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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN

Water Licence Application Supplementary Questionnaire for Municipalities

I. GENERAL

1. Date: **March 21, 2002**

2. Applicant: **The Hamlet of Whale Cove**

3. Contacts: **Imelda Angootealuk**
Senior Administrative Officer
Telephone #: 1-867-896-9961 **Fax #: 1-867-896-9109**

4. Community Status: **Hamlet**

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

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

If no, please indicate when they will be available.

Indicate which organization has provided the various maps or diagrams.

III. WATER SUPPLY

Water Source

1. Type of source: **Lake**
2. Name of water source and alternative, if any.
   Fish Lake
   Primary Source Secondary Source

3. Usual break-up & freeze-up period: **June** Break-up **November** Freeze-up

Water Intake

1. Please provide short descriptions for the following:

a) Freshwater intake facility

The intake is located to a depth of 6 m. The system is composed of a single vertically mounted drum screen and an inclined shaft casing. A submersible pump located inside the casing about 15 m from the intake is mounted on a skid.

b) Operating capacity of pumps used

1,000 liters/minute

c) Intake screen size

Water Storage

1. Type of water storage facility. (check where applicable)
   ___ Reservoir/Pond **X Storage Tank** ____ None

Other

Description:

1. If "reservoir" checked:
   Is the reservoir lined? ___ Yes ___ No
   What type of liner? _____ When was it installed?_____

Water Treatment

1. Indicate the quality of the water.

Summer:	**X good**	___ fair	___ poor
Fall:	**X good**	___ fair	___ poor
Winter:	**X good**	___ fair	___ poor
Spring:	**X good**	___ fair	___ poor

2. Describe.
   The water samples meet the Guidelines for Canadian Drinking Water Quality except for the quality of turbidity, which is .2.7 NTU as opposed to 1 NTU. The

turbidity guidelines refer to the clearness of the water which is between the aesthetic guideline of 5 NTU and the 1 NTU drinking water guideline.

2. Type of water treatment.

_____ Filtration and chlorination
X Chlorination only
_____ None
_____ Other _____
Description

Water Use And Distribution

1. Volume of water use:

Distribution	Estimated number of people on the system A	Estimated average water consumption (Litres/capita/day) B	Total water consumption (Litres/day) A x B
PIPED			
TRUCKED	**352**	**97.29**	**34,245**
		TOTAL	

General Condition of the water supply facilities

1. General condition of the:

a. Water supply facility
X Satisfactory __ Unsatisfactory
If unsatisfactory, explain.

b. Storage facility
X Satisfactory __ Unsatisfactory
If unsatisfactory, explain.

c. Distribution system
X Satisfactory __ Unsatisfactory
If unsatisfactory, explain.

Modifications

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

Provisions for the potential of future fluoridation as a form of water treatment have been made by the installation of a supply fitting on the steel water discharge line and reserving space within the pump house for fluoridation equipment.

Identification

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

X No ___Yes

IV. SEWAGE DISPOSAL

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

___ Lagoon
___ Mechanical system
___ Wetland
___ Honey bag
X Combination/Other: describe
The sewage treatment of the community consists of a lagoon to retian the waste and to discharge the sewage to the wetlands.

***Lagoon** (if applicable)*

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

___ Yes **X No**

If yes, describe

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

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

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.

Waster water is retained in the sewage lagoon system. The sewage exfiltrates through 400 m of vegetation. This combination of the retention time of the sewage and wetlands treatment is an efficient method of treating the wastewater.

Honey Bag Pit

1. Does the municipality use a honey bag pit?

X Yes ___ 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 **X No**

   If yes, indicate sources, types and quantities.

Sewage Discharge

1. Are fish, shell fish and other wildlife harvested in or near the discharge area ?
   X Yes ___ No
   If yes, indicate species harvested, and level of harvest.

