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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

Water Licence Application
Supplémentaire Questionnaire
For Municipalities

I. GENERAL

1. Date: **September 25th, 2003**

2. Applicant: **Hamlet of Chesterfield Inlet, Kivalliq Region**
   Municipality and Region

3. Contacts**: Roy Mullins SAO, also Bryan Purdy, (CG&T)**
   Name of Contact

   Senior Administration Officer
   Position

   1 (867) 898-9926 R.M., 1 (867) 645-8114 BP, 1 (867) 898-9108
   Telephone # Fax #

4. Community Status: __ Village __ Town __ City
   X Hamlet __ Settlement Corporation

5. Indicate the status of the municipality's license on the date of the application.
   _**x**_ **New Application**
   Renewal Water License # _____

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. Some plans and Maps are already on file

Indicate which organization has provided the various maps or diagrams.

III. WATER SUPPLY

Water Source

1. Type of source: **_x Lake** __River __Well __ other _____

2. Name of water source and alternative, if any.
3. **First Lake_____ _____** **33,000 cu m. rock reservoir_**
   Primary Source Secondary Source

3. Usual break-up & freeze-up period: **May 31____** **_November 1._____**
   Break-up Freeze-up

Water Intake

1. Please provide short descriptions for the following:

   a. Freshwater intake facility
   b. 4 inch Diameter Insulated Pipe /with screen

   c. Operating capacity of pump used ** **300 liters per minute**

   d. Intake screen size ** 120 mm Plus

Water Storage

1. Type of water storage facility. (Check where applicable)
   ___X Reservoir/Pond ___ Storage tank ___ none ___

   ___ Other **____Lake**_____Description:

2. If "reservoir" checked:

   Is the reservoir lined? **__Yes _x_ 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:	____good	_**x**__ fair	___ poor

2. Describe. **Good water year round, except a bit stale in the spring before ice break-up. The hamlet does not aerate through the winter. (Maintain hole in the ice).**

3. 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 (Liters/capita/day) **B**	Total water consumption (Day/day) **A x B**
PIPED			
TRUCKED	**410**	**76.04**	**31176**
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.

      One supply truck and one back-up truck

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. **Some residents in the community don't like the chlorinated water (taste of), some blame chlorine for causing stomach aches. These people, Harry mentioned, are also probably consuming untreated water as well**.

Identification

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

__ Yes _**x**_ No **There are no signs at the water supply lake, however there are signs at the reservoir (danger, keep out, etc.)**

IV. SEWAGE DISPOSAL

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

__ _ Lagoon
___ Mechanical system
_**x**__ **Wetland**
___ Honey bag
___ Combination/Other: describe

Lagoon *(if applicable)*

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

___ Yes ___ No

If yes, describe

N/A

Mechanical System *(if applicable)*

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

N/A

2. Are sludge's produced ?

__ Yes __ No

If yes, describe how the sludge's are disposed of:

N/A

Wetland *(if applicable)*

1. Describe the Wetland wastewater treatment system.

The wetlands are 900m long, and located 3.1 km west of the community, the wetlands area is 165,000 sq m and eventually the effluent enters the Hudson Bay.

Jacques Whitford Environmental Ltd are carrying out an evaluation study on the sewage w elands

Honey Bag Pit

1. Does the municipality use a honey bag pit?

___ Yes **_x__** 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, shellfish and other wildlife harvested in or near the discharge area?

___ Yes **___** No

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

Clams and Oysters are harvested 3 miles from the disposal site.

General Condition of the sewage treatment facilities

1. General condition of the:

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

N/A

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

N/A

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

N/A

Modifications

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

N/A

2. Does the municipality or residents believe changes are needed to the sewage treatment facilities? Describe. **No**

Abandonment and Restoration

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

There is an old site ¾ of a mile west of Chester that was at one time a site for combined drop for; honey bags, sewage and solid waste.

Identification

Are there signs identifying past and present sewage disposal sites?
__ Yes _**x** No

V. SOLID WASTE DISPOSAL

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

Routine garbage collection

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

3. Is the fence adequate? **_X 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.
15 times a month, garbage is burned, when the wind is favorable

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

Carcasses go in the general garbage.

Waste Oil Pit

1. Describe the waste oil storage area.

There is a bermed area just outside the fenced area of the solid waste site, when drums are filled with waste oil, antifreeze etc they are taken to this area for storage.
The problem is that the drums are deteriorating and sometimes are a target for vandalism; a plan is needed to dispose of these drums.
The Power Corp's oil which is of much better quality is picked up and transported to Rankin by Bombardier

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.

An area for bulky waste is used, 6,600 sq.m in size

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 hazardous waste (batteries) is stored inside the fenced solid waste area

b. Structure

The Hamlet uses an old water truck tank to store batteries in

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

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.

The only problems occur in construction season when contractors drop what they want where they want and the Hamlet is left to deal with the situation.

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.

I would suggest that a plan is needed to deal with used oil accumulation and possibly to make contractors accountable for how they use the facility.

Abandonment and Restoration

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

There is an old site ¾ of a mile west of Chester that was at one time a site for combined drop for; honey bags, sewage and solid waste.

Identification

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

__ Yes _**x**_ No

VI. INSPECTION AND MONITORING

1. When were municipal facilities inspected by?

_**X**__ Indian and Northern Affairs Inspector Date: _**Summer_ 2003**

___ Municipal and Community Affairs Date: _____

_**X**__ other: **Regional Health Officer** Date: __**Summer__2003**

_____

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

___ Yes _**x**__ **No**

If yes, describe.

