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

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Your file Votre référence

Our file Notre référence
NWB3BAK9904

INTERNAL PC LA

November 7, 2001.

Dennis Zettler
Senior Administrative Officer
Hamlet of Baker Lake
P.O. Box 149
Baker Lake, NU X0C 0A0

August 31, 2001 Water Licence Inspection - Report

Firstly, I wish to thank Jeremy Singaqti 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 August 31, 2001 inspection; whereas the vast majority of operational aspects appear well overseen, several administrative requirements remain outstanding. Accordingly, the following considerations were outlined and will need to be addressed:

- **Water supply:** No concerns were noted regarding the well-kept water intake and supply facility. Further, the attached analytical results relating to a sample taken from Surveillance Network Program (SNP) station BAK-1 in the vicinity of the intake station indicate that the municipal raw water supply meets the *Guidelines for Canadian Drinking Water Quality* for all tested parameters. Unfortunately, due to flight scheduling limitations, bacteriological parameters could not be analysed.

- **Sewage disposal:** Early signs of erosion were observed along the sewage disposal facility's initial holding cell (figure 1). As such, especially since effluent reportedly overtops the retention berm during winter and/or spring, the Licensee may wish to undertake preventive erosion control measures before the matter becomes problematic.

- **Solid waste disposal:** The solid waste disposal facility is quite efficiently managed, as the wastepile is well compacted and covered (figure 2). Furthermore, while pooled water was noted along the exposed toe of the wastepile (figure 3), no flow from the facility's discharge culvert was noticeable at the time of the inspection. In addition, bulky metal wastes, tires, hazardous materials, and waste oil/antifreeze are further segregated on-site. In this regards, since no form of containment is at the moment provided for accumulated batteries and other hazardous materials, it was mentioned during the inspection that two sealift containers will shortly be dedicated to that purpose.

Concerning waste oil management, the Inspector acknowledges the reclamation of the old pit and the recent acquisition of a furnace at which numerous drums have been disposed since the last inspection. However, no Abandonment and Restoration (A&R) information relating to the work was provided to the Nunavut Water Board (NWB). Additionally, at the time of the inspection no confirmation could be given to the effect that hydrocarbon-contaminated soil had been removed from the area prior to the backfilling of the site (figure 4), thus guaranteeing that runoff flowing over the reclaimed pit would not imply further contamination. In parallel, while it is recognized that the Licensee intends to dispose of the remaining waste oil drums during the coming winter, the Inspector nevertheless underlines that the Licensee must ensure that the temporary storage does not bring about the deposit of waste into waters (figures 5-6). Thus, should any such unauthorized discharges of waste occur, due contingency measures ought to be taken as per licenced conditions (part H, item 3).

In regards to the overall waste disposal, the attached analytical results relating to a sample collected from SNP station BAK-2 at the inlet to Airplane Lake reveal that all tested parameters comply with the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*, save iron (486 μg/L vs 300 μg/L). Moreover, the Microtox sample, which constitutes a reliable toxicity indicator (IC_{50}), did not attribute toxicity to the runoff from the waste disposal facilities. On a side note, as interest in the matter was voiced by Municipal Public Works staff, also attached are guidelines relating to antifreeze recycling/disposal.

- **Non-compliance of Act or Licence:** Since it was previously pinpointed, the Licensee has not submitted to the NWB the overdue Operation and Management (O&M) plan for its waste disposal facilities (part G, item 1), Spill Contingency plan (part H, item 1), and assessment of abandoned facilities (part I, item 5). Lastly, the fact that no Annual Report (part B, item 1) relating to Water licence NWB3BAK9904 has yet been submitted is unacceptable, considering that these reports constitute the foremost source of information regarding municipal water use and waste disposal available to the NWB and regulatory agencies.

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, Rankin Inlet (Don Forsyth)
- Keewatin Health & Social Services, Rankin Inlet (Wanda Poirier)
- EC Environmental Protection, Yellowknife (Anne Wilson)

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MUNICIPAL WATER USE INSPECTION FORM

Date: 2001/08/31 **Licensee Rep.** (Name/Title): Jeremy Singaqti / Municipal Public Works Maintainer

Licensee: **Hamlet of Baker Lake** **Licence No.:** **NWB3BAK9904**

WATER SUPPLY

Source(s): Baker Lake

Quantity used: meter 1 @ 1 182 769.5 m^3
meter 2 @ 268 689.2 m^3

Owner:/Operator: Hamlet

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:** NA

Comments: No concerns were noted at the well-kept water intake and supply facility. Chlorination in use.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.): secondary; discharge overland to freshwater body

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

Seasonal Discharge: x **Wetlands Treatment:** x **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:** A **Spills:** none reported

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

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

Comments: Early signs of erosion noted at the sewage disposal facility; effluent reportedly overtops the retention berm during winter/springtime. Solid waste disposal facility well managed; extensive waste segregation undertaken. Pooled water noticeable at the toe of the wastepile, but no flow noted from the facility's discharge culvert. Batteries and other hazardous materials are segregated, but no form of containment is provided. Waste oil furnace recently acquired; barrel-crusher also on-site to facilitate the disposal of emptied waste oil drums. Old waste oil pit has been reclaimed; hydrocarbon contamination noted at the temporary waste oil storage site. Operation and Maintenance (O&M) plan not provided. No Abandonment and Restoration (A&R) information submitted.

