shore areas that have been submerged under normal or high lake levels are now exposed, subjected to accretion and erosion processes. It may seem that the landward extent of the dynamic beach has changed, thereby introducing potential for development or expansion of existing development. Historic information about the farthest landward extent of flooding, will be an important consideration for good long-term management of dynamic beach hazards. The balance of various coastal processes, which allows for the state of dynamic equilibrium for these beach areas, only exists in the natural environment. Human intrusion within these areas can significantly and negatively impact on the form and function of the dynamic beach. Development

activity should only be considered in limited defined areas outside of the dynamic beach hazard, following the appropriate level of scientific investigation and assessment.

The dynamic beach hazard can be applied to all shorelines of the Great Lakes – St. Lawrence River System where there is a dynamic relationship of erosion and accretion of surficial sediment. Action by waves and other water and wind-related processes can lead to erosion of the sediments and a resultant landward translation of the shore profile or also accretion of sediments and a resultant lakeward translation of the shore profile.

The dynamic beach hazard is only applied where:

- Beach or dune deposits exist landward of the water line (e.g., land/water interface);
- Beach or dune deposits overlying bedrock or cohesive material are equal to or greater than 0.3 m in thickness, 10 m in width and 100 m in length along the shoreline; and,
- Where the maximum fetch distance measured over an arc extending 60 degrees on either side of a line perpendicular to the shoreline is greater than 5 km (this normally does not occur where beach or dune deposits are located in embayment's, along connecting channels and in other areas of restricted wave action where wave related processes are too slight to alter the beach profile landward of the waterline.

The criteria used to define and classify a section of shoreline as a dynamic beach are intended to be applied over a stretch of shoreline on the order of 100 m or more in length. Where shorter sections of sediments occur on a rocky or cohesive shoreline they are likely to be transitory. Beach width and thickness should be evaluated under calm conditions and at water levels between datum (IGDL) and the average annual low water level. When lake level conditions are higher, consideration should be given to the submerged portion of the beach. If possible, mapping should not take place during high lake level conditions. It is expected that the person carrying out the mapping will exercise judgment, based on knowledge of the local area and historical evidence, in those areas where the beach width is close to the suggested criteria for defining a dynamic beach.

The Dynamic Beach Hazard includes the following (Figure 15):

1) 100 year flood level, plus a 15 m offset allowance for wave uprush and, if necessary, for other water-related hazards including ship-generated waves, ice piling, and ice jamming;
2) An allowance inland of 30 m to accommodate for dynamic beach movement; and,
3) An additional allowance inland of 15 m.

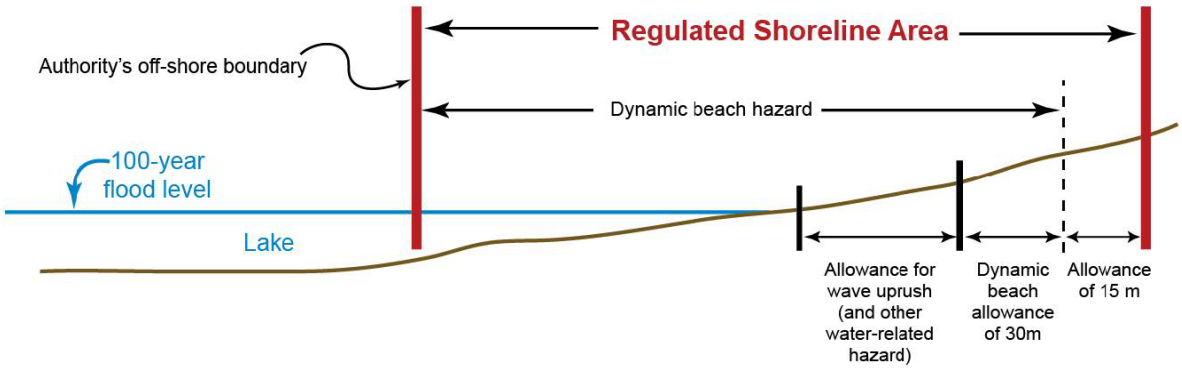

Figure 14: Dynamic Beach – Regulation Limits

3.4.5 Regulation Allowances

Similar to the more detailed discussion provided in a previous section, the allowances adjacent to shoreline flood, erosion and dynamic beach hazards allow the LTVCA to regulate development activity in these areas in a manner that:

- Provides protection against unforeseen or predicted external conditions that could have an adverse effect on public safety, property damage and the natural conditions or processes of the shoreline;
- Protects access to and along the shoreline hazard areas. Access may be required for emergency purposes, regular maintenance to existing structures or to repair failed structures;
- Ensures that existing erosion, flooding and dynamic beach hazards are not aggravated and that new hazards are not created; and,
- Addresses issues related to accuracy of the modeling and analysis tools utilized to establish the limits of the flooding, erosion and dynamic beach hazards.

3.5 Policies – Shorelines of Lake St. Clair, Lake Erie, and Rondeau Bay

The following sections outline the LTVCA's policies with respect to shorelines of Lake St. Clair, Lake Erie, and Rondeau Bay.

3.5.1 Development Within the Shoreline Flood Hazard

For the purposes of the following policies, the shoreline flood hazard is the limit of the landward extent of flooding accounting for the 100 year flood elevation, plus an allowance for wave uprush and other water related hazards (15 m for Lakes Erie and St. Clair and 7.6 m for Rondeau Bay).

In general:

- Development activity within the shoreline flood hazard shall not be permitted except in accordance with the policies outlined within this document.
- Development activity associated with new and/or the expansion of existing trailer parks / campgrounds in the shoreline flood hazard shall not be permitted.
- Hardship rebuilds, as a result of a fire or similar calamity not related to the natural hazard, must not be abandoned or derelict for a period of more than one year or the relevant new construction policies will apply.
- Structures damaged or destroyed by the hazard will be subject to re-building policies as if they were new builds.
- Fencing does not require a permit from the LTVCA within the shoreline flood hazard.
- Minor volumes of fill removal / placement associated with a minor landscaping project does not require a permit from the LTVCA provided it's not placed in water or along the shoreline.
- Stormwater management facilities within the shoreline flood hazard shall not be permitted.
- Basements within the shoreline flood hazard shall not be permitted.
- Underground parking within the shoreline flood hazard shall not be permitted.

3.5.1.1 Development activity shall be prohibited in the shoreline flood hazard where the use is:

a) An institutional use associated with hospitals nursing homes preschool, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick the elderly, persons with disabilities or the young during an emergency as a result of flooding and/or failure of floodproofing measures or protection works; or,
b) An essential emergency service such as that provided by fire, police and ambulance stations and electrical substations which would be impaired during an emergency as a result of erosion, the failure of floodproofing measures, and/or protection works; or,
c) Uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

3.5.1.2 Public and private infrastructure (e.g. roads, sewers, flood and erosion control works, etc.) and various utilities (e.g. pipelines) may be permitted within the shoreline flood hazard.

3.5.1.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems, etc.) may be permitted within the shoreline flood hazard.

3.5.1.4 Shoreline, bank, and slope stabilization to protect existing development and conservation or restoration projects may be permitted within the shoreline flood hazard.

3.5.1.5 Development activity associated with existing uses located within the shoreline flood hazard such as minor additions (defined as being up to 30% of the footprint of the existing structure's foundation), non-habitable accessory buildings (e.g. sheds, detached garages, etc.), pools, landscaping retaining walls, grading, unenclosed decks, etc., may be permitted. The submitted plans should demonstrate that:

a) There is no feasible alternative site outside of the shoreline flood hazard for the proposed development or in the event that there is no feasible alternative site, that the proposed development is located in an area of least (and acceptable) risk;
b) The proposed works do not create new hazards or aggravate flooding on adjacent or other properties;
c) The development is protected from the shoreline flood hazard in accordance with established floodproofing and protection techniques. For minor additions and non-habitable accessory structures, as a minimum they must be wet floodproofed whereby all structural building materials utilized below the regulatory flood datum must not be susceptible to flood damage and all mechanical, electrical, and heating equipment must be at or above the regulatory flood datum. Pools will be encouraged to be raised as much as feasibly possible, but they aren't required to be floodproofed (including pumps);
d) The proposed development activity will not prevent access for emergency works, maintenance, and evacuation;
e) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans (if applicable); and,
f) Erosion and dynamic beach hazards have been adequately addressed (if applicable).

Note that the total addition (if applicable) can't exceed 30% of the footprint of the existing structure's foundation in 2006 if the proposed addition isn't adequately floodproofed.

3.5.1.6 A new structure on an existing lot of record or a major addition (defined as being greater than 30% of the footprint of the existing structure's foundation) to an existing structure, or a relocation of a structure, or a reconstruction associated with a hardship (provided the previous structure wasn't damaged or destroyed by flooding or other water-related hazards), may be permitted within the shoreline flood hazard if it has been demonstrated to the satisfaction of the Conservation Authority that:

a) There is no feasible alternative site outside of the shoreline flood hazard for the proposed development activity or in the event that there is no feasible alternative site, that the proposed development is located in an area of least (and acceptable) risk;
b) The proposed works do not create new hazards or aggravate flooding on adjacent or other properties;
c) The development is protected from the flood hazard in accordance with established floodproofing and protection techniques:
    i. New habitable structures and re-builds must be dry passive floodproofed such that the ground elevation around the foundation of the structure must be at or above the regulatory flood datum for a minimum distance of two meters. Minimum openings (e.g. door sills, window sills, etc.) into the structure must be at or above the regulatory flood datum. Basements aren't allowed. A lot grading plan would be required.
    ii. Major additions to a habitable structure must be floodproofed such that the main floor of the addition must be at or above the regulatory flood datum. All structural building materials utilized below the regulatory flood datum must not be susceptible to flood damage and all mechanical, electrical, and heating equipment associated with the addition must be at or above the regulatory flood datum. Basements aren't allowed.
    iii. New and major additions to existing non-habitable structures must, at a minimum, be wet floodproofed whereby all structural building materials utilized below the regulatory flood datum must not be susceptible to flood damage and all mechanical, electrical, and heating equipment associated with the structure must be at or above the regulatory flood datum.
d) The proposed development activity will not prevent access for emergency works, maintenance, and evacuation;
e) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
f) Erosion and dynamic beach hazards have been adequately addressed (if applicable).

3.5.1.7 Development activity associated with the construction of a driveway or access way through the shoreline flood hazard in order to provide access to

lands outside of the flood hazard may be permitted subject to the provision of safe access.

