MUNICIPAL INSPECTION REPORT

ON THE

HAMLET OF TUKTOYAKTUK

WATER LICENCE N7L4-0714

SEPTEMBER 20, 1989

BY

SCOTT GALLUPE

INSPECTOR UNDER THE NORTHERN INLAND WATERS ACT

NORTHERN AFFAIRS PROGRAM

INDIAN AND NORTHERN AFFAIRS

INUVIK, N.W.T.

MUNICIPAL INSPECTION REPORT
HAMLET OF TUKTOYAKTUK
WATER LICENCE N7L4-0174

Introduction

An inspection of the water supply and waste disposal facilities was conducted by Scott Gallupe, Water Resources Officer, Inuvik, on September 20, 1989.

Points of contact during the inspection were John Holland, Senior Administrative Officer, and Bill Cockney, Hamlet Foreman.

Recent Population figures: 930 Number of Dwellings: 216

A. Water Supply

Water is obtained from Kudalak Lake and piped to a large circular reservoir via an above ground 6" PVC pipeline. Northern Underwater Systems are responsible for the line and intake maintenance as well as filling the reservoir once a year.

GNWT's Department of Public Works maintains the pumphouse and truck fill-up station at the reservoir. Meters are installed to measure volumes delivered to the trucks and the amount pumped into the reservoir during the annual fill up.

The water is chlorinated using a calcium hypochlorite solution and is automatically injected. The operator does a chlorine test approximately once per week.

The water is fluoridated and tested at the pumphouse.

No filtering is done. The main line from reservoir to pumphouse is backwashed once per month.

Records were being kept at the pumphouse. The pumphouse was clean and tidy.

Samples were taken at the pumphouse before chlorination. Please refer to Apprendix 1. Two parameters should be noted:

	Pumphouse September 22, 1989	Maximum Acceptable Concentration (ppm) (Canadian Drinking Water Guidelines Health and Welfare)
Turbidity (NTU)	9.3	5.0
Iron (ppm)	0.47	0.3

Subsequent samples have been taken by DPW. Refer to Appendix 2. Turbidity was not asked for and the iron level had dropped substantially. Samples will be taken again and be monitored by Indian and Northern Affairs. Results will be forwarded when available.

B. Sewage Disposal

Sewage is collected by vacuum trucks from tanks in the homes and buildings and trucked to the sewage lagoon. The pumpout facility at the lagoon was in good shape. There was little erosion and no honey bags at the pumpout facility.

There was a 2 inch layer of ice on the lagoon at time of inspection. Samples were taken at the decant structure on the lagoon side. Refer to Appendix 1 for results. It should be noted that the Total Coliform count of 1,260,000 counts/100 ml is indicative of high sewage strength. The presence of an ice cap for a period of time reduces the mixing and aeration process effectiveness. Samples must be taken during decants.

No visible sheen was noted on the lagoon or in the samples.

The sewage lagoon was not posted.

A few homes still use honey bags which are picked up with the garbage and deposited at the honey bag pit at the new dump site.

C. Solid Waste Disposal

The old dump site has been backfilled, contoured, planted and fenced. Some vegetation was evident at time of inspection. There remained a fair amount of bulky metal waste at the old site. However this old dump site is directly adjacent to the new dump site.

The fencing at the new dump site was in good shape. Segregation of wastes appeared good. There was little windblown debris.

There was some metal and wood in the honey bag pit.

The new dump site appeared to need a berm on the north side to prevent debris from possibly entering the ocean. Plans for the expansion of the new dump site are being discussed now.

The new dump site was posted.

D. Surveillance Network Program

Part C, Item 1 of the Surveillance Network Program requires records to be kept for dyke monitoring. No records for dyke monitoring were available for review by the Inspector.

All other SNP requirements were being met.

E. Posting

The water treatment facilities and dump site were both posted. The sewage lagoon was not posted.

G. Restoration and Maintenance

As mentioned in Section C of this report, the old dump site has been restored except for a fair amount of bulky metal waste.

No other restoration or major maintenance had been noted.

H. Other Concerns

The concern that the waste water from Gulf Canada Resources Limited`s Nalluk Base Waste Management Yard barrel steam cleaning operation was being deposited on the road outside of the base. This has and is presently being discussed with Gulf representatives.

The Hamlet is talking about new intake and line modifications for the raw water supply. It was mentioned to John Holland that submissions have to be made to the Water Board prior to modifications.

The various fuel storage areas around the Hamlet were viewed but are not considered part of the Hamlet`s Licence. The appropriate authorities will be contacted.

I. Official Onsite Discussion

A meeting with John Holland, Senior Administrative Officer, and the Inspector occurred after the inspection to discuss the conditions and requirements of the Hamlet`s Water Licence N7L4-0714.

The Inspector would like to thank the points of contact for their cooperation.

S Gallupe

Scott Gallupe
Water Resources Officer

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

WATER RESOURCES DIVISION, YELLOWKNIFE, NORTHWEST TERRITORIES

FIELD SAMPLING AND DATA

LICENSEE/PROJECT	LICENCE NO.	LOCATION
DPW GNWT		Tuktoyaktuk
DATE SAMPLED 7/89	SAMPLED BY A. Inglangasuk	Reservoir

ANALYSIS	SAMPLE VOLUME	PRESERVATIVE	STATION NUMBER					
			Reservoir					
			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	0930						
Air Temperature							
Water Temperature							
Rate of Flow							
Ice Thickness							
Depth of Sampling							
pH							
Conductivity							
Dissolved Oxygen							

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FIELD SAMPLING AND DATA

LICENSEE/PROJECT	LICENCE NO.	LOCATION
Hamlet of Tuktoyaktuk	N7L4-0714	Tuktoyaktuk, NWT.
DATE SAMPLED September 22, 1989	SAMPLED BY S. Gallupe	

