Northern Alberta Institute of Technology

The Northern Landscapes Sensitivity Atlas and Net Environmental Benefit Analysis (NEBA) Tool

Plain Language Report

Prepared for Government of the Northwest Territories

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1. Introduction

This document is a plain language report describing the work done and the outcomes of the report titled "The Northern Landscapes Sensitivity Atlas and Net Environmental Benefit Analysis (NEBA) Tool – Preliminary Project Discovery Report," covering the discovery phase of this project. The Northern Landscapes Sensitivity Atlas (NLSA) project is funded by the Government of Northwest Territories Environmental Studies Research Fund (ESRF) and the Natural Sciences and Engineering Research Council of Canada (NSERC) College and Community Social Innovation Fund (CCSIF).

The Northern Alberta Institute of Technology's (NAIT) Northern Landscapes Sensitivity Atlas is a computer-based geographic information system (GIS) that combines maps and related map data and information into one place. The current focus for the NLSA is on the Sahtú Settlement Area of the Northwest Territories, and uses publicly available data from local, regional, national, and international sources to see overlaps in mapped information. Observations made with this tool can help people make better and more inclusive decisions. By combining the different information, removing it from institutional silos, and presenting them in a unified platform, it should provide an efficient single-point-of-truth for users that is inclusive, transparent, and evidence-based.

One of the goals in the discovery phase was to meet with the Sahtú Renewable Resources Board (SRRB), Sahtú community members, industry, and other researchers to collect and share feedback and information with one another. The NAIT team attended virtual and in-person community meetings and traveled to the Sahtú region in August 2022 and February 2023.

As part of the trips to the Sahtú region, the NAIT team was able to conduct research into the SRRB library in search of data from previous research projects. Over a terabyte of data, across varying formats and types (e.g., water, land, ecological, community, cultural), were found, leading to an initial data scan and review. More work in the data management phase of this project is needed to prepare and present the data in the NLSA in a user-friendly way.

In the final months of the discovery phase and into the next phase of the project, the NAIT team will be focusing on two priority areas: 1) data control and sharing, and 2) storytelling. The NLSA respects the Sahtú communities' right to decide on how their information is collected and shared. Digital storytelling has been used in this project and well received by the community and research partners, so it will continue to be used in the next versions of the NLSA.

2. Introduction to the Sahtú

The Sahtú Settlement Area includes 283,000 km^2 of the central Northwest Territories. This region has renewable and non-renewable resources, as well as a variety of wildlife habitats.

The peoples of the Sahtú rely on this diverse area for subsistence harvest activities: hunting, fishing, and trapping, as well as tourism, recreation, and outfitted sport hunting and fishing. There are also oil, natural gas, and minerals in the area, which have played a significant role in the developing economy of the Sahtú and the Northwest Territories.

The past and future development in oil and gas, mining, tourism, and transportation can greatly affect plants, wildlife, and their habitats as well as people's activities on the land, and their cultural landscapes. It is important to collect and store information that can be used for better and more inclusive decisions that affect potential development opportunities, wildlife management, industrial activities, clean-up, remediation, and community planning.

