Grand River Conservation Authority
Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation

Ontario Regulation 41/24

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Table of Contents

1.0 Introduction

1.1 The Grand River Watershed

The Grand River *watershed* is located in southwestern Ontario. The Grand River and its major tributaries, the Speed, Eramosa, Nith and Conestogo Rivers drain an area of just over 6800 km^2 – the largest direct drainage basin to Lake Erie on the Canadian side of the border with the United States (Figure 1).

In 2021, approximately one million people resided within the Grand River watershed with 80% of them living in the cities of Kitchener, Waterloo, Cambridge, Guelph and Brantford. About 14% of the watershed is urban, 61% is rural and agricultural, while 26% per cent is *wetlands* and forests. The watershed represents a diverse area, ranging from intense agricultural production to large and rapidly densifying residential urban cores and expanding commercial and industrial areas.

Approximately 82% of the population relies on groundwater for water supply, while the remainder depends on surface water sources, mostly from the Grand River. The City of Brantford and the Six Nations of the Grand River Territory extract all their domestic water supply from the Grand River.

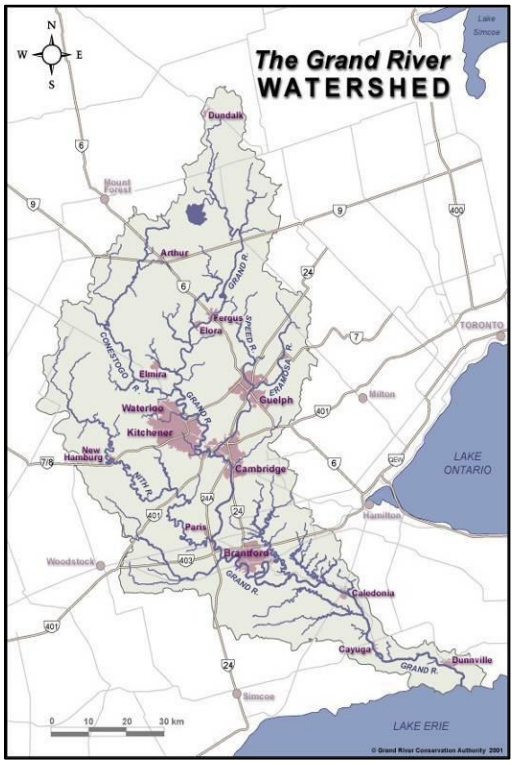


Figure 1. Grand River Watershed

According to the 2021 census, the Kitchener-Waterloo-Cambridge metropolitan area grew almost 10% between the years 2016-2021, surpassing the growth rate of 22 of the 25 largest municipalities in Canada. The Growth Plan for the Greater Golden Horseshoe (2020) anticipates watershed municipality populations to exceed 1.5 million people by 2051. As such, the wise management of our natural resources will be essential to ensure a sustainable and healthy watershed which continues to meet the ongoing needs of a growing population.

1.2 Role of the Grand River Conservation Authority

The *Conservation Authorities Act* was passed in 1946 by the Ontario government in response to severe flooding and erosion problems experienced throughout the province. This legislation provided terms of reference and guidelines for municipalities to voluntarily establish *watershed* partnerships for managing land and water resources.

The Grand River Conservation Authority (GRCA) has a long history. Formed in 1948, its governing body is comprised of 26 representatives appointed by 34 member municipalities. This board approves the GRCA budget and policies and guides its activities. To fulfill its mandate, the GRCA works closely with all levels of government to enhance watershed health by coordinating and implementing a variety of programs and services with the goals to:

- facilitate watershed planning,
- enhance water quality,

- maintain reliable water supply,
- reduce flood damages,
- protect natural areas and biodiversity,
- provide environmental education, and
- provide environmentally responsible outdoor recreational opportunities.

1.3 Prohibited Activities, Exemptions and Permits Regulation

The *Conservation Authorities Act* first empowered conservation authorities to make regulations to prohibit filling in floodplains below the high-water mark in 1956. These powers were broadened in 1960 to prohibit or regulate the placing or dumping of *fill* in defined areas where, in the opinion of the conservation authority, the control of flooding, pollution or the conservation of land may be affected (R.S.O. 1960, c. 62, s. 20 (1)). In 1968, an amendment to the *Conservation Authorities Act* (Statutes of Ontario, 1968, c. 15) further extended the power of Conservation Authorities to prohibit or control construction and alteration to waterways, in addition to filling.

In 1998, the *Conservation Authorities Act* was changed as part of the *Red Tape Reduction Act* (Bill 25) to ensure that regulations under the Act were consistent across the province and complementary with contemporary provincial policies. To better reflect provincial direction and to strengthen protection of public safety and the environment, the *Conservation Authorities Act* (CA Act) was modified to enable conservation authorities to enact the Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation (Ontario Regulation 97/04) to replace the Fill, Construction and Alteration to Waterways Regulation (R.R.O. 1990, Regulation 149 as amended by Ontario Regulation 142/98). All applications for permission received after May 4, 2006, were processed subject to the provisions of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation.

Ontario Regulation 97/04 allowed conservation authorities to prevent or restrict development in areas where the control of flooding, erosion, dynamic beaches, pollution or the conservation of land may be affected. The regulation was intended to prevent the creation of new hazards or the aggravation of existing ones. The Minister of Natural Resources approved Ontario Regulation 150/06 for the GRCA, consistent with Ontario Regulation 97/04, on May 4, 2006. This regulation was entitled the Development, Interference with Wetlands and Alteration to Shorelines and Waterways Regulation. Under this regulation, permission was required to develop in or within the allowance to *river* or stream valleys, wetlands, shorelines or hazardous lands; alter a river, *creek*, stream or watercourse; or interfere with a wetland. The Conservation Authority could grant such permission if it could be demonstrated to the satisfaction of the conservation authority that the proposed work would not affect the control of flooding, erosion, dynamic beaches or pollution or the conservation of land.

In subsequent years, numerous amendments have been made to Section 28 of the CA 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).

On April 1, 2024, a new Regulation came into force – Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits Regulation (hereinafter referred to as "the Regulation"). The Regulation, issued under the CA Act replaced all 36 individual Conservation Authority regulations (including Regulation 150/06) with one consistent province-wide regulation. The "pollution" and "conservation of land" tests for granting permission were removed from the Act and a new emphasis on public safety was added. Conservation authorities may grant permission for development activities if in the opinion of the Conservation Authority the proposal is not likely to affect the control of flooding, erosion, dynamic beaches, unstable soil or bedrock and when the development activities are 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.

Section 28 (1) of the Act states that "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,

   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."

2.0 Policy Objectives

Policy objectives related to the administration of the Regulation include, but are not limited to:

- prevent the loss of life, minimize property damage and social disruption, and avoid public and private expenditure for emergency operations, evacuation, and restoration due to natural hazards and associated processes,
- prohibit *development activity* which, singularly or cumulatively, may restrict riverine channel capacities to pass flood flows, reduce storage capacity in floodplains and wetlands resulting in increased flood levels, and create potential danger to up*stream* and downstream landowners,

- prohibit development activity of flood and erosion susceptible river or stream valleys and shorelines which may increase hazard risk, create new hazards, or aggravate existing hazards which would in future years require expensive protection measures,
- prevent interference with the *hydrologic functions* of wetlands throughout the Grand River watershed,
- avoid the degradation and loss of hydraulic and hydrologic functions in river or stream valleys, wetlands, shorelines and *hazardous land*s, and promote restoration and enhancement, wherever possible,
- reduce potential nuisances associated with development activity by limiting the potential for floating objects and debris during flood events.

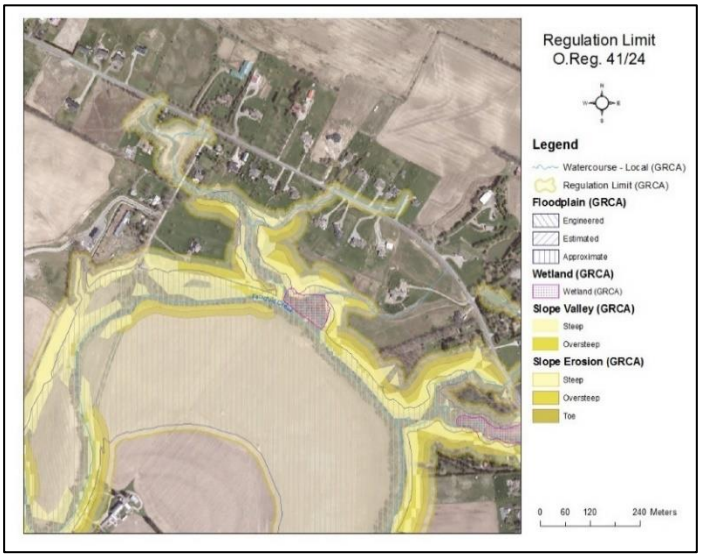


Figure 2. Regulation Limit Map

3.0 Intent

This document outlines the policies followed by the GRCA in making decisions regarding the outcome of all applications made under the Regulation pursuant to the CA Act. This ensures a consistent, timely and fair approach to the review of permit applications, staff recommendations, GRCA decisions and efficient and effective use and allocation of available resources.

4.0 Areas Regulated

The Regulation pertains to areas that are river or stream valleys, wetlands and other areas where development activity could interfere with the hydrologic function of a wetland, adjacent or close to the shoreline of Lake Erie and inland lakes and hazardous lands. The Regulated Area represents the greatest extent of the combined hazards plus an allowance as set out in the Regulation. Areas regulated under Ontario Regulation 41/24 have been mapped according to the prescribed limits in the Regulation (Figure 2).

Existing mapping is accurate to the scale at which the mapping was undertaken. Modifications to the extent of the Regulated Area may be made where more detailed studies determine a more precise boundary. It is important to note that existing mapping does not delimit the extent of all the areas regulated. **The Regulation applies to all areas described by the Regulation, whether mapped or not.** Mapping is updated by the GRCA as more detailed information becomes available.

The Regulation does not:

- limit the use of water for domestic or livestock purposes,
- interfere with the rights or powers conferred upon a municipality in respect of the use of water for municipal purposes,
- interfere with any rights or powers of any board or commission that is performing its functions

for or on behalf of the Government of Ontario, or

- interfere with any rights or powers under the *Electricity Act* or the *Public Utilities Act,*
- apply to activities approved under the *Aggregate Resources Act* (*Conservation Authorities Act, RSO 1990, C. 27, 28(10))*

Works for which permission is required under the Regulation may also be subject to other legislation, statutes, ordinances, directives, regulations, policies and standards that are administered by other agencies and municipalities such as the provincial *Planning Act, Drainage Act,* and *Environmental Assessment Act* or the federal *Fisheries Act,* among others. It is the responsibility of the applicant to ensure that all other necessary approvals are obtained prior to undertaking any work for which a permit under this Regulation has been obtained.

5.0 Activities Regulated

The CA Act and the Regulation give the GRCA the mandate to prohibit or regulate development activity in river or stream valleys, wetlands, Lake Erie shorelines, inland lakes and hazardous lands within the Grand River watershed. The Regulation also gives the GRCA the authority to prohibit or regulate *alterations* which would result in the straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, *stream*, *watercourse* or changing or interfering in any way with a wetland.

The GRCA interprets development activity to include works that by their scale or scope could have measurable impacts on flooding, erosion, dynamic beaches, or that could increase risks to public health and safety or result in the damage or destruction of property.

5.1 Exceptions

With the exception of activities within wetlands, the GRCA will generally not require permission for the following activities, including but not limited to:

- a non-habitable *accessory building* or structure that is incidental or subordinate to the principal building or structure, is 15 square metres (160 square feet) or less, and is not within a wetland or watercourse,
- the reconstruction of a non-habitable garage with no basement, if the reconstruction does not exceed the existing footprint of the garage and does not allow for a change in the potential use of the garage to create a habitable space,
- maintenance and upkeep of existing buildings and structures which do not change the existing footprint (e.g., replacement of windows, siding, roofs, stairs, etc.),
- maintenance or repair of a driveway or private lane that is outside of a wetland or the maintenance or repair of a public road, provided that the driveway or road is not extended or widened and the elevation, bedding materials and existing culverts are not altered,
- unenclosed decks and patios associated with *existing use*s,
- on-going operations associated with existing commercial/industrial uses that have been previously approved by the GRCA,
- *replacement* of existing service connections (e.g., telephone, cable, water, sewer),
- seasonal or floating docks that do not require permanent structures to support them and that can be moved in the event of flooding,

- non-structural agricultural uses such as cropping, pasturing, and woodlot management,
- the installation, maintenance or repair of a pond for watering livestock that is not connected to or within a watercourse or wetland, within 15 metres of a wetland or a watercourse, and where no excavated material is deposited within a regulated area,
- minor works such as landscaping or grading (excavation or *filling*) in an area of less than 1 hectare (2.5 acres) to a depth of less than 150 mm (6 inches) or a volume of less than 10 cubic metres (one standard dump truck load) and does not include filling of a site over multiple occasions over an extended period,
- other non-structural uses such as gardens, nurseries, open arboretums, and forestry/wildlife management,
- minor alterations and on-going maintenance to existing dams in watercourses that would not affect the control of flooding and erosion and that would not result in changes in the capacity to pass river flows or impacts on integrity of the structure or in-water works,
- on-going maintenance to stormwater management facilities that would not affect the control of flooding or erosion, and
- municipal water monitoring wells that would not affect the control of flooding and erosion.

It is recommended that any person undertaking work in regulated areas contact the GRCA prior to the activity being carried out in order to determine whether or not the work requires permission from the GRCA.

Development activity which is undertaken in regulated areas without permission of the GRCA is in violation of the CA Act. An individual may be subject to a maximum fine of $50,000 with an additional fine per day of $10,000 and/or a term of imprisonment of up to three months. A corporation may be subject to a maximum fine of $1,000,000 with an additional fine per day of $200,000 (Conservation Authorities Act, R.S.O. 1990, c. 27, s. 30.5 (2)). Upon conviction, the court may increase the fine to an amount equal to the amount of monetary benefit that resulted from the offence (*Conservation Authorities Act,* R.S.O. 1990, c. 27, s. 30.5 (3)). In addition, if convicted, the development activity may be required to be removed at the expense of the landowner. The landowner may also be required to rehabilitate the impacted area in a manner prescribed by the courts (*Conservation Authorities Act*, R.S.O. 1990, c. 27, s. 30.7 (1)).

6.0 GRCA's Regulatory and Plan Review Function

In addition to its regulatory role under the CA Act, the GRCA has a significant advisory role to watershed municipalities. The GRCA reviews and comments on municipal policy and planning documents, development proposals under the *Planning Act* and other provincial legislation (e.g., *Aggregate Resources Act*, *Drainage Act*, *Environmental Assessment Act*) as per Section 6(2) of Ontario Regulation 686/21: Mandatory Programs and Services. GRCA's comments reflect the organization's broad goals and objectives for managing natural hazards within the Grand River *watershed*.

