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Your file / Votre référence

Our file / Notre référence
N6L3-0779 (expired)

November 7, 2001.

Ron Roach
Senior Administrative Officer
Municipality of Rankin Inlet
P.O. Box 310
Rankin Inlet, NU X0C 0G0

August 27, 2001 Municipal Water Use Inspection - Report

Firstly, I wish to thank Noah Makayak and Don Morling for their 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 August 27, 2001 inspection; outstanding waste management and administrative concerns were outlined. Consequently, the following considerations will need to be addressed:

- **Water supply:** No concerns regarding the well managed water intake and supply facilities were noted during the inspection. In fact, significant resources appear to be deployed in efforts to maximize the efficiency of the water distribution network. Notwithstanding, the attached analytical results relating to a sample taken in vicinity of the Nipissak Lake intake station, while revealing the undesirable presence of faecal coliform, otherwise indicate that all tested parameters meet the *Guidelines for Canadian Drinking Water Quality*, save for two exceptions: a field pH of 8.7 which lies slightly above the 6.5-8.5 aesthetic objective, and a turbidity value of 1.3 Nephelometric Turbidity Unit (NTU) hovering between the 1 NTU maximum acceptable concentration and the 5 NTU aesthetic objective.

- **Sewage disposal:** Although the effluent from the sewage treatment plant likely has little immediate impact on freshwater since it is directly discharged to the ocean via a deep water conveyance line, the operations of the plant are nonetheless integrated in the municipal water use and waste disposal network. As such, the attached analytical results relating to a sample collected from the outflow of the sewage treatment plant, in addition to revealing substantial levels of faecal coliform (17 million CFU/100ml), indicate that the recorded values for pH (9.2 vs 6.0-9.0) and biological oxygen demand (152 mg/L vs 120 mg/L) breach the previously licenced effluent quality standards. Nevertheless, the Microtox sample, which constitutes a reliable toxicity indicator (IC_{50}), did not attribute toxicity to the sewage effluent discharge. In parallel, the Nunavut Water Board (NWB) has yet to receive the required information concerning the disposal of the sewage screenings/sludge (figure 1) generated at the plant.

- **Solid waste disposal:** No noticeable segregation of waste is undertaken at the partly fenced solid waste disposal facility (figure 2). Further, as the wastepile is neither compacted nor covered, a considerable amount of windblown waste was noted beyond the perimeter of the facility. In addition, although waste oil is properly disposed of by a third party, no particular treatment or containment is provided for batteries and other hazardous materials. Furthermore, a noteworthy volume of water was observed flowing through the wastepile (figure 3). Accordingly, the attached analytical results relating to a sample taken at the location of the former Surveillance Network Program (SNP) station (figure 4) indicate that concentrations of ammonia (3.48 mg/L vs 2.2 mg/L), cadmium (0.6 µg/L vs 0.017 µg/L), copper (77 µg/L vs 4 µg/L), iron (392 µg/L vs 300 µg/L), and zinc (146 µg/L vs 30 µg/L) exceed the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*. However, the associated Microtox sample did not denote toxicity. Likewise, ponds were noted on either side of the containment berm's lower section (figure 5), thus raising the possibility that leachate is seeping through the area. On a side note, the Inspector reminds the Municipality that once the waste originating from various undertakings is allowed to be discarded at the solid waste disposal facility (figure 6), it becomes the Municipality's responsibility to see to its proper disposal.

In related matters, it was mentioned during the inspection that the Municipality entertains plans to close and relocate the current solid waste disposal facility. In this regards, the Inspector underlines that, even in the absence of a valid Water licence, environmental assessment processes remain in effect. Moreover, due to their underlying potential for the deposit of waste into waters, clauses relating to both the abandonment and restoration (A&R) of the existing solid waste disposal facility and the establishment of a replacement site will surely be included in the municipal Water licence once it is renewed. Therefore, the Inspector trusts that the Municipality will adopt a diligent stance and provide relevant plans to the NWB before reclamation and/or construction work is undertaken.

