



Fort McMurray River Hazard Study

Study update notice

We would like to provide an update on the status of the Fort McMurray River Hazard Study.

The multi-year study started in fall 2015 and we recognize there is tremendous interest in new flood mapping products.

Municipal review and public engagement for draft flood inundation maps and related technical reports is complete. In response to feedback we received, supplementary ice jam flood frequency analysis was undertaken to incorporate information from the 2020 spring ice jam flood. Although no significant changes to the ice jam flood maps are required, revisions to the draft ice jam assessment report are underway to summarize the supplementary work.

Internal review of draft flood hazard maps continues, and a new approach to mapping floodways and updating flood hazard maps is being implemented. The new approach will better balance flood adaptation and resilience priorities and provide expanded flood hazard information to enhance public safety and inform local decision-making. We are exploring future municipal review and public engagement opportunities for draft flood hazard mapping, and will provide an update when more information becomes available.

The Fort McMurray 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 co-funded 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, the project engagement and education specialist, Alyssa Robb, can be contacted at:

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Project background and study progress

The Fort McMurray River Hazard Study assesses and identifies river-related hazards along 15 km of the Athabasca River, 20 km of the Clearwater River, and 5 km of the Hangingstone River, through Fort McMurray and the Regional Municipality of Wood Buffalo.

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 Athabasca, Clearwater, and Hangingstone 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.

- **Hydraulic river modelling** – Public engagement complete

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

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.

- **Ice jam assessment** – Public engagement complete, revisions underway

Ice conditions are known to have caused significant historical flooding in Fort McMurray. This assessment includes an evaluation of the historic 1875 ice jam flood and a review the flood level caused by the event. This assessment also includes an analysis of the ice jam flood history in the area and flood inundation maps for the 1:50, 1:100, and 1:200 ice jam floods.

Revisions are underway to summarize supplementary assessment of the 2020 spring ice jam flood.

- **Flood hazard mapping** – Under internal review, future engagement planned

Flood hazard mapping divides the 1:100 floodplain into floodway and flood fringe zones, to identify where flooding is deepest and most destructive. The flood hazard mapping reflects 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.

A new approach to mapping floodways and updating flood hazard maps is being implemented, including reflecting the protection provided by flood berms and providing information about a wider range of flood hazards.

- **Flood risk assessment and inventory** – Under internal review, future engagement planned

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

Flood risk statistics are being updated based on draft flood mapping changes.

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

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