# Water Licence Application
# Supplementary Questionnaire
# for Municipalities

## GENERAL

1. Date: January, 2005

2. Applicant: Eureka Weather Station (Environment Canada)
Municipality

3. Contacts: Al Gaudet
Contact
Station Program Manager
Position
[204] 984-6376
Telephone
[204] 984-8310
Fax

4. Municipal Status: ___ Village ___ Town
___ Hamlet ___ Settlement Corporation

5. Is this a?
____ New Application
_X__ Renewal Water Licence#___NWB6EUR9904_____

ATTACHMENTS

1. Attach up- to- date detailed map(s) showing the locations of the:
   a. Water intake; **Appendix A - Photos A,B, F**
   b. Water storage and treatment facilities; **Appendix A - Photos C,D , Appendix C - Map 6**
   c. Fuel and chemical storage; **Appendix A - Photo 1**
   d. Sewage treatment facilities (lagoon, honey bag pit, wetland); **Appendix A - Photo E, Appendix C - Map 5**
   e. Wastewater treatment area and discharge outlets; **Appendix A - Photo E**
   f. Solid waste disposal areas and drainage patterns; **Appendix C - Maps 3,4**
   g. Hazardous waste disposal area; **Appendix A - Photo 6, Appendix C - Maps 3,4**
   h. Access roads; **Not Applicable**
   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); **Appendix A - Photo 9. Note: Photo also shows previous diversion channel that no longer exists.**
   j. Areas around the community used for recreation, camping, fishing, etc. **Not Applicable**
   k. Abandoned and/or restored water treatment, sewage, and solid waste disposal facilities. **Appendix A - Photos 5-8, Appendix C - Maps 3,4**

Are maps attached? X Yes __ No
If no, please indicate when they will be available.

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Who has provided or prepared these maps ?
Photo's and maps prepared by John MacIver, Al Gaudet, & Rai Le Cotey - Station Managers and from previous application.

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## III. WATER SUPPLY

### *Water Source*

1. Type of source: Lake ☐ River ☐ Well **X** Other

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

| **Station Creek** | **None** |
|---|---|
| Primary Source | Secondary Source |

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

| **Late June** | **Late September** |
|---|---|
| Break-up | Freeze-up |

### *Water Storage*

1. Type of water storage facility. (check where applicable)
   X Reservoir/Pond X Storage tank __ None
   __Other

2. If "reservoir" checked:
   Is the reservoir lined? __ Yes X No

What type of liner? **Not Applicable** When was it installed? **Not Applicable**

### *Water Treatment*

1. What is the quality of the water, and provide water quality results.

| | | | |
|---|---|---|---|
| Summer: | X good | ☐ fair | ☐ poor |
| Fall: | X good | ☐ fair | ☐ poor |
| Winter: | NA good | ☐ fair | ☐ poor |
| Spring: | NA good | ☐ fair | ☐ poor |

Describe.

Recent sample analysis of the reservoir water indicates that, without treatment, applicable GCDWQ criteria are met. Samples are collected July and September.

3. Type of water treatment.
__ Filtration and chlorination
X Chlorination only
__ None
__ Other

A reverse osmosis system is also employed as secondary treatment for potable (food preparation and drinking) water.

**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 | 8 – 25 (8-12 permanent) | 150 | 1200 - 3750 |
| | | **TOTAL** | 1200 - 3750 |

**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
__ Satisfactory X Unsatisfactory
If unsatisfactory, explain.

**New interior storage tanks required - will be replaced when new complex facility construction is complete (2004/05).**

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

**Modifications**

1. Are there any changes *planned* for the water supply system?
   __ No __X__ Yes

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

**New interior storage tanks to be employed upon construction completion**

2. Are changes needed to the water supply, storage or treatment facilities? Describe.

**New living/admin complex currently under construction. Distribution from source will be incorporated into new complex.**

**Identification**

Are there signs identifying drinking water sources presently used by the municipality?
__ No __X__ Yes

## IV. SEWAGE DISPOSAL

**1.** What type(s) of sewage treatment is used ?
__X__ Lagoon
__ Mechanical system
__ Wetland
__ Honey bag
__ Combination/Other: describe

**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).
   **NOT APPLICABLE**

2. Are sludge's produced ?
   __ Yes __ No
   **NOT APPLICABLE**

**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 X No

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

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**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.