- **Non-compliance of Act or Licence:** Since the expiry of Water licence N6L3-0779 on 1999/08/31, the Municipality does not hold the Water licence it requires under both the *Northwest Territories Waters Act* and the *Nunavut Land Claims Agreement* for its municipal water use and waste disposal. However, the Municipality is certainly aware of the fact as the Inspector has provided numerous reminders, and the NWB has supplied on 2001/06/19 the list of information required to launch the Water licence renewal application. Considering the outstanding concerns noted in relation to waste disposal, the Inspector reiterates that the current situation is unacceptable. While it is acknowledged that the water use and waste disposal facilities are owned and operated by the Government of Nunavut and the Municipality, the Inspector nonetheless trusts that both implicated parties can iron out a common understanding which will ensure the submission of a water licence renewal application to the NWB in a timely manner, and without the need for any further prompting. Lastly, the Inspector points out that the Municipality has omitted to produce the following licenced requirements: 1998 and 1999 Annual Reports, Operation and Management (O&M) plan.

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
- DPW&H, Rankin Inlet (Dennis Althouse)
- CG&T, Rankin Inlet (Don Forsyth)
- Keewatin Health & Social Services, Rankin Inlet (Wanda Poirier)
- EC Environmental Protection, Yellowknife (Anne Wilson)

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

MUNICIPAL WATER USE INSPECTION FORM

Date: 2001/08/27 Licensee Rep. (Name/Title): Don Morling / DPW&H Operator
Noah Makayak / Municipal Foreman

Licensee: Municipality of Rankin Inlet Licence No.: N6L3-0779 (expired)

WATER SUPPLY

Source(s): Nipissak Lake Quantity used: recorded @ water treatment plant

Owner:/Operator: GN

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

Intake Facilities: A	Storage Structure: A	Treatment Systems: A	Chemical Storage: A
Flow Meas. Device: A	Convey. Lines: A	Pumping Stations: A	

Comments: Wilkinson Lake no longer relied upon since the commissioning of the storage tank. Computerized system monitors water distribution. Upgraded sampling capacities at the treatment plant will soon allow for the on-site testing of a wide range of parameters, including bacteriological data. Chlorination and fluoridation in use.

WASTE DISPOSAL

Sewage: Sewage Treatment System (Prim./Sec/Ter.): deep water discharge to ocean

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

Seasonal Discharge: Wetlands Treatment: Trench:

Solid Waste: Owner/Operator: GN - Municipality

Landfill: x 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: NA	O&M Plan: U	A&R Plan: NA
Periods of Discharge: A	Effluent Discharge Rate: not measured	

Comments: Operation and maintenance of the sewage treatment plant reportedly troublesome; treatment is minimally effective, and often bypassed during winter. Sewage screenings/sludge trucked to the disposal site roughly two or three times per week; disposal trench dug during summer. No noticeable segregation of waste at the solid waste disposal facility. Combustible waste is seldom burnt; waste is neither compacted, nor covered. Considerable quantity of windblown waste noted beyond the perimeter of the partly-fenced site. Waste oil disposal handled by a third party. No treatment or containment provided for batteries and other hazardous materials. Flowing water observed in the middle of the wastepile, and pooled below the facility; noticeable flow at the SNP station. Drums of various contents stored by the entrance to the facility. Outstanding O&M plan.

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 reported

INAC: raw water @ lake, sewage effluent prior to discharge, dump leachate

Signs Posted SNP: yes Warning: yes

Records & Reporting: Overdue requirements of the now expired licence; renewal application lacking

Geotechnical Inspection: not applicable

Non-Compliance of Act or Licence: Community is unlicenced since Water licence N6L3-0779 expired on 1999/08/31. Requirements relating to the expired licence (1998 and 1999 Annual Reports, O&M plan, sewage screenings disposal) remain outstanding. Breach of effluent quality standards. No renewal application submitted.

Philippe Lavallée

Inspector's Name

Inspector's Signature

figure 1.Sewage screenings disposal alongside the solid waste disposal facility;2001/08/27.

figure 2. Solid waste disposal facility; 2001/08/27.

figure 3. Leachate flow within the solid waste disposal facility; 2001/08/27.

figure 4. Path of leachate discharge from the solid waste disposal facility; 2001/08/27.

