Hamlet of Taloyoak Water Licence Renewal Application

Submitted to the Nunavut Water Board

July 30, 2013

Hamlet of Taloyoak
Water Licence Renewal Application

Submitted by

Shah Alam, P. Eng.

Municipal Planning Engineer,
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July 30, 2013

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
XOB 1L0

Attention: Phyllis Beaulieu, Manager of Licensing

RE: Hamlet of Taloyoak Water Licence Renewal Application —Licence Number 3BM-TAL0813

Dear Ms. Beaulieu:

Please find the enclosed Water Licence Renewal Application for the Hamlet of Taloyoak. The Hamlet's current licence expired on Sep 30, 2013.

We are aware that a requirement of the Water Licence Renewal Application is the completion of a number of documents including the following:

- Annual water and waste water Reports
- Operation and Maintenance Manual for Sewage and Solid Waste Operations
- Spill Contingency Plan
- Hazardous Waste Management Guidelines
- Quality Assurance/Quality Control (QA/QC) Plan and Monitoring Program

However, given the urgency of this application, we request that the Nunavut Water Board grants this application approval on the basis of submission of required documents and with adding outstanding documents with board on a timely fashion and sequence.

We are also requesting that the Nunavut Water Board give consideration to regulating the detention sewage lagoon, un-engineered wetland area as part of the sewage and solid waste treatment facilities. Based on sampling completed in summer 2012 and July 2013, there is evidence to support that treatment of effluent occurs within wetland area. Please refer to the results summary included in this application.

A cheque for the application fee of $30.00 is included in this application. On behalf of the Hamlet of Taloyoak we will provide the above list of required documents to the Board immediately upon their completion.

Yours sincerely,

July 30, 2013

Shah Alam, P. Eng.

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Application for Water Licence Renewal

Document Date: May 2011

Application Submission Date: 07/30/2013
Month/Day/Year

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NUNAVUT IMALIRIYIN KATIMAYIT
NUNAVUT WATER BOARD
OFFICE DES EAUX DU NUNAVUT

DOCUMENT MANAGEMENT

Original Document Date: April 2010

DOCUMENT AMENDMENTS

	Description	Date
(1)	Updated for public distribution as separate document from NWB Guide 7	June 2010
(2)	Updated NWB logos and reformatted table to allow rows to break across page	May 2011
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
(10)		

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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYIT
OFFICE DES EAUX DU NUNAVUT

APPLICATION FOR WATER LICENCE RENEWAL

Your application may be classified as a **renewal** only if all operations remain the same as previously licensed and only the term of the licence requires change. If your application contemplates:

- a change to the volume of water authorized for use;
- a new activity related to water use or waste disposal;
- a new component related to water use or waste disposal;
- a change in predicted environmental impacts(s); and/or
- a change to any term or condition of the original licence

your application is **NOT** classified as a renewal but rather an amendment and will require submission of an Application for Water Licence Amendment. Licensees applying for combined renewal / amendment are also referred to the Application for Water Licence Amendment.

The applicant is referred to the NWB's Guide 7: *Licensee Requirements Following the Issuance of a Water Licence* for more information about this application form.

EXISTING LICENCE NO: 3BM-TAL-0813

1. LICENSEE CONTACT INFORMATION

Is the licensee the same as that referred to on the existing licence?

☑ Yes ☐ No

If No, a licence assignment must be completed and approved by the NWB. **A renewal will only be issued in the name of the current licensee in the absence of assignment of the licence.**

If the licensee is the same, but the name of the licensee has changed, attach a certificate of name change.

Name: **Hamlet of Taloyoak**

Address: **P.O. Box 8, Taloyoak, NU, X0B 1B0**

Phone: **867-561-2300**
Fax: **867-561-5057**
e-mail: **hamoftal@qiniq.com**

2. LICENSEE REPRESENTATIVE CONTACT INFORMATION – If different from Block 1.

Name: **N/A**

Address: **N/A**

Phone: **N/A**
Fax: _____
e-mail: _____

(Attach authorization letter.)

3. NAME OF PROJECT

Is the name of the project the same as that considered in the existing water licence?

☑ Yes ☐ No

Indicate the name of the project including the name of the location: _____

4. LOCATION OF UNDERTAKING

Is the location of the undertaking the same as that considered in the existing water licence?

