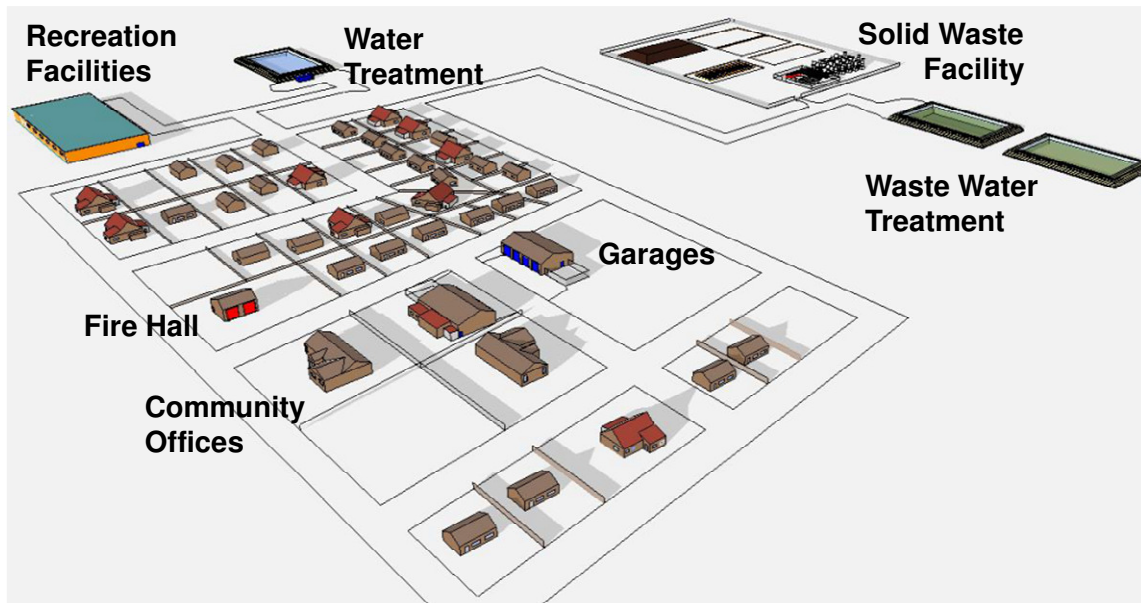
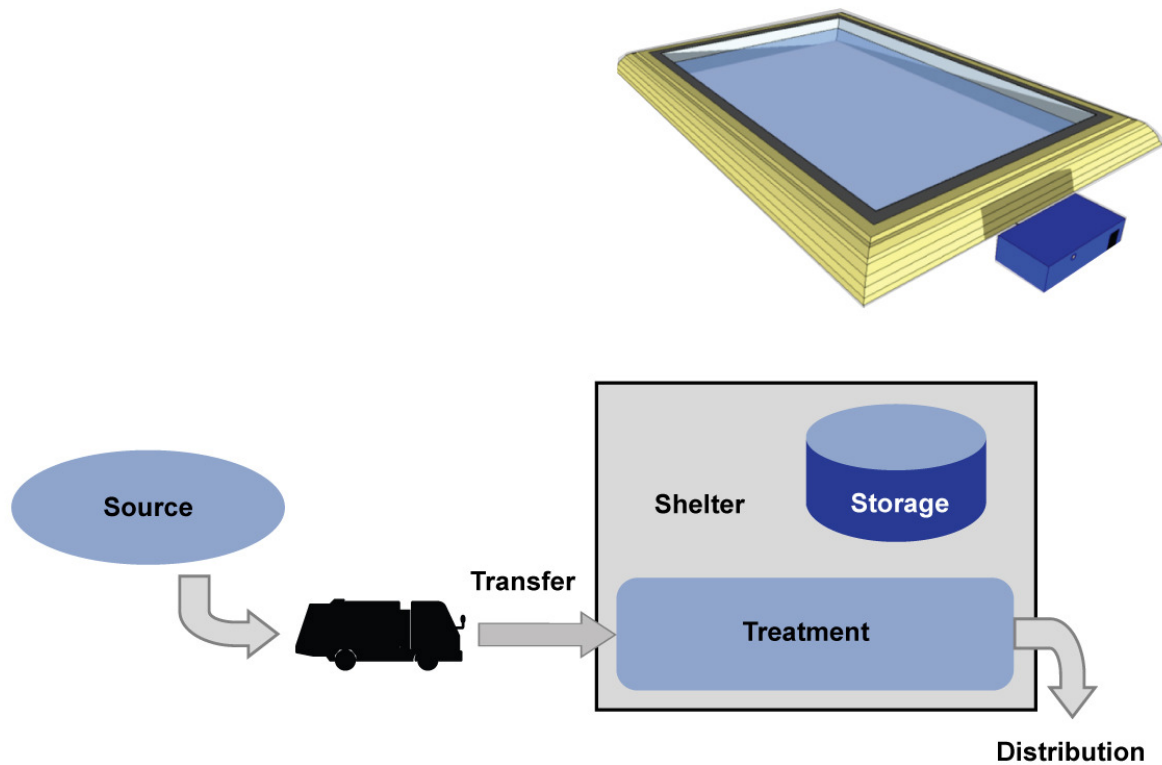


5 Community Infrastructure Standards & Criteria



5.1 Water Treatment Facilities



WATER TREATMENT AND DISTRIBUTION

Program Statement

Water is vital to the social, cultural and economic well-being of all people and communities of Nunavut. All communities require a water treatment facility and potable water distribution system, and a water supply for fire fighting.

General Description of Activities

Lakes and rivers are the typical water sources in Nunavut. In most Nunavut communities, water is distributed by truck to individual buildings and residences. Providing potable drinking water, and raw or potable water for firefighting, to a community involves:

- Transferring water from source
- Treating water
- Storing water (raw or treated)
- Sheltering equipment and staff
- Distributing water

Goals/Principles

- ⇒ Treat and supply sufficient and safe potable water from a reliable water source.
- ⇒ Provide a reliable and efficient system for the distribution of potable water.
- ⇒ Provide a sufficient and reliable source of water for fire fighting.

Regulations, Codes and Guidelines

The design and construction of all water treatment and distribution systems are governed by the most current edition of the following:

- Nunavut Waters and Nunavut Surface Rights Tribunal Act
- Public Health Act
- Guidelines for Canadian Drinking Water Quality (GCDWQ), Health Canada
- Cold Regions Utilities Monograph, Latest Edition
- National Fire Protection Act
- National Building Code of Canada and National Fire Code of Canada
- Government of Nunavut Good Building Practices Guideline

Design and Capacity Measures

One water treatment plant is typically adequate for communities in Nunavut and should be located adjacent to the raw water source.

The **type** of water treatment system suitable for a given community is determined primarily by the **raw water quality**:

- Systems made up of the components identified in these Standards and Criteria are suitable for capital planning purposes
- The exact type of water treatment plant will need to be confirmed at the time of detailed design

The **capacity** of a water treatment system to produce potable water is determined primarily by **population**:

- Systems should be capable of meeting water use calculated using historical consumption rates or estimated minimum consumption rates of:
 - 90 litres per capita per day (Lpcd) for trucked water supply
 - 225 Lpcd, for piped distribution systems
- Water treatment systems should be designed to meet the water use needs of the community for a 20 year horizon.

Water storage tanks or reservoirs may be needed to make sure that adequate water is available at all times for **firefighting**, consumption, or plant operation. The **amount** of water storage will be determined by the Office of the Fire Marshal, the Environmental Health Officer, or the plant designer. The exact area and volume cannot be known until a specific project is in the design phase. For planning purposes only a minimum volume can be estimated considering a minimum of 60,000 litres must be available for fire fighting.

The **area** of the site and building enclosure will depend on the type of treatment system, the required capacity, and space needed for water storage.

Distribution is typically by truck in Nunavut communities. Trucks and other mobile equipment standards are outside the scope of this S&C. Where a piped systems is feasible, the **length** of pipes and **number** of pumping stations necessary will depend on lot sizes, the number of buildings to be serviced and topography. For planning purposes only, the length of pipe needed can be estimated for by allowing a base of 500 m plus 40 lineal meters per building to be serviced.

Water treatment Plants are **not suitable for complexing** with any other facility type.

Components and Criteria

WATER TRANSFER FROM SOURCE		
Component	Criteria	Description and Allowances
Water Intake	All communities with surface water (lake or river) as a water source.	<ul style="list-style-type: none"> Intake screen, pump and pipe (inside a heat traced casing) from source to a water treatment plant or reservoir.
Seasonal fill line	Where a raw water reservoir is required.	<ul style="list-style-type: none"> Line from source to reservoir that can be hooked up seasonally as required, and may be insulated
Transmission line	Only where: <ul style="list-style-type: none"> the raw water source is located at a distance > 3.2 km from the WTP a reservoir system is not feasible; and a seasonal fill line is not feasible 	<ul style="list-style-type: none"> Insulated line (water is heated and recirculated) that takes water from the raw water source to the water treatment plant Pump (may be a pumphouse) This type of system requires a high level of maintenance and is vulnerable to malfunction. <p>Allow line length equal to distance between source and reservoir.</p>

WATER TREATMENT PROCESS		
Component	Criteria	Description and Allowances
Disinfection	All communities, including where the raw water source quality is deemed <i>pristine</i> by the Environmental Health Officer (EHO).	<p>Disinfection typically includes but is not limited to chlorination (calcium or sodium hypochlorite) and/or ultraviolet (UV) radiation</p> <p>Space allowance: 4 m²</p>

WATER TREATMENT PROCESS		
Component	Criteria	Description and Allowances
Primary Filtration	<ul style="list-style-type: none"> EHO determines that raw water source quality can meet GCDWQ with minimal filtration. 	<p>In addition to disinfection typically includes but is not limited to:</p> <ul style="list-style-type: none"> Reusable filter(s); Series of cartridge filters Basic monitoring and alarms without plant optimization or automatic shutdown capacity. <p>Space Allowance: 10 m²</p>
Direct Filtration	<ul style="list-style-type: none"> EHO determines direct filtration will be required to meet GCDWQ. Typically water has low to moderate turbidity levels and low levels of iron, manganese and colour 	<p>Typically includes, but is not limited to the following:</p> <ul style="list-style-type: none"> Pre-screening; Slow sand, rapid sand, multi-media pressure and/or greensand filtration; and, Remote shutdown controls <p>Space Allowance: 16 m²</p>
Chemically Assisted Filtration	<ul style="list-style-type: none"> EHO determines chemically assisted filtration will be required to meet GCDWQ. typically water with high turbidity levels and/or high levels iron, manganese and colour and/or other parameters that are above GCDWQ limits 	<p>Typically includes but is not limited to the following:</p> <ul style="list-style-type: none"> Pre-screening; Mixing chamber; Flocculation chamber; Sedimentation tank; Multi-media filter; and, Alarms and shutdowns with partial remote operation. <p>Space Allowance: 25 m²</p>
Advanced Water Treatment Process	<ul style="list-style-type: none"> EHO determines that an advanced treatment process will be required to meet GCDWQ Typically water with very high turbidity levels and/or high levels of iron, manganese and colour, and contain high levels of organic compounds 	<p>Typically includes but is not limited to the following:</p> <ul style="list-style-type: none"> Pre-treatment; Further chemical treatment; and, Alarms and shutdowns with complete remote operation <p>Space Allowance: 35 m²</p>

