Understanding

The

Burnt River

KAWARTHA CONSERVATION

This brochure has been prepared by Kawartha Conservation to assist residents of the City of Kawartha Lakes in dealing with flooding events on the Burnt River

Burnt River watershed is outside of jurisdictional boundaries of Kawartha Conservation

Understanding the Burnt River

The Burnt River has a well-documented history of flooding. This brochure has been prepared to assist residents of the Burnt River area, to understand the changes they will observe in the behavior of the river, and to be better prepared to protect their properties and lives in the event of future flooding events.

In order to understand the Burnt River, it is important to understand some principles of hydrology and water management.

What is a watershed?

A watershed is an area of land that catches rain and snow and drains towards a watercourse. A watershed can cross municipal boundaries and vary a great deal in their size and shape. The way that a watershed behaves is influenced by its size, the slope of the land, the type and depth of soil, the underlying bedrock, and the land uses within the watershed.

Flooding and Floodplains

A flood is a naturally occurring phenomenon, which occurs when the volume of water flowing in a watercourse is greater than the capacity of the channel. As a result, the river spills over its banks and causes flooding to adjacent lands. These adjacent areas are known as floodplains, and are part of the river's natural living space. Figure 1 illustrates the components of a river's natural living space.

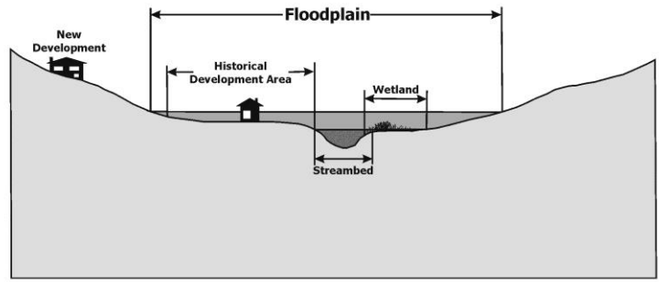

Figure 1 – The Living Space of a Typical River

Most rivers and streams flood during the months of March and April, as a result of mild temperatures, melting snow and rain. This period is referred to as the spring freshet. The volume of water available for runoff depends upon a variety of factors and how they interact. However it is important to remember that flooding may occur at anytime of the year. Ice and debris jams can make flooding conditions worse, by restricting the capacity of the river to convey water.

People enjoy living near the water and many people through a lack of awareness have either built their homes or purchased existing properties within the floodplain. Flooding puts peoples lives at risk, causes property damage and results in economic and social disruption to communities. Development within a floodplain may also impair the ability of a watercourse to carry water away.

The Burnt River

The Burnt River has a well-documented history of flooding, with significant flooding occurring in 1951, 1960, 1976, 1982, 1991 and 1998. Based upon historical records, flooding along the Burnt River usually takes place during the spring months, and has been the result of runoff generated by snowmelt in combination with rainfall.

The river, which is approximately 80 kilometres (50 miles) in length, originates in the Haliburton Highlands, and forms part of the larger Trent River drainage basin. This drainage area outlets into the Trent Severn system at the northern end of Cameron Lake at Lock 35.

The majority of development along the Burnt River is located south of Kinmount, with the greatest concentration of buildings located south of Burnt River Village. It is estimated that there are approximately 500 residences are currently located along the river.

A number of reservoir (i.e. Drag Lake, Lake Kashagawigamog and Koshlong Lake) as well as the Irondale River and creeks drain to the Burnt River. Water levels of the reservoir lakes are controlled by 15 dams, which are owned and operated by either the Ministry of Natural Resources or Trent Severn Waterway. These dams are all located in the upper portion of the Burnt River drainage basin. There are no water controls structures between Kinmount and the outlet of the river at Cameron Lake. Of the total area of the Burnt River subwatershed, 60% of the Burnt River system is located downstream of all dams used to control water levels along this system. There is very little control over the majority of the Burnt River system.

The dam that is located at Kinmount is owned and operated by the Ontario Ministry of Natural Resources. This dam has a small storage capacity, and as a result has little effect on little effect on flows

The Role of the Trent Severn Waterway and The Ministry of Natural Resources in Controlling Water Levels

The Trent Severn Waterway and the Ministry of Natural Resources regulate water levels and flows within the Burnt River subwatershed. It is the Trent Severn Waterway that decides when water levels and flows will be changed. The reservoir lakes are multi-purpose as they:

- provide water for navigation along the Trent Severn Waterway;
- provide water for recreational activities;
- protect fish and wildlife habitat;
- help maintain water quality; and
- generate hydroelectric power.

