Maitland Valley Conservation Authority
Ontario Regulation 164/06

SHORELINE POLICIES FOR EXISTING PLANS OF SUBDIVISIONS AND TOWN OF GODERICH ALONG THE LAKE HURON SHORELINE WITHIN THE MVCA AREA OF JURISDICTION

August, 2009

BACKGROUND

The Provincial Government has made a number of amendments to Section 28 (1) (a) (b) of the Conservation Authorities Act (Major changes in bold type). These include the:

a) Prohibiting, regulating or requiring the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing **or interfering in any way with a wetland;**
b) Prohibiting, regulating or requiring the permission of the authority for **development** if, in the opinion of the authority, the control of flooding, erosion, **dynamic beaches** or pollution or the conservation of land may be affected by the development.

The major changes involve the regulation of development. The MVCA is required to develop and enact policies and procedures to implement Ontario Regulation164/06. These policies and procedures have been developed to compliment and be consistent with the Provincial Planning Statement and support the secondary plans of Ashfield-Colborne-Wawanosh, Central Huron, and the Town of Goderich.

DEFINITIONS

"Building"

- Structures over 108 square feet, consisting of a wall, roof, and floor or any of them, and/or includes all or any one of plumbing works, fixtures, and service systems.
- Structures less 108 square feet, consisting of a wall, roof, and floor or any of them, including all or any one of plumbing works, fixtures, and service systems.
- Structures designated in the Building Code.
- Sewage systems

“Development”

- 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.

“Dynamic Beach”

- Areas which are highly unstable and/or critical to the natural protection and maintenance of the first main fore dune feature and/or beach profile where the impacts of flooding, wave action, and wind are such that poses an unacceptable risk to life and property as determined by the conservation authority.
- Portion of a shoreline where accumulated unconsolidated sediment (eg. sand, gravel, cobbles) continuously or intermittently moves as a result of naturally occurring processes associated with wind and waves and changes in the rate of sediment supply.
- Associated with dune systems which, if left unaltered, provide habitat for unique and rare species, provide a protective function from storm waves,

“Footprint”

- means the greatest horizontal area of a building above grade,
    - Within the outside surface of exterior walls, or
    - Within the outside surface of exterior walls and the centre line of firewalls

“Infilling”

- Development on a vacant lot located within a lawful plan of subdivision or town plot.

“Relic Beach”

- Section of beach between the mature tree line and the toe of the bluff.

“Retaining wall”

- A structure that holds back soil or rock from a building, structure, or area.
- A structure that prevents downslope movement or erosion and provide for vertical or near-vertical grade changes.

“Seawall”

- A form of coastal protection constructed on the inland part of a coast to reduce the effects of strong waves.

OBJECTIVES OF THE REGULATION

1. ***Public Safety:*** to reduce the potential for loss of life, property damage and social disruption.

2. ***Environmental Protection:*** To maintain the ecological integrity of terrestrial and aquatic ecosystems (for the shoreline area this would include the maintenance of essential coastal and physical processes, genetic diversity and sustainable utilization of species and ecosystems).

AREAS WHERE DEVELOPMENT IS PROHIBITED ALONG THE LAKE HURON SHORELINE

Ontario Regulation 164/06 subsection 2:

Development is prohibited in areas adjacent or close to the shoreline that may be affected by flooding, erosion or dynamic beaches, including the area from the furthest offshore extent of the Authority's boundary to the furthest landward extent of the aggregate of the following distances:

i. The 100 year flood level, plus a 15 metre allowance for wave uprush and other water-related hazards;
ii. The predicted long term stable slope projected from the existing stable toe of the slope or from the predicted location of the toe of the slope as that location may have shifted as a result of shoreline erosion over a 100-year period;
iii. Where a dynamic beach is associated with the waterfront lands, a 30 metre allowance inland to accommodate dynamic beach movement;
iv. 15 metres inland; and
v. Hazardous lands.

WHEN DEVELOPMENT/SITE GRADING/PLACEMENT/REMOVAL OF FILL MAY BE PERMITTED:

Ontario Regulation 164/06 subsection 3:

Development may be permitted in the areas listed above ***if*** the Authority concludes that the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development.

Applicants have the right to bring forward information with their application that addresses the potential impact of their particular development on flooding erosion,

dynamic beaches, pollution or the conservation of land. All applicants have the right to a hearing before the Board of Directors regarding their application. The Board may approve applications with conditions.

