COLLÈGE AURORA COLLEGE

IDENTIFICATION

Department	Position Title	
Aurora College	Permafrost Specialist	
Position Number	**Community**	**Division/Region**
91-15373	Inuvik	Research Division

PURPOSE OF THE POSITION

The incumbent develops, implements and manages permafrost data platforms and research programs in Inuvik and the Western Arctic region of the Northwest Territories (NWT).

The Permafrost Specialist designs and implements permafrost monitoring and research projects in the Beaufort Delta region. The incumbent plays a lead role in coordinating the compilation, management, analysis and dissemination of geotechnical, ground temperature and geohazard data for the Beaufort Delta region. This position works in close collaboration with the Northwest Territories Geological Survey (NTGS) Permafrost Scientist, Department of Infrastructure and visiting and in-house scientists at Aurora Research Institute (ARI). The incumbent coordinates and conducts field data collection, data analysis and related research that contribute to infrastructure decisions, environmental management, climate adaptation and mitigation strategies, and general scientific and engineering knowledge.

The Permafrost Specialist promotes regional scientific endeavors by conducting research, developing scientific awareness, and collaborating with researchers conducting studies in the region and Indigenous partners. To accomplish this, the Permafrost Specialist participates in field and laboratory research projects with visiting and in-house scientists, provides training to local technicians and supervises the operations and staff required to deliver these research programs.

SCOPE

Located in Inuvik and reporting to the Director, Western Arctic Research Centre (WARC), the incumbent is responsible for coordinating and implementing permafrost research projects and for managing permafrost data and associated research programs in collaboration with research staff at ARI, the NTGS and Government of the Northwest Territories (GNWT) Department of Infrastructure (INF).

The Permafrost Specialist works in a collaborative environment. As the position reports to the Director, WARC the work planning, priority setting, and performance evaluations are the responsibility of the Manager, WARC. However, annual work planning is in collaboration with the Permafrost Scientist, NTGS and with input from INF.

The Permafrost Specialist compiles ground temperature, geotechnical, environmental and geohazard data in the Beaufort Delta region, and develops and maintains permafrost and geotechnical databases, analyzes and synthesizes data, and publishes technical reports and maps. The Permafrost Specialist also trains Indigenous partners and students in permafrost monitoring methods. This work supports infrastructure planning and management and provides the base of information to support an applied permafrost monitoring and research program for the Dempster and Inuvik-Tuktoyaktuk, Highway infrastructure corridor.

RESPONSIBILITIES

1. **Develop and implement permafrost research and monitoring programs in the Beaufort Delta region**
    - Initiate and develop projects that focus on permafrost and geotechnical conditions along the Dempster and Inuvik-Tuktoyaktuk Highway corridor and in other areas of strategic importance.
    - Work with WARC and GNWT colleagues and external partners including local industry and Indigenous organizations to carry out, coordinate research projects, and ensure efficiencies of field and office-based activities.
    - Seek and secure external funding to sustain permafrost research activities.
    - Arrange the timely acquisition of permits and licences for field-based projects if needed, and consult with local communities and land managers to share information and obtain clearances.
    - Work with partners, including Indigenous organizations to support training of permafrost monitoring technicians
    - Collect data and assembles existing data, often in collaboration with technicians or external research partners, and develops a framework for analyzing information.
    - Assist with preparing service contracts and purchase orders.
    - Organize and oversees field logistics.
    - Collaborate with Geographic Information System (GIS) technical staff at ARI and NWT Centre for Geomatics on digital field data acquisition and analysis strategies as appropriate.
    - Track project related expenses.
    - Complete research activities on time and within budget.
    - Collaborate with universities to facilitate, and in some cases oversee, the field component of graduate, under-graduate, Aurora College Environment and Natural Resources Technology Program (ENRTP) students and summer student research.
    - Ensure cost-effective, efficient and safe work practices in the field and office.
    - Monitor the storage and maintenance of field equipment, assess the need for new equipment and supplies and when necessary, order new equipment.

2. **Develop and maintain a permafrost, geotechnical and geohazard data management system for the Beaufort Delta region**
    - Work with partners to develop and implement data reporting standards, protocols, and best practices.
    - Work collaboratively with Geotechnical Data Scientist, NTGS, NWT Centre for Geomatics and WARC staff to implement permafrost and geotechnical databases within data management system focused on the Beaufort Delta region.
    - Implement appropriate quality assurance and quality control methods for NWT permafrost and geotechnical data.
    - Act as system administrator and ensures timely import of data submitted by others.
    - As required, seeks and secures external funding to sustain data management systems and activities.

3. **Compiles, organizes, and archives permafrost and geotechnical data collected in the Beaufort Delta region**
    - Compile, organize, and archive permafrost, ground temperature, geotechnical and geohazard data and reports collected by the GNWT, partner organizations, researchers, and industry.
    - Plan and implement data compilation and synthesis projects in consultation with GNWT and partner organizations.
    - Works with partners to facilitate ground temperature and geotechnical data compilations relevant to the Beaufort Delta region.
    - Works with partners to review and publish technical reports.
    - Develops proposals, including budgets and schedules, for data compilation and database projects.

4. **Participates in improvements to environmental geoscience data stewardship**
    - Work with NTGS and meet with GNWT departments, industry, regulatory boards, Indigenous partners and researchers on matters related to the collection and stewardship of permafrost and geotechnical data.
    - Develop tools (e.g., data sharing agreements, GNWT contracting requirements) that assist in capturing all relevant data.
    - Develop and support territorial partnerships to improve permafrost and geotechnical data and information sharing standards.
    - Collaborate with other GNWT data managers on digital field data acquisition, management, and archiving strategies.
    - Promote the utility and value of databases to government, industry, regulatory boards, and academic partners.