   - Fishing for arctic char north of the shore near the lagoon
   - Domestic harvesting of mussels

General Condition of the sewage treatment facilities

1. General condition of the:

a. Sewage collection system
   X Satisfactory __ Unsatisfactory
   If unsatisfactory, explain.

b. Discharge control system
   X Satisfactory __ Unsatisfactory
   If unsatisfactory, explain.

c. Dams, diversion dykes, berms
   X Satisfactory __ Unsatisfactory
   If unsatisfactory, explain.

Modifications

1. Are there any changes *planned* in the sewage treatment facilities?
   X No ___ Yes
   If yes, please attach a copy of the plan, or describe changes. Provide information on the implementation schedule.

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

   Public Works and Services has recently requested a study by Ferguson Simek Clark in Yellowknife on the effectiveness of making the sewage lagoon berms impermeable. The study indicated that the current exfiltration process is effective in

treating the wastewater. The lagoon's partial impermeability does not affect the sewage treatment.

Abandonment and Restoration

1. List and describe abandoned or restored sewage treatment facilities.
Refer to original attachment maps.

None

Identification

Are there signs identifying past and present sewage disposal sites ?
X Yes ___ No

V. SOLID WASTE DISPOSAL

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

A two-person crew using a 1991 Ford F-350 compactor with a 9-m3 capacity collects solid waste daily. Residents do not burn wastes in oil drums at home. Bulky wastes disposal is the responsibility of the individual. An annual Spring cleanup takes place in July.

2. Is the solid waste site fenced? ___ Yes **X No**

3. Is the fence adequate? __ Yes __ No

If no, describe

Waste Reduction

1. Does the municipality burn garbage?
X Yes ___ No
If yes, describe how and when this is done.

The garbage is deposited using the trench method, and is burned within the trench to reduce the volume.

2. Has the municipality considered measures for waste reduction such as recycling or reuse?
___ Yes **X No**
If yes, describe

Animal Carcasses Pit

1. Does the municipality have an area for the disposal of animal carcasses ?
___ Yes **X No**
If yes, describe the location, drainage and operation/maintenance of the site

Waste Oil Pit

1. Describe the waste oil storage area.

The waste oil storage is located in the bulky waste area. Barrels containing wasre oil are stored on pallets.

Bulky Scrap Metal Waste Disposal Area

1. Does the municipality have a scrap metal or bulky waste disposal area?
X Yes ___ No
If yes, briefly describe its location and operation plan.

The bulky waste area is a separate area located 60 m by 120 m west of the solid waste site. The site contains bulky waste such as used vehicles, appliances and other large metal items. Bulky metals are usually compacted prior to refilling and capping work.

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 **X No**
If yes, please indicate sources, types and quantity.

2. Will the municipality use a hazardous waste disposal area?
X Yes ___ No
If yes, describe its:

a. Location

The waste oil storage area would be within the bulky waste disposal area.

b. Structure

The community is investigating purchasing a sealift container to store hazardous waste such as batteries and other hazardous materials.

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

The bulky waste area was relocated to an area away from the shoreline.

General Condition of the Solid Waste Disposal Area

1. Comment on the general conditions of the:

a. Solid waste disposal area
X Satisfactory __ Unsatisfactory

If unsatisfactory, explain.

Modifications

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

Abandonment and Restoration

1. List and describe abandoned or restored solid waste facilities.
   Indicate their location on a map.

   There is one abandoned site located in the community. Please refer to the attached community map in the community information for the Whale Cove Water License application.

Identification

Are there signs identifying past and present solid waste disposal sites?
X Yes ___ No

VI. INSPECTION AND MONITORING

1. When were municipal facilities inspected by:
   Indian and Northern Affairs Inspector **Date: August 30, 2001**
   Community Government and Transportation **Date: August 22, 2001**
   Other: Date: _____

2. Is there a system in place for reporting spills?
   X Yes ___ No
   If yes, describe.

   The community uses the government spill line and would report the spill to the Senior Administrative Officer (Senior Administrative Officer).

