

Sachigo Lake First Nation (Band No. 214)

Date of Visit: March 2, 2001

By Marcel Lavigne (OCWA)

Site Address: Sachigo Lake, ON P0V 2P0

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Tribal Council Affiliation: Windigo First Nations Council

Operators: Wesly Barkman and Gary Augustie

Location: The Sachigo Lake First Nation community is located approximately 425 km north of Sioux Lookout and is accessible by air.

Population: 469 people in the community (November 2000 – INAC)

No. of Units: 140 houses in the community (CAIS)

1.0 Description of the Community Water Supply

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

- 342 people use piped water
- 121 people have holding tanks with trucked water
- 6 people have no service

- 102 houses are serviced by a communal water system;
- 36 houses are serviced by individual water holding tanks with trucked water; and
- 2 houses have no services.

2.0 Description of the Community Sewage Facilities

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

- 335 people use piped sewage
- 115 people have individual sewage holding tanks
- 18 people have no service

- 101 houses serviced by a communal sewage treatment system;
- 37 houses are serviced by individual sewage holding tanks; and
- 2 houses have no 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
A. Water Source		
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. Design		
Biological	0	No lab data
Chemical	6	Aluminum exceedance
Physical	6	Low hardness
Risk to Public Health	1	No boil water advisories
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	4	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	6	No chlorine residual analyzer, chemicals not properly stored, no hydrant or main valve maintenance
D. Reporting		
Ranking for Laboratories and Testing	2	Weekly by water quality technician
Ranking for Boil Water Advisories	1	No boil water advisory
Overall Ranking for Reporting	2	

SECTION Water	SECTION RANKING Water	RISK Water
E. Operators		
Overall Ranking for Operators	6	1 operator with training and confidence, 1 operator with no training and no confidence
F. Statistical Data		
Overall Ranking for Individual Wells	0	Not Inspected
Overall Ranking for the System	4	Low 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
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	No information
B. Design		
Quality of Treated Effluent	4	One out of three exceedances of TSS
Ranking of Design of Sewage Plant	4	
Ranking of Concerns and Hazards within the Plant	6	No backup power
Condition of Laboratory Equipment	0	
Overall Ranking for Design	6	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	6	No cleaning, disruptions or spare parts
D. Reporting		
Overall Ranking for Reporting	8	Basement flooding
E. Operators		
Overall Ranking for Operators	4	Little training but confident
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	Not Inspected
Overall Ranking for the Systems	8	High Risk

5.0 Communal Water Treatment Supply (102 houses)

5.1 Water Source

The water source for the Sachigo Lake community is Sachigo Lake.

5.2 Design

The water treatment plant was built in 1996, and consists of a package plant with coagulation, sedimentation, filtration and chlorination. The rated design capacity of the package plant is 77 USGPM. There is a water reservoir located at the water treatment plant with a capacity of 225 m³.

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

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ Limit
Nov. 16, 2000	Nov. 17, 2000	Nursing Station	Aluminum	0.20 mg/L	0.10 mg/L
			Hardness	67 mg/L	80 to 100 mg/L (OG)
Sept. 26, 2001	Sept. 28, 2001	Water Plant	Hardness	68 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 that is tested monthly. There is adequate safety equipment on-site and no safety hazards or concerns were noted. There are adequate designated office/filing and workshop areas within the plant.

5.3 Operations

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

There is no on-line chlorine residual analyzer, but the operator checks the chlorine residual every day, seven days a week. Polymer and Sternpac are also used in the process. The chemicals are not stored in accordance with MOE guidelines, as there is some drain cleaner that is stored with the sodium hypochlorite. There are sufficient test reagents with a current shelf life.

There is a colilert unit and incubator available. The Band has a water quality technician that uses the colilert unit to conduct weekly testing of the water from the water treatment plant, the water hauling trucks and individual water tanks at individual houses. The water technician is also responsible for sending bacteriological samples on a monthly basis to First Nations Environmental Health Services in Sioux Lookout.

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

There have been no service disruptions in the last two years. There are broken hydrants that need to be fixed. There is an annual hydrant-flushing program conducted each spring. There is no fire hydrant maintenance program or main valve operating/ maintenance program in place. There are no emergency

spare parts readily available on-site. There is a contact listing of technicians/trades people available and their average response time is four days.

5.4 Reporting

Regular bacteriological tests are conducted on a weekly basis by the Band's water quality technician. The results are recorded and kept at the water treatment plant, the Band Office and the First Nations Environmental Health Service.

The following table summarizes all treated water bacteriological results available from Health Canada:

Date	Results
Jan. 17, 2001	5 samples with total coliform and E. Coli of zero

There have been no reported disease or health related outbreaks in the last two years or any boil water advisories. Turbidity of the water is recorded on a daily basis and there have not been any exceedances in turbidity readings.

