IDENTIFICATION

Department	Position Title	
Environment and Climate Change	Transboundary Aquatic Ecosystem Scientist	
Position Number	**Community**	**Division/Region**
23-16443	Fort Smith	Water Monitoring and Stewardship/HQ

PURPOSE OF THE POSITION

The Transboundary Aquatic Ecosystem Scientist (Scientist) is responsible for developing and leading multiple and diverse aquatic ecosystem monitoring and research activities as a subject matter specialist to meet the water management and aquatic ecosystem health goals of the Department. Services include situation assessment, program development, planning and implementation, analysis and synthesis of raw/un-interpreted and published data and results from multiple sources, and provision of final reports and recommendations. Services also include development, validation and advice on methods and techniques, and help to develop capacity and foster partnerships for community-based monitoring programs.

The Scientist provides new knowledge and expert advice on ecosystem monitoring and research activities to the Division, Department, and external stakeholders and Indigenous governments and organizations in support of northern water management and monitoring and the Government of the Northwest Territories' (GNWT) transboundary water management agreements. "External stakeholders" include municipal, territorial, federal and international governments; industry; non-government organizations (NGOs); the public; academia; and engineering/environmental consultants.

SCOPE

Located in Fort Smith, the Scientist reporting directly to the Senior Aquatic Quality Scientist (Senior Scientist) in the Water Monitoring and Stewardship Division, the Transboundary Aquatic Ecosystem Scientist is responsible for leading multiple and diverse activities within program objectives with limited direction, including the collection and compilation of information about the aquatic ecosystem in the NWT and in our transboundary waters through the design and implementation of comprehensive research and monitoring programs. The Scientist works closely with the other scientists in the Division as well as the Manager,

Watersheds Partnerships and Agreements who supports negotiations and implementation of the GNWT's existing Water Management Agreements with neighbouring jurisdictions. The incumbent is responsible for developing new/modified methods, practices, techniques and evaluation and recommending acceptance of collaborative proposals. Data aggregation/analysis functions are oriented toward raw/un-interpreted sources. The incumbent provides analyses and recommendations as well as input into the development of work statements and final deliverables from contractors or other partner agencies and institutions.

The Department of Environment and Climate Change (ECC) works to promote and support the sustainable use and development of natural resources and to protect, conserve and enhance the NWT environment for the social and economic benefit of all residents.

The Water Monitoring and Stewardship Division bears the primary roles and responsibilities related to the collection of water quality and quantity data and water stewardship and planning. The Division, in cooperation with Environment and Climate Change Canada (ECCC) and other federal and territorial departments, is responsible for collecting and interpreting information about water quantity, quality and aquatic health in the NWT.

The Northwest Territories (NWT) is the ultimate downstream jurisdiction in the Mackenzie River Basin (MRB). The MRB drains an area that consists of a fifth of Canada's land mass. It is one of the largest river basins in the world and is subject to industrial activity which has the potential to influence water flow and quality. It is experiencing the brunt of climate change as one of the nations northern watersheds. Water is a necessity of all life. Healthy and abundant water is needed for healthy and abundant ecosystems. If water quality is exceptional, the health of fish, wildlife and all flora is preserved. For humans, good quality water is necessary for drinking and food preparation. Guidelines and standards for assessing water quality are available for water quality assessments across the globe, including Canada. To ensure the quality of NWT's water, *Northern Voices, Northern Waters: NWT Water Stewardship Strategy* (the Water Strategy) was developed and is being implemented.

The incumbent is responsible for planning, designing, collecting and analyzing aquatic ecosystem samples and their results to characterize site-specific as well as regional (and national) aquatic and biological quality conditions and to prepare basin (watershed) assessments. Along with their technical expertise, the incumbent uses this information to provide authoritative advice on broad resource management and related environmental issues. The information is also used internally by the Department, and in many instances by external clients, to determine data collection priorities; establish policy and public information; inform and aid in transboundary water agreement negotiations and implementation; assess and prevent deterioration of aquatic ecosystems; assess industrial wastewater disposal proposals;

determine budgeting levels; and respond to inquiries from external clients about aquatic ecosystem issues and concerns.

The Scientist works within a legislative and regulatory framework that includes the: *Waters Act*, NWT Water Stewardship Strategy and Action Plan, 2030 NWT Climate Change Strategic Framework and Action Plan, as well as other GNWT and ECC policies and programs, including transboundary water management agreements with neighbouring jurisdictions.

