NWT CIMP Water Monitoring and Research Blueprint

NWT CIMP focuses on three valued components (VCs): caribou, water and fish. Please see the other Blueprints if your project has the potential to overlap with another VC. For more information on our funding process, visit our website.

Background

What is the Water Monitoring and Research Blueprint and how is it to be used?

The Water Blueprint informs NWT CIMP funding applicants of water-related cumulative impact monitoring and research priorities as identified by key northern decision-makers and subject-matter experts. It describes information that is necessary to better understand cumulative impacts to water and the relationships between people and water.

The Blueprint guides NWT CIMP funding application decision making. For science projects to be considered for funding, project submissions *must* demonstrate that they meet Blueprint priorities.

Who informs the Blueprint?

Monitoring and research priorities have been updated for the next five-year period (2026-2030) based on engagement with subject-matter experts, Indigenous Governments and Indigenous Organizations, co-management boards, and environmental regulators, survey and workshop feedback, and guidance from the NWT CIMP Steering Committee.

NWT CIMP's Key Principles

NWT CIMP's principles guide us in program delivery. Funding applicants should be aware of these principles and, where possible, align their proposals with them. Important principles for applicants to consider are:

- Monitoring cumulative impacts that are **relevant to northern resource management decisions**.
- Traditional Knowledge and scientific knowledge are equally important sources of monitoring information.
- Community-based monitoring and capacity-building are supported in monitoring cumulative impacts.
- Use of common and standardized data collection and analysis protocols should be used when appropriate to support data sharing and identification and analysis of cumulative impacts across the landscape.

NWT CIMP places a high priority on cumulative impact monitoring and research that uses Traditional Knowledge. The goal is to apply what we learn from Traditional Knowledge to inform northern decision-making. For additional information, refer to *Traditional Knowledge Monitoring Ideas.*

The Water Monitoring and Research Blueprint

To be considered for funding, the project proposal *must* **clearly** address one or more priority questions.

NWT CIMP refers to 'lower aquatic food webs' below. These webs refer to the foundational levels of an aquatic ecosystem, primarily consisting of phytoplankton (microscopic algae), bacteria and zooplankton.

Cumulative impacts of human activities impacting water quantity and quality

a. What are the cumulative impacts of: *(not all sub-bullets must be answered)*
    i. human disturbances (e.g. roads, mining, exploration) and natural disturbances (e.g. wildfires, permafrost thaw, other climate change impacts) on water quantity, water quality and/or the lower aquatic food web?
    ii. existing and/or emerging contaminants on the aquatic ecosystem (e.g., polycyclic aromatic compounds (PACs); other organic compounds such as per and polyfluoroalkyl substances (PFAS), polybrominated diphenyl ethers (PBDEs), pesticides, herbicides; microplastics)?
    iii. municipal waste on the receiving environment (e.g., sewage effluent, landfill leachate, water treatment plant residuals)?

b. How does road embankment structure, road dust and culvert placement impact water quality and what are the best practices to reduce impacts?

d. How will existing and proposed hydropower and dam infrastructure, combined with flooding and/or drought impact water quantity and quality, including the lower aquatic food web?

e. How can new challenges for source water due to a changing climate be mitigated?

f. What changes to best practices and methods are needed to better address cumulative impacts of human activities impacting water quantity and quality?

Cumulative impacts of wildfire and/or permafrost thaw to aquatic ecosystems

a. How does wildfire and/or permafrost thaw impact: *(not all sub-bullets must be answered)*
    i. the health of the lower aquatic food web?
    ii. nutrient cycling and dissolved oxygen in waterbodies?
    iii. the binding, transportation and bioaccumulation of contaminants?

b. What are the cumulative impacts of: *(not all sub-bullets must be answered)*

i. repeated fires within a watershed? Do these impacts differ with varying permafrost thaw rates and processes?
ii. increased debris, ash and nutrients to smaller lakes?

c. What are the drivers influencing the occurrence and distribution of iron-bacterial flocs particularly within the Deh Cho, Gwich'in, and Inuvialuit regions?

d. How can impacts and the magnitude of impacts from permafrost thaw slumps to river and lake sediment loads and water chemistry be predicted?

e. What are the predicted future trends of water quantity, quality and/or lower ecosystem food web under climate change and/or landscape change.

Flooding and drought cumulative impacts on water quality and quantity

a. How are the cumulative impacts of climate change impacting*: (not all sub-bullets must be answered)*
   i. water cycle processes across space and time? How does this affect our use of water?
   ii. hydrological, chemical, physical, biological and sediment-related changes that together affect water quality?
   iii. the magnitude and frequency of extreme drought and flooding events?
   iv. groundwater recharge and availability?

b. What are the direct and indirect effects of the longer ice-free period and change in timing of break-up and freeze-up to the lower aquatic food web?

Cumulative impacts of climate change, nutrient cycling and the lower aquatic food web

a. How are the cumulative impacts of changing water temperatures and wind patterns affecting lake stratification and dissolved oxygen? What are the implications of altered thermal stratification for the lower food web?

b. How are nutrient loading and water chemistry changing in lakes and rivers? What are the cumulative drivers of these changes?

c. What are the cumulative impacts of nutrient cycling and weather and climate on the timing, location, species and toxin risk of algae blooms?