POLICIES FOR DEALING WITH DEVELOPMENT/ALTERATIONS TO SHORELINES:

These policies are based upon different areas of a shoreline bluff cross section. These sections include (see Figure 1)

1) Lake to the toe of the bluff.
2) Bluff between the toe of the bluff to the stable slope allowance.
3) Stable slope allowance to the 100 year erosion limit.

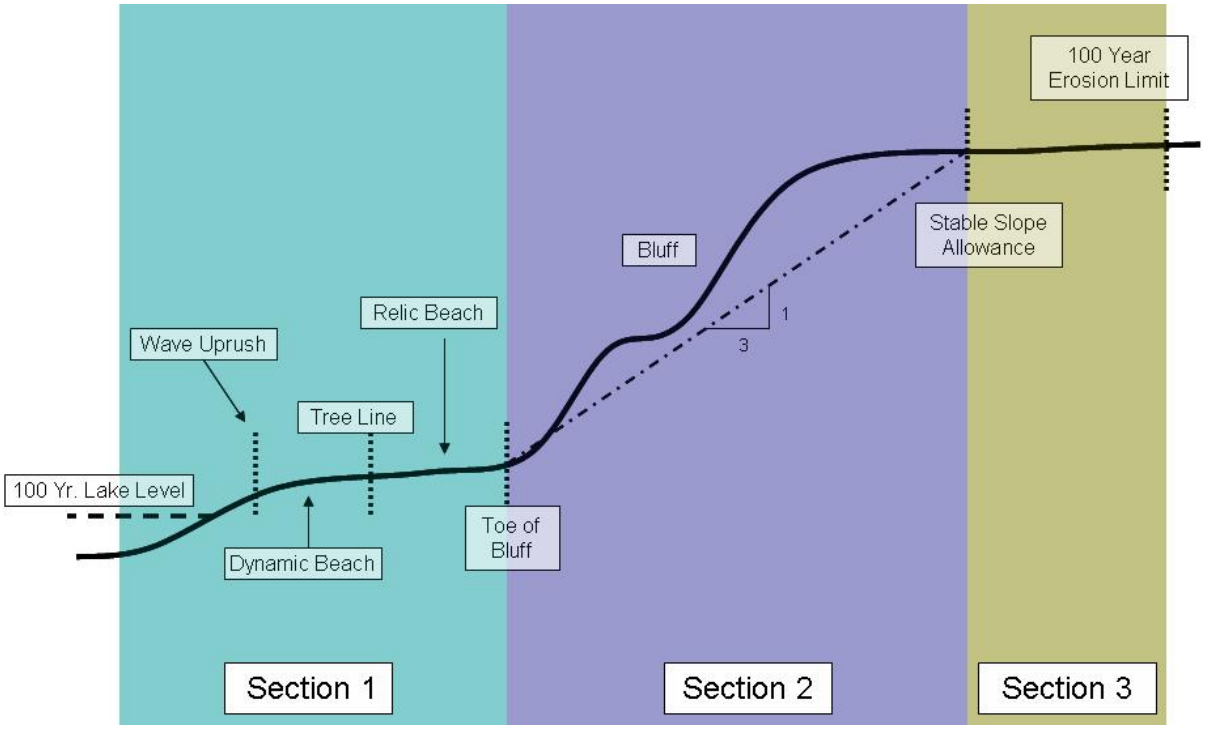


Figure 1: Different sections of the shoreline bluff cross section.

The MVCA uses the **100 year erosion limit** as the established setback for development along the Lake Huron shoreline, which is in accordance to the Provincial Policy Statement. The 100 year erosion limit is calculated (see Figure 2):

100 year Erosion Rate = Stable Slope Allowance + [Recession Rate * 100]

Stable Slope Allowance is the resistance of an inclined surface to fail by sliding or collapsing, and based on the relationship between two types of forces, dynamic forces and resisting forces. Dynamic forces (gravity, with help from the slope angle, climate, soil materials, and wave action) promote downslope movement of material, while resisting forces (cohesion and friction of the soil) prevent movement. In the form of wave action, water erodes the base of slopes, removing support and increasing dynamic forces. The stable slope allowance is calculated from the toe of the bluff to a point on the top of the bluff that would not ultimately landslide. With the soil properties of the MVCA shoreline, the MVCA considers stable slope allowance at a distance of 3H:1V (3 m horizontal distance inland for each 1 m vertical height of the bluff).