The incumbent may also be required to periodically conduct technical reviews of applications for water use and waste disposal with a goal of maintaining healthy aquatic ecosystems made under the applicable territorial and federal legislation in the NWT. Participation as a departmental expert at public hearings is periodically required. Further, upon the issuance of licenses, the incumbent is responsible to review reports to determine if they are scientifically sound and if the conditions of licenses are being met.

The Scientist must have knowledge of scientific monitoring methods and methodologies related to water quality and aquatic health assessment to lead monitoring programs and assess change in aquatic systems over time. The Scientist presents and publishes results such as technical reports, scientific papers and plain language reports on the aquatic quality and aquatic health in the NWT.

The Scientist will work to ensure that information collected is analyzed, interpretated and reported on to provide assurance of water quality and the health of NWT ecosystems to meet the goals of the departments Strategic Plan and supports/reflects the mandate of the Department, the GNWT and the people of the NWT. The incumbent regularly meets with Senior Aquatic Quality Scientist and the Manager, Watershed Partnerships and Agreements to receive assignments and provides professional advice and expertise on aquatic health for decision making.

The Scientist has significant latitude provided that best practices in data collection, research, and scientific methodology are compiled with while supporting the needs of NWT departments, communities and residents.

RESPONSIBILITIES

1. **Develops, plans and implements multiple/diverse aquatic ecosystem research and monitoring programs.**
   - Sets work objectives and priorities, identifies problems and resource requirements, and determines approach.
   - Establishes teams composed of technicians and/or scientists as the subject matter specialist, delegating work, managing contracts, financial agreements, acceptance of work products and assessment of performance.

- Provides specialist input into decision-making and policy development, including providing recommendations about new project activities.
- Manages and completes comprehensive investigations, studies and assessments of problems and issues relating to aquatic ecosystem health related aspects of remediation of contaminated sites. Develops hypotheses and objectives for the management and completion of comprehensive investigations, studies and assessments of problems and issues relating to aquatic ecosystem aspects of remediation of contaminated sites; determines current and baseline environmental conditions; and informs regulatory frameworks and initiatives, including transboundary issues. Uses a variety of scientific and communication techniques and approaches to achieve study/project goals.
- Leads the scientific design and implementation of monitoring/research programs with internal partners and/or external stakeholders, including the selection of appropriate methods, locations, biological components to be sampled, frequency and duration; defining field and lab safety protocols, as well as necessary financial and human resources. Utilizes and/or develops new techniques where appropriate. The monitoring and/or research involve the collection of surface water, suspended and bottom sediment, zooplankton, invertebrate, and fish samples. Arranges for the testing of samples at certified laboratories to produce scientifically defensible information.
- Develops scientific proposals, under various funding initiatives for aquatic ecosystem monitoring and research programs. Establishes project-related contracts, purchase orders, memorandum of understanding (MOUs), contribution agreements (CAs), etc.
- Manages project-related budgets and associated deliverables, ensuring projects are on budget and deliverables meet the objectives of the work and are submitted within project timelines.
- In support of the development of supply arrangements and other contracting initiatives, prepares requests for proposals (RFP) and statements of work. Reviews submissions, establishes the rating systems and selection criteria for the evaluation process, and awards contracts.

2. Compiles, manages, interprets, and archives data collected on aquatic ecosystems in the NWT.

- Verifies, compiles, and organizes raw/un-interpreted environmental data.
- Validates data through references to literature, guidelines, or further field investigations.
- Assembles data to support the analysis and interpretation of both real-time and historical aquatic quality conditions.
- Uploads data to data management databases and makes the data publicly available.
- Interprets, analyzes, synthesizes, and reports on collected aquatic ecosystem data and information. This would include the use of statistical methods or other techniques, generic or new in nature.

- Works with the Senior Aquatic Quality Scientist to produce, finalize and disseminate scientifically defensible reports on collected information. Products are often of high technical quality and suitable for peer-reviewed publication.
- Authors or co-authors reports, maps, web content, books, digital atlases, and other materials to meet objectives of the Department.
- Presents monitoring and research results in an audience-appropriate fashion to colleagues, partners, and clients at scientific workshops and community meetings. Facilitates community and technical meetings in a cross-cultural setting.
- Represents the Division/Department on a variety of internal and external committees, and at public and community meetings.

