



IDENTIFICATION

| Department | Position Title | |
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| Industry, Tourism and Investment | Industrial & Specialty Minerals Geologist | |
| Position Number | Community | Division/Region |
| 63-14369 | Yellowknife | Northwest Territories Geological Survey / HQ |

PURPOSE OF THE POSITION

The Industrial and Specialty Minerals Geologist provides authoritative public geoscience by designing and executing research and assessment activities related to industrial minerals for the Northwest Territories Geological Survey (NTGS). The incumbent plans and conducts field investigations and analytical programs on Northwest Territories (NWT) industrial minerals, generates defensible resource assessments, and translates results for internal and external clients to inform mineral exploration and development, infrastructure planning, community resource needs, and critical mineral strategies as well as the regulatory and land-use planning systems in which the mineral industry operates. Operating in a context of economic constraint and competing policy objectives, the position aligns scientific work with departmental priorities, ensures scientific integrity, and meets the needs of stakeholders across regulatory, infrastructure, and economic development functions.

SCOPE

Located in Yellowknife and reporting to the Manager, Mineral Deposits the Industrial and Specialty Minerals Geologist (Geologist) is a professional geoscientist responsible for planning, conducting, and reporting on industrial mineral resource assessment and applied geological investigations, including research on mineral commodities defined by their physical properties and industrial application — such as aggregate, construction materials, dimension stone, lithium-bearing and rare metal pegmatites, critical minerals, and other specialty minerals resources within the Northwest Territories Geological Survey (NTGS). The position exercises professional autonomy over technical project design and execution within the policies, guidelines, and priorities established by the Manager and the NTGS.

The resource sector is a foundational contributor to the NWT economy and socio-economic well-being, with direct and indirect economic impacts that account for up to a third of the territory's Gross Domestic Product. It is essential that these resources are responsibly managed to ensure that northerners receive maximum benefits from the sector while negative impacts



are minimized and effectively mitigated. Geoscience data produced by the NTGS underpins this objective: it drives mineral exploration investment, informs land-use planning, infrastructure routing and design, and environmental assessment, supports Indigenous Government processes, and sustains broader public-policy priorities for economic sustainability and responsible resource development.

Industrial mineral and critical mineral resource projects are essential to advancing understanding of the NWT's mineral potential. Comprehensive industrial minerals and critical mineral resource knowledge — including aggregate supply characterization, materials suitability assessment, and resource potential for commodities defined by industrial application reduces uncertainty in public and private decision-making and provides a scientific basis upon which industry can plan exploration investments in the NWT. These data also deliver significant economic returns by reducing risk for the private sector and informing the allocation of limited public resources—supporting government decision-making that competes for attention alongside demands for health care, education, and infrastructure.

The Geologist's work contributes directly to these outcomes by advancing understanding of industrial mineral and critical mineral resources whose value is determined by physical, chemical, or industrial suitability rather than metal grade and tonnage — serving mineral exploration companies, infrastructure planners, community governments seeking local construction materials, transportation corridor planners, and the critical minerals policy community.

The Geologist independently plans and leads one to three concurrent geoscience projects, each typically lasting two to five years. Core responsibilities include co-developing project scopes, timelines, and budgets with the Manager; conducting site assessments, sampling campaigns, and materials characterization of industrial mineral occurrences including aggregate, construction materials, lithium-bearing pegmatites, and acid rock drainage environments; applying geotechnical testing, environmental chemistry, and physical-properties analysis in addition to standard geological and geochemical methods, contributing technical content to the Mineral Exploration Overview; producing and quality-controlling geoscience datasets for public release; and preparing peer-reviewed scientific publications, public-facing government reports, maps, and presentations that meet NTGS standards for scientific rigour and client utility. The position contributes to securing external funding and supports collaborative arrangements with academic, industry, and governmental partners, including through, negotiating of contribution agreements and participation in intergovernmental coordination mechanisms such as the Intergovernmental Geoscience Accord.

