

Mohawks of Akwesasne First Nation (Band No. 159)

Date of Visit: June 28, 2001

By M.J. Newland (OCWA)

Site Address: P.O. Box 579

Cornwall, ON K6H 5T3

Phone No.: 613-575-1884 (for water and sewage)

Tribal Council Affiliation: Unaffiliated First Nations (South)

Operators: Dione Mitchell, Cyrus White, John Lazore

Location: The Mohawks of Akwesasne First Nation community is located southeast of the City of Cornwall

Population: 7,506 people in the community (November 2000 - INAC)

No. of Units: 1,265 housing units (CAIS)

1.0 Description of Community Water Supply

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

- 2,759 people use piped water
- 4,747 people use individual wells

- 465 houses are serviced by communal water systems; and
- 800 houses are serviced by individual wells.

2.0 Description of Community Sewage Facilities

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

- 2,189 people use piped sewage
- 5317 people use septic tanks

- 369 houses are serviced by communal sewage systems; and
- 896 houses are serviced by 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.

3.1 Kanatakon (St. Regis)

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	4	4 positive colilert samples out of 48 (8%)
Chemical	1	No exceedances
Physical	1	No exceedances
Overall Ranking for Water Source	2	
B. Design		
Biological	1	No positive colilert samples
Chemical	1	No exceedances
Physical	1	No exceedances
Risk to Public Health	1	No boil water advisories reported
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	1	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	1	
D. Reporting		
Ranking for Laboratories and Testing	1	Regular colilert testing
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	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	2	Low Risk

3.2 **Tsisnaihne (Snve)**

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	5	5 positive colilert samples out of 48 (10%)
Chemical	1	No exceedances
Physical	5	Iron and manganese exceedances
Overall Ranking for Water Source	4	
B. Design		
Biological	1	No exceedances
Chemical	1	No exceedances
Physical	1	No exceedances
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	1	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	5	Emergency repair parts not available
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	3	Low Risk

3.3 Block 97 – Kawehnoke (Cornwall Island)

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	5	5 positive colilert results out of 48 (10%)
Chemical	0	Data not available
Physical	0	Data not available
Overall Ranking for Water Source	5	
B. Design		
Biological	0	Data not available
Chemical	0	Data not available
Physical	0	Data not available
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	4	Insufficient laboratory and office areas
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	6	Service disruptions due to mud in wells
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	3	Low Risk

3.4 **Tsisnaihne East (Snye East)**

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Lab data not available
B. Design		
Biological	0	No lab
Chemical	0	No lab
Physical	0	No lab
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	4	Insufficient laboratory and office areas
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	4	No annual main valve operating and maintenance program
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	3	Low Risk

3.5 Daycare (Cornwall Island)

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Lab data not available
B. Design		
Biological	1	No exceedances
Chemical	1	No exceedances
Physical	5	Iron exceedance
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	6	Inadequate office/laboratory areas and ventilation
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	4	No as-built drawings
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	3	Low Risk

3.6 Arena (Cornwall Island)

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Lab data not available
B. Design		
Biological	1	2 positive colilert samples out of 48 (4%) that retested negative the following day
Chemical	0	Lab data not available
Physical	0	Lab data not available
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	5	Inadequate office/laboratory areas and ventilation
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	1	
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	1	No boil water advisory
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	2	Low Risk

3.7 Akwesasne Mohawk School

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	Lab data not available
B. Design		
Biological	1	No exceedances
Chemical	0	Lab data not available
Physical	0	Lab data not available
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	5	Inadequate office/laboratory areas and ventilation
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	1	
D. Reporting		
Ranking for Laboratories and Testing	0	
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Wells	0	
Overall Ranking for the System	2	Low 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.

4.1 Kanatakon (St. Regis)

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	Information not available
B. Design		
Quality of Treated Effluent	4	2 out of 7 exceedances of TSS
Ranking of Design of Sewage Plant	4	
Ranking of Concerns and Hazards within the Plant	0	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	4	No lab or office areas
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	8	By-passes are regular due to infiltration problems; bearing failures in RBC
D. Reporting		
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	4	Low Risk (assuming that new facilities will address bypassing)

4.2 Tsisnaihne (Syne)

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	Information not available
B. Design		
Quality of Treated Effluent	8	6 out of 7 BOD and TSS exceedances
Ranking of Design of Sewage Plant	8	
Ranking of Concerns and Hazards within the Plant	0	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	8	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	8	Sewage by-passing, electrical problems
D. Reporting		
Overall Ranking for Reporting	4	Monthly sampling of effluent, but some months are missing
E. Operators		
Overall Ranking for Operators	4	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	8	High Risk

