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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

# Water Licence Application
# Supplementary Questionnaire
# for Municipalities

## I. GENERAL

1. Date:

2. Applicant: Hamlet of Pangnirtung, Baffin Island

3. Contacts:

Name of Contact: William Kilabuk
Position: Planning and Lands Administrator
Telephone: 867-473-8953
Fax: 867-473-8832

4. Community Status:

__ Village
__ Town
__ City
√ Hamlet
__ Settlement Corporation

5. Indicate the status of the municipality's licence on the date of the application.

__ New Application
√ Renewal - Water Licence # N5L4-1447

## II. ATTACHMENTS

1. Attach current or up-to-date detailed map(s) showing the locations of the:

a. raw water intake;
b. water storage and treatment facilities;
c. fuel and chemical storage;
d. sewage treatment facilities (lagoon, honey bag pit, wetland);
e. wastewater treatment area and discharge outlets;
f. solid waste disposal areas and drainage patterns;
g. hazardous waste disposal area;
h. transportation access routes;
i. existing water bodies/courses and any changes to these water bodies/courses that have or may occur as a result of water use or waste disposal facilities, locations of environmental monitoring sites. (Outline drainage basin);
j. Traditional use areas outlined on site map and areas around the community used for recreation, camping, fishing, etc.
k. abandoned and/or restored water treatment, sewage, and solid waste disposal facilities.

Are maps attached? _√_ Yes __ No

If no, please indicate when they will be available.
Indicate which organization has provided the various maps or diagrams.

The Hamlet of Pangnirtung has provided the diagrams for submittal to the Nunavut Water Board.

## III. WATER SUPPLY

### *Water Source*

1. Type of source

___Lake
_v_River
___Well
___Other

2. Name of water source and alternative, if any.

Primary Source: Duval River
Secondary Source: Reservoir

3. Usual break-up & freeze-up period:

Break-up: End of June
Break-up: November

### *Water Intake*

1. Please provide short descriptions for the following:

a. Freshwater intake facility

Water is pumped from the Duval River.

b. Operating capacity of pumps used

Gorman-Rupp. 6'' diameter capable of discharging 125 IG/min

c. Intake screen size

The intake screen has a 500 mm diameter, 3 mm slot, and a 250 mm ASA flange.

***Water Storage***

1. Type of water storage facility. (check where applicable)

   _v_ Reservoir/ Pond
   ___ Storage Tank
   ___ None
   ___ Other

***Other***

Description:

2. If "reservoir" checked:

   Is the reservoir lined?

   Yes

   What type of liner?

   The liner is a poly felt T.S 700 edge of berm HDPE, 80 (mil) liner.

   When was it installed?

   1973

***Water Treatment***

1. Indicate the quality of the water.

| | | | |
|---|---|---|---|
| Summer: | _√_ good | ___ fair | ___ poor |
| Fall: | _√_ good | ____ fair | ___ poor |
| Winter: | _√_ good | ____ fair | ___ poor |
| Spring: | _√_ good | ____ fair | ___ poor |

3. Describe.

4. Type of water treatment

   __ Filtration and chlorination
   _v_ Chlorination only
   __ None
   ___ Other _Fluoridation and Chlorination_

***Water Use And Distribution***

1. Volume of water use:

| Distribution | Estimated number of people on the system<br>**A** | Estimated average water consumption (Litres/capita/day)<br>**B** | Total water consumption (Litres/day)<br>**A x B** |
|---|---|---|---|
| Piped | | | |
| Trucked | 1300 | 129 | 167,700 |
| | | | 167,700 |

***General Condition of the water supply facilities***

1. General condition of the:

   a. Water supply facility

   _v_ Satisfactory __ Unsatisfactory

   If unsatisfactory, explain.

   b. Storage facility

   _v_ Satisfactory __ Unsatisfactory

   If unsatisfactory, explain.

   c. Distribution system

   _v_ Satisfactory __Unsatisfactory

   If unsatisfactory, explain.

