

## North Caribou Lake First Nation (Band No. 204)

**Date of Visit:** February 28, 2001

By Marcel Lavigne (OCWA)

**Site Address:** Weagamow Lake, ON P0V 2Y0

**Phone No.:** 807-469-5191

**Fax No.:** 807-469-1315

**Tribal Council Affiliation:** Windigo First Nations Council

**Operators:** Roy Keeash and Isaiah Kwate

**Location:** The North Caribou Lake First Nation community is located approximately 325 km north of Sioux Lookout and is accessible by air.

**Population:** 709 people in the community (November 2000 – INAC)

**No. of Units:** 218 houses in the community (CAIS)

### 1.0 Description of the Community Water Supply

Based on the CAIS report, water to the houses in the North Caribou Lake community is treated as follows:

- 572 people use piped water
- 117 people use holding tanks with trucked water
- 20 people use other services
  
- 176 houses are serviced by a communal water supply system;
- 36 houses are serviced by individual water holding tanks with trucked water (i.e., cistern and pressurized system); and
- 6 houses have other services.

### 2.0 Description of the Community Sewage Facilities

Based on the CAIS report, sewage from the houses in the North Caribou Lake community is treated as follows:

- 517 people use piped sewage
- 10 people use septic tanks
- 169 people use sewage holding tanks
- 13 people have other services
  
- 159 houses are serviced by a communal sewage collection and treatment system;
- 3 houses are serviced by individual septic tanks;
- 52 houses are serviced by individual sewage holding tanks that require regular pumping; and
- 4 houses have other services.

### 3.0 Overall Assessment for Communal Water Treatment Supply

The questionnaire developed by PWGSC required OCWA to undertake a risk assessment of the Water Source, Design, Operation, Reporting, and Operators. To properly assess these areas, a revisit to the water treatment facilities would be required.

OCWA was requested to undertake the evaluation without a visit to the site. With the available information, OCWA has undertaken the requested assessment of the facilities.

The ranking system used is as follows:

- 0 = Not enough information to assess
- 1-4 = Low Risk
- 5-7 = Medium Risk
- 8-10 = High Risk

For more detailed information on the Risk Assessment used see the Terms of Reference, Appendix B.

SECTION Water	SECTION RANKING Water	RISK Water
<b>A. Water Source</b>		
Biological	0	No lab data
Chemical	0	No lab data
Physical	0	No lab data
Overall Ranking for Water Source	0	No lab data
<b>B. Design</b>		
Biological	0	No lab data
Chemical	10	Turbidity at limit
Physical	6	Particles, high colour, DOC in filter effluent, low hardness
Risk to Public Health	10	Turbidity, boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	8	
<b>C. Operations</b>		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	7	No chlorine residual analyzer, no hydrant maintenance, re-occurring problem with filters
<b>D. Reporting</b>		
Ranking for Laboratories and Testing	2	Weekly by CHR
Ranking for Boil Water Advisories	10	Problem with filters and chlorine levels
Overall Ranking for Reporting	6	

<b>SECTION Water</b>	<b>SECTION RANKING Water</b>	<b>RISK Water</b>
<b>E. Operators</b>		
Overall Ranking for Operators	2	Trained and confident
<b>F. Statistical Data</b>		
Overall Ranking for Individual Wells	0	No data
Overall Ranking for the System	8	Medium Risk

#### 4.0 Overall Assessment for Communal Sewage Treatment Facilities

The questionnaire developed by PWGSC required OCWA to undertake a risk assessment of the Effluent Receiver, Design, Operation, Reporting, and Operators. To properly assess these areas, a revisit to the sewage treatment facility would be required.

OCWA was requested to undertake the evaluation without a visit to the site. With the available information, OCWA has undertaken the requested assessment of the facilities.

The ranking system used is as follows:

- 0 = Not enough information to assess
- 1-4 = Low Risk
- 5-7 = Medium Risk
- 8-10 = High Risk

For more detailed information on the Risk Assessment used see the Terms of Reference, Appendix B.

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
<b>A. Effluent Receiver</b>		
Overall Ranking for Effluent Receiver	0	
<b>B. Design</b>		
Quality of Treated Effluent	0	No lab data
Ranking of Design of Sewage Plant	5	No backup power
Ranking of Concerns and Hazards within the Plant	1	No safety hazards noted
Condition of Laboratory Equipment	0	
Overall Ranking for Design	1	
<b>C. Operations</b>		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	7	Pumps plug and burn out sewage overflows
<b>D. Reporting</b>		
Overall Ranking for Reporting	5	Backups from plugged pumps
<b>E. Operators</b>		
Overall Ranking for Operators	4	Some training and confidence
<b>F. Statistical Data</b>		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	5	Medium Risk

## 5.0 Communal Water Treatment Supply (176 houses)

### 5.1 Water Source

The raw water source for the North Caribou Lake community is Weagamow Lake.