4.3 Block 97 - Kawehnoke (Cornwall Island)

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	Information is not available
B. Design		
Quality of Treated Effluent	5	3 out of 4 exceedances of BOD and TSS
Ranking of Design of Sewage Plant	4	
Ranking of Concerns and Hazards within the Plant	1	None noted
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	5	No lab/office; may be exceeding capacity of plant
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	5	Service disruptions due to RBC breakdown; overloading of RBC
D. Reporting		
Overall Ranking for Reporting	4	Monthly effluent testing but is irregular
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	4	Low Risk (assuming that new facilities will address bypassing)

4.4 Daycare (Cornwall Island)

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	1	Recirculating tile bed disposal
B. Design		
Quality of Treated Effluent	0	No testing
Ranking of Design of Sewage Plant	1	
Ranking of Concerns and Hazards within the Plant	5	No uniforms for operators
Condition of Laboratory Equipment	0	
Overall Ranking for Design	1	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	1	
D. Reporting		
Overall Ranking for Reporting	4	No effluent testing
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	3	Low Risk

4.6 Arena (Cornwall Island)

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	Information is not available
B. Design		
Quality of Treated Effluent	1	No exceedances
Ranking of Design of Sewage Plant	1	
Ranking of Concerns and Hazards within the Plant	5	Uniforms are not available for operators; concern over cross-contamination
Condition of Laboratory Equipment	0	
Overall Ranking for Design	5	No lab or office area, no backup generator
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	1	
D. Reporting		
Overall Ranking for Reporting	4	Monthly sampling, but it is irregular
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	4	Low Risk

4.6 Akwesasne Mohawk School (Cornwall Island)

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	Information is not available
B. Design		
Quality of Treated Effluent	3	1 out of 5 exceedances of TSS
Ranking of Design of Sewage Plant	0	
Ranking of Concerns and Hazards within the Plant	5	Uniforms are not available for operators; concern over cross-contamination
Condition of Laboratory Equipment	0	
Overall Ranking for Design	4	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	1	
D. Reporting		
Overall Ranking for Reporting	4	Monthly testing but it is irregular
E. Operators		
Overall Ranking for Operators	1	All operators have at least OIT certificate
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	4	Low Risk

5.0 Communal Water Treatment Plant (465 houses) – 7 Communal Systems

The Mohawks of Akwesasne community communal water systems are as follows:

- four communal water systems - Kanatakon (St. Regis), Tsisnaihne (Snye), Block 97, and Tsisnaihne East (Snye East);
- three water systems that service individual buildings (Daycare, Akwesasne Mohawk School, and Arena) that were visited by OCWA; and
- approximately 19 other small communal water supply systems operated by Mohawks of Akwesasne.

5.1.1 Kanatakon (St. Regis)

5.1.2 Water Source

Raw water is drawn from the St. Lawrence River.

5.1.3 Design

The Kanatakon (St. Regis) communal water supply consists of a river intake, a treatment plant with a DynaSand filtration system, chlorination and alum addition, and an on-site water reservoir.

Two chemical sample analyses were available from Council, taken from St. Regis water treatment plant (WTP) raw and treated water, on June 13, 2001. No exceedances of the GCDWQ were noted for these samples.

The system was constructed in 1998 and is classified as a Class II plant. The rated design capacity is 2,063 m³/day. There is an on site water reservoir with a capacity of 1,900 m³.

There is diesel backup power for the water plant, which is tested on a regular basis. Laboratory, office and workshop areas are available at the plant and serves as the Hub to the other facilities in the Mohawks of Akwesasne community.

5.1.4 Operations

Sodium hypochlorite is added for disinfection. Aluminum is used as a coagulant in the treatment process. All chemicals are stored according to MOE guidelines. At the time of the OCWA visit, the disinfection equipment was functional and there was sufficient sodium hypochlorite available on site. There are three on-line chlorine residual analyzers and they are calibrated when needed, but checked daily against the manual chlorine residual. The operators are familiar with the chlorine equipment, but the calibrations are completed by an outside source. A colilert unit is available and the operators use it.

There are maintenance manuals for plant equipment and as-built drawings on site. Emergency repair parts are available and there is a contact listing of technicians/trades people available. The response for such personnel is one to two hours.

Fire hydrants are flushed on a quarterly basis, and there is a fire hydrant maintenance program, but there is no annual main valve operating and maintenance program.

There were no safety concerns with the plant, however operators should be supplied with uniforms to reduce the possibility of taking any contaminants back to their houses.