The policies contained in Sections 7, 8 and 9 apply specifically to the GRCA's regulatory role under the CA Act. These policies must be considered in their entirety, since activities that fall within the mandate of the Regulation may influence river or stream valleys, wetlands, shorelines and hazardous lands and alteration to watercourses, either singly or in combination. Where more than one hazard exists in an

area subject to a proposed activity that falls within the scope of the Regulation, the relevant policies will be applied jointly.

Each permit application will be evaluated on its own merits, on a case-by-case basis, consistent with the policies outlined in Sections 7, 8 and 9.

7.0 General Policies to Prohibit or Regulate Development Activity

7.1 Regulated Areas

Within areas defined by the Regulation (regulated area) including river or stream valleys and an allowance; wetlands or other areas where development activity could interfere with the hydrologic function of a wetland (areas of interference); lands adjacent or close to the shoreline of Lake Erie and inland lakes and an allowance; watercourses, or hazardous lands, the following general policies will apply:

7.1.1 Development activity, interference or alteration will not be permitted within a regulated area, except in accordance with the policies in Sections 7, 8 and 9.

7.1.2 Development activity, interference or alteration within a regulated area may be permitted where it can be demonstrated through appropriate technical studies and/or assessments, site plans and/or other plans as required by the GRCA that:

- the risk to public health or safety is not increased,
- the activity will not result in the damage or destruction of property,
- susceptibility to natural hazards is not increased or new hazards created,
- there are no *adverse hydraulic or fluvial impacts* on rivers, creeks, streams, or watercourses,
- there are no adverse impacts on the natural shoreline processes of Lake Erie,
- grading (e.g., placing and removing fill) is minimized and maintains Special Policy Areas and floodplain flow regimes for a range of rainfall events, including the *Regional Storm,*
- there are no negative or adverse hydrologic impacts on wetlands,
- sedimentation and erosion during construction and post construction is minimized using *best management practices* including site, landscape, infrastructure and/or facility design (whichever is applicable based on the scale and scope of the project), construction controls, and appropriate remedial measures,
- access for emergency works and maintenance of flood or erosion control works is available,
- works are constructed, repaired and/or maintained according to *accepted engineering principles* and approved engineering standards or to the satisfactions of the GRCA, whichever is applicable based on the scale and scope of the project, and
- the activity is not likely to affect the control of flooding, erosion or dynamic beaches or unstable soil or bedrock; 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 any other requirements that may be prescribed by the regulations.

7.1.3 Notwithstanding Section 7.1.2, development activity, interference or alteration in a Regulated Area may be permitted subject to supplementary policies or stand-alone policies as specified in Sections 8 and 9.

7.1.4 Applications for permission to undertake development activity, interference or alteration in Regulated Areas must be accompanied by appropriate technical studies/assessments, site plans/other plans as required by the GRCA. These studies/plans will demonstrate to the satisfaction of the GRCA, how the applicable policies in Sections 7, 8 and 9 will be met. Pre-consultation is encouraged to determine requirements for supporting information.

7.1.5 Technical studies/assessments, site plans/other plans submitted as part of an application for a permit to undertake development activity, interference or alteration in Regulated Areas must be completed by a *qualified professional* to the satisfaction of the GRCA in conformance with the most current technical guidelines approved by the GRCA/the Province.

7.2 Prohibited Uses

7.2.1 Notwithstanding Sections 7.1.2-7.1.3 – General Policies, development activity will not be permitted within a *Riverine Flooding* or *Erosion Hazard* or *wetland* where the use is:

a) an institutional use associated with hospitals, nursing homes, pre-school, nurseries, day care or schools, where there is a threat to the safe evacuation of the sick, the elderly, persons with disabilities or the young,

b) an essential emergency service such as fire, police, ambulance, or electrical substation,

c) associated with the disposal, manufacture, treatment, transfer, or storage of *hazardous substances*,

d) associated with the outdoor storage of any materials, either temporary or permanent, or

e) associated with an *assisted living facility*.

7.3 Validity of Permits

7.3.1 A permit issued by GRCA will be valid for a period up to and including 24 months (two years) unless otherwise specified at the discretion of the GRCA. The maximum period of validity granted by the GRCA in limited circumstances, such as for large-scale public infrastructure projects, is 60 months (5 years).

7.3.2 The holder of a permit may, at least 60 days before the expiry of the permit, apply for an extension of the permit. The maximum period of validity of a permit issued, including any extension, is 60 months.

8.0 Specific Policies to Prohibit or Regulate Development Activity

8.1 River or Stream Valleys - Riverine Flooding Hazards

Defining the Riverine Flooding Hazard

Flooding of river or stream systems typically occurs following the spring freshet and may occur again because of extreme rainfall events in the summer or fall. Rivers naturally accommodate flooding within their valleys. Historically, development activity 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 loss of life.

For the Grand River watershed, the Regulation states that *Riverine Flooding Hazard* is based on the greater of the Hurricane Hazel storm event (the *Regional Storm*) or the 100-Year return period flood. The flood produced through these calculations is called the *Regulatory Flood*, the limits of which define the extent of the Riverine Flooding Hazard.

Where the Riverine Flooding Hazard is present, a 15 metre (50 foot) allowance is added. In *headwater* areas, the allowance is measured from the channel bank and defines the Regulated Area. The allowance is included to address limitations in base mapping scale and accuracy and consider activities directly adjacent to the Riverine Flooding Hazard, which could aggravate or increase the hazard risk.

The *Regulated Area* includes the Riverine Flooding Hazard (also referred to as the Regulatory Floodplain) and the allowance. Local drainage issues not associated with the Riverine Flooding Hazard are not subject to the Regulation.

Most regulated areas within/adjacent to the Grand River and its tributaries associated with the Riverine Flooding Hazard are *One-Zone Policy Areas*. In a One-Zone Policy Area, the entire regulatory floodplain is considered the *floodway* (Figure 3).

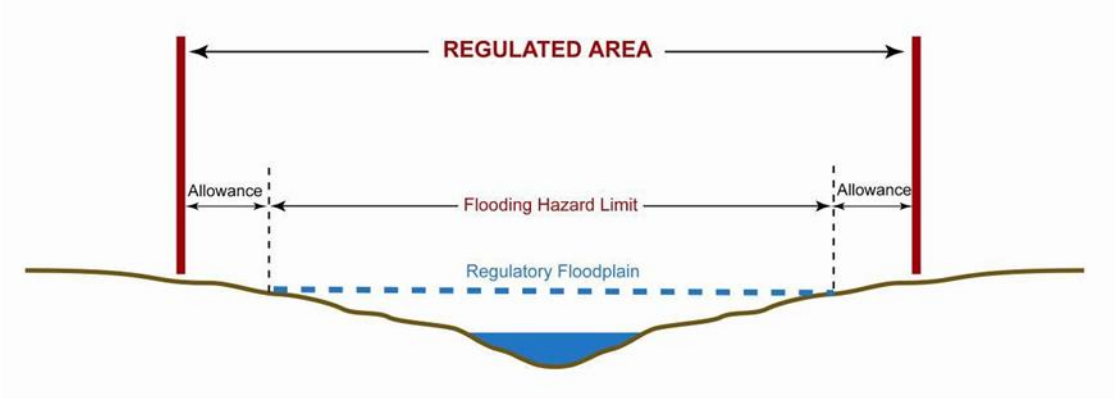


Figure 3. Riverine Flooding Hazard – Regulated Area for One Zone Policy Areas

Exceptions to the One-Zone Policy Area may exist in urban areas where a Two-Zone or Special Policy Area may be selectively applied. Both approaches allow for limited development in the *flood fringe*.

In a *Two-Zone Policy Area*, the floodplain is divided into two distinct sections – the floodway and the flood fringe (Figure 4). The floodway is that area of the floodplain that is required to pass the flows of greatest depth and velocity. The flood fringe lies between the floodway and the edge of the floodplain.

Depths and velocities of flooding in the flood fringe are much less than those in the floodway. The technical considerations used to determine the floodway-flood fringe delineation and the suitability of applying a Two-Zone policy are described in the Ministry of Natural Resources and Forestry Technical Guide - River and Stream Systems Flooding Hazard Limit (2002).

A Two-Zone Policy Area permits new development or redevelopment in the flood fringe if it is protected to the level of the Regulatory Flood. A Two-Zone Policy Area may be considered where the GRCA in cooperation with the municipality, after due consideration of local circumstances, agrees that application of the concept is suitable. The feasibility of a Two-Zone Policy Area requires the examination of several factors and implementation requires the assurance that various conditions will be complied with.

The application of a Two-Zone Policy Area is not intended to be on a lot-by-lot basis, but on a subwatershed or major reach basis. Where the GRCA and the municipality agree to the use of a Two-Zone Policy Area, appropriate official plan designations and zoning must be put into place. The regional engineer of the Ministry of Natural Resources and Forestry must also be involved in decision making regarding the potential application of a Two-Zone Policy Area.

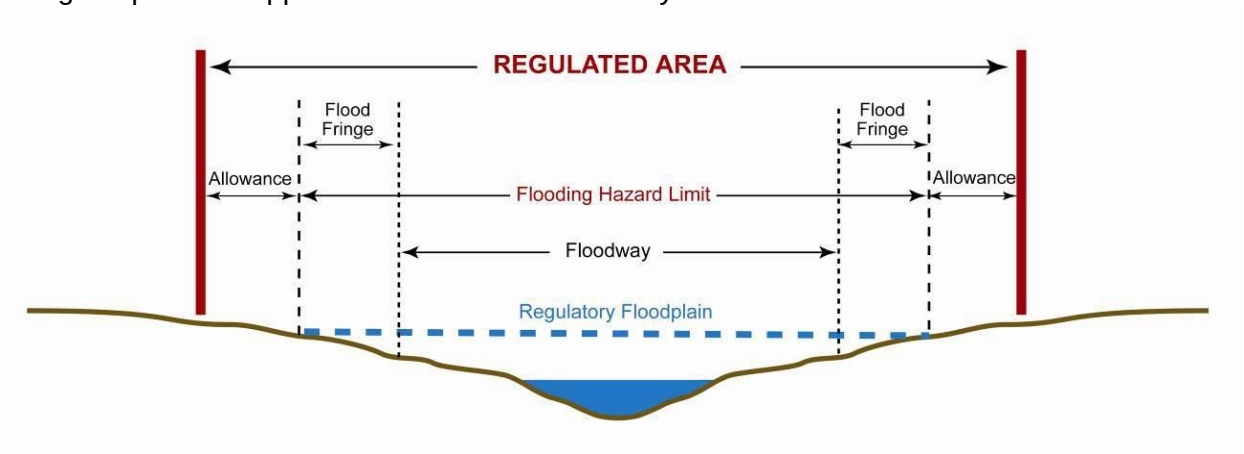


Figure 4. Riverine Flooding Hazard – Regulated Area for Two Zone Policy Areas

Application of a Special Policy Area (SPA) permits new development or redevelopment in the flood fringe and floodway where strict adherence to the One-Zone or Two-Zone approach would not provide sufficient development capability to maintain community viability. Where a SPA is applied, the municipality, GRCA and the Province of Ontario agree to relax provincial flood proofing and technical standards and accept a higher level of risk. Application of a SPA is limited to areas of historic development that qualify based on community and technical criteria. Application of a SPA requires the approval of the Province of Ontario (Ministry of Municipal Affairs and Housing and Ministry of Natural Resources and Forestry), and suitable policies and standards must be incorporated into the municipality's official plan and zoning regulations. Procedures for approval as specified by the Province must be adhered to.

Designated SPAs allow for new development that would not be otherwise permitted. Each has its own development criteria. Copies of the specific policies may be obtained at the GRCA office and at local municipal offices. Considerations for development in SPAs include structural flood proofing, safe access and egress, and the nature of land use. The constraints to development are outlined in each

SPA agreement. The following areas have SPAs: Brantford, Cambridge (Galt), Drayton, Dunnville, Guelph, New Hamburg, Paris and Waterloo (Laurel Creek).

Regardless of the approach applied, development activity within the Riverine Flooding Hazard and related allowances connected with all watercourses in the Grand River watershed requires permission from the GRCA.

Policies for One-Zone Policy Areas (excluding allowances)

The following policies apply to development activity proposed in a One-Zone Policy Area subject to a *Riverine Flooding Hazard*, excluding allowances.

8.1.1 Development activity will not be permitted within the *Riverine Flooding Hazard* except in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and Sections 8.1.2-8.1.29 – Policies for One-Zone Policy Areas.

Existing Uses

8.1.2 Development activity associated with existing uses located within a *Riverine Flooding Hazard* may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated that:

a) there is no feasible alternative site outside the Riverine Flooding Hazard,
b) the site is not subject to *frequent flooding,*
c) ingress and egress are “dry” where this standard can be practically achieved, or floodproofed to an elevation which is practical and feasible, but no less than “safe”,
d) *floodproofing* is undertaken to the extent practical, where floodproofing to the elevation of the Regulatory Flood is not technically feasible, and
e) there is no risk of structural failure due to potential hydrostatic/dynamic pressures.

Residential Uses

8.1.3 Ground Floor Additions to existing residential buildings or structures may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that:

a) the ground floor addition is 50 percent or less of the *original habitable ground floor area* to a maximum footprint of 46.5 m^2 (500 ft^2) or in the case of multiple additions, all additions combined are equal to or less than 50 per cent of the original habitable ground floor area to a maximum footprint of 46.5 m^2 (500 ft^2),
b) the number of *dwelling unit*s is the same,
c) all *habitable floor space* is at or above the existing ground floor elevation, and
d) no basement is proposed and any crawl space is non-habitable and designed to facilitate services only.

8.1.4 An Additional Storey to existing residential buildings or structures may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that the number of dwelling units is the same.

8.1.5 *Replacement* of residential buildings or structures damaged or destroyed by causes other than flooding may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that:

a) the building or structure to be replaced is relocated outside the Riverine Flooding Hazard or where this is not feasible, the building or structure is relocated to an area within the existing lot where the risk of flooding and property damage is reduced to the greatest extent, wherever possible,
b) the number of dwelling units is the same or less,
c) the new building or structure is the same size or larger to a maximum of 50 percent of the original habitable ground floor area or a footprint of 46.5 m^2 (500 ft^2), whichever is the lesser and the use is the same,
d) the building or structure is floodproofed to the elevation of the Regulatory Flood,
e) ingress and egress are “dry” where this standard can be practically achieved, or floodproofed to an elevation which is practical and feasible,
f) no basement is proposed and any crawl space is non-habitable and designed to facilitate services only,
g) electrical, mechanical and heating services are located above the level of the Regulatory Flood, wherever possible, and
h) there is no risk of structural failure due to potential hydrostatic/dynamic pressures.

8.1.6 *Relocation* of existing residential buildings and structures may be permitted in accordance with the policies in Section 8.1.5 – Policies for One-Zone Policy Areas, provided that the risk of flooding and property damage is reduced to the greatest extent wherever possible, through relocation.