ANALYSIS	SAMPLE VOLUME	PRESERVATIVE	STATION NUMBER					
			Can H_2O 714-1	Sewage 714-2				
			BOTTLE NUMBER					
MISC. & ARSENIC	1 LITRE	NONE	✓	✓				
HEAVY METALS	~~500~~ 250 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% $K_2Cr_2O_7$	✓					
NUIRIENTS	250 ML	NONE						
BACTERIA	500 ML	NONE	✓	250 mL ✓				
OIL AND GREASE	1 LITRE (GLASS)	4 ML 1:1 H_2SO_4						

Time of Sampling	11:00am	11:45am
Air Temperature	1°C	1°C
Water Temperature	4°C	10°C
Rate of Flow	tap	0.1 m³/s
Ice Thickness	—	2"
Depth of Sampling	tap	from pipe
pH	—	—
Conductivity	—	—
Dissolved Oxygen	—	—

* Sample 714-1 taken in pumphouse before chlorination (from tap).

" 714-2 taken at outfall of diesels starting while decanting.

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RESULTS OF LABORATORY ANALYSIS

APPENDIX 1

LICENSEE/PROJECT: Hamlet of Tuktoyaktuk	LICENCE NUMBER: N7L4-0714	LOCATION: Tuktoyaktuk, NWT
DATE SAMPLED: September 22, 1989	DATE RECEIVED: Sept 25 /89	DATE COMPLETED: Nov. 30/89

STATION NUMBER	Raw H_2O 714-1	Sewage 714-2
LABORATORY NUMBER	890932	890933
ANALYSIS REQUIRED	✓	✓
pH (units)	✓ 7.4	✓ 7.0
Conductivity (µmho/cm)	✓ 300	
Dissolved Oxygen		
Turbidity (NTU)	✓ 9.3	
Colour (colour U.)	✓ 10.	
Suspended Solids	✓ 8	✓ 104
TDS, Residue	✓ 154	
Calcium	✓ 25	
Magnesium	✓ 9.0	
Tot. Hardness ($CaCO_3$)	✓ 100	
Tot. Alkalinity ($CaCO_3$)	✓ 80	
Sodium	✓ 22	
Potassium	✓ 1.8	
Chloride	✓ 37.7	
Sulphate	✓ 12.	
Total Coliform (count/100 ml)	✓ <1	✓ 126×10^4
Fecal Coli. (count/100 ml)	✓ <1	✓ 34×10^3
Fecal Strep. (count/100 ml)		✓ N.A.
Std. Plate Cnt. (cnt/ml)		
BOD_5	✓ <5	✓ 21
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)	✓ 0.024	✓ 4.2
Silica Reac. (as SiO_2)	0.57	
Total Cyanide		
Available Cyanide		
Sulphide		
Oil & Grease		
Phenols		
Arsenic T (µg/L)	✓ L0.5	
Arsenic D (µg/L)		
Cadmium T (µg/L)	✓ L0.2	
Cadmium D (µg/L)		
Copper T (µg/L)	✓ 52	
Copper D (µg/L)		
Iron T (µg/L)	✓ 470	
Iron D (µg/L)		
Lead T (µg/L)	✓ 2.	
Lead D (µg/L)		
Mercury T (µg/L)	✓ 0.03	
Mercury D (µg/L)		
Nickel T (µg/L)	✓ 2.	
Nickel D (µg/L)		
Zinc T (µg/L)	✓ 24	
Zinc D (µg/L)		
Chromium T (µg/L)	✓ L1	
Chromium D (µg/L)		

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

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RESULTS OF LABORATORY ANALYSIS — APPENDIX 2

LICENSEE/ PROJECT DPW GNWT	LICENCE NUMBER	LOCATION Tuktoyaktuk
DATE SAMPLED Nov 7/89	DATE RECEIVED Nov 9/89	DATE COMPLETED Dec 1/89

STATION NUMBER		Reservoir										WC
LABORATORY NUMBER		891020										
ANALYSIS REQUIRED		✓		✓		✓		✓		✓		
pH (units)		✓	7.88									
Conductivity (µmho/cm)		✓	350									
Dissolved Oxygen												
Turbidity (NTU)												
Colour (colour U.)												
Suspended Solids												
TDS, Residue												
Calcium		✓	28.									
Magnesium		✓	9.6									
Tot. Hardness ($CaCO_3$)		✓	110.									
Tot. Alkalinity ($CaCO_3$)		✓	94.2									
Sodium												
Potassium												
Chloride												
Sulphate												
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 (as N)												
Phosphorus O-P (as P)												
Phosphorus Tot. (as P)												
Silica Reac. (as SiO_2)		✓	0.64									
Total Cyanide												
Available Cyanide (WAD)												
Sulphide												
Oil & Grease												
Phenols												
Arsenic	T (µg/L)											
	D (µg/L)											
Cadmium	T (µg/L)		0.2.									
	D (µg/L)											
Copper	T (µg/L)		64.									
	D (µg/L)											
Iron	T (µg/L)	✓	180.									
	D (µg/L)											
Lead	T (µg/L)		2.									
	D (µg/L)											
Mercury	T (µg/L)											
	D (µg/L)											
Nickel	T (µg/L)		1.									
	D (µg/L)											
Zinc	T (µg/L)		39.									
	D (µg/L)											
Chromium	T (µg/L)		1.									
	D (µg/L)											
Mn	T mg/L		11.									

Note: DO conductivity first from same subsample for pH

* METAL ANALYSIS TAKEN FROM NUTRIENT BOTTLE

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