The **recession rate** is the continuing landward movement of the shoreline, and is based on three functions; air, water, and land. Depending on the wind direction, depth of the lake nearshore, slope angle, and other properties, the rate the soil erodes varies along the Lake Huron shoreline. Rates vary from 0 m/yr (metres per year) to 0.67 m/yr, with some areas gaining beach area from those eroded areas.

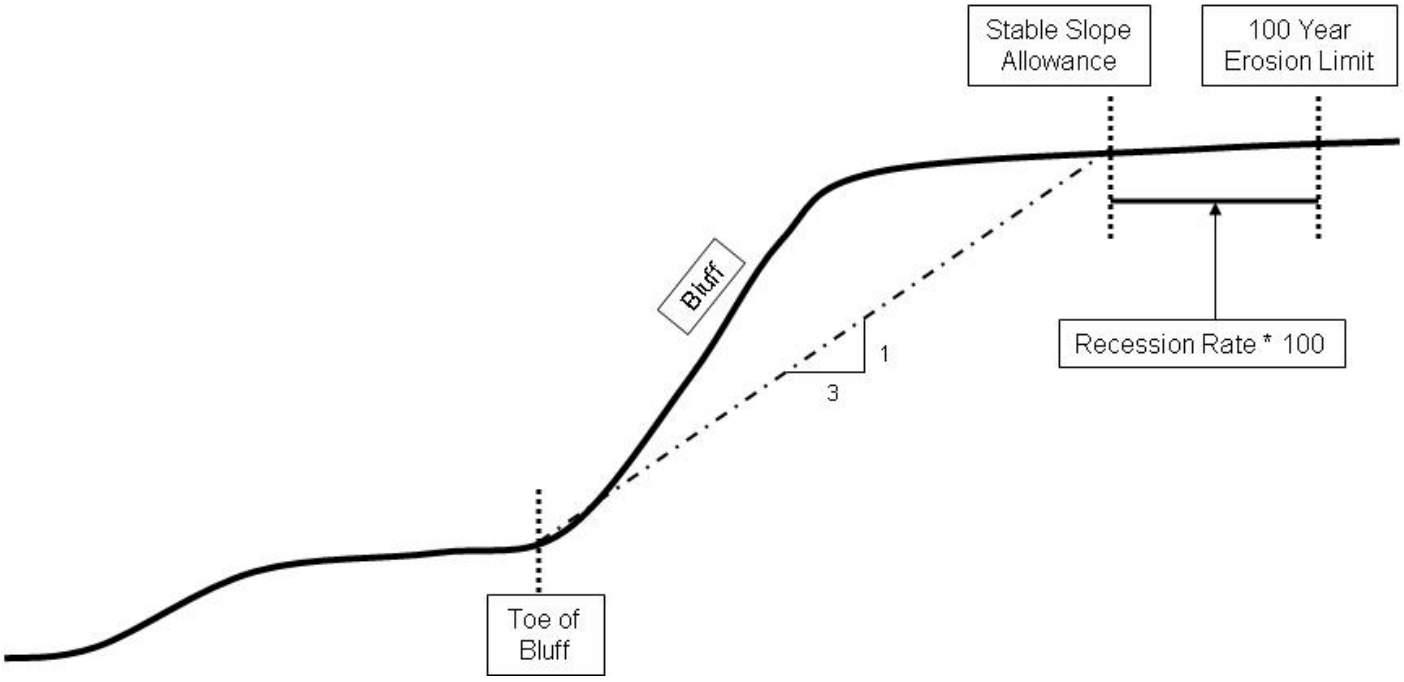
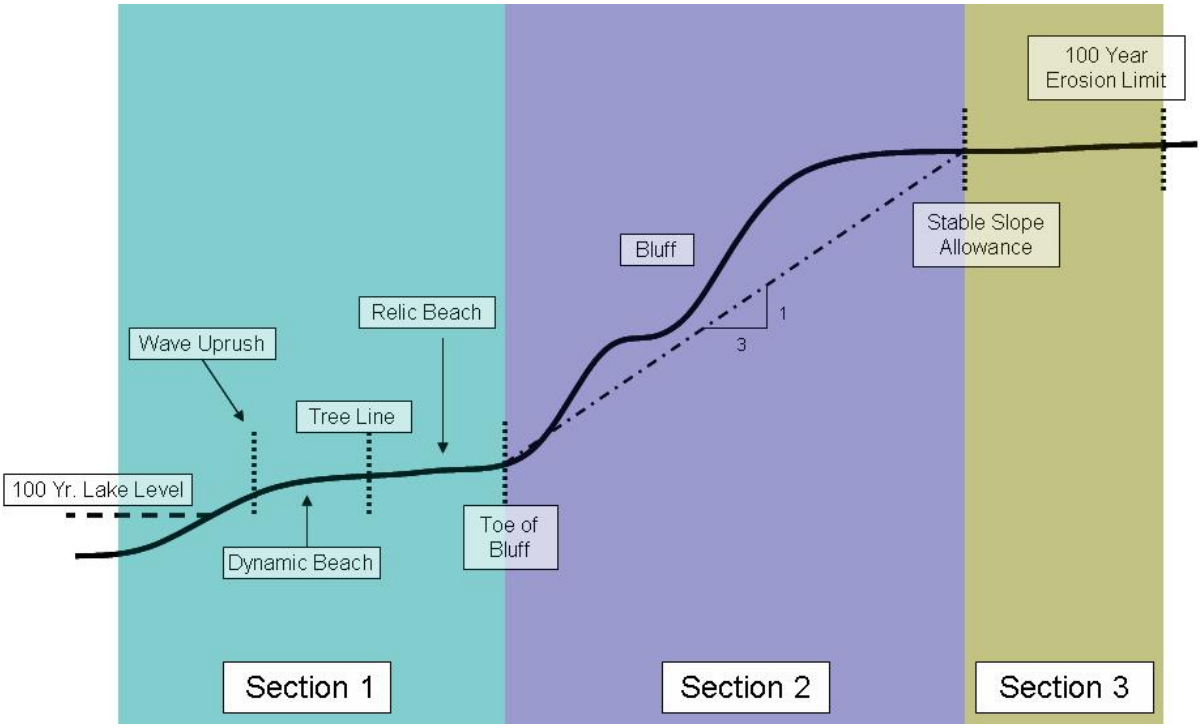