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**Sewage Discharge**

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

__ Yes X No

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

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**General Condition of the sewage treatment facilities**

1. General condition of the:

a. Sewage collection system

X Satisfactory __ Unsatisfactory

If unsatisfactory, explain.

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b. Discharge control system

X Satisfactory __ Unsatisfactory

If unsatisfactory, explain.

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C. Dams, diversion dikes, berms

X Satisfactory __ Unsatisfactory

If unsatisfactory, explain.

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**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.

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

   **No. The existing sewage treatment facility meets the present needs of the Weather Station.**

**Abandonment and Restoration**

1. List and describe abandoned or restored sewage treatment facilities. Indicate their location on a map.

   **NOT APPLICABLE**

**Identification**

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

## V. SOLID WASTE DISPOSAL

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

   The solid wastes are collected and delivered to the incinerator building where they are burned. The ashes are disposed of at the solid waste disposal site.

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

3. Is the fence adequate? ___ No ___ Yes
   If no, describe

   **NOT APPLICABLE**

**Waste Reduction**

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

   Household garbage from the Eureka Weather Station is burnt in an incinerator as required.

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

**Waste motor oil is used as an alternative heating fuel. Solvents, glycol, batteries, are sent out of the Station for disposal.**

**Animal Carcasses Pit**

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

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**Bulky Scrap Metal Waste Disposal Area**

1. Does the municipality have a scrap metal or bulky waste disposal area?
__ No __X__ Yes

If yes, briefly describe its location and operation plan.

**Scrap metal and bulk garbage is co-located with the landfill site near the airstrip and capped as identified in our Waste Management Strategy. (see Appendix C - Maps 3,4)**

**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)*
__X__ No __ Yes

If yes, please indicate sources, types and quantity.

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

a. Location

**One mile Northeast of Eureka Weather station (on east side of Airstrip Road) (see Appendix C - Maps 3,4)**

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b. Structure

**Leveled area approximately 200 ft x 200 ft**

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

**Temporary storage area for old lead/zinc batteries.**

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

1. General condition 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?

__ No X Yes

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

**New landfill cell locations have been identified adjacent to existing cell located on southeast side of runway. These new cells will become operational as existing cells become filled.**

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

**As above**

**Abandonment and Restoration**

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

**Abandoned landfill used by the weather station is located on the northwest side of the runway. (see Appendix C - Maps 3,4)**

**Identification**

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

__ No X Yes

## VI. INSPECTION AND MONITORING

1. When were municipal facilities inspected by:
   __ Indian and Northern Affairs Inspector Date:_____
   __ Municipal and Community Affairs
   Date:_____
   X Other **PWGSC Environmental Services** Date: **July/Aug 2004**

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

   **There is a flow chart that is used outlining procedures and emergency telephone numbers, See Appendix B.**

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

   **The initial response is to contain the spill as possible and notify proper authorities.**

4. Have any spills occurred in the past five years?
   __ Yes __X__ 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 ?
   X Yes __ No If Yes, answer the questions a to e

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

**Raw water sampling is done by Public Works and Government Services Canada bi-annually (July and September) and is analysed by an accredited environmental lab. Samples are flown to the lab.**

**Department of National Defense samples the water during the summer months when the reservoir is replenished. Samples are flown to their "Environmental Engineering Research Group" laboratory.**

**Samples are collected annually and sent to an accredited environmental lab for TOC & THM analysis. Samples are collected monthly for chlorine and bacteria analysis. This sampling is done by Station Staff.**

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

**The waste water lagoon is monitored and tested by Public Works and Government Services Canada during the annual discharge, and the results are analyzed by an accredited Environmental Lab. Samples are flown to the lab.**

   c. Who is responsible for water sampling ?
   **Name: Rai Le Cotey & Al Gaudet**
   **Position: Station Program Managers**
   **Telephone:[613] 990-8161**
   **Fax #: [204] 984-6376 ext. 4460**
   **Level of training: As per manufacturers specifications and accepted practices**

   d. Laboratory performing analysis of samples.

