n and Affaires indiennes
ern Affairs et du Nord

Northern Affairs Program
P.O. Box 100
Iqaluit, NWT
XOA OHO

0640-2
IW
WB

November 26, 1992

Mr. Henry Boychuk
Senior Administrative Officer
Hamlet of Broughton Island
Broughton Island, NWT
XOA OBO

Your file / Votre référence B9545-5-N4L4-0640
Our file / Notre référence

Dear Mr. Boychuk;

Re: Northern Inland Waters Act
Water Licence N4L4-0640
Hamlet of Broughton Island, NWT
Inspection Report - 14 - 15 August, 1992

1. Please find the above noted report by Mr. Paul Smith, Water Resources Officer.

2. The inspection report has identified a number of concerns which you will wish to note - please refer to paragraph 17 of the report.

3. The results of the water samples taken show that the pH of the water supply, both the Tulugak River and reservoir, is below that recommended by Health and Welfare Canada (a minimum pH of 6.5 is recommended). With this exception, no other concerns are noted.

4. Please find enclosed a bilingual (Inuktitut/English) explanation of the parameters tested for.

5. Please feel free to contact our District Office if you have any questions or comments on this report.

Sincerely,

J.M.A. Theriault
District Manager
Baffin District

cc: Municipal Co-ordinator
Water Resources
DIAND NAP/NWT Region

ec

INSPECTION REPORT

WATER MANAGEMENT

HAMLET OF BROUGHTON ISLAND

14 - 15 AUGUST 1992

BY

PAUL SMITH

INSPECTOR UNDER THE NORTHERN INLAND WATERS ACT

NORTHERN AFFAIRS PROGRAM

IQALUIT, NWT

DATE: 14 OCTOBER 1992
WATER REGISTER: N4L4-0640

INSPECTION REPORT

Water Supply

1. Potable water is currently being taken from the Tulugak River. One concern noted was oil staining on the truck pad at the fill point. Water from the river is used during the summer months.

2. The water reservoir was not being filled at the time of inspection. There was about 2 m of freeboard. A warning sign is present at the reservoir. The liner was exposed, ripped, and slumped in several places.

Waste Disposal

3. A new waste disposal area has been constructed and the old site has been closed (2 days prior to the inspection). The old site had a earthen berm across the road with a sign stating that this area was no longer a dumping site.

4. The new site consists of a sewage lagoon, sewage bag disposal area, domestic waste disposal area, waste metal disposal area, and a waste oil storage area. It is located off the road to the NWS site about 2 km from town. The site is on a levelled area of a hill side several hundred metres from the ocean. Use of this site began on approximately 12 August 1992.

5. Mr. Arnaquq stated that because a new weir is being constructed, all the dumptrucks are busy hauling fill to this site. Once construction is complete (mid-September), these trucks will be available to haul waste metal up to the new site. This will commence in the summer of 1993.

Sewage

6. A new sewage lagoon is under construction and measures approximately 100x70x4 m. Although not complete, sewage was just now being disposed of here. A sample was collected from the old disposal site. Note that this area had not been used for two days, and that there was no longer visible discharge into the ocean.

Bagged Sewage

7. Adjacent to the domestic waste disposal area, is the bagged sewage disposal area. Both the dump and sewage bag disposal area are situated atop a steep sloped area. At the bottom of this slope is a large bermed area, approximately 20x30m, to catch the run-off from the sewage bags. There are 12

housing units still using sewage bag service. It is expected that next year there will be fewer than that.

Domestic

8. North of the lagoon is the new domestic waste disposal area. Diesel is used to start the garbage burning. The gravel pits are close to this site, so it should not be a problem to periodically cover the dump with granular material.

9. Mr. Arnaquq expressed a major concern in that the prevailing wind is northerly, and that unless a fence is built, or the dump is regularly buried, windblown garbage may contaminate the water reservoir, approximately 1 km south of the dump. He suggested that the options being considered is either to build a fence around the dumpsite or to regularily bury the site. It was felt that it would be too costly to have heavy machinery in use year round to keep the dump covered.