The Geologist supports regulatory functions in three capacities. First, the position provides authoritative evaluation of the geological validity and completeness of geoscience information in work-assessment reports, and other legislated industry submissions. These evaluations, coordinated through the Assessment Geologist, provide scientifically sound recommendations to those with authority to approve and ensure that industry submissions meet statutory requirements. Second, as a proponent of field programs, the position ensures that its own field



activities comply with applicable legislation governing safety, conduct of scientific activities, and professional practice accreditation, integrating regulatory compliance and stakeholder engagement into project design, permitting, and execution. Third, the industrial minerals and applied geology products of the position provide expert information to external regulatory boards and agencies — including those operating under the Mackenzie Valley Resource Management Act — supplying data on aggregate resources, construction material suitability, and industrial mineral potential that supports infrastructure corridor assessment, community resource planning, and land-use decision-making. This position also provides technical input on acid rock drainage characterization and aggregate supply relevant to environmental assessment.

The Geologist collaborates with colleagues within and between NTGS work units, mentors junior staff and students engaged in field programs, and contributes to a safe, supportive, and inclusive workplace. The position may provide day-to-day technical guidance to field assistants and project students but does not hold formal supervisory authority over professional staff. The position often serves as the project safety officer and ensures that field operations adhere to health-and-safety plans and safe work practices appropriate for remote northern environments.

The position maintains an active professional profile through publication in peer-reviewed journals and geological survey publications, presentation at national and international and regional geology conferences, participation in collaborative industrial mineral research networks (including other geological survey organizations and university partners), and professional registration as a geoscientist, contributing to the credibility and reputation of government science in the NWT.

NTGS geoscientists are core contributors to the annual Yellowknife Geoscience Forum and play a central role in shaping the credibility of the conference's technical program. They provide authoritative geoscience knowledge, present current research, and help translate technical findings into information that is directly useful for exploration companies, Indigenous governments, regulators, educators, and northern communities. Their participation ensures the Forum, the NWT's largest annual conference, remains grounded in the realities of northern priorities—supporting responsible resource development, improved land-use decision-making, and a stronger shared understanding of the NWT's mineral potential. The Project Geologist may also represent the NTGS at national and international technical and intergovernmental forums relevant to their area of expertise and participates in the broader land and resource management regime grounded in settled land-claim and self-government agreements, particularly as these address land-use planning, environmental assessment, and economic measures under land claims.



Overall, the Geologist's portfolio combines scientific excellence with applied service delivery, regulatory support, and collaborative partnership to advance responsible resource development, sustain economic opportunity, support land-use decisions, and maintain the long-term credibility of government geoscience in the Northwest Territories.

RESPONSIBILITIES

1. Advances understanding of NWT industrial mineral, aggregate, and critical mineral resources through applied research and resource characterization.

- Initiates, plans, and conducts independent and collaborative research on NWT industrial mineral deposits, aggregate resources, unconsolidated mineral deposits, and critical mineral commodities, integrating geological, geochemical, geotechnical, and materials-characterization data to advance understanding of mineral commodities defined by their physical properties and industrial application.
- Produces resource characterizations and applied geological syntheses that define the nature, quality, distribution, and development potential of industrial mineral and aggregate resources in priority areas, contributing to the improvement of geological knowledge for the NWT.
- Maintains the NTGS's scientific readiness on industrial minerals by staying current with developments in commodity markets, materials testing standards, processing technologies, and critical mineral strategies, and by sustaining professional networks with practitioners in federal and provincial geological surveys, industry, and academia.
- Organizes, leads, and reports on field investigation programs in remote and community-accessible locations, including responsibility for scientific design, logistical planning, financial management, and the training and supervision of field crews including junior staff, students, and collaborative partners.
- Develops, sustains, and contributes to productive scientific partnerships with universities, other geological surveys, industry, and research institutions through cooperative investigations, co-supervision of student research, and joint field programs.
- Prepares and delivers scientific outputs including maps, reports, GIS-based datasets, peer-reviewed publications, and presentations at academic and industry forums, national and international conferences, and to Indigenous and community organizations.