8.1.7 *Non-Habitable Accessory Buildings or Structures* associated with an existing residential use such as detached garages, tool sheds, gazebos and other similar structures, may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated that there is no feasible alternative site outside the Riverine Flooding Hazard,

a) the site is not subject to frequent flooding,
b) the building or structure is greater than 15 m^2 (160 ft^2) but less than or equal to 46.5 m^2 (500 ft^2),
c) the building or structure is securely anchored such that it does not obstruct downstream culverts during a flood event where applicable,
d) floodproofing is undertaken to the extent practical, where floodproofing to the elevation of the Regulatory Flood is not technically feasible, and
e) there is no opportunity for conversion into habitable floor space in the future.

8.1.8 Swimming Pools may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and provided that:

a) floodproofing of electrical facilities to the elevation of the Regulatory Flood is undertaken, and
b) all fill, except that approved for landscaping, is removed from the Riverine Flooding Hazard.

Rural Residential Uses

8.1.9 Non-Habitable accessory buildings or structures associated with an existing rural residential may be permitted in accordance with the policies in Section 8.1.7 – Policies for One-Zone Policy Areas, with the exception of c), and where it can be demonstrated that the building or structure is greater than 15 m^2 (160 ft^2) but less than or equal to 100 m^2 (1,076 ft^2) or in the case of additions, the combined area of the existing building or structure and any proposed addition is equal to or less than 100 m^2 (1,076 ft^2).

Commercial/Industrial/Institutional Uses

8.10 *Additions* to existing commercial/industrial/institutional buildings or structures may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that:

a) the addition is 50 percent or less of the original ground floor area of the building or structure to a maximum of 100 m^2 (1,076 ft^2), or in the case of multiple additions, all additions combined are equal to or less than 50 per cent of the original ground floor area of the building or structure to a maximum footprint of 100 m^2 (1,076 ft^2), and

b) no basement is proposed, and any crawl space is designed to facilitate services only.

8.11 *Accessory Buildings or Structures* associated with commercial/industrial/institutional uses may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that:

a) the building or structure is greater than 15 m^2 (160 ft^2) but less than or equal to 100 m^2 (1,076 ft^2) or in the case of additions, the combined area of the existing building or structure and any proposed addition is equal to or less than 100 m^2 (1,076 ft^2),

b) the building or structure is securely anchored such that it does not obstruct downstream culverts during a flood event where applicable,

c) the cumulative impact of multiple accessory buildings or structures on the subject property is *negligible*, and

d) no basement is proposed, and any crawl space is designed to facilitate services only.

8.1.12 Parking Lots associated with existing *non-residential uses* located wholly or partially within the *Riverine Flooding Hazard* may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that the risk of property damage is minimized through site design and flood emergency plans.

Internal Renovations

8.1.13 *Internal Renovations* to existing buildings or structures which change the use or potential use of the building or structure but provide for no additional dwelling units may be permitted provided that:

a) the risks associated with flooding are low,

b) the internal renovation does not result in a new use prohibited by Section 7.2 – General Policies – Prohibited Uses,

c) electrical, mechanical and heating services are located above the level of the Regulatory flood, wherever possible, and

d) there is no risk of structural failure due to potential hydrostatic/dynamic pressures.

Stormwater Management

8.1.14 *Stormwater Management Facilities* may be permitted within the Riverine Flooding Hazard but outside of the *riparian zone* or *effective flow area*, whichever is greater, in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, if there is no feasible alternative site outside the Riverine Flooding Hazard and where it can be demonstrated that:

a) there is no loss of flood storage,
b) natural erosion and sedimentation processes within the receiving watercourse are not impacted,
c) where unavoidable, intrusions on hydrologic functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore functions,
d) facilities are excavated with minimal berming, Special Policy Areas and floodplain flow regimes for a range of rainfall events including the Regional Storm are maintained, and all excavated material is removed from the Riverine Flooding Hazard, and
e) design and maintenance performance requirements as determined by the GRCA for the receiving watercourse are met and the effect of the floodplain flow regime on the intended function of the facility is incorporated into the siting and design.

Public Infrastructure

8.1.15 *Public Infrastructure* including but not limited to roads, sanitary sewers, utilities, water and sewage treatment plants, water supply wells, well houses, and pipelines may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, provided that there is no feasible alternative site outside the Riverine Flooding Hazard as determined through an *Environmental Assessment* or other *comprehensive plan* supported by the GRCA, and where it can be demonstrated that:

a) adverse hydraulic or fluvial impacts are limited and any risk of flood damage to upstream or downstream properties is not increased or is minimized through site design and the affected landowner(s) is informed of the increased risk,
b) there is no loss of flood storage wherever possible, and
c) where unavoidable, intrusions on hydrologic functions are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately *restore* functions.

8.1.16 The maintenance and repair of Public Infrastructure may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that where unavoidable, intrusions on hydrologic functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore functions.

Recreational Uses

8.1.17 *Recreational Uses* such as passive parks, trails and river *access* points and other uses deemed appropriate by the GRCA, but not including new campgrounds, new golf courses or expansions to existing golf courses, marinas or permanent docks may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that:

a) there is no feasible alternative site outside the Riverine Flooding Hazard,
b) there is no loss of flood storage,
c) where unavoidable, intrusions on hydrologic functions are minimized and it can be demonstrated that best management practices including site, facility and/or landscape design and appropriate remedial measures will adequately restore functions, and
d) the risk of property damage is minimized through site and facility design and flood emergency plans.

8.1.18 *Marinas* and *Permanent Docks* may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that:

a) there is no measurable loss of flood storage,
b) facilities are designed to take advantage of existing impacted or open areas on the channel bank, wherever possible,
c) where unavoidable, intrusions on hydrologic functions are minimized and it can be demonstrated that best management practices including site, facility and/or landscape design and appropriate remedial measure will adequately *restore* functions, and
d) the risk of property damage is minimized through site and facility design and flood emergency plans.

8.1.19 Golf Courses or Golf Course Expansions may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that:

a) all associated permanent, closed structures including clubhouses, washrooms with septic systems and maintenance buildings are located outside of the Riverine Flooding Hazard,
b) all greens and tees are located above the elevation of the 1:10 year flood event,
c) there is no loss of flood storage,
d) watercourse crossings are minimized and designed in accordance with the policies in Section 9.1.2, and
e) the risk of property damage is minimized through site and facility design and flood emergency plans.

Dug Out/Isolated Ponds

8.1.20 A new *Dug-Out or Isolated Pond* or a redesign of an existing Dug-Out or Isolated Pond may be permitted in the Riverine Flooding Hazard in accordance with the policies in Sections 7.1.2-7.1.3 General Policies and where it can be demonstrated that:

a) the pond is located outside of the Riverine Erosion Hazard, and
b) finished side slopes are stable.

8.1.21 *Dredging* of an existing Dug-Out or Isolated Pond may be permitted where it can be demonstrated that:

a) all dredged material is removed from the Riverine Flooding Hazard and the Riverine Erosion Hazard,
b) dredging does not enlarge the pond in area or volume beyond what was previously constructed,
c) finished side slopes are stable,

d) hydrologic functions are restored and enhanced to the extent possible, and
e) the risk of erosion and sedimentation during dredging operations is minimized.

Agricultural Structures

8.1.22 Additions to existing agricultural buildings or structures may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that:

a) the addition is 50 percent or less of the original ground floor area of the building or structure to a maximum of 100 m^2 (1,076 ft^2), or in the case of multiple additions, all additions combined are equal to or less than 50 per cent of the original ground floor area of the building or structure to a maximum footprint of 100 m^2 (1,076 ft^2), and
b) no basement is proposed, and any crawl space is designed to facilitate services only.

8.1.23 *Accessory Buildings or Structures* associated with agricultural uses may be permitted in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, and where it can be demonstrated that:

a) the building or structure is greater than 15 m^2 (160 ft^2) but less than or equal to 100 m^2 (1,076 ft^2) or in the case of additions, the combined area of the existing building or structure and any proposed addition is equal to or less than 100 m^2 (1,076 ft^2),
b) electrical, mechanical, and heating services are located above the level of the Regulatory flood, wherever possible
c) the building or structure is securely anchored such that it does not obstruct downstream culverts during a flood event where applicable,
d) the cumulative impact of multiple accessory buildings or structures on the subject property are negligible, and
e) no basement is proposed.

8.1.24 *Replacement* of agricultural buildings or structures greater than 100 m^2 (1,076 ft^2) damaged or destroyed by causes other than flooding may be permitted in accordance with the policies in Sections 7.1.2 - 7.1.3 General Policies, and where it can be demonstrated that:

a) the building or structure to be replaced is relocated outside the Riverine Flooding Hazard or where this is not feasible, the building or structure is relocated to an area within the existing lot where the risk of flooding and property damage is reduced to the greatest extent, wherever possible,
b) the new building or structure is the same size or larger to a maximum of 50 percent of the original habitable ground floor area or a footprint of 100 m^2 (1,076 ft^2), whichever is the lesser.
c) no basement or crawl space is proposed,
d) electrical, mechanical, and heating services are located above the level of the Regulatory Flood, wherever possible, and
e) there is no risk of structural failure due to potential hydrostatic/dynamic pressures.

8.1.25 Relocation of existing agricultural buildings and structures greater than 100 m^2 (1,076 ft^2) may be permitted in accordance with the policies in Section 8.1.25 – Policies for One-Zone Policy

Areas, provided that the risk of flooding and property damage is reduced to the greatest extent wherever possible through relocation.

8.1.26 Agricultural Structures which reduce risks associated with erosion or sedimentation may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that:

a) there is no feasible alternative site outside the Riverine Flooding Hazard,
b) the risk of property damage is minimized through site design and flood emergency plans, and
c) floodproofing is undertaken to the extent practical, where floodproofing to the elevation of the Regulatory Flood is not technically feasible.

Exceptions

8.1.27 Notwithstanding Section 8.1.1 – Policies for One-Zone Policy Areas, development activity in municipally designated *settlement areas* may be permitted within the Riverine Flooding Hazard in areas subject to less than 0.5 metres (1.64 feet) of flooding where a subwatershed study or other appropriate comprehensive study is undertaken on a reach basis, and where it can be demonstrated that:

a) the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, excluding 8.1.2 d) are met,
b) a *cut and fill balance* is applied to reconfigure the Riverine Flooding Hazard such that Special Policy Areas and floodplain flow regimes for a range of rainfall events, including the Regional Storm are maintained, and
c) development activity is located above the elevation of the Regulatory Flood.

8.1.28 Notwithstanding Section 8.1.1 – Policies for One-Zone Policy Areas, development activity may be permitted on existing lots of record within the Riverine Flooding Hazard in *backwater areas* subject to less than 0.5 metres (1.64 feet) of flooding which have been artificially created as a result of undersized infrastructure such as culverts and bridges and where it can be demonstrated that:

a) the policies in Section 8.1.2 – Policies for One-Zone Policy Areas, excluding 8.1.2 d) are met,
b) grading (e.g., placing and removing fill) to raise the elevation of the site is minimized and does not increase upstream or downstream flood risks,
c) no basement is proposed, or where the building contains multiple units, the basement is floodproofed to the elevation of the Regulatory flood to provide parking below grade or common amenities, and
d) development activity is located above the elevation of the Regulatory Flood.

Policies for Two-Zone Policy Areas (excluding allowances)

8.1.29 A Two-Zone Policy Area may be applied in urban areas where:

a) the application of a One-Zone Policy will affect community viability in existing serviced built-up areas or where major channel enhancements or major dyke works have been carried out,

a) the application of a Two-Zone Policy Area is supported by the GRCA, the municipality and the Ministry of Natural Resources and Forestry after due consideration of a number of community-related and technical factors,

b) a higher level of risk is accepted by the municipality and the GRCA,

c) a hydraulic study is undertaken which determines the extent of the floodway and flood fringe, and

d) the municipality incorporates appropriate policies and standards into its official plan and zoning by-laws.

8.1.30 Development activity in the floodway of a Two-Zone Policy Area will not be permitted except in accordance with the policies in Sections 8.1.15 - 8.1.20 – Policies for One-Zone Policy Areas (stormwater management, public infrastructure, and recreational uses).

8.1.31 Buildings or Structures may be permitted within the flood fringe of a *Two-Zone Policy Area* provided that:

a) the building or structure is floodproofed to the elevation of the Regulatory flood,

b) all new dwelling units are above the elevation of the Regulatory flood,

c) all habitable floor space and electrical, mechanical, and heating services are above the elevation of the Regulatory flood,

d) no basement is proposed, or where the building contains multiple units, the basement is floodproofed to the elevation of the Regulatory flood to provide parking below grade or common amenities, and

e) ingress and egress to the building or structure is “dry” where this standard can be practically achieved, or floodproofed to an elevation which is practical and feasible, but no less than “safe”.

8.1.32 Development activity in the flood fringe of a Two-Zone Policy Area may be permitted in accordance with the policies and standards approved by the municipality and the GRCA.

Policies for Special Policy Areas (excluding allowances)

8.1.33 A Special Policy Area (SPA) may be allowed in urban areas where:

a) it can be demonstrated by the municipality through detailed studies and appropriate documentation that the application of a One-Zone Policy or a Two-Zone Policy is not adequate to maintain a community’s social and economic viability,

b) the application of a Special Policy Area is supported by the GRCA, the municipality and the Ministry of Natural Resources and Forestry after due consideration of a number of community-related and technical factors,

c) a higher level of risk is accepted by the municipality, the Province of Ontario (Ministry of Municipal Affairs and Housing and Ministry of Natural Resources and Forestry) and the GRCA,

d) a hydraulic study is undertaken to determine the extent of the floodway and flood fringe, and

e) the municipality incorporates appropriate policies and standards into its official plan and zoning by-laws.

8.1.34 Development activity within a Special Policy Area may be permitted in accordance with the policies and standards approved by the municipality, Province and the GRCA.

Prohibited Uses within the Riverine Flooding Hazard

8.1.35 Notwithstanding Sections 8.1.2-8.1.34, development activity will not be permitted within the Riverine Flooding Hazard as specified in Section 7.2 - General Policies, or where the use is:

a) a new campground or the expansion of an existing campground,

b) a new parking lot associated with residential uses in a One-Zone Policy Area or the floodway of a Two-Zone or Special Policy Area,

c) underground parking associated with any use in a One-Zone or the floodway of a Two-Zone Policy Area,

d) a driveway or access way to lands outside of Riverine Flooding Hazard where safe access is not achievable and no alternative access way providing safe access is available, or

e) flood protection works and bank stabilization works to allow for future/proposed development activity.

8.1.36 Development activity excluding non-habitable accessory buildings or structures associated with an existing use, will not be permitted within 15 metres (49.2 feet) of the either bank of the watercourse except for works permitted under the provisions of Section 9.

Policies for Riverine Flooding Hazard Allowances

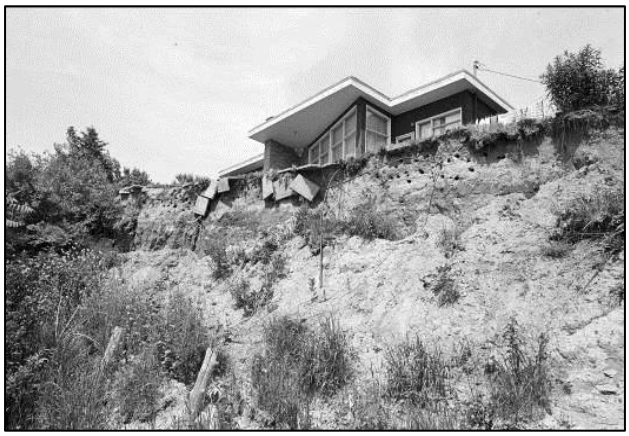
8.1.37 Development activity within allowances associated with Flooding Hazards may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, if it can be demonstrated that there is no risk of structural failure due to potential hydrostatic/dynamic pressures.

