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N5L4-1441 (expired)

October 2, 2001.

Tommy Akavak
acting Senior Administrative Officer
Hamlet of Kimmirut
P.O. Box 120
Kimmirut, NU X0A 0N0

July 30, 2001 Municipal Water Use Inspection - Report

Firstly, I wish to thank Micky Lyta for the much appreciated time and assistance provided during the tour of the Hamlet's water use and waste disposal facilities. Attached for your records is the Municipal Water Use Inspection Report pertaining to the July 30, 2001 inspection; the status of the existing, and planned, waste disposal facilities pose some concerns. As such, the following considerations will need to be addressed:

- **Water supply:** Due to the failure of its generator, the water intake facility has been bypassed for months. While the temporary truckfill station by the shoreline (figure 1) did not appear to create a negative impact on the water supply, the Inspector is glad to hear that maintenance work will proceed in a timely manner. This being said, the attached analytical results relating to a sample taken from the temporary truckfill station station indicate that the raw water meets the *Guidelines for Canadian Drinking Water Quality* for all tested parameters.

- **Waste disposal:** The sewage disposal area, essentially a truck dumping point (figure 2), provides no retention nor treatment time prior to the discharge of effluent. Further, although bulky metal wastes are segregated, waste oil and hazardous materials are still disposed of at the solid waste disposal facility. And while the household wastes appeared adequately managed (figure 3), a significant quantity of exposed wastes nonetheless line the toe of the dump, along the discharge path of the sewage effluent. Accordingly, the attached analytical results relating to a sample collected from Surveillance Network Program (SNP) station 1441-3 (figure 4) reveal that the level of total suspended solids (174 mg/L vs 120 mg/L) breaches the effluent quality standards set under the now expired Water licence N5L4-1441. In addition, concentrations of ammonia (103 mg/L vs 2.2 mg/L), phenols (200 µg/L vs 4 µg/L), cadmium (0.3 µg/L vs 0.017 µg/L), copper (56 µg/L vs 4 µg/L), iron (5.16 mg/L vs 0.3 mg/L), lead (16 µg/L vs 7 µg/L), and zinc (91 µg/L vs 30 µg/L) exceed the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*.

Moreover, the Microtox sample, which constitutes a reliable toxicity indicator (IC_{50}), shows that half of light-producing bacteria were inhibited by a sample concentration of 6.0%, whereas 50% and over is considered non-toxic. However, the considerable vegetation along the path of discharge from the waste disposal facility (figure 5) seemingly provides some means of effluent treatment. Unfortunately, due to flight scheduling limitations, bacteriological parameters could not be analysed.

In related matters, the imminent commissioning of new sewage (figures 6-7) and solid waste (figures 8-9) disposal facilities implies additional considerations. Indeed, in light of their inherent potential for the deposit of waste into waters, the construction, operation and maintenance (O&M), and abandonment and restoration (A&R) of waste disposal facilities facilities ought to previously be granted approval by the Nunavut Water Board (NWB).

- **Non-compliance of Act or Licence:** Although Water licence N5L4-1441 has lapsed into expiry on 2000/12/31, the Inspector acknowledges that the Hamlet has since provided the NWB with a licence renewal application, which is pending review. However, no appreciable effort has been made to fulfill the requirements of O&M and A&R plans submission. Consequently, given the concerns voiced by various parties concerning the lack of information surrounding the commissioning of the new sewage and solid waste disposal facilities, the Inspector reminds both the Hamlet and Community Government and Transportation (CG&T) that the NWB needs to be informed of, and approve, municipal undertakings implying the use of water and/or the deposit of waste into waters.