5.1.5 Reporting

Colilert testing is conducted on a weekly basis from 6 to 8 locations including the raw water, filtered water, water after the GAC and treated water from 2 to 3 locations in the distribution system. Retesting and remedial action in response to exceedances are well documented.

The following table summarizes the 2001 colilert data available from Council.

Period	Frequency	Exceedances
January to December, 2001	Weekly	▪ 4 positive total coliform results for WTP raw water

5.2.1 Tsisnaihne (Snye)

5.2.2 Water Source

Water is drawn from two wells.

5.2.3 Design

The Snye communal water supply consists of two wells, a pressure sand filtration system, chlorination, and on-site water reservoir.

The plant has a water softener and was constructed in 1990 and upgraded in 1994. Water is drawn from two wells. The rated design capacity for the plant is 150 m³/day.

The following table summarizes exceedances noted from three chemical analyses available from Council.

Date	Location	Exceedances	Result	GCDWQ limit
June 1, 2001	Snye WTP Well # 1	Iron	0.42 mg/L	0.3 mg/L (AO)
		Manganese	0.064 mg/L	0.05 mg/L (AO)
	Snye WTP Well # 2	No exceedances noted		
	Snye WTP Treated	No exceedances noted		

AO = aesthetic objective

There is diesel backup for power loss and it is tested on a regular basis. Laboratory, office and workshop areas are available at the plant.

5.2.4 Operations

Sodium hypochlorite is added for disinfection. All chemicals are stored according to MOE guidelines. At the time of the OCWA visit, the disinfection equipment was functional and there was sufficient sodium hypochlorite available on site. There is one on-line chlorine residual analyzer, but it was not calibrated. Chlorine residuals are manually analyzed on a daily basis. The operators are familiar with the chlorine equipment. A colilert unit is available and the operators use it.

There are operating and maintenance manuals for plant equipment and as-built drawings on site. Emergency repair parts are not available on site, but there is a contact listing of technicians/trades people available. The response for such personnel is one to two hours.

Fire hydrants are flushed on a quarterly basis, and there is a fire hydrant maintenance program. An annual main valve operating and maintenance program is in place.

There were no safety concerns with the plant, however operators should be supplied with uniforms to reduce the possibility of taking any contaminants back to their houses.

5.2.5 Reporting

Colilert testing is conducted in a weekly basis from 10 locations, including raw, treated, and distribution system water. The following table summarizes the 2001 colilert data available from Council.

Period	Frequency	Exceedances
January to December, 2001	Weekly	<ul style="list-style-type: none"> ▪ Well 1 – 6 exceedances ▪ Well 2 – 4 exceedances ▪ Pumphouse # 2 raw – 4 exceedances ▪ WTP raw – 1 exceedance ▪ Distribution System – 2 exceedances

The exceedances are documented well, along with the retesting and remedial actions taken (i.e chlorination).

5.3.1 Block 97 - Kawehnoke (Cornwall Island)

5.3.2 Water Source

The Block 97 communal water supply consists of two wells, a BCA pressure filter, and an on-site water reservoir.

The following table summarizes the exceedances for one raw water sample result available from Council.

Date	Location	Exceedance	Result	GCDWQ Limit
June 11, 2001	Raw Well # 1		No exceedances	
	Raw Well # 2		No exceedances	

5.3.3 Design

The water treatment plant was constructed in 1990. The rated design capacity for the plant is 120 m³/day. There is an on site water reservoir with 175-m³ capacity. Another 175-m³ capacity water reservoir is under construction. The plant services a 50-bed chronic care facility, a 36-unit apartment, and 10 houses.

The following table summarizes the exceedances for one treated water sample result available from Council.

Date	Location	Exceedance	Result	GCDWQ Limit
June 11, 2001	Clear Well	No exceedances		

AO = aesthetic objective

There is diesel backup for power loss and it is tested on a regular basis. Laboratory and office areas are insufficient within the plant, but a workshop area is available.

5.3.4 Operations

Sodium hypochlorite is added for disinfection. All chemicals are stored according to MOE guidelines. At the time of the OCWA visit, the disinfection equipment was functional and there was sufficient sodium hypochlorite available on site. There is one on-line chlorine residual analyzer, and it is calibrated every three months. Chlorine residuals are manually analyzed on a daily basis. The operators are familiar with the chlorine equipment, but the calibrations are completed by an outside source. A colilert unit is available and the operators use it.

