

## **APPENDIX 13**

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Willow Creek was discussed in the Scoping Report and it was noted that it is a creek with a watershed of approximately 30,700± ha (76,000± acres). It commences in Barrie upstream of Little Lake and continues downstream to the River. It has been channelized by man in the area of George Johnston Road significantly. **Drawing 7** shows the route and watershed of Willow Creek.

Aerials available from 1954 and from 1989 indicate that it was channelized downstream of George Johnston Road sometime prior to 1954 and then channelized further upstream and downstream between 1954 and 1989 so that from a point 1,000m upstream of the road to a point 2,000m downstream of George Johnston Road the channel is man-made. The aerials also show that Black Creek a small creek south of, but close to, Willow Creek has also been improved by man.

Aerials in 1954 do not show such, but those in 1989 do show a channel on Lot 10, Concession 10 that commences in the Swaley and continues close to the Willow. It is understood during the Hurricane Hazel event the Willow broke through its banks and discharged into this channel and thus ran to the Swaley. This breach was later filled in adjacent to the Willow.

The Willow as noted has a similar gradient as the old Muskrat channel but since it traverses a much longer route than from the River to George Johnston Road, it has a much higher channel bottom at George Johnston Road. Indeed, Willow Creek waters are 700mm higher than Swaley Drain waters at this road. The Willow is only 80m separated from the Swaley Drain at George Johnston Road as well.

A variety of concerns with Willow Creek have been expressed by different parties at the on-site meetings conducted re the Swaley Drain.

- A strong concern is that the Willow levels at George Johnston Road are causing long periods of farm field<sup>1</sup> inundation in the Spring and after heavy runoffs at other times.
- One concern is that the Willow has potential of breaching its banks and discharging into the Swaley Drain further upstream in Concession 8.

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<sup>1</sup> *Immediately south of the Creek and immediately east of the road.*

- Another significant concern with the Willow is the downstream impact in the Minesing Wetlands due to the significant amount of sediments it carries.
- Any works to reduce the sediment loading of the Willow can only benefit the Minesing Wetlands.
- Concerns have also been expressed re the possible increase of drainage into the Willow upstream in the area of the upstream urban lands.
- Other concerns/requests are that the Willow channel be annually inspected and kept free of blockages and sediments from the George Johnston Road down to the River.

It is this writer's opinion that it would be desirable to ensure that the Willow does not have the ability to enter the Swaley/Muskrat area again because of the concerns with the sediments that it carries. It is this writer's opinion that the Willow should be improved upstream of George Johnston Road to both reduce the possibility that it could enter into the Swaley but also to better protect the Minesing wetlands. Works should be undertaken on it upstream to control the sediment load that it carries.

Any works to study the Willow Creek should also identify if any improvements should be undertaken across and downstream of George Johnston Road towards the River. If the man-made channel components of the Willow were inspected, it may be concluded that it would be desirable to remove sediments from such to give the wetlands a cushion from future sediment loading if no other works of improvement were done. The capacity of the components of the Willow Creek should also be examined to determine if and where flow restrictions exist (other than from just sediments). If any works resulted from such examinations, the extent of flooding in the upstream side of George Johnston Road might be reduced.

Discussions with NVCA staff indicates the Authority would be very reluctant to have any works of improvement undertaken on the Willow downstream of where it has already been altered by man (Lot 12, Concession 11). But it is this Engineer's belief that NVCA recognizes there is a need to study the Willow Creek if a method and means could be found to do such.

The costs to study the Willow Creek will be substantially high. Nevertheless, it would be desirable if some method(s) could be found to fund a study of Willow Creek for the betterment of the Minesing wetlands, the Swaley Drain and other lands adjacent to the Willow Creek.

If it were desired to initiate, at the local level, a study on the Willow, the Engineer suggests that the following is a process that could be considered:

## a) Initially undertake a Project Scoping Study

- This study could be initiated, it is suggested, by a coalition of NVCA and the Township without recourse to the Drainage Act.
- It would be necessary to pre-identify the terms of reference for such a study. E.g.:
  - To determine characteristics of the existing Willow.
  - To determine concerns re the Willow.
  - To determine sources of sedimentation in the Willow.
  - To determine possible means of controlling sediments.
  - To determine any changes in flows in Willow and possible means of controlling such if increases have occurred.
  - To determine what works should be undertaken on the Willow across the Minesing wetlands to minimize damage to the wetlands by construction but also to maximize the use of the Willow through the wetlands and to maximize the other attributes of the wetlands.
  - To determine the mechanism for undertaking improvements and for ensuring such can be maintained.
- After a Terms of Reference was prepared, the costs to undertake a study should be learned.
- To finance a Project Scoping Study perhaps a consortium involving the three levels of government plus the County plus the land developers should be created to share the costs since the costs will be high.
- The Scoping Study should strongly examine the possible benefits of having Willow Creek designated as a Drain under the Drainage Act for reasons not to create a new drain but to identify how an existing channel should be better looked after. A drain report could identify the costs and distribution of the costs of works to address existing and future sediments, to address any man-made deficiencies in capacity, and to maintain the channel in the future to the extent necessary through the wetlands and to the extent necessary upstream of the wetlands.
- To identify the method and specifications for any maintenance
- To identify how a works could be initiated under the Drainage Act.

## b) Preparing a Report on the Willow Creek Through the Drainage Act

- It is suggested the most difficult step in initiating a project under the Act would be the initiation itself.
- A “petition” as defined by the Act would be necessary and if a Scoping Study were prepared, this petitioning process could be discussed.
- A petition has to be submitted by affected landowners (or road authorities if drainage is required for roads).

- At this time the Engineer suggests that since the greatest benefits of controlling or managing the Willow to minimize downstream impacts would be the NVCA and MNRF lands in the wetlands, a petition by NVCA and MNRF for their lands should be considered.
- This would normally go against the thinking of or reasons for Drainage Act petitions since customarily new drainage construction works are anticipated. However, in the Willow project the Drainage Act would be used not to construct a new works but to better manage an existing works (the Willow Creek).
- Indeed, ownership of all lands along the Willow could be reviewed and it could be determined if other parties upstream of the Minesing Wetlands, e.g. Municipal road Authorities, landowners, the province and/or the County for their roads and any lands owned should also be a party to any petition.
- The Engineer sees great advantages in having the Willow Creek designated as a Drain to minimize its negative impacts and to maximize its possible positive impacts.
- The use of the Act, if a “petition” could be obtained would greatly facilitate the study on the Willow.
- In advance and as noted, the Project Scoping process could be effectively used to determine/confirm that a petition and a process under the Act should/could be initiated.
- If any report were ultimately prepared, the report could designate how the costs involved (initial and in the future) could be distributed. A Drainage Act Report could provide for sharing of costs to minimize individual property assessments by use of Block Assessments to urban areas, by use of Road Assessments to Road Authorities and by use of Special Benefit Assessments where Special Benefits result.

If the large study as outlined can not be initiated in the near future, a means with approvals should be sought to examine and address the Willow now for deficiencies in capacity and channel stability in the area of the Swaley Drain and Minesing Wetlands.