Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

CANADA REMEMBERS
LE CANADA SE SOUVIENT

INAC, Nunavut District
P.O. Box 100
Iqaluit, NU
X0A 0H0

tel.: (867) 975-4275
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Your file *Votre référence*

Our file *Notre référence*
unlicenced

January 18, 2001.

Cecil Marshall
Senior Administrative Officer
Municipality of Arctic Bay
P.O. Box 150
Arctic Bay, NU X0A 0A0

September 19, 2000 Municipal Water Use Inspection - Report

Firstly, I wish to thank Sam Willie for the much appreciated time and assistance provided during the tour of the Municipality's water use and waste disposal facilities. Attached for your records is the Municipal Water Use Inspection Report pertaining to the September 19, 2000 inspection; given the relatively limited resources at its disposal, the Municipality appears to efficiently manage its water use and waste disposal facilities. Nonetheless, the following considerations were noted:

- **Water supply:** No concerns were noted with the intake facility itself. However, as has been observed in the past, the reliance on generators and the manual operation of the heat trace system could potentially pose a contingency issue in regards to freeze-ups of the supply line. This being said, the attached analytical results relating to a sample collected from the new water truck reveal that the quality of the municipal drinking water is quite satisfactory. Indeed, concentrations of all tested parameters lie well within the levels recommended under the *Guidelines for Canadian Drinking Water Quality*, save for two slight exceptions: field pH value of 8.7 (versus the 6.5-8.5 aesthetic objective), and colour value of 20 True Colour Units (versus the 15 TCU aesthetic objective).

- **Sewage waste disposal:** Previous inspections, in 1995 and 1997, outlined the fact that the sewage lagoon (figure 1) is most likely undersized. The Inspector concurs, and in addition points out that as the years go by and the community grows, so does the sewage lagoon become more and more inappropriate. Further, notable erosion can be observed in the lagoon's decant/overflow area (figure 2), thus negatively affecting freeboard and retention time, and ultimately, sewage effluent treatment. In fact, as was reported on-site and again noted in previous inspections, sewage glaciates immediately downslope of the decant area (figure 3) during wintertime, and washes out the decant/outflow area during springtime.

Moreover, the attached analytical results indicate that the concentration of ammonia within the sewage effluent exceeds Canadian guidelines for the protection of both freshwater and marine aquatic life. Unfortunately, weather-related delays between time of sampling and analysis rendered treatment of bacteriological data impossible. In light of this, it was mentioned during the inspection that scheduled resources for the upgrade/replacement of the sewage disposal facility have not been forthcoming. Therefore, by copy of this letter to Community Government and Transportation (CG&T), the Inspector trusts that the Municipality and the involved party can review the matter and reach a mutual understanding.

- **Solid waste disposal:** Although combustible waste appears well burned/compacted and periodically covered (figure 4), the Inspector reiterates that the instalment of a perimeter fence around the solid waste disposal facility would further limit and contain windblown material. In parallel, the Inspector acknowledges the improvement of the bulky metal wastes disposal site brought upon by the CG&T sponsored crushing/land filling work (figure 5). On a side note, use of the containment provided for hazardous material should be maximized (figure 6).

- **Non-compliance of Act:** The Municipality does not hold the licence it requires for its water use and waste disposal. Though the Municipality recognizes that a valid Water licence is a legal requirement under both the *Northwest Territories Waters Act* and the *Nunavut Land Claims Agreement*, it is nevertheless reluctant to assume responsibility of facilities it likely cannot properly maintain with its limited resources. This constitutes an outstanding issue, as this extract from the October 14, 1997 inspection report attests: "*The main concern that Mr. Marshall expressed with respect to licensing is that the licence would legally bind the Hamlet to certain requirements (sewage discharge limits as one example) from facilities that they do not legally own nor have control of funds to make the necessary improvements.*" Consequently, the Inspector urges the Municipality and CG&T to attempt to solve this dilemma, and so ensure prompt compliance with the Act. In this regards, INAC and/or other implicated agencies can provide assistance.

Please feel free to contact me at (867) 975-4298 or lavalleep@inac.gc.ca should any questions/comments arise.

