

## **Biinjitwabik Zaaging (Rocky Bay) First Nation (Band No. 197)**

**Date of Visit:** February 21, 2001

by Marcel Lavigne (OCWA) and Richard Chukra (OFNTSC)

**Site Address:** General Delivery

MacDiarmid, ON P0T 2B0

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

**Operator:** Mervin Hardy

**Location:** The Biinjitwabik Zaaging (Rocky Bay) First Nation community is located approximately 40 km north of Nipigon on Hwy. 11

**Population:** 348 people in the community (December 2000 - INAC)

**No. of Units:** 71 housing units (CAIS)

### **1.0 Description of the Community Water Supply**

Based on the CAIS report, water to the houses in the Biinjitwabik Zaaging (Rocky Bay) community is treated as follows:

- 348 people use piped water
- 71 houses are serviced by a communal water system.

### **2.0 Description of the Community Sewage Facilities**

Based on the CAIS report, sewage from the houses in the Biinjitwabik Zaaging (Rocky Bay) community is treated as follows:

- 348 people use piped sewage
- 71 houses are serviced by a communal sewage system.

### 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.

<b>SECTION Water</b>	<b>SECTION RANKING Water</b>	<b>RISK Water</b>
<b>A. Water Source</b>		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	No lab data available
<b>B. Design</b>		
Biological	0	No lab data available
Chemical	8	Turbidity, lead, aluminum, iron exceedances
Physical	6	Color, dissolved organic carbon exceedances
Risk to Public Health	10	Turbidity, lead, 2 boil water advisories
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	9	
<b>C. Operations</b>		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	7	No plan
Overall Ranking for Operations	9	No chlorine residual analyzer, no operation and maintenance manuals
<b>D. Reporting</b>		
Ranking for Laboratories and Testing	1	Weekly by operator/Dilico
Ranking for Boil Water Advisories	10	2 boil water advisories due to diarrhea and sore throat in children

<b>SECTION Water</b>	<b>SECTION RANKING Water</b>	<b>RISK Water</b>
Overall Ranking for Reporting	6	
<b>E. Operators</b>		
Overall Ranking for Operators	2	Trained and confident
<b>F. Statistical Data</b>		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	8	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
<b>A. Effluent Receiver</b>		
Overall Ranking for Effluent Receiver	8	Water intake close to sewage outfall, in recreational swimming area
<b>B. Design</b>		
Quality of Treated Effluent	0	No data available
Ranking of Design of Sewage Plant	0	Insufficient data
Ranking of Concerns and Hazards within the Plant	10	Safety equipment is at water treatment plant, no locks on sewage treatment plant, tripping hazards at plant, no backup
Condition of Laboratory Equipment	0	
Overall Ranking for Design	10	
<b>C. Operations</b>		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	8	Chemicals are not stored properly, no operation manuals, as-built drawings and service disruptions
<b>D. Reporting</b>		
Overall Ranking for Reporting	8	Backups, flooding due to consistent power failures
<b>E. Operators</b>		
Overall Ranking for Operators	4	Some training and confidence

<b>SECTION Sewage</b>	<b>SECTION RANKING Sewage</b>	<b>RISK Sewage</b>
<b>F. Statistical Data</b>		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	8	High Risk

## 5.0 Communal Water Treatment Supply (71 houses)

### 5.1 Water Source

The surface water source for the treatment plant is Lake Nipigon.

### 5.2 Design

The treatment plant was constructed in 1987 and is a multi media pressure filter plant. The rated design capacity of the plant is not known, however, the plant operator reported that no problems were experienced with the water supply when the community experienced a forest fire in 1999.

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

Date	Location	Exceedances	Result	GCDWQ limit
Apr. 27, 2000	Treated	Colour	20 TCU	15 TCU (AO)
		Iron	1mg/L	0.3 mg/L (AO)
		Lead	0.026 mg/L	0.01 mg/L (HL)
		Turbidity	4.4 NTU	1 NTU (HL)
Apr. 3, 2001	Treated	Aluminum	0.10 mg/L	0.10 mg/L (OG)
		Dissolved Organic Carbon	11 mg/L	5.0 mg/L (AO)

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

There is a diesel-operated pump for fire protection and it is tested on a weekly basis. There is no diesel-operated generator for backup power supply for the water treatment plant. There is insufficient safety equipment on site including no eyewash, and no gas or oxygen detector. The self-contained breathing apparatus (SCBA) is not maintained, i.e. there is no air in the tank and no inspection of tanks is done.