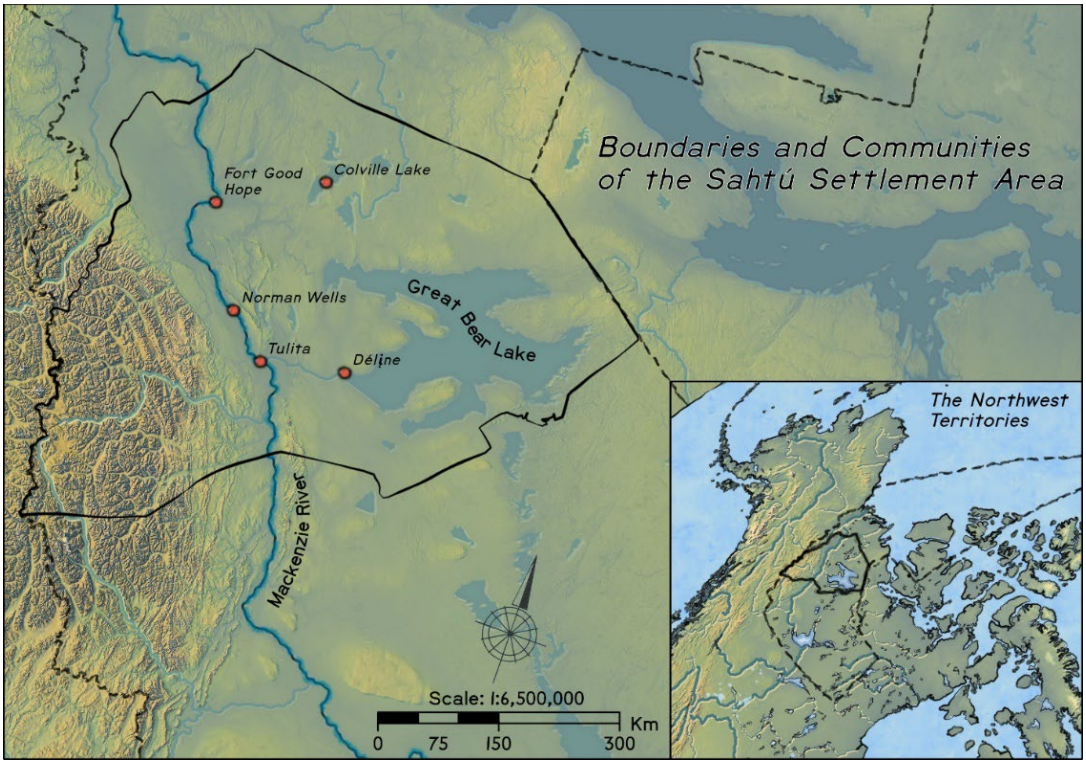

Figure 1: The Sahtú Settlement Area. Map by D. Blaine

3. Project Description

Discovery is the process of data collection, including information sharing between project collaborators and stakeholders, archival and collections research, data gathering, and cooperative discussions with communities to better understand their needs and challenges. So far, the discovery phase of this project has completed the following activities:

- Environmental Studies Research Fund (ESRF) Proof-of-Concept, 2022
- Community Engagement
- Collaborative Fieldwork
- Archives and Collections Research

i. ESRF Proof-of-Concept, 2022

With support from the Government of Northwest Territories' ESRF, NAIT created a proof-of-concept tool in 2022, that used publicly available local, regional, national, and international data to see overlaps in the mapped information. The data covered different topics including land use planning, cultural and heritage data, treaties, community development, current and legacy industrial infrastructure, climate change, environmental and wildlife monitoring, etc.

This discovery phase for the NLSA project is a continuation of this work. The project team has started collecting data, meeting community members to understand their needs, and traveling to do fieldwork in the Sahtú with our research partner, the Sahtú Renewable Resources Board.