3.5.1.8 Structural modifications to an existing structure may be allowed where:

a) The works are for flood protection; or,
b) The works are necessary to address safety or structural faults.

Raising of existing structures will be permitted provided that the structure is located outside of the wave uprush zone and the structure is raised such that the minimum openings into the structure are at or above the regulatory flood datum. It may be necessary to have a structural engineer provide written documentation that the structure is structurally sound and able to be lifted.

3.5.1.9 Placement and removal of fill and site grading within the shoreline flood hazard may be permitted.

3.5.1.10 The replacement of septic systems may be permitted within the shoreline flood hazard. The replacement system should be located outside of the shoreline flood hazard where possible and only permitted within the shoreline flood hazard in the area of lowest risk.

3.5.1.11 Aboveground parking lots may be permitted within the shoreline flood hazard if it has been demonstrated to the satisfaction of the Conservation Authority that safe pedestrian and vehicular access is achieved.

3.5.2 Development within the Allowance Adjacent to the Shoreline Flood Hazard

In general:

- Fencing does not require a permit from the LTVCA within the allowance adjacent to the shoreline flood hazard.
- Minor volumes of fill removal / placement associated with a minor landscaping project does not require a permit from the LTVCA within the allowance adjacent to the shoreline flood hazard.

3.5.2.1 Development activity may be permitted within the allowance adjacent to the shoreline flood hazard if it has been demonstrated to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.. The submitted plans should demonstrate that:

a) The development activity does not aggravate the flood hazard or create a new one;
b) The development activity does not impede access for emergency works, maintenance and evacuation;
c) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization/ restoration plans; and,
d) Erosion and dynamic beach hazards have been adequately addressed.

3.5.3 Development within the Shoreline Erosion Hazard

For the purpose of the following policy, the shoreline erosion hazard is the limit of the landward extent of the stable slope measured from the 100 year erosion allowance beyond the existing protected or unprotected toe of slope.

The erosion allowances that the LTVCA utilizes along Lake Erie are the annualized recession rates plus one standard deviation as found in the Elgin County Shoreline Management Plan (Baird, 2015) and the Chatham-Kent Lake Erie Shoreline Study (Zuzek, 2020). The erosion allowance that the LTVCA utilizes for the unprotected Lake St. Clair shoreline is as found in the Municipality of Lakeshore Shoreline Management Plan (Zuzek, 2022). The applicable erosion allowances along the LTVCA's shorelines are as below:

Lake	Location	Erosion Allowance
Lake St. Clair	Areas Where Engineered Shoreline Protection Exists	15 m
	Areas Without Engineered Shoreline Protection	50 m
Lake Erie	Detroit Line area west of Wheatley Provincial Park	35 m
	Wheatley Provincial Park to Hodovick Road	139 m
	Hodovick Road to Erie Beach	57 m
	Erie Beach	22 m
	Erie Shore Drive	33 m
	Rondeau (east of dynamic beach hazard area) to 490 m east of Taylor Road	21 m
	490 m east of Taylor Road to border of Chatham-Kent and West Elgin	64 m
	Border of Chatham-Kent and West Elgin to Talbot Creek	100 m
	Talbot Creek to eastern extent of the LTVCA's jurisdiction	160 m

In the absence of a site-specific study, a stable slope is assumed to be a 3:1 inclination (horizontal to vertical). The minimum acceptable stable slope to be considered through a supporting qualified engineer's report is 2.5:1.

For the Lake Erie shoreline in the LTVCA's jurisdiction, the implementation of erosion protection structures (e.g. revetments, seawalls, etc.) will not be considered to reduce the applicable 100 year erosion allowance.

In general:

- Development activity shall be discouraged within the shoreline erosion hazard.
- Development activity within the shoreline erosion hazard on vacant lots of record shall not be permitted.
- Additional story's/levels to existing structures shall not be permitted in the erosion hazard of an apparent river or stream valley.
- Stabilization works within the shoreline erosion hazard to allow for future/proposed development or an increase in development envelope or area shall not be permitted with the exception for the communities around Rondeau Bay and Lake St. Clair.
- Stormwater management facilities within the shoreline erosion hazard shall not be permitted.

3.5.3.1 Development activity shall be prohibited in the shoreline erosion hazard where the use is:

a) An institutional use associated with hospitals nursing homes, preschool, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick, the elderly, persons with disabilities or the young during an emergency as a result of erosion and/or failure of protection works/measures; or,
b) An essential emergency service such as that provided by fire, police and ambulance stations and electrical substations which would be impaired during an emergency as a result of erosion, or protection works/measures; or,
c) Uses associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

3.5.3.2 Public and private infrastructure (e.g. roads, sewers, flood and erosion control works, etc.) and various utilities (e.g. pipelines) may be permitted within the shoreline erosion hazard.

3.5.3.3 Development associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems) may be permitted within the shoreline erosion hazard.

3.5.3.4 Shoreline, bank, and slope stabilization to protect existing development and conservation or restoration projects may be permitted within the shoreline erosion hazard. It must be demonstrated that the works:

a) Will not result in a more unstable slope.
b) Will not result in soil movement off-site by natural processes (erosion / slumping).
c) Will not negatively impact adjacent properties / lands.
d) Will not impact erosion updrift or downdrift of its location.
e) Are only comprised of clean soil, topsoil, filter fabric, rock, or in the case of the replacement of a concrete or steel breakwall or groyne, concrete (free of exposed rebar) and steel.

For new shoreline protection, the works must be designed by a qualified engineer. For repairs or like-for-like replacement of shoreline protection, the works don't have to be engineered but engineering is encouraged.

Sign-off / approval from Fisheries and Oceans Canada, the Ontario Ministry of Environment, Conservation and Parks, and the Ontario Ministry of Natural Resources and Forestry may be required as part of the application package as well as notification of adjacent and updrift and downdrift property owners.

3.5.3.5 Development activity associated with existing trailer parks (e.g. new park models, car ports, sheds, additions, etc.) may be permitted provided the development is located, as a minimum, 15 m beyond the stable slope allowance.

3.5.3.6 Development activity associated with existing uses located within the shoreline erosion hazard such as landscaping retaining walls, grading, uncovered detached decks, stairs, etc. may be permitted. The submitted plans should demonstrate that:

a) There is no feasible alternative site outside of the shoreline erosion hazard or, in the event that there is no feasible alternative site, that the proposed development is located in an area of least (and acceptable) risk;
b) The development activity will not prevent access into and through the shoreline erosion hazard in order to undertake preventative actions/maintenance or during an emergency;
c) There is no impact on existing and future slope stability and bank stabilization;
d) The development activity will have no negative impacts on natural shoreline processes;

e) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans (if applicable); and,
f) Flooding and dynamic beach hazards have been adequately addressed (if applicable).

Depending on the proposed development activity, the works may have to be designed by a qualified engineer.

3.5.3.7 Development activity associated with minor additions (defined as being up to 30% of the footprint of the existing structure's foundation) and non-habitable accessory structures may be permitted within the shoreline erosion hazard (excluding the Erie Shore Drive area as that area can't comply with the minimum setbacks outlined below). The submitted plans should demonstrate that:

a) At a minimum, the setback is the greater of:
    a. The sum of the erosion allowance and stable slope allowance based on a planning horizon of 30 years or more; or,
    b. A minimum of 15 m beyond the stable slope allowance.
b) The accessory structure is no larger than the footprint of the existing dwelling's foundation (if applicable).
c) The development activity will not prevent access into and along the shoreline erosion hazard in order to undertake preventative actions/maintenance or during an emergency.
d) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
e) Flooding and dynamic beach hazards have been adequately addressed.

Note that the total addition (if applicable) can't exceed 30% of the footprint of the existing structure's foundation in 2006.

3.5.3.7 Development activity associated with pools may be permitted within the shoreline erosion hazard (excluding the Erie Shore Drive area as that area can't comply with the minimum setbacks outlined below). The submitted plans should demonstrate that:

e) At a minimum, the setback is the greater of:
    i. The sum of the erosion allowance and stable slope allowance based on a planning horizon of 20 years for inground pools or 10 years for above ground pools; or,
    ii. A minimum of 15 m beyond the existing stable slope allowance.

f) The development activity will not prevent access into and along the shoreline erosion hazard in order to undertake preventative actions/maintenance or during an emergency.
g) The potential for surficial erosion has been addressed through the submission of proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
h) Flooding and dynamic beach hazards have been adequately addressed.

3.5.3.8 Development activity for the reconstruction of a building damaged or destroyed as a result of a fire or similar calamity not related to the natural hazard may be permitted within the shoreline erosion hazard (excluding the Erie Shore Drive area as that area can't comply with the minimum setbacks outlined below). The submitted plans should demonstrate that the structure:

d) Cannot be relocated to an area outside the erosion hazard and, if there is no feasible alternative site, that it is located in an area of least (and acceptable) risk. As a minimum, the setback for a reconstruction shall be the greater of:
    i. The sum of the erosion allowance and stable slope allowance based on a planning horizon of 50 years; or,
    iv. A minimum of 15 m beyond the stable slope allowance.
e) Will be protected from the erosion hazard through incorporation of appropriate building design parameters; and,
f) Will not exceed original habitable floor area nor the original footprint of the previous structure.

3.5.3.9 Development activity may be permitted for the relocation of a building within the shoreline erosion hazard (excluding the Erie Shore Drive area as that area can't comply with the minimum setbacks outlined below). The submitted plans should demonstrate that the structure:

d) Is structurally sound and able to be lifted, moved, and placed on a new foundation. Documentation should be provided by a qualified engineer.
e) Cannot be relocated to an area outside the erosion hazard and, if there is no feasible alternative site, that it is located in an area of least (and acceptable) risk. As a minimum, the setback for a relocation shall be the greater of:
    i. The sum of the erosion allowance and stable slope allowance based on a planning horizon of 50 years; or,
    v. A minimum of 15 m beyond the stable slope allowance.
f) Will be protected from the erosion hazard through incorporation of appropriate building design parameters.

3.5.3.10 Structural modifications to an existing structure may be allowed where the works are necessary to address safety or structural faults. It may be necessary to have a structural engineer provide written documentation that the structure is structurally sound and able to be lifted.

3.5.3.11 The replacement of septic systems may be permitted within the erosion hazard provided they are located no closer to the shoreline than the primary dwelling and are outside of the stable slope allowance.