There are maintenance manuals for plant equipment and as-built drawings on site. Emergency repair parts are available on site and there is a contact listing of technicians/trades people available. The response for such personnel is one to two hours.

Fire hydrants are flushed on an annual basis and are maintained through an annual maintenance program. An annual main valve operating and maintenance program is in place. Service disruptions have occurred because of mud in the wells.

There are no washroom facilities at this plant.

There were no safety concerns with the plant, however operators should be supplied with uniforms to reduce the possibility of taking any contaminants back to their houses.

5.3.5 Reporting

Colilert testing is conducted on a weekly basis from 16 locations, including raw, treated and distribution system water.

The following table summarizes the 2001 colilert data available from Council.

Period	Frequency	Exceedances
January 2000 to September 2001	Weekly sampling from Cornwall Island WTP and Chronic Care facility	<ul style="list-style-type: none"> ▪ Cornwall Island WTP – 1 positive colilert result out of 87 samples

The exceedances are well documented along with retesting and remedial actions taken (i.e. chlorination).

5.4.1 Tsisnaihne East (Snye East)**5.4.2 Water Source**

The Snye East communal water supply consists of two wells, with two pumphouses and a chlorination disinfection system with a cartridge filter system.

5.4.3 Design

The operator did not know when the plant was constructed. The operator did not know the rated design capacity for the plant. This plant is on Cornwall Island and services approximately 35 houses.

There is no diesel backup for power loss. Laboratory and office areas are insufficient within the plant, but a workshop area is available. Samples are taken to the Kanatakon facility for analysis.

5.4.4 Operations

Sodium hypochlorite is added for disinfection. All chemicals are stored according to MOE guidelines. At the time of the OCWA visit, the disinfection equipment was functional and there was sufficient sodium hypochlorite available on site. There are no on-line chlorine residual analyzers. Chlorine residuals are manually analyzed on a daily basis. The operators are familiar with the chlorine equipment. A colilert unit is available and the operators use it.

There are operating and maintenance manuals for plant equipment and as-built drawings on site. Emergency repair parts are available on site, and there is a contact listing of technicians/trades people available. The response for such personnel is 24 hours.

An annual main valve operating and maintenance program is not in place.

There were no safety concerns with the plant, however operators should be supplied with uniforms to reduce the possibility of taking any contaminants back to their houses.

5.5.1 Daycare (Cornwall Island)**5.5.2 Water Source**

The Daycare Centre water supply is serviced by one-well with chlorination.

5.5.3 Design

The plant is not classified and the design capacity of the plant is unknown.

The following table summarizes the exceedance for the one treated water sample result available from Council.

Date	Exceedance	Result	GCDWQ Limit
September 14, 2001	Iron	0.677 mg/L	0.3 mg/L (AO)

AO = aesthetic objective

5.5.4 Operations

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional with sufficient disinfectant on site. The chemicals are stored in accordance to MOE guidelines. There is no on-line residual analyzer at the plant, but chlorine residual is being manually checked on a daily basis. The operator also uses a colilert unit.

There is no diesel operated backup power generator for the water treatment plant. There is sufficient safety equipment available including equipment for chemical handling.

Some safety concerns include inadequate office/laboratory area and ventilation for the plant and chemical storage area. There are also no uniforms available for the operators, which may increase the possibility of taking any contamination back to their houses. There are no other safety concerns and there have been no service disruptions.

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

5.5.5 Reporting

Period	Frequency	Exceedances
January to December, 2001	Weekly	▪ No positive colilert results

5.6.1 Arena (Cornwall Island)

5.6.2 Water Source

The Arena water supply is serviced by a two well system with chlorination.

5.6.3 Design

A water treatment plant that was constructed in 1994 services the Arena. The plant is not classified, the design capacity of the plant is unknown and there are new on-site clear wells constructed in 2000. The plant services six houses along with the Arena.

5.6.4 Operations

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional with sufficient disinfectant on site. The chemicals are stored in accordance to MOE guidelines. There is no on-line residual analyzer at the plant, but chlorine residual is being manually checked on a daily basis. The operator also uses a colilert unit.

There is no diesel operated backup power generator for the water treatment plant. There is sufficient safety equipment at the plant including equipment for chemical handling and confined space entry.

Some safety concerns include inadequate office/laboratory area and ventilation for the plant and chemical storage area. There are also no uniforms available for the operators, which may increase the possibility of taking any contamination back to their houses. There are no other safety concerns and there have been no service disruptions.

There are operating and maintenance manuals for plant equipment and as-built drawings on site. Emergency repair parts are available and there is a contact listing of technicians/trades people available. The response for such personnel is about one to two hours.

