

Hamlet of Taloyoak
P. O. Box 8
Taloyoak, NU X0B 1B0
Tel: (867) 561-2302
Fax: (867) 561-5057

Contact:

Janice Anderson
Senior Administrative Officer
SAO@taloyoak.ca

Location of Undertaking

Geographic Location:

Latitude: 69° 32' N

Longitude: 93° 31' W

1. COMMUNITY BACKGROUND

The Hamlet of Taloyoak is located at 69° 32' N latitude and 93° 31' W longitudes, approximately 460 km East of Cambridge Bay and 1224 km North-East of Yellowknife, sitting 26 m above sea level on the Boothia Peninsula on Stanners Harbour within the Kitikmeot region of Nunavut. It is a zone of continuous permafrost, on sand and gravel raised beach with flat and gently rolling terrain comprising numerous lakes and ponds, covered with thin layer of tundra vegetation. Despite poor soil quality, various types of lichen, moss, willow, heather and wildflowers grow in the area. Wildlife in the area are mainly ground squirrels, lemmings, weasels, arctic hares, arctic foxes, ringed seals and numerous species of birds and fish.

Climate of Taloyoak is reasonable summers and extremely cold winter, average mean temperature in January and July about -30°C and 11°C. Seasonal rainfall average 128 cm, snow fall average 141 cm and mean precipitation 223 mm in Taloyoak.

Description of Undertaking

The Hamlet of Taloyoak is applying for renewal of Water Licence 3BM-TAL-1419, which will expire as of December 07, 2019. As the licensee, the hamlet is responsible for providing water supply, sewage disposal and solid waste disposal and management services to the resident of Taloyoak. Water is drawn from the Canso Lake through twin intake pumphouse, treats in treatment plant and distribute to household water tank through truck fill. Sewage is deposited into the detention lagoon located approximately 3.2 km away from town through vacuum truck and solid waste is deposited at the community waste disposal site 3 km away close near to Sewage Lagoon.

2. WATER SUPPLY, TREATMENT AND DISTRIBUTION

The raw water source was determined as the Canso Lake, located about 1.5 km northeast from town. To meet the requirement and guidelines of drinking water, GN has constructed the treatment plant in 2011 which is in operation with following facilities:

- Twin water intake lines from the Water Lake into the treatment plant
- Two terrain filtration system for reduction in turbidity reduction
- Sustainable power generation Wind Turbine and Solar panel as back up to grid power line.

Water is taken from Canso Lake and then sent through filter terrain to control turbidity and then disinfection by chlorination before truckfill outside. A storage tank located inside the plant uses for operators uses. The plant building was completed in 2011 and remains in operation for community water supply 7 days a week.

2.1 Water Treatment:

It was calculated that 247.5 m³/day of water will be required in 2033 to meet the community's needs, as per the water consumption equation provided by MACA. In addition to daily domestic demand, water will be required for emergency situations, such as a fire. The Fire Marshal of Nunavut recommended the design fire flow rate to be 1,000 L/min or 1440 m³/day

Raw water intake pump flow rate	950 L/min
Fire Flow / by-pass flow rate	1,000 L/min
Truckfill arm fill-rate	1000 L/min
Process flow rate	1000 L/min
100 mm HDPE water supply pipe line pressure (max)	100 psi

Raw water intake using 20hp water pump rated at 28 L/S, automatically switch to second pump. 75 micron-pre-filtration screen is installed prior to raw water entering the filtration train. The treatment process include 20 micron -5 micron – 1 micron filtration. Water disinfection is doing through chlorination using crystal (currently changed to granular) calcium hypochlorite in two times dosing, before filtration and before truck-fill.

2.2 Water Demand

Water consumption from 2012 through 2018 are shown below (from Annual Reports to NWB)

Table1: Water consumption

Year	Volume (L)
2012	35,518,783
2013	37,599,955
2014	38,410,869
2015	38,974,600
2016	38,333,544
2017	41,733,867
2018	47,747,464

Based on the increased consumption every year, it will reach to the allowable quantity 60,000 m³ as per current licence. We request the Board to increase the allowable annual quantity 70,000 m³ or more for the next 10 years duration.