8.2 River or Stream Valleys – Riverine Erosion Hazards

Riverine Erosion Hazards

Erosion is a process of soil loss due to human or natural processes. The Riverine Erosion Hazard within river or stream valleys is that area of riverbank and lands adjacent to watercourses where erosion is actively occurring or where development activity could create slope stability issues.

The *Riverine Erosion Hazard* applies to those portions of the *valleyland* system that are both apparent (confined) and not apparent (unconfined). The extent of the hazard varies and is dependent on the characteristics of the bedrock and soils which comprise the valley slope, the degree to which the valley



slope is stable or unstable, and whether the valley slope is subject to active erosion. Valley systems are considered to be apparent or confined where valley walls are greater than 3 metres (10 feet), with or without a floodplain.

Apparent Valleys can exhibit three different conditions within which erosion hazards exist or may develop: valley slopes which are steep but stable, valley slopes which are over steepened and potentially unstable, and valley slopes which are subject to active stream bank erosion.

Where a watercourse is not contained within a clearly visible valley section, valleys are not apparent (unconfined).

Defining the Regulated Area for Apparent Valleys (Confined Systems)

Where the valley slopes in Apparent Valleys have a slope inclination of 15 per cent (6.7H:1V) or greater, the limit of the Regulated Area is the *top of slope* (which includes both the Riverine Erosion Hazard and Other Valleylands (Section 8.3)) plus an allowance of 15 metres (49.2 feet). The top of slope is the point of the slope where the downward inclination of the land begins, or the upward inclination of the land levels off. This point is situated at a higher topographic elevation of land than the remainder of the slope.

Where the valley slopes in Apparent Valleys have a slope inclination of 33 $^{1}/_{3}$ per cent (3H:1V) or greater, the limit of the Regulated Area includes two components: the Stable Slope Allowance plus an allowance of 15 metres (49.2 feet). Where active toe erosion is present in a Confined System, an additional Toe Erosion Allowance is included, regardless of the steepness of the valley wall.

The 15-metre allowance helps to buffer development activity from the hazards of slope instability and to prevent the influence of development activity on the rate of slope movement. Development activity adjacent to valley slopes can cause increased loading forces on the top of slope, compromise slope stability or worsen erosion of the slope face, and result in the loss of stabilizing vegetation. Allowances also provide access for emergencies, maintenance, and construction activities.

Defining the Riverine Erosion Hazard - Apparent Valley (Confined System) – Steep but Stable (No Toe Erosion)

For the Regulation, any slope with a gradient of 20 per cent (5H:1V) or greater is identified as a Riverine Erosion Hazard. Where the gradient is 33 $^{1}/_{3}$ per cent (3H:1V) or less, the valley slopes typically resist slumping and rotational slippage but may become unstable because of the increased loading forces of development activity, depending on the soil structure and underlying geology.

Defining the Riverine Erosion Hazard - Apparent Valley (Confined System) – Oversteepened (No Toe Erosion)

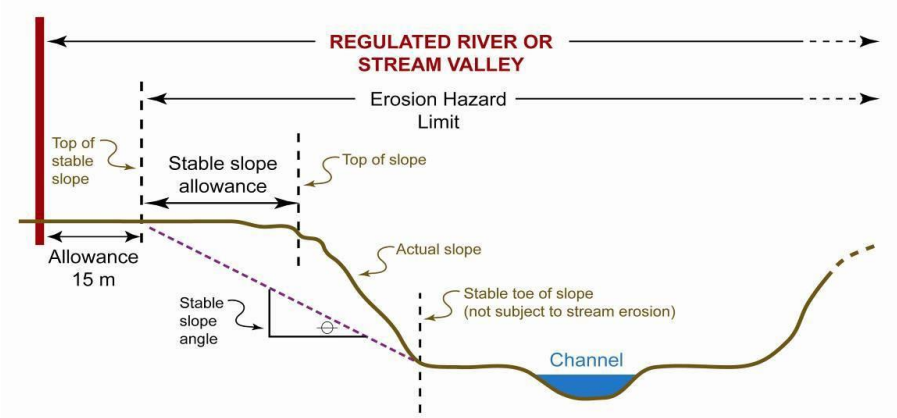


Figure 5. Riverine Erosion Hazard – Regulated Area for Apparent Oversteepened Valleys with Stable Toe

Slopes are considered oversteepened when the gradient is 3H:1V (33 $^{1}/_{3}$ per cent slope) or greater. These slopes can be unstable. On over-steepened slopes, where the *toe of slope* is stable, the Riverine Erosion Hazard is defined using a *Stable Slope Angle.* The Stable Slope Angle is based on a stable slope gradient determined from a geotechnical study or engineering assessment.

The Stable Slope Allowance is the distance between the actual valley *top of slope* and the point at which a stable slope gradient, rising from the same toe position, intersects the ground surface and includes an appropriate *factor of safety*. This is the distance required for the slope to reach a stable slope inclination. Figure 5 shows the two components used to establish the Regulated Area where slopes are oversteepened and no erosion is occurring at the toe of the valley slope.

Defining the Riverine Erosion Hazard - Apparent Valley (Confined System) – Active Toe Erosion

Where valley slopes in Apparent Valleys are subject to active toe erosion, a Toe Erosion Allowance is added into the Riverine Erosion Hazard. The Toe Erosion Allowance is the distance calculated from the toe of slope by multiplying the average annual recession rate (as determined by an engineered study based on observation of twenty-five years or longer) over a 100-year planning horizon. This method estimates the amount of erosion that would occur over the next 100 years. In the absence of an engineering study or where the toe of slope is less than 15 metres (49.2 feet) from the watercourse, a Toe Erosion Allowance of 15 metres (49.2 feet) from the bank of the stream is used. Figure 6 illustrates the three components used to establish the Regulated Area where slopes are oversteepened and active toe erosion is occurring.

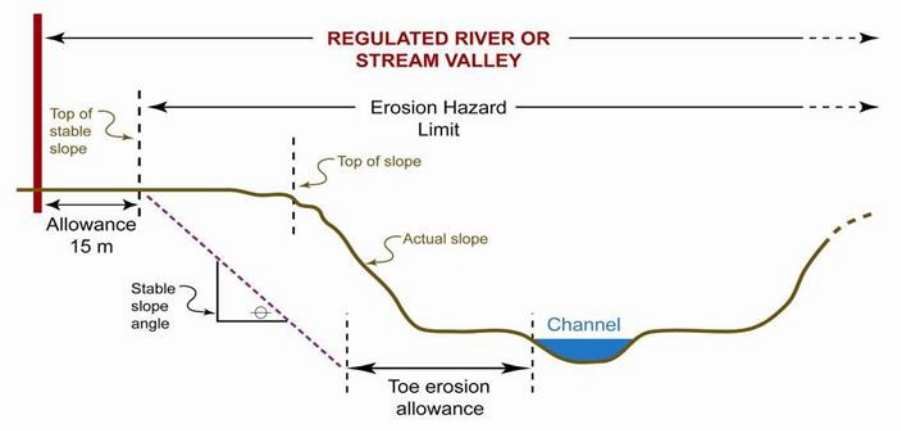


Figure 6. Riverine Erosion Hazard – Regulated Area for Apparent Oversteepened Valleys with Active Toe Erosion

Defining the Regulated Area for No Apparent Valley (Unconfined Systems)

Where there is *No Apparent Valley*, the flow of water is free to shift across shallower land. Although toe erosion and slope stability are not deemed potential hazards, consideration for the meandering tendencies of the system must be provided. In these valley sections, the Regulated Area is the greater of the extent of the Riverine Flooding Hazard plus the prescribed allowance or the *Meander Belt Allowance* plus an allowance of 15 metres (49.2 feet).

The Meander Belt Allowance provides a limit to development activity within the areas where the river system is likely to shift. This allowance is based on twenty (20) times the *bankfull channel width*, where the bankfull channel width is measured at the widest riffle section of the reach. A riffle is a section of shallow rapids where the water surface is broken by small waves. The *meander belt* is centered over the channel (Figure 7).

Development activity within the Regulated Area of any valleyland in the Grand River watershed requires permission from the GRCA.

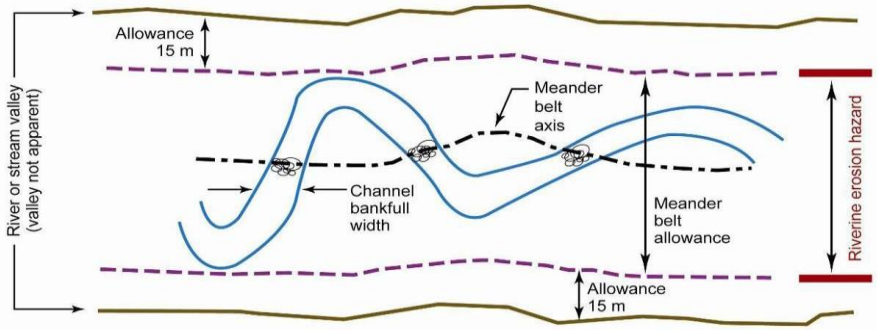


Figure 7. Riverine Erosion Hazard – Regulated Area – No Apparent Valley

Policies for Riverine Erosion Hazards and the Associated Allowance

8.2.1 Development activity will not be permitted within the Riverine Erosion Hazard and the associated *allowance* except in accordance with the policies in Sections 8.2.2–8.2.22.

Development activity in the Riverine Erosion Hazard Allowance – Apparent Valleys with Slope Inclinations of 20 per cent (5H:1V) or Greater

8.2.2 Development activity within the Riverine Erosion Hazard Allowance may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where a site-specific geotechnical or engineering assessment based on established provincial guidelines and an appropriate factor of safety against slope failure or slipping establishes a more precise *Riverine Erosion Hazard* limit, and where it can be demonstrated that:

a) there is no feasible alternative site outside the Regulated Area,
b) the proposed development activity is not subject to a Riverine Erosion Hazard or a Riverine Flooding Hazard,
c) there is no impact on existing and future slope stability,
d) the risk of creating new Riverine Erosion Hazards or aggravating existing Riverine Erosion Hazards as a result of the development activity is negligible,
e) the potential of increased loading forces on the top of the slope is addressed through appropriate structural design,
f) the potential for surficial erosion is addressed by a drainage plan,
g) access into and through the valley for preventative actions or maintenance or during an emergency will not be prevented, and
h) an appropriate setback from the Riverine Erosion Hazard, as established in Sections 8.2.3 – 8.2.10.

Residential

8.2.3 Non-Habitable Accessory Buildings or Structures associated with an existing residential use such as tool sheds, gazebos and other similar structures, may be permitted within the Riverine Erosion Hazard Allowance in accordance with the policies in Section 8.2.2, provided that a development activity setback of not less than 6 metres (20 feet) is maintained from the Riverine Erosion Hazard, where practical.

8.2.4 Ground Floor Additions to existing residential buildings or structures may be permitted within the Riverine Erosion Hazard Allowance accordance with the policies in Section 8.2.2 provided that a development activity setback of not less than 6 metres (20 feet) is maintained from the Riverine Erosion Hazard.

Commercial/Industrial/Institutional

8.2.5 Accessory Buildings or Structures associated with an existing industrial/commercial/institutional use may be permitted within the Riverine Erosion Hazard Allowance in accordance with the policies in Section 8.2.2, provided that a development activity setback of not less than 6 metres (20 feet) is maintained from the Riverine Erosion Hazard.

8.2.6 Ground Floor Additions to existing industrial/commercial/institutional buildings or structures may be permitted within the Riverine Erosion Hazard Allowance in accordance with the policies in Section 8.2.2 provided that a development activity setback of not less than 6 metres (20 feet) is maintained from the Riverine Erosion Hazard.

General

8.2.7 An Additional Storey to existing buildings or structures within the Riverine Erosion Hazard Allowance may be permitted in accordance with the policies in Section 8.2.2 provided that the existing development activity setback is maintained.

8.2.8 Buildings or Structures associated with new multi-lot or multi-unit uses (residential/industrial/commercial/institutional), large-scale uses such as golf courses or commercial/institutional complexes may be permitted within the Riverine Erosion Hazard Allowance in accordance with the policies in Section 8.2.2, provided that all building lots or greens and fairways (in the case of golf courses) are set back, in their entirety, a minimum of 6 metres (20 feet) from the Riverine Erosion Hazard.

8.2.9 Buildings or Structures on single lots not associated with new multi-lot or multi-unit uses (residential/industrial/commercial/institutional), large-scale uses or commercial/institutional complexes may be permitted within the Riverine Erosion Hazard Allowance in accordance with the policies in Section 8.2.2, provided that a development activity setback of not less than 6 metres (20 feet) is maintained from the Riverine Erosion Hazard.

8.2.10 Replacement or relocation of existing buildings or structures located within the Riverine Erosion Hazard Allowance may be permitted in accordance with the policies in Section 8.2.9.

8.2.11 Development activity within the Riverine Erosion Hazard Allowance may be permitted without a site- specific geotechnical or engineering assessment where existing geotechnical or engineering assessments based on established provincial guidelines and an appropriate factor of safety against slope failure or slipping undertaken in the immediate area establish that the site is not subject to a flooding or erosion hazard, and it can be demonstrated that the policies in Section 8.2.2 are met.

Development activity Associated with Existing Uses in the Riverine Erosion Hazard – Apparent Valleys with Slope Inclinations of 20 per cent (5H:1V) or Greater

8.2.12 Development activity associated with existing uses located within the Riverine Erosion Hazard may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated through a site-specific geotechnical or engineering assessment based on established provincial guidelines that:

a) there is no feasible alternative site outside the Riverine Erosion Hazard,
b) the site is not located in a *high-risk reach*,
c) the proposed development activity or building or structure is located in the area of least risk,
d) the site is located in an area where the factor of safety is not less than 1.1-1.3 depending on the type of use and size of the building or structure,
e) there is no impact on existing and future slope stability and bank stabilization or erosion.
f) protection works are not required,
g) the risk of creating new Riverine Erosion Hazards or aggravating existing Riverine Erosion Hazards as a result of the development activity is negligible,
h) the potential of increased loading forces on the top of slope is addressed through appropriate structural design,

i) access into and through the valley for preventative actions or maintenance or during an emergency will not be prevented, and

j) the potential for surficial erosion is addressed by a drainage plan, where applicable.

Residential

8.2.13 Non-Habitable Accessory Buildings or Structures greater than 15 m^2 (160 ft^2) but less than or equal to 46.5 m^2 (500 ft^2) associated with an existing residential use such as tool sheds, gazebos and other similar structures, may be permitted within the Riverine Erosion Hazard in accordance with the policies in Section 8.2.12. Additions may be permitted provided that the combined area of the existing non-habitable accessory building *or* structure and the addition is equal to or less than 46.5 m^2 (500 ft^2).

