ALBERTA INNOVATES

# CLEAN RESOURCES

ENVIRONMENTAL INNOVATION

WATER INNOVATION PROGRAM

## Indigenous-Driven Environmental Monitoring: Achieving Knowledge Sovereignty through Applied Research and Training

This project is designed in partnership with Indigenous communities to enhance Indigenous community-based monitoring. This will be achieved through customizable instruction and hands-on training delivered through applied research projects, designed with community input. This model purposely meets learners at their personal level, includes them as research team members, and supports practical skill development by solving problems relevant to their land. NAIT will instruct Indigenous learners on freshwater sampling and analysis techniques, data management, quality control and analysis. NAIT will also develop digital solutions to support Indigenous communities with knowledge-sharing efforts, enabling communities with the tools to integrate water management approaches.

### FUNDING DETAILS

**RECIPIENT:**

**Northern Alberta Institute of Technology**

**PARTNERS:**

**Metis Settlements General Council**

**TOTAL BUDGET:**

**$1,477,615**

**AI FUNDING:**

**$721,999**

**PROJECT DATES:**

**APR 2023 – MAR 2026**

## APPLICATION

This program is designed to support the development, quality, and long-term viability of Indigenous community-based monitoring (ICBM) programs. A new paradigm is proposed where training and applied research are combined and brought to Indigenous communities and executed with community members as part of the team. The program combines NAIT's expertise in environmental science, hands-on training, and applied research with traditional knowledge from community Elders and knowledge-keepers.

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## PROJECT GOALS

1. Create a highly flexible and customizable training framework in partnership with Indigenous communities to increase reliability and safety of water supplies on traditional lands under their stewardship. The program will enhance community autonomy in designing monitoring regiments, collecting and analyzing samples, processing and interpreting data, and preparing community, government, and industry reports.
2. Validate the unique training opportunity in partnership with Indigenous community members.
3. Address specific concerns of Métis Settlement General Council communities through applied research. Individualized research questions will be designed for each community partner regarding water quality sampling and processing techniques to answer long-term water safety and security needs.
4. Create databases and interactive visualization, enabling effective communication of community data sovereignty goals.

## BENEFITS TO ALBERTA

- Aims to build capacity within Indigenous communities in freshwater and groundwater sampling and analysis, directly addressing identified education and training barriers substantiated by Indigenous communities;
- Better understanding of how components of watersheds important to our partners' Indigenous cultural heritage are affected by different environmental stressors such as climate change and industrial development;
- First initiative to assist Indigenous communities in developing freshwater sampling and analysis protocols, as well as laying down the foundations for Indigenous community-based monitoring programs (ICBMs) with the intent of self-sustainability and capacity-building after the lifespan of the immediate project.

**2 New Products/Services**

**26+ Students Trained**

**2 Project Jobs**

**CURRENT STATUS**

### MAR 2024

NAIT has engaged with 4 Métis settlements and 5 First Nation communities, three of which (Peavine, Ermineskin, and Sturgeon Lake) have active learners participating in the program. Program learners and NAIT staff presented at 7 different conferences/symposiums/workshops this past year. A customizable capacity building curriculum was created, and the initial program participants have advanced significantly or completed the training as of March 2024. Customized databases have been created for two communities and development of a data visualization tool is underway.