

Thawing Permafrost and Highway Integrity

Determining the vulnerability of the North Alaska Highway to permafrost thaw

CONTEXT

This project will examine the potential effects of climate change on permafrost along the northern 200 km of the Alaska Highway in Yukon, where permafrost is relatively warm and often ice-rich. This stretch falls within the Traditional Territories of the White River and Kluane First Nations, and passes through the communities of Destruction Bay, Burwash Landing and Beaver Creek. The highway is critical for distributing food, supplies and medical necessities to these communities as well as to interior Alaska.



Photo: Government of Yukon

Government of Yukon's Highways and Public Works is partnering with the Northern Climate ExChange (NCE), part of the Yukon Research Centre at Yukon College, to map permafrost characteristics in the area.

OBJECTIVE

This project identifies and characterizes permafrost underneath the Alaska Highway, establishes future climate scenarios for the region, and evaluates the potential effects of climate change on the area's permafrost.

APPROACH

This project uses environmental data, engineering reports, Highways and Public Works maintenance records, air photos and field investigations, including permafrost drilling and geophysics, to identify thaw-sensitive areas under the highway. This information will be combined with future climate scenarios to inform decision-making.

RESULTS

Developing an understanding of the impacts of climate change on highway infrastructure is critical for the continued maintenance of the North Alaska Highway into the future. Information gained from this study is already:

- Helping to develop specific, efficient and effective policies, highway engineering designs and highway maintenance plans;
- Providing transportation security for Yukon communities, visitors and Alaskans to the region; and
- Serving as a model for future studies in other regions of Yukon and the North.

Significance

Exploring how permafrost thaw impacts the North Alaska Highway corridor will impact transportation security in Yukon.

Partners

- Highways and Public Works, Government of Yukon
- Northern Climate ExChange, Yukon Research Centre, Yukon College
- Climate Change Secretariat, Government of Yukon
- Aboriginal Affairs and Northern Development Canada

FOR MORE INFO

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