



**INAC-Water Resources
Field Operations
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Iqaluit, Nunavut
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December 17, 2003

Unlicensed

**Senior Administrative Officer
Hamlet of Repulse Bay
Ph: (867) 462-9952
Fax: (867) 462-4411**

Re: Hamlet of Repulse Bay Water Licence Inspection

The Hamlet of Repulse Bay is in the midst of completing their water licence application. In the course of the Water Licence Inspection a number of problems were identified with respect to the Hamlet's water use and waste disposal. The community is not keeping adequate records of water use and treatment, the landfill is not being operated up to sufficient standards and the bulk fuel storage facility is not being adequately maintained.

Potable Water Source - First Lake (Figure 1)

The Hamlet of Repulse Bay uses chlorination to treat drinking water, however record keeping for chlorine concentrations and water volumes pumped are inadequate. At the time of the inspection chlorine concentrations had not been recorded since May 26, 2003. The almost complete lack of record keeping is unacceptable, the lack of monitoring poses a significant health risk to the community and the situation needs to improve. The pumphouse is identified as the Hamlets water supply (figure 2). Water samples taken from the shore of the lake exceeded the *Summary of Guidelines for Canadian Drinking Water Quality 2003* for turbidity (1.1 NTU > 1.0 NTU). All of the remaining sample results were within Canadian Guidelines.

Sewage Treatment

The sewage treatment wetland in the Hamlet of Repulse Bay is quite extensive. The combination of the wetland and the system of ponds between the sewage dump off point and the marine environment likely provide very good treatment and high effluent quality (figure 3). As the system lacks a lagoon, solids migration may be a concern. Unfortunately the inspector was unable to take samples of the lagoon effluent because of a mix up with sample bottles.

Landfill

Runoff from the landfill flows towards the sewage treatment wetland. The Hamlet of Repulse Bay needs to control precipitation and prevent runoff from entering the landfill and transporting contaminants off site. The landfill is not fenced in, materials are not segregated and there are no signs identifying the landfill site. A new landfill facility provides the community with an opportunity to improve the segregation of waste and handling of hazardous materials. Hazardous materials need to be handled as per the *Nunavut Hazardous Waste Management Manual 2003*.

Metal dump

There is only minimal segregation of waste at the bulky metal waste disposal site with nothing in place to deal with hazardous materials.

Waste Oil

Waste oil is currently stored adjacent to the land farm for contaminated soil remediation. Waste drums are generally in good condition, stored on pallets until they can be shipped out (figure 4). The community should look into obtaining a waste oil burner, this would eliminate the expense of shipping out the waste and could also provide a source of energy to the community.

A large number of drums were observed in a pond near the Ocean edge (figure 5). These drums need to be removed from the pond, crushed and landfilled. Mr MacQuarrie assured me that they would be cleaned up come springtime.

Bulk Fuel Storage

There are a number of sections of exposed liner (figure 6) at the fuel storage facility and the liner is punctured in one section (figure 7). Exposure of the liner and punctures obviously compromise the integrity of the liner. The liner needs to be repaired and covered in order to function effectively.

Non-compliance of the Act or Licence

The Hamlet of Repulse Bay does not currently hold a water licence as required under the *Nunavut Land Claims Agreement 1993* and the *Nunavut Waters Nunavut Surface Rights Tribunal Act 2002*. The Hamlet is currently engaged in the application process to obtain a Licence from the Nunavut Water Board for the use of water and disposal of waste in the community. Nevertheless, the problems identified with record keeping, solid waste disposal, waste oil storage, bulk fuel storage and improper drum disposal need to be addressed.

I look forward to assisting the Hamlet of Repulse Bay in meeting the requirements of their Water Licence. If you have any questions or concerns please don't hesitate to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Scott Stewart".

Scott Stewart
Water Resource Officer
Field Operations
Nunavut Regional Office
Iqaluit, NU X0A 0H0
Ph: (867) 975-4289
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Figure 1. Freshwater source for the Hamlet of Repulse Bay.

