Bow and Elbow River Hazard Study

Study update notice

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

The multi-year study started in fall 2015 and we recognize there is tremendous interest in new flood mapping. Our goal is to provide useful tools to communities and the public as soon as possible.

Our study finalization process includes municipal and First Nation review and public engagement components. Public engagement for draft flood inundation maps and related technical reports was completed in January 2021. In response to feedback we received, revisions were made to hydraulic modelling and flood inundation mapping to incorporate and reflect the impact of new flood berms in the Bragg Creek and Calgary areas. Public engagement for draft flood hazard maps was completed in February 2024, and we are currently assessing all feedback received.

The current version of the draft study is based on naturalized flood flows that do not take into account the effect of flow regulation by reservoirs with a dedicated flood mitigation purpose. Hydraulic modelling, flood mapping, and flood risk assessment along the Elbow River downstream of the Springbank Off-stream Reservoir and along the Bow River downstream of the Elbow River confluence will be revised to account for the joint effect of Springbank Off-stream Reservoir and Glenmore Dam operations in early 2025. Until such time, draft flood hazard zones along the Elbow River between Glenmore Dam and the Bow River confluence, where the impact to landowners is expected to be most significant, are not being displayed on our online flood map viewer and information related to flood hazard zones in draft reports has been removed. We are committed to releasing revised flood maps in the affected areas when the Springbank Off-stream Reservoir is fully operational, and we are already working with dam operators to determine appropriate regulated flood flows for the full range of flood scenarios.

More information about our public engagement, including draft reports and flood maps as well as factsheets that answer common study questions, can be found at:

- https://www.alberta.ca/bow-elbow-river-flood-study-engagement

The Bow and Elbow River Hazard Study is being completed under the provincial Flood Hazard Identification Program, the goals of which include enhancement of public safety and reduction of future flood damages through the identification of river and flood hazards. The provincial study was funded with support from Indigenous Services Canada and with co-funding through the federal National Disaster Mitigation Program.

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, we can be contacted at:

- Email: epa.flood@gov.ab.ca

Classification: Public

Project background and study progress

The Bow and Elbow River Hazard Study assesses and identifies river-related hazards along 72 km of the Bow River and 66 km of the Elbow River, as well as 1 km of Bragg Creek and 7 km of Lott Creek. The study extends along the Bow River from Bearspaw Dam to the Highwood River confluence, and along the Elbow River from Bragg Creek to the Bow River confluence. The study area includes Calgary, Bragg Creek, Foothills County, Redwood Meadows, Rocky View County, and Tsuut'ina Nation.

The main study components outlined below include new hydraulic modelling and flood mapping, but all deliverables support local emergency response and land-use planning needs.

- **Survey and base data collection** – Public engagement complete

  Hydraulic models and flood maps require high-accuracy base data. Field surveys and LiDAR remote sensing were used to collect river and floodplain elevations, channel cross section data, bridge and culvert information, and dedicated flood control structure details.

- **Hydrology assessment** – Public engagement complete

  The hydrology assessment estimates flows for a wide range of possible floods along the Bow and Elbow Rivers, including the 1:2, 1:5, 1:10, 1:20, 1:35, 1:50, 1:75, 1:100, 1:200, 1:350, 1:500, 1:750, and 1:1000 floods. The analysis includes data from the 2013 flood.

- **Hydraulic river modelling** – Public engagement complete, future revisions planned

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

- **Flood inundation mapping** – Public engagement complete, future revisions planned

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

- **Flood hazard mapping** – Public engagement complete, assessing feedback, future revisions planned

  Flood hazard mapping divides the 1:100 floodplain into floodway and flood fringe zones and sub-zones, to identify where flooding is deepest and most destructive, reflect the protection provided by flood berms, and provide more information about a wider range of flood hazards. These maps can be used to help guide long-term development planning.

- **Flood risk assessment and inventory** – Public engagement complete, assessing feedback, future revisions planned

  An inventory of structures at risk of flooding for all mapped flood scenarios can support future flood damage assessments.

- **Channel stability investigation** – Public engagement complete

  This investigation provides insight into general channel stability along the Bow and Elbow Rivers, and compares current and historic riverbank locations and channel cross sections as far back as 1949 using historic aerial photos.

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