

Nipissing First Nation (Band No. 220)

Date of Visit: August 2, 2001

By John McGhee (OCWA)

Site Address: RR#1

Sturgeon Falls, ON P0H 2G0

Phone No.: 705-753-2050

Fax No.: 705-753-0207

Tribal Council Affiliation: Toronto Services Centre – Unaffiliated First Nation (South)

Operator: Gary Camanda

Location: The Nipissing First Nation community is located 7 km west of North Bay

Population: 831 people in the community (November 2000 - INAC)

No. of Units: 308 housing units (May 2000 - CAIS)

1.0 Description of the Community Water Supply

Based on the CAIS report, and information supplied to OCWA, water to the houses in the Nipissing community is treated as follows:

- 180 houses are serviced by a communal water system in Garden Village;
- 7 houses are serviced by a communal water system in Duchesnay Well 1;
- 50 houses are serviced by a communal water system in Duchesnay Well 2, 3, and 4;
- 10 houses are serviced by a communal water system in the Harry Couchie system;
- 11 houses are serviced by a communal water system in Arts Lane system;
- 6 houses are serviced by a communal water system in Beaucage Village system;
- 14 houses are serviced by a communal water system in Meadow Site system;
- 7 houses are serviced by a communal water system in VLA system;
- 4 building are serviced by a communal water system in the Business/School system; and
- 19 houses are serviced by individual water supply systems.

2.0 Description of the Community Sewage Facilities

Based on the CAIS report, and information supplied to OCWA, sewage from the houses in the Nipissing community is treated as follows:

- 718 people are serviced by septic tanks; and
- 718 people are serviced by holding tanks with trucked haulage.

- 266 houses are serviced by septic tanks; and
- 266 houses are serviced by holding tanks with trucked haulage.

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.

3.1 Garden Village

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Data not available
B. Design		
Biological	0	Data not available
Chemical	6	Phenol, manganese and sodium exceedances
Physical	6	Colour, DOC, and total dissolved solids exceedances
Risk to Public Health	7	One boil water advisory
Condition of Laboratory Equipment	0	
Overall Ranking for Design	6	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	9	No chlorine residual analyzer, no turbidity meter
D. Reporting		
Ranking for Laboratories and Testing	1	Health Canada conducts tests weekly
Ranking for Boil Water Advisories	7	One boil water advisory

SECTION Water	SECTION RANKING Water	RISK Water
Overall Ranking for Reporting	4	
E. Operators		
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	5	Medium Risk

3.2 Dushessnay Well 1

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Data not available
B. Design		
Biological	0	
Chemical	0	
Physical	0	
Risk to Public Health	0	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	0	Data not available
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	0	Data not available
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	Data not available
E. Operators		
Overall Ranking for Operators	0	Data not available
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	1	Low Risk

3.3 Dushessnay Well 2, 3 and 4

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Data not available
B. Design		
Biological	0	
Chemical	0	
Physical	0	
Risk to Public Health	0	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	0	Data not available
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	0	Data not available
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	Data not available
E. Operators		
Overall Ranking for Operators	0	Data not available
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	1	Low Risk

3.4 **Harry Couchie**

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	8	Turbidity, iron and sodium exceedances
Physical	5	Low hardness
Overall Ranking for Water Source	6	
B. Design		
Biological	0	
Chemical	8	Phenol and iron exceedances
Physical	6	Low hardness and high colour
Risk to Public Health	8	Due to phenol exceedance
Condition of Laboratory Equipment	0	
Overall Ranking for Design	7	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	6	Reoccurring iron problems in water
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	
E. Operators		
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	6	Medium Risk

3.5 Arts Lane

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Data not available
B. Design		
Biological	4	Two exceedances
Chemical	8	Phenol and sodium exceedances
Physical	6	High hardness
Risk to Public Health	8	Due to phenol exceedance
Condition of Laboratory Equipment	0	
Overall Ranking for Design	7	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	0	
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	
E. Operators		
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	6	Medium Risk

