



File: P09-31

MEMO

To: Rob MacKay, Director, Economic and Environmental Sustainability
City of Ottawa

From: John Price, P.Eng., Watershed Management Coordinator
Mississippi Valley Conservation

Date: May 12, 2008

Re: Flood Plain Management - Floodway/Flood Fringe Implementation

This memo is to review the policy basis for application of a floodway/flood fringe proposal as part of the Carp River Restoration Plan and how some other Conservation Authorities have chosen to address similar situations. The Carp River Regulatory (1:100 year) flood plain is wide and shallow with low flow velocities through the Kanata West area (Richardson Side Road to Hazeldean Road). As part of the Carp River Restoration Plan it is proposed to fill some flood fringe areas of the flood plain above the Regulatory flood level to allow for residential development while regional stormwater management ponds will be constructed in other areas of the flood fringe.

The application of this floodway/flood fringe concept for flood plain management has been referred to as the two-zone concept and also as a modified one-zone concept. The attributes of the proposal should be the focus and not the terminology used to describe the concept.

For the Carp River flood plain floodway/flood fringe concept:

- The floodway/flood fringe concept was a recommendation in the Carp River Watershed/Subwatershed Study. This study reviewed and analyzed the entire watershed and was completed after extensive public and agency input and review. Further and more detailed analysis was completed in support of the various Class Environmental Assessments that were completed for the Kanata West lands.
- Any area in the flood fringe that will be used for residential or commercial development will be raised above the Regulatory (1:100 year) flood plain level before development occurs.
- In addition to the other attributes of the Carp River restoration plan, flood plain storage will be maintained within the reach (i.e. all flood plain storage lost as a result of filling of the flood fringe lands will be replaced through modifications to the remaining corridor).

Member of Conservation Ontario

- As you are aware, updated hydrologic (flow) and hydraulic (water level) analyses, to assess potential impacts of future development and flood plan modifications, has been completed. Various scenarios have been analyzed and an ultimate future scenario includes the full restoration/flood plain plan, Kanata West in the developed condition with stormwater management following the Master Servicing Environmental Assessment, ultimate future development in the upper Carp River watershed following the City's Official Plan and all future potential encroachments in the flood plain (e.g. Terry Fox Drive extension).
- These models will be revised as required through the detailed design process. As development proceeds, the models will also be updated to verify that designs assumptions used are accurate and representative of watershed conditions.
- The target levels, to assess potential impacts and potential increase in flood risk, are contained in the report "Flow Characterization and Flood Level Analysis – Carp River, Feedmill Creek and Poole Creek". The reports documents flows and water levels based on the existing development and channel conditions in 2005.
- The Ministry of Natural Resources (MNR) has confirmed, through a letter dated April 26, 2007, that the "objectives of the provincial natural hazards policy have been met in the Carp River Restoration Plan" and "the flexibility provided by the policy has been appropriately used by the MVCA given the wide shallow flood plain in this urbanizing area".

Several other Conservation Authorities in the Province were contacted to discuss how they deal with wide and shallow flood plains and what types of flood plain modifications they have supported. It must be noted, however, that local Conservation Authority policies are formulated based on local watershed conditions and issues. Thus, comparisons between individual Conservation Authorities policies have to be undertaken carefully.

This situation reflects what was described in a decision of the Mining and Lands Commissioner in 1983:

The Act provides for the establishment of areas of jurisdiction on a watershed basis and programs are authorized under the Conservation Authorities Act in respect of such watersheds. It may well be that some authorities have more resources than others to implement their programs and a comparison of the decisions in individual cases between conservation authorities would not be sound in law by reason of the fact that each conservation authority is, by the Act, treated as an entity and the resources, policies, programs and decisions of conservation authorities are not necessarily identical. (MLC decision, Victor Ordorico vs. The Halton Region Conservation Authority, Dec. 1, 1983, www.omlc.mnr.gov.on.ca)

It must also be stated that development or encroachments in the Regulatory flood plain is not an issue to be taken lightly. It is the exception and not the general practice of any Conservation Authority. However, in certain situations, with appropriate justification, appropriate analysis and addressing specific criteria, municipalities in conjunction with their local Conservation Authorities have supported modifications to the Regulatory flood plain to achieve local objectives. A number of examples are provided below.