Waste Metal

10. Further Northeast and at a slightly higher elevation are the waste oil storage and waste metal disposal areas. Little material had been placed at these sites thus far.

Fuel Storage

11. The site was inspected with the Co-op manager (POL contractor). It was observed to be in excellent condition with lined berms, fences and warning signs.

12. The NTPC fuel storage was also inspected, and was found to be in acceptable condition. One concern was that the steel dike had a couple of inches of water trapped in it. This water should be drained off.

13. There is an abandoned building, located past the Renewable Resources building on the way to the airport, that has approximately one hundred and fifty 205 l barrels of oil in its yard. The ground between and around the building and barrels is heavily stained. The site poses a fire hazard, and is also close to the ocean shore. This site must be cleaned up. If it is waste oil, the barrels should be brought up to the waste oil storage are, and if necessary, a berm constructed to contain any leaks. These drums belong to the Hunters and Trappers Association (HTA).

Warning Signs

14. A warning sign was in place at the water reservoir, as required by the Licence. In accordance with the intent of the

Licence (Part A, Item 7) the following requirements for signs should be addressed by the Hamlet;

a) that a warning sign be placed at the Tulugak River truckfill site;
b) that a warning sign be placed at the entrance to the waste disposal site, and;
c) that a warning sign be placed at the sewage outfall area once its path has been established.

Records

15. Records of water use are maintained by the Hamlet.

Surveillance Network Program

16. Water quality samples were collected from the following locations:

0640-01 Raw water supply intake at the Tulugak River

0640-02 Raw water supply intake at truck fill station at the reservoir

0640-04 Sewage effluent below sewage disposal area and prior to ocean discharge.

Discussion/Concerns

17. Mr. Arnaqaq accompanied the inspector during portions of the inspection. During this time, most of the following points were discussed:

a. The area by the Renewable Resources office where all the 205 l barrels are located must be cleaned up.

b. The abandoned waste disposal area will have to be restored. This means that what material can be hauled to the new waste disposal area should be. The remaining material will have to be consolidated and buried.

c. The inspector requested that warning signs be placed at the waste disposal site (dump, sewage and outfall areas) once construction is complete.

d. The inspector commends the efforts of the Hamlet to improve the waste disposal practices of the community.

18. The inspector greatly appreciated the assistance and co-operation received from Mr. Billy Arnaquq, Acting Senior Administrative Officer while in Broughton Island.

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

19/11

RESULTS OF LABORATORY ANALYSIS

LICENSEE/ PROJECT	Hamlet of Broughton Isl.	LICENCE NUMBER	N4L4-0640	LOCATION	Broughton Islands, NT
DATE SAMPLED	14 + 15 Aug 92	DATE RECEIVED	Aug 18/92	DATE COMPLETED	Oct 15/92 WC

STATION NUMBER	640-1		640-2			640-4			
LABORATORY NUMBER	920864		920865			920866			
ANALYSIS REQUIRED	✓		✓		✓	✓		✓	
pH (units)	✓	6.13	✓	5.88		✓	6.92	Aug 19/92	MK
Conductivity (µmho/cm)	✓	17.5	✓	39		✓	2400	Aug 19/92	MK
Dissolved Oxygen									
Turbidity (NTU)	✓	0.36	✓	3.4		✓	37.5	Aug 18/92	MK
Colour (colour U.)	✓	<5	✓	<5		✓	225	Aug 18/92	MK
Suspended Solids	✓	<3	✓	<3		✓	60	Sept 1/92	MK
TDS, Residue	✓	19	✓	35		✓	1328	Sept 1/92	
Calcium	✓	<1.0	✓	<1.0				Aug 20/92	LQ
Magnesium	✓	0.3	✓	0.5					
Tot. Hardness ($CaCO_3$)	✓	<3	✓	3.5					
Tot. Alkalinity ($CaCO_3$)	✓	<1	✓	<1				Sept 2/92	LQ
Sodium	✓	1.9	✓	5.5				Sept 13	LQ
Potassium	✓	0.2	✓	0.3					
Chloride	✓	3.0	✓	8.8				Sept 9	LQ
Sulphate	✓	<2	✓	2.0					
Total Coliform (count/100 ml)									
Fecal Coli. (count/100 ml)									
Fecal Strep. (count/100 ml)									
Std. Plate Cnt (cnt/ml)									
BOD_5									
COD									
Carbon, IC									
Carbon, TOC									
Ammonia Nitrogen (as N)									
Nitrate + Nitrite (as N)	✓	<0.04	✓	<0.04		✓	<0.04	Aug 25	LQ
Total Kjeldahl N									
Phosphorus O-P (as P)									
Phosphorus Tot (as P)	✓	<0.005	✓	<0.005		✓	4.23	Aug 28	LQ
Silica Reac. (as SiO_2)									
Total Cyanide	✓	<0.005						Sept 11/92	LQ