3.6 Beaucage Village

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Data not available
B. Design		
Biological	0	
Chemical	1	No exceedances
Physical	1	No exceedances
Risk to Public Health	1	No risk
Condition of Laboratory Equipment	0	
Overall Ranking for Design	2	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	10	No chlorination
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	
E. Operators		
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	10	High Risk

3.7 Meadow Site

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	8	Turbidity and sodium exceedances
Physical	6	Low hardness
Overall Ranking for Water Source	7	
B. Design		
Biological	0	
Chemical	0	
Physical	0	
Risk to Public Health	8	Potentially due to turbidity
Condition of Laboratory Equipment	0	
Overall Ranking for Design	8	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	10	No chlorination
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	
E. Operators		
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	10	High Risk

3.8 VLA

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	5	High sodium
Physical	6	Hardness exceedances
Overall Ranking for Water Source	5	
B. Design		
Biological	0	
Chemical	6	Sodium exceedance
Physical	6	Hardness exceedances
Risk to Public Health	1	No risk
Condition of Laboratory Equipment	0	
Overall Ranking for Design	4	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	10	No chlorination
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	Data not available
E. Operators		
Overall Ranking for Operators	0	Data not available
F. Statistical Data		
Overall Ranking for Individual Wells	0	Data not available
Overall Ranking for the System	10	High Risk

3.9 Business/School System

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Data not available
B. Design		
Biological	0	
Chemical	0	
Physical	0	
Risk to Public Health	0	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	0	Data not available
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	0	Data not available
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	0	
Overall Ranking for Reporting	0	Data not available
E. Operators		
Overall Ranking for Operators	0	Data not available
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	1	Low Risk

4.0 Communal Water Supply (289 houses)

The communal water supply system is a series of wells that service different parts of the community. The complete communal water supply system consists of the following systems: Garden Village, Duchesnay Well 1, Duchesnay Well 2, 3, and 4, Harry Couchie, Arts Lane, Beaucage Village, Meadow Side, and VLA.

4.1 Garden Village Facility

4.1.1 Water Source

The system is fed from groundwater.

4.1.2 Design

The largest treatment plant in the community is the Garden Village Plant; the plant is classified as a Class II water treatment plant. Based on information provided to OCWA, the plant and reservoir were put in operation in 1983. The plant services approximately 180 houses but the current capacity at the plant cannot meet the summer demand.

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

Date	Location	Exceedances	Result	GCDWQ Limit
March 3, 1999	Treated	Colour	19 TCU	15 TCU (AO)
		Dissolved Organic Carbon	7.5 mg/L	5.0 mg/L (AO)
		Phenol	0.006 mg/L	0.005 mg/L (HL)
		Total Dissolved Solids	576 mg/L	500 mg/L (AO)
		Manganese	0.28 mg/L	0.05 mg/L
		Sodium	28 mg/L	20 mg/L*
December 1, 1999	Treated	Colour	16 TCU	15 TCU (AO)
		Dissolved Organic Carbon	7.1 mg/L	5.0 mg/L
		Hardness	40 mg/L	80 – 100 mg/L (OG)
		Total Dissolved Solids	610 mg/L	500 mg/L (AO)
		Manganese	0.07 mg/L	0.05 mg/L
		Sodium	30.8 mg/L	20 mg/L*
May 23, 2001	Elder's Residence	Sodium	24.7 mg/L	20 mg/L*
		Hardness	286 mg/L	80 – 100 mg/L (OG)
		Total Dissolved Solids	782 mg/L	500 mg/L
		Manganese	0.239 mg/L	0.05 mg/L

AO = aesthetic objective; HL = health limit; 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.

Groundwater from the well is treated in a green sand filtration system for iron removal for water softening. Chlorine is used for disinfection.

There is a diesel generator for fire protection and for backup power for the water treatment plant. There is inadequate laboratory/office/filing/maintenance area within the plant. There are minimal safety equipment onsite and some safety hazards include lack of training on sampling procedures, water shortages problems and no diesel tank containment.

The water distribution system is made up of 2 inch diameter water lines.

4.1.3 Operations

The disinfection equipment is functional with sufficient disinfection onsite. There is no on-line chlorine residual analyzer or colilert unit available but chlorine residual is checked daily.

