



Fact Sheet # 2: Willow Creek and Minesing Wetland

- 1) The Minesing Wetland spans an area of more than 6,000 hectares (15,000 acres) with an assemblage of fens, marshes, swamps and bogs supports a network of flora and fauna.
- 2) The Matheson Creek drainage area represents approximately 11% of the Minesing Wetland drainage area. Note Willow Creek is within the Matheson Creek watershed;
- 3) The phosphorus loading within the Minesing Wetland varies greatly each year and depends upon the amount and type of precipitation throughout the year. However, the current phosphorus loading within the Minesing Wetland has been estimated to be between 35,000 and 40,000 kg per year;
- 4) As identified in “Pollutant Target Loads: Lake Simcoe and Nottawasaga River Basins” Report dated June 2006 and prepared by the Louis Berger Group and Greenland International, Inc. the combined phosphorus loading entering the Minesing Wetland from the Matheson Creek watershed and the Black Creek watershed is over 3,800kg per year. Note the Midhurst Secondary Plan is completely within the Matheson Creek and Black Creek watersheds.
- 5) A detailed assessment of the cumulative loading of phosphorus from the Midhurst Secondary Plan (both Stormwater Management and the Wastewater Treatment Plant) discharging to Willow Creek and the Minesing Wetland has been completed.

To facilitate this a phosphorus budget modelling tool was developed and adapted specifically for the Nottawasaga Valley Conservation Authority (NVCA), from the modelling tool that was developed for the Lake Simcoe Protection Plan (LSPP) by the Ministry of Environment and Climate Change (MOECC), along with the inclusion of new industry standards for Low Impact Development (LID) in Ontario.

This phosphorus assessment concluded that with the extensive use of Low Impact Development (LID) measures throughout the Midhurst Secondary Plan, the traditional impact of stormwater from new development will be significantly reduced. In particular, the cumulative “net” phosphorus load after the buildout of the entire Midhurst Secondary Plan is approximately 66 kg/year, which (conservatively) represents less than 0.5% of the current phosphorus load flowing through the Minesing Wetland on an annual basis.

- 6) The combination of, the latest treatment technologies at the Wastewater Treatment Plant and assimilation processes in Willow Creek, will maintain un-ionized ammonia concentrations below the Provincial Water Quality Objectives (PWQO). Therefore,



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Willow Creek or Minesing Wetland will not be negatively affected by ammonia from the Midhurst Secondary Plan.

- 7) Willow Creek currently exceeds the Provincial Water Quality Objective (PWQO) for Total Phosphorus of 0.03 mg/L. At Full Build Out of the Midhurst Secondary Plan, effluent will be treated to the PWQO of 0.03 mg/L and there will be no measurable increase in the creek as a result of the discharge.
- 8) Based upon 10 plus years of Willow Creek flow data that has been analyzed, the flows within Willow Creek vary between a 7Q20 flow rate of 430 Litres per second (L/s) to a high of 24,000± L/s. The data also shows great variations within each specific season, depending upon the amount of precipitation that falls in a particular season. Therefore, given the significant variations in the existing flows within Willow Creek, the additional 143L/s of flow from the Wastewater Treatment Plant, after the buildout of the entire Midhurst Secondary Plan, will not affect the characteristics of Willow Creek from fluvial geomorphological perspective.
- 9) Nitrogen forms will be treated to a very high standard in the WWTP. The effluent will be non-lethal to aquatic life as it leaves the plant, prior to any mixing with the creek. The effluent will mix with the creek after discharge and the resultant dilution and assimilation processes will quickly reduce ammonia concentrations so they will meet the water quality objective for un-ionized ammonia within 360m of the point of discharge. No significant impacts will occur within this 360m “mixing zone” which is allowed under MOECC Policy. Nitrate in the creek will be maintained below water quality objectives at all points. Water quality that is at or below an objective is suitable for indefinite exposure of the most sensitive life stages of the most sensitive aquatic life and is thus safe for aquatic life.
- 10) Dissolved oxygen concentrations will be maintained at 7.8 – 8.1 mg/L in Willow Creek, well above the requirements for aquatic life.
- 11) Effluent discharge will have a minimal effect on water temperatures in the creek. At Full Build Out, and minimum creek flows, the maximum water temperature increases will be 1.05 °C in January and 0.85 °C in July, without accounting for exchange of heat with the atmosphere. Temperatures will therefore remain within current ranges with no impacts to aquatic life.
- 12) At Full Build Out, the flow from the WWTP would make up 25% of the total flow of Willow Creek at 7Q20 low flows (i.e., 430 L/s). The discharge of effluent would result in an average increased water depth of 0.01 to 0.03 m and average increased velocity



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of 0.01 m/sec, changes that would be virtually immeasurable in Willow Creek and would have no effects on erosion.

- 13) The Midhurst Developers Group is committed to working with the Nottawasaga Valley Conservation Authority (NVCA) to achieving a net-zero increase in phosphorus, if required.

In particular, if it is deemed necessary by the MOECC, a program similar to what was set up with the Developers group in the Tottenham area could be established. In the Tottenham scenario, an Expansion to the Wastewater Treatment Plant, which was necessary to accommodate new growth, was going to increase the amount of phosphorous being discharged to the Beeton Creek. Therefore, the local Developers were required by MOECC to provide monies to the NVCA for the implementation of a phosphorous offsetting program; whereby works would be undertaken by the NVCA, at key spots throughout the watershed, to reduce the amount of phosphorous entering the creek and therefore, offset the additional load from the expanded Wastewater Treatment Plant and ensuring no negative impact on the watershed.