WATER STORAGE		
Component	Criteria	Description and Allowances
Raw Water Reservoir	<ul style="list-style-type: none"> A viable water source is not available year round 	<ul style="list-style-type: none"> An exterior constructed basin to store raw water that will then be pumped from the reservoir into the water treatment plant as required. Volume required will vary depending on the time period that the water supply is not available. <p>Planning Allowance: minimum 2 ha site area/1,000 population</p>
Fire Fighting Water Storage	<ul style="list-style-type: none"> The fire flow rate required by the OFM cannot be met 	<ul style="list-style-type: none"> An interior or exterior holding tank Minimum volume as directed by the Fire Marshal but typically: <ul style="list-style-type: none"> 60,000 L for trucked services and piped services <p>Planning Allowance: 20 m² site or building area</p>
Emergency Storage	<ul style="list-style-type: none"> The raw water source or water treatment facility is located > 3.2 km from the community (rarely required) 	<ul style="list-style-type: none"> An interior or exterior tank holding a water supply that can be used in the event of a storm or shutdown of the treatment process. Minimum volume is not standard but determined by authorities May be combined with fire water storage. <p>Planning Allowance: Minimum 16 m² site area/1,000 population trucked services or 40 m² site area/1,000 population for piped services</p>
Equalization Water Storage	<ul style="list-style-type: none"> Required by authorities; or Needed to cover short term demand peaks or planned shut downs Note that this requirement is rare in Nunavut 	<ul style="list-style-type: none"> An interior water holding tank Minimum volume is not standard but determined by authorities May be combined with plant use storage. <p>Planning Allowance: Minimum 4 m² building area for trucked services or 45 m² building area/1,000 population for piped services</p>
Plant Use Storage	<ul style="list-style-type: none"> Direct, chemically assisted or advanced filtration is required 	<p>An interior tank holding water used to backwash filters may be combined with equalization water.</p> <p>Planning Allowance: 5 m² building area</p>

SHELTER		
Component	Criteria	Description and Allowances
Process Area	All water treatment facilities.	Space Allowance: Sum of areas allocated for water treatment components plus 20%
Backup Power System	All water treatment facilities	A generator, typically diesel, capable of providing power to all plant components unless otherwise stated by authorities. Space Allowance: 15 m ²
Heating System	All water treatment facilities.	Typically includes furnace or boiler, day tank, ducts, vents, piping and instrumentation. Space Allowance: 10 m ²
Chemical Storage Area	All water treatment facilities	Area inside the plant, or a separate shelter on the same site, to house accommodate storage of the chemical supply for a minimum of three (3) months (could be one year). The space required may be double if chemical assisted treatment. Space Allowance: 6 m ²
Interior Water Storage Tanks	Interior storage tanks will be provided for water storage components.	Interior storage tanks and associated piping and instrumentation. Space Allowance: Sum of areas allocated for interior water storage components plus 20%
Office/Laboratory Area	All water treatment facilities.	An area with a small laboratory bench and supply where the water treatment plant operator can complete daily water quality testing. Space Allowance: 6 m ²
Washroom	Only water treatment facilities that have a Type 3 or Type 4 water treatment process.	Washroom size will meet the requirements for type of occupancy and water treatment plant class in accordance with NBC. Space Allowance: 4 m ²

SITE REQUIREMENTS		
Component	Criteria	Description and Allowances
Parking	All water treatment facilities	<ul style="list-style-type: none"> Parking for 2 staff vehicles Space Allowance: 25 m ²
Vehicle Access	All water treatment facilities	<ul style="list-style-type: none"> Pull through driveway Truck turn around pad Space Allowance: 400 m ²
Outdoor Fuel Storage	All water treatment facilities.	<ul style="list-style-type: none"> Outdoor fuel storage tank in a chain link fence enclosure Space Allowance: 25 m ²

WATER DISTRIBUTION		
Component	Criteria	Description and Allowances
Trucked Distribution	Trucked systems are the preferred option in communities throughout Nunavut.	A truck fill arm and metering system are provided to support this approach to distribution. (Water trucks are not covered by this S&C).
Piped Distribution	<p>A piped distribution system may be considered for a portion of, or the entire community only if:</p> <ul style="list-style-type: none"> Topography and soil conditions allow for either a buried or above-ground (utilidor) piped system. Community is developed with a minimum dwelling density of ≤ 12 units per net hectare and average lot frontage ≤ 30 m The water supply and treatment system are capable of supporting the increased water use attributed to piped systems. Life Cycle Costs (LCC) can be shown to be equal or less than trucked systems. 	<p>A piped network to distribute potable/drinking water from the water treatment plant to buildings and homes in the community typically includes:</p> <ul style="list-style-type: none"> Pumping stations Buried pipes located in the road ROW with branches to each property to be serviced by pipe. A heating and/or recirculation system to keep water from freezing. A monitoring system to detect freezing conditions or leaks. Fire hydrants

Indicators

Indicator information needed to determine if existing community water treatment systems meet **quantitative** standards will include:

- Community population (current and 20 year projection)
- Community potable consumption records
- Treatment system capacity

Indicator information needed to determine if existing community water treatment systems meet **qualitative** standards will include:

- Age of facilities (as a general indicator of condition and remaining service life)
- Water quality test results
- Treatment system type (plant classification)
- Distribution type (trucked or piped)

Change

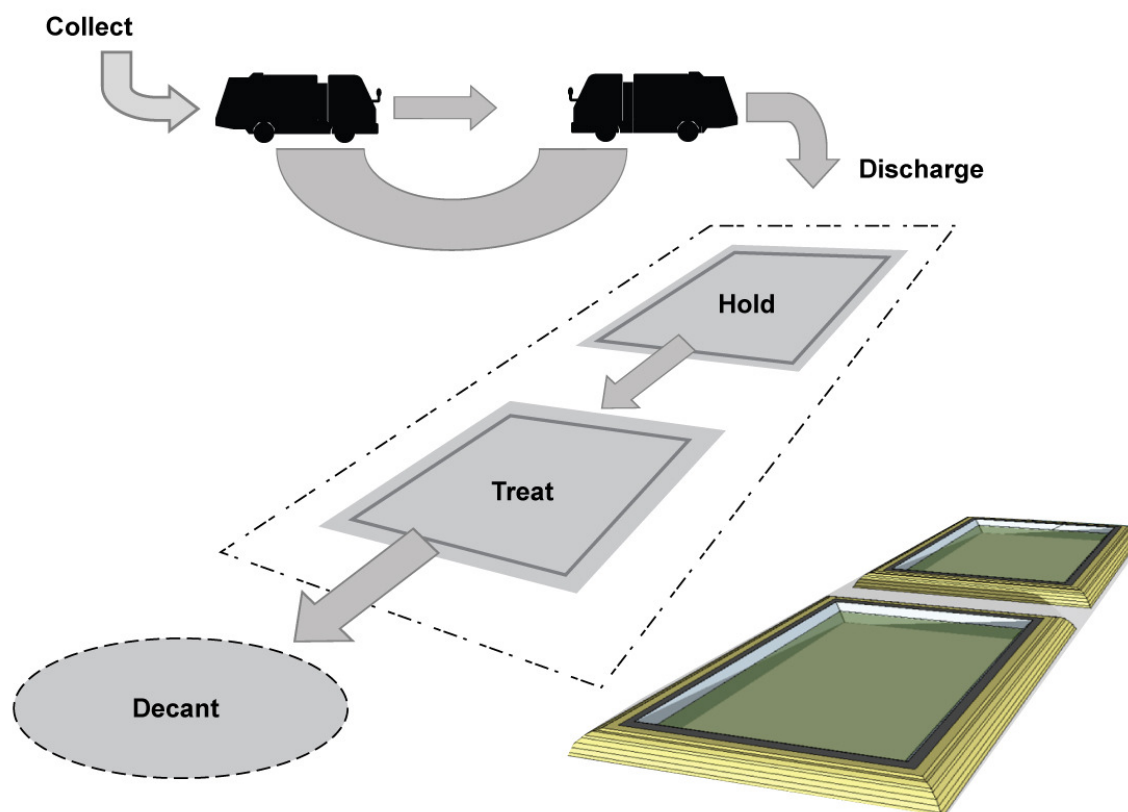
Regulatory changes, and unexpected increases to population can impact the ability of water treatment systems to provide adequate and acceptable water.

Piped distribution systems will be susceptible to changes to permafrost conditions, whether due to climate change or changes to surface drainage patterns.

Additional Information

Typically a pre-engineered, insulated building shell is used for Water Treatment Plant, with access doors for operators and equipment replacement.

5.2 Wastewater Treatment Facilities



WASTEWATER TREATMENT FACILITIES

Program Statement

Wastewater treatment is a basic necessity for the health and well-being of a community. All communities require facilities to collect, hold and treat raw sewage waste.

General Description of Activities

Wastewater (also called sewage) is typically collected by truck from individual buildings in Nunavut communities. It is then pumped into a containment facility where it can be treated to meet the criteria stated in the community's water licence. Once treated it can be released into the environment. The management of community wastewater includes:

- Collection and discharge
- Holding
- Treatment
- Decanting

Goals/Principles

- ⇒ Provide a reliable and efficient system for the collection of sewage
- ⇒ Treat and dispose of community's waste water

Technical Regulations, Codes and Guidelines

- Canada-wide Strategy for the Management of Municipal Wastewater Effluent
- Wastewater Systems Effluent Regulations – Government of Canada
- Safety Act
- Guidelines for Spill Contingency Planning
- Canadian Environmental Assessment Act
- Capital Facilities and Maintenance, Water and Sewage Systems (INAC/AAND)
- Government of the Northwest Territories Good Engineering Practice for Northern Water and Sewer Systems

Design and Capacity Measures

One wastewater treatment facility is typically adequate for communities in Nunavut.

Collection of wastewater is typically by truck in Nunavut communities. Trucks and other mobile equipment standards are outside the scope of this S&C.

Where a piped system is feasible, the **length** of pipes and **number** of pumping stations required will depend on lot sizes, the number of buildings to be serviced and topography. For planning purposes only, an estimated length of pipe calculated by allowing a base of 500 m plus 40 lineal meters per building to be serviced.

Typically wastewater treatment systems should be located a minimum of 500 m from any area of the community where development is planned within 20 years, however suitable locations may be several kilometres away. The **location** of the wastewater treatment system will determine the **length of road** needed to provide access from the developed area of the community. The cost of road construction may need to be considered in the project budget.

The **capacity** of wastewater treatment systems is determined primarily by **rates of water use** (which is in turn determined by **population**).

