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Your file Votre référence

Our file Notre référence

unlicenced

November 6, 2001.

Steven Kopak
acting-Senior Administrative Officer
Hamlet of Repulse Bay
General Delivery
Repulse Bay, NU X0C 0H0

August 29, 2001 Municipal Water Use Inspection - Report

Firstly, I wish to thank yourself 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 29, 2001 inspection; no major concerns were outlined at the municipal facilities. Nevertheless, the following considerations were noted and will need to be addressed:

- **Water supply:** No concerns were noted regarding the water intake and supply facility. Further, the attached analytical results relating to a sample taken in the vicinity of the intake station indicate that all tested parameters meet the *Guidelines for Canadian Drinking Water Quality*, save for a single exception: a turbidity value of 3.3 Nephelometric Turbidity Unit (NTU), which hovers between the 1 NTU maximum acceptable concentration and the 5 NTU aesthetic objective.

- **Sewage disposal:** As sewage effluent discharged at the truck dumping point (figure 1) flows through a series of lakes draining along a densely vegetated valley, it would seem that the sewage disposal facility provides adequate effluent treatment. However, the attached analytical results relating to a sample collected from the outlet of the first sewage lake (figure 2) reveal that the concentration of ammonia (30.4 mg/L vs 2.2 mg/L) significantly exceeds the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*. Moreover, the Microtox sample, which constitutes a reliable toxicity indicator (IC_{50}), attributed borderline toxicity to the sewage effluent discharge; half of light-producing bacteria were inhibited by a sample concentration of 50.5%, whereas 50% and under is considered toxic. Unfortunately, due to flight scheduling limitations, bacteriological parameters could not be analysed. Accordingly, in an attempt to determine if an initial retention structure prior to the discharge of sewage effluent to receiving waters is required to ensure sufficient treatment, a wider range of parameters will be sampled during the next water use and waste disposal inspection.

- **Solid waste disposal:** While combustible wastes at the solid waste disposal facility appear fairly well compacted and covered (figure 3), a considerable amount of windblown waste was nonetheless noted beyond the perimeter of the unfenced site. In this regards, it was mentioned during the inspection that a fenced in facility would practically solve this issue. In addition, leachate from the solid waste disposal facility was observed flowing along the toe of the wastepile before mixing with the sewage effluent and following the same path of discharge. As such, the attached analytical results relating to a sample taken at the toe of the facility (figure 4) indicate that concentrations of ammonia (5.65 mg/L) and iron (5.89 mg/L vs 0.3 mg/L) exceed the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*. Nevertheless, the associated Microtox sample did not denote toxicity.

In related matters, although bulky metal wastes are segregated from the combustible wastes (figure 5), no particular treatment or containment is provided for batteries and other hazardous materials. Consequently, it was suggested that a sealift container be designated for that purpose until the Hamlet can see to the proper disposal of its stockpiled hazardous materials. Lastly, evidence of hydrocarbon contamination was noted at the waste oil storage site (figure 6). Since the soil in the immediate vicinity will likely have to be considered contaminated due to the spillage, and that further leaks are likely to occur, the Hamlet may wish to consider either acquiring a means of on-site disposal or dispatching the waste oil to facilities outside of the community.

- **Non-compliance of Act or Licence:** The Hamlet 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. In light of this, a licence application form was provided during the inspection, and the Inspector points out that INAC and/or other agencies can provide assistance in order to facilitate its prompt submission to the Nunavut Water Board.

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)

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

MUNICIPAL WATER USE INSPECTION FORM

Date: 2001/08/29 **Licensee Rep.** (Name/Title): Steven Kopak / acting-Senior Administrative Officer

Licensee: **Hamlet of Repulse Bay** **Licence No.:** **unlicenced**

WATER SUPPLY

Source(s): Water Lake **Quantity used:** meter @ 261 768 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 noted at the water intake and supply facility. Chlorination in use.

WASTE DISPOSAL

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

Natural Water Body: x **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:** NA	**Spills:** none reported
Construction: NA	**O&M Plan:** NA	**A&R Plan:** NA
Periods of Discharge: A	**Effluent Discharge Rate:** not measured	

Comments: Sewage disposal facility consists of a series of lakes draining along a densely vegetated valley. Considerable quantity of windblown waste noticeable beyond the perimeter of the unfenced solid waste disposal facility. Bulky metal wastes segregated from the combustible wastes, which are regularly burnt and pushed towards the toe of the wastepile; accumulated waste is covered on an annual basis. Signs of hydrocarbon contamination noted at the waste oil storage site. No particular treatment or containment is provided for batteries and other hazardous materials. Leachate flowing from the toe of the wastepile mixes with the sewage effluent and basically follows the same path of discharge.

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 facility, sewage discharge, dump leachate

Signs Posted **SNP:** not applicable **Warning:** none @ waste disposal facilities

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 discharge point along the toe of the solid waste disposal site;2001/08/29.

figure 2. Waste disposal facility from the outlet of the first sewage lake; 2001/08/29.

figure 3. Burnpile at the solid waste disposal facility; 2001/08/29.

figure 4. Leachate at the toe of the solid waste disposal facility; 2001/08/29.

figure 5. Bulky metal wastes disposal site; 2001/08/29.

figure 6. Hydrocarbon contamination at the waste oil storage site; 2001/08/29.