3. **Provides specialized advice, education, and support on new and existing monitoring and research programs, methods and protocols and water policy and environmental initiatives to various technical committees, internal clients, and external stakeholders and rights holders including Indigenous governments and Indigenous organizations.**
   - Provides senior level input, technical advice, and recommendations to senior management on aquatic ecosystem health by way of briefing notes, decision notes, and Ministerial response letters.
   - Acts as a departmental representative with internal and external stakeholders on the subject of aquatic ecosystems. Represents the Division/Department on a variety of internal and external boards, and at public and community meetings.
   - Acts as the senior technical and strategic advisor on aquatic ecosystem health issues to GNWT negotiators responsible for the development of transboundary water management agreements and advises senior management on the review and assessment of any requirements that come out of future agreements. Makes recommendations that support the interests of Northerners with regard to NWT water management and the maintenance of ecological integrity.
   - Conducts peer reviews of the completeness and validity of diverse aquatic ecosystem quality results of other colleagues and scientists within and outside of the Department, upon request.
   - Researches, recommends and develops site-specific, regional and national water quality objectives and guidelines to promote healthy aquatic ecosystems.
   - Leads, plans, implements and evaluates studies directed at interdisciplinary environmental impact assessments of northern development projects; and makes related recommendations on departmental positions. Serves as an expert witness at public hearings or community meetings to present/defend the departmental positions.
   - Provides input into financial, technical and human resource planning. Identifies the need for external technical input and expertise. Establishes externals contracts, MOUs, as necessary. As the scientific authority, manages contracts accordingly, by assessing and ensuring the quality and timeliness of contract deliverables.

4. **Leads and supervises project teams in the design, implementation, and updating of aquatic ecosystem quality studies and comprehensive multi-media monitoring programs.**
   - Team members may include both internal personnel and external clients. Assigns work, explains tasks, and reviews work through the duration of the project.
   - Determines field work logistical requirements, including financial and human resources requirements, and coordinates joint or cooperative studies. Supervises on-site field work, assigns work to support staff, and provides instructions and guidance. Ensures safety of field team. Recommends training needs where required.
   - Develops comprehensive field safety plans and protocols for research and monitoring teams and ensures they are rigorously followed.
   - Leads or assists with the supervision and mentoring of junior or casual staff.
   - Participates in various staffing processes, including preparing questions, conducting interviews, and compiling staffing reports.
   - Prepares service contracts and purchase orders for environmental laboratory analyses and or the procurement of experts.
   - Arranges the timely acquisition of permits and licences for field-based projects if needed and consults with local communities and land managers to share information and obtain clearances.

5. **Researches and assesses the need to acquire, control, construct, calibrate and maintain aquatic ecosystem monitoring instruments/equipment (hardware/software), both in the office and remote field locations.**
   - Assesses the Department's needs for environmental equipment. Research is undertaken to provide recommendations on purchasing and maintenance needs. Assists in the development of an inventory of aquatic ecosystem monitoring, sampling, and measuring equipment for distribution to internal and external clients.
   - Purchases equipment or monitoring assets to enhance monitoring programs and ensures results are accurate and meet the needs of the Department.
   - Procures specialized support and analytical services to support monitoring programs including water, benthic and fish tissue and organ testing.
   - Assists the Lead Coordinator in maintenance and care for divisional vehicles, field clothing and support equipment in regions (e.g., boats, ATVs, outboard motors, skidoos, generators, centrifuging equipment).

WORKING CONDITIONS

Physical Demands

The incumbent will usually work in a normal office environment with intermittent field work. In the summer field season, the incumbent will be hiking over rough terrain with a backpack

and collected samples (up to 50 pounds) for eight hours per day, up to three weeks per year; will be travelling in small aircraft and helicopters for up to eight hours per day, up to three weeks per year; will be travelling in small watercraft for up to one hour per day, up to three weeks per year. In the winter field season, work involves travelling by snowmobile, work at extreme cold temperatures, and operation of one-person ice augers or other equipment.

Environmental Conditions

The incumbent will usually work in a normal office environment with intermittent field work. While in the field, the incumbent can be exposed to: rapidly changing weather and to conditions such as cold (hypothermia), intense sun (burn), wind, rain; helicopters, airplanes, ATVs, road vehicles (physical injury, hearing loss, gas/fumes); insects and insect bites; dangerous, unforeseen, uncontrolled field situations such as vehicular accidents, attack by wild animals, falls; and other accidents while on traverse (cuts, muscle sprains, broken bones, etc.). The incumbent will be exposed to these environment conditions every day up to three weeks per year.

The incumbent will be exposed to noise from helicopters, airplanes, ATVs, snowmobiles, and outboard motors as well as other equipment such as ice augers, chainsaws, firearms, and generators. The incumbent will be exposed to these noise conditions every day up to three weeks per year.