- Wastewater treatment systems should be capable of treating the annual volume of water used
- Wastewater treatment systems should be designed to meet the needs of the community for a 20 year horizon.

The **type** of wastewater treatment system suitable for a given community is determined primarily by available **land area**, **topography** and **soil conditions**.

- One of three different types of Wastewater Treatment System will typically be suitable for a given community
- The type of wastewater treatment system determined using these Standards and Criteria is suitable for capital planning purposes, however the exact type of treatment system will need to be confirmed at the time of detailed design.

For planning purposes only, the **area** needed for a sewage lagoon system can be estimated for by allowing 20,000 m² per 1,000 population. The exact area and volume needed for an effective treatment cycle will need to take into consideration climate and regulatory requirements but these will not be known until a project is in the design phase.

Sewage treatment facilities may be **co-located** with solid waste facilities, and regulatory setbacks may overlap.

Components and Criteria

COLLECTION and DISCHARGE		
Component	Criteria	Description and Allowances
Trucked Sewage Collection and Discharge Facilities	Trucked systems are the preferred option in communities throughout Nunavut.	<p>Sewage trucks (not covered by this S&C) are used to collect wastewater from buildings and homes in the community. Facilities include:</p> <ul style="list-style-type: none"> • An access road that allows trucks to reach the treatment system • Discharge ramp, and pipe or pump out connection
Piped Sewage Collection System	<p>Used only where:</p> <ul style="list-style-type: none"> ▪ Topography and soil conditions allow for either a buried or above-ground (utilidor) piped system. ▪ Lot layout and planned growth patterns are suitable and: <ul style="list-style-type: none"> ▪ Min. Dwelling Density: ≤ 12 units per net hectare ▪ Average Lot Frontage: ≤ 30 m ▪ The sewage treatment facility is close enough to be reached by piped outfall. ▪ The treatment system is capable of managing the increased volumes attributed to piped systems. ▪ Life Cycle Costs (LCC) can be shown to be equal or less than trucked systems. 	<p>Pipes may be buried or installed above-ground (utilidor) and will include:</p> <ul style="list-style-type: none"> • Insulated pipes • Pumps • Access points (manholes)

TREATMENT		
Component Options	Criteria	Description and Allowances
Sewage Treatment Lagoon(s)	<ul style="list-style-type: none"> An area with suitable conditions can be identified outside of areas planned for future community development. Space is available for the area of all lagoons needed to treat effluent. 	<p>Lagoon systems typically consist of:</p> <ul style="list-style-type: none"> Primary and secondary treatment cells constructed using berms and liners. Perimeter fencing provided to enclose lagoons and perimeter access routes. <p>Planning Allowance 20,000 m² /1,000 population</p>
Wetland Treatment Area	<ul style="list-style-type: none"> A naturally occurring wetland can be identified that is of adequate size to treat effluent. Space is available for a primary lagoon adjacent to the wetland. 	<ul style="list-style-type: none"> Natural or constructed wetlands can take the place of a secondary treatment cell. Fencing installed to indicate wetland area.
Mechanical Sewage Treatment Facility	<ul style="list-style-type: none"> The construction of a lagoon is impractical due to space or life cycle costs of other options. 	<p>Treatment systems consist of:</p> <ul style="list-style-type: none"> Building enclosure Wastewater treatment system Sludge removal bins or packages <p>Planning Allowance: 100 m2</p>

DISCHARGE		
Components	Criteria	Description and Allowances
Monitoring and Decant Structures	Community uses sewage treatment lagoons or wetland systems.	<ul style="list-style-type: none"> Decanting is typically done using portable pumps and hoses. Monitoring wells and sample collection points are located within the site
Sludge Holding Area	Community has a mechanical sewage treatment plants.	<ul style="list-style-type: none"> Pit or area where bins can be collected for bags of sludge stacked. May be integrated with wastewater treatment facility or located at SWF <p>Planning allowance: 10 m2</p>

OTHER SITE REQUIREMENTS		
Component	Criteria	Description and Allowances
Parking	All wastewater treatment facilities must provide areas for vehicle parking.	<ul style="list-style-type: none"> Parking for a minimum of two vehicles <p>Planning Allowance: 40 m2</p>
Vehicle Access Roads	All wastewater treatment facilities must provide roads for service vehicle access.	<ul style="list-style-type: none"> Service truck access route from the main road Pull through or turn around area <p>Planning Allowance: 10% of treatment lagoon area</p>
Fencing	All wastewater treatment facilities must be fenced.	<ul style="list-style-type: none"> Chain link fencing around the perimeter of the treatment lagoons area, with a lockable access gate Chain link fencing indicating the extent of wetland areas used as part of treatment system.

Indicators

Indicator information needed to determine if the wastewater treatment system meets **quantitative** standards will include:

- Community population
- Community sewage disposal records
- Treatment capacity

Indicator information needed to determine if the wastewater treatment system meets **qualitative** standards will include:

- Wastewater effluent test results

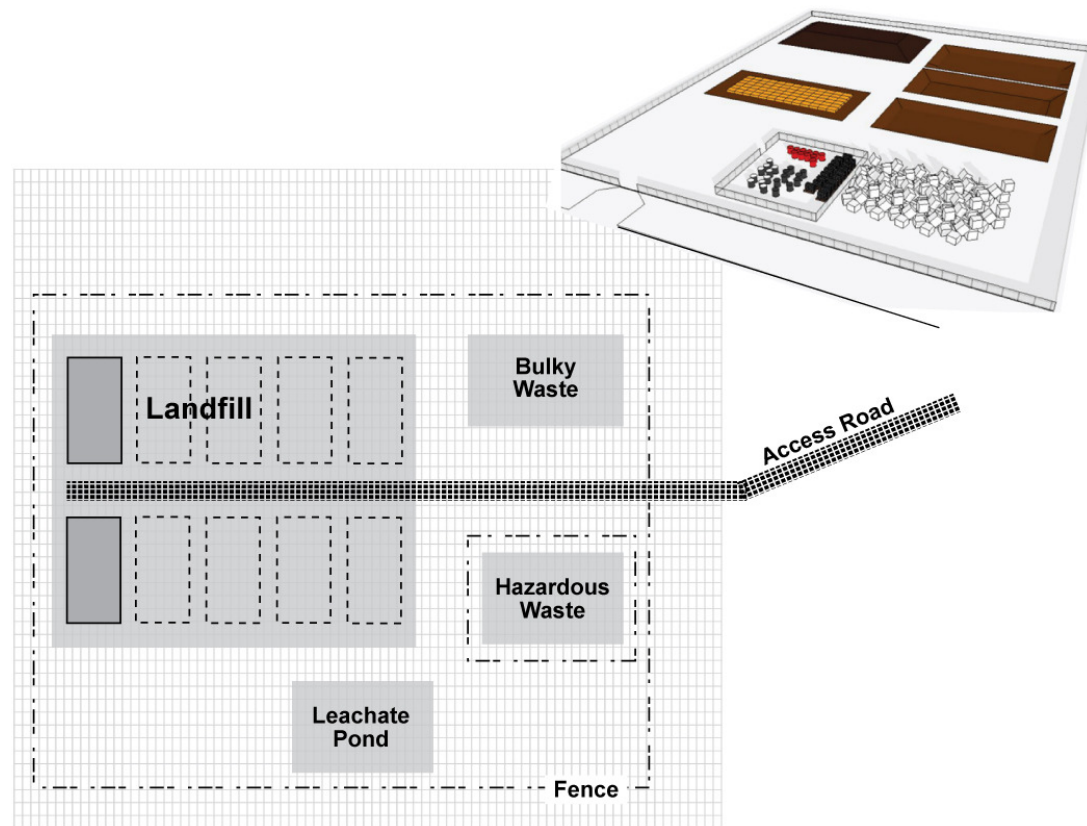
Change

Criteria for decanting (discharge) of sewage effluent into the environment will become more stringent in the foreseeable future. The Canada-wide Strategy for the Management of Municipal Wastewater Effluent, developed by the Canadian Council of Ministers of the Environment (CCME), will determine the criteria for municipal sewage facilities in Canada's Far North. New sewage facilities should be developed with this in mind. New lagoons must be either designed to meet the expected new criteria or designed so that future modifications will be possible in order to meet future criteria.

Additional Information

A Community Water and Sanitation Services Study is being conducted by Dalhousie University that will review existing systems and recommend best practices.

5.3 Solid Waste Facilities



SOLID WASTE FACILITIES

Program Statement

Community governments are responsible for managing waste produced in the community. Solid waste facilities (SWF) are needed to allow for the safe disposal of household and other waste materials. Proper waste management is important to the health and safety of people and the environment.

General Description of Activities

Residential and commercial waste is collected and managed by the community. Waste generated by the community can be collected for segregation, disposal and/or holding at the solid waste facility. Landfilling is the primary on-site disposal method used in Nunavut communities. Off-site disposal methods are less prevalent. Community waste management involves:

- Collecting and sorting waste
- Storing waste that will be disposed of off site
- Disposing of waste in designated areas in the SWF

Goals/Principles

- ⇒ Control adverse impacts to the environment, wildlife and human health
- ⇒ Maximize the capacity and operating life of the solid waste facility

Regulations, Codes and Guidelines

- Solid Waste Best Management Guide, developed for the Government of Nunavut in 2011
- Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the NWT
- Cold Regions Utilities Monograph, Latest Edition
- Environmental Guideline for the Burning and Incineration of Solid Waste – Government of Nunavut
- Environmental Guideline for General Management of Hazardous Waste – Government of Nunavut
- Guidelines for Spill Contingency Planning
- Canadian Environmental Assessment Act
- Aeronautics Act

Design and Capacity Measures

One solid waste facility is typically adequate for communities in Nunavut with populations of less than 5,000 people.

The **capacity** of a solid waste facility suitable for a given community is determined primarily by **population projections**:

- Solid waste sites should be designed to meet the waste disposal needs of the community for at least a 20 year planning horizon using the latest population projections issued by the Nunavut Bureau of Statistics.
- Landfill areas should be capable of holding **household waste** generated at a rate of 0.023 m³ per capita per day as recommended in the “Solid Waste Best Management Guide” prepared for the Government of Nunavut in March, 2011

The **type** of solid waste facility suitable for a given community is determined by **soil conditions**, and **topography**.

One of three optional landfill methods is typically suitable for communities with populations less than 5,000 people.

Typically SWF should be located a minimum of 500 m from any area of the community where development is planned within 20 years, however suitable locations may be several kilometres away. The **location** of the wastewater treatment system will determine the **length of road** needed to provide access from the developed area of the community. The cost of road construction may need to be considered in the project budget.

The total **land area** needed for a SWF will need to be confirmed as part of a site specific assessment during the project design stage. However, for planning purposes it is possible to estimate an approximate area for each component of the SWF. The largest area of the SWF will be the landfill area, which can range from 6 to 10 ha/1,000 population. Operation and maintenance practices can reduce the footprint of the landfill area by up to 60%. Planning allowances for other components such as, bulky waste areas, hazardous waste areas, leachate ponds and roads are also needed to estimate the total area of the SWF.