The Hamlet has recently completed Health and Safety training and hopes to form a committee to deal with such issues

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

___ Yes _**x**__ **No**

If yes, describe.

The Hamlet has access (local fuel supplier) to a supply of oil soak or other material for cleaning up spills

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 area was in a new sub division called Keevanivik, where a household tank was knocked off its supports and 250litres of fuel was spilled. Fuel was cleaned up and excavation was also carried out at the site of the spill.

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.

_ The chlorine levels are taken and recorded by the Hamlet each day_

b. Briefly describe any monitoring done for wastewater effluent and leachate.
Annual inspections by a DIAND Inspector Officer (WRO),

c. Who is responsible for water sampling?
Name: **_Nipi Alogut _____**

Position: **Hamlet Employee.**

Telephone **#: (867)-898-9181**

Fax #: **867-898-9108**

Level of training: **Mr. Alogut and the Foreman (Mr. Aggark) have attended courses for Water/Sanitation training in Cambridge Bay, Arviat, and Yellowknife**

d. Recognized laboratory performing analysis of samples. **(MONTHLY SAMPLES)**

Name: **Fred O'Brien, Regional Health Officer**

Address: **P.O. 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.

   Some residents in the community don't like the chlorinated water (taste of), some blame chlorine for causing stomachaches. These people, Harry mentioned, are also probably consuming untreated water as well.

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

1. Date:

2. Municipality: **Chesterfield Inlet, (Kivalliq Region)**

3. Contact: **Mr. Fred O'Brien**

   Telephone # **(867) 645-2171**

   Fax #: **(867) 645-2409**

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

   If yes, describe: Health Officer would possibly be better able to answer this.

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?
   ___ Yes **_x__ No**

   If yes, describe:

Monitoring Program

1. Does the Regional Health Board perform water quality sampling?
   ___No **x If** Yes, answer questions (a) to (e)

   The Health Officer receives monthly water samples from Chesterfield Inlet and performs testing at the Regional Office in Rankin Inlet

a. Briefly describe the sampling methodology.

Monthly samples are submitted to the Regional Health Officer

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

A DIAND Officer carries out sewage effluent sampling on an annual basis Total Suspended Solids, Phenols, BOD, PH, and Oil and Grease testing (where applicable)is carried out

c. Who is responsible for sampling?

Name: **Scott Stewart**

Position: **DIAND Officer**

Telephone **#(867) 975-4289**

Fax #: **(867) 979-6445**

Level of training:

d. Recognized laboratory performing analysis of samples.

Name: **Taiga Environmental**

Address: **P.O. 1500 Yellowknife, NT.**

Telephone #: **(867) 669-2788**

Fax #: **(867) 669-2718**

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: **Sept. 25, 2003**

2. Municipality: **Chesterfield Inlet, NU (Kivalliq Region)**

3. Contact: **Bryan Purdy**
(Community Government and Transportation Representative)

Telephone # **(867) 645-8114**

Fax # **(867) 645-8143**

4. Population: **410**

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

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 __No

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

Prepared by	Title	Completion Date

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?
_ __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.

Jacques Whitford are undertaking an evaluation of the sewage treatment wetlands the first week of October , 2003 some study of the impacts may be done

Prepared by Title Completion Date

If no, are such studies being planned?

__ No _x_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?

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? __ Yes **x** **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:

2. Drainage Area:
What is the drainage area? _____km^2
What is the average elevation of the drainage basin? _____metres
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 **x** **No**

If yes, describe measures to maintain stream bed 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? **1178.57 m^3/day.(approx.)**

2. Is water drawn from the source _**x**__ intermittently _ _continuously

3. If it is drawn intermittently, during what month(s) is it drawn?
   Aug/Sept (To fill the reservoir)

4. For what period is it drawn (days/weeks/months)? **1 week**

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

6. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn.
   There is no effect on the volume in Fish Lake

Water Intake

1. Please provide short descriptions of the following:
   a. freshwater intake facility

      4.5" intake

   b. operating capacity of the pumps - (1**) 300 liter/minute**

   c. intake screen size:

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?
   _____ 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. _____ L/min

2. What is the capacity of the water storage facility **Reservoir – 33,000,000 liters**

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.

Chlorine is added to each water truck load as it is loaded.

4. Are there any changes planned in the water treatment facilities? **no**

_x_ 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:

__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

_(current wetlands)165,000sq m

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

the year **__2005_____** .

4. Average depth of the wastewater lagoon **_____m**. wetlands

5. What is the design freeboard? **_____ m.**

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

7. Indicate the estimated rate of discharge of wastewater____**?**_____ L/sec.

8. Indicate the location of the discharge point**__The sewage dumpsite is located 3.1 km west of the community___.**

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) ? __

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.

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Solid Waste Disposal

1. Indicate the capacity of the disposal area **224,000 sq.m (area), also an additional 6,600 sq.m bulky waste site**

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

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

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?
The solid waste site is bermed to prevent leachate from flowing to the ocean

   No

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
Very localized drainage	small

5. Please describe any diversions of watercourses: nil

6.

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

_x__No __ Yes

If yes, attach a copy of the plan or indicate changes and include an implementation schedule.

Other

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

Environmental study is presently underway