Indian and Northern Affairs / Affaires indiennes et du Nord

Northern Affairs Program
P.O. Box 100
Frobisher Bay, N.W.T.
X0A 0H0

August 28, 1984

Your file / Votre référence

Our file / Notre référence N4A4-0640

Mr. D. Turpin
Regional Engineer
Department of Public Works
Government of Northwest Territories
Frobisher Bay, N.W.T.

Re: Inspection Report, Department of Public Works, Government of the Northwest Territories, Broughton Island, August 7, 1984

0640
Inspection Report
BK
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Distr
file

Attached is a copy of the a/n report, prepared by Peter Bannon of this office, of his inspection of Broughton Island water and sanitation facilities as they relate to the Water Authorization N4A4-0640.

I would like to start by stating that your compliance with the terms and conditions of the Water Authorization has been poor. The Inspector has written to your office informing you of some of the requirements of the Authorization and this still did not improve the situation.

More specifically, Mr. Bannon has identified some items that I wish to address.

1. Condition B-3 of the Water Licence requires that plans for any alterations to the water supply or waste treatment systems be submitted to the Water Controller in Yellowknife for approval. Your office overlooked this requirement despite a letter that was sent to you on January 17, 1984 (Bannon - Turpin) reminding you of the requirement. Obviously it is too late to approve the new pumping facilities at the water reservoir but I do request that the plans be sent to the Office of the Water Controller as soon as possible.

2. Condition E-1 requires that raw water samples be collected every three months and submitted for analysis. Bottles were supplied to DPW in 1982 and one set of samples were collected but none have been received since 1982. I request that you start collecting samples as soon as possible and submitting them to the DIAND Water Lab, Yellowknife, via NWT Air freight. The appropriate analyses request forms that were given with the bottles to your staff should be used. If your office has misplaced the bottles or request forms please contact this office for more.

3. Any information that you can provide on the Waste Study for Broughton Island planned by the Department of Local Government would be appreciated. Particularly, the terms of reference and the scheduling of the Study would be useful to us.

4. According to Condition E-4 of the Water Authorization, an Annual Report giving water consumption, waste disposal and potable water analytical information is to be submitted each year. As the report states, we have overlooked the enforcement of this condition, however, we hope that an effort will be made to get some of the information submitted. I would suggest that you start with 1983 and then possibly 1982. Of course the 1984 Annual Report is due early in 1985.

5. Although most people in a small community are aware of where the sewage is dumped, the Authorization does require that signs be erected in the sewage disposal areas to warn the people of the hazard.

I am sure that with a little effort, compliance with the terms and conditions of the Water Authorization can be improved markedly. If you need any assistance or if you have any questions regarding the Water Authorization or this report, you should contact this office. Furthermore, if there are any errors or omissions or areas that require further clarification, I encourage you to respond to them.

Yours truly

J.M.A. Theriault
District Manager
Baffin District

cc. R. Lemon
C. Peterson

INSPECTION REPORT

DEPARTMENT OF PUBLIC WORKS

GOVERNMENT OF THE NORTHWEST TERRITORIES

BROUGHTON ISLAND

AUGUST 7, 1984

by

PETER BANNON

INSPECTOR UNDER THE NORTHERN INLAND WATERS ACT

INDIAN AND NORTHERN AFFAIRS CANADA

NORTHERN AFFAIRS PROGRAM

BAFFIN DISTRICT

Water Register: N4A4-0640
Dated: August 28, 1984

INSPECTION REPORT

BROUGHTON ISLAND

INTRODUCTION

The water and sanitation services in the Hamlet of Broughton Island as they relate to the Water Authorization N4L4-0640 were inspected on August 7, 1984. The holder of the Water Authorization is the Department of Public Works (DPW) of the Government of the Northwest Territories (GNWT) in Yellowknife and the Hamlet of Broughton Island carry out the services. The GNWT DPW in Frobisher Bay and Broughton Island maintain the system. Broughton Island has become a Hamlet (Incorporated Settlement) since the Authorization was issued in 1979. The Inspector met with Colleen Peterson, the Secretary Manager for the Hamlet to discuss the water and sanitation services and the Licencing process in general including DIAND's role in that process.

DISCUSSION

Water Supply

There were no problems regarding the reservoir related to the Inspector except that it was a long distance from the community. A new pumping system is to be installed at the reservoir which apparently has an automatic chlorination unit with it. A letter was sent to the Regional Engineer of the Department of Public Works for the Baffin Region on January 17, 1984, requesting that plans for the modification to the water supply system should be submitted for approval to the Water Controller according to Condition B-3 of the Authorization. To date no reply has been made, however, according to the Hamlet, the work is to be carried out this summer and fall.

