

The Flood Hazard Identification Program provides information to assist communities in the appropriate development of areas that are susceptible to being impacted by the design flood event. The design flood event has a one per cent chance of occurring annually (this is also known as the 1:100 year flood event). Information is provided through a flood hazard study for a specific location. The study focuses on a single river but may also include information about smaller rivers in the study area.

The components of a flood hazard study include a hydrological assessment, topographic data collection, hydraulic modeling and transfer of model data to a map. The study provides the documentation of all the information that was used to create the flood hazard map.

Hydrological Assessment

The flood used to create the flood hazard map is called the design flood. The design flood is a flood that may occur in any year, due to open water or ice jam flooding, with a one percent probability of occurring or being exceeded. This is also known as a 1:100 year flood event. Even though a flood may have a relatively low chance of occurring in any one year, it is possible for several large flood events to occur within a few years of each other.

A statistical evaluation of the annual peak river flows is called a hydrological frequency analysis. This evaluation can incorporate data from measured river flow sites and may also include documented estimated river flows. The main source of information is the federal water flow records from Water Survey of Canada, Environment Canada.

Topographic Data Collection

Surveyed cross-sections are used to describe the river channel for the hydraulic modelling. The number and location of the cross-sections depends on the characteristics of the river. Usually only the channel portions of the cross-sections are surveyed and the overbank portions of the cross-sections are extended to an appropriate elevation using the Digital Terrain Model or DTM data.

Hydraulic Modeling

The Hydrologic Engineering Center River Analysis System (HEC-RAS), is used for modeling flood hazards. The model is freely available online. The model uses the design flow from the hydrological assessment and collected river topography data to calculate water levels throughout the study area. The flood hazard areas are defined by the water depth and velocity from the model. This complex modelling also incorporates future development scenarios.

Mapping

The final step in the flood hazard study is to take the information from the model and display it on a map. The map provides visual information about the location of the flood hazard areas. The flood hazard areas can be viewed online at: www.envinfo.gov.ab.ca/FloodHazard

Further Information

More details on the creation of flood hazard studies are available in the Flood Hazard Identification Program Guidelines. This document is available at upon request by emailing aenv-flood.risk-maps@gov.ab.ca

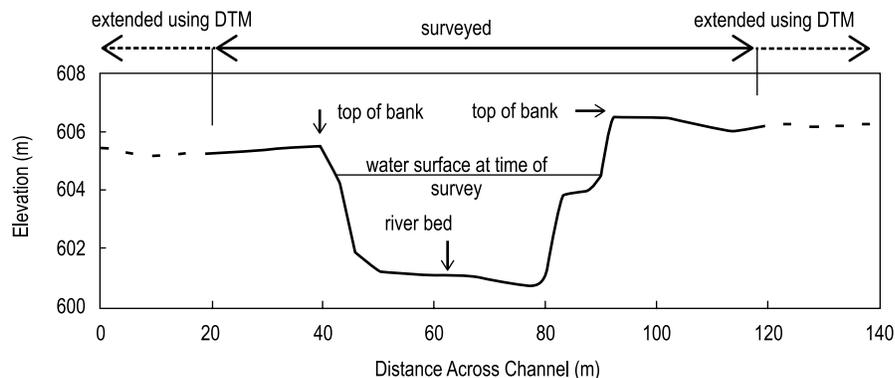


Figure 1: Sample cross section of a river.