5.6.5 Reporting

Period	Frequency	Exceedances
January to December, 2001	Weekly	▪ Arena – 2 positive colilert results

5.7.1 Akwesasne Mohawk School

5.6.2 Water Source

The Akwesasne Mohawk School water supply is serviced by a well system with chlorination.

5.6.3 Design

The plant is not classified and the design capacity of the plant is unknown.

5.6.4 Operations

This water supply system services the Akwesasne Mohawk School. The plant water supply is serviced by a well system with chlorination not classified and the design capacity of the plant is unknown.

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional with sufficient disinfectant on site. The chemicals are stored in accordance to MOE guidelines. There is no on-line residual analyzer at the plant, but chlorine residual is being manually checked on a daily basis. The operator also uses a colilert unit.

There is no diesel operated backup power generator for the water treatment plant. There is sufficient safety equipment at the plant including equipment for chemical handling.

Some safety concerns include inadequate office/laboratory area and ventilation for the plant and chemical storage area. There are also no uniforms available for the operators, which may increase the possibility of taking any contamination back to their houses. There are no other safety concerns and there have been no service disruptions.

There are operating and maintenance manuals for plant equipment and as-built drawings on site. Emergency repair parts are available and there is a contact listing of technicians/trades people available. The response for such personnel is about one to two hours.

5.5.6 Reporting

Period	Frequency	Exceedances
January to December, 2001	Weekly	▪ No positive colilert results

6.0 19 Other Small Water Supply Systems

There are approximately 19 other small water supply systems operated by the Mohawks of Akwesasne with each system serving between 5 and 20 houses. Most of these systems have chlorination disinfection.

7.0 Individual Wells (800 houses)

Based on the CAIS report, 800 houses are serviced by individual wells or other services.

5.8 Reporting for All Sites

Chlorine samples are taken daily for each of the water supply systems. Sample analyses for all of the communal systems along with the Akwesasne Mohawk School and Arena samples are kept at the Kanatakon water treatment plant. The sample analyses for the Peace Tree Mall and for the Daycare are kept at the Block 97 water treatment plant.

Neither disease nor health related outbreaks have occurred in the last two years in the Mohawks of Akwesasne community.

One boil water advisory has been issued on the Akwesasne Mohawk Board of Education (AMBE) individual well system due to re-occurring positive colilert results. A UV lamp unit was ordered for installation.

One boil water advisory has been issued on the Traveling Lodge individual system. A Ministry of Health result for the Traveling Lodge with overgrown total coliform and E. Coli was reported on January 9, 2001. Although, the colilert test for the same sample was negative, the boil water advisory was issued as a precaution.

Turbidity is recorded weekly for all of the systems except for Kanatakon, where recordings are taken daily. No chemical analyses are done at the Daycare or the Peace Tree Mall. Chemical analyses are conducted yearly for the communal systems.

Samples for bacteriological testing are submitted to the Ministry of Health laboratory every week from all of the sites.

5.9 Operators

Dione Mitchell, Cyrus White and John Lazore are three of the eight operators for the water and sewage treatment plants. Only one operator operates each plant at a time, and the location where each operator goes is decided on a weekly/monthly basis.

All operators have their Operator In Training certificate (OIT) and one operator has his Class I. Two operators are waiting for the Class II and Class I test results. Mohawks of Akwesasne should continue with their formal training program to get all operators trained to the level of the facility they operate. All operators are familiar with the disinfection equipment.

6.0 Deficiencies in the Communal Water Supply

1. There is no diesel backup for power loss for three of the seven water treatment plants visited by OCWA. Kanatakon, Snye, Block 97 and Akwesasne Mohawk School have backup power.

2. All of the systems serving individual buildings and the Snye East plant have no on-line chlorine analyzers, however chlorine residuals are checked manually on a daily basis.
3. There have been no service disruptions at six of the seven plants. Block 97 has had service disruptions due to mud in the wells.
4. Fire hydrants are flushed on an annual basis at three of the four communal water systems. Fire hydrants are maintained regularly at two communal water systems. There are no fire hydrants at Snye East.
5. The Mohawk of Akwesasne use the Kanatakon laboratory facilities as a Hub for the other treatment facilities in the community. Samples from other facilities are brought to the Kanatakon laboratories for analysis.
6. All facilities have maintenance/operating manuals and as-built drawings available.
7. Emergency repair parts are available for all sites.