Figure 2: The 100 Year Erosion Limit and how it is calculated.

GENERAL CONDITIONS (ALL SECTIONS OF SHORELINE)



Shore Protection (Groynes, Seawalls)

- No new shore protection structures will be permitted
- Repair and maintenance of existing seawalls will be permitted
- Replacement of existing structures will be permitted, so long as:
  - Replacement structures must be designed to allow for unrestricted transport of sediment alongshore
  - Existing groynes should be removed during replacement.
- Mechanical transport of sediment by dredging and/or importing sediment will not be permitted as part of any replacement seawall maintenance plan.

➢ *MVCA Permit is required for any repair, maintenance or replacement of an existing shore protection structure*

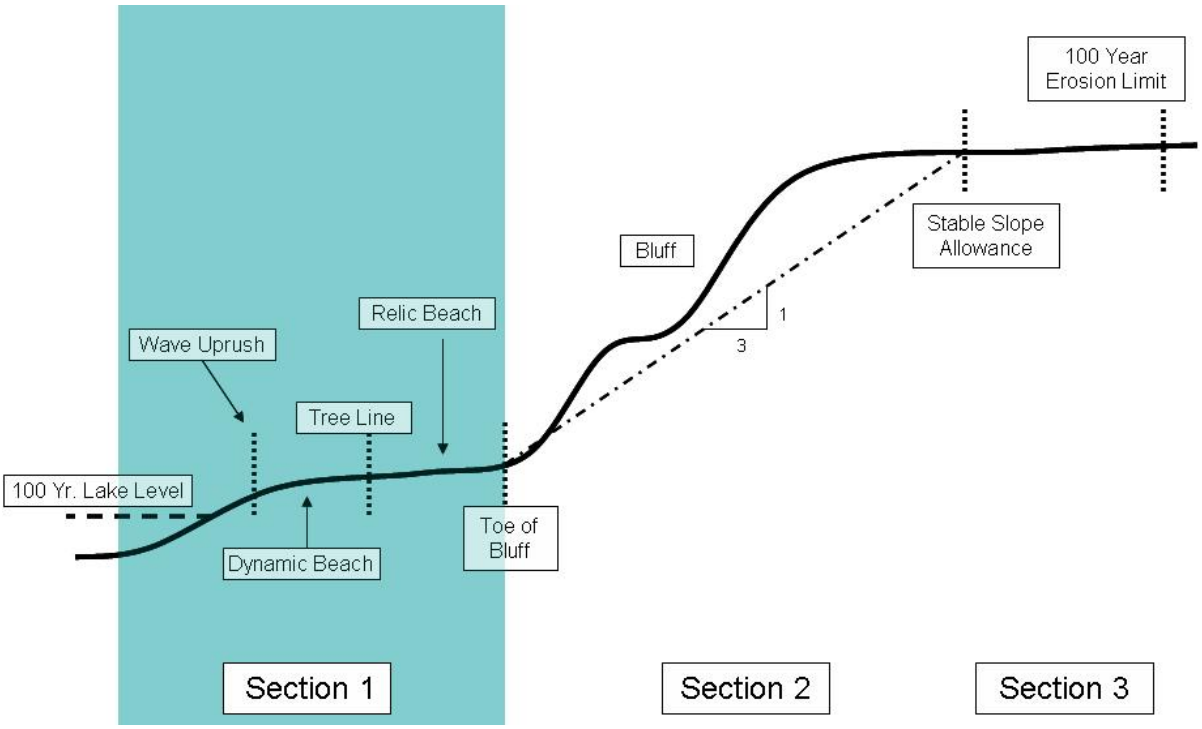
Additions to Existing Development (outside foot print of existing building)