☑ Yes ☐ No

Project Extents

NW:	Latitude: (69 ° 32 ’ 0 ” N)	Longitude: (93 ° 31’ 0 ” W)
NE:	Latitude: (° ’ ” N)	Longitude: (° ’ ” W)
SE:	Latitude: (° ’ ” N)	Longitude: (° ’ ” W)
SW:	Latitude: (° ’ ” N)	Longitude: (° ’ ” W)

Camp Location(s) N/A

Latitude: (° ’ ” N) Longitude: (° ’ ” W)

5. MAP

Are the locations of the main components of the undertaking the same as those considered in the existing licence?

☑ Yes ☐ No

Attach a topographical map, indicating the main components of the undertaking.

NTS Map Sheet No.: _____ Map Name: _____ Map Scale: _____

6. NATURE OF INTEREST IN THE LAND

Is the nature of the interest in the land the same as that considered in the existing water licence?

☑ √Yes ☐ No

Check any of the following that are applicable to the proposed undertaking (at least one box under the 'Surface' header must be checked).

Sub-surface

☐ Mineral Lease from Nunavut Tunngavik Incorporated (NTI)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Mineral Lease from Indian and Northern Affairs Canada (INAC)
Date (expected date) of issuance: _____ Date of expiry: _____

Surface

☐ Crown Land Use Authorization from Indian and Northern Affairs Canada (INAC)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Inuit Owned Land (IOL) Authorization from Kitikmeot Inuit Association (KIA)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ IOL Authorization from Kivalliq Inuit Association (KivIA)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ IOL Authorization from Qikiqtani Inuit Association (QIA)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Commissioner's Land Use Authorization
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Other _____

Date (expected date) of issuance: _____ Date of expiry: _____

Is the name of the entity(s) holding authorizations the same as that considered in the existing water licence?

☑ √ Yes ☐ No

If No, a licence assignment must be completed and approved by the NWB.

Name of entity(s) holding authorizations: Hamlet of Taloyoak.
_____

7. NUNAVUT PLANNING COMMISSION (NPC) DETERMINATION

Is the undertaking located in the same land use planning area as that considered in the existing licence?

√ ☐ Yes ☐ No

Indicate the land use planning area in which the project is located.

☐ North Baffin	☐ Keewatin
☐ South Baffin	☐ Sanikiluaq
☐ Akunniq	√ ☐ West Kitikmeot

Was a land use plan conformity determination required from NPC prior to the issuance of the existing water licence?

☐ Yes ☐ No

If Yes, indicate date issued and attach copy. _____

Does the proposed renewal change the original NPC conformity determination or the need to obtain one?

☐ Yes ☐ No

If Yes, indicate date issued (or expected) and attach a copy. _____
If No, provide written confirmation from NPC confirming that a land use plan conformity review is not required.

8. NUNAVUT IMPACT REVIEW BOARD (NIRB) DETERMINATION

Was a screening determination required from NIRB prior to the issuance of the existing water licence?

☐ Yes ☐ √ No

If Yes, indicate date issued and attach copy. _____

Does the proposed renewal change the original NIRB screening determination or the need to obtain one?

☐ Yes ☐ √ No

If Yes, indicate date issued (or expected) and attach a copy. _____
If No, provide written confirmation from NIRB confirming that a screening determination is not required.

9. DESCRIPTION OF UNDERTAKING

Is the description of the undertaking the same as that considered in the existing water licence?

☐ √ Yes ☐ No

List and attach plans and drawings or project proposal.

10. OPTIONS

Are the alternative methods and locations that were considered to carry out the project the same as those considered in the existing water licence?

☐ Yes ☐ No

Provide a brief explanation of the alternative methods or locations that were considered to carry out the project.

N/A

11. CLASSIFICATION OF PRIMARY UNDERTAKING

Is the primary undertaking the same as that considered in the existing water licence?

☒ √ Yes ☐ No

Indicate the primary classification of undertaking by checking one of the following boxes.

☐ Industrial
☐ Agricultural
☐ Mining and Milling (includes exploration/drilling/exploration camps)
☐ Conservation
☒ Municipal (includes camps/lodges)
☐ Recreational
☐ Power
☐ Miscellaneous (describe below):

_____

See Schedule II of the *Northwest Territories Waters Regulations* for Description of Undertakings.