5. **Disseminates compiled data and scientific reports in an appropriate and timely manner**
    - Respond to client requests for assistance in accessing and interpreting permafrost and environmental geoscience data.
    - Assemble and present research results as requested.
    - Organize and conduct project workshops, technical sessions, and training exercises as required.

- Maintain regular contact with colleagues and clients to ensure constant critical feedback of work underway and a high technical competency of completed work.
- Maintain communications with others that help to identify new research and funding opportunities.
- Prepare non-technical promotional and educational materials about permafrost research and data, their derived products, and other information on permafrost and geotechnical conditions in northern Canada.
- Conducts or contributes to community information sessions and outreach activities.

WORKING CONDITIONS

Physical Demands

When in an office environment there are no unusual physical demands.

During fieldwork, the incumbent will be subject to heavy lifting up to 50lbs. Fieldwork will be expected up to 10 weeks per year. Some field sites will be visited on foot, requiring walking over rough terrain.

Environmental Conditions

Fieldwork will involve working in inclement conditions, and the incumbent may encounter wildlife.

Sensory Demands

The incumbent must spend long hours in intense concentration of both a technical and an interpersonal nature.

Mental Demands

The incumbent will be required to travel, to conduct fieldwork. The incumbent is faced with mental demands stemming from the need to communicate with others constantly, the intensity of meetings, the need for attention to detail, and to provide instruction in a cross-cultural environment. Mental demands also arise from presentation of research results to scientific peers, public and community groups. Continuous management of scientific and logistical activities in addition to maintaining a safe working environment in the in remote locations requires mental focus and can heighten stress. Predicting and mitigating potentially hazardous situations and managing personal conflicts amongst office and field staff can lead to stress.

KNOWLEDGE, SKILLS AND ABILITIES

Knowledge:

- Demonstrated experience implementing research programs in remote field settings.
- Knowledge of scientific principles and techniques pertaining to permafrost and geotechnical research and monitoring, and/or engineering, including field-based data acquisition, management, and analysis.
- Knowledge of study design, research methods and statistical analysis is required.
- Knowledge of the drivers that influence permafrost conditions, especially those related to surficial geology and geomorphic processes in northern Canada.

- Knowledge of the linkages between: (i) permafrost and geotechnical information, and; (ii) data compilation and data usage for assessing terrain conditions or in engineering design.
- Knowledge of the methods, techniques, and practices of digital information management, including manipulation, interpretation, digitization, retrieval, and storage of data.
- Knowledge of data management principles and appropriate data structures for permafrost and geotechnical information.
- Understanding of government strategic priorities and the role of permafrost and geotechnical data in contributing to infrastructure planning, design, and maintenance.
- Knowledge, experience and understanding of working in a cross-cultural environment.
- Knowledge of the legal and ethical obligations of the geoscience or geotechnical engineering profession, and eligibility for registration in Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG).

Skills:

- Project management, organizational, and logistical skills to effectively manage and participate in independent and collaborative research projects.
- Data management skills to organize, archive, and manage large volumes of permafrost and geotechnical information.
- Familiarity with databases and basic computer coding to upload, search, evaluate, manipulate, and analyze datasets.
- Analytical skills to describe and synthesize permafrost data and to model data using statistical or numerical methods.
- Skills in scientific report writing, critical peer review, and editing of scientific reports and interpretations.
- Strong communication skills, both written and verbal.
- Experience in budgeting, accounting and financial management.
- Field skills that are grounded in best practices in permafrost and environmental geoscience research and monitoring.
- Strong interpersonal skills, management skills and practices.
- Skills in supervision of technical, administrative and scientific personnel are required.
- Planning and problem-solving skills in order to prioritize a number of competing operational requirements.
- Advanced computer and computer system skills, with extensive experience in word processing, spreadsheet graphics, statistical and database programs in order to produce reports and analyze data.
- Leadership, management, organizational and team building skills.
- Self-motivated, independent and innovative.

Abilities:

- Ability to work effectively, both independently and in collaboration with other professionals.
- Ability to complete projects on time and within budget, often in conjunction with the performance of other duties.
- Ability to efficiently use computer hardware and software for data collection, data management, synthesis and modeling, and presentations (e.g. MS Office; ArcGIS; specialized graphic design, statistics, and modelling software; database software).
- Ability to use programs that require some degree of computer coding.

- Ability to clearly and effectively communicate scientific information in visual, oral, and written formats and at audience appropriate levels.

Typically, the above qualifications would be attained by:

A minimum of a Master of Science (M.Sc.) degree in Geology, Geography, or related field, or a M.Sc. in Engineering with expertise in permafrost environments. At least one year of work experience in industry, academia, or a government agency in a related capacity. The incumbent will have a demonstrated track record of data management experience and peer-reviewed scientific publication.

ADDITIONAL REQUIREMENTS

Position Security (check one)

☐ No criminal records check required
☒ Position of Trust – criminal records check required
☐ Highly sensitive position – requires verification of identity and a criminal records check

French language (check one if applicable)

☐ French required (must identify required level below)
Level required for this Designated Position is:
ORAL EXPRESSION AND COMPREHENSION
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
READING COMPREHENSION:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
WRITING SKILLS:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
☐ French preferred

Indigenous language: Select language

☐ Required
☐ Preferred