There is minimal safety equipment onsite and some safety hazards include lack of training on sampling procedures, water shortage problems and no diesel tank containment.

There are operating and maintenance manuals for the plant and equipment but as-built drawings need to be obtained. Emergency spare parts are readily available onsite, and there is also a contact listing of technicians and trades people available with a response time of one day.

The operator reports that service disruptions are a result of an aging plant and because of design issues of the plant. There are no re-occurring operational problems.

Operators take samples four to seven time per week, testing for chlorine residual, iron and water softness.

4.2 **Dushesnay Well 1 Facility (7 houses)**

4.2.1 Water Source

There is no data on the water source for the Dushesnay Facility.

4.2.2 Design

The Dushesnay Well 1 facility consists of a pump house supplying water to 7 houses. There is a water reservoir for storage. There is a limited quantity of water available and the water distribution system is of one inch diameter piping.

There is no chemical analysis data available for this system from Health Canada.

4.3 **Dushesnay Well 2, 3 and 4 Facility (50 houses)**

The Dushesnay Well 2, 3, and 4 facility consists of three wells with pumphouses supplying water to approximately 50 houses. There is a water reservoir for water storage. There is a limited quantity of water available and the water distribution system consists of one inch diameter piping. There has been one boil water advisory issued on this system based upon a sample that failed. Subsequent sampling has indicated good sample results.

There is no chemical analysis data available for this system from Health Canada.

4.4 **Harry Couchie Facility (10 houses)**

The Harry Couchie facility has high iron problems with a low pH, so soda ash is added to raise the pH. Chlorine is used for disinfection. The facility has a water reservoir, and services 10 homes.

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

Date	Location	Exceedances	Result	GCDWQ Limit
March 3, 1999	Treated	Hardness	44 mg/L	80 – 100 mg/L (OG)
		Phenol	0.007 mg/L	0.005 mg/L (HL)
		Colour	16 TCU	15 TCU (AO)
December 1, 1999	Raw	Hardness	41 mg/L	80 – 100 mg/L (OG)
		Turbidity	2.3 NTU	1.0 NTU (HL)
		Iron	0.57 mg/L	0.30 mg/L (AO)
		Sodium	33 mg/L	20 mg/L*

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

* 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.

4.5 Arts Lane (6 units and 5 houses)

The Arts Lane water system services 2 apartment buildings with a total of 6 units plus 5 houses. There is a water reservoir for water storage and there is a chlorination system. The water distribution system consists of one inch diameter piping.

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

Date	Location	Exceedances	Result	GCDWQ Limit
March 3, 1999	Treated	Hardness	190 mg/L	80 – 100 mg/L (OG)
		Phenol	0.006 mg/L	0.005 mg/L (HL)
		Sodium	74.6 mg/L	20 mg/L*
December 8, 1999	Treated	Hardness	177 mg/L	80 – 100 mg/L (OG)
		Sodium	59.8 mg/L	20 mg/L*

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

* 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.

4.6 Beaucage Village (6 houses)

The Beaucage Village water system service 6 houses, has a water reservoir for water storage but there is no disinfection system. The water distribution system consists of one inch diameter piping.

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

Date	Location	Exceedances	Result	GCDWQ Limit
March 3, 1999	Treated	No exceedances		
December 1, 1999	Raw	No exceedances		

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

* 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.

4.7 Meadow Site (14 houses)

The Meadow Site water system services 14 houses. There is a water reservoir for water storage and a chlorination system. The water distribution system consists of one inch diameter piping.

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

Date	Location	Exceedances	Result	GCDWQ Limit
March 3, 1999	Raw	Hardness	57 mg/L	80 – 100 mg/L (OG)
		Turbidity	2.6 NTU	1 NTU (HL)
		Sodium	59 mg/L	20 mg/L*
December 1, 1999	Raw	Hardness	52 mg/L	80 – 100 mg/L (OG)
		Turbidity	1.8 NTU	1 NTU (HL)
		Sodium	64.3 mg/L	20 mg/L*

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

* **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.