Solid waste facilities may be **co-located** with sewage treatment facilities, and regulatory setbacks may overlap.

Components and Criteria

GENERAL SITE REQUIREMENTS		
Components	Criteria	Description and Allowances
Internal Access Road	<ul style="list-style-type: none"> All community solid waste facilities 	<ul style="list-style-type: none"> Roads designed to allow mobile equipment used to manage solid waste to enter and move around the site safely and efficiently. <p>Planning Allowance: 10% of Total area of all other components.</p>
Fencing	<ul style="list-style-type: none"> All community solid waste facilities 	<ul style="list-style-type: none"> Secure fencing surrounding the site with a lockable gate to limit public and wildlife access. Litter fences to collect windblown waste <p>Planning Allowance: perimeter of site area</p>
Leachate Collection Pond	<ul style="list-style-type: none"> All community solid waste facilities 	<ul style="list-style-type: none"> A lined pond where <i>leachate</i> can be collected so that it can be treated before discharging it into the environment. <p>Planning allowance: 0.1 ha (1,000 m²)</p>
Sludge Holding Area	<ul style="list-style-type: none"> Communities with mechanical sewage treatment systems 	<ul style="list-style-type: none"> Bagged sludge coming from the treatment plant is deposited and allowed to decompose over time. <p>Planning allowance: 0.1 ha (1,000 m²)</p>
Cover Material Stockpile	<ul style="list-style-type: none"> Communities using modified landfills 	<ul style="list-style-type: none"> Quantity of cover material required for annual operation. <p>Planning Allowance: 2% of Total area of all other components.</p>

ON SITE DISPOSAL		
Component Options	Criteria	Description and Allowances
Modified Landfill using Trench Method	<ul style="list-style-type: none"> Excavation is possible and there is low groundwater level at the site. Adequate cover material is available in the community for the proper operation of the landfill. 	<ul style="list-style-type: none"> Trenches are excavated annually where household waste can be deposited, compacted and routinely covered <p>Planning Allowance: 10 ha/1,000 people</p>
Modified Landfill using Area Method	<ul style="list-style-type: none"> The site has a naturally flat/sloping ground or it is difficult to excavate. Adequate cover material is available in the community for the proper operation of the landfill. 	<ul style="list-style-type: none"> Waste is deposited and pushed up against a berm or a natural landform, and then compacted and routinely covered <p>Planning Allowance: 6 ha/1,000 people</p>
Modified Landfill using Depression Method	<ul style="list-style-type: none"> The site has a depression or gravel pit available. Adequate cover material is available in the community for the proper operation of the landfill. 	<ul style="list-style-type: none"> Waste is deposited, compacted, and covered in the depression until it fills in the natural void <p>Planning Allowance: 6 ha/1,000 people</p>
Open Burning and Incineration	<ul style="list-style-type: none"> Space for a modified landfill area is limited Excavation is not possible. Limited cover material is available. 	<p>Open burning of paper products, paperboard packing and untreated wood wastes only.</p> <p>Planning Allowance: reduce modified landfill area by up to 10%</p>
Alternative Waste Disposal	<ul style="list-style-type: none"> Adequate cover material is not available in the community for the proper operation of a Modified Landfill Other unique circumstances make the use of a modified landfill impractical Community has waste reduction program in place 	<p>Examples could include Incineration, composting or recycling programs. Pilot projects may be undertaken, and if successful, considered for future adoption as a standard.</p> <p>Planning Allowance: reduce modified landfill area by up to 20% depending on methods used</p>

HOLDING AREAS FOR OFF SITE DISPOSAL		
Facility Type	Criteria	Description and Allowances
Hazardous Waste Area	<ul style="list-style-type: none"> All solid waste facilities 	<p>A fenced area where an annual accumulation of <i>hazardous waste</i> can be collected, segregated according to type (individual sub-areas), and safely stored. A means of containing potential leaks or leachate must be provided.</p> <p>Planning Allowance: 0.1 ha (1,000 m²)</p>
Bulky Waste Area	<ul style="list-style-type: none"> All solid waste facilities 	<p>A clearly marked area separate from the landfill and hazardous waste areas where <i>bulky waste</i> can be stored.</p> <p>Planning Allowance: 0.5 ha (5,000 m²)</p>
Salvage Area	<ul style="list-style-type: none"> Communities where a salvaging program has been approved by Council 	<p>A designated area where re-useable items can be held for a period of time before being moved into the landfill.</p> <p>Planning Allowance: 0.5 ha (5,000 m²)</p>
Contaminated Soil Farm	<ul style="list-style-type: none"> All solid waste facilities 	<p>An area where petroleum laden soils can be treated and prepared for use as cover material.</p> <p>Planning Allowance: 0.1 ha (1,000 m²)</p>

Indicators

Indicator information needed to determine whether a community solid waste site meets standards will include:

- Community population (current and 20 year projection)
- Presence and condition of individual components
- Age of facility
- Land area available
- Annual volumes of waste (annual reporting would allow volumes to be compared to design measures)

Change

Increasing concerns about environmental impacts are being reflected in new regulations. More sophisticated and costly infrastructure is required than was previously provided. Adopting practices that lessen the demand on infrastructure will help to counter-balance increasing capital costs. Practices that would reduce the land required, and extend the useful life of a landfill by as much as 10 years could include:

- Reducing waste generation
- Reusing or scavenging materials
- Composting organic materials
- Recycling waste items

Additional Information

Organic Waste Reduction

Based on waste composition studies in Nunavut and the NWT, the following table shows the estimated percentage by weight of varying waste streams.

Data Summary of Waste Composition for Six NWT/NU Communities

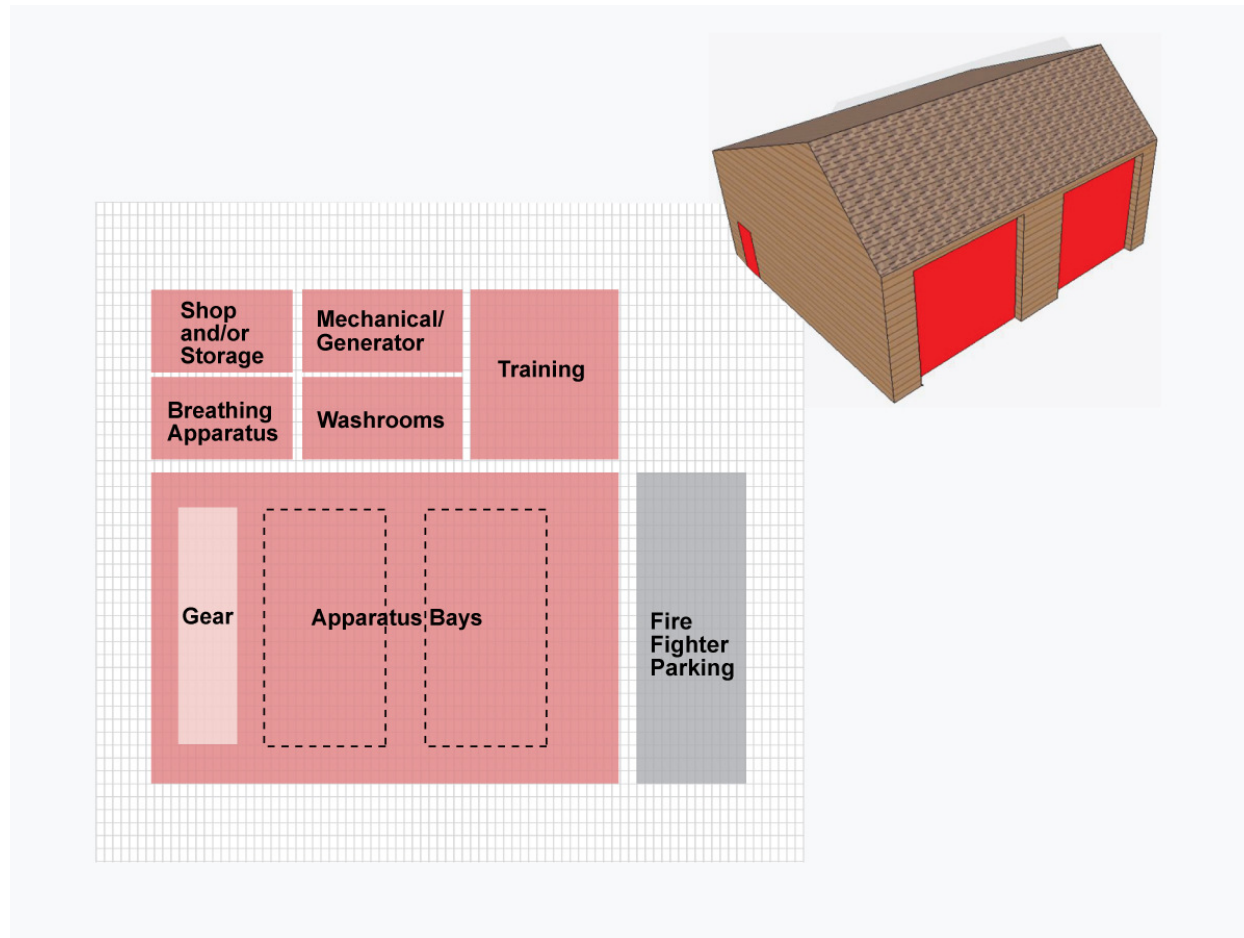
Component	Percentage of Waste by Weight
Food	19.6
Cardboard	10.9
Newsprint	2.1
Other Paper Products	15.3
Cans	4.8
Other Metal Products	5.5
Plastic, Rubber, Leather	12.2
Glass, Ceramics	4.1
Textiles	3.7
Wood	11.3
Dirt	3.8
Diapers	6.7
Total	100

(Source: D.W. Smith. (1996). *Cold Regions Utilities Monograph, Third Edition*. Reston, Virginia: American Society of Civil Engineers (ASCE).)

It should be noted that **food waste** accounts for almost 20% by weight of waste that is disposed of in community landfills. With a community composting program, much of the food waste could be diverted from the landfill. The life of the landfill could then be extended an additional 2 to 5 years beyond the initial design life of the facility. This would delay the need to develop larger solid waste facilities thus decreasing the overall capital spent on solid waste facilities throughout Nunavut.

Guidelines for Compost Quality are available from the Canadian Council of Ministers of the Environment, and can also be found in the “Solid Waste Best Management Guide” prepared for the Government of Nunavut in March, 2011.

5.4 Fire Protection Facilities



FIRE PROTECTION FACILITIES

Program Statement

Community governments are responsible for providing municipal fire fighting and fire prevention services to help protect life and property from fire damage. Fire Halls are required to house the apparatus and gear needed to deliver an appropriate level of service, and may also provide space for training activities.