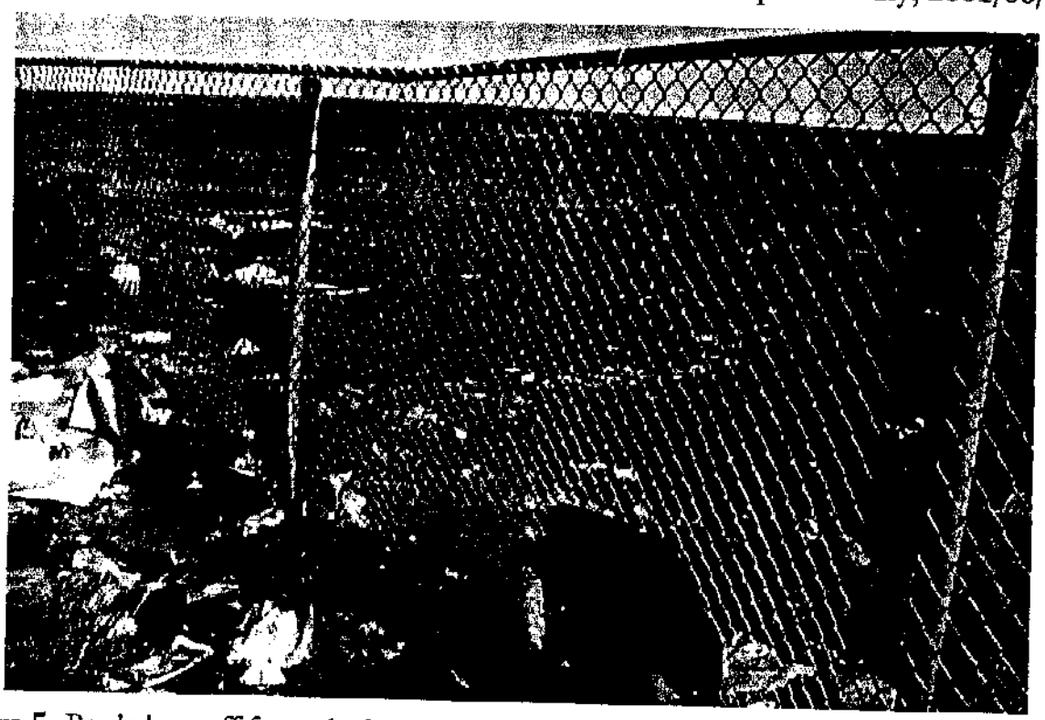

figure 5. Pooled runoff from the lower section of the solid waste disposal site;2001/08/27.

figure 6. Signs of spillage from a storage site for drums of various contents; 2001/08/27.

Taiga Environmental Laboratory
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- CERTIFICATE OF ANALYSIS -

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

Sample ID: raw water **Taiga Sample ID:** 212300

Client Project: **Sample Type:** freshwater **Received Date:** 30-Aug-01

Location: Rankin Inlet **Sampling Date:** 27-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Colour	<5		5	31-Aug-01
Solids, Total Dissolved	138	mg/L	10	07-Sep-01
Turbidity	1.3	NTU	0.1	31-Aug-01
Nutrients				
Ammonia as N	<0.005	mg/L	0.005	07-Sep-01
Biological Oxygen Demand	<2	mg/L	2	30-Aug-01
Nitrate+Nitrite as N	0.013	mg/L	0.008	14-Sep-01
Major Ions				
Sodium	24.5	mg/L	0.02	05-Sep-01
Microbiology				
Coliforms, Fecal	3	CFU/100mL	1	30-Aug-01
Metals, Total				
Arsenic	<1.0	µg/L	1.0	13-Sep-01
Cadmium	<0.3	µg/L	0.3	12-Sep-01
Chromium	5	µg/L	3	12-Sep-01

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Report Date: Wednesday, October 10, 2001

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: raw water **Taiga Sample ID:** 212300

Cobalt	<1	µg/L	1	12-Sep-01
Copper	<2	µg/L	2	12-Sep-01
Iron	230	µg/L	30	14-Sep-01
Lead	<1	µg/L	1	12-Sep-01
Manganese	7	µg/L	1	12-Sep-01
Mercury	<0.01	µg/L	0.01	02-Oct-01
Nickel	1	µg/L	1	12-Sep-01
Zinc	<10	µg/L	10	12-Sep-01
Subcontracted Tests				
Chloride	42.0	mg/L	0.1	17-Sep-01
Sulphate	13.0	mg/L	0.3	17-Sep-01

Field Data (01/08/27) raw water
Temperature: 11.5 °C
Conductivity: 261 µS/cm
pH: 8.7 **Time:** 11:00

