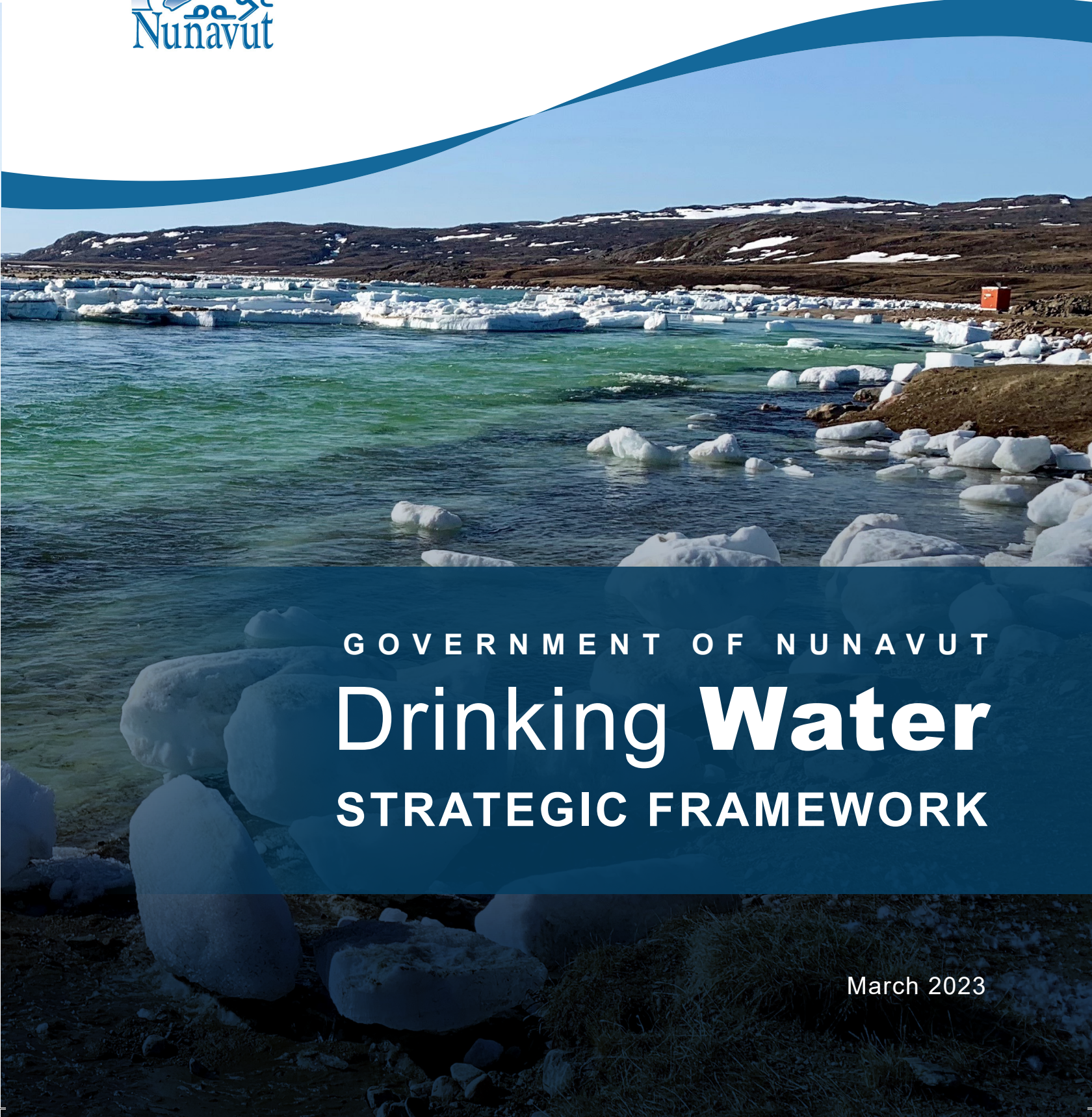




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 Building *Nunavut* Together  
*Nunavu* liuqatigiingniq  
 Bâtir le *Nunavut* ensemble



GOVERNMENT OF NUNAVUT  
**Drinking Water**  
 STRATEGIC FRAMEWORK

March 2023

## Acronyms

CAO - Chief Administrative Officer

CGS – Community Government Services

FPT – Federal, Provincial, Territorial

GCDWQ – Guidelines for Canadian Drinking Water Quality

GN – Government of Nunavut

IQ – Inuit Qaujimajatuqangit

MOU – Memorandum of Understanding

SAO – Senior Administrative Officer

UN – United Nations

*Cover Image: View of Sylvia Grennell River, taken by Joey O'Brien*

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### **Nunavut Drinking Water Strategic Framework**

#### **Government of Nunavut**

P.O. Box 1000 Station 200

Iqaluit, Nunavut

X0A 0H0

CANADA



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*View of Arctic Bay*



## Introduction

The purpose of this document is to present the **Government of Nunavut (GN) Drinking Water Strategy**, including goals, objectives and activities to attain comprehensive, sustainable drinking water programs for all Nunavut municipalities. To inform the strategy, a strategic framework was first developed to reflect the key elements of drinking water programs that are required to produce a sufficient quantity of drinking water that meets the treatment parameters of the forthcoming *Nunavut Municipal Drinking Water Regulations*. The forthcoming regulatory changes in Nunavut are anticipated to reflect the Health Canada *Guidelines for Canadian Drinking Water Quality* (GCDWQ). This document first outlines the strategic framework, and then presents the GN Drinking Water Strategy. This document is limited to drinking water from the source to the tap in the municipalities and does not encompass the entire freshwater ecosystem.



*Rankin Inlet Intake*

# Vision for the GN Drinking Water Strategy

The Vision is to have healthy Nunavummiut with a low incidence of water related disease through a sufficient supply of safe drinking water now and into the future.

Six overarching goals have been developed for this strategy to guide the work required to realize this vision. As part of realizing this vision we want to deliver safe drinking water to Nunavummiut through drinking water programs.

- **Goal 1:** To strengthen the organizational capacity to deliver drinking water programs.
- **Goal 2:** To ensure adequate and up to date physical infrastructure for the delivery of drinking water programs.
- **Goal 3:** To develop a sufficient and skilled workforce.
- **Goal 4:** To institute information management systems for drinking water
- **Goal 5:** To implement effective operations and maintenance of all drinking water systems.
- **Goal 6:** To increase public involvement, awareness, and education about drinking water

The following sections discuss the background on Nunavut drinking water systems, the key elements of the framework, and then present the Strategy, including these goals, objectives, and activities that will be taken forward into the impending action plan.

## Inuit Qaujimajatuqangit (IQ) Principles

The drinking water strategic framework will be guided by the IQ principles as set out by the Government of Nunavut.

