

Lake Helen (Red Rock) First Nation (Band No. 193)

Date of Visit: February 23, 2001

By Marcel Lavigne (OCWA)

Site Address: Nipigon, ON P0T 2J0

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Tribal Council Affiliation: Thunder Bay Services Centre - Unaffiliated First Nations (North)

Operator: John Marshall

Location: The Lake Helen (Red Rock) First Nation community is located approximately 5 km north of Nipigon (take Hwy. 17 west toward Nipigon and exit on Hwy. 585)

Population: 238 people in the community (October 2000 - INAC)

No. of Units: 82 housing unit (CAIS)

1.0 Description of Community Water Supply

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

- 238 people use piped water
- 82 houses are serviced by a communal water treatment plant.

2.0 Description of Community Sewage Facilities

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

- 238 people use individual septic tanks
- 82 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	1	No exceedances
Chemical	1	No exceedances
Physical	6	Color, hardness exceedances
Overall Ranking for Water Source	4	
B. Design		
Biological	0	No lab data available
Chemical	10	THMs, turbidity exceedances
Physical	6	Color, hardness, dissolved organic carbon exceedances
Risk to Public Health	8	THMs, turbidity, no boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	8	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	7	No chlorine residual analyzer, no operation and maintenance manuals
D. Reporting		
Ranking for Laboratories and Testing	1	Weekly by operator
Ranking for Boil Water Advisories	1	No boil water advisory
Overall Ranking for Reporting	1	

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	0	
Overall Ranking for the System	5	Medium Risk

4.0 Communal Water Supply (82 houses)

4.1 Water Source

The raw water is drawn from Lake Helen.

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

Date	Location	Exceedances	Result	GCDWQ Limit
June 6, 2001	Inlet	Hardness	72 mg/L	80 to 100 mg/L (OG)
June 6, 2001	Low Lift	Colour	15.6 TCU	15 TCU (AO)
		Hardness	72 mg/L	80 to 100 mg/L (OG)

AO - aesthetic objective; OG - operational guideline

4.2 Design

According to the operator, the plant has exceeded the design capacity. The Red Rock community is serviced by a pressure filter type treatment plant and a reservoir buried under the plant, which was constructed in 1985.

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

Date	Location	Exceedances	Result	GCDWQ Limit
May 9, 2000	Water Treatment Plant	THM	0.112 mg/L	0.1 mg/L (HL)
		Hardness	79.1 mg/L	80 to 100 mg/L (AO)
		Dissolved Organic Carbon	11 mg/L	5.0 mg/L (OG)
Mar. 1, 2001	Drinking Water	Dissolved Organic Carbon	5.0 mg/L	5.0 mg/L (AO)
June 6, 2001	ML Post Treatment	Hardness	72 mg/L	80-100 mg/L (OG)
		Turbidity	4.2 NTU	1 NTU
		THMs	0.12 mg/L	0.100 mg/L (HL)
June 27, 2001	Water Treatment Plant	THMs	0.17 mg/L	0.1 mg/L (HL)

AO - aesthetic objective, OG - operational guideline; HL - health limit

There is a diesel operated pump for fire protection but it is not tested on a regular basis. The plant does not have a diesel-operated generator to supply backup power for the plant. There is an adequate designated laboratory, office/filing and workshop area in the plant but there is a lack of special tools to perform maintenance.

The plant has adequate safety equipment on-site. However, the community health representative is concerned that there is no lock on the outside hatch cover for the backwash drain. There is also no fence around the plant.

4.3 Operations

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional and there is a sufficient supply of the disinfectant on site. The operator orders a supply every month. There is no on-line chlorine residual analyzer but the operator checks the chlorine residual once per day.

There are no operations and maintenance manuals for the plant or plant equipment, and there are no as-built drawings available. There are no emergency spare parts available. There is a contact listing of technicians/trades people and their average response time is three hours.

There have not been any service disruptions in the plant or distribution system in the last two years. There is a hydrant-flushing program in place twice per year, in the spring and fall. There is no fire hydrant maintenance program. There is no annual main valve operating and maintenance program in place. The community health representative has reported that the clear well has never been cleaned and is due for a cleaning this year.

4.4 Reporting

Once per week, bacteriological samples are picked up by a medical van and are taken to Dilico in Thunder Bay for testing. The results are kept at the Band Office.

Turbidity of the treated water is recorded on a daily basis. There have not been any exceedances in turbidity readings. Dilico conducts a chemical analysis of the treated water once per year.

4.5 Operators

Marshall John operates the treatment plant [REDACTED]. The operator has received on-going training in the operation and maintenance of the facility [REDACTED].

The plant operator is familiar with the calibration and maintenance of the disinfection equipment and he [REDACTED]. The operator also performs the maintenance of the equipment.

The operator is hired on a yearly contract basis with no backup. [REDACTED]

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5.0 Deficiencies in the Community Water Supply

1. The rated design capacity of the plant is 81,000 L/d, which does not meet current demand.
2. Plant does not have a chlorine residual analyzer but the operator checks the residual once per day.
3. Plant has a diesel operated pump for fire protection that is not tested on a regular basis.
4. Safety concerns with the plant include no lock on the outside hatch cover for the backwash drain and no fence around the plant.
5. There are no operation and maintenance manuals for the plant and no as built drawings on site.
6. Emergency spare parts are not available.

7. The community has a hydrant-flushing program in the spring and fall but there is no fire hydrant maintenance program. There is no annual main valve operating/maintenance program in place.
8. The operator is not certified but has received ongoing training through the Circuit Rider Training Program. The operator performs all the maintenance on the system. There is no backup operator.
9. The clear well needs to be cleaned.
10. THM exceedance in the treated water.

6.0 Recommendations

- Investigate capacity of water treatment plant and its ability to meet demand.
- Implement a training program that can lead to certification of the operator.
- Purchase spare chlorine feed pump as backup.
- Install an on-line chlorine residual analyzer with alarms.
- Consider backup power for the water treatment plant.
- Install a lock on the outside hatch cover for the backwash drain. Consider placing a fence around the plant for added safety.
- Clean clearwell.
- Implement an annual valve testing and hydrant maintenance program.
- Develop a contingency plan for the total water supply system.
- Establish a protocol for taking water samples at the water treatment plants, including raw water samples.
- Obtain as-built drawings and operations and maintenance manuals.
- Implement a sewage septic tank inspection program to inspect all septic tanks in the community for proper operation 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 – Medium Risk

- **Medium Risk because of the following:**
 - No chlorine residual analyzer;
 - No operations and maintenance manuals;
 - Potential THM problems in the treated water; and
 - Investigate water treatment plant capacity issue.

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