P.O. Box 119
GJOA HAVEN, NT X0E 1J0
TEL: (867) 360-6338
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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

Water Licence Application
Supplementary Questionnaire
for Municipalities

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I. GENERAL

1. Date: FEB 16/01

2. Applicant: CAMBRIDGE BAY (KITIKMEOT)
Municipality and Region

3. Contacts: LINTON HOULE
Name of Contact

MUNICIPAL SERVICES CLERK
Position

867 983 2114 867 983-2762
Telephone # Fax #

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 # N4L3-1532

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.
COMUNITY GOVERNMENT

III. WATER SUPPLY

Water Source

1. Type of source: ✓ Lake __ River __ Well __ Other _____

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

3.

WATER LAKE
Primary Source

_____
Secondary Source

3. Usual break-up & freeze-up period: JUNE (Break-up) SEPT (Freeze-up)

Water Intake

1. Please provide short descriptions for the following:

   a. Freshwater intake facility

   b. Operating capacity of pumps used

   10 HP, 3Ø, 200 V

   c. Intake screen size

Water Storage

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

   ___ Reservoir/Pond ___ Storage tank ___ None ___

   ___ Other _____Description:

2. 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:	___ good	✓ fair	___ poor
Fall:	✓ good	___ fair	___ poor
Winter:	✓ good	___ fair	___ poor
Spring:	___ good	___ fair ✓	___ poor

2. Describe.

3. Type of water treatment.

✓ Filtration and chlorination
___ Chlorination only
___ None
___ Other _____
Description

Helen

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	ATTACHED		
TRUCKED			
		TOTAL	

2001/2002
Water Usage Tracking in Litres

	Private 1	Gov't	Hamlet	Commercial	DPW, TT	Housing Assoc.	Total
March	2,131,651	431,793	118,397	1,255,953	363,138	1,954,493	6,255,425
February	1,934,076	640,849	80,009	1,137,582	307,275	1,793,524	5,893,315
January	2,150,020	374,033	64,165	963,367	299,125	1,959,739	5,810,449
Decemebr	2,055,442	357,761	91,840	1,076,956	265,004	1,880,549	5,727,553
November	1,984,778	709,861	44,445	1,019,043	176,825	1,750,548	5,685,499
October	1,685,543	552,561	68,950	709,644	251,271	1,820,543	5,088,511
September	2,047,401	298,621	64,521	1,030,417	259,413	1,793,811	5,494,182
August	1,916,137	114,346	111,833	719,955	257,566	1,936,366	5,056,202
July	1,800,744	312,616	126,561	944,217	274,603	1,868,288	5,327,029
June	1,932,970	339,228	84,925	1,003,552	258,511	1,595,211	5,214,397
May	1,635,633	661,526	65,121	1,051,929	217,006	1,369,762	5,000,977
April	1,569,468	322,848	45,407	934,208	241,120	1,370,923	4,483,974
Total	22,843,861	5,116,042	966,175	11,846,822	3,170,856	21,093,756	65,037,513

General Condition of the water supply facilities

1. General condition of the:

   a. Water supply facility
   ✓ Satisfactory __ Unsatisfactory

   If unsatisfactory, explain.

   b. Storage facility
   ✓ Satisfactory __ Unsatisfactory

   If unsatisfactory, explain.

   c. Distribution system
   ✓ Satisfactory __ Unsatisfactory

   If unsatisfactory, explain.

Modifications

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

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?

___ Yes √ 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.

Honey Bag Pit

1. Does the municipality use a honey bag pit?

___ 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 ✓ 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 ?

___ Yes ✓ No

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

General Condition of the sewage treatment facilities

1. General condition of the:

a. Sewage collection system

✓ Satisfactory ___ Unsatisfactory

If unsatisfactory, explain.

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

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

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.

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.

Identification

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

V. SOLID WASTE DISPOSAL

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

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

3. Is the fence adequate? __ Yes __ No

If no, describe

Waste Reduction

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

BURNED BY GARBAGE TRUCK DRIVER
ONLY IF WINDS ARE AWAY FROM TOWN

2. Has the municipality considered measures for waste reduction such as recycling or reuse?
✓ Yes __ No

If yes, describe

Animal Carcasses Pit

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

Waste Oil Pit

1. Describe the waste oil storage area.

Bulky Scrap Metal/Waste Disposal Area

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

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 ✓ No
   If yes, please indicate sources, types and quantity.