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

- CERTIFICATE OF ANALYSIS -

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

Sample ID: raw water **Taiga Sample ID:** 212332

Client Project: **Sample Type:** freshwater **Received Date:** 31-Aug-01

Location: Repulse Bay **Sampling Date:** 29-Aug-01

Report Status: **Final** ***Approved by:*** Kathleen Boyd

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Colour	<5		5	31-Aug-01
Solids, Total Dissolved	48	mg/L	10	13-Sep-01
Turbidity	3.3	NTU	0.1	31-Aug-01
Nutrients				
Ammonia as N	<0.005	mg/L	0.005	12-Sep-01
Nitrate+Nitrite as N	<0.008	mg/L	0.008	24-Sep-01
Major Ions				
Sodium	2.25	mg/L	0.02	05-Sep-01
Metals, Total				
Arsenic	<1.0	µg/L	1.0	14-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	<2	µg/L	2	12-Sep-01
Iron	<30	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: raw water **Taiga Sample ID:** 212332

Lead	1	µg/L	1	12-Sep-01
Manganese	1	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	3.5	mg/L	0.1	05-Oct-01
Sulphate	2.1	mg/L	0.3	05-Oct-01

Field Data (01/08/29) **raw water**
Temperature: 9.0 °C
Conductivity: 98 µS/cm
pH: 8.0 **Time:** 09:29

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: sewage discharge **Taiga Sample ID:** 212334

Client Project: **Sample Type:** freshwater **Received Date:** 31-Aug-01

Location: Repulse Bay **Sampling Date:** 29-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Solids, Total Suspended	80	mg/L	3	11-Sep-01
Nutrients				
Ammonia as N	30.4	mg/L	0.005	12-Sep-01
Nitrate+Nitrite as N	< 0.008	mg/L	0.008	24-Sep-01
Phosphorous, Total	5.29	mg/L	0.004	26-Sep-01
Subcontracted Tests				
Phenols	1.1	µg/L	0.5	05-Oct-01

Field Data (01/08/29) sewage
Temperature: 7.0 °C
Conductivity: 802 µS/cm
pH: 8.9 Time: 10:19

Report Date: Wednesday, October 10, 2001

REPORT OF TOXICITY USING MICROTOX

COMPAN LOCATION: **Repulse Bay - Sewage Discharge**

Sample Collected By: Philippe Lavallee

Date/Time Sampled: August 29, 2001 / 10:19

Date/Time Received: September 04, 2001

Date/Time Test Start: September 04, 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: **TOXIC - IC_{50} Concentration: 50:5% (Toxic 0 to 50%)**

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

TEST SUBSTANCE/CONDITIONS

pH of Sample: N/A 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 04, 2001 / 01:45 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: 3.4 mg/L

IC_{50} Confidence Range: 1.7 to 6.8 mg/L

TEST ANALYST: Wade Romanko

INITIAL: WR

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- CERTIFICATE OF ANALYSIS -

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

Sample ID: dump leachate **Taiga Sample ID:** 212333

Client Project: **Sample Type:** freshwater **Received Date:** 31-Aug-01

Location: Repulse Bay **Sampling Date:** 29-Aug-01

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

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Solids, Total Suspended	14	mg/L	3	11-Sep-01
Nutrients				
Ammonia as N	5.65	mg/L	0.005	12-Sep-01
Nitrate+Nitrite as N	0.059	mg/L	0.008	24-Sep-01
Organic				
Oil and Grease	< 0.2	mg/L	0.2	27-Sep-01
Metals, Total				
Arsenic	< 1.0	µg/L	1.0	14-Sep-01
Cadmium	< 0.3	µg/L	0.3	12-Sep-01
Chromium	4	µg/L	3	12-Sep-01
Cobalt	< 1	µg/L	1	12-Sep-01
Copper	< 2	µg/L	2	12-Sep-01
Iron	5890	µg/L	30	14-Sep-01
Lead	2	µg/L	1	12-Sep-01
Manganese	290	µg/L	1	12-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:** 212333

Mercury	< 0.01	µg/L	0.01	02-Oct-01
Nickel	4	µg/L	1	12-Sep-01
Zinc	19	µg/L	10	12-Sep-01

Field Data (01/08/29) **dump**
Temperature: 6.5 °C
Conductivity: 1 068 µS/cm
pH: 7.8 **Time:** 09:58

Report Date: Wednesday, October 10, 2001

REPORT OF TOXICITY USING MICROTOX

COMPANY LOCATION: **Repulse Bay - Dump Leachate**

Sample Collected By: Philippe Lavallee

Date/Time Sampled: August 29, 2001 / 09:58

Date/Time Received: September 04, 2001

Date/Time Test Start: September 04, 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: N/A (No pH adjustment)

Sample Appearance: Greenish, 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 04, 2001 / 02:13 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: 3.4 mg/L

IC_{50} Confidence Range: 1.8 to 6.8 mg/L

TEST ANALYST: Wade Romanko

INITIAL: WR