3.5.4 Development within the Allowance Adjacent to the Shoreline Erosion Hazard

In general:

- Fencing does not require a permit from the LTVCA within the allowance adjacent to the shoreline erosion hazard.
- Minor volumes of fill removal / placement associated with a minor landscaping project does not require a permit from the LTVCA within the allowance adjacent to the shoreline erosion hazard.

3.5.4.1 Development activity may be permitted within the allowance adjacent to the shoreline erosion hazard if it has been demonstrated to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.. The submitted plans should demonstrate that:

a) The development activity does not aggravate the erosion hazard or create a new one;
b) The development activity does not impede access for emergency works, maintenance and evacuation;
c) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization/restoration plans; and,
d) The flooding and dynamic beach hazards have been adequately addressed (if applicable).

3.5.5 Development within the Dynamic Beach Hazard

For the purpose of the following policies the Dynamic Beach Hazard is the limit of the landward extent of the 100 year flood elevation limit, plus the allowance for wave uprush and other water-related hazards, plus the dynamic beach allowance. The dynamic

beach allowance is 30 m and the wave uprush allowance is 15 m. Therefore, the dynamic beach hazard is 45 m measured from the 100 year flood elevation limit (as determined from the 2017 Lidar elevation dataset collected and provided by the Province of Ontario).

In general:

- Development activity on vacant lots of record shall not be permitted in the dynamic beach hazard.
- Stormwater management facilities shall not be permitted in the dynamic beach hazard.
- Basements shall not be permitted in the dynamic beach hazard.
- Underground parking shall not be permitted in the dynamic beach hazard.

3.5.5.1 Development activity shall be prohibited in the dynamic beach hazard where the use is:

a) An institutional use associated with hospitals, nursing homes, pre-school, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick, the elderly, persons with disabilities or the young during an emergency as a result of erosion or any other hazard associated with dynamic beaches or as a result of failure of protection works/measures; or,
b) An essential emergency service such that provided by fire, police and ambulance stations and electrical substations, which would be impaired during an emergency as a result of erosion or any other hazard associated with dynamic beaches and/or as a result of failure of protection works/measures; or,
c) Associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

3.5.5.2 Underground public infrastructure (i.e. sewers) and various utilities (e.g. pipelines) may be permitted within the dynamic beach hazard.

3.5.5.3 Development associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail systems) may be permitted within the dynamic beach hazard.

3.5.5.4 Shoreline, bank, and slope stabilization to protect existing development and conservation or restoration projects may be permitted within the dynamic beach hazard.

3.5.5.5 Site grading within the dynamic beach hazard may be permitted if the proposed works do not create new or aggravate flooding on the subject, adjacent, or other properties. Grading of sand dunes may be permitted if it is demonstrated to the satisfaction of the Conservation Authority that erosion (e.g. wind and water erosion) and flooding impacts will not be increased on adjacent properties. Notification of adjacent neighbours of site grading will be required as part of the permit application process. Grading of sand dunes adjacent to the waterbody shall not be permitted for a distance equal to 1/3 of the subject dynamic beach depth. Grading of sand dunes up to property lines shall not be permitted for a distance equal to 1/3 of the width of the subject property unless the neighbouring property provides consent to do so. Proof of approval from the Ministry of Environment, Conservation and Parks under the Endangered Species Act may be required prior to application.

3.5.5.6 Development activity associated with existing uses located within the dynamic beach hazard such as minor additions (defined as being up to 30% of the footprint of the existing structure's foundation), non-habitable accessory buildings (e.g. sheds, detached garages, etc.), pools, landscaping retaining walls, grading, unenclosed decks, etc., may be permitted provided that they are no closer to the hazard than the existing residential structure. The submitted plans should demonstrate to the satisfaction of Conservation Authority that:

a) There is no feasible alternative site outside of the dynamic beach hazard for the proposed development or in the event that there is no feasible alternative site, that the proposed development is located in an area of least (and acceptable) risk and is no closer to the hazard than the main residential structure;
b) The proposed works do not impede dynamic beach processes on the subject, adjacent, or nearby properties;
c) The footings/foundations must be engineered sufficiently to address dynamic beach processes (if applicable);
d) The proposed development activity will not prevent access for emergency works, maintenance, and evacuation;
e) The potential for surficial erosion has been addressed through the submission of acceptable drainage, erosion and sediment control, and site stabilization / restoration plans (if applicable); and,
f) Flooding and erosion hazards have been adequately addressed (if applicable).

Note that the total addition (if applicable) can't exceed 30% of the footprint of the existing structure's foundation in 2006.

3.5.5.7 Development may be permitted for the reconstruction or relocation of a building within the dynamic beach hazard, provided that it has not been damaged or destroyed by dynamic beach processes, flooding, or erosion. The submitted plans should demonstrate to the satisfaction of Conservation Authority that the structure:

a) Cannot be relocated to an area outside the dynamic beach hazard and, if there is no feasible alternative site, that it is located in an area of least (and acceptable) risk;
b) Will be protected from the dynamic beach hazard through incorporation of appropriate building design parameters; and,
c) Will not exceed original habitable floor area nor the original footprint of the previous structure.

3.5.5.8 New and replacement septic systems may be permitted within the dynamic beach hazard. The systems must be located no closer to the shoreline than the primary dwelling.

3.5.6 Development within the Allowance Adjacent to the Dynamic Beach Hazard

In general:

- Fencing does not require a permit from the LTVCA within the allowance adjacent to the dynamic beach hazard.
- Minor volumes of fill removal / placement associated with a minor landscaping project does not require a permit from the LTVCA within the allowance adjacent to the dynamic beach hazard.

3.5.6.1 Development activity may be permitted within the allowance adjacent to the dynamic beach hazard if it has been demonstrated to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property. The submitted plans should demonstrate that:

a) The development activity does not create or aggravate the dynamic beach hazard;
b) The development activity does not prevent access to and along the dynamic beach;
c) The potential for surficial erosion has been addressed through proper drainage, erosion and sediment control and site stabilization / restoration plans (if applicable); and,

d) Flooding and erosion hazards have been adequately addressed (if applicable).

4.0 HAZARDOUS LANDS

The current legislative structure embeds requirements for the administration of s. 28 in both the Conservation Authorities Act and O. Reg 41/24.

4.1 Conservation Authorities Act – Hazardous Lands

The Conservation Authorities Act contains the following sections dealing with hazardous lands:

Prohibited activities re watercourses, wetlands, etc.

> *28 (1) No person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority: …*
>
> > *2. Development activities in areas that are within the authority's area of jurisdiction and are,*
> >
> > *i. hazardous lands, …*

Permits

> *28.1 (1) An authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority,*
>
> *a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and*
> *b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; …*
>
> *The permit shall be given in writing, with or without conditions.*

4.2 Ontario Regulation 41/24 – Hazardous Lands

The following section indicates the extent of hazardous lands for the purpose of administering the Regulations. The Authority may grant a permit for a development activity in or on Hazardous Lands subject to the tests or criteria in the CA Act. The Regulation contains the following definition for hazardous lands:

> **"hazardous land"** means land that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock.

4.3 Discussion of Hazardous Lands

Hazardous land means land that could be unsafe for development activities because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock. If the activity is within unstable soil and unstable bedrock hazardous lands then this chapter applies, otherwise refer to the River or Stream Valleys and Great Lakes and Inland Lakes Shorelines chapters for other hazards such as flooding, erosion, and dynamic beaches.

Due to the specific nature of areas of unstable soil or unstable bedrock, it is difficult to identify these hazards. The potential for catastrophic failures in some areas of unstable soil and unstable bedrock warrant site specific studies to determine the extent of these hazardous lands, and therefore the appropriate limits of the hazard and Regulation Limits. The regulated area is based on the conclusions and recommendations of such studies.

Development within areas deemed as hazardous is considered through the "development activity" provision of the Regulation. Activities proposed within unstable soil and unstable bedrock hazardous lands must therefore meet the definition of "development activity" in the Regulation to be regulated.

4.3.1 Unstable Soil

Unstable soil includes but is not necessarily limited to areas identified as containing sensitive marine clays (e.g. leda clays) or organic soils (MNR & CO, 2005).

4.3.1.1 Sensitive Marine Clays (Leda Clay)

Sensitive marine clays, also known as leda clays, are clays that were deposited as sediment during the last glacial period in the Champlain Sea. Undisturbed, the clays can appear as solid and stable. But, when disturbed by excessive vibration, shock or when they become saturated with water, the clays can turn to liquid (MNR, 2001). The resulting failures or earthflows can be sudden and catastrophic.

Sensitive marine clays are not identified to be located within the LTVCA's watershed.

4.3.1.2 Organic Soils

Organic soils are normally formed by the decomposition of vegetative and organic materials into humus, a process known as humification. A soil is organic when the percentage weight loss of the soil, when heated, is five to eighty per cent (MNR, 2001).

As a result, organic soils can cover a wide variety of soil types. Peat soils, however, are the most common type of organic soil in Ontario. Therefore, a CA's wetland inventory may provide guidance in the location of organic soils. In addition, maps by the

Geological Survey of Canada, MNRF, and the Ministry of Agriculture, Food and Rural Affairs may provide additional information on the location of organic soils.

Due to the high variability of organic soils the potential risks and hazards associated with development in this type of hazardous land are also highly variable. As such, assessment of development potential in areas of organic soils is site specific. Section 4.0 of the Hazardous Sites Technical Guide (MNR, 1996a) provides important guidance in this regard.

4.3.2 Unstable Bedrock

Unstable bedrock includes but is not necessarily limited to areas identified as karst formations. Karst formations may be present in limestone or dolomite bedrock, and are extremely variable in nature. Local, site-specific studies are required for identifying karst formations. Air photo interpretation of surface features such as sink holes may provide an indication of karst formations (MNR and CO, 2005).

While there are areas within the LTVCA's watershed where the Ontario Geological Survey has mapped inferred karst (specifically, areas in Elgin and Middlesex counties), no known areas or potential areas of karst have been identified. As such, the LTVCA has no karst related policies. In addition, there is no known unstable bedrock locations in the LTVCA's watershed.

4.4 Policies – Unstable (Organic) Soils

The following sections outline the LTVCA's policies with respect to unstable soil.

4.4.1 Development Within Unstable (Organic) Soil Hazardous Lands

In general, development shall not be permitted within hazardous lands associated with unstable soils.