➢ *Additions will be limited to a 15% increase in the footprint of the existing development on each property.*

On-Site Sewage Systems

➢ *Place/Remove fill/Site grading associated with the installation of an on-site sewage system may require a MVCA permit application, depending upon the location of the work and potential impact on the shoreline.*

SECTION 1: LAKE TO THE TOE OF THE BLUFF



Location: Wave Uprush Limit

Replacement/Additions/Infilling/Redevelopment of Dwelling and Site Grading of Property

- Development will not be permitted.
- Replacement of structure will not be permitted at the same location, and must be located outside the wave uprush limit.
- Site grading will not be permitted unless associated with an approved shore protection as approved by the conservation authority and any other agency with jurisdiction.

➢ *MVCA Permit is required.*

Location: Dynamic Beach

Replacement of dwellings destroyed by forces other than flood/erosion

- Replacement will be permitted on the same footprint.

➢ *MVCA Permit Application is required.*

Replacement of dwelling if destroyed by flooding/erosion

- Replacement building will not be permitted at the same location
- Dwellings must be located outside the dynamic beach.

➢ *MVCA Permit Application is required.*

Infilling/Redevelopment of Existing Dwelling

- Redevelopment
  - Redevelopment will be permitted on the same footprint or inland if a more suitable location is present.
- Infilling
  - Infilling may be permitted if the site is suitable for structure and on-site sewage system.
  - The dynamic beach is not to be negatively impacted.

➢ *MVCA Permit is required.*

Additions to Existing Development (outside foot print of existing building)

- Additions may be permitted to the existing structure if there are no negative impacts on the dynamic beach. MVCA must be satisfied that there will be no negative impacts.
- Additions of more than 15% of the existing foot print will require a site assessment by the MVCA to determine if there will be any impact on dynamic beach/beach. Additions of this size will also require a site assessment by the Huron County Health Unit to determine if changes are required to the On-Site Sewage Disposal System.
- No basements permitted
- Second story may be permitted

➢ *MVCA Permit is required.*

Accessory Buildings (Boat Houses, Storage Sheds, Bunk Houses, Decks/Patios, Boardwalks)

- **Decks/Patios**, **Boardwalks, Crossover Points** may be permitted provided that it is designed in such a way that it will not have a negative impact on the dynamic beach.
- **Boat Houses, Storage Sheds, and Bunk Houses** will not be permitted on the dynamic beach.

➢ *MVCA Permit is required for boat houses, storage sheds, and bunk houses.*
➢ *MVCA Permit may not be required for decks and patios.*

Site Grading

- Site grading will not be not permitted on the dynamic beach
- Exceptions may be permitted if the site grading is related to access to an existing lawful development on the dynamic beach and beach restoration projects.

