
Kashechewan First Nation (Band No. 243)

Date of Visit: February 26, 2001

By John McGhee (OCWA)

Site Address: c/o General Delivery

Kashechewan, ON P0L 1S0

Phone No.: 705-275-4440

Fax No.: 807-275-1023

Tribal Council Affiliation: Mushkegowuk Tribal Council

Operators: Alfred Wesley and Isaiah Wynne

Location: The Kashechewan First Nation community is located approximately 450 km north of Timmins and 700 km northwest of North Bay, and is accessible by air

Population: 1143 people in the community (CAIS)

No. of Units: 199 housing units (CAIS)

1.0 Description of the Community Water Supply

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

- 1028 people use piped water
- 115 people have no services

- 179 houses are serviced by a communal water system; and
- 20 houses have no services.

2.0 Description of the Community Sewage Facilities

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

- 1028 people use piped sewage
- 115 people have no services

- 170 houses are serviced by a communal sewage system; and
- 29 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 | |
| Chemical | 0 | |
| Physical | 0 | |
| Overall Ranking for Water Source | 0 | No lab data available |
| B. Design | | |
| Biological | 4 | 9 APC exceedances out of 94 available samples |
| Chemical | 8 | Turbidity, aluminum exceedances |
| Physical | 6 | Hardness exceedance |
| Risk to Public Health | 6 | Turbidity, no boil water advisory |
| Condition of Laboratory Equipment | 0 | Not inspected |
| Overall Ranking for Design | 6 | |
| C. Operations | | |
| Reservoir Cleanliness | 0 | Not inspected |
| Emergency Plan | 10 | No plan |
| Overall Ranking for Operations | 9 | Disinfection equipment not working, chlorine residual analyzer not calibrated, chemicals not properly stored |
| D. Reporting | | |
| Ranking for Laboratories and Testing | 1 | Monthly by Health Canada and Health Clinic |
| Ranking for Boil Water Advisories | 1 | No boil water advisories |

| SECTION Water | SECTION RANKING Water | RISK Water |
|--------------------------------------|----------------------------------|-----------------------|
| Overall Ranking for Reporting | 1 | |
| E. Operators | | |
| Overall Ranking for Operators | 2 | Trained and confident |
| F. Statistical Data | | |
| Overall Ranking for Individual Wells | 0 | |
| Overall Ranking for the System | 10 | High 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 data available |
| B. Design | | |
| Quality of Treated Effluent | 0 | |
| Ranking of Design of Sewage Plant | 0 | Insufficient information |
| Ranking of Concerns and Hazards within the Plant | 0 | |
| Condition of Laboratory Equipment | 0 | |
| Overall Ranking for Design | 0 | No data available |
| C. Operations | | |
| Ranking for Emergency Plan | 0 | |
| Overall Ranking for Operations | 5 | Power source problem bypassing |
| D. Reporting | | |
| Overall Ranking for Reporting | 5 | Yearly Health Canada |
| E. Operators | | |
| Overall Ranking for Operators | 2 | Trained and confident |
| F. Statistical Data | | |
| Overall Ranking for Individual Septic Tanks | 0 | |
| Overall Ranking for the Systems | 5 | Medium Risk |

5.0 Communal Water Supply (179 houses)

5.1 Water Source

The surface water source for the community is Willow Creek.

5.2 Design

The Kashechewan community is serviced by a water plant constructed in 1997. The plant consists of a gravity feed from the creek to a wet well in the plant. Two variable speed low lift drive pumps pump water to the treatment plant. The plant consists of a single train EIMCO plant with dry alum as a primary coagulant and LT20 poly as a coagulant aid. Treated water is chlorinated in a reservoir at the plant. The reservoir consists of two cells with storage for approximately three days.

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

| Date | Location | Exceedances | Result | GCDWQ limit |
|--------------|-----------------------|-------------|------------|---------------------|
| May 29, 2000 | Treated Surface Water | Hardness | 138 mg/L | 80 to 100 mg/L (AO) |
| | | Turbidity | 1 NTU | 1 NTU (HL) |
| | | Aluminum | 0.68 mg/L | 0.1 mg/L (OG) |
| | | Sodium | 20.8 mg/L | 20 mg/L (AO) |
| Jun. 7, 2001 | Treated Surface Water | Aluminum | 0.203 mg/L | 0.1 mg/L (OG) |

* AO = aesthetic objective, HL = health limit, OG = operational guideline

The plant has a diesel operated pump for fire protection however; it was not operational at the time of the site visit. The safety equipment at the plant includes an eyewash unit, face shield, gloves, apron and other such personal protective equipment, but there is no oxygen meter. It should be verified that the plant has confined space equipment and that it is in good working order.

There is no annual hydrant-flushing program but there is a fire hydrant maintenance program in place. The water system does not have a main valve operating/maintenance program in place.

5.3 Operations

Sodium hypochlorite (12%) is used for disinfection. The disinfection equipment is not functioning properly. The disinfectant is ordered every six months. There is an on-line chlorine residual analyzer (Wallace and Tiernan) and the operator reports that the chlorine residual is checked twice per day. However, the operator also reports that the analyzer is not calibrated and has not worked properly since its installation.