7.0 Communal Sewage Facilities (369 houses)

The Mohawks of Akwesasne community is comprised of:

- Three communal sewage systems – Kanatakon (St. Regis), Tsisnaihne (Snye), and Block 97; and
- Three systems that service individual buildings - Daycare, Arena and Akwesasne Mohawk School.

All of the communal sewage treatment systems consists of a rotating biological contact (RBC) system with chlorination, except the Daycare, which has septic tanks and a recirculating tile bed.

7.1.1 Kanatakon (St. Regis)

7.1.2 Effluent Receiver

Effluent is discharged into the St. Lawrence River.

7.1.3 Design

This sewage treatment plant is an RBC facility that was constructed in 1991. The design capacity is 400 m³. Ferric chloride is used as a coagulant. There are two sewage pumping stations. **The plant is currently undergoing an expansion and construction should be complete in late 2001.**

The following table summarizes the 2001 effluent sample data available from Council. Influent and effluent samples are taken on a monthly basis, although one month is missing from the data set provided by Council. The effluent limits specified in the table below are from the Environment Canada, April 1976 publication titled “Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments”.

Date	Exceedance	Result	Limit
1/10/01	No exceedances		
2/2/01	No exceedances		
2/28/01	TSS	145 mg/L	25 mg/L
3/28/01	No exceedances		
4/24/01	TSS	30 mg/L	25 mg/L
6/29/01	No exceedances		
7/26/01	No exceedances		

The plant is equipped with backup power in case of power loss. There is adequate workshop space, but insufficient laboratory and office areas. There are operation and maintenance manuals or operations manuals and as-built drawings on site.

7.1.4 Operations

The sewage pumping stations are cleaned monthly. Approximately eight raw sewage bypasses from the pumping stations have occurred within the last two years due to infiltration. Service disruptions have occurred due to bearing failures on the RBC.

There are emergency repair parts available on site. And there is a contact listing of technicians and trades people. The response time for such personnel is within one to two hours.

7.2.1 Tsisnaihne (Snye)

7.2.2 Effluent Receiver

Effluent is discharged into a wetland.

7.2.3 Design

This sewage treatment plant is an RBC facility. The one pumping station pumps effluent to the sewage treatment facility and where it is treated using RBC technology. From the treatment facility, it is pumped to a two-cell lagoon for further treatment.

The following table summarizes the 2001 effluent sample data available from Council. Although one month is missing in the data set provided by Council. Influent and effluent samples are taken on a monthly basis. The effluent limits specified in the table below are from the Environment Canada, April 1976 publication titled "Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments".

Date	Exceedance	Result	Limit
1/17/01	BOD	51.5 mg/L	20 mg/L
	TSS	50 mg/L	25 mg/L
1/24/01	BOD	42.9 mg/L	20 mg/L
	TSS	115 mg/L	25 mg/L

Date	Exceedance	Result	Limit
2/28/01	TSS	145 mg/L	25 mg/L
3/30/01	BOD	54.1 mg/L	20 mg/L
	TSS	99 mg/L	25 mg/L
4/25/01	TSS	89 mg/L	25 mg/L
7/12/01	TSS	51 mg/L	25 mg/L
8/15/01	No exceedances		

The plant is equipped with backup power in case of power loss. There is adequate workshop space, but insufficient laboratory and office areas. Samples are taken to the Kanatakon laboratory for analysis. There are maintenance/operations and as-built drawings on site.

7.2.4 Operations

The sewage pumping stations are cleaned monthly. Raw sewage has been bypassing from the pumping station. No chlorine is used for disinfection. Ferric chloride is used as a coagulant. Service disruptions have occurred due to pumping station electrical problems.

Emergency repair parts are available and there is a contact listing of technicians and trades people. The response time for such personnel is within one to two hours.

7.3.1 Block 97 – Kawehnoke (Cornwall Island)

7.3.2 Effluent Receiver

Effluent is discharged into the St. Lawrence River.

7.3.3 Design

This sewage treatment plant is a RBC facility that was constructed in 1990. The design capacity is 75 m³. There is one sewage pumping station. **The plant is currently undergoing an expansion and construction should be completed in August 2001.**

The following table summarizes the January to August 2001 effluent sample data available from Council. Influent and effluent samples are taken on a monthly basis, although some months are missing in the data set provided by Council. The effluent limits specified in the table below are from the Environment Canada, April 1976 publication titled "Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments".