4.8 VLA Site (7 houses)

The VLA Site water system services 7 houses, has a water softener to remove barium, a water reservoir for water storage and there is no disinfection system. The water distribution system consists of one inch diameter piping.

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

Date	Location	Exceedances	Result	GCDWQ Limit
March 3, 1999	Raw	Hardness	116 mg/L	80 – 100 mg/L (OG)
		Sodium	35.3 mg/L	20 mg/L*
December 1, 1999	Treated	Hardness	15 mg/L	80 – 100 mg/L (OG)
		Sodium	44.2 mg/L	20 mg/L*
May 23, 2001	Raw	Hardness	33 mg/L	80 – 100 mg/L (OG)

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

* **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.

4.9 Business/School System (4 buildings)

There is a two-well system that services three businesses and a school. The school uses chlorination to treat the water for odour control, then an activated carbon unit is used.

5.0 Individual Wells (19 houses)

Based on the CAIS report, 19 houses are serviced by individual wells.

5.1 Reporting

Health Canada conducts bacteriological testing weekly and the results are recorded and kept at the clinic and Public Works. There have been no disease or health related outbreaks in the last 2 years. A boil water advisory has been placed on the Duchesnay Well 2, 3, and 4 system. Turbidity of the water is not recorded and a chemical analysis of treated water is conducted every one to two years. It is unknown whether turbidity or any chemicals have exceeded the GCDWQ.

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

Period	Frequency	Exceedances
99/10/13 to 2001/10/17	Weekly from different locations	<ul style="list-style-type: none">▪ Fecal coliform exceedance – Arts Lane (00/05/03)▪ Fecal coliform exceedance – 3 businesses and a school (00/09/06)▪ Total coliform exceedance – Arts Lane (00/11/29)

5.2 Operators

s.19(1)

Gary Camanda operates the treatment plant.

There is a part-time backup provided by Public Works when the operator is sick or on vacation.

6.0 Deficiencies in the Communal Water Supply

1. The water distribution system has one to two inch diameter lines resulting in insufficient water flow capacity for fire protection in the community.
2. Turbidity of treated water is not tested for the community.
3. There is no disinfection for the Beaucage Village, and VLA facilities.

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 II

*Note: There are more than eight water systems in the community. The highest classed system is ranked (Garden Village is noted as class II)

8.0 Recommendations

- Implement disinfection for Beaucage Village and VLA facilities.
- Investigate phenol exceedances at the Garden Village, Harry Couchie and Arts Lane facilities.
- Investigate turbidity exceedances at the Harry Couchie and Meadow Site facilities.
- Purchase necessary safety equipment.
- Consider installing laboratory and office area for the Garden Village facility.
- Install on-line chlorine residual analyzer at all sites.

- Ensure chemicals are stored in accordance to MOE guidelines.
- Obtain as-built drawings.
- A study is underway by Burnside to review design and capacity of the plants.
- Develop a comprehensive contingency plan to address operational problems, breakdowns, vacations and illnesses, main breaks and boil water advisories.
- Develop a comprehensive operating and maintenance program for the water distribution system to address valve and hydrant maintenance.
- Establish and implement a protocol for taking water samples at the water treatment plants, including raw water samples.
- Implement a training program that leads to operator certification.
- Monitor boil water advisories and chemical analyses exceeding GCDWQ.
- Implement a sewage septic tank inspection program to inspect all septic tanks in the community for proper operations and meeting the required standards.

8.0 Overall Community Risk Assessment

Water Category

- | | |
|-------------------------------------|---|
| ➤ Garden Village | – Medium Risk |
| ➤ Dushesnay Well 1 | – Low Risk |
| ➤ Duchesnay Well 2, 3, and 4 | – Low Risk |
| ➤ Harry Couchie | – Medium Risk |
| ➤ Arts Lane | – Medium Risk |
| ➤ Beaucage Village | – High Risk because of no chlorination |
| ➤ Meadow Site | – High Risk because of no chlorination |
| ➤ VLA | – High Risk because of no chlorination |
| ➤ Business/School | – Low Risk |

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.