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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

WATER LICENCE APPLICATION FORM

Application for: (check one)

☒ New ☐ Amendment ☐ Renewal ☐ Assignment

Nunavut Water
Board

NOV 24 2006

Public Registry

LICENCE NO: New application for Utilidor System of the Hamlet of Resolute Bay
(for NWB use only)

**1. NAME AND MAILING ADDRESS OF
APPLICANT/LICENSEE**

Bhabesh Roy, P.Eng.
Municipal Planning Engineer
Baffin Region, GN
Pond Inlet, P.O.Box 379
NU, X0A 0S0
Phone: 867 899 7314
Fax: 867 899 7328
e-mail: broy@gov.nu.ca

**2. ADDRESS OF CORPORATE
OFFICE IN CANADA (if applicable)**

Baffin Regional Office, CGS
Govt. of Nunavut, Pond inlet
P.O. Box 379
NU, X0A 0S0
Phone: 867 899 7314
Fax: 867 899 7314
e-mail: broy@gov.nu.ca

3. LOCATION OF UNDERTAKING (describe and attach a topographical map, indicating the main components of the undertaking)

Latitude: N74-43-01
NTS Map No. _____ Scale _____

Longitude: W94-58-10 (NAV Canada)

4. DESCRIPTION OF UNDERTAKING (attach plans and drawings)

**Plan and Drawings for Resolute Bay Utilidor Upgrade and Related Work, A.D.
Williams Engineering Inc., (2005)**

5. TYPE OF UNDERTAKING (A supplementary questionnaire must be submitted with the application for undertakings listed in "bold")

☐ Industrial ☐ Remote/Tourism Camps
☐ Mine Development ☒ **Municipal**
☐ Advanced Exploration ☐ Power
☐ Exploratory Drilling ☐ Other (describe):

6. WATER USE

- | | |
|---|--|
| <input checked="" type="checkbox"/> To obtain water | <input type="checkbox"/> To divert a watercourse |
| <input type="checkbox"/> To modify the bed or bank of a watercourse | <input type="checkbox"/> Flood control |
| <input type="checkbox"/> To alter the flow of, or store, water | <input type="checkbox"/> Other (describe): |
| <input type="checkbox"/> To cross a watercourse | |

7. QUANTITY OF WATER INVOLVED (litres per second, litres per day or cubic metres per year, including both quantity to be used and quality to be returned to source)

Water intake from Char Lake in average 75,000 lgal/day (345.39 cubic metre per day) (Ref.A.D. Williams, 2006)
and discharge to the sea in average roughly 95% of Intake volume.

8. WASTE (for each type of waste describe: composition, quantity, methods of treatment and disposal, etc.)

- | | |
|---|---|
| <input checked="" type="checkbox"/> Sewage | <input type="checkbox"/> Waste oil |
| <input checked="" type="checkbox"/> Solid Waste | <input type="checkbox"/> Grey water |
| <input checked="" type="checkbox"/> Hazardous | <input type="checkbox"/> Sludges |
| <input checked="" type="checkbox"/> Bulky Items/Scrap Metal | <input type="checkbox"/> Other (describe) |

9. PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)**Land Use Permit**

- | | | | |
|----------------------------|------------------------------|--|----------------------|
| DIAND | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | If no, date expected |
| Regional Inuit Association | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | If no, date expected |
| Commissioner | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | If no, date expected |

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

- | | | | |
|----------------|---|-----------------------------|----------------------|
| NIRB Screening | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | If no, date expected |
|----------------|---|-----------------------------|----------------------|

11. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)**Consultant on Job:**

AD Williams Engineering Inc.
P.O.Box-200
Cambridge Bay, NU, X0B 0C0
Ph 867 983 4141

~~Fax 867 983 4123~~

Function: Design and construction supervision of the rehabilitation and extension works of the Utilidor System.

12. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)

1. Water and Sewer Facilities Investigation (Final Report), UMA Engineering Ltd, 1996
2. Utilidor upgrade, Revision 1(Vol. 1), Dillon Consulting, 1999
3. Water System building assessment (Vol. 2), Dillon Consulting, 1999
4. Sewage Treatment and Future system expansion(Vol. 3), Dillon Consulting, 1999
5. Utilidor upgrade (Final Report), Dillon Consulting, 1999
6. Utilidor Repair and Upgrades, A.D. Williams Engineering Inc., 2006
7. Environmental Assessment study, Resolute Bay Utilidor extension and Upgrades, G.A. Packman and Associates, 2006

13. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN

Supplementary Questionnaire (where applicable: see section 5) ☐ Yes ☒ No If no, date expected

Inuktitut/English Summary of Project ☒ Yes ☐ No If no, date expected

Application fee \$30.00 (c/o of Receiver General for Canada) ☒ Yes ☐ No If no, date expected

14. PROPOSED TIME SCHEDULE

☐ Annual (or) ☒ Multi Year

Start Date: 2005 Completion Date: 2007

Bhabesh Roy, M.A.Sc., P.Eng.

