Adapting to Climate Change: **Inland Flooding**

Grand Falls

Figure 1:
Location of Grand Falls

The Area

Situated in mid-western New Brunswick, the town of Grand Falls (pop. 5706 in 2011) is a centre of economic activity for north-western New Brunswick. The adjacent region encompasses eight communities and a population of approximately 30,000 within a radius of 30 km. The region contains valleys, high plateaus, two rivers and countless streams and lakes.

Nestled on both sides of the Gorge, Grand Falls is an agro-industrial community, the only town in Canada with a name in both official languages Grand Falls/Grand-Sault. The town was named Grand Falls because of the largest waterfall east of Niagara Falls, dropping from a height of 23 meters (75 feet). The region lies within the Valley lowlands ecozone and experiences relatively cold winters. Total precipitation is lower than regions further south, although there is an elevated tendency for impacts from heavy summer thunderstorms.

Climate Change and Community Vulnerability

Three major watercourses flow through the town of Grand Falls: the St. John River, the Little River and Falls Brook. These watercourses cut deeply through the landscape, creating relatively high steep slopes. These watercourses represent approximately 10 km of deeply incised channel with as much as 60 metres of elevation change between the normal water level and the top of the bank. Slope instability in Grand Falls has become a major cause for concern in regard to human and infrastructure safety. Slope instabilities are seen at numerous sites within the town close to residential or commercial developments and municipal infrastructure.

Erosion along the river bank.
Gemtec Consulting Engineers & Scientists

Figure 2: Risk areas along three watercourses.

- Municipal Boundary
- Current Risk Area
- Potential Future Risk Area
- Current problem storm outfalls

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Local Climate Change Addressing Adaptation Needs

Erosion and failure of steep bank areas along the Saint John River and associated risk to property and infrastructure are a significant problem. The Town of Grand Falls recognized the need to adapt to existing and future impacts caused by erosion of the banks along the three major watercourses.

The Town partnered with GEMTEC Consulting Engineers to (1) provide the Town with an evaluation of existing and potential erosion sites; (2) model surface runoff within the Town and to evaluate its contribution to erosion along the three watercourses; (3) examine the land use activities which contribute to surface runoff and erosion; (4) assess present and future risks and vulnerabilities to property along the watercourses; and (5) provide conceptual engineering solutions to stabilize existing and potential problem areas or mitigate risk to existing developments and to provide best practices and solutions for landowners.

Next Steps and Opportunities

The engineering study produced Geographic Information Systems (GIS) mapping for the town, an evaluation of current and future erosion rates for Grand Falls, mapping of high risk areas and recommendations regarding infrastructure.

The study was useful in sensitizing owners to land use activities that cause erosion such as dumping fill and snow over the banks, cutting vegetation and stormwater management. The municipality will modify its municipal plan and zoning by-law to reflect the findings of the study.

The study will be instrumental in preparing the next municipal plan and zoning by-law, which will be done in 2012. It will also play an important role in planning future storm water infrastructure and management of the banks of the three watercourses.

For More Information

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