

# Upper Bow River flood study details



This document provides answers to common questions about the Upper Bow River flood study.

## What area does the flood study cover?

The Upper Bow River flood study assesses and identifies river-related hazards along 118 km of the Bow River, as well as 7 km of Policeman Creek, 1 km of Exshaw Creek, 5 km of Bighill Creek, and 5 km of Jumpingpound Creek. The study area extends from Banff National Park to Bearspaw Dam, including through Canmore, Cochrane, Exshaw, Ghost Lake, Kananaskis Improvement District, Lac des Arcs, Municipal District of Bighorn, Rocky View County, and Stoney Nakoda First Nation.

## When was the flood study conducted?

The study started in fall 2015 and technical work was completed in winter 2022.

## Will flood maps from this study replace any older flood maps?

Yes. When the draft flood study is finalized, it will replace three older flood studies and expand coverage. It will replace the Canmore flood study (which was completed in 1993), the Municipal District of Bighorn and Exshaw flood study (which was completed in 1996), and the Cochrane flood study (which was completed in 1986 and last revised in 1990). The new study will replace 79 km of older mapping and add 57 km of new mapping through areas never mapped before.

## Was the draft study shared with my local authority?

Yes. Draft reports and flood maps were provided to affected municipalities and First Nations between August 2016 and March 2022, for information and to obtain feedback as the first step of the study finalization process.

## What reports and flood maps are included in the study?

The study includes multiple reports that document the collection of survey and base data, summarize the hydrology assessment, describe the hydraulic model creation and calibration process, present the open water and ice jam flood modelling results used to create flood maps, illustrate the information used to define the floodway and flood fringe, include the flood hazard maps, assess and inventory flood risks, and investigate channel stability. Open water and ice jam flood inundation maps are provided in separate flood inundation map libraries.

## Is this the first public engagement for the study?

No. Public engagement on draft flood inundation maps, which show areas at risk for different sized floods to help with emergency response, and related reports was completed in January 2021.



## Were any changes made since the last round of public engagement?

No. No significant revisions were required based on the feedback we received.

## What is the purpose of this round of public engagement?

This round of public engagement focuses on draft flood hazard maps, which define floodway and flood fringe areas to help with long term planning.

Most of the draft reports were shared with the public in our first phase of engagement and some have been revised to address feedback or correct factual errors or omissions. Reports being shared for the first time include the flood hazard mapping and the risk assessment reports. Copies of the draft flood hazard maps are also included in the “Governing Design Flood Hazard Mapping Report”, but they are easier to explore using our online flood map viewer.

## What causes flooding along the rivers covered by the study?

Flooding along the Bow River and its tributaries typically occurs because of high river flows during the spring and summer. However, flooding along the Bow River in the Cochrane area can also occur because of ice jams in early winter. We are aware that there may be other sources of flooding in the area, including groundwater flooding or flooding caused by local drainage issues, but the focus of this study is on riverine flooding caused by high river flows or ice jams.

## What is the difference between open water and ice jam flooding?

Open water floods are typically caused by high flows driven by heavy rainfall, either alone or combined with snowmelt runoff, and are typically more of a risk in the spring and summer. In contrast, ice jam floods in the Cochrane area are caused by river ice freeze-up in the early winter season.

## What type of flooding is shown in the draft flood hazard maps?

Flood hazard maps are based on 1:100 ice jam design flood levels where ice jam flooding is more severe than open water flooding. Open water flooding is the design condition used for flood hazard mapping along most of the Bow River and its tributaries. Ice jam flooding is the design condition along the Bow River in the Cochrane area, between a location downstream of Ghost Dam to a location upstream of Bearspaw Dam, and along short lengths of Bighill and Jumpingpound Creeks near their confluences with the Bow River.

## Why don't the maps match the flooding we experienced in past years?

It would be unusual for a flood map to perfectly match a past flood, due to different river flows, variations in local conditions, and assumptions made for the study. Flood maps are based on theoretical floods with different chances of occurring, including the 1:100 design flood used for flood hazard mapping. Draft flood maps from the new study do not represent any specific recent or historic flood.



## Will flood maps be updated if flood berms are built or upgraded in the future?

Flood studies are based on river conditions, floodplain topography, and flood mitigation infrastructure present at the time a study is conducted. If new community-level flood berms are constructed in the future, or existing flood berms are upgraded, we will assess the potential impact on calculated flood levels and flood maps. If impacts are significant, revisions to the flood maps will be considered.

## What will happen if new dams or reservoirs are built in the future?

Provincial flood studies typically use naturalized flows for flood mapping, to be cautious and help communities prepare for a worst-case scenario when a dam simply passes the flow it would naturally receive from upstream during a flood. If new dams or reservoirs with a dedicated and permanent flood mitigation component are built in the future, and if their impact on flood flows is established to be dependable and significant, we will reevaluate our hydrology assessment and hydraulic modelling and consider flood map revisions, if appropriate.

## How has climate change been considered?

The potential effects of climate change were assessed as part of the hydrology assessment. In general, the effect of climate

change on Bow River and tributary flood flows is uncertain. Given this uncertainty, various climate change scenarios were not explicitly modelled. However, the potential impact on flood levels from increased 1:100 flood flows was assessed, and this information can be considered by communities if desired.

## Where can I learn more about provincial flood studies?

Review our “General information about flood studies” fact sheet to learn more about provincial flood studies, including how flood maps are developed and how flood inundation and flood hazard maps are used.

Visit [www.floodhazard.alberta.ca](http://www.floodhazard.alberta.ca) for more information about the Flood Hazard Identification Program.

The website includes more details on different types of flood maps and how to view them using our online flood map viewer, as well as individual web pages for listing our draft and final flood studies.

## Contact

Email us at [epa.flood@gov.ab.ca](mailto:epa.flood@gov.ab.ca) for more information about our public engagement for draft flood studies, or if you have questions about the Flood Hazard Identification Program.