***Modifications***

1. Are there any changes *planned* for the water supply system?

_v__ No __Yes

If yes, please attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

2. Does the community believe changes needed to the water supply, storage or treatment facilities? Describe.

No.

***Identification***

Are there signs identifying drinking water sources presently used by the municipality?

__ Yes _√_ No

Will do one.

## IV. SEWAGE DISPOSAL

1. What type(s) of sewage treatment does the community have?

____ Lagoon
____ Mechanical system
____ Wetland
____ Honey bag
____ Combination/Other: describe

***Lagoon*** *(if applicable)*

1. Has there been any operating problems with the lagoon?

Not Applicable

If yes, describe

***Mechanical System*** *(if applicable)*

1. Describe (type, specifications, operation and maintenance program for the mechanical wastewater treatment system)

Not Applicable

2. Are sludges produced?

_ Yes __ No

If yes, describe how the sludges are disposed of:

***Wetland** (if applicable)*

1. Describe the Wetland wastewater treatment system.

Not Applicable

***Honey Bag Pit***

1. Does the municipality use a honey bag pit?

___ Yes __v_ No

If yes, describe the location, drainage, and operation/maintenance of the site:

***Commercial, Industrial and/or Hazardous Wastes***

1. Are there any sources of commercial or industrial *liquid* waste being discharged or deposited to the wastewater treatment system that may affect the quality of the effluent or leachate produced? *(The municipality should be aware that any commercial or industrial discharge has to be approved by the municipality)*

___ Yes _v__ No

If yes, indicate sources, types and quantities.

***Sewage Discharge***

1. Are fish, shellfish and other wildlife harvested in or near the discharge area ?

_v_ Yes ___ No

If yes, indicate species harvested, and level of harvest.

Char, seals, and sea mammals.

***General Condition of the sewage treatment facilities***

1. General condition of the:

a. Sewage collection system

__ Satisfactory _v_ Unsatisfactory

If unsatisfactory, explain.

No sewage lagoon or treatment plant.

b. Discharge control system

___ Satisfactory _v_ Unsatisfactory

If unsatisfactory, explain.

No control system.

c. Dams, diversion dykes, berms

Not Applicable

If unsatisfactory, explain.

***Modifications***

1. Are there any changes *planned* in the sewage treatment facilities?

__ No _v_ Yes

If yes, please attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

A new sewage treatment plant will be constructed in the summer/fall 2001. The facility is scheduled to be commissioned in January 2002.

2. Does the municipality or residents believe changes are needed to the sewage treatment facilities? Describe.

Yes. The municipality and residents believe that a new sewage treatment facility is needed for the Hamlet.

***Abandonment and Restoration***

1. List and describe abandoned or restored sewage treatment facilities.

None

***Identification***

Are there signs identifying past and present sewage disposal sites?

___ Yes _√_ No

The Hamlet is getting some made.

## V. SOLID WASTE DISPOSAL

1. Briefly describe how solid wastes are collected and delivered to the disposal area.

Trucked pickup and dump on site.

Hamlet has two garbage trucks that work on a schedule and collect and bring garbage to the dump.

2. Is the solid waste site fenced? _v_ Yes __ No

3. Is the fence adequate? __ Yes _v_ No

If no, describe

50% of it got blown down.

### *Waste Reduction*

1. Does the municipality burn garbage?

_v_Yes _ No

If yes, describe how and when this is done.

Depending on directional wind, burning occurs during southwest winds.

2. Has the municipality considered measures for waste reduction such as recycling or reuse?

__ Yes _v_ No

If yes, describe

### *Animal Carcasses Pit*

1. Does the municipality have an area for the disposal of animal carcasses ?

_v_ Yes __ No

If yes, describe the location, drainage and operation/maintenance of the site

The animal carcass pit is located at the local municipal dump, in one of the sections as indicated on the attached map.

***Waste Oil Pit***

1. Describe the waste oil storage area.

   Waste oil is stored by municipal garage in tanks.