8.2.14 Ground Floor Additions to existing residential uses may be permitted in accordance with the policies in Section 8.2.12 provided that the addition is less than 50 per cent of the original ground floor area of the building or structure to a maximum footprint of 46.5 m^2 (500 ft^2).

Industrial/Commercial/Institutional

8.2.15 Accessory Buildings or Structures greater than 15 m^2 (160 ft^2) but less than or equal to 100 m^2 (1,076 ft^2) associated with an existing industrial/commercial/institutional use may be permitted within the Riverine Erosion Hazard in accordance with the policies in Section 8.2.12. Additions may be permitted provided that the combined area of the existing accessory building or structure and the addition is equal to or less than 100 m^2 (1,070 ft^2).

8.2.16 Ground Floor Additions to existing industrial/commercial/institutional uses may be permitted in accordance with the policies in Section 8.2.12 provided that the addition is less than 50 per cent of the original ground floor area of the building or structure to a maximum footprint of 100 m^2 (1,076 ft^2).

General

8.2.17 An Additional Storey to existing buildings or structures may be permitted in accordance with the policies in Section 8.2.12.

8.2.18 Replacement or relocation of existing buildings or structures may be permitted in accordance with the policies in Section 8.2.12.

Development activity – No Apparent Valley

8.2.18 Development activity will not be permitted within the Riverine Erosion Hazard where there is no apparent valley. A site-specific geotechnical, hydraulic or engineering assessment may be required to establish more precise limits for the Riverine Flooding Hazard and the Riverine Erosion Hazard.

8.2.19 Development activity proposed in an area subject to the Riverine Flooding Hazard but beyond the limits of the Riverine Erosion Hazard, may be permitted in accordance with the policies in Section 8.1 – River or Stream Valleys – Riverine Flooding Hazards.

Public Infrastructure

8.2.20 Public Infrastructure including but not limited to roads, sanitary sewers, utilities, water supply wells, well houses, and pipelines, may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies provided that: there is no feasible alternative site outside the Regulated Area as determined by an Environmental Assessment or other comprehensive plan supported by the GRCA, a site-specific geotechnical or engineering assessment based on established provincial guidelines and an appropriate factor of safety establishes a more precise Riverine Erosion Hazard, and where it can be demonstrated that:

a) there are no impacts on existing and future slope stability,
b) the risk of creating new Riverine Erosion Hazards or aggravating existing Riverine Erosion Hazards is minimized through site and infrastructure design and appropriate remedial measures,
c) the potential of increased loading forces on the top of slope is addressed through appropriate structural design,
d) the potential for surficial erosion is addressed by a drainage plan, and
e) where unavoidable, intrusions on slopes or hydrologic functions are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore features and functions.

Recreational Infrastructure

8.2.21 Recreational Infrastructure which by its nature must locate in river valleys such as fencing, stairways, and access points, and other recreational uses deemed appropriate by the GRCA may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated through a site-specific geotechnical or engineering assessment based on established provincial guidelines and appropriate factor of safety that:

a) there is no impact on existing and future slope stability,
b) the risk of creating new Riverine Erosion Hazards or aggravating existing Riverine Erosion Hazards is minimized through site and infrastructure design and appropriate remedial measures,
c) facilities are designed and constructed to minimize the risk of structural failure and/or property damage,
d) the potential for surficial erosion is addressed by a drainage plan, and
e) where unavoidable, intrusions on slopes or hydrologic functions are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions.

Prohibited Uses within the Riverine Erosion Hazard

8.2.22 Notwithstanding Sections 8.2.2-8.2.22, development activity will not be permitted within the Riverine Erosion Hazard as specified in Section 7.2 – General Policies, or where the use is:

a) a bank stabilization project intended to protect new development activity, with the exception of public infrastructure,
b) placement or dumping of fill not associated with works approved by the GRCA,
c) a Stormwater Management Facility, or

d) excavation works at the toe of a valley slope, except for works which may be permitted in accordance with the policies in Section 9.1.

8.3 River or Stream Valleys – Apparent Valleys - Other Valleylands

River and stream valleys are complex, dynamic landscapes. The interplay between surface and ground water and the linkages, interactions and inter-dependence of aquatic environments with terrestrial environments supply hydrologic functions critical to sustaining watersheds. In the majority of cases, valleylands within apparent valleys are contained within the Riverine Flooding Hazard and/or the Riverine Erosion Hazard. However, the Regulation also includes stable, gently sloping valley walls where the slope inclination is greater than or equal to 15 per cent (6.7H:1V) but less than 20 per cent (5H:1V) to the top of slope, and pockets of gently sloping land terraced between valley slopes outside of the Riverine Flooding Hazard and the Riverine Erosion Hazard. These areas are referred to as *Other Valleylands.*

Where Other Valleylands are defined by the top of slope, an additional 15 metre (49.2 foot) allowance is added to establish the Regulated Area. Development activity within Other Valleylands and the associated allowance (Regulated Area) requires permission from the GRCA and the following policies apply.

Policies for Other Valleylands

8.3.1 Development activity will not be permitted in Other Valleylands and the *associated allowance* except in accordance with the policies in Sections 8.3.2-8.3.3.

8.3.2 Development activity in Other Valleylands and the associated allowance may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated through a site-specific geotechnical or engineering assessment that:

a) the proposed development activity is not subject to a Riverine Erosion Hazard or a Riverine Flooding Hazard,

b) there is no impact on existing and future slope stability and bank stabilization, or erosion protection works are not required,

c) the potential of increased loading forces is addressed through appropriate structural design,

d) access into and through the valley for preventative actions or maintenance or during an emergency will not be prevented, and

e) the potential for surficial erosion is addressed by a drainage plan where applicable.

8.3.3 Development activity in Other Valleylands and the associated allowance may be permitted without a site- specific geotechnical study, where:

a) existing geotechnical or engineering assessments based on established provincial guidelines and an appropriate factor of safety against slope failure or slipping undertaken in the immediate area establish that the site is not subject to a flooding or erosion hazard, and it can be demonstrated that the policies in Section 8.3.2 are met, or

b) in the opinion of the GRCA, the impact of the development activity on slope stability is negligible and the policies in Sections 7.1.2-7.1.3 General Policies are met.

8.4 Wetlands and Areas of Interference

Wetlands are important natural features on the landscape, whether permanently or seasonally wet. They moderate water flow by absorbing much of the surface water runoff from the land and then slowly releasing it. This helps to reduce flooding and to sustain stream flows during dry spells. Many wetlands recharge groundwater by moving surface water into the groundwater system. Other benefits include protecting and improving water quality, providing habitat for fish and wildlife, and providing recreational opportunities. The lands which surround wetlands are also important to sustaining their essential hydrologic functions.

The areas surrounding wetlands where development activity could interfere with the hydrologic function of the wetland are called “areas of interference”. These areas include lands that are 30 metres (98 feet) from the boundaries of all wetlands.

All wetlands and their associated areas of interference are regulated under the Regulation. Adjustments to the extent of areas of interference are made to the Regulation limits where roads exist. Further refinements to the extent of areas of interference will be made where areas for protection around wetlands were established prior to April 1, 2024 and endorsed by the GRCA through the development process. Future adjustments may be made to the regulation limit after a GRCA permit has been obtained and the approved development undertaken or the subdivision or condominium plan has been registered by the municipality, whichever is applicable.

Any development activity or interference within wetlands or development activity in areas of interference requires permission from the GRCA.

Policies for Wetlands and Areas of Interference

8.4.1 Development activity/interference within a wetland or development activity within an area of interference will not be permitted except in accordance with the policies in Sections 8.4.3-8.4.13.

8.4.2 Peat Extraction within a wetland will not be permitted except in accordance with the policies in Sections 8.4.4-8.4.5.

Development activity/interference within Wetlands

8.4.3 Subdivision or condominium development activity within a wetland or an area of interference previously approved by a municipality under the *Planning Act* with GRCA support may be permitted provided that:

a) the proposed development activity met the GRCA policies in effect at the time of draft plan approval, and

b) the proposed development activity is modified in accordance with the policies in Section 8 – Policies for Wetlands and Areas of Interference, wherever possible.

8.4.4 Development activity within a naturally occurring wetland may be permitted where the wetland is less than 0.5 hectares (1.24 acres) and it can be demonstrated that the wetland is not:

a) located within a floodplain or watercourse,
b) there are no negative or adverse impacts on flooding and erosion, and
c) hazards related to unstable soils can be addressed.

8.4.5 Development activity within or interference with *an anthropogenic wetland* less than 2 hectares (5 acres) may be permitted where it can be demonstrated that the wetland's hydrologic functions can be maintained or enhanced elsewhere within the subwatershed or planning area and the wetland is not:

a) located within a floodplain or watercourse,
b) there are no negative or adverse impacts on flooding and erosion, and
c) hazards related to unstable soils can be addressed.

8.4.6 Public Infrastructure including but not limited to roads, sanitary sewers, utilities, water supply wells, well houses, and pipelines, within a wetland larger than specified in Sections 8.4.4-8.4.5 may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, if it can be demonstrated that:

a) an Environmental Assessment or other comprehensive plan supported by the GRCA, demonstrates that all alternatives to avoid wetland loss or interference have been considered and that the proposed alignment minimizes wetland loss or interference to the greatest extent possible, and
b) where unavoidable, intrusions on wetlands and their hydrologic functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore functions.

8.4.7 Where an Environmental Assessment or other comprehensive plan is available and supported by the GRCA as specified in Section 8.4.6, the GRCA will request a more detailed site-specific study (e.g., a *Scoped Environmental Impact Study*) consistent with the comprehensive plan. This study will determine a more precise area wetland boundary in accordance with the current Ontario Wetland Evaluation System and demonstrate how the hydrologic functions of the wetland will be restored.

8.4.8 Dredging of existing ponds within a wetland may be permitted in accordance with the policies in Section 7.1.2 and Section 8.1.21, and provided that all dredged material is placed at a suitable distance from the wetland.

Development activity within Areas of Interference

8.4.9 Development activity within an area of interference less than or equal to 30 metres (100 feet) from a wetland may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where an Environmental Impact Study demonstrates that:

a) there are no negative or adverse impacts on the wetland feature and its hydrologic functions,
b) there are no negative or adverse impacts on flooding and erosion,
c) all development activity is located outside of the wetland and maintains as much setback as feasible,
d) development activity is located above the water table, except as specified in Section 8.4.11, and

e) septic systems are located a minimum of 15 metres (50 feet) from the wetland and 0.9 metres (3 feet) above the annual maximum water table.

8.4.10 Peat Extraction within an area of interference may be permitted where an Environmental Impact Study demonstrates that policies in Sections 7.1.2-7.1.3 – General Policies are met, and the affected area is rehabilitated to restore the wetland feature and functions.

8.4.11 An Environmental Impact Study may not be required in an area of interference from a wetland if, in the opinion of the GRCA, the potential hydrologic impacts of the proposed development are negligible. This includes, but is not limited to single family residences, additions, and accessory structures for which less than one (1) hectare (2.5 acres) is required for grading.

Conservation Projects within Wetlands

8.4.12 Wetland Conservation Projects within wetlands and areas of interference may be permitted where an Environmental Impact Study demonstrates how the hydrologic functions will be protected, created, restored, or enhanced.

Stormwater Management within Wetlands

8.4.13 Stormwater Management Facilities within a wetland may be approved for flood control purposes provided that a comprehensive plan supported by the GRCA, demonstrates that all alternatives to avoid wetland loss have been considered and a flood control structure is required to alleviate an existing flood or erosion problem of a regional scope, and where it can be demonstrated that:

a) all structural components and actively managed components of the stormwater management facility are located outside of the wetland,
b) a detailed study (scoped Environmental Impact Study) consistent with the comprehensive plan demonstrates how the hydrologic functions of the wetland will be protected, restored, or enhanced,
c) sedimentation during construction and post construction are minimized using best management practices including site and facility design, construction controls, and appropriate remedial measures,
d) design and maintenance requirements as determined by the GRCA are met, and
e) works are constructed, repaired, or maintained according to accepted engineering principles and approved engineering standards or to the satisfaction of the GRCA, whichever is applicable based on the scale and scope of the project.

8.4.14 Stormwater Management Facilities for water quality control will not be permitted within a wetland, but may be permitted in the area of interference where it can be demonstrated that:

a) all structural components and actively managed components of the stormwater management facility including constructed wetlands, are located outside of the wetland,
b) a detailed study demonstrates how the hydrologic functions of the wetland will be protected, restored or enhanced,
c) sedimentation during construction and post construction are minimized using best management practices including site and facility design, construction controls, and appropriate remedial measures,
d) design and maintenance requirements as determined by the GRCA are met, and
e) works are constructed, repaired, or maintained according to accepted engineering principles

and approved engineering standards or to the satisfaction of the GRCA, whichever is applicable based on the scale and scope of the project.

8.5 Lake Erie Shoreline

About 26 kilometres (16 miles) of Lake Erie shoreline is within the jurisdiction of the GRCA. For the purposes of defining the extent of the Regulated Area, a 15 metre (50 foot) allowance is added to the furthest landward extent of the flooding hazard, erosion hazard or dynamic beach hazard.

Updated technical studies and shoreline hazard mapping were completed and compiled in a report entitled “Haldimand County Lake Erie Hazard Mapping and Risk Assessment Technical Report” (Baird & Associates) in 2020 and subsequently adopted by the GRCA. The report refined the hazard limits and built upon the Shoreline Management Plan completed by Shoreplan Engineering in 1994, which laid out a technical basis and recommended a management plan for the lakeshore. The Lake Erie shoreline erosion hazard and dynamic beach hazard are determined based on information from the Baird report, updated shoreline mapping, and current applicable site-specific technical information.

Lake Erie Shoreline Flooding Hazard

Flooding from Lake Erie affects the entire shoreline area, backshore areas and extends up the lower portions of the Grand River and its tributaries up to and including the Town of Dunnville. The *Lake Erie Shoreline Flooding Hazard* limit is based on 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 jamming *(*Figure 9).