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

5.5 Operators

Weslly Barkman and Gary Augustie operate the water and sewage treatment plants. Mr. Augustie is the part-time operator. [REDACTED] maintain the facility during 1996 to 1999 by the Circuit Rider Training Program. Mr. Barkman is familiar with calibrating and maintaining the disinfection equipment, [REDACTED]. Mr. Barkman has been working at the water treatment plant since it was built and is familiar with the plant operation. He does a jar test to optimize the chemical dosage of the polymer and the sternpac. Mr. Barkman is training Mr. Augustie (who started three months ago) on the plant operation.

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Mr. Barkman would like some electrical training to be able to troubleshoot some of the equipment. Mr. Augustie needs water treatment and distribution system operation training. Mr. Augustie [REDACTED]

6.0 Deficiencies in the Communal Water Supply

1. Fire hydrant maintenance program is not in place.
2. Emergency spare parts are not available on-site.
3. Broken fire hydrants need to be repaired.
4. Main valve operating and maintenance program is not in place.
5. Two operators are interested in their work but would benefit from some additional training.
6. The water treatment plant generator automatic transfer switch is not working and should be repaired.

7. One at the two available samples shows an exceedance of aluminum.

7.0 Communal Sewage Treatment Facility (101 houses)

7.1 Effluent Receiver

The lagoon is discharged annually in the spring to Sachigo Lake.

7.2 Design

The communal sewage treatment system consists of a sewage collection system, two sewage-pumping stations and a lagoon. The treatment system was built in 1996.

Backup power is available for one of the pumping stations but there is no backup power for the second pump station. Adequate safety equipment is on-site.

The following table summarizes all effluent samples available from Health Canada

Date	Location	Exceedances	Result	Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments
May 1, 2000	Cell #2	Total Suspended Solids	34 mg/L*	25 mg/L*
Jun. 16, 2001	Lagoon	No Exceedances		
Sept. 25, 2001	Cell #2	No Exceedances		

*Note: High level of suspended solids may be caused by wind or wave action before sampling.

7.3 Operation

Operating and maintenance manuals and as-built drawings are available on-site. There have been service disruptions in the last two years caused by pumps plugging up. The sewage pumping station wet wells are cleaned on an annual basis. The pump station pumps are not routinely maintained and emergency spare parts are not readily available. There is a contact listing of technicians/trades people and their average response time is four days. There have been no raw sewage bypasses from the pump stations.

The lagoons do not have excessive reed growth problems but the berms are not in good condition.

7.4 Reporting

Regular effluent tests from the lagoon are conducted annually before spring discharge. The operator sends them to the Windigo Tribal Council for analysis. The sample results are kept at the water treatment plant. There has not been any disease or health related outbreaks in the last two years and no odour complaints are recorded.

There have been sewage collection backups and basements flooded. The operators report that these service disruptions are caused by the pumps in the lift station plugging up with rags and burning out.

7.5 Operators

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Wesly Barkman and Gary Augustie operate the water and sewage treatment plants. Mr. Augustie is the part-time operator. Mr. Barkman has received training to operate and Mr. Barkman is familiar with calibrating and maintaining the disinfection equipment, Mr. Barkman is familiar with the plant operation. He does a jar test to optimize the chemical dosage of the polymer and the sternpac. Mr. Barkman is training Mr. Augustie on the plant operation.

Mr. Barkman would like some electrical training to be able to troubleshoot some of the equipment. Mr. Augustie needs water treatment and distribution system operation training.

8.0 Deficiencies in the Communal Sewage Facilities

1. Backup power is available only to one of the pumping stations.
2. There have been cases of pumps plugging with rags are causing sewage collection backups and basement flooding.
3. The pump station pumps are not routinely maintained and emergency spare parts are not available.
4. There is a full-time and part-time/backup operator and the full-time operator is trained and confident in his operational techniques. Both operators need further training.

9.0 Recommendations

- Purchase spare chlorine feed pump as backup.
- Install on-line chlorine residual analyzer with alarms.
- Consider replacing liquid sternpac with dry sternpac to save cost of shipping liquid sternpac.
- Repair the automatic transfer switch.
- Implement a training program that can lead to certification of the operators.
- Implement a training program for water truck haulers.
- Develop a contingency plan for the water supply system, including the individual water holding tanks.
- Establish a protocol for taking water samples at the water treatment plants, including raw water samples.
- Establish a procedure for cleaning and disinfecting individual water holding tanks.
- Establish a protocol for sampling of individual water holding tanks.
- Repair broken hydrant.
- Address problem of sewage pump plugging and burning out.
- Purchase emergency spare parts for pumps.
- Provide backup power for the second pumping station.

10.0 Plant Classification

Based upon the Terms of Reference – Appendix I – Plant Classification Guideline developed by Public Works 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 – Low Risk**
- **Sewage Category – High Risk**
- **High Risk because of the following:**
 - Address pump plugging problem and eliminate sewage backups and basement flooding.

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.