### 5.3 Operations

Sodium hypochlorite is used for disinfection. The disinfection equipment is operational and the disinfectant is stored in accordance with MOE guidelines. There is sufficient supply available and the operator orders the disinfectant every four to five months. There is no on-line chlorine residual analyzer, but the chlorine residual is checked on a daily basis except for on the weekend.

There is a safety concern over a leak in the fire pump exhaust that leaks into the building. Also during the site visit, the inspector noticed that some of the electrical boxes were opened.

Operating and maintenance manuals for the plant equipment and treatment plant are not readily available on site. As-built drawings are available on site. Emergency spare parts are not readily available on site but there is a contact listing of technicians/trade people available and their average response time is three hours.

There is a regular hydrant-flushing program that is done each spring and fall. There is no hydrant maintenance program and no annual main valve operating and maintenance program.

There is a re-occurring problem of power loss, experienced at least once per week and there is not enough power for the equipment to come back on automatically.

#### 5.4 Reporting

Samples for bacteriological testing are taken by the operator once per week and are sent to Dilico in Thunder Bay for testing. The results are kept at the Band Office and are also posted in the Band health station.

The operator stated that there have been health related outbreaks in the last two years. Symptoms were diarrhea and sore throats. There have been two boil water advisories issued by the Dilico Ojibway Child & Family Service.

The turbidity of the treated water is recorded three times daily. The turbidity is not recorded on the weekend.

A chemical analysis of the treated water is conducted once per year by Dilico and seems to be in compliance.

#### 5.5 Operators

##### **s.19(1)**

Mervin Hardy operates the treatment plant. [REDACTED] he receives on-going training to operate and maintain the facility [REDACTED]. The operator is familiar with calibrating and maintaining the disinfection equipment [REDACTED] steam engineer certificate and some plumber training and is prepared to take further training. Some additional training in water treatment and distribution is suggested.

The operator works only three hours per day to look after both the water and the sewage treatment plants. One of the band councilors takes over responsibility of plant during vacation or sickness.

#### **6.0 Deficiencies in the Community Water Supply**

1. Safety equipment on site is not sufficient. There is no eye wash, no gas or oxygen detector and there is no air in the SCBA.
2. There are no operating and maintenance manuals for plant equipment and there are no as-built drawings on site.
3. Several safety hazards/concerns were noted on site including a leak in the fire pump exhaust. Electrical boxes were left open.
4. There is no hydrant maintenance or main valve operating and maintenance program in place.
5. There is no written contingency plan available.
6. There is no on-line chlorine residual analyzer, but the chlorine residual is checked on a daily basis except for on the weekend.
7. There have been two boil water advisories issued by the Dilico Ojibway Child & Family Service on the communal water system in the last year. The operator stated that there was a reported outbreak of diarrhea and sore throats in children.
8. Plant does not have spare parts readily available.

9. There is a re-occurring problem of power loss experienced at least once per week, and there is not enough power for the equipment to come back on automatically.
10. The operator is not certified but reports that he receives on-going training by the Ontario First Nations Technical Services Corporation.
11. Additional tools for maintenance are required.
12. The water plant is not secure from outside access; other people have a key and the gate is not closed and locked.
13. Inappropriate oil storage was found at the plant that should be stored elsewhere.
14. The operator works only three hours a day to operate both water and sewage treatment plants. No chlorine or turbidity analyses are done on the weekend.
15. There are lead and turbidity exceedances in the treated water.

## **7.0 Community Sewage Treatment Facilities (71 houses)**

### **7.1 Effluent Receiver**

Discharge of the treated effluent is to Lake Nipigon.

### **7.2 Design**

The sewage system for this community was constructed in 1987. The raw sewage is collected by gravity to one pumping station, which pumps the sewage to seven septic tanks for pre-treatment. The septic tank effluent then flows to a RBC unit for further treatment. Treated effluent flows to a clarifier and finally to a chlorine contact chamber for disinfection. The operator does not know the rated design capacity of the treatment plant but states that the Dilico lab report on the treated effluent is good.

The septic tanks at the plant are pumped out every year. There is adequate ventilation for the plant and for chemical storage.

There is no backup power in case of hydropower loss. There is no safety equipment on site. The fall arrest and SCBA is at the water treatment plant but the equipment is not well maintained and there is no air in the tank. There is no gas or oxygen meter.

There are no locks on the gates of the treatment plant, the RBC is not locked, and there is an unidentified step in walking to the clarifier that could cause someone to trip and fall into the clarifier. The electrical control panel was open at the site visit.