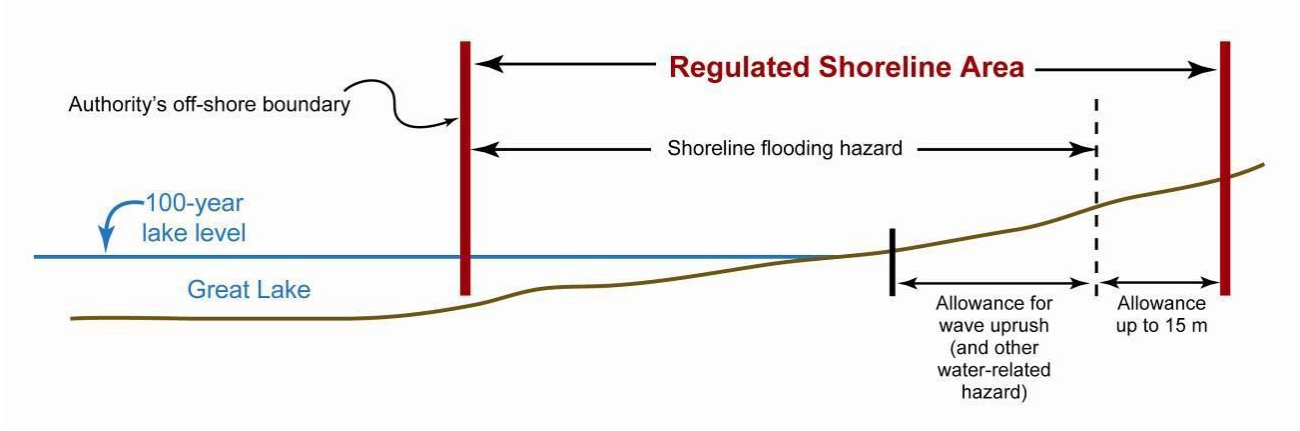


Figure 8. Lake Erie Shoreline Flooding Hazard - Regulated Area

Lake Erie Shoreline Erosion Hazard

The *Lake Erie Shoreline Erosion Hazard* is defined as the average annual rate of recession extended over a 100-year period. The erosion hazard is determined using a stable slope allowance (equal to the horizontal distance measured landward from the toe of slope equal to three (3) times the height of the cliff, bluff or bank) and an erosion allowance equal to 100 times the average annual recession rate (Figure 10).

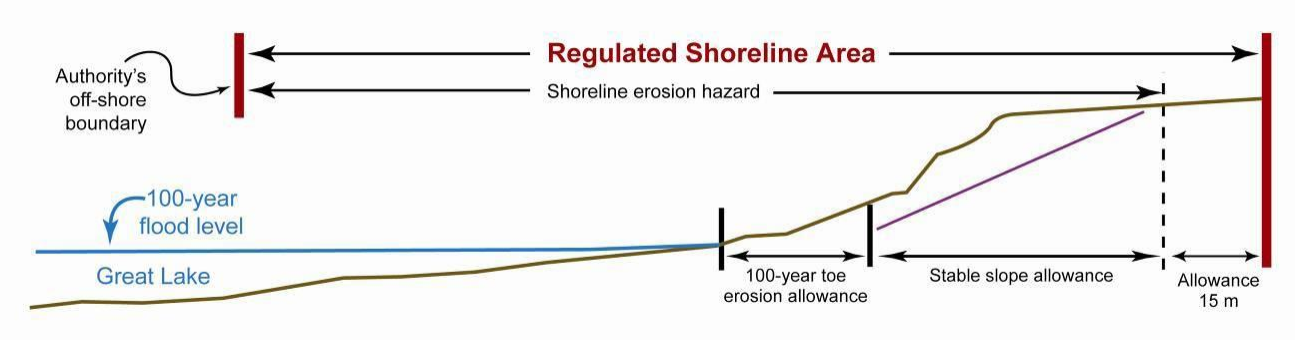


Figure 9. Lake Erie Shoreline Erosion Hazard - Regulated Area

Lake Erie Dynamic Beach Hazard

The *Lake Erie Dynamic Beach Hazard* is that portion of a shoreline where accumulated unconsolidated sediment continuously moves because of naturally occurring processes associated with wind and water and changes in the rate of sediment supply. The extent of the dynamic beach hazard is defined as the extent of the flooding hazard plus a dynamic beach allowance of 30 metres inland to accommodate dynamic beach movements. The "Haldimand County Lake Erie Hazard Mapping and Risk Assessment Technical Report" identifies four reaches containing dynamic beaches, three of which do not form the furthest landward extent of the shoreline hazard due to extensive backshore flooding and wetland areas (Figure 11).

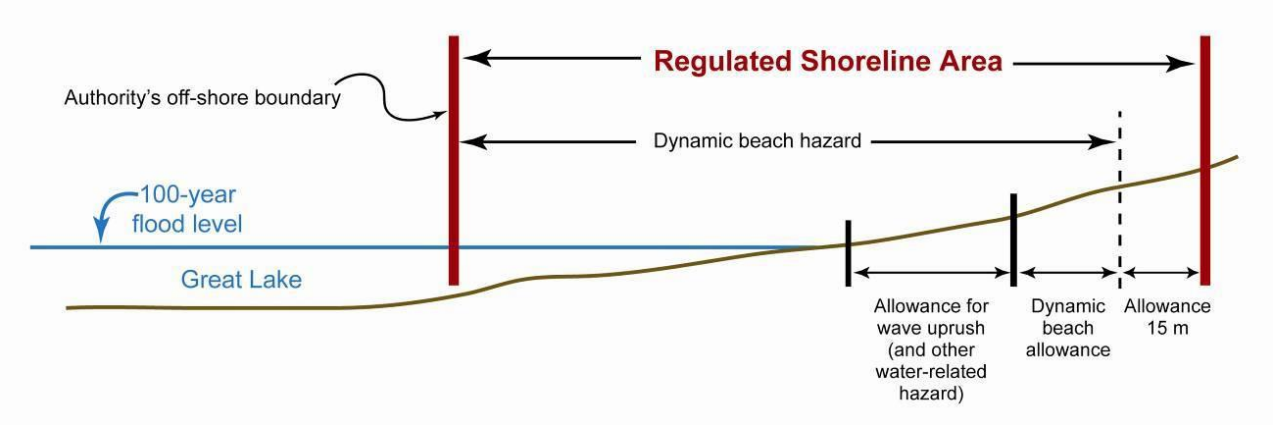


Figure 10. Lake Erie Dynamic Beach Hazard - Regulated Area

Any development activity adjacent or close to the shoreline of Lake Erie within the Regulated Area requires permission from the GRCA.

Policies for Lake Erie Shoreline

8.5.1 Development activity within the Regulated Area associated with the Lake Erie shoreline will not be permitted except in accordance with the recommendations of the currently approved Shoreline Management Plan or equivalent for the applicable shoreline reach and the policies in Sections 8.5.2-8.5.13.

Development activity – Lake Erie Shoreline Flooding or Erosion Hazard

8.5.2 Development activity associated with existing uses located within Lake Erie Shoreline Flooding or Erosion Hazards may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where there is no feasible alternative site outside the flooding or erosion hazard, provided that it can be demonstrated that:

a) the proposed development activity is located in an area of least (and acceptable) risk,
b) floodproofing standards, protection works standards and access standards as determined by the GRCA are met,
c) no basement is proposed in the flooding hazard and any crawl space is non-habitable and designed to facilitate services only, and
d) a maintenance access of at least 5 metres (16 feet) is retained to and along existing shoreline protection works.

8.5.3 Ground Floor Additions to existing buildings or structures may be permitted in accordance with the policies in Section 8.5.2 – Policies for Lake Erie Shoreline, and where it can be demonstrated that:

a) the ground floor addition is 50 percent or less of the original habitable ground floor area to a maximum footprint of 46.5 m^2 (500 ft^2) or in the case of multiple additions, all additions combined are equal to or less than 50 per cent of the original habitable ground floor area to a maximum footprint of 46.5 m^2 (500 ft^2).
b) the number of dwelling units is the same,
c) all habitable floor space is at or above the existing ground floor elevation, and
d) no basement is proposed.

8.5.4 An Additional Storey to an existing building or structure may be permitted in accordance with the policies in Section 8.5.2 – Policies for Lake Erie Shoreline, and where it can be demonstrated that the number of dwelling units is the same.

8.5.5 Non-Habitable Accessory Buildings or Structures greater than 15 m^2 (160 ft^2) associated with an existing uses such as detached garages, tool sheds, gazebos and other similar structures within lands subject to the Lake Erie Shoreline Flooding or Erosion Hazard may be permitted in accordance with the policies in Sections 8.5.2 - Policies for Lake Erie Shoreline, and where it can be demonstrated that there is no opportunity for conversion into habitable space in the future.

8.5.6 Replacement of buildings or structures other than those destroyed by flooding or erosion within lands subject to the Lake Erie Shoreline Flooding or Erosion Hazard may be permitted in accordance with the policies in Section 8.5.2, and where it can be demonstrated that:

a) the building or structure to be replaced is relocated to an area within the existing lot where the risk of flooding, erosion and/or property damage is reduced to the greatest extent, wherever possible,

b) the number of dwelling units is the same or less,

c) the new building or structure is the same size or smaller than the ground floor area of the former building or structure and the use is the same,

d) the ground floor elevation is at or exceeds that of the former building or structure, where it is not practical to raise it to the level of the Shoreline Flooding Hazard,

e) the elevation for ingress and egress is the same or higher than that which was available with the original building or structures, and

f) no basement is proposed, and any crawl space is non-habitable and designed to facilitate services only.

8.5.7 Relocation of existing buildings and structures within lands subject to Lake Erie Shoreline Flooding or Erosion Hazard may be permitted in accordance with the policies in Section 8.5.6 provided that the risk of flooding, erosion and/or property damage is reduced through relocation.

8.5.8 Development activity within Lake Erie Shoreline Flooding or Erosion Hazards, including marinas and other recreational facilities, may be permitted in accordance with the policies Section 8.5.2 – Policies for Lake Erie Shoreline, provided that it can be demonstrated that:

a) there is no feasible alternative site outside of the flooding or erosion hazard, and

b) vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies.

8.5.9 Public Infrastructure including but not limited to roads, sanitary sewers, utilities, water and sewage treatment plants, water supply wells, well houses, and pipelines may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, provided that there is no feasible alternative site outside the Shoreline Flooding or Erosion Hazards as determined through an Environmental Assessment or other comprehensive plan supported by the GRCA, and where it can be demonstrated that:

a) adverse impacts on shoreline processes are limited and any risk of flood or erosion damage to neighbouring properties is not increased, and

b) where unavoidable, intrusions on wetlands and their hydrologic functions or shoreline functions and processes are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions.

8.5.10 The maintenance and repair of Public Infrastructure may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 - General Policies, and where it can be demonstrated that where unavoidable, intrusions on wetlands and their hydrologic functions or shoreline functions and processes, are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions.

8.5.11 Shoreline Protection Works to protect existing development activity and other uses deemed appropriate by the Grand River Conservation Authority to protect again the shoreline flooding and erosion hazards may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated that:

a) all feasible alignments have been considered through an Environmental Assessment supported by the GRCA or other site-specific technical studies, whichever is applicable based on the scale and scope of the project,

b) floodproofing standards, protection works standards and access standards as determined by a qualified engineer and supported by the GRCA are met,

c) where unavoidable, intrusions on wetlands and their hydrologic functions or shoreline functions and processes are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions,

d) maintenance requirements are minimized, and

e) a maintenance access of at least 5 metres (16 feet) is retained to and along existing and proposed shoreline protection works.

Development activity – Lake Erie Shoreline Flooding or Erosion Hazard Allowance

8.5.12 Development activity within the Lake Erie Shoreline Flooding or Erosion Hazard Allowance may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated that:

a) the potential for surficial erosion is addressed by a drainage plan, and

b) a maintenance access of at least 5 metres (16 feet) is retained to and along existing and proposed shoreline protection works.

8.5.13 Internal Renovations to existing buildings and structures within the Lake Erie Shoreline Regulated Area which change the use or potential use of the building or structure but provide for no additional dwelling units may be permitted provided that the internal renovation does not result in a new use prohibited by Section 7.2.

Prohibited Uses within Lake Erie Flooding or Erosion Hazards

8.5.14 Notwithstanding Sections 8.5.2-8.5.8, development activity will not be permitted in accordance with the policies in Section 7.2 – General Policies, or where the proposed location is:

a) on lands within dynamic beach hazard and its associated allowance,

b) used for new and/or the expansion of existing campgrounds or trailer parks,

c) used for a Stormwater Management Facility,

d) used for underground parking, or

e) within areas that would be rendered inaccessible to people or vehicles during times of flooding hazards, erosion hazards and/or dynamic beach hazards unless safe access is available.

8.6 Inland Lakes

Lands that are adjacent or close to the shorelines of inland lakes that have a surface area of greater than 2 hectares (5 acres) and less than 100 km^2 (39 $miles^2$) or that respond to a single runoff event could be affected by flooding or erosion. These lands are within the jurisdiction of the GRCA. Any development activity proposed adjacent to an inland lake will require permission from the GRCA.

Policies for Inland Lakes

8.6.1 Development activity along inland lake shorelines that are impacted by flooding or erosion hazards will not be permitted except in accordance with the policies in Sections 8.1 and 8.2, where applicable.

Prohibited Uses along Inland Lake Shorelines

8.6.2 Notwithstanding Section 8.6.1, development activity will not permitted in accordance with the policies in Section 7.2 – General Policies, or within 15 metres (50 feet) of the average annual high-water mark of the lake with the exception of water control structures (Section 8.9.3).

8.7 Water Management Reservoirs – Belwood and Conestogo Lakes

The Grand River Conservation Authority owns the land adjacent to Belwood and Conestogo Lakes. This land was acquired for dam and reservoir construction, which was completed in 1942 and 1958, respectively. After construction, a decision was made to allow access to lands adjacent to the reservoirs for recreational purposes including public access and cottage lots. This was done with the understanding that the dams and reservoirs would be operated primarily for water management purposes to prevent downstream flooding during the spring snowmelt and extreme rainfall events and to augment low river flows in the summer to ensure adequate water quality and quantity in downstream communities who use the river for water supply.

To ensure that the Grand River Conservation Authority can meet water quality, water quantity and water supply needs throughout the year, the Authority must have the ability to raise and lower reservoir levels as required. Lands below the maximum operating elevation for the reservoirs are essential for flood storage purposes during extreme flood events. The maximum operating elevation that is needed for water management purposes is 425.38 metres (1395.60 feet) at Belwood reservoir and 393.50 metres (1291.01 feet) at the Conestogo reservoir.

The extent of the flood hazard adjacent to Belwood and Conestogo Lakes is different than that for inland lakes and is defined by the elevation of the top of dam, which is 426.72 metres (1400 feet) at the Shand Dam (Belwood) and 395.00 metres (1295.93 feet) at the Conestogo Dam. Development activity within the flood hazard above the maximum operating elevation is limited. In addition, lands above the elevation of the flood hazard may be subject to an erosion hazard. The Regulation Limit around the reservoirs is defined as the furthest limit of the flood and erosion hazard plus an allowance as prescribed in Ontario Regulation 41/24.

Any development activity on cottage lots owned by the Grand River Conservation Authority adjacent to Belwood and Conestogo Lakes will require permission from the GRCA under Ontario Regulation 41/24.

Policies for Lake Belwood and Conestogo Lake

8.7.1 General repairs to existing cottages will be permitted.

8.7.2 Where cottage lots are located within the Regulation Limits defined by Ontario Regulation 41/24, all building or site alteration must be in accordance with the Grand River Conservation Authority Policies for the Administration of the Prohibited Activities, Exemption and Permits Regulation Sections 7.1.2-7.1.3 – General Policies. Other stipulations for development activity on cottage lots may be required in accordance with the Grand River Conservation Authority Cottage Lot Site Development Policy approved on May 28, 2009.