4.4.1.1 Development shall be prohibited in hazardous lands associated with unstable soils where the use is:

a) An institutional use associated with hospitals, nursing homes, preschool, school nurseries, day care and schools, where there is a threat to the safe evacuation of the sick, the elderly, persons with disabilities or the young during an emergency as a result of erosion or any other hazard associated with unstable soils and/or as a result of failure of protection works/measures; or,
b) An essential emergency service such as that provided by fire, police and ambulance stations and electrical substations, which would be impaired during an emergency as a result of erosion or any other

hazard associated with unstable soils and/or as a result of failure of protection works/measures; or,

c) Associated with the disposal, manufacture, treatment or storage of hazardous substances.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

4.4.2.2 Public and private infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within hazardous lands associated with unstable soil subject to the activity being approved through a satisfactory Environmental Assessment process and/or if it has been demonstrated to the satisfaction of the Conservation Authority that the control of flooding, erosion, dynamic beaches or unstable soil or bedrock will not be affected; and that the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

4.4.2.3 A new structure on an existing lot of record, an addition to an existing structure, or a reconstruction or relocation associated with existing uses may be permitted within the unstable soil hazard if it has been demonstrated to the satisfaction of the Conservation Authority that:

a) There is no feasible alternative site outside of the unstable soil hazard for the proposed development activity or in the event that there is no feasible alternative site, that the proposed development activity is located in an area of least (and acceptable) risk;
b) the development activity is protected from the unstable soil hazard in accordance with established techniques (e.g. subsurface has been investigated by a qualified professional and footings/foundations engineered accordingly);
c) All hazards/risks have been adequately addressed.

5.0 WATERCOURSES

The current legislative structure embeds requirements for the administration of s. 28 in both the CA Act and O. Reg. 41/24.

5.1 Conservation Authorities Act – Watercourses

The CA Act contains the following sections dealing with watercourses.

Activities prohibited (Prohibited activities re watercourses, wetlands, etc.)

> ***28*** *(1) No person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority:*
>
> > *1. Activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland.*
> > *2. Development activities in areas that are within the authority's area of jurisdiction and are, …*
> >
> > *iii. river or stream valleys the limits of which shall be determined in accordance with the regulations, …, or*

Permits *(for activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse)*

> ***28.1*** *(1) An Authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority,*
>
> *a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and*
> *b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; …"*

The permit shall be given in writing, with or without conditions.

5.2 Ontario Regulation 41/24 – Watercourses

Ontario Regulation 41/24 includes the following definition of a watercourse:

> *"watercourse" means a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs.*

The following section indicates how watercourses are defined for the purpose of administering the Regulation. A watercourse shall have a 15 m allowance in accordance with the Regulation for River or Stream Valleys.

5.3 Discussion of Watercourses

These policies should be read in conjunction with the River or Stream Valleys section of this document. All watercourses shall have an allowance of 15 m. This section includes the following graphics (Figures 16 and 17) that include the 15 m allowance. The allowance may be located adjacent to slopes associated with the watercourse or may be located immediately adjacent to the watercourse and its' meanderbelt (whichever is greater).

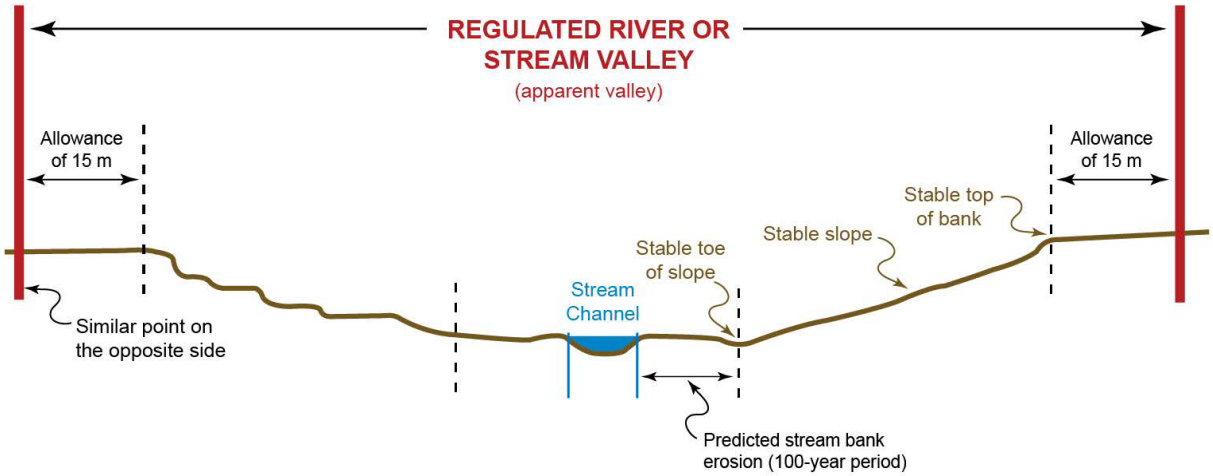

Figure 15: Apparent River or Stream Valley where the valley slopes are stable.

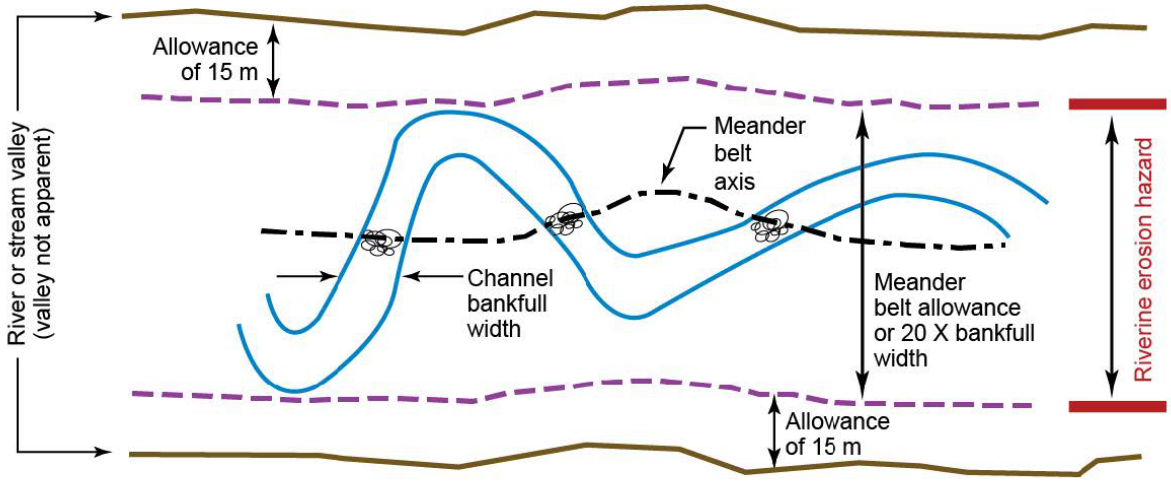

Figure 16: Not Apparent River or Stream Valley (Meander Belt)

To provide guidance in the Regulation of watercourses, it is necessary to highlight the functions of watercourses.

5.3.1 Function of Watercourses

Watercourses transport both water and sediment from areas of high elevation to areas of low elevation. Watercourses also transfer energy (e.g. heating and cooling of stream waters) and organisms (e.g. movement of mammals, fish schooling and insect swarming) and provide habitat for fish and other species either in-stream or at the air-water interface. Moreover, watercourses provide a source of water supply for wildlife and livestock.

From a human perspective, watercourses provide social and economic values such as water supply, food resources, recreational opportunities (canoeing and fishing), hydro generation, land drainage, education experiences, and aesthetics.

Watercourses are dynamic, living systems with complex processes that are constantly undergoing change. The structure and function of watercourses are influenced by channel morphology, sediment characteristics (soil type, bedrock, and substrate characteristics) and the nature of the riparian vegetation both on the overbank and rooted in the bed of the watercourse. Any changes to one of these influences can have significant impacts upon other parts of the system. One of the key influences on the structure and function of a watercourse is related to the hydrology of the stream and its normal hydrograph. Changes in the volume, peaks and timing of flows can significantly impact the stream morphology, sediment transport and even riparian vegetation.

Changes to channel morphology reduce the ability of the watercourse to process sediment causing erosion and changing the amount or size of bed load being moved. Loss of riparian vegetation results in more pollutants and run-off being transferred from the land to the water, impacting water quality and flooding downstream reaches. These changes, in turn, degrade near shore and aquatic habitat and impair the watercourse for human use.

5.4 Policies – Watercourses & Municipal Drain Interference

The term “interference” below includes all alterations mentioned within the Regulation (straighten, change, divert or interfere in any way).

Activities conducted pursuant to the Drainage Act, where the Conservation Authority has an opportunity to work in cooperation with member municipalities and other approval agencies (including Fisheries and Oceans Canada) to consider and mitigate environmental impacts of new drainage proposals and improvements of existing drains, will have permissions granted through that process. The circulation of final Engineer’s Reports for municipal drains are considered to be the member municipality’s

application/request for the alteration of a watercourse/shoreline. For municipal drain maintenance, the development activity would be exempt from the requirement of a permit if the maintenance or repair works are as described within, and if they are conducted in accordance with the mitigation requirements as set out in the DART Protocol.

The following setbacks apply for new structures adjacent to rivers, stream valleys, and other watercourses (including municipal drains):

a) Near a slope or embankment which may be subject to instability and/or erosion, the minimum setback would be the sum of an erosion allowance plus a stable slope allowance.

   An outside bend of the Thames River has an erosion allowance of 20 m. An inside bend of the Thames River has an erosion allowance of 10 m. A straight section of the Thames River has an erosion allowance of 15 m. For all other watercourses beyond the Thames River, the erosion allowance is a minimum of 10 m.

   In the absence of a site-specific study, a stable slope is assumed to be a 3:1 inclination (horizontal to vertical). The minimum stable slope to be considered through a supporting qualified engineer's report is 2.5:1. The minimum setback from the Thames River is 25 m from water's edge.

b) Where a bank on a natural watercourse has been determined to be stable by a qualified engineer with no erosion potential in the next 100 years, the horizontal setback requirement from the top-of-bank would be the lesser of either i) 8 m plus the depth of the watercourse, or, ii) 15 m.

c) For the majority of shallow municipal drains, the setback is 15 m from the top-of-bank of the drain but should be verified with the LTVCA planning and regulations staff in consultation with the municipal drainage superintendent (whom have their own municipal setback requirements). Consideration may be given to allow a reduced setback of 8 m plus the depth of the drain as measured from the top of the bank.

d) For inland canal systems, the minimum setback is 7.6 m from the top of the bank provided that there is sufficient *erosion* protection along the canal. If no *erosion* protection is in place, the setback requirement is 10 m from the toe of the bank and/or not less than 7.6 m from the top of the bank. In Lighthouse Cove, the minimum setback for a pool adjacent to a canal is 3 m measured from the top-of-bank of the canal or from the top of the erosion protection.

e) The setback from a dyke is a minimum of 15 m measured from the landside toe of the dyke.