12. WATER USE

Is the type(s) of water use(s) the same as that considered in the existing water licence?

☒ Yes ☐ No

Check the appropriate box(s) to indicate the type(s) of water use(s) being applied for.

☒ To obtain water for camp/ municipal purposes
☐ To obtain water for industrial purposes
☐ To divert a watercourse
☐ To cross a watercourse
☐ To modify the bed or bank of a watercourse
☐ To alter the flow of, or store water
☐ Flood control
☐ Other: _____

13. QUANTITY OF WATER INVOLVED

Is the source of water the same as that considered in the existing licence? ☒ Yes ☐ No

Name of water source(s): **Canso Lake**
(show location(s) on map)

Is the quality of the water source and its available capacity the same as that considered in the existing licence?

☒ Yes ☐ No

Describe the quality of the water source(s) and the available capacity(s):

Turbidity is slightly higher than is required by GCDWQ (Dillon Consulting Report 2007). Treatment will be required for turbidity and microbiological components such as E. coli and Coli Form. Therefore, treatment would be included filtration and disinfection.
The source has enough flow of water for the year round and DFO has concluded that source water is not likely to results to fish and fish habitat.

Is the overall estimated quantity of water to be used the same as that considered in the existing licence?

☒ Yes ☐ No

Provide the overall estimated quantity of water to be used: 248 m^3/day (annual Quantity 2012: 36,520 m3)

Are the quantity(s) of water to be used from each source the same as those considered in the existing licence?

☒ Yes ☐ No

Provide the estimated quantity(s) of water to be used from each source: Annual quantity not exceeding 60,000 m3 (daily average: 165 m3 and maximum 248 m3)

Are the quantity(s) of water to be used for each purpose the same as those considered in the existing licence?

☒ Yes ☐ No

Provide the estimated quantities to be used for each purpose (camp, drilling, etc.): N/A

Are the method(s) of extraction the same as those considered in the existing licence? ☐ Yes ☐ No

Describe the method(s) of extraction:

Are the quantity(s) of water returned to source(s) the same as those considered in the existing licence?

☐ Yes ☒ No

Estimated quantity(s) of water returned to source(s): **N/A** m^3/day

Are the quality(s) of water(s) returned to source(s) the same as those considered in the existing licence?

☐ Yes ☐ No

Describe the quality(s) of water(s) returned to source(s): **N/A**

14. WASTE

Are the type(s) of waste(s) to be generated and/ or deposited the same as those considered in the existing licence?

☒ Yes ☐ No

Check the appropriate box(s) to indicate the types of waste(s) generated and deposited.

- ☒ Sewage
- ☒ Solid Waste
- ☒ Hazardous
- ☒ Bulky Items/Scrap Metal
- ☐ Animal Waste
- ☐ Other (describe):_____
- ☒ Waste oil
- ☒ Greywater
- ☐ Sludges
- ☐ Contaminated soil and/or water

15. QUANTITY AND QUALITY OF WASTE INVOLVED

Are the quantity(s) of the types of wastes involved the same as those considered in the existing licence?

☒ Yes ☐ No

Are the composition(s) of the types of wastes involved the same as those considered in the existing licence?

☒ Yes ☐ No

Are the method(s) of treatment for the types of waste involved the same as those considered in the existing licence?

☒ Yes ☐ No

Are the method(s) of disposal for the types of waste involved the same as those considered in the existing licence?

☒ Yes ☐ No

For each type of waste indicated in Block 14, describe its composition, quantity in cubic meters/day, method of treatment and method of disposal.

Type of Waste	Composition	Quantity Generated	Treatment Method	Disposal Method
Sewage	House sewage combined grey and black	Less than 95 m3/day	Detention lagoon	Natural treatment through BOD and wetland
Solid Waste	Residential, commercial municipal	35 m3/day	Composting & heaping	Composting and segregation

Hazardous	Battery, paint, switch, lights, glycol etc.	Not daily, occasionally	Containment and ship out	Collect in container place inside the cell and make ready for ship out.
Bulky items/ Scrap metal	Wood piece, door, window & house items, vehicle parts, fuel/ water/ sewage tank, plastic, cartons etc.	Not daily, time to time as required	Heaping & composting, burning on site, cover.	break into smaller pieces and on site pile.
Waste oil	Engine oil, trans. Oil, glycol, heating oil etc.	As required time to time	Containment to shipping out.	Collect in container and protect from spill out.