2. Provides industrial minerals and applied geological expertise to support the administration of geoscience-related provisions of mineral resource legislation.



- Evaluates industry work assessment submissions and other legislated geological reports involving industrial minerals, unconsolidated resources and placer deposits and provides technically defensible recommendations on whether submissions meet the scientific and regulatory standards prescribed under the *NWT Mining Regulations* and, upon transition, the *Mineral Resources Act* and its regulations.
 - Contributes industrial minerals subject-matter expertise to the development of regulatory standards, guidelines, procedures, and interpretive materials for geoscience-related provisions of mineral resource legislation, including standards for reporting on industrial mineral quality, characterization, and materials testing, as directed by the Manager.
 - Applies industrial minerals expertise to support the evaluation of applications to various funding and incentive programs as they may exist from time to time, and other advisory functions that improve mineral exploration and development outcomes in the NWT.
 - Maintains current awareness of industrial mineral, aggregate, and critical mineral exploration and development activity in the NWT and of relevant national and international developments to inform both scientific programs and the discharge of regulatory advisory responsibilities.
- 3. Translates, communicates, and applies industrial minerals knowledge to support infrastructure planning, community resource needs, critical mineral strategies, and public decision-making.**
- Translates and communicates industrial minerals knowledge and research results to support infrastructure development decisions, community resource needs, critical mineral strategies, regulatory processes, land use planning, environmental assessment, and broader public decision-making in the NWT.
 - Provides expert industrial minerals and aggregate advice to regulatory boards and processes established under land claim and self-government agreements, including land and water boards, land use planning bodies, and environmental assessment panels, ensuring NTGS input is scientifically sound and relevant to the decision at hand.
 - Prepares briefing materials, technical summaries, and plain-language communications on industrial mineral resources, aggregate supply, and critical mineral potential for senior management, departmental colleagues, elected officials, Indigenous governments, and external clients as required.
 - Engages with Indigenous communities, community governments, industry, prospectors, and the academic community to share research results, understand client perspectives on resource needs — particularly local construction material and aggregate supply — and ensures NTGS industrial minerals programs are responsive to diverse stakeholder needs.



- Contributes to NTGS knowledge-transfer products and services, including the Yellowknife Geoscience Forum, open file publications, web-based information, and stakeholder workshops, to ensure industrial minerals knowledge is accessible and applied.
- Engages with Indigenous governments and community organizations on matters related to industrial mineral and aggregate potential within their settlement areas, ensuring engagement is respectful, timely, and consistent with obligations under land claim and self-government agreements and aligned with the GNWT's implementation of the United Nations Declaration on the Rights of Indigenous Peoples.

4. Manages project-level resources and field and analytical operations to support effective industrial minerals program delivery

- Plans and manages project-level budgets, expenditures, and procurement activities for assigned industrial minerals research programs, ensuring resources are used effectively within approved allocations and in compliance with GNWT financial and administrative requirements.
- With oversight from the Manager, increases financial support and expertise capacity for industrial minerals projects by developing funding proposals, negotiating collaboration and partnership agreements, and addressing requirements of external funding programs.
- Coordinates the logistical planning and execution of field operations — including site assessments, sampling campaigns, and materials-testing programs — and ensures all field activities are conducted safely and in accordance with approved health and safety plans.
- Provides day-to-day direction, mentoring, and technical supervision to junior geoscientists, field assistants, and summer students assigned to industrial minerals projects, including ensuring appropriate training and competency for field work.
- Manages scientific data, samples, and records generated through industrial minerals research to ensure integrity, accessibility, and compliance with NTGS data management standards and any requirements under mineral resource legislation for the submission and stewardship of geological information.
- Supports a diverse, inclusive, and supportive scientific workforce by mentoring colleagues, providing constructive feedback to peers, and fostering a culture of mutual support, teamwork, knowledge-sharing, and professional development.