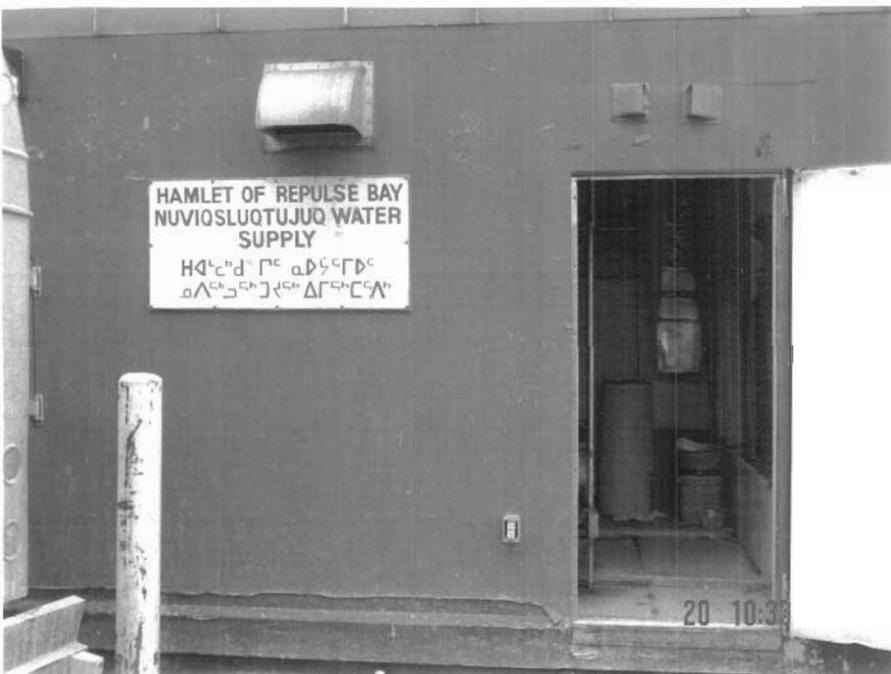


Figure 2. Pumphouse at freshwater source for Repulse Bay.



Figure 3. The final path of sewage effluent before entering the ocean in Repulse Bay.



Figure 4. Waste oil drums in the Hamlet of Repulse Bay.



Figure 5. Old barrels floating in a pond near the sewage effluent discharge to the ocean.



Figure 6. Exposed liner at the Hamlet of Repulse Bay bulk fuel storage facility.



Figure 7. Punctured liner at the Hamlet of Repulse Bay bulk fuel storage facility.



MUNICIPAL WATER USE INSPECTION REPORT

Date: August 20, 2003 Licensee Rep. (Name/Title): Brian MacQuarrie /SAO

Licensee: Hamlet of Repulse Bay

Licence No.: Unlicensed

WATER SUPPLY

Source(s):

Quantity used: Unknown

Owner:/Operator: Municipality

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: NI Conveyance Lines: A Pumping Stations: NI

Comments: Chlorine storage appears acceptable however record keeping for chlorination and water use is inadequate.

WASTE DISPOSAL

Sewage: Sewage Treatment System (Prim./Sec./Ter.): Primary

Natural Water Body:

Continuous Discharge (land or water):

Seasonal Discharge: Overland to Ocean

Wetlands Treatment: Extensive

Trench: None

Solid Waste:

Owner/Operator:

Landfill:

Burn & Landfill: x

Other:

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

Discharge Quality: NA

Decant Structure: NA

Erosion: NI

Discharge Meas. Device: NA

Dyke Inspection: NA

Seepages: A

Dams, Dykes: NA

Freeboard: NA

Spills: A

Construction: NA

O&M Plan: NI

A&R Plan: NI

Periods of Discharge: NA

Effluent Discharge Rate: NI

Comments: The sewage treatment wetland appears to be working quite well. Unfortunately effluent samples could not be taken at the time of the inspection. Problems with solids migration and leachate from the adjacent landfill may negatively impact the effluent quality.

FUEL STORAGE:

Unacceptable: The liner in the bulk fuel storage facility is exposed in a number of places and the liner was observed to be punctured in one place.