16. OTHER AUTHORIZATIONS

In addition to the sub-surface and surface land use authorizations provided in Block 6, are the same authorizations required as considered in the existing licence?

☐ Yes ☒ No

For each provide the following:

Authorization: _____

Administering Agency: _____

Project Activity: _____

Date (expected date) of issuance: _____ Date of expiry: _____

17. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES

Are predicted environmental impacts of the undertaking and proposed mitigation measures the same as those considered in the existing water licence?

☒ Yes ☐ No

Describe direct, indirect, and cumulative impacts related to water and waste.

No noticeable impact to environment due to water use or sewage solid waste facility uses. But, benefit to the community in supply potable water, safe sewage disposal and discharge to ocean, proper storage of solid waste, metal dump and management of hazardous materials.

18. WATER RIGHTS OF EXISTING AND OTHER WATER USERS

Are the effects of the undertaking on any known persons or property including those that hold licences for water use in precedence to the application, domestic users, in-stream users, authorized waste depositors, owners of property, occupiers of property, and/or holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature, the same as those considered in the existing water licence?

☐ Yes ☒ No

Provide the names, addresses and nature of use for any known persons or properties that may be adversely

affected by the proposed undertaking, including those that hold licences for water use in precedent to the application, domestic users, in-stream users, authorized waste depositors, owners of property, occupiers of property, and/or holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature.

Advise the Board if compensation has been paid and/or agreement(s) for compensation have been reached with any existing or other users.

N/A

19. INUIT WATER RIGHTS

Are the effects of the undertaking on the quality, quantity or flow of waters flowing through Inuit Owned Land (IOL) the same as those considered in the existing water licence?

☒ Yes ☐ No

Advise the Board of any substantial affect of the quality, quantity or flow of waters flowing through Inuit Owned Land (IOL), and advise the Board if negotiations have commenced or an agreement to pay compensation for any loss or damage has been reached with one or more Designated Inuit Organization (DIO).

There is no known affect of the quality and quantity of flow of water or sewage effluent through Inuit owned land and final discharge into ocean. No affect on water intake from Water Lake to fish or fish habitat.

20. CONSULTATION - Provide a summary of any consultation meetings including when the meetings were held, where and with whom. Include a list of concerns expressed and measures to address concerns.

The Department of Community and Government Services has been in active consultation, meeting with the Hamlet, NWB and AANDC in taking management, training and operational plan for facilities in regards to ensure in environmental and public safety in the event of an emergency situation.

21. SECURITY INFORMATION

Is the financial security assessment the same as that considered in the existing water licence? **N/A**

☐ Yes ☐ No

Is the estimate of the total financial security for final reclamation the same as that considered in the existing water licence? **N/A**

☐ Yes ☐ No

Provide an estimate of the total financial security for final reclamation equal to the total outstanding reclamation liability for land and water combined sufficient to cover the highest liability over the life of the undertaking. Estimates of reclamation costs must be based on the cost of having the necessary reclamation work done by a third party contractor if the operator defaults. The estimate must also include contingency factors appropriate to the particular work to be undertaken.

Where applicable, the financial security assessment should be prepared in a manner consistent with the principals respecting mine site reclamation and implementation found in the *Mine Site Reclamation Policy for Nunavut,* Indian and Northern Affairs Canada, 2002.

No financial security involved in development and operation of these facilities. Therefore, this is not applicable.

22. FINANCIAL INFORMATION

Is the statement of financial security the same as that considered in the existing water licence? N/A

☐ Yes ☐ No

Provide an updated statement of financial security. N/A

If the applicant is a business entity please answer the questions below:

Is the list of the officers of the company the same as those considered in the existing water licence?

☒ Yes ☐ No

Provide a list of the officers of the company.

SAO- Senior Administrative Officer

Is the Certificate of Incorporation or evidence of registration of the company name the same? N/A

☐ Yes ☐ No

Attach a copy of the Certificate of Incorporation or evidence of registration of the company name.