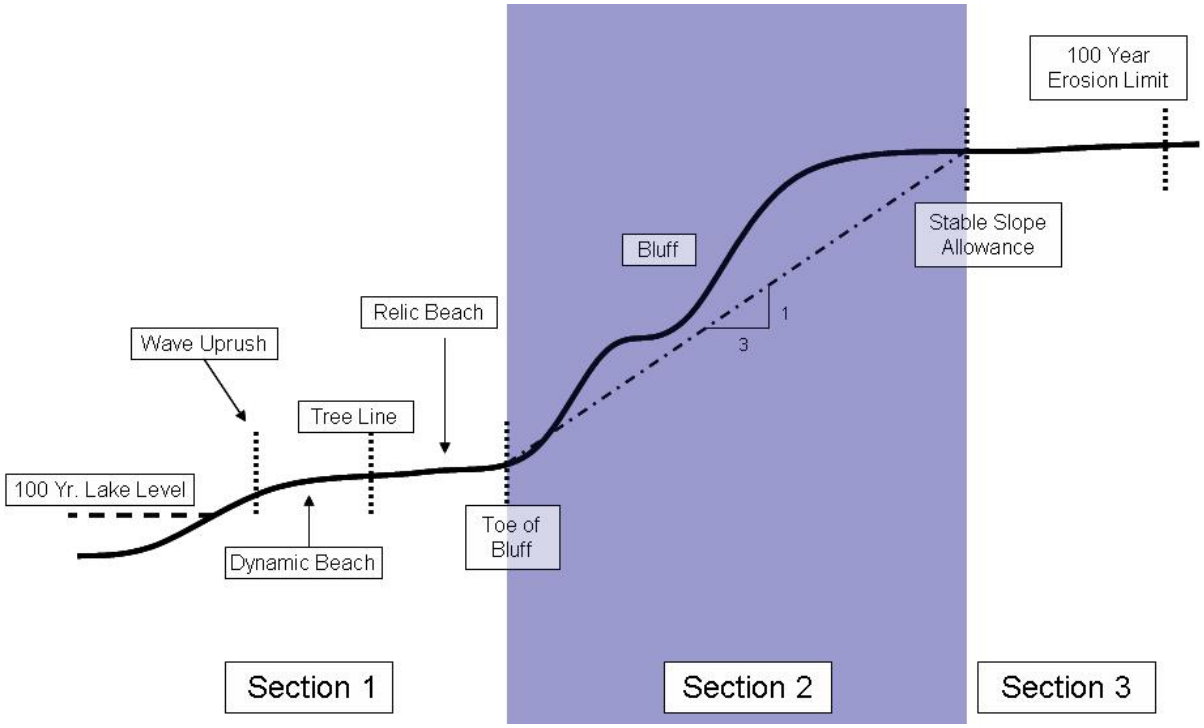
➢ *MVCA Permit is required.*
➢ *MVCA Permit is not required within a 3 metre area directly in front of the structure for the removal of sand blocking access to sheds/boat houses.*

Location: Relic Beach

Replacement/Additions/Infilling/Redevelopment of Dwelling and Site Grading of Property

- Development may be permitted.
- Replacement of structure may be permitted at the same location, and must be located outside the dynamic beach.
- Site grading may be permitted.
- *MVCA Permit is not required.*

SECTION 2: TOE OF THE BLUFF TO THE STABLE SLOPE ALLOWANCE



Replacement of development destroyed by forces other than flood/erosion

- Development may be permitted provided the site is suitable and safe for development. The conservation authority must be satisfied that the site is suitable and safe for redevelopment.
- A geotechnical assessment **and/or a** coastal engineering assessment may be required.
- If the site is deemed to be safe and suitable by the conservation authority, geotechnical input will be required for the design of foundation.

➢ *MVCA Permit is required.*

Replacement of development destroyed by flooding/erosion (Wave Action, Bluff Instability)

- Replacement may not be permitted at the same location unless the flooding/erosion were caused by surface runoff from the top of the bluff.
- Surface runoff issues would have to be resolved to the satisfaction of the conservation authority prior to rebuilding.

➢ *MVCA Permit is required unless the dwelling is located outside of the 100 Year Erosion Limit.*

Infilling on Existing Lots of Record/Additions/Redevelopment of Existing Development on the Same Footprint.