5. Contributes industrial minerals and applied geology expertise to NTGS, departmental, and intergovernmental initiatives to support alignment of programs with policy objectives and collaborative management frameworks

- Contributes industrial minerals and applied geology expertise to NTGS, departmental, and intergovernmental initiatives, including those established under the National Geoscience Accord and settled land claim and self-government agreements, to support alignment of programs with policy objectives and collaborative management frameworks.
- Provides scientific input to briefings, reports, and decision-support materials requested by the Manager or senior management that integrate industrial mineral resource assessments with policy considerations, including infrastructure planning, critical mineral strategies, and aggregate supply.
- Participates in technical working groups, committees, and forums related to industrial mineral research, critical minerals strategies, aggregate resource management, and geoscience program coordination as assigned by the Manager.
- Supports the alignment of industrial minerals research with the purposes and requirements of mineral resources legislation, including the improvement of geological knowledge in the territory, by ensuring research programs address priority knowledge gaps identified through regulatory, policy, and client engagement processes.
- Contributes to the development and continuous improvement of shared NTGS approaches to scientific standards, field safety, data management, and program delivery as directed by the Manager.

WORKING CONDITIONS

Physical Demands

Office work involves minimal physical demands.

Fieldwork involves sustained physical exertion over extended periods, including hiking over rough and uneven terrain for full workdays while carrying field equipment and geological samples (with individual loads up to 25 kg) for 8 hours a day. Field operations also require participation in physically demanding logistical activities typical of remote camps, such as equipment handling, camp setup, loading and unloading vehicles, boats and aircraft. The physical demands are experienced daily during field deployments, which may extend several consecutive weeks.

Environmental Conditions

Normal office environment for most of the year, with periodic extended field deployments of up to approximately eight weeks annually in remote locations.



During fieldwork, the incumbent is regularly exposed to uncontrolled outdoor environments and occupational hazards inherent to remote operations including: rapid and adverse changing weather; uneven terrain; aviation-supported, off-road and/or marine travel; wildlife and other safety risks. These conditions are experienced daily during field deployments.

Sensory Demands

Normal office environment outside of the field season.

Field work requires sustained vigilance, situational awareness, and a heightened state of alertness to the safety of the team and operations in dynamic, potentially hazardous environments. Workdays may be extended requiring continuous monitoring of environmental and operational conditions. The incumbent is subject to impacts associated with long hours of field work (e.g. fatigue). These demands are present throughout field assignments.

Mental Demands

Ongoing management of multiple concurrent responsibilities including scientific leadership, regulatory oversight, human and financial resource management and stakeholder engagement, often under time constraints.

During field deployments, the incumbent assumes continuous responsibility for scientific decision-making, logistical coordination, and staff safety, requiring real-time judgment under conditions of uncertainty and risk. The incumbent is also subject to substantial disruption of family life. These demands are experienced daily during field assignments, which may extend for a couple of months.

The incumbent is also responsible for the timely delivery of reports and results, presenting research or work plans to scientific peers, collaborators, community groups, etc. and attending geoscience meetings in Southern Canada two to four times per year.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of geology and geological potential of industrial mineral and aggregate deposits in the NWT.
- Knowledge of industrial mineral deposit models and a thorough understanding of the uses of and markets for industrial minerals.
- Familiarity with manufacturing processes that employ industrial minerals, in part to determine if mineral wastes from one industry can feed the manufacturing processes of another.
- Knowledge of the theories, principles, methods, techniques, and practices of industrial mineral exploration, resource definition, and production.
- Knowledge of testing methods and standards for industrial minerals.