   **Name: EnviroTest Laboratories**
   **Address: 9936 - 67 Ave. Edmonton, AB**
   **Telephone: (780)413-5227**
   **Fax: (780)437-2311**

**Note: This may change per standing offer availablility over fiscal years.**

   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.

**No concerns expressed.**

## VIII. PUBLIC HEALTH *(To be filled by the Regional Environmental Health Officer)*

1. Date: _____

2. Municipality: _____

3. Contact: _____

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

__ Yes **X** No

If yes, describe

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

**X** No __Yes

If yes, describe

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

**X** No __ Yes

If yes, describe

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**Monitoring Program**

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

a. Briefly describe the sampling methodology.

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

C. Who is responsible for sampling ?

Name:

Position:

Telephone:

Fax:

Level of training:

D. Laboratory performing analysis of samples.

Name

Address

Telephone

Fax #

E. Are any changes planned in the water quality monitoring program?
__ Yes X No
If yes, describe.

## IX. TECHNICAL INFORMATION *(Assistance from the Regional Municipal and Community Affairs Office)*

1. Date: **NOT APPLICABLE**

2. Municipality: _____

3. Contact: _____
   MACA Representative/Position
   _____
   Telephone
   _____
   Fax #

4. Population (according to most recent census results): **8 - 12 people**

5. Estimated growth rate over next 5 years: **Zero Growth expected**

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 **X** No

   If yes, provide details below:

   **Not Applicable**

   Prepared by Title Completion Date

   If no, are such studies being planned?

   **X** 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?
   __ Yes **X** No.
   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 Yes __ No
If yes, provide details below.

| Prepared by | Title | Completion Date |
|---|---|---|
| PWGSC | Environmental Assessment, Abandoned Landfill | May 1995 |
| PWGSC | Detailed Site Characterization and Monitoring | Nov. 1995 |
| PWGSC | Initial Environmental Assessment "Eureka 2000" | March 1997 |

**Note: These reports have been submitted with previous (1998) application package.**

If no, are such studies being planned?
__ Yes __ No 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;
   Please see Attachments for response.
   b. details of all retaining structures (dimensions, materials of construction, etc.);Not Applicable.
   c. details of the drainage basin, and existing and proposed drainage modifications; Landfill drainage see Map 4.
   d. details of all decant, siphon mechanisms etc., including sewage treatment facilities; decanting of sewage lagoon performed once per year. No decanting of solid waste site.
   e. details regarding direction and path of wastewater flow from the area; Landfill site see Map 4,
   f. distance from watercourses and fish bearing waters; Landfill is approximately 1.5 kilometers from Slidre Fiord.
   g. location and construction of liners. Not Applicable.
   h. leachate and groundwater collection systems; and control structures. Not Applicable.

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.); Sewage lagoon approximately 23 x 76 x 1.726 M. Map 5.

**b.** details of the drainage basin, and existing and proposed drainage modifications;
Lagoon is adjacent to Slidre Fiord. Photo 3.

c. details regarding direction and path of wastewater flow from the area; Discharge point is at the southwest corner of lagoon, directly into Slidre Fiord. Photo 3

d. indications of the distance from watercourses and fish bearing waters; Adjacent.

e. all sources of seepage presently encountered near these areas, including volumes (m'/day) and directions. None

Are drawings for the solid waste disposal area and sewage treatment system attached?
X Yes __ No
If Yes. who has provided them ?
**Station Managers**

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If no, indicate when they will be available

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

The reservoir was built approximately 30 years ago east of Station Creek and west of the Weather Station.

2. Drainage Area:
What is the drainage area? 100 $Km^2$
What is the average elevation of the drainage basin 300 Meters ASL.
Is the drainage basin outlined on an attached map? **X** Yes__ No __
Describe the drainage basin characteristics, (vegetation, general soil type, lakes, swamps and permafrost areas, etc.)

The drainage basin consists of rolling hills (elevation not exceeding 300 meters A.S.L) with little vegetation cover other than lichens, mosses and grasses. The depth of permafrost is from several hundred meters to a few meters. Soils are mainly sandy silts and clays.

