



Garden River Flood Study

Study notice

The Garden River Flood Study will assess and identify flood hazards along 34 km of the Peace River and 19 km of Garden Creek through Mackenzie County, Improvement District No. 24, and the Little Red River Cree Nation community of Garden River, which is located within Wood Buffalo National Park.

The study began in fall 2024 and technical work is expected to be complete by fall 2025. Survey and base data collection is underway and work on other components is in early stages.

We recognize there is tremendous interest in new flood mapping. Our study finalization process includes municipal and Indigenous community review and public engagement components. Our goal is to provide useful tools to communities and the public as soon as possible.

The 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 is being funded by the Parks Canada Agency.

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

Project background and study progress

The Garden River Flood Study will assess and identify flood hazards along 34 km of the Peace River and 19 km of Garden Creek through Mackenzie County, Improvement District No. 24, and the Little Red River Cree Nation community of Garden River, which is located within Wood Buffalo National Park.

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** – Early stages

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

- **Hydrology assessment** – Early stages

The hydrology assessment estimates flows for a wide range of possible floods along the Peace River and Garden Creek, 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** – Early stages

A new hydraulic computer model of the 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 thirteen 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 identify areas of direct flooding and areas that could be flooded if local berms fail.

- **Ice jam assessment** – Early stages

Ice conditions are known to have caused significant historical flooding in Garden River. This assessment includes an analysis of the ice jam flood history in the area and flood inundation maps for the 1:20, 1:35, 1:50, 1:75, 1:100, 1:200, 1:350, and 1:500 ice jam floods.

- **Flood hazard mapping** – Early stages

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. 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.