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 @ intake (BAK-1), waste discharge @ Airplane Lake (BAK-2)

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

Records & Reporting: overdue Annual Reports

Geotechnical Inspection: not applicable

Non-Compliance of Act or Licence: Outstanding 1999 and 2000 Annual Reports. O&M plan for the waste disposal facilities not yet submitted. Spill Contingency plan still not finalized. A&R information lacking. Waste oil management improved upon but still cause for concern.

Philippe Lavallée

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

figure 1. Sewage disposal facility from the truck dumping point; 2001/08/31.

figure 2. Solid waste disposal facility; 2001/08/31.

figure 3. Pooled water along the toe of the solid waste disposal facility; 2001/08/31.

figure 4. Location of the recently backfilled old waste oil disposal pit; 2001/08/31.

figure 5. Hydrocarbon contamination at the waste oil storage site; 2001/08/31.

figure 6. Hydrocarbon contamination at the waste oil storage site; 2001/08/31.

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: BAK-1 raw water **Taiga Sample ID:** 212478

Client Project: **Sample Type:** raw water **Received Date:** 07-Sep-01

Location: Baker Lake **Sampling Date:** 31-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Colour	< 5		5	14-Sep-01
Solids, Total Dissolved	74	mg/L	10	19-Sep-01
Turbidity	0.7	NTU	0.1	14-Sep-01
Nutrients				
Ammonia as N	0.006	mg/L	0.005	12-Sep-01
Nitrate+Nitrite as N	0.059	mg/L	0.008	10-Oct-01
Major Ions				
Sodium	10.6	mg/L	0.02	18-Sep-01
Metals, Total				
Arsenic	< 1.0	µg/L	1	21-Sep-01
Cadmium	< 0.3	µg/L	0.3	11-Sep-01
Chromium	< 3	µg/L	3	11-Sep-01
Cobalt	< 1	µg/L	1	11-Sep-01
Copper	< 2	µg/L	2	11-Sep-01
Iron	34	µg/L	30	14-Sep-01

Report Date: Tuesday, October 16, 2001

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Lead	<1	µg/L	1	11-Sep-01
Manganese	8	µg/L	1	11-Sep-01
Mercury	<0.01	µg/L	0.01	02-Oct-01
Nickel	<1	µg/L	1	11-Sep-01
Zinc	<10	µg/L	10	11-Sep-01
Subcontracted Tests				
Chloride	21.0	mg/L	0.1	05-Oct-01
Sulphate	4.4	mg/L	0.3	05-Oct-01

Field Data (01/08/31) BAK-1
Temperature: 10.5 °C
Conductivity: 115 µS/cm
pH: 8.3 **Time:** 10:32

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: BAK-2 waste discharge **Taiga Sample ID:** 212479

Client Project: **Sample Type:** wastewater **Received Date:** 07-Sep-01

Location: Baker Lake **Sampling Date:** 31-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Solids, Total Suspended	4	mg/L	3	19-Sep-01
Nutrients				
Ammonia as N	0.725	mg/L	0.005	12-Sep-01
Nitrate+Nitrite as N	0.955	mg/L	0.008	10-Oct-01
Phosphorous, Total	0.306	mg/L	0.004	27-Sep-01
Organic				
Oil and Grease	0.4	mg/L	0.2	10-Oct-01
Metals, Total				
Arsenic	<1.0	µg/L	1	21-Sep-01
Cadmium	<0.3	µg/L	0.3	12-Sep-01
Chromium	<3	µg/L	3	12-Sep-01
Cobalt	<1	µg/L	1	12-Sep-01
Copper	4	µg/L	2	12-Sep-01
Iron	486	µg/L	30	14-Sep-01
Lead	<1	µg/L	1	12-Sep-01

Report Date: Tuesday, October 16, 2001

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: BAK-2 waste discharge **Taiga Sample ID:** 212479

Manganese	18	µg/L	1	12-Sep-01
Mercury	< 0.01	µg/L	0.01	02-Oct-01
Nickel	2	µg/L	1	12-Sep-01
Zinc	< 10	µg/L	10	12-Sep-01
Subcontracted Tests				
Phenols	1.8	µg/L	0.5	05-Oct-01

Field Data (01/08/31) **BAK-2**
Temperature: 10.5 °C
Conductivity: 115 µS/cm
pH: 7.6 **Time:** 11:20

Report Date: Tuesday, October 16, 2001

REPORT OF TOXICITY USING MICROTOX

COMP. //LOCATION: **Baker Lake, BAK-2, Waste Discharge**
Sample Collected By: Philippe Lavallee

Date/Time Sampled: August 31, 2001 / 11:20 PM

Date/Time Received: September 08, 2001

Date/Time Test Start: September 11, 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.***

Environment Canada has conducted testing on the material sampled according to its own Microtox standards and procedures. The data proceeding from that testing is intended as a preliminary screening tool only, and cannot be used for any other purpose. This data is provided on the condition that it not be used in any report that is intended 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: 7.5 (No pH adjustment)

Sample Appearance: Clear, 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 11, 2001 / 4:57 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: 3.7 mg/L

IC_{50} Confidence Range: 3.1 to 4.4 mg/L

TEST ANALYST: Ron Bujold **INITIAL:** RB