General Description of Activities

Community fire fighting is typically done by volunteers who are trained to respond to a variety of incidents, and to use firefighting apparatus. Standard operating procedures are established for all activities so that the health and safety of fire fighters and others is protected. Fire fighting involves:

- Training of volunteers and/or staff
- Maintaining fire fighting apparatus and gear
- Post incident cleaning and reporting

Goals/Principles

- ⇒ Protect life and property
- ⇒ Public education is an important fire prevention strategy
- ⇒ Train an adequate number of community residents as fire fighters
- ⇒ Maintain in good working order equipment needed for fire fighting
- ⇒ Work with and reporting to the Office of the Fire Marshal

Regulations, Codes and Guidelines

The design and construction of all fire halls in Nunavut are governed by the most current edition of the following:

- National Building Code of Canada (NBC) and Supplements
- Good Building Practices Guidelines, Government of Nunavut

Design and Capacity Measures

The **capacity** of fire halls is determined primarily by the **number**, **types**, and **dimensions** of **apparatus** provided to the community. There are no set standards for the number and types, however apparatus provided to community fire departments in communities with less than 5,000 population typically includes:

<i>Vehicle Type</i>	<i>Typical Number</i>	<i>Dimensions (m)</i>	<i>Heating Required</i>	<i>Notes</i>
Pumper truck	▪ One	2.6 (w) * 8(l) x 3 (h)	▪ Yes	<ul style="list-style-type: none"> ▪ Must be ready to go at all times. ▪ Clearance of at least 1.5 m should be provided around each vehicle.
Tanker truck (may use water truck)	▪ One	2.6 (w) * 9(l) x 3.25 (h)	▪ Yes	

Other equipment and gear that is maintained at the Fire Hall includes:

- Turnout gear and personal protection apparatus (breathing apparatus) for fire fighting crews which may range in size from 10 to 20 trained volunteers.
- Compressor
- Fire fighting hoses
- Portable equipment such as generators, lighting, radios

The **number** of firefighters in most Nunavut communities can vary from 10 to 20. Although **not normally occupied**, Fire Halls need to be designed to allow for regular training exercises for a minimum of 10 firefighters.

Standardized designs are suitable for fire halls in Nunavut.

Including fire halls as part of a complex with other community facilities is **not recommended**.

Components and Criteria

APPARATUS STORAGE AND MAINTENANCE		
Components	Criteria	Description and Allowances
Apparatus (vehicle) bays	All fire halls	<ul style="list-style-type: none"> One parking bay for each required vehicle apparatus parked no more than 2 deep. Adequate clearance around vehicles for access and maintenance Overhead doors Space allowance: 66 m ² /bay
Maintenance bay	Fire halls with more than 4 apparatus bays	<ul style="list-style-type: none"> One bay with space to work on largest piece of apparatus (vehicle). Space allowance: 66 m ²
Breathing apparatus room	All fire halls	<ul style="list-style-type: none"> Enclosed room where breathing apparatus can be stored, cleaned, and maintained. Air fill equipment Space allowance: 12 m ²
Turn out gear lockers	All fire halls	<ul style="list-style-type: none"> Minimum of 10 and maximum of 20 individual lockers for turn out gear and personal clothing. Located with vehicle apparatus bays Space allowance: Area provided by increasing width of one apparatus bay by 1m – allow 12 m ² .
Storage room	Fire halls with more than 4 apparatus bays	Space allowance: 12 m ²
Shop	All fire halls	<ul style="list-style-type: none"> Work bench and tool storage cabinets Space allowance: 12 m ² .
Hose drying area	All fire halls	<ul style="list-style-type: none"> Rack where hoses can be hung to dry Space allowance: 8 m ² .

TRAINING AND ADMINISTRATION AREAS		
Components	Criteria	Description and Allowances
Training room	Communities with fire halls requiring more than 2 apparatus bays.	<ul style="list-style-type: none"> Classroom with table and chairs for a minimum of 10 and maximum of 15 people. Space for white board, projection equipment and internet access and storage cabinets for supplies. Coffee and snack preparation area Space allowance: 20 m ²
Office / reporting, communications and records area	All fire halls	<ul style="list-style-type: none"> Desk, chairs, and filing cabinets Telephone, radio, and internet access May be combined with training room Space allowance: 10 m ²

POST INCIDENT FACILITIES		
Components	Criteria	Description and Allowances
Cleaning area	All fire halls	<ul style="list-style-type: none"> Laundry sink Countertop Space allowance: 4 m ²
Showers and laundry	Communities with populations over 3,000	<ul style="list-style-type: none"> 1 shower compartment One front loading washing machine Space allowance: 8 m ²

BUILDING SERVICES		
Components	Criteria	Description and Allowances
Washrooms	All fire halls	<ul style="list-style-type: none"> One combined male/female washroom Space allowance: 4 m ²
Mechanical/electrical	Fire halls with up to 4 apparatus bays	<ul style="list-style-type: none"> Space for water tank, heating, electrical/IT/communications equipment Space allowance: 12 m ²
Generator room	All fire halls	<ul style="list-style-type: none"> Back up generator Space allowance: 10 m ²

SITE AND OUTDOOR FACILITIES		
Components	Criteria	Description and Allowances
Apron	All fire halls	<ul style="list-style-type: none"> Minimum width equal to fire hall Minimum depth equal to length of largest piece of apparatus. Space allowance: 70 m ² X number of overhead doors.
Parking and service access	All communities	<ul style="list-style-type: none"> Parking for up to 10 vehicles Vehicle access to all servicing points for fuel, water, wastewater, and power. Space allowance: 200 m ² provided within required lot setbacks.
Outdoor training area	All communities	<ul style="list-style-type: none"> Space where outdoor exercises can take place involving use of apparatus and other equipment. Space allowance: 100 m ² provided within required lot setbacks.

Indicators

Indicator information needed to determine if the community fire protection infrastructure meets **quantitative** standards will include:

- Number of parking bays in firehall
- Inventory of fire fighting apparatus
- Training room capacity

Indicator information needed to determine if the community fire protection infrastructure meets **qualitative** standards will include:

- Age of facilities (as a general indicator of condition and remaining service life)

Change

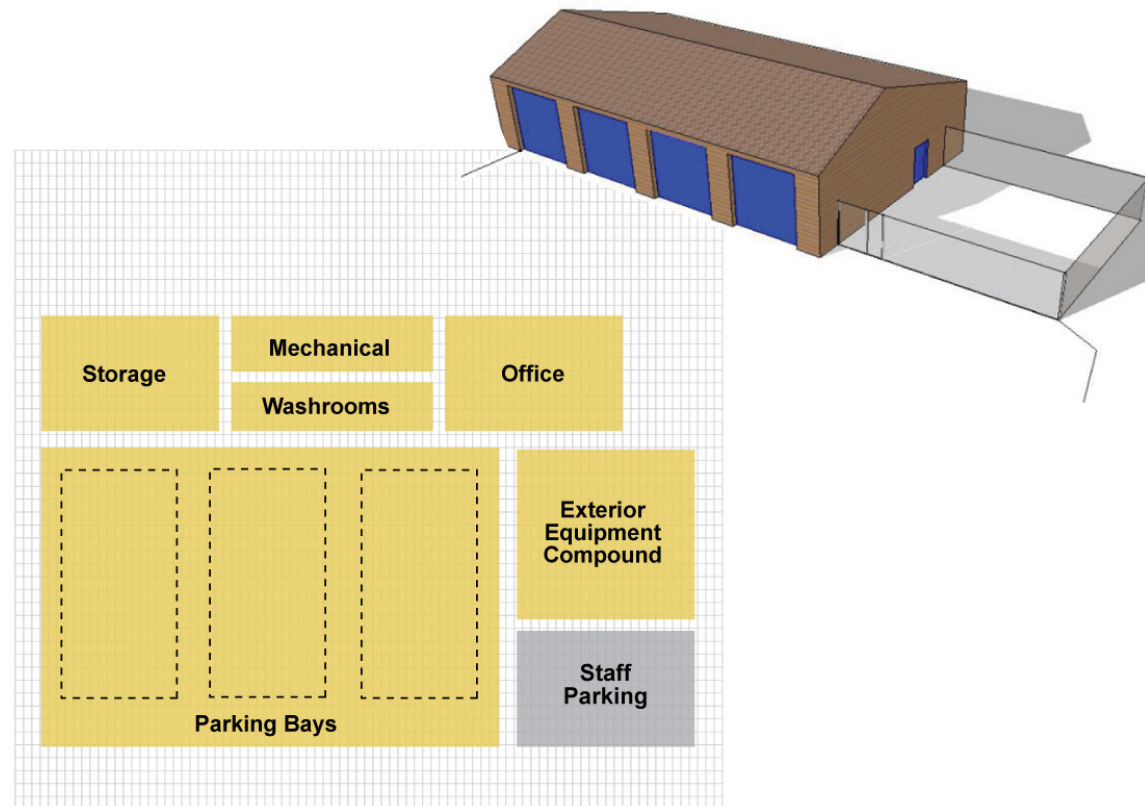
As communities develop with larger buildings, they will need to be equipped with different types of apparatus, and be capable of delivering larger water supplies to fires. More sophisticated training will also likely be required as populations grow and new generations of volunteers are trained. To be prepared for change, sites should be selected that allow for future facility expansion.

Additional Information

The following information about fire protection facilities is provided to note specific design requirements or preferences, but does not replace any of the technical requirements in the GBP:

- Building height must be able to accommodate vehicle height, and provide space for suspended lighting, and hose drying racks.
- Single level fire halls are preferred, however mezzanines may be considered for training rooms.
- Automatic overhead door openers should be provided, with manual backup.
- Exhaust removal is important as vehicles will be started up before overhead doors open.
- Breathing apparatus.
- Electrical outlets and compressors for vehicle maintenance.
- Hoses and floor troughs are required for vehicle cleaning.
- Sirens and radio antennas must be provided
- Communication systems that allow radio contact with firefighters attending an incident are required.

5.5 Garages



GARAGES

Program Statement

Community Governments use several types of mobile heavy equipment to deliver basic municipal services including water delivery, sewage collection, garbage collection and compaction, snow removal, roadwork, work crew transportation, and supervision. Community garages provide a place to store and service mobile equipment (separate from fire fighting vehicles).