Not applicable for these facilities.

23. STUDIES UNDERTAKEN TO DATE

List and attach updated studies, reports, research etc.

Provide a compliance assessment and status report including a response to any inspector's reports. The licensee must contact the NWB for licence specific direction in completing the assessment and report.

If in non-compliance, a licence may not be issued until compliance is achieved. If in non-compliance, attach plans/reports for consideration. Application will not be processed if significant issues of non-compliance exist.

Hamlet is working close with the Consultant hired by GN in complying the monitoring and operational plan, training and management of facilities in regards to issues identified by AAND inspector and regulatory bodies. Issues included in monitoring, signage and operation of sewage effluent, solid waste and hazardous materials and leachate effluent in accordance with NWB and CCME guidelines.

24. PROPOSED TIME SCHEDULE

Is the time schedule for all phases of development (construction, operations, closure and post closure) the same as that considered in the existing licence? **No new construction or development in place**

☐ Yes ☐ No

Indicate the proposed start and completion dates for each applicable phase of development (construction, operation, closure, and post closure).

Construction
Proposed Start Date:_____ (month/year) Proposed Completion Date:_____ (month/year)

Operation
Proposed Start Date:_____ (month/year) Proposed Completion Date:_____ (month/year)

Closure
Proposed Start Date:_____ (month/year) Proposed Completion Date:_____ (month/year)

Post - Closure
Proposed Start Date:_____ (month/year) Proposed Completion Date:_____ (month/year)

For each applicable phase of development indicate which season(s) activities occur**. N/A**

Construction
☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

Operation
☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

Closure
☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

Post - Closure
☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

These are existing facilities and their operation as identified during the first completion of these facilities, except the new water intake and treatment system that was commissioned and continued in operation since 2011 for community water supply.

25. PROPOSED TERM OF LICENCE

On what date does the existing licence expire? ___September 30, 2013_____

Indicate the proposed term of the renewal (maximum of 25 years): ____5 (Five) years_____

Requested date of renewal issuance: __October, 2013 (month/year) Requested Expiry Date: September 2018 (month/year)

(The requested date of renewal issuance must be at least three (3) months from the date of application for a type B water licence and at least one (1) year from the date of application for a type A water licence, to allow for processing of the water licence application. These timeframes are approximate and do not account for the time to complete any pre-licensing land use planning or development impact requirements, time for the applicant to prepare and submit a water licence application in accordance with any project specific guidelines issued by the NWB, or the time for the applicant to respond to requests for additional information. See the NWB's *Guide 5: Processing Water Licence Applications* for more information)

26. ANNUAL REPORTING

Is the annual report template expected to be the same as that considered in the existing licence?

☒ Yes ☐ No

If not using the NWB's *Standardized Form for Annual Reporting*, provide details regarding the content of annual reports and a proposed outline or template of the annual report.

Use NWB standard Form for Annual Reporting

27. CHECKLIST

The following must be included with the application for renewal for the water licensing process to begin.

Completed Application for Water Licence Renewal form.

☑ Yes ☐ No If no, date expected _____

Updated plans, including designs and reports (see Block 23).

☐ Yes ☑ No If no, date expected __follow up_____

Updated security assessment (see Block 21).

☐ Yes ☑ No If no, date expected __N/A_____

Updated financial statement (see Block 22).

☐ Yes ☑ No If no, date expected ____N/A_____

Compliance Assessment / Status Report (see Block 23).

☐ Yes ☑ No If no, date expected __N/A_____

English Summary of Renewal Application.

☑ Yes ☐ No If no, date expected _____

Inuktitut and/or Inuinnaqtun Summary of Renewal Application.

☑ Yes ☐ No If no, date expected _____

Application fee of $30.00 CDN (Payee Receiver General for Canada).

☑ Yes ☐ No If no, date expected _____

Water Use Fee Deposit of $30.00 CDN (Payee Receiver General for Canada). The actual water use fee will be calculated by the NWB based upon the amount of water authorized for use in accordance with the Regulations at the time of issuance of the licence.