5.4.1 Interference with a Watercourse / Municipal Drain

In general, interference with a watercourse shall not be permitted.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

5.4.1.1 Public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within, over, or beneath a watercourse subject to the activity being approved through a satisfactory Environmental Assessment process or through other studies deemed necessary by the Conservation Authority and/or if the interference on the natural features and hydrologic functions of the watercourse has been deemed to be acceptable by the Conservation Authority.

5.4.1.2 Any utility line that is to be located below the bed of the Thames River shall be located below the long term scour depth to the satisfaction of the Conservation Authority. Without a site-specific study, the long term scour depth is assumed to be a minimum of 4 m below the existing river bed.

5.4.1.3 Any utility line that is to be located below a municipal drain or other watercourse shall be located a minimum of 1.5 m below the existing bottom or design bottom (in the case of a municipal drain), whichever is deepest. In the Municipality of Chatham-Kent, the minimum is 2.5 m below the existing bottom or design bottom of a municipal drain.

5.4.1.4 Stream, bank, and channel stabilization to protect existing development or conservation or restoration projects may be permitted within a watercourse if the interference on the natural features and hydrologic functions of the watercourse has been deemed to be acceptable by the Conservation Authority.

5.4.1.5 Minor interference and/or alteration may be permitted within a watercourse if it has been demonstrated to the satisfaction of the Conservation Authority that the interference is acceptable on the natural features and hydrologic functions of the watercourse.

5.4.1.6 Major interference (e.g. realignment, dam, enclosure, pond, etc.) with a watercourse may be permitted where supported by the recommendations of a sub-watershed study, Environmental Assessment and/or if it has been demonstrated to the satisfaction of the Conservation Authority that the

interference is acceptable for the natural features and hydrologic functions of the watercourse. An engineering study, such as a municipal drainage engineer's report, will be required.

Further, enclosures part way down a drain will be discouraged. However, if reasons necessitate enclosure part way down a system or within the upper watershed, a hydrologic study will have to be completed by the proponent as part of the CA permit process to determine whether or not the enclosure would have an effect on flooding or erosion. Where the drainage area upstream of the proposed enclosure is greater than 125 hectares, surface water compensation and/or mitigation measures may be required. An engineering study, such as a municipal drainage engineer's report, will be required.

And, enclosures of natural watercourses \ valley lands associated with permanent and\or seasonal flow of water cannot be approved by staff and must go before the LTVCA's Hearing Board.

5.4.1.7 Watercourse crossings may be permitted if it has been demonstrated to the satisfaction of the Conservation Authority that the interference on the natural features and hydrologic functions of the watercourse has been deemed to be acceptable by the Conservation Authority. At a minimum, the submitted plans should demonstrate the following based on morphological characteristics of the watercourse system[4];

a) Culverts have an open bottom where it is feasible or, where it is not feasible, the culverts should be appropriately embedded into the watercourse;
b) Crossing location, width, and alignment should be compatible with stream morphology, which typically requires location of the crossing on a straight and shallow/riffle reach of the watercourse with the crossing situated at right angles to the watercourse;
c) The crossing is sized and located such that there is no increase in upstream or downstream erosion or flooding; and,
d) Have regard for upstream and downstream effects when installing / replacing a culvert.

[4] Refer to Adaptive Management of Stream Corridors in Ontario (Stream Corridors Project Management Team, 2001) for more information.

6.0 WETLANDS AND OTHER AREAS

The current legislative structure embeds requirements for the administration of s. 28 in both the Conservation Authorities Act and Ontario Regulation 41/24.

6.1 Conservation Authorities Act – Wetlands and Other Areas

The Conservation Authorities Act contains the following sections dealing with wetlands.

Activities prohibited (Prohibited activities re watercourses, wetlands, etc.)

> ***28*** *(1) No person shall carry on the following activities, or permit another person to carry on the following activities, in the area of jurisdiction of an authority:*
>
> *Activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland.*
>
> 1. *Development activities in areas that are within the authority's area of jurisdiction and are, …*
>
> *a. wetlands, …, or*
>
> *v. other areas in which development should be prohibited or regulated, as may be determined by the regulations. 2017, c. 23, Sched. 4, s. 25."*

Permits for development activity or change or interfere in any way

> ***28.1*** *(1) An Authority may issue a permit to a person to engage in an activity specified in the permit that would otherwise be prohibited by section 28, if, in the opinion of the authority,*
>
> *a) the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and*
>
> *b) the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; …*

The tests in the clauses outlined above apply to change or interfere with a wetland and development activities in the wetland and 'other area' (s. 28 (1) 1 and 2)). The tests will be used by LTVCA staff in the review of a permit for both of these

regulated areas and types of activities. The permit shall be given in writing, with or without conditions.

6.2 Ontario Regulation 41/24 – Wetlands and Other Areas

The LTVCA may grant a permit to change or interfere in any way with a wetland; or for a development activity, in or near the wetland (i.e. in the 'other area' which is defined as being within 30 m of the wetland). The Regulation defines wetlands for the purpose of administering the Regulation.

Wetland Definition

A wetland is defined in the Regulation as:

> ***"wetland"*** *means land that,*
>
> *a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,*
>
> *b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,*
>
> *c) has hydric soils, the formation of which has been caused by the presence of abundant water, and*
>
> *d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water,*
>
> *The definition of "wetland" does not include periodically soaked or wet land used for agricultural purposes which no longer exhibits a wetland characteristic referred to in clause (c) or (d) of that definition.*

Other Areas Definition

Prohibited activities, subparagraph 2 of ss. 28 (1) of the Act (development activity prohibited) O. Reg. 41/24 defines 'other areas' as:

> ***2.*** *(3) For the purposes of subparagraph 28(1) 2.v. of the Act, no person shall carry out development activities in areas that are within an authority's area of jurisdiction and are within 30 metres of a wetland.*

The following section outlines additional definitions to those previously provided in this document.

6.2.1 Additional Definitions

The following sections outline additional definitions:

6.2.1.1 Provincial Policy Statement

Hydrologic Function means**:**

The functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water's interaction with the environment including its relation to living things.

This is a comprehensive definition for the hydrologic cycle, which allows many factors to be considered when reviewing a change or interference to wetlands. The Southern Ontario Wetland Evaluation System (page 85, MNRF, 2022) states "it must be recognized that many non-hydrological functions of a wetland depend, in part, on the wetland's hydrological setting and that changes in the basin beyond the boundaries of the wetland could have an effect on the ecological value of the wetland".

6.2.1.2 Additional Definitions and Interpretations

The 'Guidelines for Developing Schedules of Regulated Areas, October 2005' approved by MNRF and Conservation Ontario includes the following "The requisite function of a wetland - `... directly contributes to … hydrological function/through connection with a surface watercourse…' is deemed to exist for all wetlands. Where a surface connection between a wetland and surface watercourse is not apparent, it is assumed that a groundwater connection exists between them, unless there is information to the contrary." (pg. 27). The LTVCA will use this interpretation and may require the applicable studies to assess the application e.g., hydrological, hydrogeological, geotechnical study, etc.

It should be noted that the *Conservation Authorities Act* and the Regulation uses the wording "in any way" when describing change or interference with a wetland. Activities proposed within the wetland boundary that could interfere in any way with the wetland, including both those activities that meet the definition of "development activity" and those that do not necessarily meet the definition of "development activity". An example of an activity that does not strictly meet the definition of "development activity" and could represent "change or interference" is the removal of hydrophytic or water tolerant plants in the wetland.

The Conservation Ontario Draft Guidelines to Support Conservation Authority Administration of the "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation", 2008 developed in consultation with MNRF, interpreted 'Interference in any way' as:

> "any anthropogenic act or instance which hinders, disrupts, degrades or impedes in any way the natural features or hydrologic functions of a wetland or watercourse" (March 2008).

'Natural features' include vegetation as outlined in the definition of a wetland "…(d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water, …".

There are a variety of sources for identifying wetlands. Many wetlands have been identified through the provincial wetland evaluation program and municipalities. A CA may have identified wetlands through a Natural Heritage or Subwatershed Study or technical assessments and site visits. Conservation Authorities may also identify wetlands as part of other natural hazard programs. Soils mapping (OMAFRA) may be useful in identifying organic soils which would indicate the potential for wetlands.

The Province uses the Ontario Wetland Evaluation System (OWES), originally developed in 1983, to identify and evaluate wetlands primarily to support land use planning processes under the *Planning Act*. The OWES currently consists of two manuals: the Southern Ontario Wetland Evaluation System and the Northern Ontario Wetland Evaluation System (MNRF, 2022). However, many of the scientific references in the current OWES guideline are from the 1970s to the early 1990s and more current scientific studies may be considered by CAs. Most components of the manuals are similar but important differences do exist between the evaluation manuals such as differences in climate, geomorphology, hydrology, human uses and other factors between these two parts of the province. Wetlands identified and evaluated using the OWES can be a valuable resource for implementing Section 28 of the *Conservation Authorities Act*, however, it is important to note that a wetland must meet the definition of 'wetland' within O. Reg. 41/24.

6.3 Discussion of Wetlands and Other Areas

To provide guidance in the regulating of wetlands and the associated allowances, it is necessary to highlight the functions of wetlands.

6.3.1 Functions of Wetlands

Wetlands provide functions that have both ecosystem and human values. From an ecosystem perspective these include primary production, sustaining biodiversity, wildlife habitat, habitat for species at risk, maintenance of natural cycles (carbon, water) and food chains. From a human perspective, wetlands provide social and economic values such as flood attenuation, recreation opportunities, production of valuable products, improvement of water quality and educational benefits.

Wetlands retain waters during periods of high water levels or peak flows (i.e. spring freshet and storm events) allowing the water to be slowly released into the watercourse, infiltrate into the ground, and evaporate. As well, wetlands within the floodplain of a watercourse provide an area for the storage of flood waters and reduce the energy associated with the flood waters.

Wetlands retain and modify nutrients, chemicals and silt in surface and groundwater thereby improving water quality. This occurs temporarily in the plants of the wetland but long term in the organic soils.

