

Project overview

Under the *NWT Waters Act*, the City of Yellowknife requires a licence from the Mackenzie Valley Land and Water Board (MVLWB) to draw water from local water bodies and to deposit waste into the environment. The City's current water licence expires in May 2022. The City will apply to renew it for 12-15 years.

As it prepares its application, the City would like to give residents and interested stakeholders the opportunity to understand what is being proposed and why, to ask questions, and to provide feedback if they wish. The City hopes to complete its pre-application engagement by the end of October 2020 and to submit it to the MVLWB in January 2021. Once submitted, the full application will be available for public review and feedback on the MVLWB Public Registry.

What the water licence regulates

A water licence is the authorization that allows the community to withdraw water and deposit waste in accordance with environmental guidelines.

There are two types of water licences issued under the *Mackenzie Valley Resource Management Act* (MVRMA). Due to the size of the Yellowknife population, the amount of water the City uses and the volume of waste it deposits into the environment, the City is required to have a "Type A" water licence. The "Type A" water licence generally requires more detail in the application, undergoes a more rigorous review, and is subject to more conditions than a Type B licence.

The renewal will give the City permission to continue to use the Yellowknife River as its source for municipal drinking water, to deposit municipal waste in the City's landfill, and to direct wastewater into the Fiddler's Lake Treatment System.

The water licence regulates:

- the amount of water the City is allowed to withdraw from approved water sources each year;
- the condition of wastewater before it can be released to the environment;
- terms and conditions for the design, construction, operation, maintenance, monitoring, management and reporting of the City's waste and water facilities;
- conditions for the closure and reclamation of waste disposal facilities;
- stormwater management, and
- spill contingency.

Not all aspects of the City's water and waste services are regulated by the water licence. For example, drinking water quality is regulated by the Department of Health and Social Services under the *NWT Public Health Act* and is not part of what is looked at under the water licencing process.



Studies and improvements since 2010

Since the current Water Licence came into effect in 2010, the City has made some important changes to its facilities and has undertaken various studies to inform potential changes. Notably, the City has:

- built a new Water Treatment Plant in 2015 which uses a sophisticated multi-barrier treatment system to produce high-quality drinking water;
- created a Stormwater Management Plan;
- created the Fiddler's Lake Treatment System Plan;
- completed a Solid Waste Facility Interim Closure and Reclamation Plan;
- created an Interim Groundwater Monitoring Plan;
- conducted phosphorus studies for the Fiddler's Lake Treatment System and Great Slave Lake;
- conducted a year-long effluent study;
- conducted BOD (Biochemical Oxygen Demand) and CBOD (Carbonaceous Biochemical Oxygen Demand) studies to determine organic pollutants in the City's wastewater;
- conducted a pH and algal bloom study;
- conducted a solid waste facility drainage study; and
- decommissioned the biotreatment facility that was used to treat hydrocarbon contaminated soil, snow and water.

What the application will include

The renewal application will talk about the changes noted above and provide details about how the City:

- monitors and manages stormwater before it flows to Great Slave Lake;
- operates, maintains, and monitors its landfill and compost facility, including monitoring generated leachate and limiting any potential impacts on the environment and groundwater;
- manages the Fiddler's Lake Treatment System and monitors the lagoon and downstream wetlands;
- gets its source water ("raw water") for drinking and how much it consumes;
- operates its Water Treatment Plant; and
- manages leaks, potential spills and wastewater during maintenance and emergency repairs of the wastewater collection system.

The renewal application will also include the City plans to close, clean up, and monitor the landfill site ("closure and reclamation") and associated components in the future.

What does it mean?

LEACHATE

Leachate is any liquid material that drains from land or materials in a landfill that contains significantly elevated concentrations of undesirable materials.

GROUNDWATER

Groundwater is water that is beneath the surface and flows through soils and/or fractured bedrock.



Project overview

Key documents

The licence application will be made up of a series of documents that cover all the main aspects of the City's waste and water management.

Water Treatment

- **Water Treatment Plant (WTP) Operation and Maintenance Manual:** Describes in detail the water supply, treatment (chemical/physical) processes, waste ("residuals") treatment/disposal and related instrumentation and automation controls used at the WTP. The manual also provides information on how waste from the water treatment process is managed and the relationship between the WTP and the City's wastewater collection and disposal facilities.