3. SEWAGE DISPOSAL

Sewage water collected from the community household sewage tank by sewage vacuum truck and then discharge into the primary cell of sewage lagoon. The lagoon is located 3.2 km from the community with approximate capacity of 35,700 cu. m which normally holds raw sewages of 9 month quantity discharged. The lagoon system comprises a series of two cells - the primary cell receives raw sewage from truck discharge and the detention cell receives sewage from primary cell over the semi-submerge berm. No mechanical decanting requires from primary cell. The volume of sewage generation also increasing each year like the water consumption volume, therefore, a larger and efficient lagoon system will be required to properly manage the sewage wastewater.

The wetland located immediately downstream of the detention cell involves in flowing out the effluent water towards the final discharge point at Stanner Harbour through a 900 m meandering channel.

3.1 Sampling location of Sewage water

The following are stations for water and sewage effluent sampling, during June – September.

Table 2: Monitoring Stations of sewage and solid waste sample collection

Sampling Station	GPS Location		Description	Comments
	Latitude	Longitude		
TAL-1	N 69° 32' 39"	W 93° 32' 05"	Raw Water supply at Water Lake	Volume of water collected from lake
TAL-2	N 69° 32' 28"	W 93° 35' 39"	Sewage discharge from truck	Volume discharge
TAL-3	N 69° 32' 46"	W 93° 35' 56"	Effluent flow out from 2 nd cell to wetland	Monthly sample, July-Sep
TAL-4	N 69° 32' 26"	W 93° 35' 22"	Run-off from Solid waste facility	Monthly samples, July-Sep
TAL-5	N 69° 32' 23"	W 93° 34' 34"	Hazardous storage cell retention water	Monthly (available) July-Sep
TAL-6	N 69° 32' 22"	W 93° 34' 25"	Final Discharge point	End of pipe, July-Sep

4. SOLID WASTE DISPOSAL

The solid waste site is located close near the lagoon and no other water body in between the sewage lagoon and solid waste facility, except the wetland that ties up both facilities to the final discharge point at Stanner Harbour. Leachate run-off from the solid waste area mixes with the lagoon effluent prior to flowing towards the final point. A sump area for run-off ponding outside of solid waste facility is determined as the sampling point TAL-4.

The solid waste site has two areas- the general municipal waste and the second area for bulky wastes. The general municipal waste area is fenced and does not have a gate, so remains open for public dumping anytime of the day. The second area is the metal dump area where items such as scrap vehicles, appliances, tires and other parts of abandoned vehicles dispose- off from the community. This area has no fence and no isolated cell, but wastes are managing by heaping at the side.

5. Hazardous Waste Management:

Hazardous bulky materials store in an area inside the metal dump separated from other waste types. Waste oil, waste paints and unused fuel drums are stored inside C-cans on site for shipping out when possible. Waste batteries are stored inside wooden boxes with plastic sheet all around and moved inside the C-cans for shipping out. There are no separate cells or containment other than C-cans for hazardous materials storage and disposal within the facility.

6. Spills Waste and Contaminated soil management:

The community currently does not have a separate facility for spills waste storage, or contaminated soil remediation other than inside a C-can in mega bags or on ground inside the fenced area of decommissioned Land farm (by Nunavut Airport authority) soil washed water pond. The community is considering to take ownership of this old landfarm facility for soli treatment under a separate Licence or, to include it within this licence scope if possible.

AANDC inspector has advised (Ref. inspection report 2017) to consider of taking over the old soil tank farm which was decommissioned. Taking the ownership of this facility will help the community of getting a piece of land ready to start and will cost less to upgrade the berm, water pond and sampling locations. Also, since apart from the solid waste and metal dump sites, this old facility location will not leach HC contamination to the wetland or the sewage final discharge. A monitoring station TAL-5 has already designated for water sampling if decanting required from the soil washed pond.

7. STUDIES UNDERTAKEN TO DATE

Few studies and documents were completed in relation to the existing sewage lagoon, wetland and solid waste facilities issues. Some reports were received and some are in progress as follows:

1. Taloyoak Wastewater Treatment Feasibility Study: completed by exp Services Inc. 2016.
2. Geotechnical investigation of sites for sewage lagoon development: completed by exp, 2016
3. Wetland Assessment for sewage lagoon development or upgrade: completed by exp, 2016
4. Taloyoak Solid Waste Feasibility Study: Waste Audit Draft Report prepared by exp, May 2019