☑ Yes ☐ No If no, date expected _____

28. SIGNATURE

I, _____ (print name)

certify that the application requires no changes to water use or waste disposal as previously authorized and that the information given on this form is, to the best of my knowledge, correct and complete.

_____ _____
Signature Date

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

Contact:
Mr. Chris Dixon
Senior Administrative Officer
hamoftal@qiniq.com

LOCATION OF UNDERTAKING

Geographic Location:

Latitude: 69^0 32' N

Longitude: 93^0 31' W

1. COMMUNITY BACKGROUND

The Hamlet of Taloyoak is located at 69^0 32' N latitude and 93^0 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 Horbour 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 -30^0C and 11^0C. 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-0813, which expires in September 30, 2013, for providing water supply, sewage disposal and solid waste management services to the resident of Taloyoak and its business offices. Water is drawn from the Canso Lake through twin intake pumphouse, treats in newly built 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 selected raw water source was determined to be the Canso Lake located about 1.5 km North-East from town. To meet the requirements and guidelines of drinking water, GN has constructed the new treatment plant in 2011 which is in operation with following facilities:

- Twin water intake lines from the Water Lake into newly built pump house
- 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 Water Lake and then sent through filter terrain to control turbidity and then disinfection by chlorination before temporary storage tank located at the site and truckfill outside. The new building was completed in 2011 and remains in operation for community water supply for 7 days a week.

2.1 WATER DEMAND:

Water consumption from 20061 through 2012 are shown below (from Annual Reports to NWB)

Table1: Water consumption

Year	Volume (L/Yr)
2006	32,379,784
2007	33,553,127
2008	34,681,679
2009	34,702,592
2010	34,952,134
2011	35,152,333
2012	35,518,782

Based on these years consumption, it looks the daily maximum intake quantity 248 m3 (248,000 L) should be fine for this time. Any further increase in demand will be requested to the Board for approval upon requirement.

3. SEWAGE DISPOSAL

Sewage is collected from the community household sewage tank by sewage vacuum truck and is then discharged into the primary cell of sewage lagoon. The lagoon is located 3.2 km from the community and has an approximate volume of 35,700m^3. The lagoon system comprises a series of two cells- (i) the primary cell receives raw sewage from truck discharge and keep it for the whole winter and (ii) the detention cell receives sewage from primary cell over the semi-submerge berm when sewage melt in summer and leads to natural outfall onto shallow channel over the meandering wetland which ended to ocean by natural remediation through BOD and in the presence of sunlight. No mechanical

decanting requires from primary cell.

The wetland located immediately downstream of the detention lagoon had some improvement in runoff flow channel which ultimately discharge the effluent onto the ocean approximately 900 m downstream of the lagoon.

3.1 Sampling Results Taken from Sewage Treatment System

The sewage treatment system at Taloyoak consists of a series of two cell lagoon and an un-engineered wetlands area. The following are stations from samples taken in summer 2012. Based on these results fecal coliforms, BOD_5 and total suspended solids within the MAC limits of parameters identified in the water licence requirements. Please refer to results in the Tabular form. The laboratory analysis report has results for SNP locations TAL-3 (solid waste leachate) and TAL-2 (sewage effluent).

Taloyoak Water Licence-3BM-TAL-0813

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

Sampling Station	GPS Location		Description	Comments
	Latitude	Longitude		
TAL-1	N 69^0 32′ 39″	W 93^0 32′ 05″	Raw Water supply at Water Lake	Volume of water collected from lake
TAL-2	N 69^0 32′ 38″	W 93^0 35′ 39″	Sewage outfall entry to wetland	Outside the detention lagoon , onto wetland
TAL-3	N 69^0 32′ 26″	W 93^0 35′ 22″	Solid waste discharge run-off	Outside the fenced area on wetland
TAL-4	N 69^0 32′ 22″	W 93^0 35′ 25″	Effluent Final discharge point before meeting ocean	Combined effluent at the end of wetland
TAL-5	N 69^0 32′ 23″	W 93^0 34′ 34″	Hazardous storage cell retention water	New station. Sample collect only when decanting requires

4. SOLID WASTE DISPOSAL

The solid waste site is located close near the lagoon. There are no water bodies within the local vicinity of the solid waste disposal facility, except for the discharge drainage pattern from the sewage lagoon. Leachate run-off from the solid waste site drains towards this drainage area and mixes with the lagoon effluent prior to draining towards the ocean. Some areas of ponding water have been noted in and around the solid waste site.