Waste Oil Storage

Owner/Operator: Hamlet of Repulse Bay

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

Berms & Liners: NA

Water within Berms: NA

Evidence of Leaks: None

Drainage Pipes: NA

Pump Station & Catchment Berm: NI

Pipeline Condition: NA

Not Applicable:

Condition of Tanks:

Waste oil had built up around the warehouse as the oilburner was not functioning properly. Oil was visible in the soil around the drums.

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected

Hamlet: None

INAC: Freshwater

Signs Posted

SNP: None

Warning: None

Non-Compliance of Act or Licence:

The Hamlet of Repulse Bay does not currently possess the Water Licence it requires for water use and waste disposal under the *NWNSRTA 2002* and the *Nunavut Land Claims Agreement 1993*. Furthermore, record keeping at the water treatment plant is inadequate.

Scott Stewart

Inspector's Name

Peter Kusugak
Manager's Name

Scott Stewart
Inspector's Signature

Peter Kusugak
Managers Signature

RECEIVED

DEC 03 2003



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

DIAND
Tel: (867)-669-2788
Fax: (867)-669-2718

- CERTIFICATE OF ANALYSIS -

Prepared For: DIAND WR

Attn: Scott Stewart

Sample ID: Raw water REP-1

Taiga Sample ID: 232957

Client Project:

Sample Type: freshwater

Received Date: 25-Aug-03

Location: Hamlet of Repulse Bay

Sampling Date: 20-Aug-03

Report Status: Final

Approved by:

Test Parameter	Result	Units	Detection Limit	Analysis Date
<u>Physicals</u>				
Colour	5		5	08-Sep-03
Conductivity, Specific	119	µS/cm	0.3	29-Aug-03
pH	7.85	pH units	0.05	29-Aug-03
Solids, Total Suspended	<3	mg/L	3	25-Aug-03
Turbidity	1.1	NTU	0.1	08-Sep-03
<u>Nutrients</u>				
Nitrate+Nitrite as N	0.010	mg/L	0.008	03-Sep-03
Organic Carbon, Total	2.4	mg/L	0.2	15-Sep-03
<u>Major Ions</u>				
Calcium	16.4	mg/L	0.05	03-Sep-03
Magnesium	3.13	mg/L	0.02	03-Sep-03
Potassium	0.75	mg/L	0.03	05-Sep-03
Sodium	2.17	mg/L	0.02	05-Sep-03
Sulphate	4	mg/L	3	29-Aug-03



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Taiga Sample ID: 232957

Metals, Total

Aluminum	< 30	µg/L	30	20-Sep-03
Antimony	0.4	µg/L	0.1	20-Sep-03
Arsenic	< 1	µg/L	1	26-Aug-03
Barium	3.3	µg/L	0.1	20-Sep-03
Beryllium	< 0.1	µg/L	0.1	20-Sep-03
Cadmium	< 0.1	µg/L	0.1	20-Sep-03
Cesium	< 0.1	µg/L	0.1	20-Sep-03
Chromium	< 0.3	µg/L	0.3	20-Sep-03
Cobalt	< 0.1	µg/L	0.1	20-Sep-03
Copper	< 0.2	µg/L	0.2	20-Sep-03
Iron	< 30	µg/L	30	28-Aug-03
Lead	< 0.1	µg/L	0.1	20-Sep-03
Lithium	1.0	µg/L	0.3	20-Sep-03
Manganese	2.4	µg/L	0.1	20-Sep-03
Mercury	< 0.01	µg/L	0.01	02-Oct-03
Molybdenum	0.2	µg/L	0.1	20-Sep-03
Nickel	0.2	µg/L	0.1	20-Sep-03
Rubidium	1.1	µg/L	0.1	20-Sep-03
Selenium	< 1	µg/L	1	20-Sep-03
Silver	< 0.1	µg/L	0.1	20-Sep-03



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Sample ID: Raw water REP-1

Taiga Sample ID: 232957

Strontium	13.6	µg/L	0.1	20-Sep-03
Thallium	< 0.1	µg/L	0.1	20-Sep-03
Titanium	2.9	µg/L	0.1	20-Sep-03
Uranium	0.7	µg/L	0.1	20-Sep-03
Vanadium	0.8	µg/L	0.1	20-Sep-03
Zinc	< 10	µg/L	10	20-Sep-03