Sincerely,

Philippe Lavallée
Water Resources Officer
INAC, Nunavut District

c.c. - Nunavut Water Board, Gjoa Haven
- CG&T, Iqaluit (Doug Sitland)
- Baffin Health & Social Services, Iqaluit (Bonnie Segal)
- EC Environmental Protection, Yellowknife (Anne Wilson)

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MUNICIPAL WATER USE INSPECTION FORM

Date: 2000/09/19 **Licensee Rep.** (Name/Title): Sam Willie / Foreman

Licensee: **Municipality of Arctic Bay** **Licence No.:** **unlicenced**

WATER SUPPLY

Source(s): Marcil Lake **Quantity used:** meter @ 56 542.4 m^3

Owner:/Operator: GN/Municipality

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: A **Storage Structure:** NA **Treatment Systems:** A **Chemical Storage:** A

Flow Meas. Device: A **Convey. Lines:** NA **Pumping Stations:** A

Comments: Intake facility well-kept. Concerns regarding the heating of the intake line; no freeze-ups have occurred, but heat trace system and generators must be manually operated. Water consumption monitored and recorded; on average, water use increases by roughly 5% annually. Chlorination in use.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.): primary; discharge overland to ocean

Natural Water Body: **Continuous Discharge** (land or water):

Seasonal Discharge: x **Wetlands Treatment:** limited **Trench:**

Solid Waste: **Owner/Operator:** GN/Municipality

Landfill: **Burn & Landfill:** x **Other:**

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: sampled **Decant Structure:** U **Erosion:** U

Discharge Meas. Device: none **Dyke Inspection:** NA **Seepages:** A

Dams, Dykes: NA **Freeboard:** U **Spills:** none reported

Construction: NA **O&M Plan:** NA **A&R Plan:** NA

Periods of Discharge: A **Effluent Discharge Rate:** not measured

Comments: Sewage lagoon is most likely undersized. Decant/overflow area notably eroded; freeboard and retention time thus minimal. Frozen sewage effluent buildup in progress, immediately downslope of the lagoon's decant/overflow area. Combustible waste appears well burned/compacted and covered. Facility is unfenced, but relatively little windblown material noted beyond the perimeter. Crushing and land filling of bulky metal wastes recently undertaken; to be completed when frozen ground conditions allow further movement of heavy machinery. Containment provided for hazardous material. Waste oil is adequately stored and disposed of at municipal facility (furnace).

FUEL STORAGE

Owner/Operator:

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Berms & Liners: **Water within Berms:** **Evidence of Leaks:**

Drainage Pipes: **Pump Station & Catchment Berm:**

Pipeline Condition: **Not Applicable:** x **Condition of Tanks:**

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected **Hamlet:** none

INAC: drinking water @ water truck, sewage discharge

Signs Posted **SNP:** not applicable **Warning:** to be installed once work @ metal dump completed

Records & Reporting: not applicable

Geotechnical Inspection: not applicable

Non-Compliance of Act or Licence: Community is unlicenced.

Philippe Lavallée

Inspector's Name **Inspector's Signature**

figure 1. Sewage lagoon, with solid waste disposal site in background; 2000/09/19.

figure 2. Outflow area of sewage lagoon; 2000/09/19.

figure 3. Path of discharge from the sewage lagoon; 2000/09/19.

figure 4. Solid waste disposal facility; 2000/09/19.

figure 5. Bulky metal wastes disposal site; 2000/09/19.

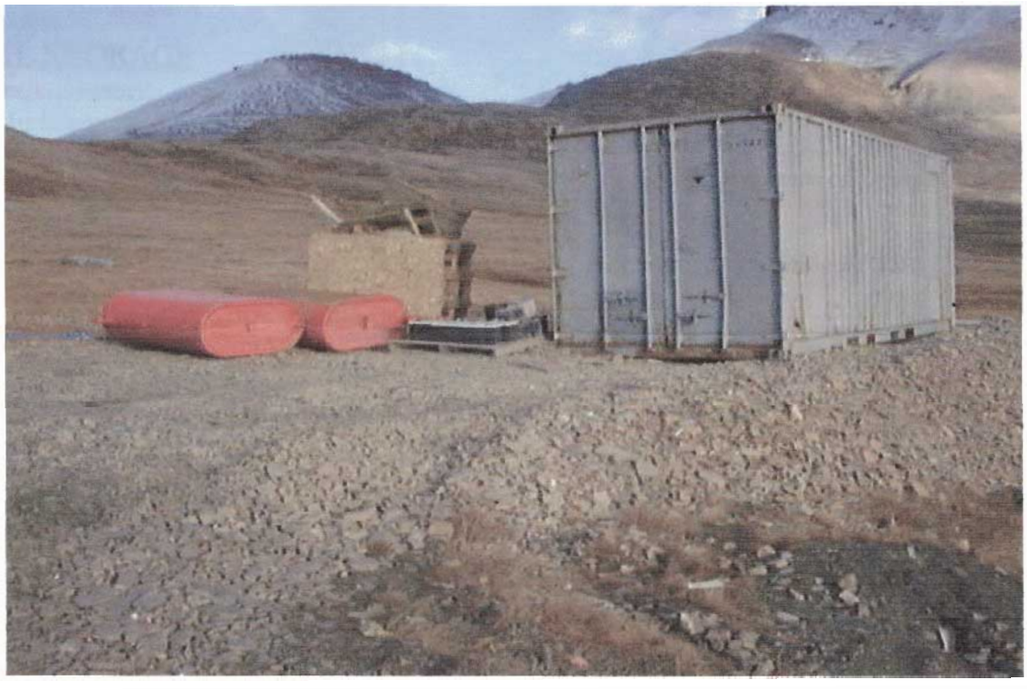

figure 6. Hazardous material storage area, solid waste disposal facility; 2000/09/19.

