Chippewas of Saugeen First Nation (Band No. 123)

Date of Visit: April 5, 2001
By George Culhane (OCWA)
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Tribal Council Affiliation: Toronto Services Centre - Unaffiliated First Nations (South)
Operators: Gerald Fred Shannon, Tony Kewageshig, Jim Kewaquom
Location: The Chippewas of Saugeen First Nation community is located on the east shore of Lake Huron, approximately 24 km west of Owen Sound
Population: 427 people in the community (December 2000 - INAC)
No. of Units: 300 housing units (CAIS)

1.0 Description of the Community Water Supply

Based on the CAIS report and information provided to OCWA, water to the houses in the Chippewas of Saugeen community is treated as follows:

- 182 people are serviced by six communal water systems
- 231 people are serviced by the Southampton waterworks
- 8 people use individual wells
- 6 people use individual holding tanks

- 128 houses are serviced by six communal water systems;
- 162 houses are serviced by the Southampton waterworks;
- 6 houses are serviced by individual wells; and
- 4 houses are serviced by individual holding tanks.

2.0 Description of the Community Sewage Facilities

Based on information provided to OCWA, sewage from the houses in the Chippewas of Saugeen community is treated as follows:

- 421 people use septic tanks
- 6 people use individual holding tanks

- 296 houses are serviced by individual septic tanks; and
- 4 houses are serviced by individual holding tanks.

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	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Lab data not available
B. Design		
Biological	4	5 total coliform exceedances out of 284 samples (1.7%)
Chemical	8	Turbidity, fluoride, iron, sodium
Physical	6	Hardness
Risk to Public Health	9	Turbidity
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	6	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	6	No turbidity monitoring, re-occurring problem with curb stops
D. Reporting		
Ranking for Laboratories and Testing	2	Weekly by CHR
Ranking for Boil Water Advisories	1	No boil water advisories on communal well systems
Overall Ranking for Reporting	5	

SECTION Water	SECTION RANKING Water	RISK Water
E. Operators		
Overall Ranking for Operators	2	Trained and confident
F. Statistical Data		
Overall Ranking for Individual Wells	8	3 exceedances out of 5 samples
Overall Ranking for the System	4	Low Risk

4.0 Communal Water Supply (128 houses)

4.1 Water Source

The six different well and pump house systems are summarized as follows:

- Well pump house # 1 services 8 housing units.
- Well pump house # 2 services 19 housing units.
- Well pump house # 3 services 11 housing units.
- Well pump house # 4 services 29 households and 3 churches.
- Well pump house # 5 services 30 households and 1 church.
- Well pump house # 6 services 31 households and 1 campground.

Based on information provided to OCWA, 162 houses in the Village core are serviced by the Southampton waterworks. OCWA operates the treatment plant that supplies the water to the Village core area. OCWA is not aware of any water quality or quantity problems with the water supply.

4.2 Design

The community is serviced by a ground water supply system consisting of six wells and six pump houses. The rated design capacities are unknown but the operator states the present usage of the systems is adequate. There are no on-site water reservoirs in this community. The treatment facilities are housed in a wood-framed building with on-line filters, pressure tanks and disinfection.

The following table summarizes the treated water data available from Health Canada, which does not meet GCDWQ:

Date	Location	Exceedances	Result	GCDWQ limit
February 23, 1999	Pumphouse No. 1	Turbidity	1.4 NTU	1.0 NTU (HL)
		Iron	1.23 mg/L	0.30 mg/L (AO)
		Hardness	140 mg/L	80-100 mg/L (OG)
		Sodium	101 mg/L	20 mg/L*
	Pumphouse No. 2	Sodium	32.7 mg/L	20 mg/L*
	Pumphouse No. 3	Turbidity	1.0 NTU	1.0 NTU (HL)
		Sodium	51 mg/L	20 mg/L*
	Pumphouse No. 4	Fluoride	1.5 mg/L	1.5 mg/L (HL)
		Turbidity	3.5 NTU	1.0 NTU (HL)
		Sodium	79.7 mg/L	20 mg/L*
	Pumphouse No. 5	Fluoride	1.5 mg/L	1.5 mg/L (HL)
		Sodium	58.9 mg/L	20 mg/L*
	Pumphouse No. 6	Sodium	49.6 mg/L	20 mg/L*

HL = health limit, AO = aesthetic objective, OG = operational guideline
* Note: Although the aesthetic objective for sodium is 200 mg/L, the local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L.