Records of water consumption are kept by the Hamlet and they are using currently about 150,000 litres per month and it is higher once everyone is living in the community again from the fall to the end of spring.

A water sample has not been submitted by the Water Authorization holder since November 1982. Condition E-1 requires samples to be collected every 3 months. Sample bottles were supplied to DPW in 1982 for a number of sets of samples. A letter was sent to the Regional Engineer on June 7, 1984, regarding the requirement for sampling, however, no samples have been received to date.

Waste Disposal

The population of Broughton Island is about 400 and there are about 100 buildings that generate sanitary wastes. Of these buildings about 60 are on pumpout and the remaining 40 are on bagged sewage with discharge of grey water to areas adjacent to the building. The sewage is disposed of to segregated areas of the solid wastes dump. This site is close to the ocean (about 25 meters). The alternate disposal plans as required by the Water Authorization were never implemented due to the technical failure of the macerator concept. The Department of Local Government has had a Waste Study in the community plan for a year or two however, this study has been delayed.

Quantities of sewage are estimated based on water consumption. Records of the quantity of honeybags are kept. No signs designating the sewage disposal areas were observed by the Inspector.

GENERAL

No annual reports have been filed by the Authorization holder to date. Enforcement of this condition by the Inspector has been lax because the condition was omitted from the copy of the Water Authorization the Inspector's office has.

A discussion of the Licencing process, including the Public Hearing for Broughton Island was discussed. One point raised was that the Waste Study recommendations would not be ready for at least a year and it would seem logical that these be reviewed prior to conditions governing waste disposal being set.

SUMMARY

No problems with the water supply were expressed by the Hamlet. No water samples have been received since 1982 from DPW, the Authorization Holder, and requested plans for the installation of a pumping system at the reservoir were not submitted for approval. A Waste Study which was to be carried out at Broughton Island has been delayed.

No Annual Reports have been submitted to date.

A discussion of the Licencing Process including the Public Hearing was discussed with the Hamlet. The delay of the Waste Study may interfere somewhat with the scheduling of the licencing of Broughton Island.

Peter Bannon
Inspector Under the
Northern Inland Waters Act.

Water Register: N4A4-0640
Dated: August 28, 1984

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

Office Files

RESULTS OF LABORATORY ANALYSIS

LICENSEE/ PROJECT DPW GNWT.	LICENCE NUMBER N4A4-0640	LOCATION Broughton Island
DATE SAMPLED Aug 7/84	DATE RECEIVED Aug 13. 84	DATE COMPLETED AUG. 31, 1984

STATION NUMBER			640-2								
LABORATORY NUMBER			41390								
ANALYSIS REQUIRED		✓		✓		✓		✓		✓	
pH (units)		✓	6.4								
Conductivity (µmho/cm)		✓	93								
Dissolved Oxygen											
Turbidity (NTU)		✓	3.6								
Colour (colour U.)		✓	5								
Suspended Solids		✓	<5								
TDS, Residue		✓	29								
Calcium		✓	<1.0								
Magnesium		✓	0.9								
Tot. Hardness ($CaCO_3$)		✓	3.7								
Tot. Alkalinity($CaCO_3$)		✓	1.7								
Sodium		✓	13.								
Potassium		✓	0.5								
Chloride		✓	20.								
Sulphate		✓	11.								
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)											
Total Kjeldahl N			Entered								
Phosphorus O-P (as P)											
Phosphorus Tot (as P)											
Silica Reac.(as SiO_2)											
Total Cyanide											
Available Cyanide											
Sulphide											
Oil & Grease											
Phenols											
Arsenic	T (µg/L)	✓	<1.0								
	D (µg/L)										
Cadmium	T (µg/L)	✓	<0.1								
	D (µg/L)										
Copper	T (µg/L)	✓	4.6								
	D (µg/L)										
Iron	T (µg/L)	✓	29								
	D (µg/L)										
Lead	T (µg/L)	✓	0.1								
	D (µg/L)										
Mercury	T (µg/L)										
	D (µg/L)										
Nickel	T (µg/L)	✓	<1.0								
	D (µg/L)										
Zinc	T (µg/L)	✓	<10								
	D (µg/L)										
Chromium	T (µg/L)	✓	<0.5								
	D (µg/L)										
Manganese	T	✓	2.0								

Results are expressed in mg/L, except as indicated. T and D refer to total and dissolved metals respectively.