### 5.2 Design

The treatment process is sand filtration with Granular Activated Carbon (G.A.C). The rated design capacity is 3.5 L/s and the plant was constructed in 2000. There are two water reservoirs located at the water treatment plant each with a capacity of 47,000 L.

The following table summarizes the exceedances for all treated water samples available from Health Canada in Sioux Lookout:

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ Limit
Dec. 7, 2000	Dec. 12, 2000	Nursing Station	Turbidity	1.0 NTU	1.0 NTU
			Hardness	57 mg/L	80 to 100 mg/L (OG)

AO = aesthetic objective, OG = operational guideline

There is no diesel-operated pump for fire protection but there is a diesel-operated generator to supply backup power for the plant. The diesel generator is not tested regularly. There is adequate safety equipment on-site and there are no safety hazards or concerns with the facility.

There are adequate designated office/filing and workshop areas within the plant. The testing is done in the chemical room, where a strong chlorine odor is present.

### 5.3 Operations

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional and the disinfectant is ordered every three months.

There is no on-line chlorine residual analyzer but the chlorine residual is checked twice per day, seven days a week. The operator reports that the chemicals are stored in accordance with MOE guidelines and there are sufficient test reagents with a current shelf life available.

There is a colilert unit and incubator available with a sufficient supply of test reagent with a current shelf life. Mr. Ines Sakchekapo, the community health representative, uses the colilert unit to test random samples on a weekly basis. The samples are randomly taken from a house and the water treatment plant.

On the day of the site visit, the sand filter was not operating properly and the turbidity of the water was higher after the filter than before. The operators attempted to back wash the filter. A contractor is expected to arrive soon to fix the problem.

A lab test of Filter #1 effluent was conducted to determine the problems with the filter. The following exceedances occurred.

The following table summarizes an effluent test of Filter #1 done to determine the problem with the filter:

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ Limit	Notes
Jun. 19, 2001	Jun. 21, 2001	Filter #1	Colour	24 TCU	15 TCU (AO)	The sample's appearance was light yellow, with particles. Sample was not tested for phenol or sulphide because insufficient sample was submitted.
			Turbidity	1.0 NTU	1 NTU	
			Dissolved Organic Carbon	6.3 mg/L	5.0 mg/L (AO)	

AO = aesthetic objective, OG = operational guideline

Bacteriological samples are flown to Thunder Bay on a monthly basis. The operation and maintenance manuals and as-built drawings for the treatment plant are readily available on-site.

There is a hydrant-flushing program in place twice per year in the spring and fall. There is no hydrant maintenance program in place. There are no emergency spare parts readily available. There is a contact listing of technicians/trades people that are available and their average response time is four days.

There is an annual main valve operating and maintenance program in place.

#### 5.4 Reporting

The community health representative conducts regular bacteriological samples on a weekly basis. The results are recorded and kept at the water treatment plant and in the nursing station. There was no bacteriological data available from Health Canada. There have not been any disease or health related outbreaks in the last two years. Last summer, while the water treatment plant was being constructed, there was one boil water advisory issued by the operator and Band Council.

Health Canada has issued the following boil water advisory:

- August 17, 2001 because of new plant construction

In a letter dated September 24, 2001, Health Canada wrote to confirm continuation of the boil water advisory due to the increasing turbidity and decreasing chlorine residual.

The turbidity of the water is recorded on a daily basis and continuously with an on line turbidity meter. There have been some exceedances in the turbidity readings due to the sand filter not working properly

A chemical analysis of the treated water is conducted on an annual basis.

#### 5.5 Operators

Roy Keeash and Isaiah Kwate are the operators of the water and sewage treatment facilities. [redacted] they have both received training three years ago by Mr. D. Leblanc to operate and maintain the facilities. The operators are familiar with the calibrating and maintaining of the disinfection equipment [redacted]. Both operators have been working at the water and sewage treatment plants [redacted]

s.19(1)

The operators should take refresher operator training courses. Laboratory analysis training may be useful to cover for the health representative in performing the colilert tests.