***Bulky Scrap Metal Waste Disposal Area***

1. Does the municipality have a scrap metal or bulky waste disposal area?

   v_ Yes __ No

   If yes, briefly describe its location and operation plan.
   The bulky scrap metal disposal area is also located at the municipal dump, in one of the sections as indicated on the attached map.

***Commercial, Industrial and/or Hazardous Wastes Disposal Area***

1. Are there any commercial or industrial waste being discharged or deposited in the solid waste disposal area? *(The municipality should be aware that any discharge of commercial or industrial waste has to be approved by the municipality)*

   ___ Yes _v_ No

   If yes, please indicate sources, types and quantity.

2. Will the municipality use a hazardous waste storage area?

   __ Yes _√__ No

   If yes, describe its:

   a. Location

   b. Structure

   c. Operation and maintenance (describe special handling/disposal methods for these wastes)

      The Hamlet does not have a storage area for hazardous waste. When handling these wastes is required the handlers use Personnel Level 1 protective clothing.

***General Condition of the Solid Waste Disposal Area***

1. Comment on the general conditions of the:

a. Solid waste disposal area

_v_ Satisfactory __ Unsatisfactory

If unsatisfactory, explain.

Needs new fencing done - dumpsite is okay.

***Modifications***

1. Are there any changes planned for the solid waste disposal area?

_v_ No _Yes

If yes, attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

2. Are changes needed to the solid waste disposal area? Describe.

New fencing

***Abandonment and Restoration***

1. List and describe abandoned or restored solid waste facilities.

Indicate their location on a map.

As shown on the attached map.

***Identification***

1. Are there signs identifying past and present solid waste disposal sites ?

_v_ Yes __ No

## VI. INSPECTION AND MONITORING

1. When were municipal facilities inspected by:

___ Indian and Northern Affairs Inspector Date: _____
_____ Community Government and Transportation Date: _____

_____Other: Date: _____

2. Is there a system in place for reporting spills?

_v_ Yes ___ No

If yes, describe.

We reply to EMO, Iqaluit

3. Is there a contingency plan for clean up of spills?

_v__ Yes ___ No

If yes, describe.

Spills are cleaned up using special spill material.

4. Have any spills occurred in the past five years?

__Yes _√_ No

If yes, describe and show on a map the locations of the spills. What action has been taken to clean the affected areas?

***Monitoring Program***

1. Is water sampling and analysis done ?

__v_ Yes ___No

If Yes, answer the questions a to e

a. Briefly describe how samples are taken and sent to the laboratory.

Water samples are taken from all water trucks and all public buildings. Sample containers are rinsed twice from the sample site, then put into a cooler and sent to the laboratory the same day.

b. Briefly describe any monitoring done for wastewater effluent and leachate.

None

c. Who is responsible for water sampling ?

Name: Daniel Kulugutul

Position: Acting/Assistant Foreman
Telephone #: 867-473-8926
Fax #: 867-473-8367
Level of training:

d. Recognized laboratory performing analysis of samples.

Name: Philip Reeve H&SS
Address: P.O Box 1000 stn 1046 Iqaluit, Nunavut
Telephone #: 867-975-4815
Fax: 867-975-4830

e. Are any changes planned in the water quality-monitoring program?

___ Yes _v__ No

If yes, describe.

## VII. PUBLIC CONCERNS

1. What concerns does the municipality or residents have regarding the municipal water supply or waste disposal facilities? List the concerns and describe what steps have been taken to address those concerns.

The community has not stated any concerns regarding water supply or waste disposal.

## VIII. PUBLIC HEALTH *(Help may be obtained from the Regional Environmental Health Officer if you have difficulty with this section.)*

1. Date:

2. Municipality:

3. Contact: Phillip Reeve
Telephone #: 867-975-4815
Fax #:

4. Have there been any problems or health/environmental concerns with drinking water ?

___ Yes ___No

If yes, describe

5. Have there been any problems or health/environmental concerns with sewage disposal/treatment?

___ Yes ___ No

If yes, describe

6. Have there been any problems or health/environmental concerns with solid waste disposal?

___ Yes ___ No

If yes, describe

Same as stated earlier.