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 (Shaun Mackie)
- EC Environmental Protection, Yellowknife (Anne Wilson)
- DFO Habitat Management, Iqaluit (Jordan DeGroot)

Indian and Northern Affairs Canada / Affaires Indiennes et du Nord Canada

MUNICIPAL WATER USE INSPECTION FORM

Date: 2001/07/30 **Licensee Rep.** (Name/Title): Micky Lyta / Municipal Garage Foreman

Licensee: Hamlet of Kimmirut **Licence No.:** N5L4-1441 (expired)

WATER SUPPLY

Source(s): Lake Fundo **Quantity used:** meter @ 6 675 600 L

Owner:/Operator: Hamlet

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

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

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

Comments: The water intake facility's generator has been out of service since springtime; direct truckfill station by the lakeshore currently utilized until specialized assistance comes in. Water delivery records kept. Manual chlorination (bleach) in use at the temporary truckfill station.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.): none; discharge overland to ocean

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

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

Solid Waste: **Owner/Operator:** Hamlet

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

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

Discharge Quality: sampled **Decant Structure:** NA **Erosion:** A

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

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

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

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

Comments: Sewage disposal area provides no retention/treatment time prior to the discharge of effluent. Minimal segregation of waste at the partly-fenced solid waste disposal site; windblown garbage noted far beyond the perimeter of the facility. Waste oil is still stored and disposed of at the dump; old burn area partially covered with fill material. No particular storage area for hazardous materials. Work has been undertaken on new solid waste and sewage disposal sites; little information provided beforehand. Operation and Maintenance (O&M) plan for the waste disposal facilities not submitted. No Abandonment and Restoration (A&R) plan yet submitted in regards to the current waste disposal facility.

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: raw water @ intake (1441-1), waste discharge below facility (1441-3)

Signs Posted **SNP:** none **Warning:** none

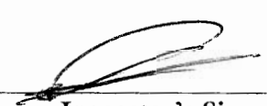
Records & Reporting: No O&M, A&R plans; minimal information regarding new waste disposal site

Geotechnical Inspection: not applicable

Non-Compliance of Act or Licence: O&M plan still outstanding; due by 1991/07/01. Water licence N5L4-1441 expired since 2000/12/31; however, renewal application submitted and is pending review.

Philippe Lavallée

Inspector's Name



Inspector's Signature

figure 1. Temporary water intake facility, Lake Fundo; 2001/07/30.

figure 2. Sewage disposal area, with bulky metal wastes in background; 2001/07/30.

figure 3. Solid waste disposal facility; 2001/07/30.

figure 4. Discharge at the toe of the waste disposal facility; 2001/07/30.

figure 5. Path of discharge from the waste disposal facility; 2001/07/30.

figure 6. Truck discharge point, new sewage disposal facility; 2001/07/30.

figure 7. Truck discharge and drainage valley, new sewage disposal site; 2001/07/30.

figure 8. New solid waste disposal facility, with Lake Fundo in background; 2001/07/30.

figure 9. New solid waste disposal facility; 2001/07/30.

Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788
Fax: (867)-669-2718

- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office DIAND, Operations *Attn:* Philippe Lavalllee

Sample ID: raw water 1441-1 **Taiga Sample ID:** 211878

Client Project: **Sample Type:** **Received Date:** 02-Aug-01

Location: Kimmirut **Sampling Date:** 30-Jul-01

Report Status: **Final** ***Approved by:***

Lab Section	Test Parameter	Result	Units	Detection Limit	Analysis Date
Major Ions	Chloride	2.6	mg/L	0.2	14-Aug-01
	Sodium	1.94	mg/L	0.02	07-Aug-01
	Sulphate	14	mg/L	3	08-Aug-01
Nutrients	Ammonia as N	<0.005	mg/L	0.005	21-Aug-01
	Nitrate+Nitrite as N	<0.008	mg/L	0.008	17-Aug-01
Physicals	Colour	<5		5	02-Aug-01
	Solids, Total Dissolved	108	mg/L	10	04-Sep-01
	Turbidity	0.4	NTU	0.1	08-Feb-01
Total Metals	Arsenic	1.6	µg/L	1.0	10-Aug-01
	Cadmium	<0.3	µg/L	0.3	10-Aug-01
	Chromium	<3	µg/L	3	10-Aug-01
	Cobalt	<1	µg/L	1	10-Aug-01
	Copper	<2	µg/L	2	10-Aug-01

Report Date: September 7, 2001

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Sample ID: raw water 1441-1 **Taiga Sample ID:** 211878

Total Metals	Iron	30	µg/L	30	13-Aug-01
	Lead	2	µg/L	1	10-Aug-01
	Manganese	<1	µg/L	1	21-Aug-01
	Mercury	<0.01	µg/L	0.01	03-Aug-01
	Nickel	2	µg/L	1	10-Aug-01
	Zinc	<10	µg/L	10	10-Aug-01