- $\Delta\phi^{\text{b}}\text{N}^{\text{r}}\text{c}^{\text{r}}\text{v}^{\text{r}}\text{c}^{\text{r}}$  - Inuuqatigiitsiarniq  
Respecting others, relationships and caring for people.
- $\text{D}^{\text{r}}\text{L}^{\text{r}}\text{r}^{\text{r}}$  - Tunnganarniq  
Fostering good spirit by being open, welcoming and inclusive.
- $\text{A}^{\text{r}}\text{r}^{\text{r}}$  - Pijitsirniq  
Serving and providing for family and/or community.
- $\text{v}^{\text{r}}\text{N}^{\text{r}}\text{r}^{\text{r}}$  - Aajiiqatigiinniq  
Decision making through discussion and consensus.
- $\text{A}^{\text{r}}\text{L}^{\text{r}}\text{r}^{\text{r}}$  - Pilimmaksarniq  
Development of skills through observation, mentoring, practice, and effort.
- $\Delta\text{b}^{\text{r}}\text{N}^{\text{r}}\text{r}^{\text{r}}$  - Ikajuqtiigiinniq  
Working together for a common cause.
- $\text{v}^{\text{r}}\text{D}^{\text{r}}\text{r}^{\text{r}}$  - Qanuqtuurniq  
Being innovative and resourceful.
- $\text{v}^{\text{r}}\text{N}^{\text{r}}\text{r}^{\text{r}}\text{b}^{\text{r}}\text{L}^{\text{r}}\text{r}^{\text{r}}$  - Avatittinnik  
Kamatsiarniq  
Respect and care for the land, animals and the environment.





## Background

The drinking water systems for all 25 communities in Nunavut include a water treatment plant and water delivery trucks. Additional infrastructure may include seasonal resupply systems, transmission pipes, constructed reservoirs, water storage tanks, and distribution pipelines, depending on the unique municipal system. Ownership and operational responsibility of the treatment and distribution systems differs between communities. Some community systems are owned and operated by the municipality, some are municipally owned and GN operated, and finally there are communities that are owned and operated by the GN. For water delivery, all trucked delivery is owned and

operated by the Municipalities, whereas utilidor systems are owned and operated by GN-CGS, except Iqaluit, where the City owns and operates the utilidor system. The map on the following page outlines ownership and operational responsibilities for the water treatment plant by community.

All communities in Nunavut use trucked water and sewage utility systems. However, in the communities of Iqaluit, Rankin Inlet and Resolute Bay, utilidor systems (piped water and sewage) provide the bulk of water and sewer capacity. The use of trucked water for potable purposes creates specific challenges not typical of water systems in southern Canada.

*Baker Lake Truckfill*





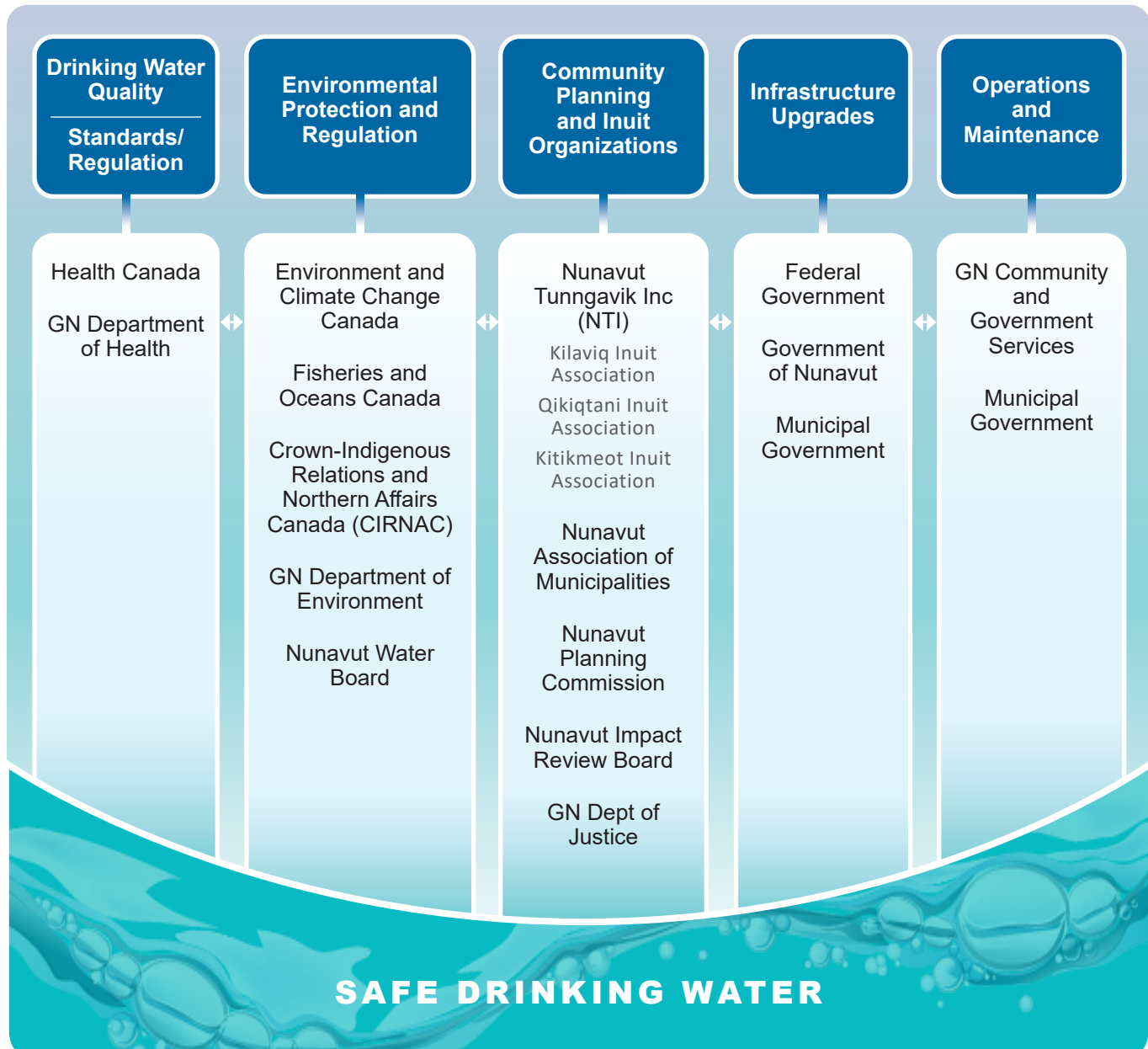
## List of communities and water supply treatment ownership and operation



## Roles and Responsibilities

The delivery of safe water is a shared responsibility across federal, territorial and municipal stakeholders and agencies. **Figure 1** below outlines how these organizations support each other to provide safe drinking water to the public. Further description of the responsibilities of each organisation can be found in the **Appendix**.

**Figure 1: Organizational chart of stakeholders that contribute to supplying safe drinking water**



# Why We Need a Drinking Water Strategy in Nunavut

## Water and Health

Safe and readily available water is important for public health, whether it is used for drinking, domestic use, food production or recreational purposes<sup>1</sup>. In 2010, the UN General Assembly explicitly recognized the human right to sufficient, continuous, safe, acceptable, physically accessible, and affordable water for personal and domestic use<sup>2</sup>. This was reflected in the 2015 UN Sustainable Development Goals as Goal 6 Clean Water and Sanitation<sup>3</sup>.

Drinking unsafe water impairs health through illnesses such as diarrhoea while chemical contamination of water continues to pose a health burden, whether of natural origin such as arsenic and fluoride or not<sup>4</sup>. Canada has experienced large outbreaks of waterborne illness that have led to many jurisdictions reviewing and strengthening their drinking water programs.