***Monitoring Program***

1. Does the Regional Health Board perform water quality sampling?
___No ___If Yes, answer questions (a) to (c)

a. Briefly describe the sampling methodology.

b. Briefly describe any monitoring of wastewater effluent and leachate.

Samples from public places

c. Who is responsible for sampling?

Name:
Position:
Telephone #:
Fax # :
Level of training:

d. Recognized laboratory performing analysis of samples.

Name:
Address:
Telephone #:
Fax # :

e. Are any changes planned in the water quality-monitoring program?

__ Yes __No

If yes, describe.

**IX. TECHNICAL INFORMATION** *(Assistance may be obtained from the Regional Community Government (CG&T) office if you have difficult with this section).*

1. Date:

2. Municipality:

3. Contact:
Telephone #:
Fax #:

4. Population (according to most recent census results):

1,276 (2001 Census)

5. Estimated growth rate over next 5 years:

2.1% per year

6. Has any baseline data collection and evaluation been undertaken with respect to the physical, biological, and chemical characteristics of the main water bodies in the area?

__Yes v_No

If yes, provide a summary of program details or site title, authors, cities, and dates:

If no, are such studies being planned?

_√_No ___Yes (If yes, when and by whom):

7. Have Elders been consulted in the collection of baseline data on main water bodies in the area?

_v__No __Yes

If yes, specify

8. Has any baseline data collection and evaluation been undertaken with respect to the various biophysical components of the environment potentially affected by the project?

_√__No ___Yes

If yes, provide details below.

If no, are such studies being planned?

_√_ No __Yes.

If yes, specify:

***Attachments***

1. Attach detailed plan or drawing(s) of the present *solid waste disposal area*. Include the following information:

    a. details of pond size and elevation;
    b. details of all retaining structures (dimensions, materials of construction, etc.);
    c. details of the drainage basin, and existing and proposed drainage modifications;
    d. details of all decant, siphon mechanisms etc., including sewage treatment facilities;
    e. details regarding direction and path of wastewater flow from the area;
    f. distance from watercourses and fish bearing waters;
    g. location and construction of liners;
    h. leachate and groundwater collection systems; and
    i. control structures.

2. Attach detailed plan or drawing(s) of the present *sewage treatment system.* The drawing(s) should include the following:

    a. details of all retaining structures (dimensions, materials of construction, etc.);
    b. details of the drainage basin, and existing and proposed drainage modifications;
    c. details regarding direction and path of wastewater flow from the area;
    d. indications of the distance from watercourses and fish bearing waters;
    e. all sources of seepage presently encountered near these areas, including volumes ($m^3$/day) and
    directions.
    f. The volume of seepage flow ($m^3$ / day); and
    g. The direction of each flow.

3. Are drawings for the solid waste disposal area and sewage treatment system attached?

    _√__ Yes ___No

    If Yes, who has provided them ?

    The Hamlet has provided them. Bill Kilabuk (C.L.A.) sent them to Ferguson Simek Clark who will be submitting them with the water licence application.

    If no, indicate when they will be available.

***Hydrology***

1. Effects on surface water flow:

    Are any stream channels altered? __ Yes _v_ No

    Is the natural storage or water level of any lake or pond changed? __ Yes _v_ No

Are there changes in water flow downstream of the project? ___ Yes _v_No

Is a storage reservoir created in a natural channel? ___ Yes _v_ No

If yes to any of the above, briefly describe the expected change in flow or storage:

2. Drainage Area:

What is the drainage area?

0.1 $km^2$

What is the average elevation of the drainage basin?

0

Is the drainage basin outlined on an attached map?

_√_Yes ___No

Describe the drainage basin characteristics, (vegetation, general soil type, lakes, swamps and permafrost areas, etc.)

3. Channel characteristics:

Is the course of any channel changed?

____ Yes __v_No

If yes, describe measures to maintain stream bed and bank stability.

4. Will the cross-section of any watercourse be changed?

___ Yes _v_ No

If yes, describe the change and its effect on the flow capacity of the channel.

