

Chippewas of Kettle and Stoney Point First Nation (Band No. 171)

Date of Visit: March 22, 2001

By M.J. Newland (OCWA)

Site Address: R.R. #2, 53 Indian Lane
Forest, ON N0L 2G0

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Tribal Council Affiliation: Southern First Nations Secretariat

Operators: Jack Brown, George Shawnoo, Keith Bressette

Location: The Chippewas of Kettle and Stoney Point community is located approximately 50 km northeast of Sarnia, take Hwy. 40 to the Town of Forest and exit to Hwy. 21 north

Population: 1,120 people in the community (November 2000 - INAC)

No. of Units: 355 housing units (CAIS)

1.0 Description of the Community Water Supply

Based on the CAIS report, water to the houses in the Chippewas of Kettle and Stoney Point community is treated as follows:

- 1,082 people are serviced by a communal water system; and
- 38 people are serviced by individual wells.

- 343 houses are serviced by a communal water system; and
- 12 houses are serviced by individual wells.

2.0 Description of the Community Sewage Facilities

Based on the CAIS report, sewage from the houses in the Chippewas of Kettle and Stoney Point community is treated as follows:

- 170 people are serviced by a communal sewage system;
- 903 people are serviced by individual septic tanks;
- 19 people have other services; and
- 28 people have no services.

- 54 houses serviced by a communal sewage system;
- 286 houses are serviced by individual septic tanks;
- 6 houses have other services; and
- 9 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	6	High Aluminum
Physical	6	High turbidity
Overall Ranking for Water Source	6	
B. Design		
Biological	4	5 exceedances out of 360 samples noted (1.4%)
Chemical	0	No lab data
Physical	0	
Risk to Public Health	1	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	6	Inadequate ventilation, chemical storage, safety equipment.
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	7	Service disruptions, no as-built drawings, no maintenance program; re-occurring operational problems and noted; sludge decant problems
D. Reporting		
Ranking for Laboratories and Testing	1	Health Canada conducts tests weekly

SECTION Water	SECTION RANKING Water	RISK Water
Ranking for Boil Water Advisories	1	No boil water advisories issued
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	Certified, trained and confident
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	5	Medium 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	
B. Design		
Quality of Treated Effluent	7	E. Coli exceedance
Ranking of Design of Sewage Plant	4	
Ranking of Concerns and Hazards within the Plant	5	Corrosion in plant
Condition of Laboratory Equipment	0	
Overall Ranking for Design	5	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	4	No as-built drawings, operational problems
D. Reporting		
Overall Ranking for Reporting	1	Regular testing conducted
E. Operators		
Overall Ranking for Operators	4	Trained and have Level 1 certification
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	4	Low Risk

5.0 Communal Water Treatment Supply (343 houses)

5.1 Water Source

The raw water is drawn from Lake Huron.

The following table summarizes all raw water data that exceeds the GCDWQ, as available from Health Canada:

Date	Exceedance	Result	GCDWQ Limit
May 18, 2000	Turbidity	6.23 NTU	1 NTU
	Aluminum	3.13 mg/L	0.01 mg/L (OG)

OG – operational guideline

5.2 Design

The Chippewas of Kettle and Stoney Point community is serviced by a water treatment plant constructed in 1994. The rated design capacity of the plant is 1,200 m³/d, however, the operator states that the present usage of the system is well below capacity, at approximately 530 m³/d.

The treatment plant is a Napier Ried package water filtration plant with alum addition and sodium hypochlorite disinfection with a SCADA system. There is an on-site water tower with a capacity of 779 m³. The disinfection equipment is functional with sufficient sodium hypochlorite on site. There is an on-line chlorine residual analyzer, which is calibrated daily but no colilert unit. Chlorine residual is also manually checked daily.

There are diesel operated backup power generators for fire protection and water treatment plant operation. There is insufficient safety equipment at the plant such as protective clothing and face shields for chemicals.

5.3 Operations

Some safety concerns include inadequate ventilation for the plant, the chemical storage area, and alum is not stored according to MOE guidelines. Eye shields and safety clothing for mixing chemicals is needed

There is adequate office area and workshop area with appropriate tools to perform maintenance. There is no designated laboratory area.