In addition, wetlands provide a variety of hydrologic functions. Over 60 potential hydrological functions have been identified for wetlands when developing the Southern Ontario Wetland Evaluation System. However, confirmation of many of these functions requires hydrological experts and field studies by qualified hydrologists. Therefore, the Ontario Wetland Evaluation System utilizes easily identifiable features and measures as surrogate values for these hydrological features.

Removal, filling, dredging, or changing the hydrologic regime of wetlands (e.g. ponds or drains) can result in reducing the capacity of wetlands to retain water. This can result in higher flows in watercourses with resulting increases in flooding and erosion. As well, with no ability to retain water, the ability to recharge the aquifer is reduced, and the hydrologic cycle is modified.

Many wetlands develop on organic soils and, as a result, when reviewing development within a wetland, the soil composition should be reviewed. Where the soils are organic then the section on Hazardous Lands should also be reviewed and the policies from this section should also be incorporated.

When reviewing an application with respect to change or interference, or development, the evaluation done under the OWES may be used as an information resource because it identifies the features and functions of the wetland. It should be noted that when reviewing an application with respect to development activity under the Regulation, the significance of the wetland as determined by the Ontario Wetland Evaluation System is not a reason to deny or approve the application. The application must be reviewed with respect to the following: the activity is not likely to affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

Determining what represents an interference can be very challenging and is dependent on a variety of parameters such as the type and the scale of activity. The legal and practical implications associated with regulating change or interference will require ongoing discussions and court decisions over the upcoming years.

Many individual and cumulative hydrologic impacts to a wetland commonly occur within the catchment area of the wetland. It is important to consider the linkages between small wetlands and headwater areas, stormwater, and upstream constrictions to flow.

Impacts to the components of a wetland (e.g., hydrologic function of a wetland) due to development within the “other areas” may also result from changes in imperviousness/infiltration due to a removal or change in vegetation, soil compaction

during construction, disruption, or alteration of groundwater flow paths due to underground construction, etc.

6.3.2 Development and Interference

Applications to undertake a development activity must be assessed with respect to the "tests" outlined in the Conservation Authorities Act.

There are three ways through which the *Conservation Authorities Act* and the Regulation address wetlands and other areas within which development and other activities may interfere with wetland (includes all components of the definition of a wetland) (Figure 13):

1) Development activities within the wetland boundary
2) Development within the "other areas" (within 30 m of the wetland itself)
3) Activities to change or interfere in any way with a wetland

Applications that include change or interference may be assess with respect to the natural features (e.g. hydrophytic plants) and hydrologic functions.

Given the proximity of the 'other area' to a wetland (i.e. within 30 m of the wetland), it is likely that most development activities in these areas will interfere with the adjacent wetland, subject to the scale of the proposed activities in this area. Applications for a development activity or change or interference must be assessed using the three components of the definition of a wetland in the Regulation (e.g., the effect a permit application may have on the hydrology, hydrologic functions maintaining the wetland, effect on hydrophytic plants etc.).

The LTVCA's assessment of the application may consider, depending upon the scope of the proposal, the following direct or indirect effects for activities that may change or interfere with the wetland:

- Changes to the hydrologic function e.g., quantity or depth of water based on the existing hydrology and hydroperiod, retention of water; water regime maintaining the wetland (e.g., surface or groundwater, water balance, recharge and/or discharge);
- Water quality during or after the activity will not result in filling the wetland or "other areas" with sediment etc. or affect the hydrophytic vegetation;
- Impacts to the hydroperiod (seasonally);
- Impact to the hydric soils or vegetation (e.g., removal);
- The potential for damage to a wetland or a watercourse associated with the wetland on an adjacent property; and,
- Other criteria identified by the LTVCA.

To receive a permit for activities associated with wetlands, it must be demonstrated in an application that interference on all components of the definition of a wetland as noted above, will not be affected by any activities of the application (site preparation, during construction and long term) or the interference is found to be acceptable by the Conservation Authority.

Portions of wetlands may also be regulated due to the presence of hazardous lands such as regulated floodplains or unstable soils. The applicable sections of this policy document should be referenced with respect to these hazards.

6.3.4 Technical Analysis

"Change or Interfere in Any Way"

The definition of a wetland contains multiple components. Any activity that affects one or more components of the definition may be considered change or interference. In many circumstances, the activity will also meet the definition of development activity and the LTVCA may consider reviewing the application using that definition.

As part of the review of a permit application, the LTVCA may request a study (or, studies) that addresses all components of the wetland definition as well as the CA Act and Regulation requirements related to a change or interference with a wetland. Studies are a mechanism for assessing impacts and to determine the suitability of a proposal. The submission of a technical study does not guarantee approval of the works. The study must be carried out by a qualified professional, with recognized expertise in the appropriate area of concern and shall be prepared using established procedures and recognized methodologies to the satisfaction of the LTVCA.

6.4 Policies - Wetlands

The following sections outline the LTVCA's policies with respect to unstable soil.

6.4.1 Development Activity and Change or Interference Within Wetlands

In general:

- Development activity (or, activities) shall not be permitted within wetlands.
- Change or interference shall not be permitted within wetlands.
- Newly / proposed ponds and drains shall not be permitted within or adjacent to wetlands.
- Stormwater management facilities shall not be permitted within wetlands.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation

Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

6.4.1.1 Public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted within a wetland subject to the development activity and change or interference on the hydrophytic vegetation and hydrologic function of the wetland has been deemed to be acceptable by the Conservation Authority. An Environmental Assessment may be required.

6.4.1.2 Conservation or restoration projects may be permitted within a wetland if the development activity and change or interference on the hydrophytic vegetation and hydrologic function of the wetland has been deemed to be acceptable by the Conservation Authority.

6.4.1.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail system) may be permitted within a wetland if the development activity and change or interference on the hydrophytic vegetation and hydrologic function of the wetland has been deemed to be acceptable by the Conservation Authority.

6.4.2 Development Activity Within 30 m of a Wetland

The regulated area extends 30 m from the boundary of any wetland.

All components of the wetland definition and the CA Act and Regulation requirements related to the development activity or a change or interference with a wetland will be considered in a permit application.

In general, development shall not be permitted within 30 m of the boundary of the wetland.

Notwithstanding, the following may be permitted subject to the applicant providing complete studies and plans that demonstrate to the satisfaction of the Conservation Authority that the activity will not affect the control of flooding, erosion, dynamic beaches or unstable soil or bedrock; will not change or interfere in any way with a wetland or watercourse; and the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property.

6.4.2.1 Public infrastructure (e.g. roads, sewers, flood and erosion control works, outlet of a stormwater management facility) and various utilities (e.g.

pipelines) may be permitted within 30 m of a wetland if the development activity and change or interference of the wetland has been deemed to be acceptable by the Conservation Authority.

6.4.2.2 Conservation or restoration projects may be permitted within 30 m of a wetland if the development activity and change or interference on the hydrologic functions of the wetland has been deemed to be acceptable by the Conservation Authority.

6.4.2.3 Development activity associated with public parks (e.g. passive or low intensity outdoor recreation and education, trail system) may be permitted within 30 m of a wetland if the development activity and change or interference of the wetland has been deemed to be acceptable by the Conservation Authority.

6.4.2.4 Non-habitable detached accessory structures may be permitted within 30 m of a wetland on vacant lots of record if the development activity and change or interference of the wetland has been deemed to be acceptable by the Conservation Authority. A study or studies to assess the application and each component of the wetland definition shall be required if the submitted plans do not demonstrate the following:

a) All development (including grading) is located outside the regulated wetland and maintains as much setback as feasible;
b) Disturbances to natural vegetation communities including hydrophytic plants contributing to the hydrologic function of the wetland are avoided;
c) The overall existing drainage patterns for the lot will be maintained;
d) Disturbed area and soil compaction is minimized;
e) The development activity is located above the high water table;
f) Impervious areas are minimized; and,
g) Best Management Practices are used to:
    i. maintain water balance
    ii. control sediment and erosion
    iii. buffer wetlands

6.4.2.5 Other development activity within 30 m of a wetland may be permitted if the development activity and change or interference on the vegetation and hydrologic functions etc. of the wetland has been deemed to be acceptable by the Conservation Authority.

7.0 Other Agency Approvals

Issuance of a permit does not relieve the applicant from the responsibility of acquiring approval from other agencies or relieve the applicant from compliance with any conditions that other agencies may impose on the work.

8.0 GLOSSARY

100 Year Flood Event Standard: that flood, based on an analysis of precipitation, snow melt, or a combination thereof, having a return period of 100 years on average, or having a 1% chance of occurring or being exceeded in any given year.

Access standards: means methods or procedures to ensure safe vehicular and pedestrian movement, and access for the maintenance and repair of protection works, during times of flooding hazards, erosion hazards and/or other water-related hazards.

Area of interference: those lands where development activity, interference, or change to a wetland could interfere with the natural features or hydrologic functions of a wetland or watercourse.

Armour: artificial surfacing of watercourse or shoreline bed, banks, shores or embankments to resist scour or erosion.

Accepted Engineering Principles: means those current coastal, hydraulic, and geotechnical engineering principles, methods and procedures that would be judged by a peer group of qualified engineers as being reasonable for the scale and type of project being considered, the sensitivity of the locations, and the potential threats to life and property.

Basement: one or more story's of a building located below the first story (Building Code). Crawl space or cellar shall be considered as a basement if it is,

a) more than 1800 mm high between the lowest part of the floor assembly and the ground or other surface below; or,
b) used for any occupancy.

Breakwall/Breakwater: object (especially a groyne or pier) resisting force of waves.

Destroyed: damaged beyond repair, or where a Chief Building Official has condemned a structure or issued an order to demolish/remove the structure.

Development activity: Ontario Regulation 41/24 defines 'development activity' as: a) the construction, reconstruction, erection or placing of a building or structure of any kind, b) any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure, c) site grading, or d) the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere. Development Activity includes a Development Project. Note that 'development', under the Planning Act, is defined differently.

Development project: is defined in Section 28.1.2 (2) of the CA Act. In this section," development project means a development project that includes any development activity as defined in subsection 28 (5) and any other act or activity that, without a permit issued under this section or section 28.1, would be prohibited under section 28. 2020, c. 36, Sched. 6, s. 17."

Dwelling unit: one or more habitable rooms, occupied or capable of being occupied as an independent and separate housekeeping establishment, in which separate kitchen and sanitary facilities are provided for the exclusive use of the occupants.

Dyke: an embankment or wall, usually along a watercourse or floodplain, to prevent overflow on to adjacent land. Also spelled dike.