General Description of Activities

Making sure that mobile equipment is maintained, secure, and ready for service involves:

- Parking equipment in garages
- Doing mechanical maintenance work on a variety of types of equipment
- Storing tools and supplies
- Moving equipment in and out of garages

Goals/Principles

- ⇒ Maximize the useful life of community-owned mobile equipment
- ⇒ Protect equipment from vandalism and unauthorized access
- ⇒ Provide staff with adequate facilities for working on equipment

Regulations, Codes and Guidelines

The following apply to garage buildings

- National Building Code
- National Fire Code
- Government of Nunavut Good Building Practices
- Canadian Measures for Energy Conservation in New Buildings

Design and Capacity Measures

The **capacity** (size) of community garages is primarily determined by the number, types and dimensions of **mobile equipment** needed to deliver services, and required clearance space around vehicles. A typical inventory of municipal equipment includes:

Equipment Type	Typical Number ¹	Typical Dimensions	Heating Required	Use	Other considerations
Water truck(s)	1 for pop <750 add 1 for every +450 population	2.5 x 9 x 3.5 2,500 gallon capacity	Year round	Daily / year round	▪ Must be stored separately from sewage truck.
Sewage collection truck(s)		w x l x h 1,000 gallon	Year round	Daily / year round	▪ Must be stored separately from water delivery truck.
Garbage truck(s)	1 each for populations <750 Add 1 for every +750 population	▪	Winter	Daily/weekly/year round	▪
Front end loader		▪	Winter	Daily/year round	▪
Snow removal equipment		▪	Winter	Daily / winter	▪
Grader		▪	No	Weekly / summer	▪ May be parked outdoors.
Dump truck		▪	No		▪
Pick-up truck or passenger vehicle		▪	No	Daily/year round	▪ Used by local staff and often kept at residence.

¹ The number of vehicles needed to service a community will need to be determined and approved. The number here provides a 'rule of thumb' for planning purposes only.

The **number** of separate community garage buildings in a community will depend on circumstances. Ideally the total number of bays required should be accommodated in the fewest number of individual buildings as possible. However other considerations include:

- Capacity of existing garages with remaining service life greater than 10 years
- Segregation of water and sewer trucks
- Size of available lots in suitable locations

The **type** of garage (heated or unheated) is primarily determined by the need to keep water tanks from freezing, or having vehicles ready for service without delays caused by temperature. Garage designs can be easily standardized, using a basic model that can be expanded.

Components and Criteria

INTERIOR PARKING AREAS		
Component Options	Criteria	Description
Basic Unheated Parking Bays	All communities	<ul style="list-style-type: none"> 2 parking bays with space for vehicles and clearance between vehicles and building. Space allowance: 60 m ² /bay
Additional Unheated Parking Bays	One additional bay for every additional approved vehicle requiring sheltered, but unheated storage.	<ul style="list-style-type: none"> Same as basic bays
Basic Heated Parking Bays	All communities	<ul style="list-style-type: none"> 2 parking bays with space for vehicles and clearance between vehicles and building. Space allowance: 60 m ² /bay
Additional Heated Parking Bays	One additional bay for every additional approved vehicle requiring heated storage.	<ul style="list-style-type: none"> Same as basic bays

MAINTENANCE SUPPORT AREAS		
	Criteria	Description
Maintenance Bay	<ul style="list-style-type: none"> One bay in communities with populations < 1,500 Two bays in communities with populations >1,500 	<ul style="list-style-type: none"> Bay with space to work on vehicles and equipped with a lift. <p>Space allowance: 60 m² / bay</p>
Tools and Equipment Storage Areas	One area for each maintenance bay	<ul style="list-style-type: none"> Built in workbench Equipment and supply storage cabinets May include a secure enclosed room <p>Space allowance: 25 m²</p>
Office	Communities with more than one maintenance bay.	<ul style="list-style-type: none"> Space for desk, phone, computer, files, and open shelving. <p>Space allowance: 10 m²</p>

BUILDING SERVICE AREAS		
Components	Criteria	Description
Washrooms	Garage building includes at least one maintenance bay.	<ul style="list-style-type: none"> Minimum fixtures allowed by NBC <p>Space allowance: included in mechanical electrical allowance</p>
Mechanical/electrical area	Garage contains heated parking bays or maintenance bay.	<ul style="list-style-type: none"> Enclosed space for heating equipment Water storage tank sized for washroom use. Electrical panel <p>Space allowance: 15% of total building area</p>

SITE AND OUTDOOR FACILITIES		
Components	Criteria	Description
Apron	All garages	<ul style="list-style-type: none"> • Minimum width equal to garage • Minimum depth equal to length of largest piece of apparatus. Space allowance: 60 m ² X number of overhead doors
Exterior Equipment Compound	All communities	<ul style="list-style-type: none"> • Fenced compound with space for up to 4 pieces of mobile equipment that are not used frequently in winter. Space allowance: 240 m ²
Staff parking and service access	All garages	<ul style="list-style-type: none"> • Parking for staff vehicles equal to the number of garage bays. • Vehicle access to all servicing points for fuel, water, wastewater, and power. Space allowance: typically be provided within required lot setbacks.

Indicators

Indicator information needed to determine if the garages meet **quantitative** standards will include:

- Number of pieces of mobile equipment

Indicator information needed to determine if the garages meet **qualitative** standards will include:

- Age of facilities (as a general indicator of condition and remaining service life)
- Dimensions (height and length of garages compared to mobile equipment)

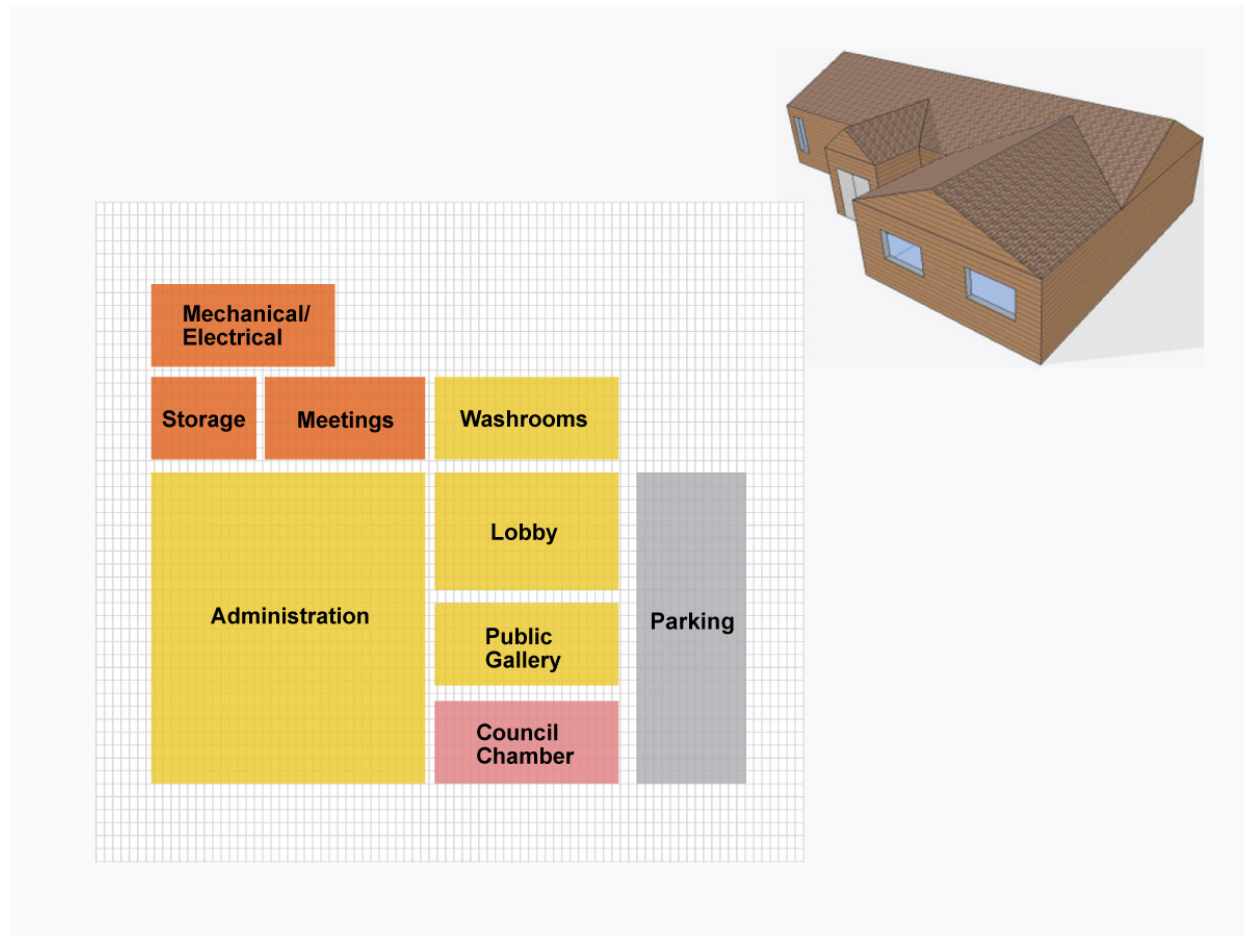
Change

It is no longer acceptable to allow spills of fuel or other liquids to seep into gravel floors in garages. Remediation of contaminated sites has become very expensive. Garages must be designed to allow for containment or easy clean up.

Additional Information

- A standard design and pre-engineered building package is suitable for all garages.
- Repeat designs should be used wherever possible.
- Concrete floors are preferred in all garages.
- Overhead doors should be equipped with both automatic and chain operated openers.
- A boiler system is preferred for heated garages because of recent experience with fires started by suspended unit heaters.
- Hydraulic jack sized for servicing of largest piece of mobile equipment should be installed in at least one maintenance garage in all communities.

5.6 Community Offices



COMMUNITY OFFICES

Program Statement

Communities are responsible for governance, and the administration and delivery of a number of municipal services in Nunavut. A community office provides a central place for Councils to meet, for staff to work, and for the public to find information or provide input.

General Description of Activities

Community governments in Nunavut are responsible for a wide variety of administrative activities including financial management, land administration, human resources and recreation programming. Community Offices are used for the following kinds of activities:

- Members of the public come to pay bills, find information, meet with staff, participate in Council and other public meetings
- Community Council members attend formal meetings to discuss, and decide on municipal issues
- Community Administrative staff do office work, respond to public and Council inquiries, and maintain records
- Special program staff, or staff from other organizations, may do administrative work or deliver community services
- Other community organizations may use meeting rooms for weekend and/or evening meetings

Goals/Principles

- ⇒ One centrally located facility preferred
- ⇒ Community meeting place for council and the public
- ⇒ Good working environment for staff
- ⇒ Energy efficiency
- ⇒ Offices may be part of a community complex in combination with a community hall

Regulations, Codes and Guidelines

- National Building Code
- National Fire Code
- Government of Nunavut Good Building Practices
- Canadian Measures for Energy Conservation in New Building

Design Capacity and Measures

Community office facilities should be grouped into **one building** in all communities in Nunavut – not including space for municipal functions accommodated in recreation or maintenance facilities.