Field Data (01/07/30) 1441-1
Temperature: 19.5 °C
Conductivity: 144 µS/cm
pH: 8.5 **Time:** 13:20

Report Date: September 7, 2001

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- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office DIAND, Operations *Attn:* Philippe Lavalllee

Sample ID: waste discharge 1441-3 **Taiga Sample ID:** 211879

Client Project: **Sample Type:** **Received Date:** 02-Aug-01

Location: Kimmirut **Sampling Date:** 30-Jul-01

Report Status: **Final** ***Approved by:***

Lab Section	Test Parameter	Result	Units	Detection Limit	Analysis Date
Nutrients	Ammonia as N	103	mg/L	0.005	21-Aug-01
	Nitrate+Nitrite as N	< 0.008	mg/L	0.008	17-Aug-01
	Phosphorous, Total	14.3	mg/L	0.004	29-Aug-01
Organic	Oil and Grease	52.5	mg/L	0.2	10-Aug-01
	Phenols	200.0	µg/L	0.5	22-Aug-01
Physicals	Solids, Total Suspended	174	mg/L	3	22-Aug-01
Total Metals	Arsenic	2.7	µg/L	1.0	10-Aug-01
	Cadmium	0.3	µg/L	0.3	10-Aug-01
	Chromium	< 3	µg/L	3	10-Aug-01
	Cobalt	4	µg/L	1	10-Aug-01
	Copper	56	µg/L	2	10-Aug-01
	Iron	5160	µg/L	30	13-Aug-01
	Lead	16	µg/L	1	10-Aug-01

Report Date: September 7, 2001

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- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office DIAND, Operations *Attn:* Philippe Lavalllee

Sample ID: waste discharge 1441-3 **Taiga Sample ID:** 211879

Total Metals	Manganese	56	µg/L	1	21-Aug-01
	Mercury	< 0.01	µg/L	0.01	03-Aug-01
	Nickel	15	µg/L	1	10-Aug-01
	Zinc	91	µg/L	10	10-Aug-01

Field Data (01/07/30) **1441-3**
Temperature: 24.5 °C
Conductivity: 1 534 µS/cm
pH: 7.7 **Time:** 13:50

Report Date: September 7, 2001

REPORT OF TOXICITY USING MICROTOX

COMPANY/LOCATION: **Kimmirut Waste Discharge - 1441-3**

Sample Collected By: Philippe Lavallee

Date/Time Sampled: July 30, 2001

Date/Time Received: August 02, 2001

Date/Time Test Start: August 03, 2001

Sample Type: Elutriate
Sampling Method: Grab

Method: ***Environment Canada Laboratories SOP#830.0 Revision 1, for Microtox Testing in Compliance with November 1992: Biological Test Method: Toxicity Test Using Luminescent Bacteria Photobacterium phosphoreum), November 1992, EPS 1/RM/24.***

RESULTS: **TOXIC - IC_{50} Concentration: 6.0** **(Toxic 0 to 50%)**

TEST ORGANISMS:
Species: Vibrio fisheri (Photobacterium phosphoreum)
Test Apparatus: Model 500 Analyzer

TEST SUBSTANCE/CONDITIONS

pH of Sample: 7.8 (No pH adjustment)

Sample Appearance: Murky (no colour adjustment)

Lot # of OAS: OSA007
(Osmotic Adjusting Solution)

Lot # of Reconstitution Solution: RSN099Y

Lot # of Diluent: DIL034L

TEST METHODS AND CONDITIONS

Test Start Date/Time: August 03, 2001 / 12:23 PM

Test Method: Basic 45% Test, 15 minute incubation.

QUALITY CONTROL

Reference Toxicant: Zinc Sulfate Standard

Analyst: WR

Date of Test: August 03 2001

Reagent Lot #: ACV026-6

IC_{50} - 15 minutes mg/L: 3.0 mg/L

IC_{50} Confidence Range: 2.2 to 4.2 mg/L

TEST ANALYST: Wade Romanko **INITIAL:** WR