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

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**Water Supply**

1. What is the rate of withdrawal from the source? 8 $M^3$/day.
2. Is water drawn from the source **X** intermittently ___ continuously
3. If it is drawn intermittently, during what month(s) is it drawn? **July**
4. For what period is it drawn (days/weeks/months)? **3-4 weeks/year**
5. What is the rate of flow of source (if river) or size (if lake)? Variable
6. At the intended rate of water usage, describe the effects on the river or lake from which water will be drawn.

No apparent effects on stream.

**Water Intake**

1. Please provide short descriptions of the following:

a. freshwater intake facility

**Consists of a water reservoir that is filled annually by pumping directly from Station Creek. A pump house is located at the reservoir which then pumps water, after settling time, to holding tanks for use.**

b. operating capacity of the pumps

**intake pump capacity is approximately 8 cubic meters per day**

c. intake screen size

**approximately 1 cm perforations**

**Water Storage**

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

X Reservoir/Pond X Storage tank ___None

___Other_____
Description

2. If "reservoir":
Is the reservoir lined? ___Yes X No

What type of liner? When was it installed?

3. Is a dam or dike being used to store or alter the flow of water? ____ Yes X No

4. What are the dimensions of the dam or dike?
Length: ___N/A_____Width: ___N/A_____Height:
U/S slope:___N/A_____ D/S slope:__N/A_____

5. Does the proposed dam create a reservoir in a natural watercourse? __ Yes X No
If yes, what is the storage capacity arid surface area of the reservoir?
Volume _____$m^3$ Area _____ $m^2$.

6. Will the dam or dike affect fish migration or movement ?
___Yes X No
If yes, describe all measures for compensation of fish habitat lost due to the dam or dike, and mitigation's for fish migration or movement.

## Water Treatment

1. Indicate the capacity of the treatment facility. Not Applicable L/min

2. What is the capacity of the water storage facility 800 $m^3$

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.

   After water is withdrawn from Station Creek, it is allowed to settle in the fresh water reservoir for at least 2 weeks before being pumped to storage tanks. Chlorine is added to the water tanks at this point in accordance with Health Canada guidelines and manufacturers recommendations. The water used for cooking and drinking is additionally treated using an on-demand reverse osmosis system located in the confectionary complex.

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 MACA Capital Plan if available.

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## Sewage Disposal

1. Indicate the level of sewage treatment:
   **X** primary ___secondary ___ tertiary

   Pre-treatment (if applicable): _____ screening **X** maceration

   Lagoons (if applicable): ____ anaerobic ____ aerobic **X** facultative

2. Indicate the capacity of the sewage treatment facility. Approximately 2090$m^3$

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

4. Average depth of the wastewater lagoon: 2.13 meters.

5. What is the design freeboard? 0.5 M.

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

   305 days.

7. Indicate the estimated rate of discharge of wastewater Not Available L/sec.

8. Indicate the location of the discharge point. Please see photo 3

9. Is the discharge: __X__ seasonal ____ continuous
If the discharge is seasonal, during what month(s) is it done?
September
What is the duration of the discharge (days/weeks/months)? One to two days

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.

Include excerpt from MACA Capital Plan if available.

**Solid Waste Disposal**

1. Indicate the capacity of the disposal area UNKNOWN $M^3$

2. *The average* depth of the solid waste disposal site 1.5 M.

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

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

The disposal area is located in a small valley and as such naturally channels drainage.

No methods are used to decrease amount of runoff entering this area. See attached photo 4 of previous application and maps 3 & 4 of present application

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 ($m^3$/day) |
|---|---|
| natural drainage | Unknown |
| | |

6. Please describe any diversions of watercourses:
**Not applicable**

7. Are there any changes planned in the solid waste disposal facilities?
___ No **X** Yes
If yes, attach a copy of the plan or indicate changes and include an implementation schedule, Include excerpt from NACA Capital Plan if available.

AES, DND and PWGSC have implemented a new landfill strategy. Plan is forthcoming (late January 2005)

**Other**

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

**Please refer to covering letter of this application for a synopsis of improvements**