TAIGA ENVIRONMENTAL LABORATORY
Dept. Indian Affairs & Northern Development
4601-52 nd Ave., Box 1500
Yellowknife, NT. X1A 2R3
Tel. (867) 669-2788
Fax: (867) 669-2718

To: NUNAVUT
Operations Directorate, DIAND
BOX 100

IQALUIT X0A 0H0

Att'n: Philippe Lavallee

LAB# 202188

SAMPLE INFORMATION

Our Lab#: 202188
Your Sample ID: drinking water
Sample Matrix: drinking water

PROJECT: Arctic Bay

Collection:
Location: Arctic Bay
Date: 9/19/00
By: P.Lavallee

Received Date: 9/26/00
Report Date: 06-Nov-00
Approved By:

- SAMPLE ANALYSIS REPORT -

Lab#	Test		Result	Units	Detection Limit	Analysis Date	Analytical Method
202188							
	Tot-Suspended-Solids	<	3	mg/L	3	10/10/2000	EC10406
	NO3-N+NO2-N		0.041	mg/L	0.008	11/01/2000	07110
	Ammonia-N		0.056	mg/L	0.005	10/16/2000	EC7557
	T-Phosphorous	<	0.004	mg/L	0.004	10/12/2000	EC15411
	Calcium		2.44	mg/L	0.05	10/05/2000	EC20003
	Magnesium		1.08	mg/L	0.01	10/05/2000	012102
	Sodium		1.17	mg/L	0.02	10/05/2000	011102
	Potassium		0.35	mg/L	0.03	10/05/2000	EC19102
	Chloride		1.9	mg/L	0.2	10/24/2000	17206
	Colour		20		5	10/02/2000	02021
	Tot-Mercury(water)	<	0.01	ug/L	0.01	9/26/2000	080314
	Total Arsenic(w)-GFAA	<	1	ug/L	1	10/12/2000	GFAA
	Phenols		3	ug/L	2	10/20/2000	006536

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LAB# 202188

Tot-Cadmium(ICP-MS)	<	0.3	ug/L	0.3	9/28/2000	ICP-MS
Tot-Cobalt(ICP-MS)	<	1	ug/L	1	9/28/2000	ICP-MS
Tot-Chromium(ICP-MS)	<	3	ug/L	3	9/28/2000	ICP-MS
Tot-Copper(ICP/MS)		3	ug/L	2	9/28/2000	ICP-MS
Tot-Iron(AA)		0.15	mg/L	0.03	9/29/2000	ICP-MS
Tot-Manganese(ICP-MS)		2	ug/L	1	9/28/2000	ICP-MS
Tot-Nickel(ICP-MS)	<	1	ug/L	1	9/28/2000	ICP-MS
Tot-Lead(ICP-MS)	<	1	ug/L	1	9/28/2000	ICP-MS
Tot-Zinc(ICP-MS)	<	10	ug/L	10	9/28/2000	ICP-MS

Field Data (00/09/19) **Water truck**
Temperature: 5.5 °C
Conductivity: 32 µS
pH: 8.7 **Time:** 17:06

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IQALUIT X0A 0H0

Att'n: Philippe Lavallee

LAB# 202187

SAMPLE INFORMATION

Our Lab#: 202187
Your Sample ID: discharge
Sample Matrix: discharge

PROJECT: Arctic Bay

Collection:
Location: Arctic Bay
Date: 9/19/00
By: P.Lavallee

Received Date: 9/26/00
Report Date: 06-Nov-00
Approved By:

- SAMPLE ANALYSIS REPORT -

Lab#	Test		Result	Units	Detection Limit	Analysis Date	Analytical Method
202187							
	Tot-Suspended-Solids		107	mg/L	3	10/10/2000	EC10406
	NO3-N+NO2-N	<	0.008	mg/L	0.008	11/01/2000	07110
	Ammonia-N		127	mg/L	0.005	10/16/2000	EC7557
	T-Phosphorous		16.6	mg/L	0.004	10/12/2000	EC15411

Field Data (00/09/19) Lagoon
Temperature: 4.0 °C
Conductivity: 1684 µS
pH: 7.9 **Time:** 16:11