3. Is there a contingency plan for clean up of spills?
   ___ Yes **X No**
   If yes, describe.

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

The list of spills that have occurred within the community of Whale Cove is attached to the end of this report. This information was obtained from the government spill line.

Monitoring Program

1. Is water sampling and analysis done ?
   X Yes ___ No
   If Yes, answer the questions a to e

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

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

c. Who is responsible for water sampling?
   Name: Paul Voisey
   Position: Maintainer, PWS
   Telephone #: 867-896-9305
   Fax #:
   Level of training: Certified by Northern Territories Water and Waste Association

d. Recognized laboratory performing analysis of samples.
   Name: Wanda Poirier and DHSS
   Address: Bag 298, Rankin Inlet, NU X0C 0G0
   Telephone #: 867-645-2171
   Fax #: 867-645-2409

e. Are any changes planned in the water quality-monitoring program?
   ___ Yes **X 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.

   None. No public concerns.

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

1. **Date: January 18, 2002**

2. **Municipality: Whale Cove**

3. Contact: (Environmental Health Officer Contact)
Name: Wanda Poirier
Telephone #: 867-645-2171
Fax #: 867-645-2409

4. Have there been any problems or health/environmental concerns with drinking water ?
___ Yes **X No**
If yes, describe

5. Have there been any problems or health/environmental concerns with sewage disposal/treatment?
___ Yes **X No**
If yes, describe

6. Have there been any problems or health/environmental concerns with solid waste disposal?
X Yes ___ No
If yes, describe

The solid waste disposal facility requires a fence to enclose the site. Also, the site requires an enclosed area for the storage of hazardous materials such as batteries etc. No signage around this area.

Monitoring Program

1. Does the Regional Health Board perform water quality sampling?
X Yes ___ No
Yes, answer questions (a) to (e)

a. Briefly describe the sampling methodology.

Water samples are taken from the water truck and other locations in the community once per month and sent to Rankin Inlet for analysis by EHO.

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

None done by Dept. of H&SS.

c. Who is responsible for sampling?
Name: Paul Voisey
Position: Settlement Manager
Telephone #: 867-896-9305
Fax #:
Level of training: Certified by Northern Territories Water and Waste Association.

d. Recognized laboratory performing analysis of samples.
Name: Wanda Poirier and DHSS
Address: Bag 298, Rankin Inlet, NU X0C 0G0
Telephone #: 867-645-2171
Fax #: 867-645-2409

e. Are any changes planned in the water quality-monitoring program?
___ Yes **X 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: Jean CORBEIL**
(Community Government and Transportation Representative)
Telephone #: 867-645-8114
Fax #: 867-645-8143

4. Population (according to most recent census results): **644 (in 1996)**

5. Estimated growth rate over next 5 years: **3.18%**

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?
X Yes ___ No

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

Prepared by	Title
Ferguson Simek Clark	**Lagoon Water Quality Testing and Testing of Adjacent Water Sources**

Completion Date:

If no, are such studies being planned?
___ Yes ___No (If yes, when and by whom):

7. Have Elders been consulted in the collection of baseline data on main water bodies in the area?
X 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?
X No ___Yes
If yes, provide details below.

Prepared by Title Completion Date

If no, are such studies being planned?
X 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.

3. 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
   f. (m3/day) and directions.
   g. the volume of seepage flow (m3/day); and
   h. the direction of each flow.

3. Are drawings for the solid waste disposal area and sewage treatment system attached?
X Yes ___ No
If Yes, who has provided them?

Ferguson Simek Clark

If no, indicate when they will be available.