The plant has an adequate designated laboratory, office/filing and workshop areas, however, the operator needs more hand tools to perform proper maintenance.

### **7.3 Operations**

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional and there is sufficient disinfectant supply on site (the operator orders every four to five months). The sodium hypochlorite is not stored according to MOE guidelines; it was stored beside the baseboard heater.

There are no operating and maintenance manuals for the plant equipment or the treatment plant on site. The as-built drawings are also not available on site.

There are re-occurring service disruptions caused by power failure. There is no backup power and the plant does not start backup automatically.

The sewage pumping station wet wells are cleaned once per year and are routinely maintained. There are no emergency spare parts readily available. There is a contact listing of technicians and trades people available and their average response time is three hours.

The operator reports that there have been raw sewage bypasses from the pump station.

#### 7.4 Reporting

Chlorine residual tests are conducted daily by the operator except on weekends. Effluent samples are sent into Dilico on an annual basis (Thunder Bay) for analysis of Biochemical Oxygen Demand (BOD), suspended solids (SS) and total phosphorus (TP). The chlorine analyses are kept at the treatment plant and the BODs, SS and TP are kept in Thunder Bay.

Two incidents of sewer line plugging and power failure have caused two improper discharges within the last two years. The operator reports that there have been sewage collection backups and basements flooded caused by power failures as there are no backup power generators for the lift station.

#### 7.5 Operators

##### **s.19(1)**

Mervin Hardy operates the treatment plant. [REDACTED] he receives on-going training to operate and maintain the facility [REDACTED]. The operator is familiar with calibrating and maintaining the disinfection equipment [REDACTED] steam engineer certificate and some [REDACTED]. Some additional training in water treatment and distribution is suggested.

The operator works only three hours per day to look after both the water and the sewage treatment plants. One of the band councilors takes over responsibility of plant during vacation or sickness.

### **8.0 Deficiencies in the Community Sewage Facilities**

1. System does not have backup power in case of hydro loss. There are re-occurring service disruptions due to power loss.
2. There is no safety equipment on site. Fall arrest equipment and SCBA are at the water treatment plant but the equipment is not well maintained; there is no air in the SCBA tank.
2. Safety hazards at the plant include, open access to the RBC (no lock) and an unidentified step to the clarifier that could cause tripping.
3. Operating and maintenance manuals and as-built drawings are not available on site.
4. There are no emergency spare parts readily available.
5. There have been raw sewage bypasses from the pumping station.

6. Operator performs chlorine tests daily except for on the weekend.
7. Two improper discharges were experienced in the last two years due to sewer line plugging.
8. Operator reports that sewage collection backups and flooded basement have been caused by power failure.
9. Lift station does not have backup power.
10. Operator is not certified but reports that he received on-going training by the Circuit Rider Training Program.
11. Treated effluent is discharged to a small bay used for recreational purposes. The water plant intake is within one kilometer of the discharge point.
12. Some insulation that is blocking the back door should be removed.

## **9.0 Recommendations**

- Address boils water advisories.
- Implement a training program that can lead to operator certification.
- Obtain adequate safety equipment.
- Consider backup power for the water treatment plant, sewage treatment plant and sewage lift station.
- Implement an annual valve and hydrant maintenance program.
- Develop a contingency plan for the water supply.
- Purchase a spare chlorination unit and eyewash unit.
- Review water-sampling procedures for system.
- Purchase spare equipment and tools.
- Improve security at facilities.
- Address re-occurring power loss problems.
- Address operational problems with the pumping station bypasses and backup.
- Establish and implement a protocol for taking water samples at the water treatment plant, including raw water samples.
- Develop a comprehensive contingency plan to address operational problems, breakdowns, vacations and illnesses, main breaks and boil water advisories.
- Implement sewage collection system annual flushing and cleaning program.
- Clean and maintain pumping station.
- Address problems with sewage collection backup, flooded basement, and improper discharges.
- Obtain as-built drawings and operating and maintenance manuals and keep on site.
- Address leaking fire pump exhaust, and open electrical boxes.
- Address lead and turbidity exceedances in the treated water.

## **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 I  
Sewage Treatment Facility – Class II

## 11.0 **Overall Community Risk Assessment**

### **Water Category - High Risk**

- **High Risk because of the following:**
  - Two boil water advisories;
  - Weekly power failures at facilities;
  - Implementation of security program at facilities; and
  - Potential lean and turbidity exceedances in the treated water.

### **Sewage Category – High Risk**

- **High Risk because of the following:**
  - Frequent power failures, resulting in backups, basement flooding and improper discharges.

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