



Red Deer River Hazard Study

Study update notice

We would like to provide an update on the status of the Red Deer River Hazard Study.

The multi-year study started in fall 2017 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, revisions to hydraulic modelling and flood inundation mapping are underway to remap using regulated flows that incorporate the flood mitigation potential of Dickson Dam. No significant changes to other draft reports are required, although minor editorial clarifications or corrections are being considered.

We are currently seeking municipal feedback on draft flood hazard maps that implement our new approach to mapping floodways and updating flood hazard maps. The new approach better balances flood adaptation and resilience priorities and provides expanded flood hazard information to enhance public safety and inform local decision-making. We are exploring future public engagement opportunities for draft flood hazard mapping, and will provide an update when more information becomes available.

The Red Deer 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, we can be contacted at:

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

Project background and study progress

The Red Deer River Hazard Study assesses and identifies river-related hazards along 51 km of the Red Deer River, 33 km of Waskasoo Creek, and 20 km of Piper Creek, through Red Deer, Lacombe County, and Red Deer County, including Penhold.

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 Red Deer River and Waskasoo and Piper Creeks, 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, revisions underway

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.

Revisions are underway to model water levels based on regulated Red Deer River flood flows.

- **Flood inundation mapping** – Public engagement complete, revisions underway

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.

Revisions are underway to remap using regulated Red Deer River flood flows.

- **Flood hazard mapping** – Under municipal review, future public 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. 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 using regulated 1:100 Red Deer River flood flows, reflecting the protection provided by flood berms, and providing information about a wider range of flood hazards.

- **Flood risk assessment and inventory** – Under municipal review, future public 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 Red Deer River and Waskasoo and Piper Creeks, and compares current and historic riverbank locations and channel cross sections as far back as 1949 using historic aerial photos.