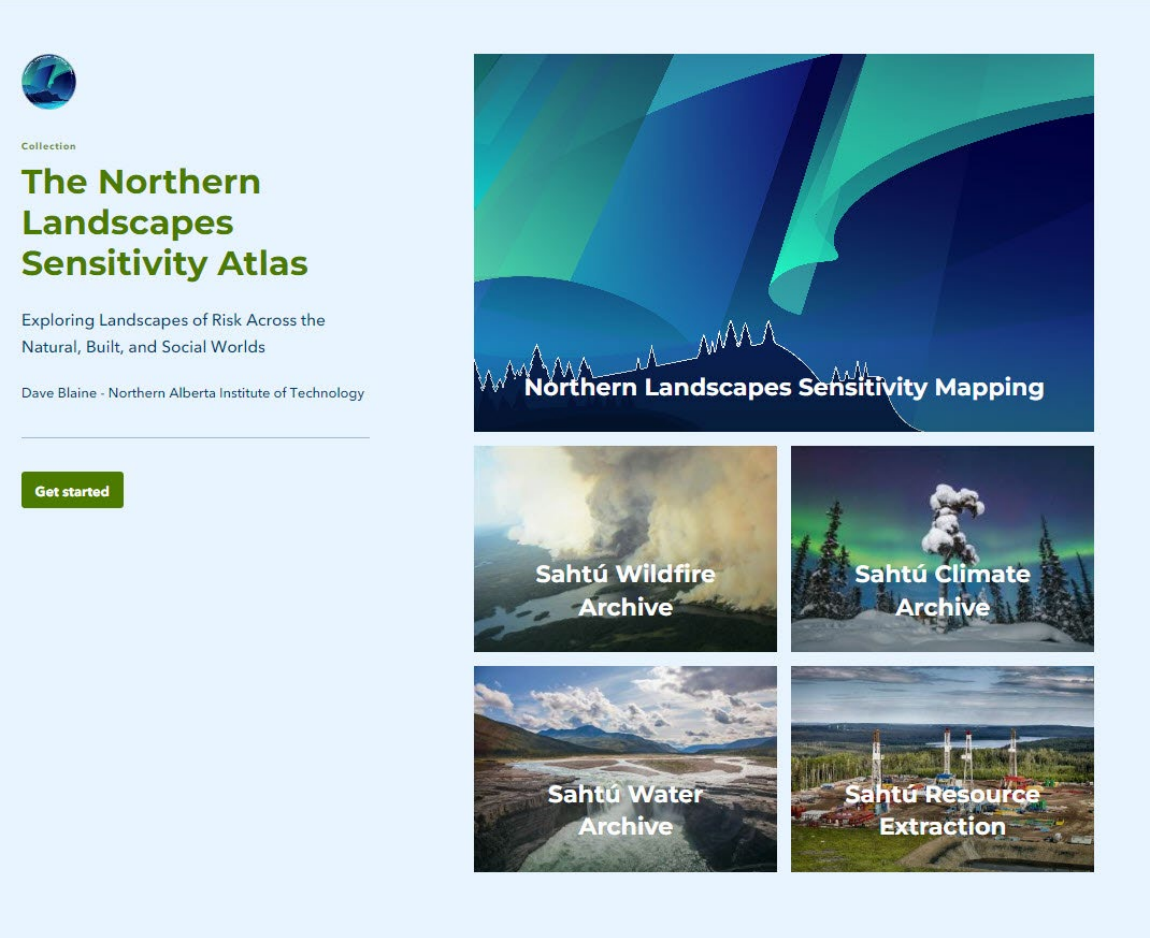

Figure 2: Landing Page for the NLSA Application Demonstration Site

ii. Community Engagement

NAIT and the SRRB have formed a research partnership to develop the NLSA, beginning in the Sahtú Settlement Area. Within the Sahtú, a methodology exists for the co-production of knowledge, especially knowledge that come from communities and may be considered their intellectual property. As such, the SRRB has taken every opportunity to include the NAIT team in its community engagement discussions. These meetings have given the project team valuable insights into the communities' priorities, which has been critical to the success of the project.

Community Meetings (remote and in-person), January 2022 – March 2023

- Norman Wells Proven Area - Reclamation and Remediation Forum (January 2022)
- Nę K'ə Dene Ts'įlį Forum Meeting - Reclamation Mapping (February 2022)
- Petroleum Histories Project - Study Circles (February 2022 through February 2023)
- Nę K'ə Dene Ts'įlį Forum Meeting - Petroleum Histories Project Update (November 2022)
    - Petroleum Histories Project - GIS and Story Mapping Demonstration (November 2022)
- Nę K'ə Dene Ts'įlį Forum Meeting – Geology and Permafrost Research (December 2022)
- Petroleum Histories Project – In-Person Study Circle, Norman Wells, NWT (March 2023)

iii. Collaborative Fieldwork: August 2022, February 2023

The NAIT has presented the ESRF proof-of-concept tool several times, which led to being invited to attend a fieldwork planning meeting for the SRRB's Petroleum Histories Project (PHP) – focusing on the last century of oil and gas exploration in and around the Norman Wells Proven Area – to help identify field sites of legacy petroleum operations that would be visited and described by local knowledge keepers.

Figure 3: Arrival in Norman Wells, NWT. Petroleum Histories Project Summer Fieldwork, August 2022. Photo by D. Blaine.

The PHP summer fieldwork presented a valuable opportunity for NAIT to work together on a SRRB project that would also help with the NLSA discovery phase and to let the different project teams meet in person. The fieldwork results from visiting sites in the vicinity of Norman Wells and Tulít'a, were presented at the Nę K'ə Dene Ts'įlį Community Forum Meeting in November 2022 and led to an opportunity to return to the Sahtú in early 2023.

Figure 4: Winter fieldwork, vicinity of Tulít'a, NWT. Community-led wildlife monitoring program, January 2023. Photo by D. Blaine.

PHP fieldwork planned for January and February 2023 involved a community-led project to set up remote wildlife cameras at different stream crossings next to the pipeline right-of-way extending north from Tulít'a to Norman Wells, to track and monitor wildlife behaviour where traditional areas of hunting and trapping overlap with oil and gas infrastructure. The NAIT team was invited by the SRRB on this trip to document the field research for training purposes. The fieldwork was affected by extreme cold weather conditions, but on a short trip into the field, the NAIT project lead learned about the SRRB's way of documenting wildlife and traditional ways of identifying and tracking wildlife trail marks.

iv. Archives and Collections Research

The PHP summer fieldwork introduced NAIT to many of the SRRB's current and past research projects. The brief summer visit in August 2022 to the SRRB headquarters in Tulít'a led to planning for a longer trip to explore their library collection to understand what data they already have that could be included as a part of the discovery phase for the NLSA.

