CATARAQUI REGION
CONSERVATION AUTHORITY

Appendix 'E': Guidelines for Riparian Buffer Areas

This document should be read in conjunction with the CRCA Planning Policy.

1.0 PURPOSE

The purpose of this document is to summarize the recommendations of the Cataraqui Region Conservation Authority (CRCA) for the installation of riparian buffers for areas within its jurisdiction. The guidelines reflect the current knowledge of the CRCA, and may or may not satisfy the specific requirements of other agencies. This document will be updated from time to time.

A riparian buffer is a vegetated strip of land extending along a shoreline (or along both sides of a stream). The intent of these guidelines is to establish standards for the design of buffers to protect the streams, wetlands and floodplains of the Cataraqui Region; to protect the water quality of watercourses, reservoirs, and lakes within the region; to protect riparian and aquatic ecosystems; and to provide for the environmentally sound use of region's land resources.

2.0 BACKGROUND

Buffers adjacent to water bodies provide numerous *conservation* benefits which can include the following:

(a) restoring and maintaining the chemical, physical and biological integrity of the water resources;

(b) removing pollutants delivered in urban stormwater;

(c) reducing erosion and controlling sedimentation;

(d) stabilizing stream banks;

(e) providing infiltration of stormwater runoff;

(f) maintaining the base flow of streams;

(g) contributing the organic matter that is a source of food and energy for the aquatic ecosystem;

(h) providing tree canopy that shades streams and promotes desirable aquatic organisms;

(i) providing riparian wildlife habitat;

(j) maintaining critical floodplain setbacks; and

(k) furnishing scenic value and recreational opportunities.

As indicated by Sections 3.4 and 3.7 of the CRCA Planning Policy, the Cataraqui Region Conservation Authority supports the establishment, protection, and maintenance of vegetation along all waterbodies within the Region.

4.0 GENERAL BUFFER PLAN REQUIREMENTS

As part of the review of development applications adjacent to waterways, CRCA staff may request that a riparian buffer plan be prepared for our review. The plan should be prepared by a qualified environmental professional or Landscape Architect.

Each riparian buffer plan shall contain the following information:

1. a location or vicinity key map;

2. a map showing:

   i) field-delineated and surveyed streams, springs, seeps, waterbodies, and *wetlands* (include a minimum of 60 m into adjacent properties);
   ii) field-delineated and surveyed forest outline, taken at the *dripline* of the trees;
   iii) the limits of the regulatory (1:100 year) *floodplain*, where it is has been identified; and
   iv) slopes greater than 15 percent for areas adjacent to and within 60 m of a waterbody;

3. a narrative of the species and distribution of existing vegetation within the buffer.

The buffer plan shall meet or exceed the design standards listed below. The plan shall be submitted in conjunction with the grading plan for any *development,* and the buffer shall be clearly delineated on the final grading plan.

Permanent boundary markers shall be installed prior to clearing and/or grading.

5.0 SPECIFIC DESIGN STANDARDS FOR BUFFERS

Buffers are significantly less effective if they fail to meet minimum standards. This section presents the minimum design standards for buffers.

5.1 Buffer Width

The buffer shall begin at the normal waters edge of a lake or reservoir, and at edge of the bank of an active stream channel. The buffer width shall be increased as necessary to include contiguous sensitive areas, such as wetlands, floodplains, steep slopes or erodible soils.

The minimum width for all buffers (i.e., the base width) is 30 m. The buffer width shall be extended beyond 30 m based upon:

1. stream order -- in third order and higher order streams, add 8 metres to the base width;

2. percent slope (see below);

3. the regulatory (1:100year) floodplain -- the entire floodplain should be included in the buffer; and

4. wetlands or other critical aquatic, riparian, and terrestrial habitat areas -- the buffer shall be measured from the edge of the habitat (see Appendix 'B').

To determine the minimum buffer widths where there are steep slopes the following may be used

Percent Slope	Width of Buffer
15%-17%	add 8 metres
18%-20%	add 10 metres
21%-23%	add 15 metres
24%-25%	add 18 metres
Greater than 25%	add 30 metres

5.2 Buffer Zones

The buffer shall be composed of three distinct zones, with each zone having its own set of allowable uses and vegetative targets (See Figure 1).