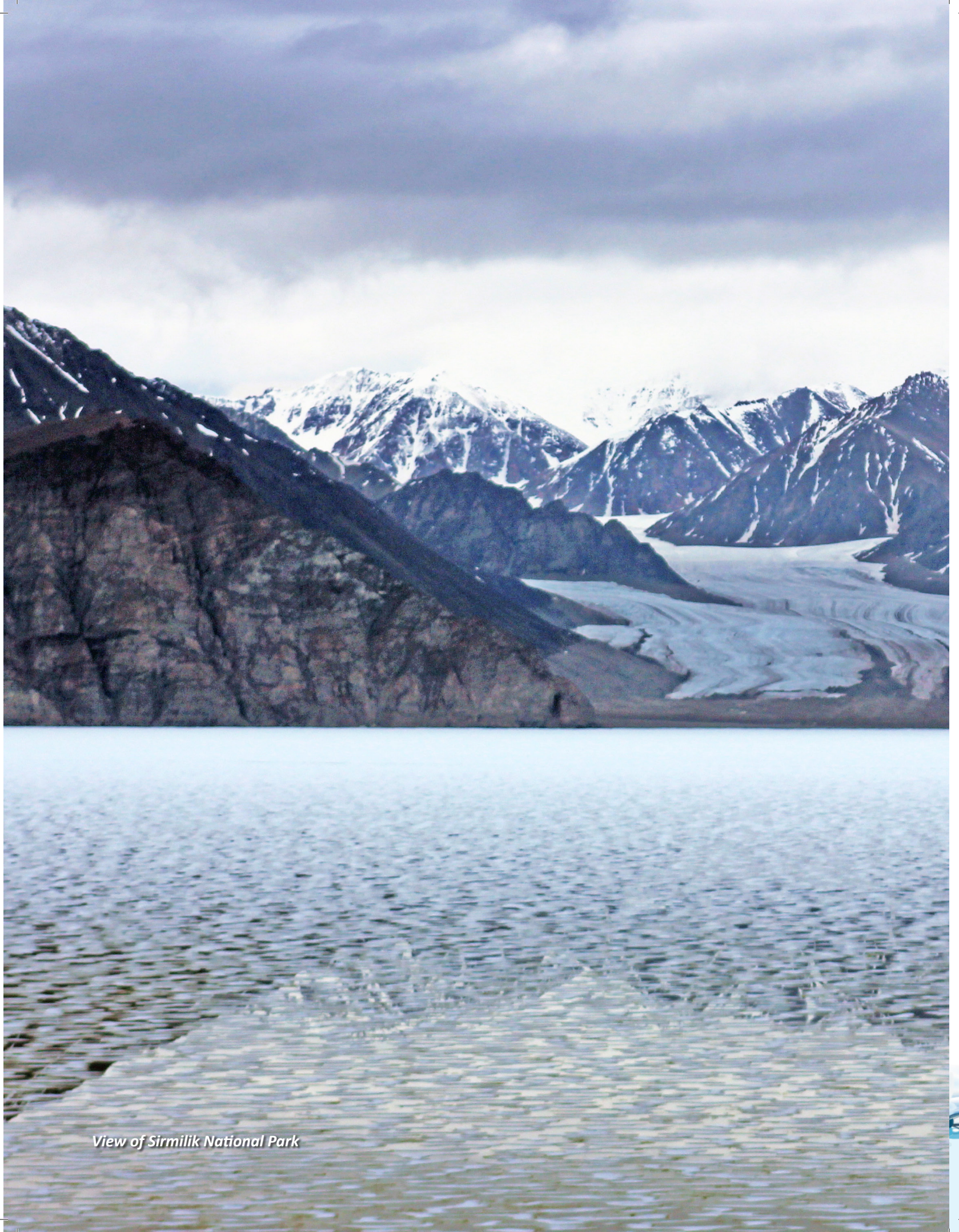
In addition to producing safe drinking water, supply systems must also produce a sufficient quantity of water for distribution. An adequate supply of safe water is required for cooking, personal hygiene, washing clothes, and cleaning the home. An insufficient supply can lead to increased occurrence of infection and disease transmission.



## Territory Wide Approach

The Government of Nunavut is prioritizing the development of this drinking water strategy and a subsequent action plan to improve drinking water programming in the Territory. Water quality standards and treatment system designs are evolving, causing existing systems within the Territory, designed based on standards in place at the time, to be outdated. While every effort is made to protect the safety of residents through monitoring and operational augmentations, many water treatment plants do not meet the GCDWQ and the nationally acceptable treatment minimums for surface water. Most water treatment plants will need to be upgraded or replaced under the newly contemplated regulations.





*View of Sirmilik National Park*

# The Drinking Water Strategic Framework

## Elements of the GN's Drinking Water Strategy

The elements that form the framework for the **GN Drinking Water Strategy** were identified through review of key Canadian drinking water documents, applicable regulation and guidance documents, community needs, and the GN's mandate for supporting drinking water programs within Nunavut Communities. In addition, essential components identified during discussions regarding First Nations Drinking Water legislation<sup>5</sup> have been adapted for the Territory's unique context. These key elements make up the strategic framework, and ultimately informed the development of the GN's Drinking Water Strategy, which is presented in the following section.

Following the publication of the multi-barrier approach to safe drinking water from the Health Canada *Guidance for Providing Safe Drinking Water in Areas of Federal Jurisdiction*, physical infrastructure alone cannot ensure the safety of a drinking water program. The Drinking Water Strategy has been developed based on the multi-barrier approach which is an integrated system of procedures, processes and tools that collectively prevent or reduce the contamination of drinking water from source to tap.<sup>6</sup> Applying the multi-barrier approach to the delivery of drinking water in Nunavut has unique considerations due to the significant isolation of communities, extended winter season, volume of resources, skilled labour market size, and political framework. These items form the context that this strategic framework was developed within.

## Legislation and Policy

- Development of legislation and policy which outline the authority and responsibilities for each aspect of the drinking water system.<sup>7</sup>
- Collaboration between stakeholders with overlapping responsibilities for drinking water. See **Appendix 1** for a list of the stakeholders including their role and supporting legislation.

## Standards, Guidelines, Best Practices

- Formal adoption of the Health Canada Guidelines for Canadian Drinking Water Quality by Nunavut including standards for microorganisms and chemical substances (which could lead to adverse health effects), turbidity and aesthetic guidelines. All guideline values and supporting documentation are posted on Health Canada's water quality website<sup>8</sup> which are re-assessed on an ongoing basis.

## Source water protection and management

- Protection of drinking water sources from contamination and depletion.
- Prohibition of the discharge of contaminants, such as wastewater, within a defined distance of the water source.
- Approval mechanism for primary and secondary water sources.
- Delineation of watersheds with an accompanying management plan.
- Participation of drinking water officials in land use planning and environmental assessment.

## Infrastructure Management

- Standards for the location, design, construction, and modifications of treatment systems.
- Treatment systems designed to meet the GCDWQ based on the results of source water quality assessments. Designs must be verified and stamped by a professional engineer licenced to practice in Nunavut.
- Review and upgrade of treatment and distribution systems as necessary.
- Approval to commission for all new systems or any modifications to an existing system from appropriate authority.
- Protocols for the notification of the appropriate authority of system modifications.
- Classification of all treatment plants to determine operational complexity and the level of operator certification required.
- Minimum criteria for design, construction (including materials), and operations of water infrastructure to ensure public health protection and environmental quality objectives are met.
- Ongoing investment in infrastructure upgrades and maintenance programs.

*Resolute Bay Water Treatment Plant*

## Operation of Drinking Water Systems

- Implementation of standard operating procedures so that treatment and distribution systems are operated consistently across the territory.
- Clear documentation of operating procedures which are easily accessible.
- Procedures for issues management and emergency response.

## Distribution System Maintenance

- Distribution systems include delivery trucks as well as piped systems.
- Regular maintenance of drinking water conveyance systems for reliable delivery and to preserve water quality once it leaves the treatment plant.
- Sufficient disinfectant residual present at all points throughout the distribution system (secondary disinfection).
- Active cross-connection controls.
- Bulk water delivery containers and cisterns designed and constructed to applicable standards.