Date	Exceedance	Result	Limit
1/12/01	BOD	20.8 mg/L	20 mg/L
	TSS	89 mg/L	25 mg/L
3/1/01	TSS	67 mg/L	25 mg/L
4/12/01	BOD	42.9 mg/L	20 mg/L
	TSS	59 mg/L	25 mg/L
8/10/01	No exceedances noted		

The plant is equipped with backup power in case of power loss. There is adequate workshop space, but insufficient laboratory and office areas. Samples are taken to the Kanatakon laboratory for analysis. There are maintenance manuals and as-built drawings, but no operations manuals on site.

7.3.4 Operation

The sewage pumping stations are cleaned quarterly. Service disruptions have occurred due to R.B.C. breakdowns. There is also a recurring operational problem of overloading. Chlorination is achieved with swimming pool chlorine pucks.

There are emergency repair parts available on site and there is a contact listing of technicians and trades people. The response time for such personnel is within one to two hours.

7.4.1 Daycare (Cornwall Island)

7.4.2 Effluent Receiver

No information is available.

7.4.3 Design

The Day Care sewage is serviced by a septic tank and filter bed system that was constructed in 2000. The plant is not classified and the rated design capacity is unknown.

The sewage treatment plant consists of septic tanks and a recirculating tile bed. The septic tanks require pumping out every three years. There is one sewage pumping station as part of its collection system.

There is no diesel operated backup power generator for the treatment plant and there is no designated laboratory and office area. There is sufficient safety equipment at the plant. However, there are no uniforms available for the operators, which may increase the possibility of taking any contamination back to their houses. There are no re-occurring operational problems and there have not been any service disruptions.

7.4.4 Operations

There are maintenance manuals for plant equipment, operation manuals and as-built drawings available. Emergency repair parts are available and there is a contact listing of technicians/trades people available. The response for such personnel is about one to two hours.

There has not been any raw sewage bypassing from the pumping stations. There have been no odour complaints, and no disease or health outbreaks in the last two years.

7.5.1 Arena (Cornwall Island)

7.5.2 Effluent Receiver

The effluent is discharged into St. Lawrence River.

7.5.3 Design

The Arena sewage is serviced with a sewage treatment plant that was constructed in 1995. The plant is not classified and the rated design capacity is unknown.

The sewage treatment plant consists of a rotating biological contactor (RBC) unit. There are no sewage pumping stations.

The following table summarizes the January to August 2001 effluent sample data available from Council. Influent and effluent samples are taken on a monthly basis, although four months are missing in the data set provided by Council. The effluent limits specified in the table below are from the Environment Canada, April 1976 publication titled "Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments".

Date	Exceedance	Result	Limit
1/5/01		No exceedances	
3/1/01		No exceedances	
7/20/01		No exceedances	

There is no backup power generator for the treatment plant and there is no designated laboratory and office area. Samples are taken to the Kanatokon laboratory for analysis. There is sufficient safety equipment at the plant with designated workshop area available.

However, there are no uniforms available for the operators, which may increase the possibility of taking any contamination back to their houses. There are no re-occurring operational problems and there have not been any service disruptions.

7.5.4 Operations

There are operation and maintenance manuals for plant equipment and as-built drawings. Emergency repair parts are available and there is a contact listing of technicians/trades people available. The response for such personnel is about one to two hours.

There has not been any raw sewage bypassing from the pumping stations. There have been no odour complaints and no disease or health outbreaks in the last two years.

7.6.1 Akwesasne Mohawk School (Cornwall Island)

7.6.2 Effluent Receiver

The effluent is discharged into St. Lawrence River.

7.6.3 Design

The Akwesasne Mohawk School (A.M.S.) sewage treatment plant was constructed in 1990 and services a group home, the Band Office, Peace Tree Mall and Akwesasne Mohawk School. The plant is not classified and the rated design capacity is unknown.

The sewage treatment plant consists of an RBC unit and UV disinfection. Ferric chloride is also used in the treatment process as a coagulant. There are no sewage pumping stations.

The following table summarizes the 2001 effluent sample data available from Council. Influent and effluent samples are taken on a monthly basis, although two months are missing in the data set provided by Council (which is up to August, 2001). The effluent limits specified in the table below are from the Environment Canada, April 1976 publication titled "Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments".

Date	Exceedance	Result	Limit
1/18/01	TSS	26 mg/L	25 mg/L
2/28/01	No exceedances		
4/28/01	No exceedances		
7/5/01	No exceedances		
8/2/01	No exceedances		

There is a backup power generator for the treatment plant but there is no designated laboratory and office area. There is sufficient safety equipment at the plant with designated workshop area available. However, there are also no uniforms available for the operators, which may increase the possibility of taking any contamination back to their houses. There are no re-occurring operational problems and there have not been any service disruptions.