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

FIELD SAMPLING AND DATA

LICENSEE/PROJECT	LICENCE NO.	LOCATION
GNWT : V	N4A4-640	Broughton Island Reservoir
DATE SAMPLED	SAMPLED BY	

ANALYSIS	SAMPLE VOLUME	PRESERVATIVE	STATION NUMBER					
			640-2					
			BOTTLE NUMBER					
MISC. & ARSENIC	1 LITRE	NONE	✓					
HEAVY METALS	500 ML	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 + 2 ML 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						

Time of Sampling	1030						
Air Temperature	3°C						
Water Temperature	3°C						
Rate of Flow							
Ice Thickness							
Depth of Sampling	surface						
pH							
Conductivity							
Dissolved Oxygen							

640-2 - at truck fill point ~~in~~ reservoir.

DIAND WATER QUALITY INFORMATION SYSTEM 1988/08/25

[illegible]: N4L4-0640 HAMLET OF BROUGHTON I[illegible]
[illegible]UN: 0640-2 - SEWAGE INTAKE AT TRUCK FILL STATION AT RESERVOIR
[illegible]OR CLIENT [illegible]LYSED (L/C): L

LAB NUMBER	390	
Record Number	070	
[illegible]MPLE DATE	198[illegible]08/07	
[illegible]ple Date In	1984/08/13	
[illegible]ple date Out	1984/08/31	
Sample Time	10:30	
Sample Depth (m)	0	
Flow Rate (cms)		
Air Temp (C)	3	
Water Temp (C)	3	
Ice Thickness (m)		
pH (units)	6.4	
Cond (umhos/cm)	93	
Dissolved Oxygen		
Turbidity (NTU)	3.6	
Color (units)	5	
Susp Solids	5	L
TDS Residue	29	
Calcium	1.0	L
Magnesium	.9	
Tot Hardness	3.7	
Tot Alkalinity	1.7	
Sodium	13	
Potassium	.5	
Chloride	20	
Sulphate	11	
Fluoride		
Tot Coli (ct/100 ml)		
Fecal Coli (ct/100ml		
Fecal Strep (ct/100m		
Plate Cnt (cnt/ml)		
BOD5		
COD		
Carbon IC		
Carbon TOC		
Ammonia Nitrogen		
Nitrite Nitrate		
Tot Kjeldahl N		
Phosphorus O P		
Phosphorus Tot		
Silica		
Tot Cyanide		
WAD Cyanide		
Tot Resid Chlorine		
Sulphide		
Oil Grease		
Phenols (ug/L)		
METALS (ug/L)		
Arsenic (T)	1	L
Arsenic (D)		
Mercury (T)		
Mercury (D)		
[illegible]arium (DIG)		
[illegible]rium (AE)		
[illegible]rium (D)		
Beryllium (DIG)		
Berylliua (AE)		
Berylliua (D)		
Cadmium (DIG)	.1	L
Cadmium (AE)		
Cadmium (D)		
Chromium (DIG)	.5	L
Chromium (AE)		
Chromium (D)		
Cobalt (DIG)		
Cobalt (AE)		
Cobalt (D)		
Copper (DIG)	4.6	
Copper (AE)		
Copper (D)		
Iron (DIG)	29	
Iron (AE)		
Iron (D)		
Lead (DIG)	.1	
Lead (AE)		
Lead (D)		
Manganese (DIG)	2	
Manganese (AE)		
Manganese (D)		
Nickel (DIG)	1	L
Nickel (AE)		
Nickel (D)		
Zinc (DIG)	10	L
Zinc (AE)		
Zinc (D)		
Notes		

Results expressed in mg/L except as indicated
(DIG) and (AE) refer to total digested and total acid extractable respectively.
(D) refers to dissolved. L refers to less than. F indicates field value

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

RESULTS OF LABORATORY ANALYSIS

LICENCE/PROJECT CGN - DPW	LICENCE NUMBER N4A9- 0640	LOCATION reservoir
DATE SAMPLED Mar 12/84	DATE RECEIVED March 20/84	DATE COMPLETED APRIL 13, 1984.