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

   a. Location

   b. Structure

   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
   __ Satisfactory ✓ Unsatisfactory
   If unsatisfactory, explain.

Modifications

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

Abandonment and Restoration

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

Identification

Are there signs identifying past and present solid waste disposal sites ?
__ Yes ✓ No

VI. INSPECTION AND MONITORING

1. When were municipal facilities inspected by:
   ___ Indian and Northern Affairs Inspector Date: _____
   ___ Municipal and Community Affairs Date: _____
   ___ Other: Date: _____

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

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

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 ?

✓ Yes ___No

If Yes, answer the questions a to e

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

SAMPLES ARE TAKEN DAILY IN SAMPLE BOTTLES AND BROUGHT TO HEALTH CENTER FOR SHIPPING TO LAB

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

c. Who is responsible for water sampling ?

Name: JOHN ATIGIKYOAK

Position: BUILDING MAINTAINER

Telephone #: (867) 483 2114

Fax # : 867 483 2782

Level of training: NONE

d. Recognized laboratory performing analysis of samples.

Name: STANTON - REGIONAL HEALTH BOARD

Address: 550 BYRNE RD YELLOWKNIFE NT

Telephone #: 669-4163

Fax #: 669-4141

e. Are any changes planned in the water quality monitoring program?
___ Yes __ 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.

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

1. Date: Jan. 23/01

2. Municipality: Cambridge Bay, Nu

3. Contact: (Environmental Health Officer Contact)
   Robert Phillips
   Telephone #: (867) 983-4086
   Fax #: (867) 983-4088

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

   If yes, describe
   Public Health Act (Public Water Supply Reg's) requires that two water samples be submitted for bacteriological analysis per month, and that a chemical sample be submitted every other year.

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 ___ No

   If yes, describe
   (1) Blowing debris – perimeter fence recommended
   (2) Occassionally smoke from burning dumps blows into town.

Monitoring Program

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

a. Briefly describe the sampling methodology.

Membrane filtration for total and fecal Coliforms

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

Water Resources Officer (INAC) samples 1 X year

c. Who is responsible for sampling ?

Name: Johnny Oyakyoak

Position: Building Maintainer

Telephone #: 983-2114

Fax # : 983-2782

Level of training:

d. Recognized laboratory performing analysis of samples.

Name: Stanton Regional Hospital

Address: 550 Byrne Road
Yellowknife, NT

Telephone #: (867) 669-4163

Fax # : (867) 669-4141

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: JAN 31/01

2. Municipality: CAMBRIDGE BAY

3. Contact: Koso O. Kuivi, P. Eng.
(Community Government and Transporation Representative)

Telephone # 867-983-4011

Fax # 867-983-4003

4. Population (according to most recent census results): 1500

5. Estimated growth rate over next 5 years: 2.25%

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 WATER SUPPLY LAKE & DEW LINE LAKE

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

Prepared by	Title	Completion Date
UMA GROUP →	A PREDESIGN REPORT ON WATER SUPPLY SOURCE & INTAKE FACILITY FOR CAMBRIDGE BAY →	1976
TECHNICAL SERVICES UNIT →	COMMUNITY WATER & SANITATION SERVICES - KITIKMEOT REGION →	1982
FSC →	PLANNING STUDY FOR THE CAMBRIDGE BAY WATER SYSTEM →	1996
UMA ENGINEERING →	WATER SUPPLY UPGRADE CAMBRIDGE BAY →	1997

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.

UMA GROUP → CAMBRIDGE BAY WATER SUPPLY SYSTEM - OPERATION & MAINTENANCE MANUAL → 1981

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.

Prepared by	Title	Completion Date

If no, are such studies being planned?

√ No __Yes.