## Water Quality Monitoring, Sampling and Testing

- Minimum requirements for monitoring of drinking water quality including frequency of sampling, testing parameters and methods to be used.
- Reporting protocol for adverse test results.
- Communication protocol between the laboratory, the agency operating the treatment plant and the regulator.
- Use of accredited laboratories and set conditions for on-site test kits.
- Quantity of withdrawal from source recorded and reported annually.

## Compliance Monitoring

- Environmental Health Program: standard approach for inspections by regulators.
- Application of risk assessment and risk management approach to monitoring.
- Authority to issue drinking water advisories when applicable, to protect public health.

## Education and Training

- Ongoing training and development opportunities available to water operators and other water program staff.
- Operator certification process in place.

## Public Involvement, Awareness and Education

- Increase public awareness on protection of source water quality and other drinking water quality issues.

- Information for the public about health risks related to drinking water.
- Public education on drinking water advisories and cleaning and maintaining holding tanks in households and public buildings.
- Publicly available information about monitoring programs and actions by authorities to address risks with community drinking water systems.
- Issue regular reports about drinking water systems.

## Information Management

- Establishment of minimum requirements, based on Territorial regulations, for the collection, and reporting of drinking water data on water quality.
- Monitoring of water quality and quantity.
- Use of information management systems.

*Right: Chesterfield Reservoir*



# Challenges for Drinking Water Programs in Nunavut

Nunavut drinking water systems are impacted by several challenges that may be related to source water quality, resource shortages, or infrastructure deficiencies. While each community has unique characteristics, many share several of these common challenges and will benefit from standardizing our approach to drinking water programs. Standardizing treatment processes and monitoring procedures allows more equitable water quality expectations and operations of familiar equipment; standardizing training programming will improve the Territories overall resources to operate and maintain infrastructure to expected standards.



*Pond Inlet Water Treatment Plant*

Examples of common challenges are outlined below:

- **Saltwater intrusion:** Salt intrusion can occur when the intake location in a freshwater source is located near marine water depending on wind direction, water temperature and currents.
- **Elevated Total Dissolved Solids:** Minerals from the surrounding environment within the source water at levels that exceed the recommended concentrations in the GCDWQ.
- **Seasonal turbidity:** During spring freshet melting water flows overland causing sediment to be suspended and enter the source water. High turbidity levels impacts the aesthetics of water and may render the disinfection process less effective.
- **Bacteria in the water:** Water is tested for coliform bacteria and E. coli. Sources of bacteria in the treated water may be from inadequate treatment or from contamination within the delivery system or household storage tanks.
- **Unprotected source water:** recreational and other activities, such as car washing or dumping, in or near the source water can contribute to contamination of the water.
- **Elevated metals:** manganese and iron are commonly elevated metals within Nunavut source water. Appropriately designed filtration systems are able to treat these.
- **Resource shortages:** operational capacity within community and territorial operations teams contributes to challenges maintaining systems.
- **Infrastructure deficiencies:** Water systems were designed based on the regulations of the day. Infrastructure upgrades are needed to meet Guidelines for Canadian Drinking Water Quality.



**Water advisories are used to mitigate the risk of water quality or contamination concerns to protect the public.**

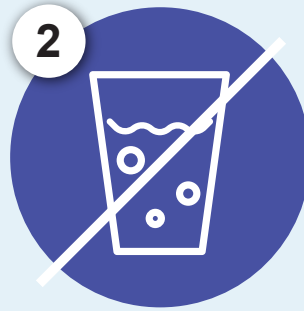
Advisories may be precautionary in nature, wherein no known contamination has occurred but there is an increased risk of contamination, or may be due to detection of a known contamination within the water.

**The three types of water advisories are:**



**BOIL WATER ADVISORY**

Issued when boiling the water eliminates the risk of illness that may result from the contaminant (ie. if turbidity is elevated or bacteria has been detected). Also used as a precaution if the system has been compromised and requires sampling to ensure it is producing safe water.



**DO NOT CONSUME ADVISORY**

Issued when the water cannot be made safe for consumption by boiling or other simple means.



**DO NOT USE ADVISORY**

Issued if a contaminant has been detected that is not only unsafe for consumption, but is unsafe for all uses.



*Arctic Bay Pumphouse*

# Government of Nunavut Drinking Water Strategy

Based on the framework, the following section presents the Government of Nunavut Drinking Water Strategy. The strategy consists of six overarching goals, intended to work toward meeting the Vision for drinking water within Nunavut. Each goal has been divided into several objectives and activities designed to provide further detail on the work required to realize the goal.

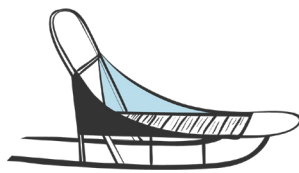


## GOAL 1

**To strengthen the organizational capacity for the delivery of drinking water programs in Nunavut**

*Organizational capacity includes the structure of the drinking water programs, leadership, system development and strategic decision making, legislation and appropriate funding.*

OBJECTIVES	ACTIVITIES
To incorporate IQ principles into all aspects of Nunavut drinking water programs.	<ul style="list-style-type: none"> <li>• Ensure the Drinking Water Strategy and Action Plan reflect IQ principles.</li> </ul>
Determine which municipal, territorial and federal departments and agencies play a role in drinking water in Nunavut.	<ul style="list-style-type: none"> <li>• List all departments and agencies and describe their role and the associated legislation.</li> </ul>
To ensure that agencies/ stakeholders with responsibilities for drinking water have the structure and resources required to fulfill their roles and responsibilities.	<ul style="list-style-type: none"> <li>• Document the current organizational structure related to drinking water of all departments with responsibilities in this area.</li> <li>• List the resources (human resources and budgets and capital funds).</li> <li>• Conduct a review of standards around drinking water staffing and resources.</li> <li>• Conduct a gap analysis and identify actions to ensure the necessary structure and resources are in place.</li> <li>• Develop a plan for increasing organizational capacity.</li> </ul>



OBJECTIVES	ACTIVITIES
<p>To collaborate across all departments and agencies with responsibilities for drinking water at all levels of government.</p>	<ul style="list-style-type: none"> <li>• Document existing processes for collaboration.</li> <li>• Determine if more formalized processes are needed e.g., MOU or similar agreement.</li> </ul>
<p>To ensure representation at different levels of government for ongoing system development and strategic decision making.</p>	<ul style="list-style-type: none"> <li>• Identify the FPT Committees that address water related issues e.g., FPT Committee on Drinking Water, Environment and Health.</li> <li>• Seek Nunavut representation on appropriate FPT committees related to drinking water including environmental protection of drinking water.</li> </ul>
<p>To regularly review and revise drinking water legislation and regulations.</p>	<ul style="list-style-type: none"> <li>• Update the drinking water regulations under the <i>Public Health Act</i> (in progress).</li> <li>• Develop a plan to implement updated regulations.</li> <li>• Review all changes to the Guidelines for Canadian Drinking Water Quality and the implications for Nunavut.</li> <li>• Regularly review and revise drinking water related policies, regulations, and protocols for Nunavut to keep up with the scientific evidence and best practices.</li> </ul>
<p>To ensure that the drinking water programs are appropriately funded.</p>	<ul style="list-style-type: none"> <li>• Put forth priorities for capital funding process annually.</li> <li>• Review operational funding e.g., the water and sewer funding program.</li> <li>• Determine the need and mechanism to fund contingency plans.</li> </ul>



