



IDENTIFICATION

Department	Position Title	
Environment and Climate Change	Environmental Laboratory Technologist	
Position Number	Community	Division/Region
23-16899	Yellowknife	Water Monitoring and Stewardship/HQ

PURPOSE OF THE POSITION

The Environmental Laboratory Technologist (Lab Technologist) is responsible for analyzing a variety of water, wastewater, and soil/sediment samples within the Taiga Environmental Laboratory (TEL), in accordance with the criteria and standards required to maintain continued certification with the Canadian Association for Laboratory Accreditation (CALA) and to ensure that its clients have the test results necessary to manage public health, manage environmental health, and comply with regulatory requirements in the Northwest Territories (NWT).

SCOPE

Located in Yellowknife and reporting to the Organics Section Lead (OS Lead), the Laboratory Technologist is responsible for receiving a wide variety of environmental sample types and analyzing the samples for chemical, molecular, and microbiological parameters. The Lab Technologist works primarily in one of the five sections of the lab: Inorganics, Organics, Trace Metals, Molecular/Microbiology, or Sample Login; however, the Lab Technologist will be cross trained in other sections as required for the effective operation of the TEL. Day-to-day supervision of the Lab Technologist will be done by the Section Lead for whichever section the Lab Tech is assigned to.

The Taiga Environmental Laboratory (TEL) is the only full-service environmental analytical laboratory in northern Canada. The TEL performs a wide range of chemical, molecular and microbiological analysis on water (freshwater, ground water, drinking water, industrial effluents, and sewage) and soil/sediment samples. Significantly, TEL is accredited by the Canadian Association for Laboratory Accreditation (CALA), and the scope of accreditation includes 248 individual parameters in four distinct sections: Inorganic, Organic, Trace Metals, and Molecular/Microbiology. In addition to standard services, a variety of special services are also offered, including rush sample services, scientific training, QA/QC plans, and public education.



The TEL provides approximately \$1.4 million of environmental testing services each year to the following clients:

- internal GNWT departments including Environment and Climate Change (ECC), Health and Social Services (HSS), and Municipal and Community Affairs (MACA).
- federal government agencies, including Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and Environment and Climate Change Canada (ECCC).
- Indigenous governments and community/municipal governments.
- industry (e.g., mines), consultants, and other local businesses; and
- researchers from academic institutions working in the north.

The TEL performs over 40,000 tests a year; analytical results provided by the TEL are used by its clients to:

- ensure the safety of drinking water in all NWT communities.
- track pathogen levels (e.g., SARS-CoV-2) in wastewater to inform public health actions.
- evaluate trends in environmental contaminant levels in freshwater from across the NWT.
- ensure regulatory compliance of communities and government with the *Public Health Act* and *Water Supply System Regulations*; and
- ensure regulatory compliance of communities, remediation projects, and industries with the conditions of their water licenses under the *NWT Waters Act* and *Mackenzie Valley Resources Management Act*.

The Lab Tech will be designated as an Analyst under the *NWT Waters Act* to certify and analyze legal samples. This may require the incumbent to testify in court.

RESPONSIBILITIES

1. Receives, organizes, and conducts chemical analysis of water and wastewater samples using standard and CALA-accredited laboratory methods to ensure that TEL clients have the results required to make decisions about public health, regulatory compliance, and environmental contamination levels.

- Organizes and prioritizes samples according to sample hold times, due dates and instructions from the Section Lead to ensure workflow is maintained in a timely manner to meet turnaround time.
- Uses instrument and test specific software to create data tables.
- Prepares samples for analysis using techniques such as decanting, subsampling, grinding, and sieving, autoclaving, filtering, digesting either manually or on specific equipment as per test requirement.
- Prepares calibration and other quality control solutions.
- Analyzes samples using complex laboratory equipment and manual techniques.
- Ensures all results are accurately entered into the Laboratory Information Management System (LIMS) in a timely manner.



- Maintains work area in a safe, clean, and orderly manner ensuring the principles of the Workplace Hazardous Materials Information System are adhered to.
- 2. Maintains records of all work, quality control (QC) samples, analytical data, and results. Results are entered into the LIMS for use in client reports.**
 - Responsible for maintaining original test data, including dilutions, calibration records, quality control data and calculations.
 - Records and reports non-conformances with supporting paperwork.
 - Ensures data meets quality objectives through validation checks.
 - Enter data manually or through importing into LIMS. Ensures that the LIMS data entered is consistent and correct.
 - Submits data for approval in a timely manner.
 - 3. Performs, records, interprets, and monitors QC on analytical data and equipment to ensure the precision and accuracy of reported results.**
 - Follows approved standard operating procedures to perform QC tests on all instruments prior to and during sample analysis.
 - Calibrate or assist in the calibration of laboratory equipment on a scheduled and required basis.
 - Continually reviews test results in accordance with approved standard operating procedures to evaluate for potential analytical errors.
 - Assists in the investigation of non-conformances and implements corrective actions.
 - Report QC issues to the Section Lead or the Quality Assurance Officer.
 - 4. Performs and assists in the optimization and maintenance of complex laboratory equipment to minimize downtime, maintain productivity, and reduce the need for costly repairs or replacements.**
 - Performs and documents routine preventative maintenance on a scheduled basis.
 - Due to the remoteness of the community, the incumbent troubleshoots and will assist the Section Lead to perform complex repairs on instrumentation, either unassisted or in telephone consultation with instrument repair specialists, as required.
 - Informs supervisor (Section Lead, Laboratory Manager) when equipment is out of service, gives suspect results, shown to be defective or outside specified limits to allow for timely operational decisions to be made.
 - 5. Provides support for other sections of the lab on an as-needed basis to ensure standard or rush turnaround times can be met during the peak summer season or whenever there are staff shortages.**
 - Participates in cross-training opportunities to assist with sample reception and for analysis of trace metals, microbiology, molecular biology and/or organics,
 - At the direction of the Section Lead, analyzes samples or provides other support to technologists in other sections.