RECEIVED
NOV 17 1992
Indian & Northern Affairs Canada
IQALUIT, N.W.T.

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

FIELD SAMPLING AND DATA

LICENSEE/PROJECT	LICENCE NO.	LOCATION
Hamlet of Broughton Island	N4L4-0640	Broughton Island, NT
DATE SAMPLED: 14 + 15 Aug 92	SAMPLED BY: Paul Smith	

ANALYSIS	SAMPLE VOLUME	PRESERVATIVE	STATION NUMBER					
			640-1	640-2		640-4		
			BOTTLE NUMBER					
MISC. & ARSENIC	1 LITRE	NONE ✓	"	"		"		
HEAVY METALS	250 ~~500~~ ML	3.5 mL 3.5:1 ~~2 ML 1:1~~ HNO_3 ✓	"	"				
CYANIDE	500 ML	About 6 pellets NaOH to pH 12 ✓	"					
MERCURY	250 ML	2 ML 1:1 ~~HNO_3~~ H_2SO_4 + 2 ML ~~5%~~ 2.5% $K_2Cr_2O_7$	"					
NUTRIENTS	250 ML	NONE ✓	"	"		"		
BACTERIA	500 ML	NONE						
OIL AND GREASE	1 LITRE (GLASS)	4 ML 1:1 H_2SO_4						
			15 Aug 92					
Time of Sampling			10:55	11:05		16:35		
Air Temperature			6° →			6°		

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

RESULTS OF LABORATORY ANALYSIS

LICENSEE/ PROJECT: Lot of Broughton Isl.	LICENCE NUMBER: N4L4- 0640		LOCATION: Broughton Islands, NT
DATE SAMPLED: 14+15 Aug 92	DATE RECEIVED: Aug 18/92		DATE COMPLETED: Oct 15/92