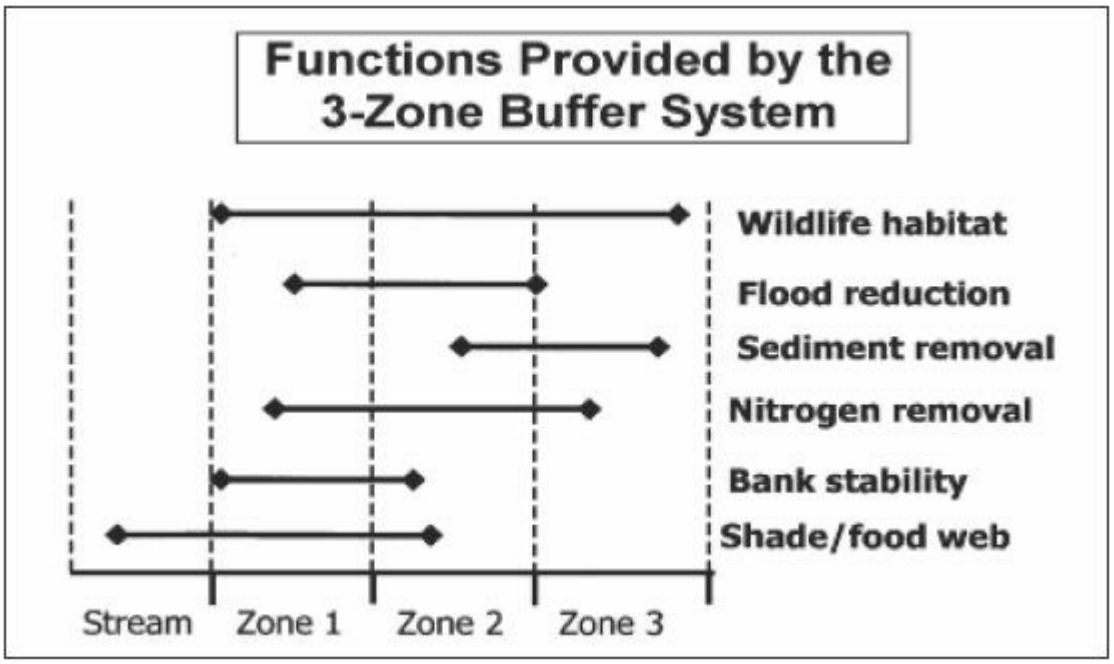

Figure 1: Three Zone Buffer System Function
(source:www.chesapeakebay.net/pubs/subcommittee/nsc/forest/handbook.htm)

Zone 1 - Streamside or Shoreline Zone

(a) The function of this zone is to protect the physical and ecological integrity of the stream or shore ecosystem.

(b) Zone 1 will begin at the edge of the stream bank of the active channel or shoreline and extend a minimum of 8 m from the top of the bank.

(c) The vegetative target for the streamside zone is undisturbed native vegetation.

Zone 2 - Middle Zone

(a) The function of the middle zone is to provide physical separation between upland *development* and the streamside zone.

(b) The middle zone will begin at the outer edge of the streamside zone and extend a minimum of 15 m.

(c) Allowable uses within the middle zone are restricted to:

(i) stormwater management facilities;
(ii) pathways and other recreational uses*;* and
(iii) limited tree clearing.

(d) The vegetative target for the middle zone is mature native vegetation adapted to the Cataraqui Region.

Zone 3 - Outer Zone

(a) The function of the outer zone is to prevent encroachment into the buffer and to filter runoff from adjacent residential and commercial *development*.

(b) The outer zone will begin at the outward edge of the middle zone and provide a minimum width of 7 m between Zone 2 and the nearest permanent structure.

(c) There shall be no sewage systems, permanent structures or impervious cover, with the exception of pathways, within the outer zone.

(d) The vegetative target for the outer zone may vary, although the planting of native vegetation should be encouraged to increase the total width of the buffer.

6.0 BUFFER MANAGEMENT AND MAINTENANCE

Each buffer, including component wetlands and floodplains, shall be managed to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of these resources.

The following practices and activities are discouraged within Zones 1 and 2 of the buffer:

1. clearing and grubbing of existing vegetation;

2. storage or application of pesticides, except for the spot spraying of noxious weeds or non-native species when advised by an appropriate agency;

3. housing, grazing, or other maintenance of livestock; and/or

4. storage or operation of motorized vehicles.

The following practices and activities are both discouraged within Zones 1 and 2 *and* may be regulated by the CRCA's "Fill, Construction and Alteration to Waterways Regulation" pursuant to Section 28 Regulation under the Conservation Authorities Act:

1. site alteration by filling, grading, stripping, or other practices;

2. drainage by ditching, underdrains, or other means;

The following structures, practices, and activities are permitted in the buffer, with specific design or maintenance features, subject to the review of CRCA staff:

1. Roads, bridges, paths, and utilities:

(a) An analysis needs to be conducted to ensure that no economically feasible alternative is available.

(b) The right of way should be the minimum width needed to allow for maintenance access and installation.

(c) The angle of the crossing shall be perpendicular to the stream or buffer to minimize clearing requirements.

(d) The minimum number of road crossings should be used.