Report Date: Wednesday, October 10, 2001

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: sewage discharge **Taiga Sample ID: 212301**

Client Project: **Sample Type:** sewage **Received Date:** 30-Aug-01

Location: Rankin Inlet **Sampling Date:** 27-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Solids, Total Suspended	125	mg/L	3	11-Sep-01
Nutrients				
Ammonia as N	23.1	mg/L	0.005	12-Sep-01
Biological Oxygen Demand	152	mg/L	2	30-Aug-01
Nitrate+Nitrite as N	< 0.008	mg/L	0.008	24-Sep-01
Phosphorous, Total	3.84	mg/L	0.004	26-Sep-01
Microbiology				
Coliforms, Fecal	17000000	CFU/100mL	1	30-Aug-01
Subcontracted Tests				
Phenols	18.0	µg/L	0.5	17-Sep-01

Field Data (01/08/27) sewage

Temperature: 17.0 °C
Conductivity: 703 µS/cm
pH: 9.2 Time: 11:35

Report Date: Friday, October 05, 2001

REPORT OF TOXICITY USING MICROTOX

COMPANY/LOCATION: **Rankin Inlet, Sewage Discharge, (212301)**

Sample Collected By: Philippe Lavallee

Date/Time Sampled: **August 27, 2001 / 11:35**

Date/Time Received: **N/A**

Date/Time Test Start: **August 08, 2001 / 4:19 PM**

Sample Type: Elutriate
Sampling Method: Grab

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

Environment Canada has conducted testing on the material sampled according to its own Microtox standards an procedures. The data proceeding from that testing is intended as a preliminary screening tool only, and cannot b used for any other purpose. This data is provided on the condition that it not be used in any report that is intende for public or official use.

RESULTS: **NON TOXIC at 45% concentration**

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

TEST SUBSTANCE/CONDITIONS

pH of Sample: **N/A** (No pH adjustment)

Sample Appearance: **no colour adjustment**

Lot # of Osmotic Adjusting Solution: OAS007

Lot # of Reconstitution Solution: RSN099Y

Lot # of Diluent: DIL034L

TEST METHODS AND CONDITIONS

Test Start Date/Time: **September 08, 2001 4:19 PM**

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

QUALITY CONTROL

Reference Toxicant: Zinc Sulfate Standard

Reagent Lot #: ACV026-6

IC_{50} - 15 minutes mg/L: **2.8 mg/L**

IC_{50} Confidence Range: **1.9 to 4.2 mg/L**

TEST ANALYST: Ron Bujold

INITIAL: RB

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: dump leachate **Taiga Sample ID:** 212302

Client Project: **Sample Type:** sewage **Received Date:** 30-Aug-01

Location: Rankin Inlet **Sampling Date:** 27-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Solids, Total Suspended	3	mg/L	3	11-Sep-01
Nutrients				
Ammonia as N	3.48	mg/L	0.005	12-Sep-01
Biological Oxygen Demand	6	mg/L	2	30-Aug-01
Nitrate+Nitrite as N	5.65	mg/L	0.008	14-Sep-01
Phosphorous, Total	0.072	mg/L	0.004	26-Sep-01
Microbiology				
Coliforms, Fecal	100	CFU/100mL	1	30-Aug-01
Metals, Total				
Arsenic	<1.0	µg/L	1.0	13-Sep-01
Cadmium	0.6	µg/L	0.3	12-Sep-01
Chromium	8	µg/L	3	12-Sep-01
Cobalt	4	µg/L	1	12-Sep-01
Copper	77	µg/L	2	12-Sep-01
Iron	392	µg/L	30	14-Sep-01

Report Date: Wednesday, October 10, 2001

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: dump leachate **Taiga Sample ID: 212302**

Lead	1	µg/L	1	12-Sep-01
Manganese	471	µg/L	1	12-Sep-01
Mercury	< 0.01	µg/L	0.01	02-Oct-01
Nickel	33	µg/L	1	12-Sep-01
Zinc	146	µg/L	10	12-Sep-01
Subcontracted Tests				
Phenols	1.5	µg/L	0.5	17-Sep-01

Field Data (01/08/27) dump
Temperature: 8.0 °C
Conductivity: 2 830 µS/cm
pH: 7.3 **Time:** 13:41