Some safety concerns include lacking the use of gloves and eye protection when handling hypochlorite. Also, an eyewash station should be installed in the pump house.

There is no main valve operating and maintenance program.

4.3 Operations

Sodium hypochlorite (12%) is used for disinfection. The disinfection equipment is functional with sufficient disinfectant available on site. The chemicals are stored properly in accordance with MOE guidelines and there are sufficient test reagents available. The operators also use chlorine residual analyzer and colilert unit.

There are operating and maintenance manuals for plant equipment and as-built drawings on site. Emergency spare parts are readily available. There is a contact listing of technicians/trades people available and the response for such personnel is approximately 24 hours.

Re-occurring operational problems include curb stops.

4.4 Reporting

Health Canada conducts bacteriological testing weekly on the communal water system. The results are kept at the Health Canada office.

The following table summarizes the bacteriological data available from Health Canada.

Period	Frequency	Exceedances
00/05/26 to 01/10/31	Unknown from different locations	▪ 5 total coliform exceedances out of 294 samples (1.7%)

There have been no disease or health related outbreaks in the last two years. There has been one boil water advisory, but it was for an individual well.

The turbidity of the treated water is not recorded and it is unclear whether chemical analyses are being conducted.

4.5 Operators

Fred Shannon, Tony Kewageshig, and Jim Kewaquom are the operators at the treatment plant. The [redacted] have received training to operate and maintain the facility. The operators [redacted] are familiar with calibrating and maintaining the disinfection equipment.

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There are backup operators available to cover for vacation or illness.

5.0 Deficiencies in the Community Water Supply

1. Safety equipment such as eyewash unit should be purchased. Protective equipment should be used when handling sodium hypochlorite.

2. There are inadequate storage/office/workshop areas at each of the well pump houses.

3. There is no main valve maintenance program on the water distribution system.

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4. have had training on plant operating and maintenance. The operators should get more training regarding hypochlorite.

5. Fluoride is a problem and it is naturally occurring in the host aquifer.

6. Children under the age of 12 use bottled water for drinking.

7. CAIS records on water and sewage services need to be updated.

6.0 Recommendations

- Implement a training program that can lead to certification of the operators.
- Establish and implement a protocol for taking water samples at the water treatment plants, including raw water samples.
- Review safety equipment that is available on site or at the Band Office.
- Investigate options for fluoride reduction in water supply at all the well sites.
- Purchase on-line chlorine analyzer and turbidity meter for the six well systems.
- Develop a comprehensive operating and maintenance program on the water distribution system to address valve and hydrant maintenance.
- Investigate pressure problems in the Village Core System.
- Develop a comprehensive contingency plan to address operational problems, breakdowns and main breaks, etc.
- Purchase eyewash units for each of the six well systems.
- Obtain turbidity meters for each of the six well systems.
- Implement an annual valve maintenance program.
- Implement a sewage septic tank inspection program to inspect all septic tanks in the community for proper operations and meeting the required standards.

7.0 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 this plant as follows:

Water Treatment Facility - Class I

8.0 Overall Community Risk Assessment

Water Category

- **Pump House # 1 - Low Risk**
- **Pump House # 2 – Low Risk**
- **Pump House # 3 – Low Risk**
- **Pump House # 4 – Low Risk**
- **Pump House # 5 – Low Risk**
- **Pump House # 6 – Low Risk**
- **Village Core System – Low Risk**

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.