

Sheguiandah First Nation (Band No. 176)

Date of Visit: February 5, 2001

By John McGhee (OCWA) and Lorne Abotosaway (UCCM)

Site Address: Sheguiandah, ON P0P 1W0

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Tribal Council Affiliation: United Chiefs and Councils of Manitoulin (UCCM)

Operator: Andy Aguonie

Location: The Sheguiandah First Nation community is located on Manitoulin Island, approximately 10 km south of Little Current on Hwy. 68

Population: 139 people in the community (October 2000 - INAC)

No. of Units: 46 housing units (CAIS)

1.0 Description of the Community Water Supply

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

- 121 people are serviced by a communal water system; and
- 18 people are serviced by individual water holding tanks with trucked water.

- 40 houses are serviced by a communal water system; and
- 6 houses are serviced by individual water holding tanks with trucked water.

2.0 Description of the Community Sewage Facilities

Based on information supplied to OCWA, sewage from the houses in the Sheguiandah community is treated as follows:

- 139 people are serviced by individual septic tanks.

- 46 houses are serviced by individual septic 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 | |
| B. Design | | |
| Biological | 1 | 1 E.Coli exceedance noted |
| Chemical | 1 | No exceedances |
| Physical | 6 | Hardness and DOC exceedances |
| Risk to Public Health | 1 | |
| Condition of Laboratory Equipment | 0 | |
| Overall Ranking for Design | 8 | Low pressure is system |
| C. Operations | | |
| Reservoir Cleanliness | 0 | |
| Emergency Plan | 0 | |
| Overall Ranking for Operations | 10 | Malfunctioning equipment, reoccurring problems, no emergency plans. |
| D. Reporting | | |
| Ranking for Laboratories and Testing | 1 | Regular testing conducted |
| Ranking for Boil Water Advisories | 1 | No boil water advisories |
| Overall Ranking for Reporting | 1 | |

| SECTION Water | SECTION RANKING Water | RISK Water |
|--------------------------------------|----------------------------------|------------------------------|
| E. Operators | | |
| Overall Ranking for Operators | 7 | No training or certification |
| F. Statistical Data | | |
| Overall Ranking for Individual Wells | 0 | |
| Overall Ranking for the System | 8 | High Risk |

4.0 Communal Water Supply (40 houses)

4.1 Water Source

The raw water source is the North Channel of Lake Huron, 1,443 feet from the shore and gravity fed to a wet well.

4.2 Design

The communal water supply consists of a lake intake to a wet well at the plant. The low lift pumping station, pumps water through two Culligan pressure filters, chlorine is added for disinfection and pressure tanks maintain the pressure in the water distribution system.

The following table summarizes the treatment water chemical exceedance data available from Health Canada:

| Date | Exceedance | Result | GCDWQ Limit |
|---------------|--------------------------|----------|--------------------|
| Jan. 26, 2000 | Hardness | 113 mg/L | 80 – 100 mg/L (OG) |
| Mar. 8, 2001 | Hardness | 101 mg/L | 80 – 100 mg/L (OG) |
| | Dissolved Organic Carbon | 7.1 mg/L | 5.0 mg/L (AO) |

OG – operational guideline; AO – aesthetic objective

The community is serviced by a communal water treatment plant, which was constructed in 1976, with additional equipment installed in 1988. The rated design capacity is not known, however, the system supplies approximately 50 m³/day (11,000 gal/day). The raw water source is the North Channel of Lake Huron, 1,443 feet from the shore and gravity fed to a wet well. The water intake has a zebra mussel problem. Also, the intake pipe is covered by one foot of water at the shore to 3.5 feet, 375 feet from the shore and there is a potential freezing problem, from spring ice movement that should be addressed.

The low lift station pumps the water through two Culligan pressure filters. One of these filters may not be operational. Sodium hypochlorite (12%) is added for disinfection. The 10 m³ low lift wet well (7 foot deep by 9 foot diameter) stores a small volume of approximately 2000-2500 IMPG.

The chlorine equipment is functional. There is no on-line chlorine residual analyser. Chlorine residual is measured once per day, five days per week, and turbidity once per week as well.

The safety equipment on site is not adequate (no eyewash station, safety clothing) for the plant operator. The available space is very small and is filled with fire department equipment. Housekeeping of the facilities is poor (no cleaning supplies available on site) and there is no designated lab area, office/filing area or a workshop with tools for maintenance. There is adequate ventilation. There is a diesel operated pump for fire protection and it is used daily for backwashing. There is no backup power supply for the plant. There is one emergency backup person available.

There is no annual main valve operating/maintenance program or water main flushing program. There is a hydrant maintenance program undertaken semi-annually. Each fall, fire hydrants are drained. Pressure tests on the distribution system have given low-pressure readings during high demand periods and during backwash cycles and there may be some leaks in the water distribution system.

The only spare equipment available on site is a standby chemical feed pump. There are no contact listings of the technicians/trades people available. The average response time of technicians/trades people is by the next day and there is a 24-hour on-call person available.

There are no as-built drawings or operating and maintenance (O & M) manuals available on site, except for the O & M manual for the Culligan filters.