There are operating and maintenance manuals for plant equipment, but no as-built drawings on site. Emergency repair parts are available, however, there is no contact listing of technicians/trades people available. The response for such personnel is typically about two hours.

There is no annual hydrant flushing or maintenance program, or main valve operating/ maintenance program. In the last two years, service disruptions have been experienced due to a water break. There are some re-occurring operational problems but they were not identified.

There is a problem with the sludge tank decant. Sludge is supposed to be re-circulated back into the system. The operator stated that this upsets the plant, but the consultants have not returned to solve this problem. In the meantime, it is being pumped out into a ditch outside the plant, which is upsetting the local residents.

5.4 Reporting

Indian Health Services conducts bacteriological testing every week on the communal water system. The results and analyses are kept at Indian Health Services. The operators report that there is no contact between Health Canada and them however, Health Canada records indicate that bacteriological sampling is done on a weekly basis.

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

Period	Frequency	Regularity	Exceedances
99/11/08 to 01/10/09	Weekly	<ul style="list-style-type: none"> ▪ No months missing 	<ul style="list-style-type: none"> ▪ 2001/07/10 – total coliform and E. Coli at a residence ▪ 2001/07/10 – total coliform at a residence ▪ 2001/06/28 – total coliform at residence ▪ 2001/06/12 – total coliform residence ▪ 2000/08/08 – total coliform/E.Coli at a residence

There were no chemical analyses available from Health Canada.

In the last two years, there have not been any disease or other health related outbreaks. Health Canada has not issued any boil water advisories on the communal water system.

5.5 Operators

Keith Bressette, George Shawnoo, and Jack Brown are the operators at the water and sewage treatment plants. Two of the operators are certified as Class II water treatment, Class I water distribution, Class I sewage treatment, and Class I sewage collection. The operators are familiar with calibrating and maintaining the disinfection equipment, and they appear to be confident in their operational techniques.

The operators require ongoing formal training in the operation of the sewage treatment facility, including preventative maintenance and UV disinfection. Additional training in the operating and maintenance of the UV and RBC systems is recommended.

The turbidity of the treated water is not recorded, and treated water is not submitted for chemical analysis. The operators are unaware whether turbidity or other chemical parameters exceed the GCDWQ.

1. Eye shields and safety clothing for mixing chemicals is needed.
2. There are operating and maintenance manuals for plant equipment but no as-built drawings and no operating manuals for the plant.
3. The operators do not perform a hydrant flushing and maintenance program or valve operating and maintenance program on the water distribution system.
4. Service disruptions included a watermain break.
5. There is no written contingency plan available.
6. Record keeping needs improvement
7. The chlorine equipment was working and a free chlorine test is done once a day along with continuous testing done by the on-line chlorine analyzer.

8. Chemical analysis and turbidity tests of treated water are not performed.
9. The sludge tank decant re-circulation system needs to be repaired.
10. There is insufficient ventilation for plant chemical storage.

6.0 Communal Sewage Facilities (54 houses)

6.1 Effluent Receiver

The effluent is discharged into Shanananda Creeks.

6.2 Design

The Chippewas of Kettle and Stoney Point community is serviced by a sewage treatment plant constructed in 1994. The rated design capacity is 240 m³/d, however, the operator states that the present usage of the system is well below capacity at approximately 120 m³/d. The treatment plant is classified as Class II.

The facility is a rotating biological contactor (RBC) with alum addition and UV disinfection. There is one sewage pumping station, which is cleaned every three months. The chemicals are stored in accordance with MOE guidelines.

The following table summarizes the treated effluent chemical data from Health Canada showing frequency of sampling and exceedances:

Period	Frequency	Date	Exceedance	Result	Guideline
April 14, 1999 to August 23, 2001	1 per week (total of 84 samples)	August 16, 2001	TSS	119 mg/L	25 mg/L
		August 1, 2001	TSS	63 mg/L	25 mg/L
		June 22, 2001	BOD ₅	123 mg/L	20 mg/L
			TSS	127 mg/L	25 mg/L
			TP	4.75 mg/L	1.0 mg/L
		May 30, 2001	BOD ₅	224 mg/L	20 mg/L
			TSS	105 mg/L	25 mg/L
			TP	3.07 mg/L	1.0 mg/L
		September 6, 2000	TSS	26 mg/L	25 mg/L
		August 17, 2000	BOD ₅	130 mg/L	20 mg/L
			TSS	86 mg/L	25 mg/L
			TP	4.25 mg/L	1.0 mg/L
		April 22, 1999	TP	1.84 mg/L	1.0 mg/L

An evaluation of operations should be under taken to address these exceedances.