Sensory Demands

The incumbent will usually work in a normal office environment with intermittent field work.

Mental Demands

The incumbent will usually work in a normal office environment with intermittent field work. From May to August there is expectation of some field-based work where the incumbent is subject to disruption of family life due for field work in distant or remote locations. The incumbent is also responsible for the continuous management of scientific and logistical activities and safe work practices while in the field, including the prediction and mitigation of potentially hazardous situations and managing personality conflicts amongst field staff. The incumbent will be exposed to these demands every day up to three weeks per year.

The incumbent is also required to present research or work plans to scientific peers, collaborators, community groups, etc. and may attend workshops or research meetings in southern Canada two to four times per year.

From time to time the incumbent may be responsible for responding to media inquiries on water and aquatic quality monitoring and research projects, including findings.

KNOWLEDGE, SKILLS AND ABILITIES

- Comprehensive knowledge of diverse and complex elements of environmental science, such as a range of physical science disciplines including water chemistry, hydrology, biochemistry, aquatic biology, ecology, and limnology. The incumbent must stay current with the approaches and methodologies used to monitor, assess or predict the nature and extent of impacts on the aquatic ecosystems, to collect and apply aquatic ecosystem quality data to studies of the northern environment and to integrate environmental monitoring programs into water management approaches for regulating resource development.
- Knowledge of current NWT water initiatives, such as the NWT Water Stewardship Strategy, Bilateral Water Management Agreements, Cumulative Impact Monitoring Program and the Conservation Areas Strategy. Knowledge of Aboriginal land claim agreements in the context of northern water management and the function of the various land and water boards.
- Knowledge of departmental science, policy, and program objectives, as well as the scientific roles and responsibilities of external stakeholders with interests and authority for effecting the management of land and water in the NWT. This knowledge is required when discussing the details of project proposals and developments, and when liaising with them on water and aquatic ecosystem issues.
- Knowledge of the cross-cultural environment and its effect on communication and effective working relationships with Indigenous people in communities, Indigenous governments and Indigenous organizations, and other agencies.
- Knowledge of new and evolving environmental monitoring methods and an expertise with biological and ecosystem assessment and analytical techniques (including quality control and assurance programs), qualitative and quantitative statistical analyses, and research report interpretation.
- Knowledge of statistical methods (including techniques and data manipulation) to review, analyze and interpret data and produce reports.
- Knowledge and proven ability of technical and plain language report writing to produce detailed scientific study/survey reports in the field of aquatic quality and ecosystem health.
- Knowledge of various municipal and industrial water handling processes in a wide range of applications (e.g., mining, oil and gas) in order to identify potential effects of the operations on the aquatic ecosystems.
- Knowledge of water resource management methods and practices to provide advice on approaches to resolve problems and issues pertaining to aquatic ecosystem health aspects of such operations.
- Demonstrated knowledge of current technical and scientific literature on aquatic quality, aquatic toxicology, aquatic ecology, and aquatic quality guidelines, with particular emphasis on the northern environment and aquatic species, to ensure the most current techniques, advances in detection limits and cost-effective methodologies are used in studies and investigations.
- Ability to use good judgement, superior communication skills, and operate in an autonomous, flexible, discreet, and trustworthy fashion.

- Ability to use analytical skills are required to modify methods, techniques, and practices, generate independent research results and/or validate the research findings generated by others.
- Ability to use human relation skills are required to lead multi-disciplinary teams, supervise scientific or technical staff and/or students.
- Ability to writing and provide verbal communication when to presenting and defending scientific information to clients. Clients may include the scientific community, public and academia.
- Ability to tailor the delivery of their presentations to the knowledge level and needs of the respective audience.
- Knowledge of computer systems and various commercial software applications to manage data and generate reports including specialty software such as Geographic Information Systems (GIS), statistics packages, graphics and spreadsheets and various databases and word processors.
- Knowledge of arctic survival, transportation of dangerous goods, first aid, firearms, remote communications, equipment repair and navigation techniques are required to safely carry out aquatic field work, particularly in remote regions.
- 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:
Completion of a graduate degree (M.Sc.) in environmental science, biology, or aquatic ecology, with at least two (2) years progressive experience in environmental management, planning and/or program delivery in the NWT.

Equivalent combinations of educational and experience will be considered.

Assets include:

- Working on multi-disciplinary scientific water or aquatic quality monitoring teams.
- Demonstrated track record of implementing water quality and aquatic health information analysis and assessment, data management and scientific/technical report writing/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