Cottages Below Top of Dam

8.7.3 Additions may be permitted, between the maximum operating elevation and the top of dam, where it can be demonstrated that:

a) the footprint of the cottage is not expanded to an area greater than 139.4 m^2 (1,500 ft^2), not including decks or an attached garage,
b) the addition does not block the view of the lake from adjacent cottages,
c) the addition does not move the cottage footprint closer to the reservoir,
d) the ground floor elevation is at or exceeds that of the existing cottage, *and*
e) any attached garage as an addition is less than or equal to 58m^2 (625ft^2) and is not habitable.

8.7.4 Non-Habitable Accessory Buildings less than or equal to 10 m^2 (108 ft^2) associated with an existing cottage located between the maximum operating elevation and the top of dam, may be permitted where it can be demonstrated that:

a) the building is not used for habitation,
b) the building does not block the view of the lake from adjacent cottages,
c) the building is not used to store fuels, solvents, chemicals, paints, solid waste, or any other hazardous materials,
d) the building or structure is securely anchored, and
e) electrical services are located above the top of dam.

Cottages Above Top of Dam

8.7.5 Non-Habitable Accessory Buildings associated with an existing cottage located above the top of dam, may be permitted where it can be demonstrated that the accessory building is:

a) less than or equal to 58 m^2 (625 ft^2) in the case of a garage,
b) less than or equal to 11.1 m^2 (120 ft^2) in the case of a shed, or
c) less than or equal to 27 m^2 (290 ft^2) in the case of a boathouse, and
d) does not block the view of the lake from adjacent cottages.

8.7.6 New Cottages located above the top of dam may be permitted where it can be demonstrated that:

a) all applicable polices for development activity within the Regulated Limits, in accordance with Sections 7, 8 and 9 have been met,
b) the footprint of the new cottage is less than or equal to 139.4 m^2 (1,500 ft^2), excluding decks or attached garages,

c) the cottage does not block the view of the lake from the adjacent cottages,

d) any attached garage is less than or equal to 58 m^2 (625 ft^2) and is not habitable,

e) no habitable basement is proposed, *and*,

f) a Class 4 or tertiary sewage system is installed in accordance with provincial standards in a location suitable to the Grand River Conservation Authority.

8.7.7 Additions may be permitted to existing cottages above the top of dam, where it can be demonstrated that:

a) all applicable polices relating within Regulated Limits, in accordance with Sections 7, 8 and 9 have been met,

b) the footprint of the cottage is not expanded to an area greater than 139.4m^2 (1,500 ft^2), not including decks or an attached garage,

c) the addition does not block the view of the lake from adjacent cottages, and

d) any attached garage as an addition, is less than or equal to 58 m^2 (625 ft^2) and is not habitable.

Replacement

8.7.8 Replacement Cottages may be permitted, except in areas below the maximum operating elevation, where it can be demonstrated that:

a) development activity within the flooding hazard is in accordance with the policies in Section 8.1.2 – Policies for One-Zone Policy Areas,

b) the replacement cottage is relocated above the top of dam or where this is not feasible or where this causes the view of the lake to be impaired, the footprint of the replacement building is located no closer to the reservoir than the original building,

c) the footprint of the replacement cottage is less than or equal to 139.4 m^2 (1,500 ft^2), excluding decks or attached garages,

d) any attached garage is less than or equal to 58 m^2 (625 ft^2) and is not habitable,

e) no habitable basement is proposed,

f) a class 4 or tertiary sewage system is installed in accordance with provincial standards in a location suitable to the Grand River Conservation Authority,

g) the replacement cottage is floodproofed to the top of dam, where applicable,

h) all electrical, mechanical and heating services are located above the *top of* dam, wherever possible, and

i) all applicable polices relating within Regulated Limits, in accordance with Sections 7, 8 and 9 have been met,

8.7.9 Replacement of Sewage Systems already located between the maximum operating elevation and the top of dam may be permitted where it can be demonstrated that:

a) there is no other suitable location on the lot above the top of dam that will accommodate the system,

b) the sewage system is upgraded to a class 4 or a tertiary sewage system in accordance with provincial standards in a location suitable to the Grand River Conservation Authority, *and*

c) the base or bottom of the sewage system is buried at an elevation that is above the maximum operating elevation.

Setbacks

8.7.10 A minimum setback of 1.5 metres (5 feet) between any structure and the cottage lot side yard boundaries shall be maintained as identified in Schedule “D” of the Cottage Lot Program Lease, subject to topographic features or other features of the land.

Docks

8.7.11 Docks will be constructed in accordance with the Grand River Conservation Authority Boat Ramp Policy and in a way that they can be adjusted to changing reservoir levels.

8.8 Hazardous Lands

Hazardous land is defined in the Regulation as land that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock.

The Grand River watershed contains other hazardous lands including organic soils and unstable bedrock such as the karst formations. Organic and peat soils, formed by the decomposition of vegetative and organic materials into humus can release humic acids to the ground water system and create highly combustible methane gas. Peat and other organic soils also lack soil structure making them susceptible to erosion and unable to support structure because they compress easily.

Any development activity within hazardous lands requires permission from the GRCA.

Policies for Hazardous Lands

8.8.1 Development activity within hazardous lands will not be permitted except in accordance with the policies in Section 8.8.2.

Development activity in Hazardous Lands

8.8.2 Development activity may be permitted within hazardous lands in accordance with the policies in Section 7.1.2-7.1.3 – General Policies, and where a technical site-specific study and/or an Environmental Impact Study establishes a more precise hazard land boundary and where it can be demonstrated that:

a) there is no feasible alternative site outside the Regulated Area, and
b) the risk of instability which would result in structural failure or property damage is minimized.

Prohibited Uses in Hazardous Lands

8.8.3 Notwithstanding Section 8.8.2, development activity will not permitted in accordance with the policies in Section 7.2 – General Policies.

8.9 Watercourses

The area along both sides of any river, creek, stream or watercourse, called the riparian zone, not only provides habitat for a wide range of flora and fauna, but it also filters surface runoff before it reaches open waterways. As runoff passes through, the riparian zone retains excess nutrients, some pollutants and reduces the sediment flow. A healthy zone can also keep stream flow going even during the dry seasons, by holding and releasing groundwater back into the stream. This interface between terrestrial

and aquatic environments acts as a sponge for storing water, which in turn helps to reduce flooding and shelters the banks against shoreline erosion. Alterations to the channel of a watercourse can negatively impact the hydrologic functions provided by riparian zones.

Any alteration to the channel of a river, creek, stream or watercourse requires permission from the GRCA. This includes activities such as, but not limited to, culvert placement or replacement, bridge construction, bed level crossings, piping of watercourses, installation or maintenance of pipeline crossings, cable crossings, construction or maintenance of by-pass, connected or online ponds, straightening and diversions as well as any work on the bed or the banks of the watercourse such as bank protection projects.

Policies for Alterations to a River, Creek, Stream, or Watercourse

8.9.1 Alterations including straightening, changing, diverting or interfering with an existing river, creek, stream or watercourse channel are not permitted except as specified in Sections 8.9.2-8.9.17.

Crossings

8.9.2 Crossings including but not limited to bridges, culverts, pipelines, channel enclosures of less than 20 metres (66 feet) and causeways may be permitted to be constructed, replaced or upgraded in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and Sections 8.1.16 – 8.1.17 and Section 8.2.20 where appropriate, and provided that all feasible alternative sites and alignments have been considered through an Environmental Assessment supported by the GRCA or through site-specific studies, whichever is applicable based on the scale and scope of the project and where it can be demonstrated that:

a) crossings avoid any bends in the watercourse to the extent practical,
b) crossings are located to take advantage of existing impacted or open areas on the channel bank or valley slope, wherever possible,
c) crossing structures avoid the Riverine Erosion Hazard in order to accommodate natural watercourse movement, wherever possible,
d) the risk of flood damage to upstream or downstream properties is reduced through site and infrastructure design, wherever possible,
e) where unavoidable, intrusions on watercourses and their hydrologic functions and morphology are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions.
f) physical realignments or alterations to the river, creek, stream or watercourse channel associated with a new crossing are avoided or are in accordance with the policies in Section 9.1.16, and
g) maintenance requirements are minimized.

Water Control Structures

8.9.3 Water Control Structures to protect existing development activity or other uses deemed appropriate by the GRCA from the Riverine Flooding Hazard including dikes and berms, but excluding stormwater management facilities and dams, may be permitted to be constructed maintained or repaired in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated that:

a) all feasible alignments have been considered through an Environmental Assessment supported by the GRCA or other site-specific technical studies, whichever is applicable based on the scale and scope of the project, *and*
b) where unavoidable, intrusions on watercourses and their hydrologic functions and morphology are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions.

Dams

8.9.4 Dams which by their nature must be located within or directly adjacent to a river, stream, creek or watercourse, including stormwater management facilities, may be permitted where it can be demonstrated that:

a) all feasible alternative sites and alignments have been considered through an Environmental Assessment supported by the GRCA or through site-specific studies, whichever is applicable based on the scale and scope of the project,
b) the water management benefits of the dam or stormwater management facility are demonstrated to the satisfaction of the GRCA,
c) sedimentation and erosion during construction and post construction are minimized using best management practices including site, landscape, infrastructure design, construction controls, and appropriate remedial measures,
d) where unavoidable, intrusions on watercourses and their hydrologic functions and morphology are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions, and
e) works are constructed according to accepted engineering principles and approved engineering standards or to the satisfaction of the GRCA, whichever is applicable based on the scale and scope of the project.

8.9.5 Alterations to existing Dams may be permitted where it can be demonstrated that:

a) sedimentation and erosion during construction and post construction are minimized using best management practices including site, landscape, infrastructure design, construction controls, and appropriate remedial measures,

b) where unavoidable, intrusions on watercourses and their hydrologic functions and morphology are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions,

c) there are no adverse impacts on the capacity of the structure to pass flows,

d) the integrity of the original structure is maintained or improved, and

e) works are altered according to accepted engineering principles and approved engineering standards or to the satisfaction of the GRCA, whichever is applicable based on the scale and scope of the project.

8.9.6 The Retirement of Dams or the Removal of Dams which are structurally unsound or no longer serve their intended purpose, located within a river, stream, creek or watercourse may be permitted where an Environmental Assessment or a detailed decommissioning plan supported by the GRCA demonstrates that:

a) all potential hydrologic impacts have been identified and considered,

b) hydrologic functions and morphology within or adjacent to the river, creek, stream or watercourse are restored and enhanced through the retirement or removal of the structure and a site restoration plan supported by the GRCA,

c) the risk of and sedimentation during and after retirement or removal is addressed through a draw down plan supported by the GRCA, and

d) susceptibility to natural hazards is not increased or new hazards created.

Conservation Projects

8.9.7 Conservation Projects such as stream rehabilitation works, small impoundments and realignments which restore or enhance watercourse morphology may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and provided that:

a) the hydrologic benefits of the project are demonstrated to the satisfaction of the GRCA,

b) stream bank stability is enhanced,

c) watercourses and their hydrologic functions and morphology are restored and enhanced using best management practices including site and/or infrastructure design and appropriate remedial measures,

d) natural channel design principles are followed to the extent possible and maintenance requirements are minimized.

Erosion and Sediment Control Structures

8.9.8 Erosion and Sediment Control Structures to protect existing development and other uses deemed appropriate by the GRCA may be permitted in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where it can be demonstrated that:

a) erosion risk on adjacent, upstream and/or downstream properties is reduced, or erosion and sedimentation processes are controlled to reduce existing or potential impacts from adjacent land uses, whichever is appropriate,

b) natural channel design principles are followed to the extent possible,

c) where unavoidable, intrusions on watercourses and their hydrologic functions and morphology are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance the feature and its functions, and

d) maintenance requirements are minimized.

8.9.9 The maintenance and repair of Dams or Erosion and Sediment Control Structures may be permitted where it can be demonstrated that:

a) sedimentation during maintenance and repair activities is minimized using best management practices including site and infrastructure design, construction controls and appropriate remedial measures,

b) where unavoidable, intrusions on watercourses and their hydrologic functions and morphology are minimized, and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions,

c) susceptibility to natural hazards is not increased or new hazards created, and

d) works are maintained or repaired according to accepted engineering principles and approved engineering standards or to the satisfaction of the GRCA based on the scale and scope of the project.

Ponds

8.9.10 Connected Ponds with no water intakes from the watercourse but which outflow into the watercourse may be permitted provided that the provisions of Sections 7.1.2-7.1.3 – General Policies are met and a site plan and/or other site-specific study demonstrates that:

a) there is no negative impact on the downstream geomorphic regime,

b) there is no increase in flooding and erosion, and

c) maximum berm heights above existing grades do not exceed 0.3 metres (1 foot) within the Riverine Flooding or Erosion Hazard and all remaining fill is removed from the hazard area.

8.9.11 Bypass Ponds connected to watercourses created as part of site restoration plan or a conservation project may be permitted subject to the provisions of Section 8.9.10, and where it can be demonstrated that the water intake is set above the elevation that permits continuous flow (e.g., refreshing of the pond will depend on increased stream flows from snow melt and rainfall events).

8.9.12 On-Line Ponds in a river, creek, stream or watercourse are not permitted except as specified in Sections 8.9.4 and 8.9.11.

8.9.13 On-Line Ponds at the very upstream end of watercourses may be permitted for wetland restoration in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and where a site plan and/or other site-specific study demonstrates that:

a) there is no negative impact on downstream geomorphic regimes,
b) there is no increase in flooding and erosion, and
c) there are no negative impacts on areas of groundwater recharge/discharge.

Dredging

8.9.14 Dredging of an existing connected, bypass or on-line pond may be permitted in accordance with the policies in Section 8.1.22.

8.9.15 Dredging of a river, creek, stream or watercourse may be permitted to improve hydraulic characteristics and fluvial processes or to improve aquatic habitat or water quality in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies, and where a dredging plan and/or other site-specific study demonstrates that:

a) stream bank stability is enhanced,
b) where unavoidable, intrusions on the feature and its hydrologic function and morphology are minimized and it can be demonstrated that best management practices including site design and appropriate remedial measures will adequately restore and enhance features and functions, and
c) all dredged material is removed from the Riverine Flooding and Erosion Hazard and safely disposed of in accordance with the policies in provincial guidelines.

Realignment, channelization or straightening

8.9.16 Realignment, channelization or straightening of a river, creek, stream or watercourse may be permitted to improve hydraulic characteristics and fluvial processes or to improve aquatic habitat or water quality in accordance with the policies in Sections 7.1.2-7.1.3 – General Policies and where a site plan and/or other site-specific study demonstrates that:

a) all feasible alternative alignments have been considered through an Environmental Assessment supported by the GRCA or through site-specific studies, whichever is applicable based on the scale and scope of the project,
b) stream bank stability is enhanced,
c) where unavoidable, intrusions on the feature and its hydrologic functions and morphology are minimized and it can be demonstrated that best management practices including site design and appropriate remedial measures will adequately restore and enhance features and functions, and
d) natural channel design principles are followed to the extent possible.