Dynamic Beach Hazard: areas of inherently unstable accumulations of shoreline sediments along the Great Lakes – St. Lawrence River System and inland lakes, as identified by provincial standards, as amended from time to time. The dynamic beach hazard limit consists of the flooding hazard limit plus a dynamic beach allowance.

Erosion: continual loss of earth material (i.e. soil or sediment) over time as a result of the influence of water or wind.

Erosion Hazard: the loss of land, due to human or natural processes, that poses a threat to life and property. The erosion hazard limit is determined using considerations that include 100 years of erosion rate, an allowance for slope stability, and an erosion / erosion access allowance.

Flooding: the inundation of areas adjacent to a shoreline or a river or stream system which are not ordinarily covered by water

Flooding Hazard: the flooding hazard for river or stream valley systems is defined as the area adjacent to the watercourse which would be inundated by a flood event resulting from the greater of Hurricane Hazel, the Timmins Storm, an observed event, or by the 100 year frequency based event.

The LTVCA has adopted an observed event flood standard for the Thames River. The regulatory free flow flood event is based off of a historical event that occurred in April of 1937 in the Thames River system. This event is defined in the Regulation based on the following flows which decrease linearly down the system:

Location	Flow (cms)
Delaware	1,540
Thamesville	1,160
Chatham	1,125

In the area downstream of Chatham, which is protected by a series of dykes, the regulatory flood event for the Thames River is based on historic ice jam flooding.

For creeks, streams and watercourses other than the main channel of the Thames River, the regulatory flood event is a 1:250 year event where the probability of occurrence in any given year is 0.4%.

Along the shorelines of Lake Erie and Lake St Clair as well as inland lakes, the flooding hazard limit is based on the one hundred year flood level plus an allowance for wave uprush and other water related hazards.

Gabions: stone-filled steel wire baskets which can be assembled or stacked to act as retaining walls or provide slope and erosion protection.

Groyne: a structure extending from the shore into a body of water with the aim to reduce erosion and arrest sand movement along a shoreline.

Habitable: with respect to a building, habitable means suitable to live in or means can be inhabited. Inhabit means to dwell in or occupy.

Habitable Space: within a structure means space suitable for living but does not include bathrooms, closets, crawlspaces, or hallways. Includes garages attached to dwellings.

Hazardous Land: means land that could be unsafe for development activity because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock.

Hydrologic Function: the functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water's interaction with the environment including its relation to living things.

Interference in any way: any anthropogenic act or instance which hinders, disrupts, degrades or impedes in any way the natural features or hydrologic functions of a wetland or watercourse.

Jetty: pile or mole running out to protect a harbour or coast.

Large Inland Lakes: waterbody that have a surface area equal to or greater than 100 square kilometers where there is no measurable or predictable response to a single runoff event.

Minor Addition: for riverine or other watercourse regulated areas, a minor addition is defined as being the greater of 500 square feet or up to 30% of the footprint of the existing structure's foundation. For shoreline regulated areas, a minor addition is defined as being up to 30% of the footprint of the existing structure's foundation.

Qualified Professional: a person with specific qualifications, training, and experience authorized to undertake work in accordance with accepted engineering or scientific principles as well as provincial standards, criteria, and guidelines to the satisfaction of the LTVCA.

Reconstruction: to construct anew or again, to build a substantial (>50%) part or whole of a structure again after destruction, damage or impairment.

Regulatory floodplain: see definition of flooding hazard.

Retaining Wall: a vertical structure designed to resist the lateral pressure of soil and water behind it.

Revetment: a vertical or inclined facing of rip-rap or other material protecting a soil surface from erosion.

Riprap: a layer of stone to prevent the erosion of soil.

Rubble: waste fragments of stone, brick etc. from old structures; pieces of undressed stone used especially as filling-in, for walls; loose angular stones as covering of some rocks; water worn stones.

Scour: local lowering of a stream bed or lake bed by the erosive action of flowing water.

Sedimentation: The deposition of detached soil particles.

Significant Wetland: an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.

Spill Flood Hazard: Spill flood hazard areas are locations where flood waters may leave the flood plain of a watercourse and “spill” into surrounding lands, rejoining the watercourse at a distance downstream or moving into another watershed.

Still water line: the 100 year peak or flood level on a lake or other waterbody with a one chance in one hundred of occurring in any given year, without the influences of wave uprush, seiche, ship-generated waves, ice-piling or other water-related hazards.

Storey: the portion of a building;

a) that is situated between the top of any floor and the top of the floor next above it, or,
b) that is situated between the top of the floor and the ceiling above the floor, if there is no floor above it.

Surficial erosion: the physical removal, detachment and movement of soil at the ground surface due to water or wind.

Top-of-bank: the point at which the slope of a valley, bank, or shoreline meets the horizontal plain of the adjacent top table-land.

Toe-of-slope: the point at which the slope of a valley, bank, or shoreline meets the horizontal plain of the exiting ground slope below.

Watercourse: means a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs.

Watershed: an area that is drained by a river and its tributaries.

Wave uprush: means the rush of water up onto a shoreline or structure following the breaking of a wave; the limit of wave uprush is the point of furthest landward rush of water onto the shoreline. (Provincial Policy Statement, 2020)

Wetland: means land that,

a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,
b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,
c) has hydric soils, the formation of which has been caused by the presence of abundant water, and
d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water.

The definition of “wetland” above does not include periodically soaked or wet land that is used for agricultural purposes and no longer exhibits a wetland characteristic referred to in clause c) or d).

Note: Additional definitions may be found in the MNR Technical Guidelines, Natural Heritage Guidelines and the Provincial Policy Statement under the Planning Act.

9.0 REFERENCES AND WEB LINKS

9.1 References

MNRF (2023) *Technical Bulletin – Flooding Hazards: Data Survey and Mapping Specifications*

MNRF (2002 as amended). *River and Stream Systems: Flooding Hazard Limit Technical Guide*.

MNRF (2002). *River and Stream Systems: Erosion Hazard Limit Technical Guide*.

MNRF (2001). *Understanding Natural Hazards*.

MNRF (2005) Procedures for Approval of New Special Policy Areas (SPAs) and Modifications to Existing SPAs Under the Provincial Policy Statement, 2005 (PPS, 2005), Policy 3.1.3 – Natural Hazards – Special Policy Areas.

MNRF (1996). *Hazardous Sites Technical Guide*.

MNRF (1996). *Technical Guide for Great Lakes – St. Lawrence River System. (See Part One to Part Eight)*

Ministry of Natural Resources and Forestry (MNRF) and Conservation Ontario. (2005). *Guidelines for Developing Schedules of Regulated Areas*.

MNRF (1996). *Technical Guide for Large Inland Lakes.*

MNRF (1997). *Wave Uprush and Overtopping: Methodologies and Applications (Great Lakes - St. Lawrence River Systems)*

MNRF (2022). Ontario Wetland Evaluation System: Southern Manual.

Prent & J. Parish (2001). Belt Width Delineation Procedures.

Terraprobe Limited and Aqua Solutions (for MNRF) (1998). *Geotechnical Principles for Stable Slope, Great Lakes – St. Lawrence River System: Physical features and Processes*, part #1 pp 38-49.

9.2 Web Links

Conservation Authorities Act
https://www.ontario.ca/laws/statute/90c27

Conservation Ontario
www.conservationontario.ca

Lower Thames Valley Conservation Authority
www.ltvca.ca

Ontario Regulation 668/21 – Mandatory Programs and Services
https://www.ontario.ca/laws/regulation/210686

Ontario Regulation 596/22 – Prescribed Acts – Subsections 21.1.1 (1.1) and 21.1.2 (1.1) of the Act
https://www.ontario.ca/laws/regulation/220596

Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits
https://www.ontario.ca/laws/regulation/r24041

Provincial Policy Statement
https://www.ontario.ca/page/provincial-policy-statement-2020

APPENDIX A

Appendix A

LOWER THAMES VALLEY CONSERVATION AUTHORITY

LTVCA Dock Policy

Lower Thames River & Lighthouse Cove

2024

March 28, 2024

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Ice Guideline for Docks in the Lower Thames River Technical Background: Final Approved Report , George Comfort, P. Eng., G. Comfort Ice Engineering Ltd., October 21, 2021 (separate document)

Approved by:	**Date**	**Motion Number**
LTVCA Board of Directors	October 20, 2022	BD-2022-52
LTVCA Board of Directors	March 28, 2024	

DRAFT - LTVCA DOCK POLICY – LOWER THAMES RIVER AND LIGHTHOUSE COVE

1. Background

There is a long history of ice jams on the Thames River; and in parallel, efforts have been made for more than four decades to investigate ice problems and potential solutions for mitigating them. The Lower Thames Valley Conservation Authority (LTVCA) is often asked to make decisions regarding whether or not docks are permitted on the Thames River. The LTVCA has found that even robust docks suffer damage from flooding and ice push/jam events. A detailed approach has been lacking for the LTVCA to make informed decisions regarding proposed docks in the Thames River. An Ice Guideline was produced to assist the LTVCA in decision-making with respect to permitting for docks on the Thames River in the area of Chatham and immediately downstream of Chatham. The guideline and a supporting technical document was prepared by Mr. George Comfort, P. Eng., an experienced and qualified ice engineer.

Both the Technical Background Report and the Ice Guideline document can be found here: https://www.lowerthames-conservation.on.ca/planning-and-regs/regulations/ and are also found in Appendix 'B' and 'C' of this document.

In order to implement the Guideline that is supported by the Technical Background Report, a Thames River Dock Policy is required.

2. Types of Docks and Area of Jurisdiction

- The policy is intended to be applicable to "recreational" docks. For the purposes of this document, a recreational dock is a structure for mooring watercraft located immediately in front of existing public, residential or commercial properties.
- The Dock Policy's area of jurisdiction extends from the mouth of the Thames River up to Communication Road, which is near the eastern boundary for the City of Chatham (refer to Appendix 'A'). Furthermore, the Dock Policy's area of jurisdiction is limited to the lower Thames River, and it excludes the tributaries (i.e., various creeks and canals upstream of Lighthouse Cove) that feed into the river. Additionally, this policy addresses docks within the canaled area of the community of Lighthouse Cove.
- From Communication Road east, to the easterly limits of the LTVCA's jurisdiction in the Community of Delaware, non-removable permanent dock works are not permitted due to the hydraulic profile of the river through this reach. Any structure would be subject to extreme forces during flood and ice jam situations.