## **6.0 Deficiencies in the Communal Water Supply**

1. A diesel-operated generator is available for backup power but is not tested regularly.
2. Emergency spare parts are not readily available.
3. A boil water advisory was issued in August, 2001 during the construction of the plant. Health Canada confirmed in September 24, 2001 that boil water advisory should remain in effect due to high turbidity and low chlorine residual.
4. Two operators operate the water treatment plant. **s.19(1)** have been trained and are familiar **s.19(1)** in operating the equipment.
5. PLC has to be manually re-set after power failure.
7. There should be an on-line chlorine residual analyzer at the water treatment plant with alarm.
8. At the time of the site visit, there were some operational problems with the sand filter. The turbidity of the water was higher after the filter than before.
9. Some spilled diesel fuel on the floor of the water treatment plant was noted.

## **7.0 Communal Sewage Treatment Facility (159 houses)**

### **7.1 Effluent Receiver**

The lagoons are discharged once per year to Weagamow Lake.

### **7.2 Design**

The sewage treatment facility for this community is a lagoon system constructed in 1998. There is a sewage collection system with two sewage pumping stations. The rated design capacity of the system is not available.

There is no backup power for the pumps in case of hydropower loss. There is adequate safety equipment on-site and no safety hazards or concerns were noted. Maintenance required on the system is done at the water treatment plant.

### **7.3 Operation**

Operating and maintenance manuals and as-built drawings for the sewage treatment plant are available on-site.

There is a re-occurring problem of a sewage pump plugging and burning out, causing service disruptions. One operator reports that he has found rags plugging the pump. The sewage pumping station wet wells are cleaned on an annual basis. Pump hour meter readings are done on a daily basis. When the pump, run time is high, the lift station is opened and the float switches are cleaned.

There are no emergency spare parts readily available. There is a contact listing of technicians/trades people available and their average response time is four days.

There has not been any raw sewage bypasses from any of the sewage pumping stations. There are no excessive reed growths in the lagoons and the berms are in good condition.

#### 7.4 Reporting

Regular effluent tests from the lagoons are not conducted and no records are kept. Odor complaints are not recorded.

There have been some sewage collection backups but no basements have been flooded. The cause of the collection backups has been a pump plugging and burning out. The operators have found rags plugging the pumps.

A Health Canada letter dated August 13, 2001 discusses the failing lift station #3. The letter notes that the pumps in the lift station are malfunctioning and allowing leaking of raw sewage in an area that is close to a school and walking path. Repair parts had been ordered but Health Canada recommended that the affected area be fenced off.

The letter also notes of an overflow pipe at the main lift station next to the lake which needs investigation as to whether it overflows directly to the lake.

#### 7.5 Operators

**s.19(1)**

Roy Keeash and Isaiah Kwate are the operators of the water and sewage treatment facilities. [REDACTED] they have both received training three years ago by Mr. D. Leblanc to operate and maintain the facilities. The operators are familiar with the calibrating and maintaining of the disinfection equipment a [REDACTED] Both operators have been working at the water and sewage treatment plants [REDACTED]

The operators should take refresher operator training courses. Laboratory analysis training may be useful to cover for the health representative in performing the colilert tests.

### **8.0 Deficiencies in the Communal Sewage Facilities**

1. No backup power for pumps is available.
2. There is a re-occurring problem with the pumps in a lift station, causing raw sewage overflows.
3. Emergency spare parts are not available.
4. Technician/trades people response time is four days.
5. Effluent tests from lagoon discharge are not conducted.
6. There have been some sewage collection backups but no basements have been flooded.
7. An overflow pipe at the lift station near the lake may be able to discharge to the lake directly.

## 9.0 Recommendations

- Repair operational problems with the sand filter and PLC.
- Provide automatic reset for PLC.
- Consider purchasing some emergency spare parts.
- Consider installing an on-line chlorine residual analyzer with an alarm.
- Implement a training program for operators and truck haulers.
- Develop a contingency plan for the community water supply, including the individual water tanks.
- Consider backup power and emergency spare pumps for sewage.
- Install bar screen to fix pump-plugging problem at the sewage treatment plant.
- Repair failing lift station #3.
- Implement a regular testing program of the lagoon discharge.
- Investigate overflow pipe at lift station near lake.

## 10.0 Plant Classification

Based upon the Terms of Reference – Appendix I – Plant Classification Guideline developed by Public Works and Government Services Canada and with discussions with the Ontario Ministry of the Environment Classification Group, OCWA classified these plants as follows:

Water Treatment Facility - Class II  
Sewage Treatment Facility - Class I

## 11.0 Overall Community Risk Assessment

- **Water Category – High Risk**
- **High Risk because of the following:**
  - Repair sand filter and PLC.
- **Sewage Category – Medium Risk**
- No backup power for pumps
- Re-occurring problem with sewage pump plugging burning out and now sewage overflowing.
- There have been some sewage collection backups

**Note:** Information within this report is based on discussions with the plant operators and a quick visual walkthrough of the facilities. No detailed review was undertaken by OCWA.