If yes, specify:

(1) EXISTING LAND USE
(2) WATER AND SANITATION SITES

Attachments

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

SEE ATTACHMENT LIST

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:

SEE ATTACHMENT LIST

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 ✓ No
Is the natural storage or water level of any lake or pond changed? __ Yes ✓ No
Are there changes in water flow downstream of the project? __ Yes ✓ No

No — Is a storage reservoir created in a natural channel? __ Yes __

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

2. Drainage Area:
What is the drainage area? 2.3 km²
What is the average elevation of the drainage basin? 15 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.) See sheet marked "EXHIBIT": DRAINAGE AREA

NOTE: THE LAKE WATER SURFACE AREA OF WATER LAKE IS APPROXIMATELY 165 acres (67 ha). MAXIMUM DEPTH BY RANDOM SOUNDING WAS 5.49 m.

3. Channel characteristics:
Is the course of any channel changed? ___ Yes ✓ No

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

4. Will the cross-section of any watercourse be changed? __ Yes √ 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? 186 m³/day.
2. Is water drawn from the source __ intermittently √ continuously
3. If it is drawn intermittently, during what month(s) is it drawn? _____
4. For what period is it drawn (days/weeks/months)? EVERY DAY
5. What is the rate of flow of source (if river) or size (if lake)? 1,738,000 m³
6. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn. INSIGNIFICANT

Water Intake

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

INCLINED SHAFT INTAKE CASING WITH SUBMERSIBLE PUMP CONNECTED TO AN INTAKE PUMPHOUSE EQUIPPED WITH WATER TEMPERING AND DISINFECTION SYSTEMS PLUS A TRUCK FILL ARM.

   b. operating capacity of the pumps

10HP, 3Φ, 200V

   c. intake screen size

JOHNSON SURFACE WATER INTAKE SCREEN. 16PS SCREEN SIZE SCREEN LENGTH 700mm. STAINLESS STEEL, SLOT OPENING 0.50mm. UPSTREAM END FITTED WITH FLAT SCREEN PLATE DOWNSTREAM END WELDED TO 1/4" THK MATING FLANGE.

Water Storage N/A

1. Is a dam or dyke being used to store or alter the flow of water? ___Yes ✓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. 347.4 L/min

2. What is the capacity of the water storage facility. 240 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.
   CHLORINE DISINFECTION

See Bob Phillips for most recent bacteriological and Chemical analysis.

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

Sewage Disposal

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

2. Indicate the capacity of the sewage treatment facility 90,000 m^3

3. Based on current population projections, the facility will meet the needs of the community until
   the year 2020 GUESSTIMATE

4. Average depth of the wastewater lagoon 2.0 m.

5. What is the design freeboard? NATURAL LAKE m.

6. Indicate the retention time of the sewage while in the treatment facility 270 days.

7. Indicate the estimated rate of discharge of wastewater _____ L/sec. NOT AVAILABLE

8. Indicate the location of the discharge point See Sheet Marked "EXHIBIT" :M

9. Is the discharge: ✓ seasonal ___ continuous

   If the discharge is seasonal, during what month(s) is it done? JULY - SEPTEMBER
   What is the duration of the discharge (days/weeks/months) ? 3 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.

Solid Waste Disposal

1. Indicate the capacity of the disposal area 63,000 m^3.

2. The *average* depth of the solid waste disposal site 3.0 m.

3. The current facility will meet community needs until the year 2020. ESTIMATE

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?

COMBINATION

A BERM/STORE SEPARATES THE WASTE DISPOSAL AREA FROM THE NEIGHBOURING SEWAGE LAGOON OR LAKE

NO SIGNIFICANT AMOUNT OF RUNOFF ENTER THESE AREAS AS THE DRY WEATHER IN CAMBRIDGE BAY CAUSES ANY PRECIPITATION TO QUICKLY EVAPORATE.

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

Source	Volume

6. Please describe any diversions of watercourses:

NOT APPLICABLE

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.

COUNCILS PLANS TO RELOCATE THE SEWAGE LAGOON SOLID WASTE SITE, AND BULK WASTE DISPOSAL SITE TO CREAT ROOM FOR THE FUTURE GROWTH OF THE COMMUNITY TOWARDS AND ON THE LAND CURRENTLY OCCUPIED BY THE REFERENCED SANITATION SITES WHICH ARE IN RELATIVE CLOSE PROXIMITY TO EACH OTHER.

Other

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

SEE COUNCIL/MAYOR FOR COPIES OF BRIEFING NOTES AND CAPITAL PLAN.