There have been no boil water advisories on the communal water system.

4.4 Reporting

No reported disease or health related outbreaks in the last two years.

Bacteriological samples are analyzed by Health Canada once per month and the results are kept in the Band Office. In the last two years, there has been one boil water advisory on the water holding tanks.

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

| Period | Frequency | Regularity | Exceedances |
|----------------------|-----------------------|--|---|
| 99/10/24 to 01/09/17 | 1 – 9 times per month | <ul style="list-style-type: none">▪ Months missing 1999: Nov.▪ Months missing 2000: Apr., Jun., Sept., Nov.▪ Months missing 2001: Feb., Apr. | <ul style="list-style-type: none">▪ 2001/07/28 – personal residence |

Chemical analyses of treated water are conducted once a year.

4.5 Operators

Andy Aguonie operates the water treatment plant.

s.19(1)

5.0 Individual Water Holding Tanks with Trucked Water (6 houses)

Based on the CAIS report, six houses in the community are serviced by individual water holding tanks located at each house. A boil water advisory has been issued on an individual water holding tank.

The individual water holding tanks have the potential for contamination either in the handling of the water and contamination of the individual water holding tank. This is evident with the boil water advisory placed on individual water holding tanks. Individual water holding tanks need to be cleaned and disinfected on a regular basis.

6.0 Deficiencies in the Communal Water Supply

1. The intake piping should be reviewed for depth of water cover, potential freezing, and potential ice damage. Zebra mussels are also present.
2. Capacity of the water treatment plant may have been reached. Low pressure readings with high demand and during backwash cycles have been experienced. The low lift pumping station may be the bottleneck.

3. A backup generator is needed for the water treatment plant.
4. Additional safety equipment is required such as eyewash station, safety equipment for chlorine mixing and safety clothing, etc.
5. One Culligan pressure filter is not operational.
6. The operator is using the diesel fire pump for backwashing the Culligan filters every day therefore, there is no backup power supply for the water treatment plant.
7. There are no operating and maintenance manuals for the plant equipment and are no as-built drawings on site.
8. Several safety hazards/concerns were noted on site including fire department equipment on the floor, small area and no designated laboratory/office or workshop area. This water treatment plant needs to be cleaned and organized. Good housekeeping of the plant needs to be practiced.
9. The chlorine equipment was working and a chlorine residual test is done once per day, 5 days/week. There is no on-line chlorine residual analyzer.
10. There is no reservoir on the water distribution system. Pressure is maintained through the low lift pumps.
11. The operator performs a hydrant flushing and maintenance program semi annually. At the time of the OCWA visit, several fire hydrants needed repair. The TCTSA noted the hydrants were not properly installed during construction, (no thrust blocks, rock and cedar post were used for backfill).
12. There is no valve operating and maintenance program in the water distribution system. Water mains have never been flushed.
13. There is no written contingency plan available.
14. There is low pressure in the water distribution system.
15. The operator **s.19(1)** should receive on going training. The operator has one backup person to fill in during vacations and sickness.
16. There are no alarms on the water supply system.
17. The Town of Little Current landfill and sewage outfalls into the North Channel close to where the Sheguiandah water system intake is located.

7.0 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 Recommendations

- Investigate intake piping issue to reduce the effects of minimum water cover over the intake piping, potential freezing and ice damage of the intake piping and address the presence of zebra mussels.
- Investigate the low-pressure readings in the water distribution system that has been recorded during backwash cycles. Bottleneck could be the low lift pumping station.
- Purchase an eyewash station for operator safety while mixing chlorine. Review available safety equipment on site and purchase missing equipment.
- Repair Culligan pressure filter.
- Implement a training program that can lead to certification of the operator.
- Establish and implement a protocol for taking water samples at the water treatment plants including raw water samples.
- Purchase backup power for the water treatment plant.
- Consider installing an on-line chlorine residual analyzer. This could save operators time in sampling everyday.
- Flush water mains.
- Implement a housecleaning and general maintenance program at the facilities.
- Consider constructing additional storage/office space/laboratory/workshop.
- Develop a comprehensive operating and maintenance program on the water distribution system to address valve and hydrant maintenance. Repair leaking hydrants.
- Develop a comprehensive written contingency plan.
- Recommend a professional engineer to be hired and review the total operations of the water treatment plant, to identify all deficiencies.
- Consider installing an alarm system at the water treatment facilities.
- Investigate the location of the intake compared to the landfill and the Town of Little Current sewage outfalls.
- Obtain as built drawings.
- Implement a training program for water truck haulers.
- Establish sampling responsibilities for the individual water holding tanks.
- Establish and implement a procedure for cleaning and disinfecting individual water holding tanks. At a minimum, tanks with boil water advisories to be cleaned and disinfected.
- Implement a sewage septic tank inspection program to inspect all the septic tanks in the community for proper operations and meeting the required standards.

9.0 Overall Community Risk Assessment

Water Category – High Risk

- **High Risk because of the following:**
 - One pressure filter is not operational and needs repair; and
 - Water supply system needs a total review by a professional engineer.

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