***Water Supply***

1. What is the rate of withdrawal from the source?

2,520 $m^3$/day

2. Is water drawn from the source

_v__ intermittently
____ continuously

3. If it is drawn intermittently, during what month(s) is it drawn?

   Late August – early September

4. For what period is it drawn (days/weeks/months)?

   Weeks

6. What is the rate of flow of source (if river) or size (if lake)?

   Unknown.

7. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn.

   No effects on the river

***Water Storage***

1. Is a dam or dyke being used to store or alter the flow of water?

   ___Yes _v_No

2. What are the dimensions of the dam or dyke?

   Not Applicable

3. Does the proposed dam create a reservoir in a natural watercourse?

   Not Applicable

   If yes, what is the storage capacity and surface area of the reservoir?

4. Will the dam or dyke affect fish migration or movement ?

   Not Applicable

   If yes, describe all measures for compensation of fish habitat lost due to the dam or dyke, and mitigation for fish migration or movement.

***Water Treatment***

1. Indicate the capacity of the treatment facility. ____1,000_____ L/min

2. What is the capacity of the water storage facility.

   Approximately 69,600 $m^3$.

3. Describe the method of water treatment (i.e., backwash, flocculation, sedimentation, chemicals used), and provide the results of the most recent bacteriological and chemical analysis. Attach a diagram, if possible.

   Water is treated by hypochlorination as the delivery truck is being filled. Each fall when the reservoir is filled, barrels of hydrofluosilic acid are used to batch fluoridate the water. The water in the reservoir is properly mixed to prevent pooling of the fluoride.

4. Are there any changes planned in the water treatment facilities?

   _v__ No ___Yes

   If yes, attach a copy of the plan or indicate changes and include an implementation schedule. Include excerpt from MACA Capital Plan if available.

***Sewage Disposal***

1. Indicate the level of sewage treatment:
   ____ Primary
   ____ Secondary
   ____ Tertiary

   None

   Pre-treatment (if applicable):

   ____ Screening
   ____ Maceration

   Lagoons (if applicable):

   Not Applicable

2. Indicate the capacity of the sewage treatment facility

   Not Applicable

3. Based on current population projections, the facility will meet the needs of the community until the year

   Not Applicable

4. Average depth of the wastewater lagoon

   Not Applicable

5. What is the design freeboard

   Not Applicable

6. Indicate the retention time of the sewage while in the treatment facility

   8-12 hours.

7. Indicate the estimated rate of discharge of wastewater

   Approximately equal to rate of water consumption.

8. Indicate the location of the discharge point

9. Is the discharge:

   ____ seasonal
   __v_ continuous

   If the discharge is seasonal, during what month(s) is it done

   What is the duration of the discharge (days/weeks/months)

10. Are there any changes planned in the sewage disposal facilities?

    __ No _√_ Yes

    If yes, attach a copy of the plan or indicate changes and include an implementation schedule. Include excerpt from MACA Capital Plan if available.

    A new sewage treatment plant is proposed. The plant will be a 320 $m^2$ pre-engineered building.

***Solid Waste Disposal***

1. Indicate the capacity of the disposal area

   Approximately 15,000 $m^2$.

2. The *average* depth of the solid waste disposal site.

   The average depth is approximately 1 meter.

3. The current facility will meet community needs until the year

   Beyond 2007.

4. Do any natural watercourse enter the solid waste disposal area? What methods are used to decrease the amount of runoff water entering these areas?

   No/None.

5. Indicate the volume of water that may enter these areas from any source(s) and attach all pertinent details of the diversions.

   Source: Stream, run off spring
   Volume: not much

6. Please describe any diversions of watercourses:

   Road ditches

7. Are there any changes planned in the solid waste disposal facilities?

   ___ No ___√___ Yes

   If yes, attach a copy of the plan or indicate changes and include an implementation schedule.
   Include excerpt from MACA Capital Plan if available.

   Changes are planned however a planning study is not ready at this time. It will be submitted for approval when complete.

***Other***

1. Describe any additional details on the existing municipal facilities which should be considered by the Nunavut Water Board during its review.