STATION NUMBER		640-2																	
LABORATORY NUMBER		40138																	
ANALYSIS REQUIRED		✓		✓		✓		✓		✓		✓		✓		✓		✓	
pH (units)		✓	6.4																
Conductivity (µmho/cm)		✓	120																
Dissolved Oxygen																			
Turbidity (NTU)		✓	1.0																
Colour (colour U.)		✓	<5																
Suspended Solids		✓	<5																
TDS, Residue																			
Calcium		✓	0.3																
Magnesium		✓	1.1																
Tot. Hardness ($CaCO_3$)		✓	5.3																
Tot. Alkalinity($CaCO_3$)		✓	2.5																
Sodium		✓	22.5																
Potassium		✓	2.4																
Chloride		✓	21.																
Sulphate		✓	7.1																
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)																			
Total Kjeldahl N																			
Phosphorus O-P (as P)																			
Phosphorus Tot (as P)																			
Silica Reac.(as SiO_2)																			
Total Cyanide																			
Available Cyanide																			
Sulphide																			
Oil & Grease																			
Phenols																			
Arsenic	T (µg/L)	✓	<1.0																
	D (µg/L)																		
Cadmium	T (µg/L)	✓	0.2																
	D (µg/L)																		
Copper	T (µg/L)	✓	<1.0																
	D (µg/L)																		
Iron	T (µg/L)	✓	30.																
	D (µg/L)																		
Lead	T (µg/L)	✓	2.0																
	D (µg/L)																		
Mercury	T (µg/L)	✓	0.01																
	D (µg/L)																		
Nickel	T (µg/L)	✓	<1.0																
	D (µg/L)																		
Zinc	T (µg/L)	✓	17																
	D (µg/L)																		
Chromium	T (µg/L)	✓	1.4																
	D (µg/L)																		

Filtered 0.45 µ

Results are expressed in µg/L, except as indicated. T and D refer to total and dissolved metals respectively.

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

FIELD SAMPLING AND DATA

Broughton Is.

LICENSEE/PROJECT	LICENCE NO.	LOCATION
GNWT D	N9A4-640	Reservoir
DATE SAMPLED Mar 12/84	SAMPLED BY Bannon	

ANALYSIS	SAMPLE VOLUME	PRESERVATIVE	STATION NUMBER					
			640-D					
			BOTTLE NUMBER					
MISC. & ARSENIC	1 LITRE	NONE	✓					
HEAVY METALS	500 ML	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 + 2 ML 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						

Time of Sampling	1600						
Air Temperature	-22						
Water Temperature	-1						
Rate of Flow	—						
Ice Thickness	—						
Depth of Sampling	—						
pH	—						
Conductivity	20						
Dissolved Oxygen	—						

DIAND WATER QUALITY INFORMATION SYSTEM 1998/08/25

N4L4-0640 HAMLET OF BROUGHTON ISL
0640-1 - RAW WATER SUPPLY INTAKE AT THE TULUSAK RIVER
CLIENT ANALYSED (L/C): L

NUMBER	79024	
Record Number	267	
SAMPLE DATE	19 /04	
Date In	1982/10/14	
Date Out	1982/11/04	
Sample Time	12:00	
Sample Depth (m)		
Flow Rate (cms)		
Air Temp (C)	15	
Water Temp (C)	-4	
Ice Thickness (m)		
pH (units)	6.5	
Cond (umhos/cm)	83	
Dissolved Oxygen		
Turbidity (NTU)	5.3	
Color (units)		
Susp Solids	5	L
TDS Residue	50	
Calcium	.72	
Magnesium	.84	
Tot Hardness	5.05	
Tot Alkalinity	7.1	
Sodium	10.5	
Potassium	1.1	
Chloride	19	
Sulphate	5.7	
Fluoride		
Tot Coli (ct/100 ml)		
Fecal Coli (ct/100ml		
Fecal Strep (ct/100m		
Plate Cnt (cnt/ml)		
BOD5		
COD		
Carbon IC		
Carbon TOC		
Ammonia Nitrogen		
Nitrite Nitrate		
Tot Kjeldahl N		
Phosphorus D P		
Phosphorus Tot		
Silica		
Tot Cyanide		
WAD Cyanide		
Tot Resid Chlorine		
Sulphide		
Oil Grease		
Phenols (ug/L)		
METALS (ug/L)		
Arsenic (T)	1	L
Arsenic (D)		
Mercury (T)	.06	
Mercury (D)		
Barium (DIG)		
Barium (AE)		
Barium (D)		
Beryllium (DIG)		
Beryllium (AE)		
Beryllium (D)		
Cadmium (DIG)	1	
Cadmium (AE)		
Cadmium (D)		
Chromium (DIG)	2.6	
Chromium (AE)		
Chromium (D)		
Cobalt (DIG)		
Cobalt (AE)		
Cobalt (D)		
Copper (DIG)	19	
Copper (AE)		
Copper (D)		
Iron (DIG)	612	
Iron (AE)		
Iron (D)		
Lead (DIG)	3	
Lead (AE)		
Lead (D)		
Manganese (DIG)		
Manganese (AE)		
Manganese (D)		
Nickel (DIG)	1	L
Nickel (AE)		
Nickel (D)		
Zinc (DIG)	149	
Zinc (AE)		
Zinc (D)		
Notes		

Results expressed in mg/L except as indicated
(DIG) and (AE) refer to total digested and total acid extractable respectively.
(D) refers to dissolved. L refers to less than. F indicates field value