There is a diesel operated backup power generator for the treatment plant, and it is operated on a weekly basis. There has not been any raw sewage bypassing from the pumping station.

6.3 Operations

There is adequate office and workshop areas with appropriate tools to perform maintenance. There is no separate laboratory area. There is adequate safety equipment and spare parts on site.

There are maintenance manuals for plant equipment, but no as-built drawings or operating and maintenance manuals on site. Emergency repair parts are available. There is also a contact list of technicians/trades people available with a two hour response time.

In the last two years, there have been no service disruptions. Serious corrosion has developed in the plant and needs to be addressed to prevent a plant failure.

6.4 Reporting

Samples are taken by plant personnel weekly and taken to private laboratories for analysis. The results are recorded and kept at the plant.

The following table summarizes the treated effluent bacteriological data available from Health Canada, showing frequency of sampling and exceedances:

Period	Frequency	Regularity	Exceedances
November 8, 1999 to August 14, 2001	1 -2 times a month	<ul style="list-style-type: none">▪ Months missing 1999: Dec.▪ Months missing 2000: Feb., Mar., Apr., May, Aug., Sep., Nov., Dec.▪ Months missing 2001: Mar., Jun.	<ul style="list-style-type: none">▪ July 17, 2000 - 1.0×10^3 E. Coli▪ April 10, 2000 - 1.0×10^3 E. Coli

There have been no disease or health related outbreaks in the last two years, no improper discharges, no odour complaints, no sewage collection backups, and no basement flooding.

6.5 Operators

Keith Bressette, George Shawnoo, and Jack Brown are the operators at the water and sewage treatment plants. Two of the operators are certified as Class II water treatment, Class I water distribution, Class I sewage treatment, and Class I sewage collection. The operators are familiar with calibrating and maintaining the disinfection equipment, and they appear to be confident in their operational techniques.

The operators require ongoing formal training in the operation of the sewage treatment facility, including preventative maintenance and UV disinfection. Additional training in the operating and maintenance of the UV and RBC systems is recommended.

7.0 Deficiencies in the Communal Sewage Facilities

1. There are maintenance manuals, but no operating and maintenance manuals or as-built drawings on site.
2. There is a corrosion problem at the plant.
3. Record keeping needs improvement.

4. Records indicate a number of exceedances of BOD₅, TSS and TP in the treated effluent. These exceedances should be evaluated.
5. Bacteriological testing of treated effluent is infrequent.

8.0 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 these plant as follows:

Water Treatment Facility- Class II
Sewage Treatment Facility- Class II

9.0 Recommendations

- Establish and implement a protocol for taking water samples at the water treatment plants, including raw water samples. Sample results to be shared with operators.
- Setup protocol to ensure the operators receive the bacteriological and chemical test results from Health Canada.
- Perform regular chemical analyses on water samples.
- Install turbidity meter.
- Implement a training program for the operators.
- Review and purchase required safety equipment.
- Develop a comprehensive operating and maintenance program on the water distribution system to address valve and hydrant maintenance.
- Implement a preventative maintenance program for the treatment facilities.
- Obtain as-built drawings and operating and maintenance manuals.
- Repair sludge decant re-circulate system.
- Review ventilation issues in the plant.
- Develop a contingency plan for the total community water system.
- Develop and implement a contingency plan for emergency situations at the sewage treatment plant.
- Address corrosion problem.
- Investigate reasons for exceedances in treated effluent.
- Implement a sewage septic tank inspection program to inspect all septic tanks in the community for proper operations and meeting the required standards.
- Implement an individual well inspection program to inspect all individual wells in the community.

10.0 Overall Community Risk Assessment

Water Category – Medium Risk

➤ **Medium Risk because of the following:**

- Sludge decant problems;
- Inadequate safety equipment ventilation, chemical storage; and
- No records of chemical analyses.

Sewage Category – Low Risk

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.