Consideration should be given to substitute the use of ferric chloride with alum for safety and corrosion reasons.

7.6.4 Operations

There are operation and maintenance manuals for plant equipment and as-built drawings available. Emergency repair parts are available and there is a contact listing of technicians/trades people available. The response for such personnel is about one to two hours.

There has not been any raw sewage bypassing. There have been no odour complaints, and no disease or health outbreaks in the last two years.

7.7 Reporting

The sample results for the Daycare are kept at the Block 97 water treatment plant. The sample results for the rest of the sites are kept at the Kanatakon water treatment plant.

Regular effluent tests are conducted at each of the sites and submitted to a private lab. There is no effluent at the Daycare site.

7.8 Operators

Dione Mitchell, Cyrus White and John Lazore are three of the eight operators for the water and sewage treatment plants. Only one operator operates each plant at a time, and the location where each operator goes is decided on a weekly/monthly basis.

All operators have their Operator In Training certificate (OIT) and one operator has his Class I. Two operators are waiting for the Class II and Class I test results. Mohawks of Akwesasne should continue with their formal training program to get all operators trained to the level of the facility they operate. All operators are familiar with the disinfection equipment.

8.0 Deficiencies in the Community Sewage Treatment Facilities

1. Akwesasne Mohawk School has backup power but the Arena has no backup power supply.
2. All samples are sent to the Kanatakon sewage treatment plant laboratory for analysis.
3. None of the systems serving individual buildings have had service disruptions. All of the communal sewage systems have had service disruptions. At the Block 97 plant there have been RBC breakdowns. The Kanatakon plant has had bearing failures in the RBC unit. The Snye plant has had pumping station electrical problems.
4. The Tsisnaihne plant has had recurring operational problems with overloading. The new plant under construction should alleviate the overloading problems.
5. The Kanatakon plant has had approximately eight bypass occurrences within the last two years due to infiltration. The effluent quality for BOD and TSS does not meet effluent limits.
6. The sample results for the Daycare are kept at the Block 97 water treatment plant. The sample results for the rest of the sites are kept at the Kanatakon water treatment plant.
7. Regular effluent tests are conducted at each of the sites and submitted to a private lab. There is no effluent at the Daycare site.

9.0 Recommendations - Action Required

- Address bypassing at the Kanatakon sewage facilities – the expansion of the sewage treatment facility will address this problem.
- Address overloading and RBC breakdowns at Block 97 facilities – expansion of the sewage facility will address this problem.
- Address sewage by-passing, poor effluent quality and pumping station electrical problems at Tsisnaihne (Snye) sewage facilities.
- Consider developing a written comprehensive contingency plan to address operational problems, breakdowns, vacations and illnesses, main breaks and boil water advisories.
- Provide on-line chlorine residual analyzers at the facilities that serve individual buildings.
- Provide diesel generator for standby power at the communal facilities.
- Provide additional ventilation for plant and chemical storage areas at the small facilities.
- Implement a well inspection program to inspect all individual wells in the community for proper operations and meeting the required standards.
- Implement a septic tank inspection program to inspect all septic tanks in the community for proper operations and meeting the required standards.

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 Facilities:

(Kanatakon)	-	Class II
(Tsisnaihne)	-	Class I
(Block 97)	-	Class I
(Tsisnaihne East)	-	Class I
(Daycare)	-	Class I
(Arena)	-	Class I
(School)	-	Class I

Sewage Treatment Facilities:

(Kanatakon)	-	Class I
(Tsisnaihne)	-	Class I
(Block 97)	-	Class I
(Daycare)	-	Class I
(Arena)	-	Class I
(School)	-	Class II

11.0 Overall Community Risk Assessment**Water Category**

- **Kanatakon** – Low Risk
- **Tsisnaihne** – Low Risk
- **Block 97** – Low Risk
- **Tsisnaihne East** – Low Risk
- **Daycare** – Low Risk
- **Arena** – Low Risk
- **Akwesasne Mohawk School** – Low Risk

Sewage Category

- **Kanatakon** – Low Risk (Assume new facilities will address bypassing)
- Approximately 8 bypass occurrences within the last two years due to infiltration
- **Tsisnaihne** – High Risk
 - High Risk because of the following:
 - Sewage by-passing
 - Effluent exceedances in BOD and TSS
- **Block 97** – Low Risk (Assume new facilities will address bypassing)
- Overloading of RBC, service disruptions, effluent exceedances
- **Daycare** – Low Risk
- **Arena** – Low Risk
- **Akwesasne Mohawk School** – Low Risk

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.