There are no operating and maintenance manuals for plant equipment, but the as-built drawings are available on site. Emergency repair parts are not readily available and there is no contact listing of technicians/trades people available but the expected response time for technicians/trades people is one week.

In the last two years, service disruptions have been experienced once per month due to power failures.

5.4 Reporting

Health Canada conducts bacteriological testing once per month, and the health clinic conducts bacteriological testing twice per month. The results are kept at the health clinic.

The plant has a turbidity meter, however, it is broken therefore results are not recorded. A chemical analysis of the treated water is conducted once per year and the results are kept in the Band Office.

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

| Period | Frequency | Regularity | Exceedances |
|---------------------------|--|--|--|
| 99/10/03 to 2001/10/03 | 4 to 12 times per month from different locations | <ul style="list-style-type: none"> ▪ 2 months missing in 1999 ▪ 7 months missing in 2000 ▪ 3 months missing in 2001 | <ul style="list-style-type: none"> ▪ APC exceedances were noted on 2000/04/06, 2001/01/18, and 2001/02/08 |

5.5 Operators

s.19(1)

Alfred Wesley and Isaiah Wynne are the operators of the water and sewage treatment plants.

The operators backup each other during vacation or sickness absence.

6.0 Deficiencies in the Community Water Supply

1. Some safety equipment is available on site, including an eyewash unit, face shield, gloves, aprons and other basic protective clothing. There is no oxygen meter and it should be verified that confined space equipment is available and in good working order.
2. The disinfection equipment is not working properly. The chlorine residual analyzer has also not been working properly since its installation.
3. A turbidity meter is available but it is not operational.
4. Operating and maintenance manuals for the plant are not available but the as-built drawings are available on site.
5. The plant has a diesel operated pump for fire protection but it was not operational at the time of the visit.
6. The backwash water tank does not fill up on auto control.
7. One low lift pump needs immediate attention.
8. There is no annual hydrant-flushing program in place but there is a fire hydrant maintenance program in place.
9. There is no main valve operating and maintenance program on the water distribution system.

10. There is no written contingency plan available.
11. Emergency repair parts are not available on site.
12. Housekeeping and record keeping needs improvement.
13. The two operators are not certified and should have additional training.

7.0 Communal Sewage Facilities (170 houses)

7.1 Effluent Receiver

The lagoon is discharged twice per year in the spring and fall. The receiving stream is the Albany River.

7.2 Design

The Kashechewan community sewage system consists of a collection system with three pumping stations and a lagoon.

7.3 Operations

The sewage pumping station wet wells are cleaned on an as needed basis. The pumping station pumps are not routinely maintained and emergency repair parts are not readily available. The pumping station pumps have pump failure problems possibly due to power source problems. The main station has no backup pump.

There is no contact listing of technicians/trades people available but the average response time for such personnel is one week.

There have been raw sewage bypasses at the pumping station and the manhole by the school has been repaired to solve this problem.

7.4 Reporting

The operator reports that Health Canada conducts effluent tests only once per year. The results are not recorded. Health Canada data was not available to OCWA

No complaints of odour are recorded. There has been one sewage collection backup causing one basement to be flooded. Suspected cause of the backup is reported to be due to grease build up in a manhole.

7.5 Operators

Alfred Wesley and Isaiah Wynne are the operators of the water and sewage treatment plants.

s.19(1)

The operators backup each other during vacation or sickness absence.

8.0 Deficiencies in the Community Sewage Facilities

1. There are no emergency repair parts readily available for the three pumping stations.
2. Main pumping station does not have a backup pump.
3. The pumping station has re-occurring pump failure problems possibly due to power source problems.
4. There have been raw sewage bypasses from the pumping station but a manhole has been repaired to solve this problem.
5. Regular effluent tests are not conducted. Health Canada conducts an effluent test only once per year and the results are not recorded.
6. There has been one event of a sewage collection backup and one basement flooding possibly caused by grease build up in a manhole.
7. Housekeeping and cleanliness needs improvement.
8. The operators are not certified and should have additional training.

9.0 Recommendations

- Purchase oxygen meter and check confined space equipment.
- Repair chlorinator and chlorine residual analyzer.
- Repair turbidity meter.
- Repair backup fire pump.
- Repair auto control for the backwash water tank.
- Repair low lift pump.
- Improve housekeeping and record keeping.
- Obtain operating and maintenance manuals.
- Implement a fire hydrant flushing and an annual valve maintenance program.
- Implement a training program that can lead to certification of the operator.
- Develop a contingency plan for the water supply system.
- Establish a protocol for taking water samples at the water treatment plants, including raw water samples.
- Consider spare pumps for emergencies on-site.
- Consider installing backup power for pumping station pumps to reduce occurrences of bypasses.
- Regular effluent tests should be conducted with every discharge. Results should be recorded and kept on file.

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:**
 - Malfunctioning chlorinator and chlorine residual and turbidity meters; and
 - Malfunctioning backup fire pump, auto backwash and low lift frequency drive pumps.

Sewage Category – Medium Risk

- **Medium Risk because of the following:**
 - Regular effluent tests not conducted.

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.