## GOAL 2

**To ensure adequate and up to date physical infrastructure for the delivery of Nunavut drinking water programs**

*Infrastructure requirements include the location, design, construction, modification, asset management and decommissioning of drinking water systems.*

OBJECTIVES	ACTIVITIES
To adopt engineering standards for water treatment plants.	<ul style="list-style-type: none"><li>• Review engineering standards for water treatment plants in Canada.</li><li>• Adapt the standards to ensure applicability to Nunavut.</li></ul>
To develop a common design for water treatment plants	<ul style="list-style-type: none"><li>• Review current water treatment plant design/s used in Nunavut.</li><li>• Compare the current designs against the engineering standards for water treatment plants adapted for Nunavut (see above).</li><li>• Adapt the design on a case-by-case basis according to local source water quality and other community related factors.</li></ul>
To develop a classification system for water treatment plants.	<ul style="list-style-type: none"><li>• Create the criteria for the classification of water treatment plants.</li><li>• Classify each water treatment plant in Nunavut.</li></ul>
To develop criteria for prioritizing renewal of drinking water infrastructure in the capital planning process.	<ul style="list-style-type: none"><li>• Review criteria for setting priorities for renewal of drinking water infrastructure in other provinces and territories in Canada.</li><li>• Review the current method for setting priorities for renewal of drinking water infrastructure.</li><li>• Update the current criteria as necessary.</li></ul>
To follow a standard infrastructure development process to consistently produce infrastructure to meet GCDWQ and operational requirements within communities.	<ul style="list-style-type: none"><li>• Evaluate the current infrastructure development process.</li><li>• Revise as necessary.</li></ul>

OBJECTIVES	ACTIVITIES
<p>To conduct an inventory of existing water infrastructure in all communities in the territory.</p>	<ul style="list-style-type: none"> <li>• Determine the parameters that should be included when conducting the inventory e.g., age of the system, type of water treatment, type of distribution system, known issues etc.</li> <li>• Conduct a review of all documents describing the current water infrastructure in the territory.</li> <li>• Validate through consultation with Regional Engineers and Environmental Health Officers.</li> </ul>
<p>To improve sanitation of residential and institutional water tanks and distribution systems.</p>	<ul style="list-style-type: none"> <li>• Develop criteria for water tanks and water tank maintenance that are used in conjunction with trucked water delivery.</li> <li>• Promote public awareness and accountability of maintenance requirements for privately owned water tanks.</li> </ul>

*Whale Cove Water Treatment Plant*





### GOAL 3

#### To work towards a sufficient and skilled workforce

*A sufficient and skilled workforce requires an appropriate number of personnel with the required training and qualifications at all levels of government across the territory.*

OBJECTIVES	ACTIVITIES
<p>To develop a human resource plan for drinking water programs.</p>	<ul style="list-style-type: none"><li>• Document the current number and type of personnel who have responsibilities related to the current drinking water systems in Nunavut. Include municipal, regional, and territorial personnel as well as personnel from contracted private companies.</li><li>• Conduct an environmental scan across the country to gather information on types of personnel in other jurisdictions with small water supplies.</li><li>• Search for any human resource standards and workforce competencies related to drinking water systems and programs.</li><li>• Produce a needs assessment based on the types and numbers of positions as appropriate acknowledging the challenges particular to Nunavut.</li><li>• Internal advertising for talent and training to job opportunities.</li></ul>
<p>To develop a training, maintenance of competency and career development program for all those with roles and responsibilities related to the drinking water system.</p>	<ul style="list-style-type: none"><li>• Provide training and maintenance of competency support for personnel with responsibilities for drinking water including SAO/CAOs, regional and territorial engineers, Environmental Health Officers, Health Protection staff.</li><li>• Review certification programs in other jurisdictions for water treatment plant operators.</li><li>• Establish a Certification Board for water treatment personnel.</li><li>• Establish a training and certification program for water treatment plant operators to ensure that they are trained to the level appropriate for the classification of the water treatment plant they work in.</li><li>• Develop a training program for water truck drivers.</li></ul>



## GOAL 4

### To institute information management systems for drinking water

*Appropriate information infrastructure and business processes are required for monitoring drinking water system operations and water quality for continuous quality improvement and waterborne disease control.*

OBJECTIVES	ACTIVITIES
To implement appropriate electronic information management tools related to drinking water.	<ul style="list-style-type: none"><li>• Identify the business requirements for an information management system related to drinking water.</li><li>• Review the current capabilities of WaterTrax and Hedgehog (by Hedgerow) by CGS and Health.</li><li>• Ensure appropriate information sharing agreements are in place for stakeholders.</li><li>• Develop a plan for new user training and refreshers for staff.</li><li>• Conduct training as necessary.</li></ul>
To conduct surveillance for waterborne illness and drinking water advisories.	<ul style="list-style-type: none"><li>• Identify waterborne diseases on the list of reportable diseases under the <i>Reporting and Disease Control Regulations</i> of the <i>Public Health Act</i>.</li><li>• Track all Drinking Water Advisories.</li><li>• Prepare an annual report on waterborne illness and drinking water quality.</li></ul>
Develop a reporting system related to operational activities of drinking water systems	<ul style="list-style-type: none"><li>• Identify issues to be tracked.</li><li>• Determine types and frequency of reporting.</li><li>• Develop a communication and dissemination plan for the reports.</li></ul>





## GOAL 5

### To promote effective operations and maintenance of all drinking water systems

*Drinking water systems require the development and implementation of operations and maintenance plans to produce the required quality and quantity of drinking water from the source to the tap.*

OBJECTIVES	ACTIVITIES
To protect source water.	<ul style="list-style-type: none"><li>• Review any existing source water protection plans of each Municipality.</li><li>• Work with the Municipalities and other partners to develop and update source water protection plans.</li></ul>
To manage the operations of all drinking water treatment plants and associated infrastructure in order to produce safe drinking water.	<ul style="list-style-type: none"><li>• Ensure the operation and management plans are reviewed and updated as regulated by authorities.</li><li>• Ensure the Drinking Water Regulations Compliance Plan is updated and followed.</li></ul>
To maintain the safety of drinking water as it flows into and throughout the distribution system.	<ul style="list-style-type: none"><li>• Review and update the operation and maintenance plans and the standard operating procedures for the distribution system.</li><li>• Develop and implement appropriate notification and communication procedures.</li></ul>
To meet regulatory reporting requirements.	<ul style="list-style-type: none"><li>• Review compliance on reporting for existing water licences relating to drinking water systems.</li><li>• Review compliance for reporting with the Nunavut Water Act and Public Water Supply Regulations.</li><li>• Develop a system to promote compliance with reporting requirements.</li></ul>
To promote the use of asset management plans for drinking water infrastructure within all Municipalities.	<ul style="list-style-type: none"><li>• Support the Municipalities to develop, implement and review asset management plans for drinking water infrastructure in each community.</li></ul>





## GOAL 6

To increase public involvement, awareness, and education about drinking water

*The public must be aware of their responsibilities and understand how their activities and decisions affect drinking water.*

### OBJECTIVES

To develop a comprehensive public communication strategy on drinking water.

### ACTIVITIES

- Conduct a needs assessment to determine the level of knowledge of the public related to drinking water and the topics of concern to them.
- Develop a communication plan including the target audiences and subgroups, key messages, types of communications products, and timelines for dissemination.
- Develop communication materials.