The total building area required for community office facilities will include space needed for different uses:

<i>User Group</i>	<i>Space Needs</i>
Public	<p>The number of people to be accommodated at any given time will be similar in all communities. Some increased space may be needed when populations exceed 1,500 people.</p> <p>On occasion large public meetings may occur but the Community Office building should not be designed to provide for these. Instead, other facilities, such as a community hall are available.</p>
Council	Council Chambers need to accommodate a Mayor and eight Councilors in all Nunavut Communities.
Administrative Staff	<p>The total areas required for administrative activities can be calculated using the GN Office Space Standards. This method calculates a 'space envelope' (a total area that can be subdivided into rooms) using the number of full time equivalent (FTE) staff using a 10 year planning horizon. Seasonal, casual or temporary staff numbers are not considered in calculating space requirements, however adequate space is provided for them.</p> <p>The number of administrative staff to be used in calculating space needs for a community will need to be reviewed and agreed on before standards can be applied. Approved <i>Community ICSP HR Plans</i> may be a good information source.</p>
Other facility users	The administrative space envelope can be increased to allow for some space to be allocated to a publicly funded or volunteer organization providing services that benefit the community. This will typically accommodate functions such as search and rescue, community radio station, outreach programs, hunters and trappers, or sometimes GN staff. How spaces are best allocated will vary by community, and multipurpose spaces will frequently be the most practical approach.
Building Services	Space needs to be determined by designers, but for planning purposes allowances based on past experience. Heating, power, water, fire protection, and IT services require equipment to be installed in the building.

Community Offices may be part of a larger **complex** that includes a community hall or other offices. Any shared use areas must be located so that the community offices can be secured outside of regular business hours.

Components and Criteria

PUBLIC AREAS		
Components	Criteria	Description and Allowances
Entrance Vestibule	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Vestibule provided at main public entrance Space allowance: 4 m ²
Basic Lobby	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Located near building entrance and adjacent to Council Chamber. Allows for seating, coffee area, and displays Space allowance: 25m ²
Additional Lobby	<ul style="list-style-type: none"> Communities with populations over 1,500 	<ul style="list-style-type: none"> Additional seating areas Space allowance: (in addition to basic) 5 m ²
Basic Washrooms	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Shared public and staff washrooms minimum number of fixtures required by NBC for male and female washrooms. Space allowance: included in staff space envelope
Public Washrooms	<ul style="list-style-type: none"> Communities with populations over 1,500 	<ul style="list-style-type: none"> Separate washrooms may be provided Space allowance: (in addition to basic) 10 m ²
Basic Public Gallery	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Provides seating area for approximately 15 people Incorporated with Council Chamber with access to speaking podium. Space allowance: 20 m ²
Additional Public Gallery	<ul style="list-style-type: none"> Communities with populations over 1,500 	<ul style="list-style-type: none"> Additional seating for up to 5 more people Space allowance: (in addition to basic) 5 m ²
Circulation	<ul style="list-style-type: none"> All community offices 	Space allowance: 15% of total space allowance for other components.

COUNCIL AREAS		
Components	Criteria	Description and Allowances
Chamber	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Seating at tables or benches for all members of Council plus 2 administrative staff. AV equipment and translation booth Space allowance: 60 m ²
Mayor's Office	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> One enclosed Type C office as described in the GN Office Space Standards. Space allowance: 12 m ²

STAFF AREAS		
Components	Criteria	Description and Allowances
Core Staff Space Envelope	<ul style="list-style-type: none"> Provided based on an agreed number of full time equivalent (FTE) staff (see design and capacity measures). 	<ul style="list-style-type: none"> Individual and shared work areas, coffee stations, copying and printing, IT equipment, records and general storage areas, washrooms and internal circulation. Design Standards included in the GN Office Space Standards should be used as a guide for individual room areas, they do not imply minimum entitlements Individual work area Office types may include a mix of Type C, D, E, F and G. Space allowance: calculated as <ul style="list-style-type: none"> 23 m²/position for the first 5 FT staff; plus 18 m²/position for the next 5 FT staff; plus 17 m²/position for additional staff
Additional Area	<ul style="list-style-type: none"> Community has identified need 	<ul style="list-style-type: none"> Search and rescue, radio station, or any other community organization or agency. Space allowance: 20 m ²

BUILDING SERVICE AREAS		
Components	Criteria	Description
HVAC and Electrical Services	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Space for all mechanical electrical equipment. Area estimated at 10% of total calculated public, council and staff areas.
Potable Water storage	<ul style="list-style-type: none"> Community Office is serviced by truck 	<ul style="list-style-type: none"> Floor area for storage tanks including access for cleaning and maintenance. Area allowance estimated at 5% total of calculated public, council and staff areas.
Sprinkler water storage	<ul style="list-style-type: none"> Buildings required by NBC or OFM to have automatic sprinkler systems installed. 	<ul style="list-style-type: none"> Floor area for storage tanks including access for cleaning and maintenance. Area estimated at 10% of total calculated public, council and staff areas.
Janitorial space	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> 4 m² floor area allowance

Site and Outdoor Facilities		
Components	Criteria	Description and Allowances
Pedestrian access	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Barrier free access route to front entrance protected from vehicle obstruction. <p>Space allowance: Typically provided within required lot setbacks.</p>
Service and building access	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Vehicle access to all servicing points for fuel, water, wastewater, and power. <p>Space allowance: Typically provided within required lot setbacks.</p>
Vehicle parking	<ul style="list-style-type: none"> All community offices 	<ul style="list-style-type: none"> Parking for up to 6 vehicles with access to electrical plug ins on timers. <p>Space allowance: Typically provided within required lot setbacks.</p>

Indicators

Indicators that can be used to determine how closely a new or existing building will meet or meets the standard include:

- Community population (current, and 10 year projection – available from Nunavut Bureau of Statistics)
- Number of approved FTE positions of municipal administrative staff only (not including staff who work primarily from garages or recreation facilities)
- Room areas and/or total building area (calculated from floor plans)
- Age of facility (found in TCA inventory)
- Major building system descriptions (may be)

Change

Community office space requirements may change with changes to community responsibilities.

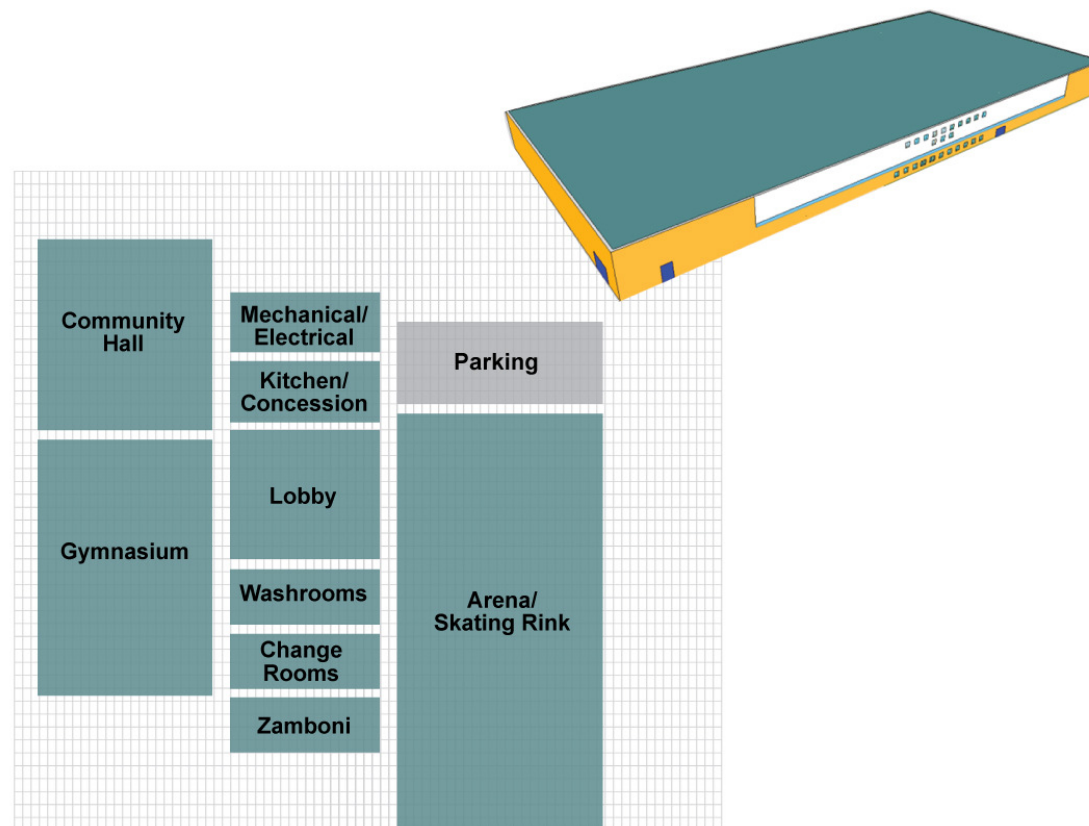
Communities can typically adapt to some change by reassigning room uses, completing minor renovations, or leasing additional space in another building.

Technological changes will also likely influence the type, size, and location of equipment needed for communication and business systems. For example, as electronic communications and filing become more prevalent, less space will be needed for paper storage, while more space will be needed for equipment.

Additional Information

GN Structured Cabling Guidelines are available from the Department of Community and Government Services.

5.7 Recreation Facilities



RECREATION FACILITIES

Program Statement

One very important role of a Community Government is to provide facilities where community residents can participate in cultural, social and recreation programs. Facilities may be maintained by the community or shared, and single purpose or multi-purpose facilities can provide for a wide range of activities suitable for all ages.

General Description of Activities

Recreation activities may be coordinated by municipal staff, other agencies such as schools or churches, or community volunteer associations. Recreational activities may include:

- Social gatherings
- Cultural activities
- Competitive sports and tournaments
- Non-competitive (recreational) sports

Goals/Principles

- ⇒ People of all ages and levels of fitness should have access to recreation facilities
- ⇒ A variety of activities should be able to take place in all facilities
- ⇒ Both indoor and outdoor facilities provide recreational opportunities
- ⇒ Specialized cultural and physical recreational activities should be supported even when custom facilities are not available
- ⇒ Collaborating with schools or other community agencies through shared use agreements benefits the community
- ⇒ Building finishes and hardware are selected for durability, considering heavy public use

Regulations, Codes and Guidelines

- National Building Code
- Government of Nunavut Good Building Practices
- Canadian Measures for Energy Conservation in New Buildings

Design Capacity and Measures

The **types** of recreational facilities to be maintained by a Community Government will need to take into consideration the capacity to maintain facilities relative to population size, as well as considering facilities maintained by others that are available for public use.

The **capacity** of recreational facilities may be determined by the types of activities that will take place, or a combination of activities and population. For example:

- *A hockey rink needs a minimum ice area regardless of population size*
- *Game court sizes vary depending on level of competition*
- *The participation of a large portion of the community is important to many activities, such as concerts or feasts, or where spectators are a part of sporting events.*

Facilities should be designed for a 20 year projected population.

Recreation facilities are very suited to being designed as complexes including a variety of recreation components and/or community offices.