2. Stormwater management facilities: (See the guidelines in Appendix 'F' to the CRCA Planning Policy) the buffer area cleared will be limited to the area required for construction and adequate maintenance access.

3. Stream restoration projects: facilities and activities are permitted within the buffer.

4. Water quality monitoring and stream gauging are permitted within the buffer.

5. Individual trees within the buffer may be removed which are in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream.

6. Other timber cutting techniques may be undertaken within the buffer, if necessary to preserve the forest from extensive pest infestation, disease infestation, or threat from fire.

All drawings/surveys prepared for recording and rights-of-way shall clearly:

1. Show the extent of any buffer on the subject property;

2. Label the buffer;

3. Provide a note to reference any buffer stating: "There shall be no clearing, grading, construction or disturbance of vegetation;" and

4. Provide a note to reference any protective covenants governing all buffers areas stating:

> "Any buffer shown hereon is subject to protective covenants which may be found in the subdivision agreement and/or notice to purchasers which restrict disturbance and use of these areas."

Where possible all buffer areas shall be maintained through a declaration of protective covenant and/or conservation easement. These should be recorded in the land records and shall run with the land and continue in perpetuity.

An offer of dedication of a buffer area to a public body shall not be interpreted to mean that this automatically conveys to the general public the right of access to this area.

Riparian buffer areas may be allowed to grow into their vegetative target state naturally, but

methods to enhance the successional process such as active reforestation may be deemed necessary by the CRCA to ensure the health and function of the buffer area.

8.0 SPECIAL CIRCUMSTANCES

The CRCA may consider:

1. Those *development* or *site alteration* projects or activities where it can be demonstrated that compliance with these guidelines is not feasible;

2. Those *development* or *site alteration* projects or activities serving a public need where no feasible alternative is available; or

3. The repair and maintenance of public improvements where avoidance and minimization of *negative impacts* to wetlands and associated aquatic ecosystems have been addressed.

Reductions in buffer width may also be considered if deemed appropriate by CRCA staff as follows:

The buffer width may be relaxed and the buffer permitted to become narrower at some points as long as the average width of the buffer meets the minimum requirement and is no less than 5 m wide at any point.

The proponent shall submit a written justification for the reduction, which shall include rationale and any other information necessary to evaluate the proposed reduction request. The CRCA may require an alternatives analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.

In supporting a reduction, the CRCA may require site design, landscape planting, fencing, the placement of signs, and the establishment of water quality best management practices in order to reduce *negative impacts* on water quality, streams, *wetlands*, and *floodplains*.

9.0 DEFINITIONS

Additional definitions are found in Section 4.0 of the CRCA Planning Policy. It is intended that the definition of these and other terms be consistent with the definitions listed in the Provincial Policy Statement, as amended.

Active Channel: means the area of the stream channel that is subject to frequent flows, and that includes the portion of the channel below where the floodplain flattens.

Best Management Practices (BMPs): means conservation practices or management measures that control soil loss and reduce water quality degradation caused by nutrients, animal wastes, toxins, sediment, and runoff.

Buffer: means a vegetated area, including trees, shrubs, and herbaceous vegetation, which exists or is established to protect a stream system, lake, reservoir or coastal estuary.

Non-point Source Pollution: means pollution which is generated by various land use activities rather than from an identifiable or discrete source, and is conveyed to waterways through natural processes, such as rainfall, storm runoff, or groundwater seepage rather than direct discharge.

Pollution: means any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to: public health, safety or welfare; domestic, commercial, industrial, agricultural, recreational, or other beneficial uses; livestock, wild animals, or birds; fish or other aquatic life.

Stream Channel: means part of a water course either naturally or artificially created which contains an intermittent or perennial base flow of groundwater origin. Base flows of groundwater origin can be distinguished by any of the following physical indicators:

(a) hydrophytic vegetation, hydric soil or other hydrologic indicators in the area(s) where groundwater enters the stream channel, in the vicinity of the stream headwaters, channel bed or channel banks;

(b) flowing water not directly related to a storm event; and/or

(c) historical records of a local high groundwater table, such as well and stream gauge records.

Stream Order: means a classification system for streams based on stream hierarchy. The smaller the stream, the lower its numerical classification. For example, a first order stream does not have tributaries and normally originates from springs and/or seeps. At the confluence of two first order streams, a second order stream begins, and so on.

Stream System: means a stream channel together with one or both of the following:
1) regulatory (1:100 year) floodplain and/or 2) hydrologically-related wetlands

Streams: means perennial and intermittent watercourses identified through site inspection, Ontario Base Maps (OBM), and/or air photo interpretation.

Water Pollution Hazard: means a land use or activity that causes a relatively high risk of potential water pollution.

References

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