Essex Region Conservation Authority

The Essex Region is located in the Windsor and Leamington area and is generally very flat and flood water have been known to flow overland directly into Lake Erie. For their watershed:

- The Regulatory flood plain can be a kilometre in width and the flood plain from Lake St. Clair can extend inland from shore up to a kilometre.
- The Conservation Authority has completed floodway/flood fringe studies for all the waterways conveying flow to Lake St. Clair. These studies resulted in the definition of hydraulic floodways for these watercourses that could be 35-60 metres in width.
- The areas outside of these floodways are defined as flood fringe. The flood fringe areas can be filled and developed. In these scenarios, flood plain storage is not replaced and full subdivisions in the flood fringe areas have been supported by the local municipality and Conservation Authority.
- For areas draining directly to the lake only water quality control is required with new development.

Credit Valley Conservation

Credit Valley Conservation (CVC) is located west of Toronto and Region Conservation Authority (TRCA) and the watercourses within their watershed generally have well developed valley systems (confined). CVC staff stated that the Carp River system would be analogous to some of their headwater areas where the topography is flat and flood plains could be unconfined. In some of these headwater areas:

- If identified through a Subwatershed Study, the modification of the Regulatory flood plain is supported to allow for the creation of a sustainable natural system in urbanizing areas.
- The watercourse is reviewed at the system level through the Subwatershed Study and the requirements of the watercourse and flood plain/valley system are determined.
- Natural watercourse/valley corridors are replicated using natural channel design principles.
- This procedure has been used in developing areas such as Brampton and has involved large tracts of land. (e.g. between Concession Roads). One example involved an area of over 1500 hectares where the watercourse was being relocated and a valley system created.
- CVC does not use the terminology Two-Zone concept to describe this type of flood plain modification.

Central Lake Ontario Conservation

The Central Lake Ontario Conservation (CLOC) watershed is located east of the TRCA. In their watershed there are applications of Two-Zone and Special Policy areas for floodplain management.

- In Oshawa, supported by an analysis and study, the Goodman Creek Two Zone Policy allows for infill development and redevelopment within a defined flood fringe of the Regulatory floodplain. This area is within a large floodplain caused by a backwater behind a railway embankment. New developments (e.g. commercial blocks of land) have been approved in the defined flood fringe by filling the sites above the regional flood elevation, and providing compensating flood storage in the floodway. Opportunities to floodproof existing homes in the floodfringe is accomplished by allowing filling (without compensating flood storage) and redevelopment.
- A similar analysis and study is underway for another watercourse reach upstream of Highway 401 in Oshawa.
- CLOC generally has supported/allowed other examples of modifications to the Regulatory flood plain to allow new development based on a cut and fill balance and hydraulic analysis. For this scenario the terminology Two-Zone is not employed and the CLOC often requires all filling and grading to be undertaken (through a permit issued by the Conservation Authority) before site plan approval is granted.

Nottawasaga Valley Conservation Authority

The Nottawasaga Valley Conservation Authority (NVCA) watershed is located north of the TRCA and drainage is ultimately to Georgian Bay.

- In the Town of Collingwood on the Pretty River upstream of a diked section of the river, flood proofed new development (including a 300 lot subdivision) is being implemented in a spill zone.
- NVCA has permitted a balanced cut fill on the Wilson Drain in the Town of Alliston after a secondary plan study was undertaken supporting the development
- NVCA has supported, in some circumstances, flood plain modification for new development through a cut and fill balance to replace flood plain storage.
- For a reach it is acceptable to NVCA to replace flood plain storage on a return period basis as is being implemented for the Carp River.

Conservation Halton

The Conservation Halton watershed is located west of CVC.

- Within the Conservation Halton watershed, major flood plain alterations (including placement of fill to create, or enlarge, a building lot) and major watercourse alterations are generally not permitted.
- Such alterations, however, may be considered where justification is provided through a subwatershed study, an Environmental Assessment or similar comprehensive study and are subject to conformity with municipal planning documents.
- In the cases of these flood plain modifications, to protect against cumulative impacts, the existing watercourse characteristics of travel time and stage-storage and stage-discharge must be maintained
- Conservation Halton has supported flood plain modifications in developing areas.

John P. ...