STATION NUMBER		640-1		640-2			640-4					WC
LABORATORY NUMBER		920864		920865			920866					
ANALYSIS REQUIRED		✓		✓		✓	✓		✓			
pH (units)		✓	6.13	✓	5.88		✓	6.92	Aug 19/92		MK	
Conductivity (µmho/cm)		✓	17.5	✓	39		✓	2400	Aug 19/92		MK	
Dissolved Oxygen												
Turbidity (NTU)		✓	0.36	✓	3.4		✓	37.5	Aug 18/92		MK	
Colour (colour U.)		✓	<5	✓	<5		✓	225	Aug 18/92		MK	
Suspended Solids		✓	<3	✓	<3		✓	60	Sept 1/92		MK	
TDS, Residue		✓	19	✓	35		✓	1328				
Calcium		✓	<1.0	✓	<1.0							
Magnesium		✓	0.3	✓	0.5				Aug 20/92		KA	
Tot. Hardness ($CaCO_3$)		✓	<3	✓	3.5							
Tot. Alkalinity ($CaCO_3$)		✓	<1	✓	<1				Sept 25/92			
Sodium		✓	1.9	✓	5.5				Sept 13		KA	
Potassium		✓	0.2	✓	0.3							
Chloride		✓	3.0	✓	8.8				Sept 9		KA	
Sulphate		✓	<2	✓	2.0							
Total Coliform (count/100 ml)												
Fecal Coli. (count/100 ml)												
Fecal Strep. (count/100 ml)												
Std. Plate Cnt (cnt/ml)												
BOD_5												
COD												
Carbon, IC												
Carbon, TOC												
Ammonia Nitrogen (as N)												
Nitrate + Nitrite (as N)		✓	<0.04	✓	<0.04		✓	<0.04	Aug 25		KA	
Total Kjeldahl N												
Phosphorus O-P (as P)												
Phosphorus Tot (as P)		✓	<0.005	✓	<0.005		✓	4.23	Aug 28		KA	
Silica Reac. (as SiO_2)												
Total Cyanide		✓	<0.005						Sept 11/92			
Available Cyanide (WAD)												
Sulphide												
Oil & Grease												
Phenols												
Arsenic	T (µg/L)	✓	<0.5	✓	<0.5		Sept 18/92		KP			
	D (µg/L)											
Cadmium	T (µg/L)	✓	<0.2	✓	<0.2		Sept 10/92		KP			
	D (µg/L)											
Copper	T (µg/L)	✓	2	✓	2		"					
	D (µg/L)											
Iron	T (µg/L)	✓	10	✓	37		"					
	D (µg/L)											
Lead	T (µg/L)	✓	<1	✓	<1		"					
	D (µg/L)											
Mercury	T (µg/L)	✓	<0.02				Aug 20		WE			
	D (µg/L)											
Nickel	T (µg/L)	✓	<1	✓	<1		Sept 10/92		KP			
	D (µg/L)											
Zinc	T (µg/L)	✓	<1	✓	2		"					
	D (µg/L)											
Chromium	T (µg/L)	✓	1	✓	1		"					
	D (µg/L)											

Results are expressed in µg/L, except as indicated. T and D refer to Total & Dissolved Metals

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

FIELD SAMPLING AND DATA

LICENSEE/PROJECT	LICENCE NO.	LOCATION
E of Broughton Island	N4L4 - 0640	Broughton Island, NT
E SAMPLED 14 + 15 Aug 92	SAMPLED BY Paul Smith	

ANALYSIS	SAMPLE VOLUME	PRESERVATIVE	STATION NUMBER					
			640-1	640-2		640-4		
			BOTTLE NUMBER					
MISC. & ARSENIC	1 LITRE	NONE ✓	"	"		"		
HEAVY METALS	~~250~~ ~~500~~ ML	~~1.5 mL 3.5:1~~ ~~2 ML 1:1~~ HNO_3 ✓	"	"				
CYANIDE	500 ML	About 6 pellets NaOH to pH 12 ✓	"					
MERCURY	250 ML	2 ML 1:1 ~~HNO_3~~ H_2SO_4 + 2 ML ~~5%~~ 2½% $K_2Cr_2O_7$	"					
NUTRIENTS	250 ML	NONE ✓	"	"		"		
BACTERIA	500 ML	NONE						
OIL AND GREASE	1 LITRE (GLASS)	4 ML 1:1 H_2SO_4						
			15 Aug 92					
Time of Sampling			10:55	11:05		16:35		
r Temperature			6° →			6°		
Water Temperature			—	—		—		
Rate of Flow				—		—		
Ice Thickness			N:1 →			N:1		
Depth of Sampling			~0.1 m	Surface		Surface		
pH			—	—		—		
Conductivity			—	—		—		
Dissolved Oxygen			—	—		—		
							—	—

640-1 Raw water supply at Tuligak River 15 Aug 92

640-2 Raw water supply intake & truck fill station at the Reservoir

640-4 This area is no longer used (within the past 48hrs)
This will be the last sample collected. There was no run-off to the Sea (ie no 640-5)