3. Policy Applicability

The following policies apply to in-water and shoreline works and related activities. Proponents of projects must ensure that the policies applicable to a particular type of work are considered when submitting an application.

4. Dock Policy

A. GENERAL

A.1. All dock construction shall be subject to / meet the requirements described in 'Ice Guideline for Docks in Lower Thames River – Final Approved Report, George Comfort, P. Eng., G. Comfort Ice Engineering Ltd., October 21, 2021'.

Further to A.1., there is an Exception under the Regulations whereby:

Paragraph 2 of Subsection 28 (1) of the Act does not apply to: (a) the construction, reconstruction, erection or placement of, (i) a seasonal or floating dock that,

(A) is 10 square metres or less,

(B) does not require permanent support structures, and

(C) can be removed in the event of flooding.

A.2. Construction of in-water and shoreline works, and related activities may only proceed once a permit is issued, and the work must conform to the conditions as stated in the approved permit/clearance letter.

A.3. It is the applicant's responsibility to ensure that the proposed work meets the requirements of all other federal and provincial agencies and the municipality (including any applicable permits) (e.g. ensuring that Species at Risk (SARO) and their habitats will be protected).

A.4. No structures (e.g. sheds, boathouses, gazebos, etc.) shall be permitted on the dock.

A.5. Where the river or waterbody bed is defined in ownership, permission will only be granted with written consent of the landowner.

A.6. All applications for in-water and shoreline works require detailed plans or sketches showing the location and nature of the work. Photos or digital images illustrating the location of the proposed work and condition of the site may also be required along with a plan showing the orientation of the photos.

A.7. Structures, works, facilities and activities must not interfere with, or pose a hazard to navigation, or create a public safety hazard, and must not interfere with water flow and currents.

A.8. Flotation devices for floating docks shall be enclosed and contained, where applicable, to prevent the escape or breakup of the flotation material into the water.

A.9. Only one dock per lot is allowed per property unless it is a water access only property.

A.10. Dock / structures are intended (and will be reviewed / permitted) solely for the purpose of vessel access.

A.11. Any other ancillary structures (houseboats, gazebos, sheds, storage areas, party platforms, etc.) floating or otherwise, are to be treated as any other form of 'development' and as such, our standard flood/erosion/shoreline/watercourse/wetland setbacks will apply.

A.12. Dock boxes, up to a maximum dimension of 28" x 75" by 48" in height, can be permitted provided they are secured to the dock.

B. SPECIFIC POLICIES BASED ON LOCATION OF DOCK (REFER TO APPENDIX 'A' – POLICY LOCATION MAP)

B.1. Development of non-removable permanent docks will be permitted within the area bounded by Communication Road and the beginning of the easterly limits of the municipal diking (approx. 2.55 km upstream of the Prairie Siding Bridge).

B.2. Non-removable permanent docks or major abutment works shall not be permitted within the diked portion of the lower Thames River.

B.3. Non-removable permanent docks shall not be permitted within the upstream portion of the Thames River (upstream of Communication Road).

B.4. Non-removable permanent dock work shall not be permitted in the Thames River downstream of the diking through the Community of Lighthouse Cove (upstream of river mouth at Lake St. Clair).

B.5. Removable docks shall be permitted in the Thames River.

C. CONSTRUCTION REQUIREMENTS / RECOMMENDATIONS

C.1. Generally, cantilevered, floating, and docks supported on legs, posts or pipes are recommended.

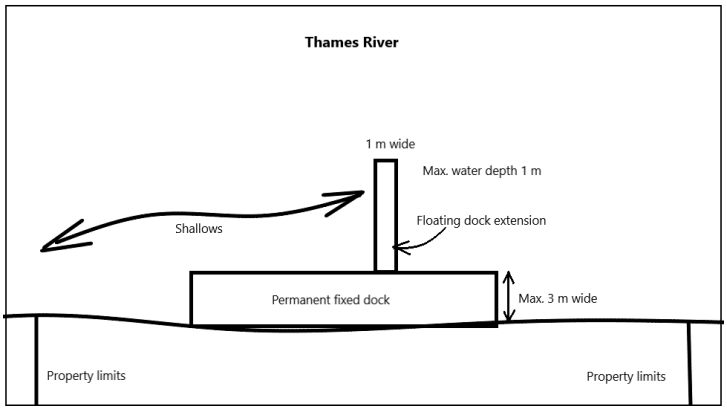
C.2. Crib style docks and docks consisting of solid in-water structures will not be permitted.

C.3. Structures to secure docks to the shore shall be installed above the upper navigation (water) level.

C.4. Non-removable permanent docks shall not extend into the river greater than a length of 3 metres.

C.5. In the case of very shallow water, an extension consisting of a floating dock no wider than 1 m may be granted up to a water depth of 1 m (3 ft.) (refer to Figure 1.) to allow for sufficient depth for boat mooring, if in the opinion of the Authority this structure will not impact natural hazards i.e. ice movement or ice jamming. All appropriate lighting on the extension must be undertaken, as per Federal requirements, so that the extension does not pose a hazard to other users of the river.

Figure 1.



C.6. Sediment and erosion control measures are required to prevent the entry of sediments into the water e.g. such as the installation of silt fencing, etc..

C.7. All activities including maintenance procedures shall be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water.

C.8. In-water and shoreline works must be located a minimum distance away from the side lot lines of neighbouring properties, as projected into the water from the shoreline as defined by Federal authorities (Transport Canada). Any proposed dock must be situated 5 m or more from

the adjacent property boundaries and property line extensions (taken from https://laws-lois.justice.gc.ca/eng/regulations/SOR-2021-170/page-1.html#h-1308703).

C.9. Treated wood that meets provincial and federal guidelines will be allowed, provided the wood is pre-treated and dry. Creosote preservative and wood treated with creosote will not be approved. Treated wood will not be allowed where it has contact with the water.

D. Maintenance and Repair

D.1. Regular maintenance and repair that does not alter an existing structure or involve an addition will be allowed without a permit. All other major structural repairs and renovations such as repairs to beams, joists, stringers, posts and piles will require a permit, and where possible, have a net positive impact on the environment.

E. Timing of Work

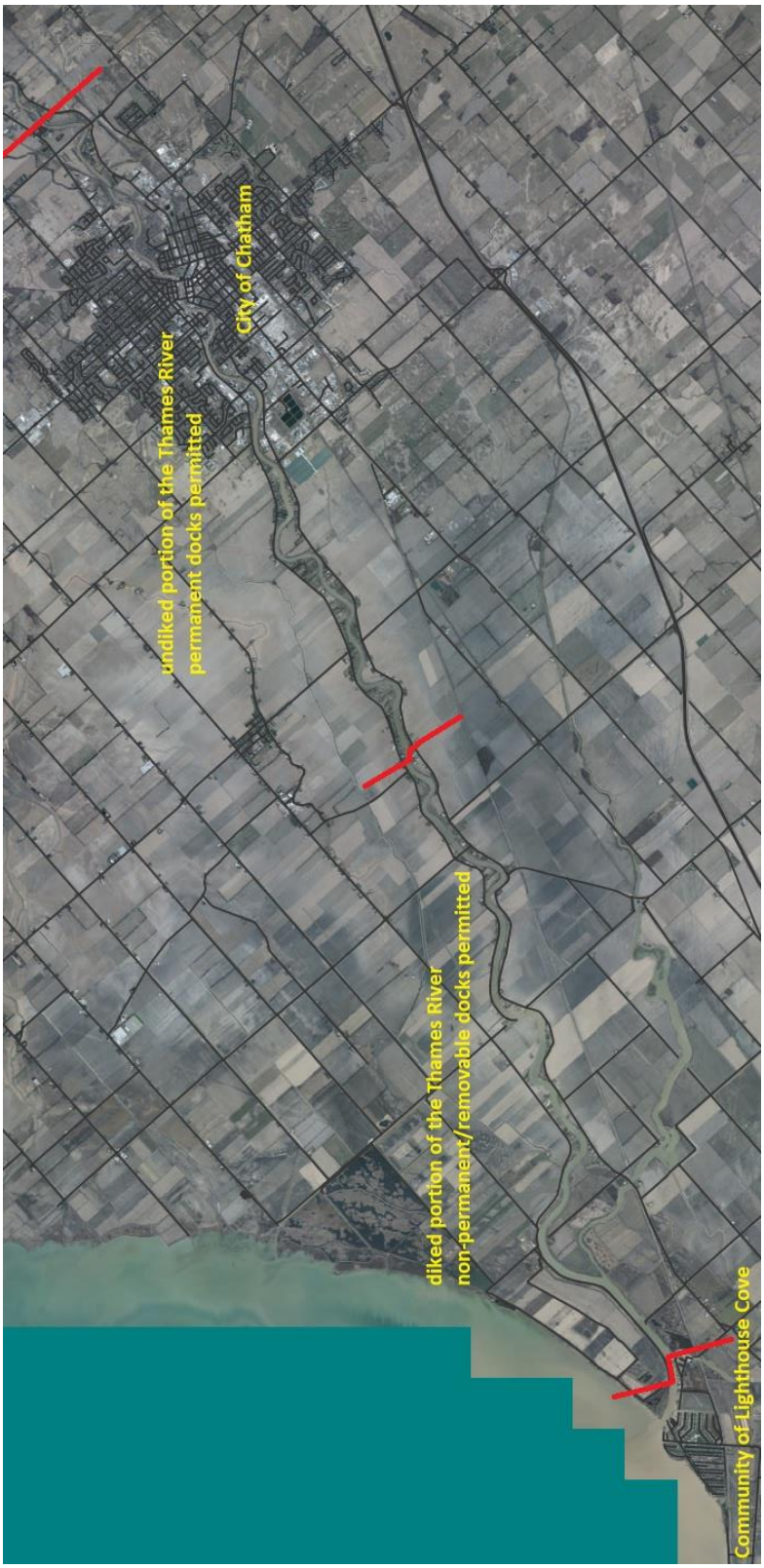
E.1. Works must be completed within timing windows as specified by Provincial and Federal authorities.

F. Environmentally Sensitive Areas Where New / Replacement Docks will NOT be Permitted

G.1. Works will not be permitted where access to the dock is through a Wetland, in the absence of a favourable Environmental Impact Study / Development Assessment Report, or site visit with qualified LTVCA staff (to determine appropriate siting of the dock and access path).

Appendix 'A'

POLICY LOCATION MAP



Appendix ‘B’

Ice Guideline for Docks in Lower Thames River – Final Approved Report,
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October 21, 2021 (separate document)

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