Municipal Planning Engineer

Name (Print)

Title (Print)

Signature

November 15, 2006

Date

For Nunavut Water Board use only

APPLICATION FEE

Amount: \$ 30.00

Receipt No.:

WATER USE DEPOSIT

Amount: \$ 30.00

Receipt No.:

Resolute Bay Utilidor System

**Prepared By: Bhabesh Roy, M.A.Sc., P.Eng
Regional Municipal Planning Engineer**

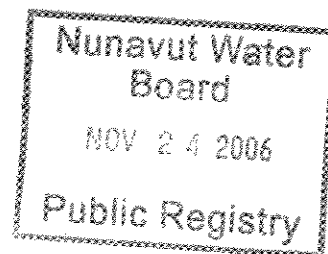
Introduction: The Hamlet of Resolute Bay is serviced by an Utilidor system which delivers water to houses and commercial users, and collects the sewage from these users. The system is combined of water supply and sewage systems and has several components like:

- Raw water source (Char Lake)
- Pump House
- The water supply line from pump house to the WTP
- The utilidor system is comprised of the water distribution system and the sewage collection system
- The sewage outfall

The entire system was built in Stages: Stage 1A was completed in 1977 and stage 1B was completed in 1978. Dillon's final report dated February 17, 1999 indicated that the design of the Utilidor system was done by UMA. UMA also conducted condition assessment study in 1995 and also Dillon in 1998. Following these reports, A.D. Williams Engineering Inc. did the recent assessment and is working forward to the followings:

1. Install a new boiler at Char Lake and reduce the bleeder rate to lower water usage to about 55,000 lgal. /day.
2. Install larger circulation pumps in the boiler systems and revise the circulation systems.
3. Check the rate of circulation from WTP and repair the utilidor watermain.
4. Lower the main bleeder rate at the sewer bleeders to a flow rate of about 4 gpm each.
5. Upgrade Emergency generator for both Plants

Presently rehabilitation of existing 168m utilidor system was completed in this summer. There is an extension of 480m water main and 260m sewer main to accommodate 5 Fire hydrants and two gate valves. The extension works is expected to complete in 2007. A.D. Williams Engineering Inc. is the existing consultant for the rehabilitation and extension works of the utilidor system.



Description of the project:

Raw water source: Char Lake is the raw water source for both Municipal system and Airport. This source is located about 2km North-west from the Hamlet of Resolute Bay. Present water production is roughly in the 70,000 to 80,000 lgal/day range. A new boiler of 200,000 Btuh is recommended to be added to heat the wet well.

Pump House: The pump house is an insulated metal building located on the top of a underground Concrete Reservoir which is connected to Char Lake with a 200mm intake pipe. The Char Lake pump house has two main pumps which are operated to maintain the reservoir level at Signal Hill. Insulation system has been improved to about 84,000 Btuh to adequately heat the pump house. Boiler system has been changed with the capacity of 60 gpm.

Supply Line from Char Lake to the WTP: The water intake from Char Lake to the WTP is an 1878m long 150 mm diameter with 50 mm insulation buried pipeline. The pipeline is electrically heat traced. The heat trace is allowed to operate only when the main pipe are not operating.

Signal Hill Treatment Plant: Signal Hill WTP receives water from Char Lake and treated by Chlorine . The treated water then enters the above ground heated reservoir of capacity 117,000 lgl. The bottom 3650 mm of the reservoir is the fire reserve of the town. The temperature of the reservoir is maintained at 5.6 degree Celcius. The heating of the Signal Hill building is also by the boilers, roughly 24,600 Watts of heat.

Water is pumped by one of the two circulation pumps of capacity 370gpm each through 200mm diameter pipe from the reservoir to the Utilidor system. To ensure the water system does not freeze, roughly 300 gpm are recirculated back to the WTP. Water also flows to the truck fill.

Utilidor System: The system consists of water distribution and wastewater collection systems. The water supply utilidor is a looped water supply system of 2044m with 200 mm insulation and 323m with 150 mm insulation mains looping around the town and back to the Signal Hill Reservoir. A Constant pressure of 50 kPa (20 psi) is provided at the water treatment plant to the distribution system. Recirculation process is established to avoid freezing. The system consist of 30 manholes.

Wastewater is collected from the bleeders and domestic use. 3 main bleeders are there, each having a high bleed rate. Each house has a bleeder set up about 1litre/hr. There are about 73 units of a total 73 L/hr from housing units. The total bleed rates are about 175 Cubic metres per hour. Also, main bleeders are located at seven locations in the manholes at about 7.3 gpm each. Bleeders are established to ensure flow in dead end portions of the system and to ensure adequate flow goes to the sanitary system especially the upper portions. Again when there is no water use in the community, the bleeders ensure that the sanitary lines remain unfrozen.