6. Maintains inventories of analytical supplies, reagents, and consumables.

- Maintains an inventory of laboratory products and supplies for their section.
- Identifies when resupply is needed and notifies the Section Lead when additional supplies need to be ordered.
- Accepts goods purchased as per accepted lab procedures.

7. Discards samples as outlined in laboratory procedures.

- Follows Workplace Hazardous Materials Information System principles to collect and store chemical wastes produced during testing until appropriate final disposal available.

WORKING CONDITIONS

Physical Demands

The position is required to stand for long periods when performing lab work (i.e., up to 7.5 hours per day with standard breaks), typically four to five days per week or more when overtime is required; on average, the incumbent will be either standing or walking for 80% of each working day. Also, the position moves and/or lifts heavy cylinders (up to 25 kg), coolers, and carts daily.

Environmental Conditions

The work is performed in the laboratory and office environments. There is constant exposure to dust, noise and vibrations from freezers, fans, lab instruments and equipment, and daily exposure to substances that require special handling (e.g., using WHMIS) including noxious odors, toxic and corrosive chemicals (including known carcinogens), pathogens (human and animal excrement) and various forms of radiation.

The requirement to use chemical auto-analyzers, hot plates, block digesters, fume hoods, atomic absorption spectrometers, and inductively coupled argon plasma spectrometers presents exposure to heat, ultraviolet, radio frequency and electromagnetic radiation during normal operation approximately five days a week (or more often during staff shortages).

Due to the work environment, protective clothing (e.g., lab coats, safety eye wear, gloves) and proper use of protective equipment (e.g., fume hood) are always required for work in the laboratory. Some sections of the laboratory are not air-conditioned and, because of the presence of running laboratory equipment, can reach temperatures of up to 28°C between the months of April and October.

Sensory Demands

The work requires visual acuity as well as precise manual dexterity and hand-eye coordination to prepare samples for testing, to handle fragile laboratory equipment parts and glassware, and



to calibrate and operate a variety of laboratory equipment. The preparation of samples also requires the ability to make the appropriate motor responses at the appropriate time, and with speed to maximize efficiency.

Visual acuity and tactile sensitivity are needed to assess very subtle sample conditions based on overall visual appearance (colour, shade, intensity, clarity) and temperature.

Sensory demands occur approximately 75% of the time.

Mental Demands

The position is subject to tight timelines, fast work pace, and competing priorities, with seasonal increases in volume of work, particularly May to October, when the lab receives at least 80% of its annual sample load; during this time, staff are frequently required to work overtime (nights and weekends) to meet seasonal demands.

There is a requirement to maintain constant mental vigilance with respect to safety protocols around corrosive, damaging toxins and pathogens.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of the principles, theories, methods, techniques and practices of biology, chemistry, physical and environmental science.
- Knowledge of organic and inorganic chemical reactions used in environmental sample analysis.
- Knowledge of laboratory quality assurance and quality control practices.
- Knowledge of the use, care and maintenance of analytical equipment.
- Knowledge in safe handling of concentrated acids and bases, chemical preservatives and bio-hazardous materials.
- Knowledge of International Standards Organization and Canadian Association for Laboratory Accreditation guidelines, standards and quality assurance/quality control theories and principles.
- Knowledge of and ability to comply with the Canada Labour Code safety requirements, the *NWT Safety Act*, the *NWT Occupational Health and Safety Regulations*, and Workplace Hazardous Materials Information Systems to ensure a safe working environment.
- Ability to safely handle pathogenic or carcinogenic material, compressed gasses and organic solvents.
- Ability to interpret raw data and detect quality control issues.
- Ability to organize and conduct chemical analysis of environmental samples according to set procedures.
- Ability to use manual and modern instrumentation methods in water analysis.
- Ability to solve problems through independent conceptual thinking.
- Ability to work cooperatively as a team member.
- Interpersonal skills to effectively communicate both verbally and in writing.

- Organizational and time management skills, including the ability to plan, coordinate, prioritize activities, and meet deadlines.
- 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 diploma from a recognized environmental or chemical laboratory technology program or a degree in a relevant field of science such as chemistry, biology, or environmental science. Regardless of whether the applicant has a diploma or a degree, applicants must have a minimum of two (2) years' experience working in an environmental testing laboratory in addition to experience obtained during a diploma or degree program.

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