- Ability to carry out basic tests on samples to quickly determine if further investigation is warranted.
- Knowledge of industrial mineral and quarrying policies and regulations of both the NWT and other jurisdictions.
- Knowledge of integrating mineral deposit studies with geological mapping, geochemistry, geophysics and remote sensing datasets in a GIS format.
- Knowledge of modern geoscience data systems, GIS, databases, analytical tools, and digital information delivery platforms sufficient to support data stewardship and dissemination.
- Knowledge of the NWT's industrial and specialty mineral deposits to guide scientific activities, to serve as a subject matter resource for clients, academia and senior management, and to represent the organization within national and international geoscience communities.
- Knowledge of mineral exploration approaches and the resulting geoscience data, metadata and documentation practices.
- Knowledge of the legal, ethical, and professional obligations of a registered professional geoscientist (P.Ge.), including standards of independence, impartiality, and evidence-based decision making.
- Knowledge of federal and territorial legislation, regulations, and policy frameworks governing mineral exploration, mining, and field-based research and operations, and the role of geoscience within regulatory systems.
- Knowledge of how scientific evidence informs government policy, regulatory decision-making, and public interest outcomes.
- Knowledge of the balance between scientific independence and the organizational mandate of public geoscience dissemination.
- Knowledge of intergovernmental roles, responsibilities, and collaboration mechanisms under geoscience accords and related agreements.
- Working knowledge of human resource and financial frameworks sufficient to support compliant procurement, contracting, and reporting for assigned activities.
- Knowledge of health, safety, and risk management principles related to remote field operations, including ensuring appropriate training, planning, and mitigation measures.
- Knowledge of standard office and project management tools required to deliver complex programs and reporting obligations.
- Data management skills to organize, archive, and disseminate large volumes of geological information.
- Field skills grounded in best practices in safety management and geoscience research.
- Skills in scientific writing, peer review, and quality assurance to ensure authoritative, defensible public-sector geoscience outputs.
- Interpersonal and relationship-building skills to establish and maintain effective working relationships with Indigenous Governments and Organizations, industry, academia, other governments, and internal stakeholders.



- Demonstrated skills in conducting fieldwork, writing and reviewing geoscience technical reports and publications, collaborating effectively with research teams, and presenting the results of their original scientific work to colleagues and stakeholders.
- Analytical and synthesis skills to integrate a variety of data from multiple sources, identify trends, and translate scientific results into scientific publications and usable public-sector information products.
- Ability to develop sound geological interpretations by incorporating geological knowledge, field and laboratory data, and reference materials.
- Ability to integrate industrial mineral research priorities with ongoing and proposed mapping projects to contribute towards complimentary and linked final research products.
- Ability to learn approaches used to produce industrial and specialty minerals.
- Ability to co-develop, execute, and report on geoscience projects within budget and on schedule.
- Ability to anticipate emerging issues, opportunities, and risks affecting geoscience programs and to adapt strategies accordingly.
- Ability to mentor and develop junior scientists and students, including coaching in field methods, data management, and scientific communication and writing techniques.
- Ability to work independently and in collaboration with others in a team.
- Ability to foster a collaborative, respectful, and inclusive workplace that values teamwork, and knowledge sharing, while maintaining high scientific and ethical standards.
- Ability to facilitate and participate in solution-focused meetings and workshops.
- Ability to leverage external and intergovernmental partnerships and funding sources to deliver cost-effective geoscience programs.
- Ability to communicate complex scientific concepts, evidence, and uncertainty clearly and credibly to a range of audiences, including senior decision-makers, regulators, scientific peers, Indigenous Organizations, and non-technical audiences.
- Ability to translate scientific programs and results into information, tools, and practices applicable across disciplines and policy domains.
- Ability to commit to actively upholding and consistently practicing personal diversity, inclusion and cultural awareness, as well as safety and sensitivity approaches in the workplace.

Typically, the above qualifications would be attained by:

A Master of Science degree with a specialization relevant to economic geology, and five years of work experience in a variety of industrial mineral, aggregate, and quarrying-related activities..

The incumbent must be eligible for professional registration in the NWT and Nunavut Association of Professional Engineers and Geoscientists (NAPEG).

Equivalent combinations of education and experience will be considered.



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