*Pangnirtung Water Reservoir*



*View of Pangnirtung*



## Next Step

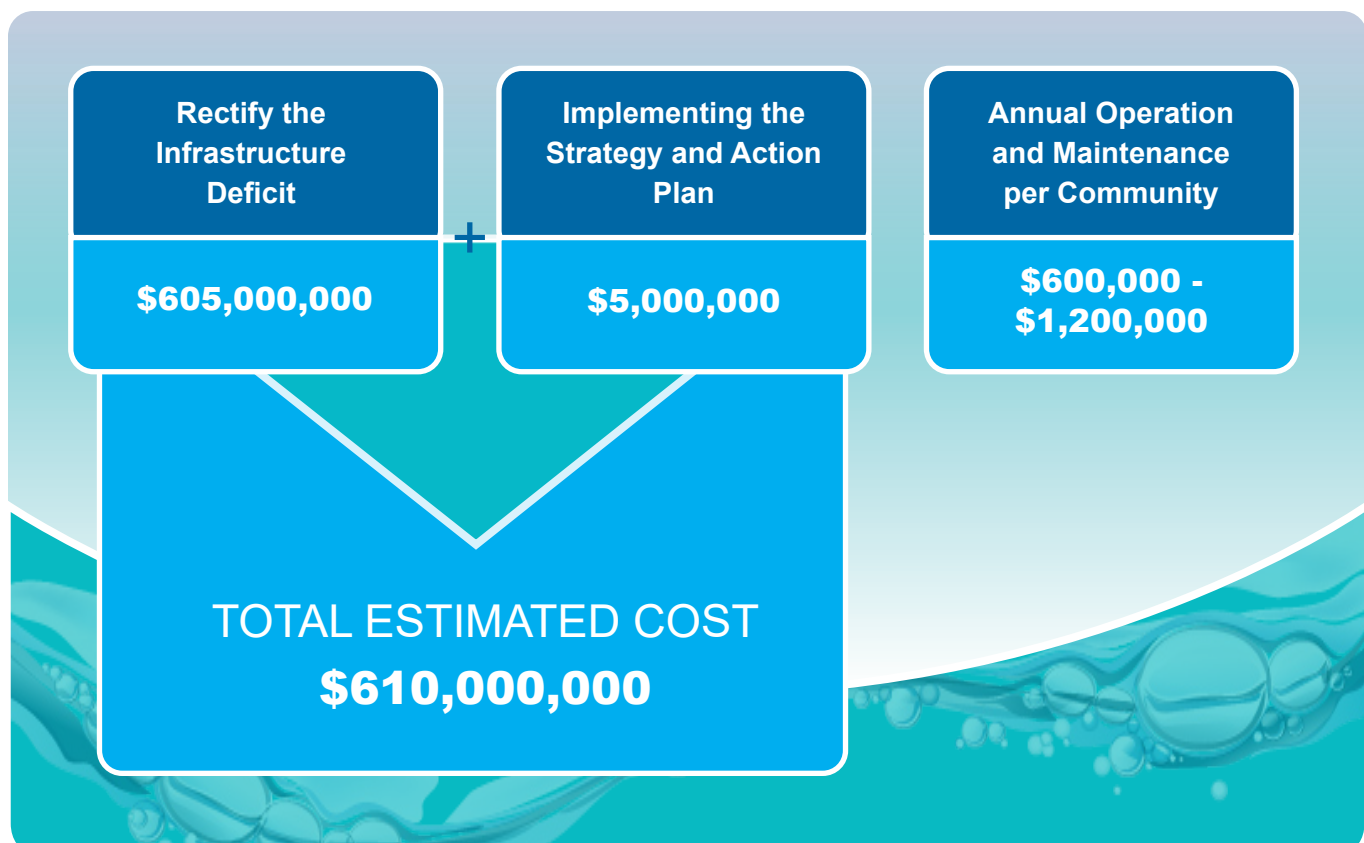
Upon approval of the Drinking Water Strategy, work will begin on developing a detailed Action Plan. The Action Plan will entail the drivers of the plan, cost for the six goals required to achieve the strategy and timeframes associated with each activity and overarching objectives.

The cost to fulfill the Drinking Water Strategy, estimated in 2022 dollars, will be: \$610,000,000, with an estimated annual operational and maintenance increase to \$600,000 - \$1,200,000 for most communities.

A high-level breakdown of total estimate:

- To rectify the infrastructure deficit – \$605,000,000.
- The increased complexity of drinking water treatment systems comes with an increase in operational and maintenance costs. Annual operation and maintenance costs for new infrastructure is estimated at \$600,000 - \$1,200,000 per water treatment plant. (excluding Rankin Inlet)
- Acquiring resources to implement the Strategy, develop and roll out the Action Plan will be an estimated cost of \$5,000,000.

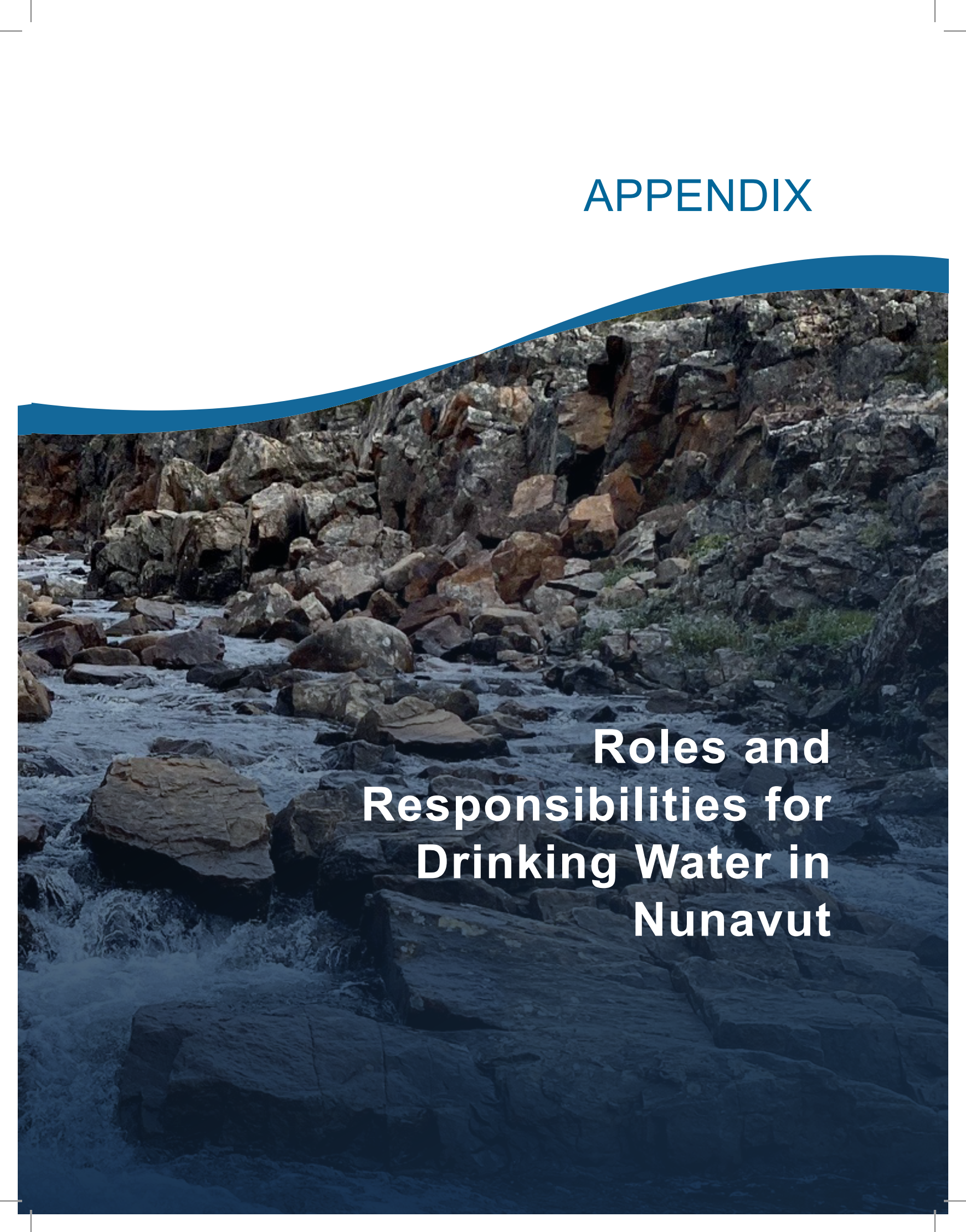
**Figure 2: Estimated cost of the Drinking Water Strategy**