Components and Criteria

INDOOR RECREATION FACILITIES		
Components	Criteria	Description and Allowances
Shared use facilities	<ul style="list-style-type: none"> All communities where a school gym or other potential public use facilities are available at no cost to the community. 	<ul style="list-style-type: none"> Partnership agreements specify hours of use, responsibilities for booking, clean up, insurance, and may include in-kind compensation.
Community Hall	<ul style="list-style-type: none"> Communities where populations are expected to be over 500 people in the next ten years. 	<ul style="list-style-type: none"> A large open area or hall designed to be suitable for community meetings, social gatherings, child care, arts and crafts programs, and limited indoor games. <p>Space allowance: minimum area of 300 m², plus 50 m² for every increment of 500 population.</p>
Gymnasium	<ul style="list-style-type: none"> Communities where populations are expected to be over 1,500 people in the next ten years. 	<ul style="list-style-type: none"> Gym area appropriate for regional competition level of at least 2 indoor sports. Design and finishes selected primarily for sports uses but also suitable for community meetings and social gatherings. <p>Space allowance: Minimum area of 440m² (equivalent to basketball court area)</p>
Indoor Ice Rink	<ul style="list-style-type: none"> Communities where populations are expected to be over 1,500 people in the next ten years. 	<ul style="list-style-type: none"> Designed primarily for hockey games with boards, penalty box, players boxes, and bleacher style seating for a minimum of 150 people. <p>Space allowance 1,860m²</p>
Other Facilities	<ul style="list-style-type: none"> Only if communities can demonstrate outside funding sources are available for capital and long term O&M costs. 	Any type of recreation facility not identified elsewhere in this Standard.

SUPPORT FACILITIES		
Component Options	Criteria	Description and Allowances
Lobby	<ul style="list-style-type: none"> All indoor recreation facilities 	Planning allowance: Area calculated as 10% of the total indoor recreation component areas.
Storage	<ul style="list-style-type: none"> All indoor recreation facilities 	Planning allowance: Area calculated as 10% of the total indoor recreation component areas.
Washrooms	<ul style="list-style-type: none"> All indoor recreation facilities 	Planning allowance: Area calculated as 8% of the total indoor recreation component areas.
Kitchen / concession	<ul style="list-style-type: none"> community hall, gymnasium, and/or indoor skating rinks 	Planning allowance: Area calculated as 5% of the total indoor recreation component areas.
Spectator Viewing	<ul style="list-style-type: none"> indoor ice rink and/or a gymnasium. 	Planning allowance: Area calculated as 5% of the total indoor recreation component areas.
Change Rooms	<ul style="list-style-type: none"> indoor ice rink and/or a gymnasium. 	Planning allowance: 4 change rooms with an area of 30 m ² each
Additional Change Rooms	<ul style="list-style-type: none"> Communities designated as regional centres 	Planning allowance: 2 change rooms with an area of 30 m ² each
Zamboni storage	<ul style="list-style-type: none"> Communities with an indoor ice rink. 	Space allowance: 20 m ²

SITE AND OUTDOOR FACILITIES		
Components	Criteria	Description
Shared use facilities	<ul style="list-style-type: none"> All communities where school playgrounds are accessible for public use. 	<ul style="list-style-type: none"> School playgrounds are typically provided as part of school facilities.
Playgrounds	<ul style="list-style-type: none"> All communities with populations over 1,500 people. 	<ul style="list-style-type: none"> Municipal playground equipped with play structures suitable for children ages 2 to 12 years. <p>Area allowance: 1,000 m² for every population increment of 1,000 people.</p>
Sports fields	<ul style="list-style-type: none"> All communities with populations over 1,500 people 	<ul style="list-style-type: none"> Sport field with field surface designed to accommodate softball/baseball, soccer, or track and field; and suitable fencing to protect site from vehicle traffic. <p>Area allowance of 5,000 m² (regulation soccer size field)</p>
Outdoor skating rink	<ul style="list-style-type: none"> All communities 	<ul style="list-style-type: none"> Designated rink with demountable boards can be set up seasonally that can be used for other activities off season. <p>Area allowance of 950 m²</p>
Pedestrian access	<ul style="list-style-type: none"> All indoor recreation facilities 	<ul style="list-style-type: none"> Barrier free access route to front entrance protected from vehicle obstruction.
Service access	<ul style="list-style-type: none"> All indoor recreation facilities 	<ul style="list-style-type: none"> Vehicle access to all servicing points for fuel, water, wastewater, and power. Typically provided within required lot setbacks
Vehicle parking	<ul style="list-style-type: none"> All indoor recreation facilities 	<ul style="list-style-type: none"> Parking is typically provided within required setbacks Access to electrical plug- ins on timers for 2 vehicles.

Indicators

Indicator information needed to determine whether community recreation facilities meet standards will include:

- Community population (current and future projections)
- Presence and condition of individual components
- Age of facility(ies)
- Number(s) and type(s) of recreation facilities owned and maintained by other organizations or agencies that are available to the public.

Population figures used to determine the public space requirements should be the most recent **10 year projection**, issued by the Nunavut Bureau of Statistics.

Change

Increasing emphasis on physical activities as an important element of a healthy community may increase demand for indoor facilities. Increasing skills may mean that demand will increase for spaces that meet national regulations to support competitive team practice.

Additional Information

It is very important that facilities be designed for heavy and frequent use.

Interior and exterior finishes must be selected that are suitable for the variety of activities the facility is intended to support.

The majority of users will be children and youth, and behaviors typical of this age group should be expected.

Concrete floors should be provided in arenas provided to allow all season uses, and provide acceptable drainage.

Swimming Pool Options Review was completed by CGS Technical Services in January 2010 that provides general recommendations based on the performance, maintenance and cost experience of existing pools in Nunavut.

6 Application

This section describes an Excel Workbook that can be used to apply the revised S&C to capital projects. Demonstrating this workbook may also assist CGS with adopting and introducing the revised S&C to GN staff and Community Governments. To avoid inadvertently changing any embedded formulas the Workbook is password protected:

The password for administrative access (to change anything) = *standards*

The password for user access (to enter indicators or select from lists) = *municipal*

6.1 Project Scope Determination

Worksheets for each type of infrastructure allow a general project scope to be determined based on relevant parameters as shown in the following example:

Firehall Space Summary by Community	
COMMUNITY A	
Community Population 10 yr projection	1200
Number of Fire Vehicles (Apparatus)	2
Component	Space Allocation m ²
Apparatus Storage and Maintenance	
vehicle apparatus bays	132
maintenance bay	0
breathing apparatus room	12
turn out gear lockers	12
storage room	0
shop	12
hose drying area	8
Training and Administration Areas	
training room	20
Office/reporting/communications	10
Post Incident Facilities	
cleaning area	4
showers and laundry	0
Building Services	
washroom	4
mechanical/electrical	12
generator room	10
Total Floor Area	226

Information is entered in grey cells

Areas are automatically calculated in accordance with S&C.

6.2 Indicators

Indicators have been identified for each type of infrastructure. Routine updating of measures should be done at least annually as part of the capital planning cycle.

<i>Region</i>	<i>Community</i>	INDICATORS	<i>Population</i>	<i>2010</i>	<i>2021</i>	<i>2036</i>	Other indicators	<i>Water Quality</i>	<i>FT staff</i>	<i>Vehicles</i>
Baffin	Arctic Bay			757	851	1,000				
Baffin	Cape Dorset			1,411	1,638	1,968				
Baffin	Clyde River			912	1,056	1,272				
Baffin	Grise Fiord			157	181	205				
Baffin	Hall beach			721	843	1,056				
Baffin	Iglolik			1,700	1,949	2,431				
Baffin	Iqaluit			7,054	7,722	8,551				
Baffin	Kimmitut			459	517	603				
Baffin	Pangnirtung			1,489	1,675	2,022				
Baffin	Pond Inlet			1,484	1,672	2,017				
Baffin	Qikiqtarjuaq			548	593	672				
Baffin	Resolute			257	285	327				
Baffin	Sanikiluaq			812	928	1,139				
Keewatin	Arviat			2,331	2,841	3,747				
Keewatin	Baker Lake			1,950	2,294	2,851				
Keewatin	Chesterfield Inlet			386	455	568				
Keewatin	Coral Harbour			861	1,056	1,363				
Keewatin	Rankin Inlet			2,704	3,193	3,972				
Keewatin	Repulse Bay			855	1,045	1,335				
Keewatin	Whale Cove			392	467	563				
Kitkmeot	Cambridge Bay			1,676	1,756	1,845				
Kitkmeot	Gjoa Haven			1,184	1,217	1,302				
Kitkmeot	Kugaaruk			736	816	946				
Kitkmeot	Kugluktuk			1,458	1,572	1,694				
Kitkmeot	Taloyoak			895	986	1,102				

6.3 Benchmarks

The S&C can be in conjunction with an asset management system. Using a coordinated set of parameters will allow actual conditions of infrastructure to be compared to benchmarks established by the S&C.

7 Definitions

Benchmark –a reference point against which progress or change can be measured

Breathing Apparatus - A device worn by firefighters for the purpose of providing breathable oxygen in emergency response situation.

Capacity – a quantity that something is able to contain, and used in planning to quantify volumes of tanks, the number of people that can be in a room or building, or the amount of waste that can be held in a solid waste site.

Capital Standard – A set of prescribed space allocations which must be followed when planning facilities. Standards do not establish or imply minimum space entitlement and consideration should be given by departments to meet their requirements using less space wherever possible.

CCME – The Canadian Council for Ministers of the Environment.

Circulation Space – Spaces such as corridors and aisles provided to allow access to different areas of a building or site by facility occupants or users.

Complexing – A combination of two or more facility components that could be standalone facilities, but are compatible if combined into one. The combined area of the complex must be less than the sum of the two area allowances.

Design Brief - a written document describing the desired attributes of a planned facility, used to guide designers and all other members of a project team.

Full Time Equivalent - a measure of utilization that approximates the number of full time employees so that part-time employee numbers can be accounted for.

Grey Water – All liquid wastes from showers, baths, sinks, kitchens and domestic washing facilities but not from toilets.

Guidelines – Statements designed to provide advice. While not mandatory, guidelines should be followed unless there is good reason not to do so.

Hazardous Waste - Waste which, because of its quantity, concentration, or characteristics, may be hazardous to human health or the environment when improperly treated, stored, transported, or disposed.

Leachate – water that has passed through waste materials.

Potable Water – Water suitable for drinking; physically, biologically, chemically, and radiologically safe water.

Raw Water –Water that is taken directly from the source, such as a river or lake without further treatment.

Remediation – an action used to restore a site to an acceptable condition after it has been contaminated or damaged in some way.

Road - An all-weather public thoroughfare for moving vehicular traffic that consists of right-of-ways, drainage, sub-base, base, and driving surface.

Sewage – All toilet waste, also known as black-water, and grey water.

Sludge - Solids that have settled out from wastewater

Space Envelope - the total amount of general purpose office space provided to a department, as determined under these standards.

Turn-out Gear – Also referred to as bunker gear, refers to the outer protective clothing and personal protective equipment worn by fire fighters in emergency response situations.

Utilidor – An above or below ground conduit that acts as an enclosed corridor for a network of pipes and cables sometimes used to supply community services to individual homes and businesses.

Vestibule – An enclosed area between the outer door and the interior of a building.

Wetland – a general term used to name any poorly drained tract, whatever its vegetation cover or soil.

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