Enclosures

8.9.17 Enclosures of creeks, streams or watercourses may be permitted where there is a risk to public safety and/or potential property damage and where a site-specific study demonstrates that:

a) all feasible options and methods have been explored to address the hazards and the enclosure is supported by the GRCA,
b) the risk to public safety is reduced,
c) susceptibility to natural hazards is reduced and no new hazards are created,
d) there are no negative or adverse hydrologic impacts on wetlands,
e) sedimentation and erosion during construction and post construction is minimized using best management practices including site and infrastructure design, construction controls, and appropriate remedial measures,
f) intrusions within or adjacent to the river, creek, stream or watercourse are minimized and it can be demonstrated that best management practices including site design and appropriate remedial measures will adequately restore and enhance features and functions to the extent possible,
g) there is no negative impact on the downstream geomorphic regime, and
h) works are constructed, repaired and/or maintained according to accepted engineering principles and approved engineering standards or to the satisfaction of the GRCA, whichever is applicable based on the scale and scope of the project.

Definitions

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 (by virtue of their qualifications, training and experience), 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.

Access (Ingress/Egress) means standards and procedures applied in engineering practice associated with providing safe passage for vehicles and people to and from a shoreline or river-side property during an emergency situation as a result of flooding, other water related hazards, the failure of floodproofing, and/or protection works, and/or erosion that have been reviewed and approved by the Grand River Conservation Authority and/or the Ontario Ministry of Natural Resources and Forestry.

Accessory Building or Structure means a use or a building or structure that is subordinate and exclusively devoted to a main use, building or structure and located on the same lot.

Adverse Hydraulic and Fluvial Impacts means flood elevations are not increased, flood and ice flows are not impeded and the risk of flooding to and erosion on adjacent upstream and/or downstream properties is not increased.

Apparent Valley or Confined Valley means that part of the valleyland system where the valley walls are greater than 3 metres (10 feet), with or without a floodplain.

Anthropogenic means created by a human.

Assisted Living Facility means a multiple residential unit that is constructed with limited kitchen facilities in the unit(s) or a group home, where individuals who require full or partial assistance with activities of daily living (e.g., bathing, toileting, ambulating, self-administration of medications, etc.) reside.

Aquifer means an underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, silt or clay).

Areas of Interference means those lands where development activity could interfere with the hydrologic function of a wetland.

Backwater Area means a section of watercourse with an elevation that is increased above normal because of a downstream human-made obstruction such as a narrow bridge opening or culvert that restricts natural water flow.

Bankfull Channel Width means the formative flow of water that characterizes the morphology of a fluvial channel. In a single channel stream, “bankfull” is the discharge, which just fills the channel without flowing onto the floodplain.

Best Management Practices (BMPs) means methods, facilities and structures which are designed to protect or improve the environment and natural features and functions from the effects of development activity or interference.

Comprehensive Plan means a study or plan undertaken at a landscape scale such as a watershed/subwatershed plan, an Environmental Assessment, a detailed Environmental Implementation Report (EIR) that has been prepared to address and document various alternatives and

is part of a joint and harmonized planning or Environmental Assessment process, or a community plan that includes a comprehensive Environmental Impact Study.

Created in the context of wetlands means the development of a wetland through the manipulation of physical, chemical, or biological characteristics where a wetland did not previously exist.

Creek means a natural stream of water normally smaller than and often tributary to a river.

Cumulative Impact means the combined effects of all activities in an area over time and the incremental effects associated with individual project in an area over time.

Cut and Fill Balance means all fill placed at or below the flood elevation is balanced with an equal amount of soil material removal within a defined reach of a watercourse.

Dam means a structure or work holding back or diverting water and includes a dam, tailings dam, dike, diversion, channel, artificial channel, culvert or causeway (Lakes and Rivers Improvement Act, R.S.O. 1990 c. L3, s. 1)

Development means the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the Planning Act

Development activity in section 28 of the Act and in the Regulation means the construction, reconstruction, erection or placing of a building or structure of any kind, 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, site grading, or the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere.

Dug-out or Isolated Ponds mean anthropogenic waterbodies that are created by excavating basins with no inlet or outlet channels and in which surface and ground water collect.

Dwelling unit means a suite operated as a housekeeping unit, used or intended to be used as a domicile by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

Effective Flow Area means that part of a river, stream, creek or watercourse where there are significant flow velocities and most of the flow discharge is conveyed.

Enclosure means a pipe or other conduit for carrying a creek, stream or watercourse underground.

Enhance in the context of wetlands means the altering of an existing functional wetland to increase or improve selected functions and benefits.

Environmental Assessment means a process that is used to predict the environmental, social and economic effects of proposed initiatives before they are carried out. It is used to identify measure to mitigate adverse effects on the environment and can predict whether there will be significant adverse environmental effects, even after the mitigation is implemented.

Environmental Impact Statement (EIS) means a report prepared to address the potential impacts of development activity or interference on regulated features and hydrologic functions. There are three types: a comprehensive EIS is a landscape scale, watershed or subwatershed study which sets the width of setbacks and offers guidance for the investigation and establishment and maintenance of

buffers; a Scoped EIS is an area or site-specific study that addresses the potential negative impacts to features described previously in a comprehensive study; a Full EIS is an area or site-specific study prepared, in the absence of a comprehensive study to address possible impacts from a development activity. Due to the lack of guidance from a comprehensive study, the full EIS is typically much more detailed than a scoped study and will also include statements to address possible negative impacts at a regional scale.

Existing Use means the type of activity associated with an existing building or structure or site on the date of a permit application.

Factor of Safety means the ratio of average available strength of the soil along the critical slip surface to that required to maintain equilibrium. The design minimum factors of safety are provided by the Ministry of Natural Resources and Forestry Technical Guide for River and Stream Systems (2002). The higher factor of safety is used in complex geotechnical conditions or where there are geologically metastable materials.

Fill means any material used or capable of being used to raise, lower or in any way affect the contours of the ground, whether on a permanent or temporary basis, and whether it originates on the site or elsewhere.

Flood Fringe means the outer portion of the floodplain between the floodway and the Riverine Flooding Hazard limit where the depths and velocities of flooding are less severe than those experienced in the floodway.

Floodproofing means structural changes and/or adjustments incorporated into the basic design and/or construction or alteration of individual buildings, structures or properties to protect them from flood damage.

Floodway for river, stream, creek, watercourse or inland lake systems means the portion of the floodplain where development activity would cause a danger to public health and safety or property damage. Where the one-zone concept is applied, the floodway is the entire contiguous floodplain.

Where the two-zone concept or special policy area concept is applied, the floodway is the contiguous inner portion of the floodplain, representing that area required for the safe passage of flood flow and/or that area where flood depths and/or velocities are such that they pose a potential threat to life and/or property damage. Where the two-zone concept or special policy area applies, the outer portion of the floodplain is called the flood fringe.

Frequent Flooding means that a site is subject to the 1:25 year flood event or a more regular flood event.

Geologically Metastable Material means a material susceptible to earth flow or where low safety factors may lead to creep movements and progressive softening.

Groundwater Discharge means the flow of water from an *aquifer*. Discharge areas are locations at which ground water leaves the aquifer and flows to the surface. Ground water discharge occurs where the water table or potentiometric surface intersects the land surface. Where this happens, springs or seeps are found. Springs and seeps may flow into freshwater bodies, such as lakes or streams, or they may flow into saltwater bodies.

Groundwater Recharge means downward movement of water through the soil to the groundwater or the process by which external water is added to the zone of saturation of an aquifer, either directly into a formation or indirectly by way of another formation.

Habitable Floor Space means any area that has the potential to be used as or converted to residential living space, including basements.

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.

Hazardous Substances means substances which individually or in combination with other substances, are normally considered to pose a danger to or threat to public health, safety and the environment. These substances generally include a wide range of materials that are toxic, ignitable, corrosive, reactive, radioactive or pathological.

Headwater means the source and extreme upper reaches of a river, creek, stream or watercourse.

High risk reaches include, but are not limited to, the Grand River between where the Brantford South Access Route crosses the Grand River in the City of Brantford, downstream through the County of Brant to the border with Six Nations of the Grand River Territory.

Hydrologic Function means the functions of the hydrologic 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.

Hydrologic Study means a report prepared to address the potential impacts of development activity and interference on the hydrologic functions of a wetland or other natural feature.

Karst means an area of irregular limestone in which erosion has produced fissures, sinkholes, underground streams, and caverns.

Lake Erie Dynamic Beach Hazard means that portion of the Lake Erie shoreline where accumulated unconsolidated sediment continuously moves as a result of naturally occurring processes associated with wind and water and changes in the rate of sediment supply. The extent of the dynamic beach hazard is defined as the extent of the flooding hazard plus an allowance as identified in the Haldimand County Lake Erie Hazard Mapping and Risk Assessment Technical Report (2020) and Shoreline Management Plan (1994), which lays out a technical basis and recommends a management plan for the lakeshore. Site specific/updated technical information may also apply.

Lake Erie 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, plus a 15 metre allowance.

Lake Erie Flooding Hazard means the inundation, under the 100-year flood including wave uprush and other water-related hazards.

Meander Belt means the area of land in which a watercourse channel moves or is likely to move over a period of time.

Meander Belt Allowance means a limit for development activity within the areas where the river system is likely to shift. It is based on twenty (20) times the bankfull channel width where the bankfull channel width is measured at the widest riffle section of the reach. A riffle is a section of shallow rapids where the water surface is broken by small waves. The meander belt is centred over a meander belt axis that connects the riffle section of the stream.

Meander Belt Axis means the line or "axis" that the meander belt is centred over which connects all the riffle sections of a stream.

Multi-lot means four lots or more.

Multi-unit means any building or structure or portion thereof that contains more than one unit for any use (e.g., a residential dwelling unit, an industrial/commercial/institutional space designed or intended to be occupied or used for business, commercial, industrial or institutional purposes).

Negligible means not measurable or too small or unimportant to be worth considering.

Non-Apparent Valley or Unconfined Valley means that part of the *valleyland* system where a *river*, *creek*, *stream* or *watercourse* is not contained within a clearly visible valley section.

One Hundred Year Erosion Rate means the predicted lateral movement of a river, creek, stream or watercourse or inland lake over a period of one hundred years.

Original Ground Floor Area as it pertains to Policy 8.1.3 is the original habitable ground floor area existing in 1970. The year 1970 is used since it was the first year that the Fill Construction and Alteration to Waterways Regulation (Ontario Regulation 41/70) was administered by the GRCA. As it pertains to Policy 8.5.3, the original ground floor area is the original habitable ground floor area existing on May 4, 2006. This was the date that the Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation (Ontario Regulation 150/06) was approved which broadened the regulatory mandate of the GRCA to include the Lake Erie shoreline.

Other Water-Related Hazards means water-associated phenomena other than flooding hazards and wave uprush which act on shorelines. This includes, but is not limited to ship-generated waves, ice piling and ice jamming.

Oversteepened Slope means a slope which has a slope inclination equal to or greater than 33 $^{1}/_{3}$ per cent (3H:1V).

Potentiometric Surface means the potential level to which water will rise above the water level in an aquifer in a tightly cased well that penetrates a confined aquifer; if the potential level is higher than the land surface, the well will overflow.

Protection Works means structural or non-structural works which are intended to appropriately address damages caused by flooding, erosion and/or other water-related hazards.

Qualified Professional means a person with specific qualifications, training, and experience authorized to undertake work in accordance with the policies in accepted engineering or scientific principles, provincial standards, criteria and guidelines, and/or to the satisfaction of the GRCA.

Regulated Area means the area encompassed by all hazards and wetlands, plus any allowances.

Regulatory Flood means the inundation under a flood resulting from the rainfall experienced during the Hurricane Hazel storm (1954) or in limited situations in headwater streams, the 100-year flood, wherever it is greater, the limits of which define the riverine flooding hazard.

Replacement means the removal of an existing building or structure and the construction of a new building or structure. Replacement does not include reconstruction on remnant foundations or derelict or abandoned buildings or structures.

Restore in the context of wetlands means the re-establishment or rehabilitation of a former or degraded wetland with goal of returning natural or historic functions and characteristics that have been partially or completely lost by such actions as filling or draining.

Riffle means a section of shallow rapids where the water surface is broken by small waves.

Riparian Vegetation means the plant communities in the riparian zone, typically characterized by hydrophilic plants.

Riparian Zone means the interface between land and a flowing surface water body. Riparian is derived from Latin ripa meaning riverbank.

River means a large natural stream of water emptying into an ocean, lake, or other body of water and usually fed along its course by converging tributaries.

Riverine Erosion Hazard means the loss of land, due to human or natural processes, that poses a threat to life and property. The riverine 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, plus a 15-metre allowance or, in unconfined systems, the meander belt allowance plus a 15-metre allowance.

Riverine Flooding Hazard means the inundation, under a flood resulting from the rainfall experienced during the Hurricane Hazel storm (1954) or in limited situations in headwater streams, the 100-year flood, wherever it is greater.

Riverine Hazard Limit means the limit which encompasses the flooding and erosion hazards and the river, creek, stream or watercourse.

Safe Access means locations where during the Regulatory Flood, the flow velocity does not exceed 1.7 m/s, the product of depth and velocity does not exceed 0.4 m^2/s, the depth of flooding along access routes to residential units does not exceed 0.8 metres or 1.2 metres along access routes to commercial or industrial buildings or structures, and the depth of flooding adjacent to residential units does not exceed 1.2 metres or 2.0 metre adjacent to commercial or industrial buildings or structures.

Settlement Area means urban areas and rural settlement areas within municipalities (such as cities, towns, villages and hamlets) that are: built up areas where development is concentrated and which have a mix of land uses; and lands which have been designated in an official plan for development over the long-term planning horizon.

Special Policy Area means an area within a community that has historically existed in the floodplain and where site-specific policies, approved by the Ministers of Natural Resources and Forestry, Municipal Affairs and Housing, GRCA and the municipality are intended to provide for the continued viability of existing uses (which are generally on a small scale) and address the significant social and

economic hardships to the community that would result from strict adherence to the provincial policies concerning development. The Province establishes the criteria and procedures for approval. A Special Policy Area is not intended to allow for new or intensified development if a community has feasible opportunities for development outside the floodplain.

Stage-Storage Discharge Relationship means the relationship of flood storage and flood elevation values at various flood flow rates within a particular watercourse/floodplain reach. This relationship is used as a factor to determine whether the hydraulic function of the floodplain is preserved.

Stream means a flow of water in a channel or bed, as a brook, rivulet, or small river.

Toe of Slope means the lowest point on a slope, where the surface gradient changes from relatively shallow to relatively steep.

Top of Slope means the point of the slope where the downward inclination of the land begins, or the upward inclination of the land levels off. This point is situated at a higher topographic elevation of land than the remainder of the slope.

Valleyland means land that has depressional features associated with a river or stream, whether or not it contains a watercourse.

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

Watershed means 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.

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

Links to Key References

Provincial Legislation and Regulations

Federal Legislation and Regulations

Conservation Authorities Act

Ontario Regulation 41/24

Ontario Regulation 42/24

Ontario Regulation 686/21

Provincial Policy Statement