*View of Apex River, taken by Joey O'Brien*

# APPENDIX



## **Roles and Responsibilities for Drinking Water in Nunavut**

## Roles and Responsibilities for Drinking Water in Nunavut

In Nunavut, responsibility for the supply of safe drinking water from the source to the tap requires collaboration of various levels of government departments.

Territorial Government	
Department of Health (DOH)	<p>Within the GN, DOH is responsible for the <a href="#">Public Health Act</a> and the Public Water Supply Regulations which address water quality and quantity.</p> <p>The <i>Public Health Act</i> requires every municipal corporation to operate a water supply system which provides enough water for current as well as future demand and for fire suppression. The operator must ensure that the water is safe to drink by operating and maintaining it in a clean and sanitary manner with all precautions needed to prevent contamination and other hazards. New regulations, which are in progress, will specify the water quality standards that must be met along with the requirements for inspection, testing and reporting.</p> <p>Environmental Health Officers perform inspections and review the operation of water treatment plants (WTPs) as well as ensure the required water-sampling programs are in place. They review all test results to ensure that the drinking water is safe and that regulatory requirements are being met. If there are any safety concerns, corrective actions are taken immediately by the water treatment operators with support from CGS, if required. If drinking water safety cannot be assured, drinking water advisories (DWAs) are put in place and the public is notified. DWAs are removed only when the CPHO is assured that drinking water quality meets the regulations, standards and policies to ensure its safety.</p>
Community and Government Services (CGS)	<p>CGS provides the infrastructure and support to municipalities to manage their drinking water program. CGS manages water treatment plants in the following 8 communities: Resolute Bay, Rankin Inlet, Whale Cove, Baker Lake, Nauyasat, Arviat, Cambridge Bay and Gjoa Haven.</p>
Department of Environment (DOE)	<p>The Department of Environment (DOE) is mandated to protect, promote, and enhance the sustainable use of Nunavut's environment and its natural and cultural resources. This is accomplished in part through maintaining healthy ecosystems, a clean environment and by educating the public.</p> <p>The authority for environmental protection arises from the <i>Environmental Protection Act</i> and subsequent regulations that outline responsibilities for the protection, promotion and enhancement of the environment, including, but not limited to, conducting research studies along with development, co-ordination and administration of policies, standards, guidelines and codes of practice.</p> <p>Through the DOE's Climate Change Secretariat, DOE is also responsible for supporting climate adaptation and mitigation measures throughout the Territory.</p>

<p>Municipalities</p>	<p>The <i>Public Health Act</i> (s. 24) requires every municipal corporation to operate and maintain a water supply system and ensure the water it supplies is safe for human consumption. Water supply systems are managed by Nunavut's 25 municipalities except where the GN still owns the water treatment plant asset. The Chief Administrative Officer (CAO) in each municipality where the municipality manages the WTP supervises the water operator, while the water operator ensures that the water is treated and disinfected based on the territorial regulations. Unless the community has a piped water system, truck drivers deliver water to buildings in the community.</p>
<p><b>Designated Inuit Organizations</b></p>	
<p><a href="#">Nunavut Tunngavik Inc. (NTI)</a></p> <p><a href="#">Kivalliq Inuit Association</a></p> <p><a href="#">Qikiqtani Inuit Association</a></p> <p><a href="#">Kitikmeot Inuit Association</a></p>	<p>Designated Inuit Organizations (DIOs) were created by the <i>Nunavut Land Claims Agreement</i> to ensure that promises made under the Nunavut Agreement are carried out. Nunavut Tunngavik Inc. (NTI) has the authority to create a Designated Inuit Organization.*</p> <p>Inuit exchanged Aboriginal title to all their traditional land in the Nunavut Settlement Area for the rights and benefits set out in the Nunavut Agreement. The management of land, water and wildlife is very important to Inuit. NTI and the regional DIOs coordinate and manage Inuit responsibilities set out in the Nunavut Agreement and ensure that the federal and territorial governments fulfill their obligations.</p> <p>* The <a href="#">Nunavut Agreement</a> Article 1 defines Designated Inuit Organization as the "Tungavik" and any organization so designated by Tungavik. Article 39 gives Tungavik the authority to create a DIO. Tungavik has been succeeded by two organizations to become Nunavut Tunngavik Incorporated (NTI). In 1971, a group of Inuit leaders formed the Inuit Tapirisat of Canada (ITC) to begin negotiating on behalf of Inuit. In 1981, ITC was succeeded by the Tungavik Federation of Nunavut (TFN), which in 1993 was succeeded by Nunavut Tunngavik Inc which is a federally incorporated organization.</p>

## Institutions of Public Government

### Nunavut Water Board (NWB)

The NWB regulates the water licences for the communities, focusing on water withdrawal or waste deposited by the municipality that might compromise the water source from an environmental perspective.

*The Nunavut Agreement and Nunavut Waters and Nunavut Surface Rights Tribunal Act* establish a Nunavut Water Board (NWB), which has responsibilities and powers over the regulation and use of water in the Nunavut Settlement Area.

The [Nunavut Agreement](#) Articles 10 and 13 provide for water management and establishes the Nunavut Water Board. Article 3 provides arbitration power to the Nunavut Water Board with respect to compensation to a Designated Inuit Organization if necessary.

The governance structure of the Nunavut Water Board is set out in the federal [Nunavut Waters and Nunavut Surface Rights Tribunal Act](#). Section 14 establishes the Board and Section 35 provides the authority for the Board to issue licenses. The Minister of Northern Affairs is responsible for enforcement as per section 85 of the Act.

The Nunavut Agreement recognizes two distinct types of monitoring: project monitoring and general monitoring. Project monitoring can result from a Nunavut Impact Review Board (NIRB) or NWB water use licencing decision and may require the licensee to undertake specific monitoring programs. General monitoring addresses information on the long-term state and health of the ecosystem and socio-economic environment in the Nunavut Settlement Area. It should be noted that the NWB only monitors the quantity of drinking water removed – there is no enforceable chemical/bacteriological monitoring requirement for municipal licences (done for waste disposal).

The types of licenses for water extraction are set out in Schedule II under the [Nunavut Water Regulations](#) made pursuant to the *Nunavut Land Claims Agreement Act* and *Nunavut Waters and Nunavut Surface Rights Tribunal Act*.

Schedule II contains the License Criteria for water extraction as follows:

- No license needed if water use is less than 50 m cubed per day
- Type B license needed if water use is 50 m cubed to 300 m cubed per day
- Type A license needed if water use is more than 300 m cubed per day

Enforcement of licenses is the responsibility of the Minister of Northern Affairs, at **Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)**.