When settling flow rates and water levels at dams, the Trent Severn Waterway must weigh the requirements of these various uses to arrive at optimal levels. Waterway staff consider daily readings from automated water level recording stations and precipitation gauges, the volume of snow on the ground, the condition of the soil, forecast temperatures as well as historical records are taken into consideration in setting water levels.

Seasonal Changes of The Burnt River

- **Fall and Winter**

During the fall and winter months, the Trent Severn Waterway (TSW) maintains water levels in the reservoir lakes in order to enable recreation, and to ensure that water levels are appropriate for fall-spawning fish, such as Lake Trout. Water levels of the reservoir lakes are typically reached by the Thanksgiving Weekend and maintained until the spring melt. These lower levels allow for the storage of runoff from snowmelt and rainfall in the spring, in order to reduce the potential for flooding to areas located downstream.

- **Spring Melt or Freshet**

As spring approaches, the Trent Severn Waterway and the Ministry of Natural Resources evaluate the conditions of the drainage basin on a daily basis.

Once the spring melt (freshet) begins, stoplogs are gradually reinstalled in the reservoir lakes, allowing for some spill to continue, while ensuring that the lake levels continue to rise. It is not possible to maintain low lake levels and then capture the spring runoff. There would quite often be insufficient water available to fill these lakes without catching considerable flow before the peak water level had passed. As the spring proceeds, the total available flood protection is diminished due to the multi-use nature of these lakes and the need to have these lakes at capacity at the start of the summer season.

- **Summer**

During the summer months, water is gradually released from the reservoir lakes in order to maintain water levels for navigation in the Kawartha Lakes. The release rate of water from the reservoir lakes depends upon the amount of rainfall as well as the period over which occurs.

The Trent Severn Waterway typically reduces flow rates to a target minimum, in order to store water for periods of little or no rainfall.

Factors Which Contribute To Flooding on the Burnt River:

- The topography of the Burnt River plays an important role in its behavior. The lower section of the Burnt River between Burnt River Village and Cameron Lake has a much more gradual slope that the upper portion of the river.

- The Irondale River provides a significant input to flows experienced along the Burnt River, and has contributed to flooding problems in the past.

- There are no water controls structures between Kinmount and the outlet of the river at Cameron Lake.

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- Meanders (bends) in the lower section of the river cause natural obstructions in the flow of water through the system.

- The Trent Severn Waterway is not able to alleviate flooding problems on the Burnt River by opening the dam at Cameron Lake. Water must move through the entire Burnt River before adjustments to the dam at Cameron Lake can be noticed.

The Role of the City of Kawartha Lakes

Several departments of the City of Kawartha Lakes are involved in the provision of emergency services. The City's Public Works Department monitors flooding throughout the municipality and reports incidents of flooding to the Fire Department, which may require their involvement.

The City of Kawartha Lakes has a Contingency Plan, which outlines the procedures to be followed during a state of emergency. Should flooding conditions worsen to the state of an emergency, it is the responsibility of the Mayor to declare a state of emergency. Local councillors are kept informed of the situation in their respective wards.

Residents of the Burnt River can visit **www.wateroffice.ec.gc.ca** or **www.ontario.ca/flooding** to find out about the most recent information about the potential for flooding in their area. This information is updated as new information becomes available.

Residents should not call the emergency 911 number unless there is an emergency situation.

- ***If a flood message is issued for your area, please take heed.***

- ***Be prepared to take measures to safeguard your property, your life and your loved ones.***

- ***Be prepared to follow the advice and instructions of emergency response personnel.***

The Role of Kawartha Conservation

The Burnt River is located outside the jurisdictional boundaries of Kawartha Conservation.

Ministry of Natural Resources and Forestry (Minden office) provides flood forecasting and warning for the Burnt River watershed.

To assist residents of the Burnt River and the City of Kawartha Lakes, Kawartha Conservation provides information on:

- watershed conditions (amount of snow available for runoff, basin saturation);
- anticipated weather conditions
- information observed by residents on local flooding conditions.