PARISH geomorphic

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John Price
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Re: Erosion Hazard Limit for Karson Kartage Konstruction Head Office in Carp, ON

Dear John,

In October 2009, PARISH Geomorphic Ltd. prepared a memorandum summarizing the results of an erosion hazard limit study for the Karson Kartage Konstruction property in the Village of Carp. The property is bordered on the south by the Carp River and a portion of the property lies within the regulatory floodplain. At this location, the Carp River is confined by a 2-3m high valley wall along the Karson property, and is unconfined by low-lying Class 2 agricultural land to the south.

It is acknowledged that there is some uncertainty regarding the application of a toe-erosion hazard assessment. In our previous submission, we used the PPS guidelines for a confined system, which has a 2m threshold. Using the MVCA guideline for an Apparent Valley, would require the slopes/banks to have a height of 3m. As shown below in **Figure 1**, seven cross-sections are plotted relative to the bottom of slope of the north bank. These sections clearly indicate that the banks range in height from greater than 2m to greater than 3m, thus it is felt that this site satisfies both guidelines. These sections were measured from the site survey provided by Novatech Engineering Consultants Ltd.

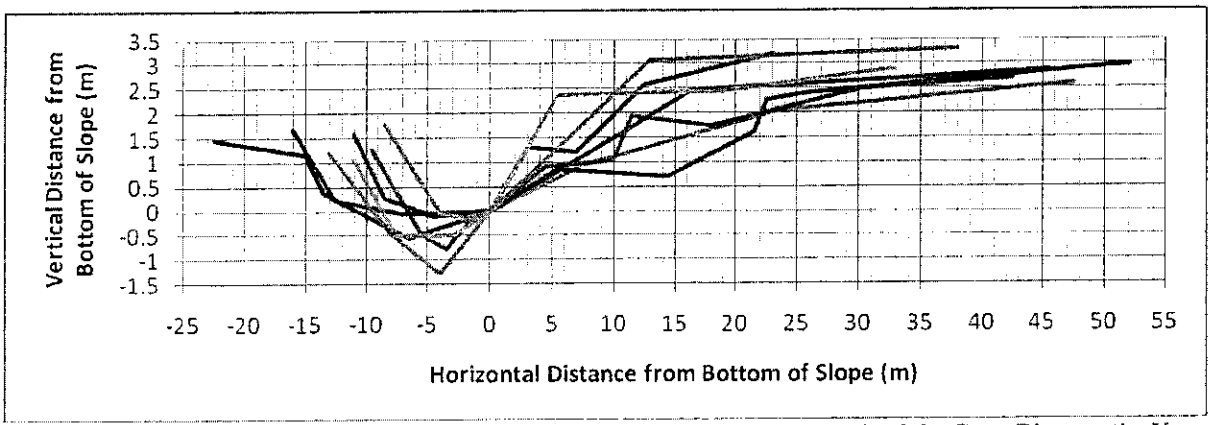

Figure 1 – Valley cross-sections relative to the bottom of slope of the north bank of the Carp River at the Karson property

The City of Ottawa *Community Design Plan for The Village of Carp* (2004) identifies the property as part of the village core, and its redevelopment from industrial to commercial use will address goals outlined in the community design plan. Novatech is aiming to redevelop the portion of the property outside of the floodplain, and to construct a portion of the parking lot area within the floodplain according to Section 6.1.2 of the Mississippi Valley Conservation Authority (MVCA) Regulation Policies (Draft: November,

2009). It is recognized that the MVCA may permit stream bank, slope, and valley stabilization to protect existing development or conservation or restoration projects (Section 7.2.2.2.d, MVCA Draft November, 2009) and that the redevelopment of this property would not negatively affect flooding, erosion, pollution, or the conservation of land.

In the October 5, 2009 memorandum, the site was classified as a confined/apparent system according to the Provincial Policy Statement (2005) and as defined in the *Technical Guide – River & Stream Systems: Erosion Hazard Limit* (Ontario Ministry of Natural Resources, 2002) because the valley wall was greater than 2m high. The study recommended that the erosion hazard limit at this site be defined as the toe erosion allowance (13.5m), plus the stable slope allowance (suggested 3H:1V), plus the erosion access allowance (6m). The 13.5m toe erosion allowance is specific to the site and the details are summarized in the memorandum.

It should also be noted that the site is somewhat unique in that there is existing development, the site is located along the inside of the meander bend, the site is bordered by the Carp Road bridge to the east and the former CN rail line to the north, and that only one side of the river is confined by a valley wall.

As mentioned previously, the MVCA may permit stream bank, slope, and valley stabilization to protect existing development according Section 7.2.2.2.d, and that the redevelopment of this site in the village core is beneficial to the community. The erosion hazard risk at the property is lessened by the fact that the natural tendency of the river is to migrate in the downstream direction by depositing sediment on the inside bank and eroding the outside bank. In broad terms, the river will choose to meander away from the Karson property, and not into it. The Carp Road bridge and former CN rail line further limit the possibility of future channel migration by restricting channel migration at these structures. The low-lying agricultural land to the south provides an adequate floodplain for the river at high stages and limits the erosion potential at the valley wall toe.

As discussed, the valley slopes/banks satisfy both the PPS and MVCA guidelines for a confined/apparent valley. Furthermore, the unique characteristics of the Karson property limit the erosion hazard potential at the site and it is our view that the redevelopment of this property will not adversely affect flooding, erosion, pollution, or the conservation of land.

Respectively submitted,

Josh Wiebe
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John Parish, P.Geo.
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