Hydrology

1. Effects on surface water flow:

Are any stream channels altered?	__ Yes	**X No**
Is the natural storage or water level of any lake or pond changed?	**X Yes**	_ No
Are there changes in water flow downstream of the project?	__ Yes	**X No**
Is a storage reservoir created in a natural channel?	__ Yes	**X No**

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

Water is obtained from Fish Lake. Fish Lake has a recharge volume of nearly 93,000 m^3 per year, as compared with the present annual consumption of 9,000 m^3. Winter storage capacity of 97,000 m^3 was calculated based on an assumption that 50% of the total volume of the lake was occupied by ice cover.

2. Drainage Area:

What is the drainage area? _____km^2

What is the average elevation of the drainage basin? _____meters

Is the drainage basin outlined on an attached map? ___ Yes **X No**

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

A thin layer of organic material supports mosses and lichens along the rocky coast and low hills.

3. Channel characteristics:

Is the course of any channel changed? ___ Yes **X No**

If yes, describe measures to maintain streambed and bank stability.

4. Will the cross-section of any watercourse be changed? ___ Yes **X 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? **35 m^3/day**.

2. Is water drawn from the source ___ intermittently **X continuously**

3. If it is drawn intermittently, during what month(s) is it drawn? **N/a**

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

4. What is the rate of flow of source (if river) or size (if lake)? **93,000 m^3/yr**

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

None.

Water Storage

1. Is a dam or dyke being used to store or alter the flow of water? ___ Yes **X No**

2. What are the dimensions of the dam or dyke?
Length:_____ Width: _____ Height:_____
U/S slope: _____ D/S slope: _____

3. Does the proposed dam create a reservoir in a natural watercourse?
___ Yes ___No
If yes, what is the storage capacity and surface area of the reservoir?
_____ m^3 _____ ha.

4. Will the dam or dyke affect fish migration or movement ?
___ Yes ___ No
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. **900 L/min**

2. What is the capacity of the water storage facility? **Winter storage capacity of 93,000 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 through chlorination.

4. Are there any changes planned in the water treatment facilities?
X No ___Yes
If yes, attach a copy of the plan or indicate changes and include an implementation schedule.
Include excerpt from CG&T Capital Plan if available.

Sewage Disposal

1. Indicate the level of sewage treatment:
X primary ___ secondary ___ tertiary
Pre-treatment (if applicable): ___ screening ___ maceration
Lagoons (if applicable): ___ anaerobic ___ aerobic ___facultative

2. Indicate the capacity of the sewage treatment facility_____ m^3

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

4. Average depth of the wastewater lagoon **1.2 m**.

5. What is the design freeboard? **N/a (previously a lake)** m.

6. Indicate the retention time of the sewage while in the treatment facility_____ days.

7. Indicate the estimated rate of discharge of wastewater **Equal to rate of disposal** L/sec.

8. Indicate the location of the discharge point: **n/a**

9. Is the discharge: ___seasonal **X continuous**
If the discharge is seasonal, during what month(s) is it done?
What is the duration of the discharge (days/weeks/months)? **All year**

10. Are there any changes planned in the sewage disposal facilities?
X No ___Yes
If yes, attach a copy of the plan or indicate changes and include an implementation schedule.

Ferguson Simek Clark performed a study for Public Works and Services on the possibility of making the lagoon berms impermeable. During the study, it was found that the existing semi-permeability of the lagoon berms provided efficient treatment and discharging systems.

Include excerpt from CG&T Capital Plan if available.

Solid Waste Disposal

1. Indicate the capacity of the disposal area **80,000 m^3**.

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

3. The current facility will meet community needs until the year **2021**.

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?

None. Changes have been made to the placement of the domestic waste trench from the shoreline of the solid waste facility.

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

Source	Volume
N/A	

6. Please describe any diversions of watercourses:

N/A

7. Are there any changes planned in the solid waste disposal facilities?
X Yes ___No
If yes, attach a copy of the plan or indicate changes and include an implementation schedule.
Include excerpt from MACA Capital Plan if available.

The community has made changes to the solid waste facilities to conform to territorial guidelines.

Other

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