- **Redevelopment**
  - Redevelopment may be permitted, provided that:
    - A geotechnical assessment satisfactory to the conservation authority prepared by a geotechnical engineer shows that the site is stable.
    - A coastal assessment to the satisfaction of the conservation authority may be required in areas of erosion.
  - The foundation design receives input from a geotechnical engineer.
- **Infilling**
  - Infilling permitted, provided that:
    - A geotechnical assessment from a geotechnical engineer shows that the site is stable.
    - A coastal assessment may be required in areas of erosion.
  - If the site is suitable, the foundation may need to be designed with input from a geotechnical engineer.
  - There has to be sufficient area on lot for a sewage system.
- *MVCA Permit is required.*

Additions to Existing Development (outside footprint of existing building)

- Additions greater than 15% of the existing footprint will not be permitted.
- Additions less than 15% of the existing foot print may be permitted provided that the geotechnical assessment satisfactory to the conservation authority from a geotechnical engineer identifies that the slope is stable.
  - MVCA may waive the requirement for a geotechnical assessment for additions under 15% of existing footprint.
- The proposed addition is designed to maintain slope stability.
- No basements or multiple stories permitted.
- *MVCA Permit and Huron Country Health Unit Permit **may be** required.*

Accessory Buildings/Structures: (Boat Houses, Storage Sheds, Bunk Houses, Decks/Patios, Boardwalks)

- Accessory buildings/structures may be permitted, provided that:
  - A geotechnical assessment from a geotechnical engineer shows that the site is stable.
- If site is suitable, the foundation may need to be designed with the input from a geotechnical engineer.
- *MVCA Permit is required if accessory building/structure is:*
  - Structures over 108 square feet, consisting of a wall, roof, and floor or any of them, and/or includes all or any one of plumbing works, fixtures, and service systems.
  - Structures less 108 square feet, consisting of a wall, roof, and floor or any of them, including all or any one of plumbing works, fixtures, and service systems.
  - Structures designated in the Building Code.

Site Grading, construction of retaining walls on or near bluff

- Site grading and **construction of retaining walls** would require a geotechnical assessment from a geotechnical engineer to determine the impact grading or retaining wall would have on slope stability.
  - *MVCA Permit Application is required for new site grading and/or retaining walls*
  - *MVCA Permit Application may not be required for routine maintenance/repairs to existing roadways, retaining walls unless there are slope stability concerns.*

Phased Geotechnical Assessment for Development Within the Stable Slope Allowance

This is intended to provide a framework for establishing a process for incorporating geotechnical studies for the rebuilding and/or expansion of existing structures within the stable slope allowance along the MVCA administered portion of the Lake Huron Shoreline.

The proposed approach is to implement a phased approach for the geotechnical studies to minimize the costs to property owners while ensuring the protection of the property from the erosion risk from the lake and bluff failure.

Phase I Investigation

Phase I is a non-intrusive, preliminary investigation, performed by a Geotechnical Engineer or Geoscientist, satisfactory to the conservation authority, into the stability of the slope in question. This phase should include:

- A review of all pertinent information, including geological mapping, geotechnical reports, water well records and any other information available for the area
- A site inspection in order to identify any evidence of slope instability, seepage and site vegetation
- Recommendations for siting/location, drainage and revegetation, minor site grading
- No intrusive work (i.e. drilling, test pits, etc)

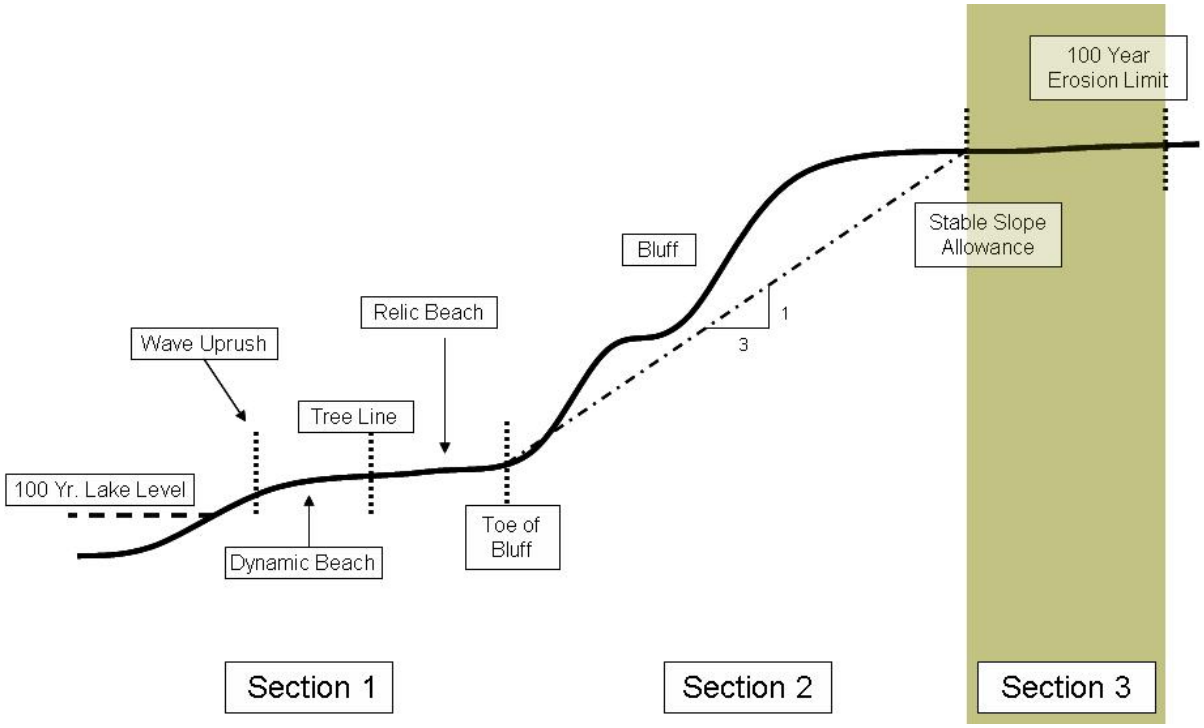
If the results of this investigation prove satisfactory, no further geotechnical studies will be required. However, a number of triggers, based on the Phase I report will lead to the commencement of a Phase II, including:

- Indications of slope instability
- Recommendations for major structural engineering, or
- Recommendations for major alteration/grading of the slope
- Recommendations for any slope stabilization work
- Recommendations for further investigation

Phase II Investigation

This is a more detailed investigation and will likely include some intrusive work. If the need for a Phase II geotechnical study is identified, the Terms of Reference are to be developed by the conservation in consultation with the proponent at the proponent's expense in order to address the issues outlined in the Phase I report.
Source: MNR Hazard Guidelines

SECTION 3: STABLE SLOPE ALLOWANCE TO THE 100 YEAR EROSION LIMIT



Replacement of Existing Development: If destroyed by forces other than erosion (Fire/Tornado etc.)

- Replacement of the development may be permitted
- The replacement development will be required to be moved as far away from bluff as is feasible and still be able to attach to an on site sewage disposal system
- The proponent will be required to construct in a manner that the development may be moved if needed.

➢ *MVCA Permit is required for approval of the development location only.*
➢ *MVCA will determine the appropriate setbacks*

Replacement of Existing Development if destroyed by Flooding/Erosion

- Replacement will not be permitted at the same location.
- Replacement of development must meet the conditions for new development/infilling policies in "Section 3: Stable Slope Allowance to the 100 Year Erosion Limit of the MVCA Shoreline Policies."

➢ *MVCA Permit is required if the new location of the development is located within the 100 year erosion limit.*

Infilling on Existing Lots of Record, Additions and Redevelopment of Existing Development (Existing Development Demolished and New Development constructed)

- **Redevelopment**
  - Development may be permitted, provided that the replacement structure is at a location satisfactory to the conservation authority.
  - *MVCA Permit Application is required.*
- **Infilling**
  - Infilling may be permitted on lots as long as the development can be located outside the 100 year erosion limit.
  - No new development will be permitted within the 100 year erosion limit.
  - *MVCA Permit may not be required if development is located outside the 100 year erosion limit.*
  - *MVCA Permit Application is required if the new location of the development is within the 100 year erosion limit.*

- **Additions to Existing Development (outside footprint of existing building)**
- Additions greater than 15% of the existing foot print will not be permitted
- Additions less than 15% of the existing foot print may be permitted, provided that the conservation authority is satisfied that:
  - The development is not at risk to the erosion hazard for a minimum of 25 years
  - The minimum development setback is 7.5 metres from the stable slope allowance
  - Access to an existing protection works is not diminished
  - The development does not increase occupancy.
- Basement may be permitted.
- Additional stories or parts there of, may be permitted provided it has been demonstrated that the building design will not result in an increase in soil pressure.
- *MVCA Permit may not be required if development is located outside the 100 year erosion limit*
- *MVCA Permit is required if development is located within the 100 year erosion limit*

Accessory Buildings (Boat Houses, Storage Sheds, Bunk Houses, Decks/Patios, Boardwalks, Swimming Pools)

- These types of structures will be permitted.
- *MVCA Permit is not required.*

Site Grading

- Site grading will be permitted

- *MVCA Permit is not required.*

MVCA RECOMMENDED APPLICATION PROCESS