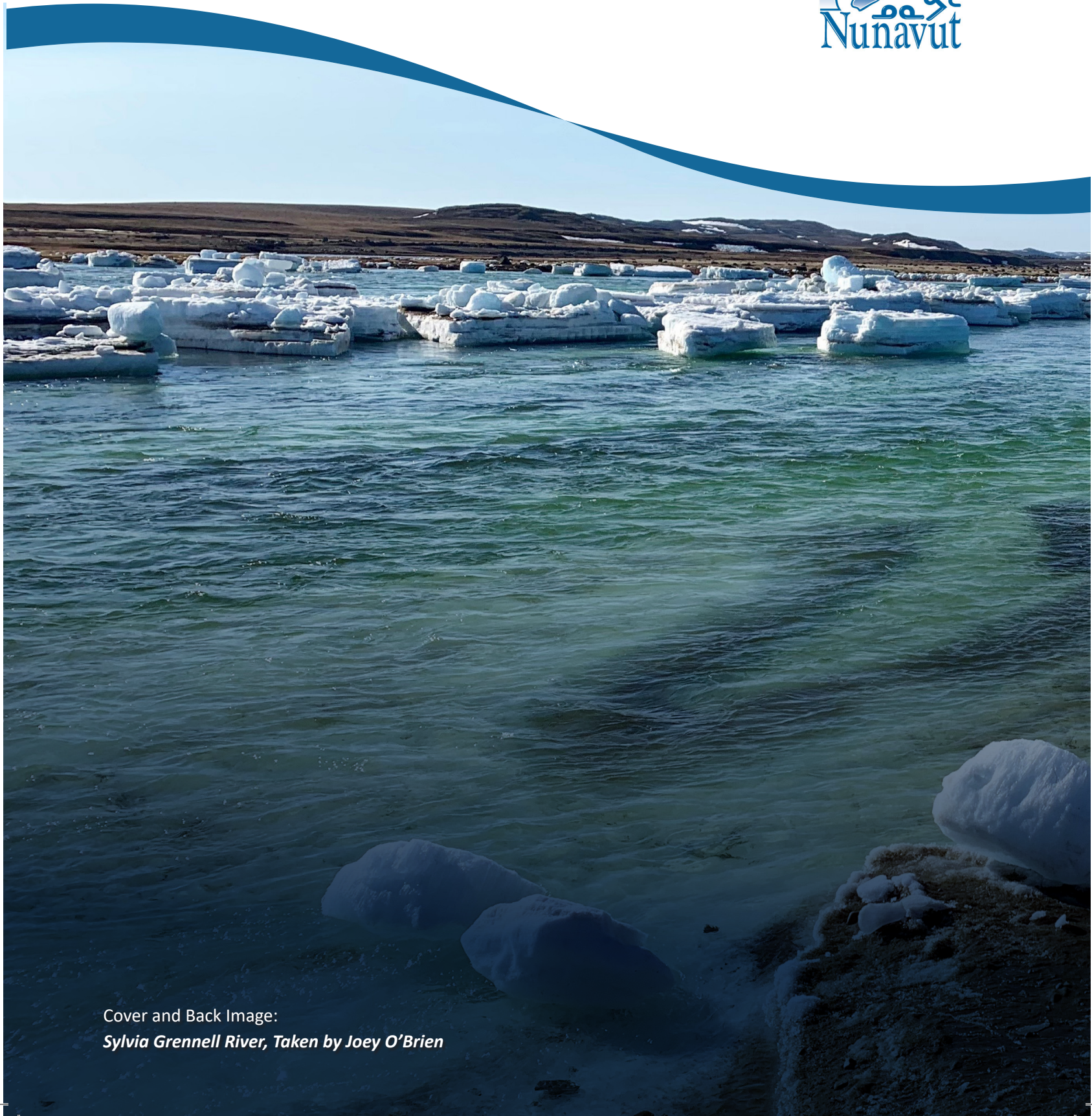


Nunavut Planning Commission	<p>The Nunavut Planning Commission is an institution of public government and acts as the single point of entry for land use projects. The Commission works with the Nunavut Water Board to assess land use projects that may impact the quantity and quality of flow of water.</p> <p>The <a href="#">Nunavut Agreement</a> Articles 10 and 11 provide for land use planning and establishes the Nunavut Planning Commission.</p> <p>The authority and governance structure of the Commission are set out in the federal <a href="#">Nunavut Planning and Project Assessment Act</a>.</p>
Nunavut Impact Review Board (NIRB)	<p>The Nunavut Impact Review Board (NIRB) is an institution of public government with the mandate to assess the impact of proposed development projects. The Nunavut Water Board works with NIRB to assess projects that may impact the use of water.</p> <p>The <a href="#">Nunavut Agreement</a> Articles 10 and 12 provide for land use planning and establishes the Nunavut Impact Review Board.</p> <p>The authority and governance structure of NIRB are set out in the federal <a href="#">Nunavut Planning and Project Assessment Act</a>.</p>
<b>Federal Government</b>	
Health Canada (HC)	<p>HC, in collaboration with provinces and territories, develops <a href="#">Guidelines for Canadian Drinking Water Quality</a> (GCDWQ). These Guidelines set important quality criteria based on the best available science and are updated regularly.</p>
Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	<p>Source protection is regulated by Crown-Indigenous Relations and Northern Affairs Canada and Environment and Climate Change Canada.</p> <p>The Minister of Northern Affairs is responsible for enforcement of licenses issued by the Nunavut Water Board. This enforcement authority is set out in section 85 of the federal <a href="#">Nunavut Waters and Nunavut Surface Rights Tribunal Act</a> .</p>
Environment and Climate Change Canada (ECCC)	<p>Source protection is regulated by Crown-Indigenous Relations and Northern Affairs Canada and Environment and Climate Change Canada.</p>
Fisheries and Oceans Canada	<p>Projects (development proposals) near the water must be assessed for impact on fish and their aquatic environment. Water extraction is included as an activity that must be assessed.</p>

## Endnotes

- <sup>1</sup> Drinking-water Fact Sheet, World Health Organization, 14 June 2019, <https://www.who.int/news-room/fact-sheets/detail/drinking-water>
- <sup>2</sup> <https://www.who.int/news-room/fact-sheets/detail/drinking-water>
- <sup>3</sup> “Goal Six Clean Water and Sanitation”, United Nations Development Programme, accessed 01/03/2022, <https://www.undp.org/sustainable-development-goals#clean-water-and-sanitation>
- <sup>4</sup> “Water, Sanitation and hygiene (WASH), World Health Organization, 01/03/2022, <https://www.who.int/health-topics/water-sanitation-and-hygiene-wash>
- <sup>5</sup> “Guidance for Providing Safe Drinking Water in Areas of Federal Jurisdiction Version 2”, Health Canada, May 2013, <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-providing-safe-drinking-water-areas-federal-jurisdiction-version-2.html>
- <sup>6</sup> “From Source to Tap. The multi-barrier approach to safe drinking water”, The Federal-Provincial-Territorial Committee on Drinking Water , May 16, 2002, <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/source-multi-barrier-approach-safe-drinking-water-health-canada.html> (see figure 1: the multi-barrier Approach).
- <sup>7</sup> “From Source to Tap. The multi-barrier approach to safe drinking water”, The Federal-Provincial-Territorial Committee on Drinking Water , May 16, 2002, <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/source-multi-barrier-approach-safe-drinking-water-health-canada.html>





Cover and Back Image:  
*Sylvia Grennell River, Taken by Joey O'Brien*