Solid Waste

- **Solid Waste Facility Operations and Maintenance Manual:** Details the procedures to properly operate and maintain the solid waste facility in a manner that limits the impact to the environment and nuisances (e.g. smells, attracting animals, etc.). This includes procedures for disposal of waste materials generated in the City of Yellowknife, leachate management, and monitoring requirements. There are also inspection and maintenance requirements to maintain an organized and clean site that functions as designed.
- **Hazardous Waste Management Plan:** Describes what types of hazardous materials are accepted and not accepted at the Solid Waste Facility. It also describes the associated health and environmental hazards for the accepted hazardous waste, and the methods for managing, handling, and storing the material prior to shipping it off site.
- **Compost Facility Operation and Maintenance Manual:** Details the procedures to properly operate and maintain the compost facility in a manner to produce a high-quality final product, as well as limits the impact to the environment and nuisances. This includes procedures for managing and testing materials through the composting process, management of generated leachate, and monitoring requirements. There are also inspection and maintenance requirements to maintain an organized and clean site that functions as designed.
- **Solid Waste Facility Closure and Reclamation Plan:** Describes the procedures for the closure of the landfill as waste reaches the designed height. Closure includes the construction/installation of a cover system that is designed to reduce water infiltration to prevent leachate being produced. The City is required to show how it plans to deal with the leachate from its landfill over the long term and reduce impacts to the environment as well as prevent human exposure to waste. The plan also includes the requirements for cleaning up the site during closure and monitoring of the facility for any potential impacts to the surrounding environment.
- **Solid Waste Facility Interim Groundwater Monitoring Plan:** Describes the present groundwater monitoring activities undertaken by the City. The City has installed multiple groundwater monitoring wells at the Solid Waste Facility to monitor potential impacts to groundwater as it relates to landfill activities. This activity is intended to mitigate contamination off-site.



Stormwater

- **Stormwater Management Plan:** Describes the City of Yellowknife's infrastructure that collects and diverts rainwater and snow melt ("stormwater"), the maintenance of this infrastructure, and the City's strategies to minimize urban stormwater impacts on the environment. Key components of this plan are pollution control measures, public education programs, and a stormwater monitoring program.

Wastewater

- **Sewage Disposal Facilities Operations and Maintenance Manual:** Provides information to assist City of Yellowknife personnel with the operation and maintenance of the Yellowknife wastewater facilities, which includes the wastewater collection pipe system, wastewater pumping/lift stations, and the Fiddler's Lake Treatment System (FLTS) that includes a facultative lagoon and a wetland system. The manual also includes trucked waste, "honey bag" and animal wastes management information. The manual includes requirements and guidance for the sampling and monitoring program, record keeping, safety procedures, FLTS site access control, and emergency response.
- **Fiddler's Lake Treatment System Management Plan:** Describes the Fiddler's Lake Treatment System (FLTS) elements, current effluent requirements and objectives, and actual effluent quality relative to these needs. Water quality trends and other observations in the effluent receiving environment are discussed, which are used to inform proposed changes to effluent quality requirements and objectives, water quality triggers and thresholds, and Surveillance Network Program requirements. FLTS contingency planning is also discussed, highlighting actions the City could take if required.

What does it mean?

FACULTATIVE LAGOON

A waste stabilization pond used for biological treatment of wastewater. Sewage or organic waste is gradually broken down as it goes through the system by exposure to air, wind and sun as well as the organisms in the pond.

Other documents may also be included in the application related to ongoing or long-term upgrades to the municipal water, wastewater and solid waste facilities.

We invite you to learn more

- [The City of Yellowknife's water and waste water treatment systems](#)
- [The City of Yellowknife's solid waste management system](#)
- [The City of Yellowknife's composting program](#)

Have questions or comments on the City's water licence renewal project?

The City will be posting more information on each of the components of the water licence renewal over the coming weeks and will be soliciting feedback from interested residents and stakeholders via email, letter and our online engagement tool [PlaceSpeak](#).

Additional details on engagement opportunities will be provided in the weekly Capital Update and via Twitter and Facebook.

Questions related to the renewal process can be directed to Madison Warren, Municipal Engineer at waterlicence@yellowknife.ca.