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 which are disposed of. This area has no fence and no isolated cell, but pile in isolated heap.

4.1 Water Quality Results of Leachate from Solid Waste Site

The leachate samples obtained from the wetland stream just downstream of the municipal waste and bulky waste site during July- Aug 2012. The Hamlet's water licence does not specify effluent quality standards for leachate from the solid waste facility. Therefore leachate sampling results were compared to the Canadian Environmental Quality Guidelines (CEQG) provided by the Canadian Council of Ministers of the Environment (CCME).

Leachate from the solid waste facility enters the wetland approximately half way between the lagoon and the ocean edge. As the compliance point was estimated to be 30 m down from solid waste site fence, leachate discharged into the wetland also appeared to receive treatment within the wetland. This leachate run-off travel over the wetland before mixing with sewage effluent at the midway point before approaching the final discharge point, thus remediate with the BOD and sunlight. Green vegetation all over the wetland helps this remediation process as well.

5. Hazardous Waste Management

Most hazardous materials are stored in the metals dump area and are segregated from other wastes within this area. There are no measures for appropriate storage and disposal of these items at this time, but plan in bringing container for temporary storage onsite and ship out by certified hazardous handler and agent.

6. STUDIES UNDERTAKEN TO DATE

Previous Reports:

A number of previous studies have been completed in relation to the existing water facility. Following reports and studies are as follows:

Taloyoak Water System Site Investigation and Remedial Action Plan. Dillon Consulting Limited. December, 2004

Taloyoak Water System Upgrade Planning Study. Dillon Consulting Limited. April 2005.

Dillon Consulting Limited, 2007. Water System Upgrade for Taloyoak, NU

APPENDIX- 'A'

Table 3: Summary of Leachate Sampling Results (SNP Monitoring Station)

Sewage and solid waste effluent samples collected on July 17 and Aug 27, 2012

	MAC	units	17-Jul-12		27-Aug-12	
Parameter	Limits		TAL-2	TAL-3	TAL-2	TAL-3
Alkalinity		mg/L	178		227	239
Conductivity		µS/cm	567	1010	760	1050
P^H	6-9		10.4	7.59	8.92	7.97
TSS		mg/L	136	16	48	10
Ammonia as N2		mg/L	1.7	<0.01	1.98	0.021
BOD		mg/L	40	<2	24	6
CBOD		mg/L	40	2	15	5
Nitrate as N2		mg/L	0.28	0.02	0.38	0.29
Calcium		mg/L	41.2	82	52.4	78.4
chloride		mg/L	64.4	123	83.8	122
Hardness		mg/L	178	374	227	350
Magnesium		mg/L	18.3	41.2	23.3	37.3
Potasium		mg/L	12.2	3.6	15.1	9.4
Sodium		mg/L	55.6	78.5	69.9	86.8
Sulphate		mg/L	34	54	43	122
Fecal Coliform		CFU/100mL	<10	2	370	9
Oil and Gas	5000	µg/L	Invis.	invis.	none	none
Aluminium		µg/L	84	10	43.4	10.3
Arsenic	100	µg/L	0.9	1.1	0.9	0.9
Cadmium	10	µg/L	<0.1	<0.1	<0.05	<0.05
Chromium	100	µg/L	0.3	0.3	0.2	0.2
Cobalt	50	µg/L	8.2	<0.1	0.2	0.2
Copper	200	µg/L	9	0.7	6.9	1.6
Iron		µg/L	138	466	46	272
Lead	50	µg/L	<0.1	<0.1	<0.1	<0.1
Manganese		µg/L	30.5	95.4	25.6	22.4
Nickel	200	µg/L	1.4	0.9	1.7	1.6
Zinc	500	µg/L	11	<5	6.2	1.4

Based on results, no parameters have exceeded the Canadian Environmental Quality Guidelines

Pictures: Two Cells natural lake Lagoon (Primary cell and detention cell)

Picture: Natural Wetland for effluent run-off remediation

Pic: Sewage effluent onto wetland

Pic: Effluent runoff on wetland before Ocean