

Upper Bow River Hazard Study Update

We would like to provide an update on the status of the Upper Bow River Hazard Study.

Substantial progress has been made since the multi-year study started in fall 2015. Survey and base data collection is complete, the calibrated hydraulic model is being reviewed, and the channel stability investigation work is in late stages. The main focus of our consultant over the last number of months has been building the hydraulic and ice models, which will form the basis of all flood mapping products.

Although substantial progress has been made on the study, delays associated with survey work and hydrology assessment resulted in a revised completion date. Originally expected to be finished this spring, technical work on the study is now expected to be complete by the end of the year.

Hydraulic modelling and flood mapping require high-accuracy river survey and floodplain information, and we are committed to using the best quality data available for this study. Unfortunately, not all survey work could be completed prior to winter 2015, as originally anticipated. Inclement weather and unsuitable river conditions contributed to delays in the field, as did securing land and river access in some areas, but all survey work was completed in spring 2016. Municipal stakeholders supported this work, by reviewing reporting and confirming flood control structure details.

Hydraulic modelling and flood mapping also require up-to-date flow estimates for a range of floods, including the 100-year flood. A separate hydrology assessment, covering multiple river basins in southern Alberta, was recently completed and will provide new flood frequency estimates for the Bow River and its tributaries for the Upper Bow River Hazard Study. Municipal stakeholders also played a significant role reviewing the hydrology assessment, and we are pleased to note that revisions were made to address the feedback received over the last several months. Incorporating this feedback took more time than original anticipated, but we are committed to using the best flow information available for the study.

As stated above, the Upper Bow River Hazard Study is expected to be complete by the end of this year. We recognize there will be tremendous stakeholder interest in any new flood mapping. Our study finalization process includes municipal review and public engagement for major components, as appropriate.

More information about the Alberta Flood Hazard Identification Program can be found at www.floodhazard.alberta.ca. If you have any questions regarding this work, the project engagement specialist, Chris Leptich, can be contacted by email at christopher.leptich@gov.ab.ca, or by telephone at 403-355-2491.

Project Background and Study Progress

The Upper Bow River Hazard Study will identify and assess river-related hazards along a 120 km reach of the Bow River, including Canmore, Cochrane, Exshaw, Kananaskis Improvement District, Lac des Arcs, Municipal District of Bighorn, Rocky View County, and Stoney Nakoda First Nation. The study extends from the Banff National Park boundary to Bears paw Dam. Major tributaries at select communities are included.

The main study deliverables (outlined in more detail below) include a hydrology assessment, new hydraulic river models, updated and new flood inundation and flood hazard mapping, a flood risk inventory, and a channel stability assessment – all of which will be provided to each community within the study reach to support their local emergency response and land-use planning needs.

- **Hydrology Assessment – Complete**

The hydrology assessment estimates flows for a wide range of possible floods along the Bow River, including the 2, 5, 10, 20, 35, 50, 75, 100, 200, 350, 500, 750 and 1000-year floods. The analysis will include the 2013 flood.

- **Hydraulic River Modelling – Late Stages**

A new hydraulic computer model of the entire river system will be created using new survey data and modern tools. The model will be calibrated using surveyed highwater marks from past floods to ensure that results for different floods are reasonable.

- **Flood Inundation Mapping – Early Stages**

Flood maps for 13 different sized floods, based on the hydraulic model results and the hydrology assessment, will be produced. Flood inundation maps can be used for emergency response planning and to inform local infrastructure design. These maps show areas of isolated flooding or areas that could be flooded if local berms fail.

- **Ice Jam Assessment – Early Stages**

Along the Bow River reach through Cochrane, ice conditions are known to have caused significant historical flooding. This assessment will include (1) an analysis of the ice jam flood history along this reach, and (2) an analysis to estimate water levels for the 50-, 100-, and 200-year ice jam floods. The hydraulic computer model will be enhanced to accommodate ice conditions. Flood inundation maps for the 50-, 100-, and 200-year ice jam floods will be produced, as well as ice jam floodway criteria maps, which are based on the 100-year ice jam flood.

- **Flood Hazard Mapping – Early Stages**

Flood hazard mapping divides the 100-year floodplain into floodway and flood fringe zones, which show where flooding is deepest and most destructive. The flood hazard mapping will reflect the worst-case flood hazard of the open water and ice jam scenarios. These maps can be used to help guide long-term development planning.

- **Flood Risk Assessment & Inventory – Early Stages**

An inventory of structures at risk of flooding for all of the mapped flood scenarios will be created. This flood risk assessment and inventory can support future flood damage assessments.

- **Channel Stability Investigation – Late Stages**

The main goal of this study component is to provide insight into general channel stability along the Bow River. We will compare current and historic riverbank locations and channel cross sections, going as far back as 1949 using historic aerial photos.