During the winter trip in 2023, NAIT's project lead spent four days conducting research into the contents of the SRRB's library. Over a terabyte (TB) of data in different formats and types, including audio and visual recordings were found. Some of the data is very dated in terms of software file type and storage format (e.g. floppy disk, CD-ROM). The project team is planning to see if there is a way to read and access the data using old technology in the data management phase of this project.

The discovery phase is about finding as much of the SRRB's old data as possible, and most have yet to be looked at. The following list is a small portion of the data retrieved. Identifying the remaining project data to see if it can be recovered and used in future versions of the NLSA will be part of the data management phase. The Sahtú communities will remain in control of how this information will be used, if at all.

- Dene Mapping Project, multiple years, 1974-2014
- Sahtú GIS Project, 1996-2007
- Sahtú Harvest Study, multiple years, 1998-2012
- Sahtú Settlement Area Vegetation Classification Project, 1999
- Sahtú Atlas Project, 2003-2005
- Délįnę Uranium Committee Oral History Project, 2004
- Canada - Délįnę Uranium Table, 2005
- Délįnę Remediation Zone Mapping Project, 2010

v. Legacy GIS Archive – Initial Data Scan and Review

An initial analysis and exploration of the data archive from the SRRB found GIS data from a variety of sources. While there is a lot of data available (e.g., water, land, ecological, community, cultural), there are also issues with missing information to identify where it comes from or how to interpret the data points. For the data to be useable, the missing information will need to be found and added, so that it can be included in the NLSA.

Although only an initial scan has been done of the data archive at this point, it is clear there is a lot of important data for the Sahtú Settlement Region within this archive. While some of this data can be found in Government of Canada or Northwest Territories dataset, much of it is not available to the public. Once this data from the SRRB archives has been prepared and presented in a user-friendly way, it would be a valuable resource for the communities in the Sahtú.

4. Next Steps

The discovery phase of the NLSA project has provided us with the opportunity to identify other project priorities that we were aware of in our proof-of-concept phase. Two priorities are the issues of data control, specifically relating to traditional knowledge; and how, and in what ways the data will be shared.

i. Data Control and Data Sharing

The discovery process has brought us into contact with traditional indigenous knowledge and its keepers and has informed us to historical appropriations and misuses of that knowledge. We are committed to take direction from the communities of the Sahtú on what knowledge they want to share, and what they want to keep for their own use.

While the concept of indigenous data control and sovereignty is not new: the United Nations Declaration on the Rights of Indigenous Peoples[1] (UNDRIP) (UN General Assembly, 2007) affirms Indigenous Peoples' rights to self-determination as political entities and the concept of indigenous control over indigenous data. However, this declaration does not specifically address the complex issues of data consent, ownership, security, storage, use, and continuity into a concrete way for dealing with past, current, and new data about, relating to, and/or belonging to Indigenous Peoples.

The discovery phase of this project has not solved these complex issues, but frequent communication and discussion with people in the communities is a priority. The NLSA respects the Sahtú communities' right to decide on how their information is collected and shared.

An ongoing series of community discussion forums, and study circles has been proposed and are planned to begin with the data management phase in June 2023. The findings of the discovery phase will be presented at these forums, focussing on a specific legacy project, the contents of its data, and how it might be used as part of the NLSA. A data sharing agreement will be developed with the SRRB, and any other collaborators who are involved.

ii. Storytelling

The NAIT team has presented on the progress of the NLSA and fieldwork results using ESRI's ArcGIS StoryMaps application, an example of which can be found here. Using the digital multimedia-sharing capabilities of web-based GIS, this engaging and interactive storytelling platform has been well received by our partners.

Storytelling can be included in the NLSA by linking media content (audio, video, photos) to a specific location to provide context, for example, stories of the different names for a place. Digital storytelling can be used for public outreach to share research stories and more. As such, the NLSA attempts to present a more inclusive, and perhaps in some minimal way, a truer reflection of the landscape beyond a mere graphic representation of a territory on a map.

The discovery phase of the NLSA project will be complete as of June 30, 2023. The data management phase will continue from June 1, 2023, until May 31, 2024. The app development phase will run from June 1, 2024, until May 31, 2025.

[1] UN General Assembly, United Nations Declaration on the Rights of Indigenous Peoples : resolution / adopted by the General Assembly, 2 October 2007, A/RES/61/295, available at: https://www.refworld.org/docid/471355a82.html [accessed 20 March 2023]