COMPLIANCE INSPECTION REPORT

FINCH WELL SUPPLY

NB

Ministry of the Environment

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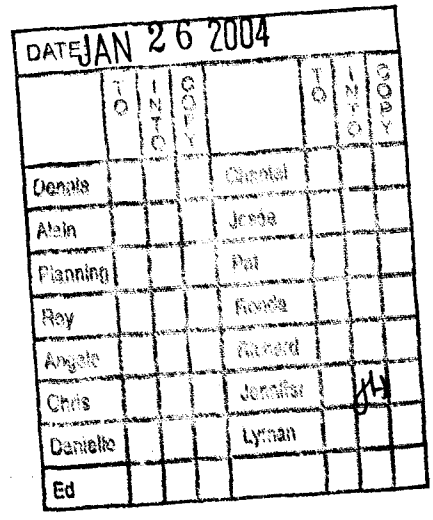

January 23, 2004

Mr. Rheal Charbonneau, Clerk-Treasurer
Township of North Stormont
PO Box 99
2 Victoria Street
Berwick, Ontario K0C 1G0

Dear Sir:

Re: Compliance Inspection - 2003/2004
Finch Well Supply

The Finch Well Supply was inspected on June 17, 2003, by Jan Franssen, Inspector, Drinking Water Inspection Program, Eastern Region. Enclosed is a copy of the inspection report.

A copy of the Compliance Inspection Report will be sent to Mr. Blair Henderson, who is designated as the Operations Manager for the waterworks. Copies will also be sent to Dr. Robert Bourdeau, Medical Officer of Health for the Eastern Ontario Health Unit, Mr. Mirek Tybinkowski, MOE Environmental and Approvals Branch, and Mr. Richard Pilon of the South Nation Conservation Authority.

Your attention is directed to Section 6 "Summary of Non-Compliance Issues and Required Actions" and Section 7 "Summary of Best Practice Recommendations" of the report. **Please provide a response by February 29, 2004** detailing how the Township plans to address the recommendations provided in Section 7.

Should you have any questions or comments pertaining to the Compliance Inspection Report, please do not hesitate to contact me at (613) 933-7402 extension 234.

Yours truly,

Jan Franssen
Inspector
Drinking Water Inspection Program
Eastern Region

Ontario

Ministry of the Environment
Drinking Water Inspection Report

FINCH WELL SUPPLY

INSPECTION DETAILS	
Location:	20 William Street, Finch, Ontario
Water Works Type:	Treatment With Distribution
Water Works Number:	210003912
Inspection Type:	Announced
Date of Inspection:	June 17, 2003
Date of Previous Inspection:	July 24, 2002
Inspection Number:	689

CONTACT INFORMATION	
Municipality/Owner Township of North Stormont PO Box 99 2 Victoria Street Berwick, Ontario K0C 1G0 Attention: Rheal Charbonneau Clerk-Treasurer Phone: 613-984-2821 Fax: 613-984-2908	**Operating Authority** Ontario Clean Water Agency (OCWA) Chesterville Hub 5 Industrial Drive Chesterville, Ontario K0B 1J0 Attention: Blair Henderson Operations Manager Phone: 613-448-3098 Fax: 613-448-1616
Inspector: Jan Franssen Cornwall Office Eastern Region 613-933-7402 ext 234	Distribution Date: January 23, 2004

Name and address of other contacts can be found in **Appendix E.**

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SECTION 1 INTRODUCTION

1.1 INSPECTION OBJECTIVES

The primary focus of this inspection is to confirm compliance with Ministry of the Environment legislation and control documents, as well as conformance with Ministry drinking water-related policies for the inspection period. Specifically, this includes a review and assessment of operating practices as they relate to the following documents:

- The Safe Drinking Water Act, 2002
- Drinking Water Systems Regulation (O. Reg. 170/03)
- The Well Regulation (Wells - O. Reg. 903)
- Operator Certification Regulation (Water Works and Sewage Works - O. Reg. 435/93)
- Certificates of Approval
- Permits to Take Water
- Previous Ministry Compliance Inspection Report
- Engineer's Report dated March, 2001

The ministry has implemented a rigorous and comprehensive approach to the inspection of water systems that focuses on source, treatment, and distribution components as well as water system management practices.

Table 1 AUTHORIZING AND CONTROL DOCUMENTS REVIEWED

CERTIFICATES OF APPROVAL		
Certificate #	**Date Issued**	**Description**
1269-5E5MU3	January 31, 2002	Amended Certificate of Approval
PERMIT TO TAKE WATER		
Permit #	**Expiry Date**	**Description**
80-P-4002	March 31, 2010	Permit to Take Water
PREVIOUS ORDERS		
Order #	**Date Issued**	**Description**
--	--	None Issued

SECTION 2 EXISTING WATER SYSTEM DESCRIPTION

The Moose Creek Well Supply is owned by the Township of North Stormont and is operated by the Ontario Clean Water Agency (OCWA). The supply and treatment works are located at 20 Williams Street in the Village of Finch. The water system was designed by Simcoe Engineering and Cumming-Cockburn Limited in 1973.

The system was designed to supply a population of 593 with an average consumption of 455 L/day, with an average daily demand of 270m^3/day and a maximum daily demand of 742m^3/day.

2.1 WATER SOURCE

The production wells are located in the basement of the water treatment plant. A review of the water well records revealed that the wells were drilled into a limestone bedrock formation in 1972. The source water quality is characterized by elevated levels of hydrogen sulfide, hardness and sodium. Each well is equipped with a submersible well pump, rated at 5 liters per second at 50 m Total Dynamic Head (TDH), that discharges to a single supply line that feeds into the aerator located on the main floor of the treatment plant. The discharge line from each well is equipped with a raw water flow meter manufactured by Endress & Hauser.

2.2 TREATMENT PROCESSES

Water pumped from the production wells is passed through a forced air aeration system that reduces the elevated concentrations of hydrogen sulphide. Following aeration the water is injected with sodium hypochlorite and then discharged into a clearwell. The disinfection system consists of one 100 L sodium hypochlorite solution storage tank, two chemical metering pumps (one duty, one standby). Water is pumped from the clearwell by one of two high lift pumps and through two enclosed dual media filters. The treatment process is equipped with a flocculation tank, but this tank is not in use. Water discharged from the filters is pumped into the distribution system.

Water used to backwash the filters is drawn from the treated water discharge line. Backwash wastewater from the filters is discharged to a surge tank and then pumped directly into the sanitary sewer.

Instrumentation at this facility includes: turbidimeter, chlorine analyzers on the treated water outlet, and a magnetic flow meters on the raw water supply lines and the treated water discharge line. A detailed description of the components of the treatment system is provided in Part 1 of the amended CofA (see Appendix A). GPS coordinates for the water treatment plant are provided in Appendix C.

2.3 DISTRIBUTION SYSTEM

The distribution system consists of approximately 8.6 km of watermains. The system supplies water to 220 service connections that serve a population of approximately 441. Approximately 59 hydrants are installed on the system.

A 580 cubic meter steel capacity storage tank is located on the west side of Williams Street across from the water treatment plant. GPS coordinates for the storage tank are provided in Appendix C.

2.4 SYSTEM DIAGRAM

The system diagram supplied by the operating authority is provided in Appendix F.

SECTION 3 INSPECTION FINDINGS

3.1 OPERATIONS

3.1.1 Source/Supply

The two production wells are located in the basement of the water treatment plant. The surrounding landuse includes an Arena to the east, light industrial to the north, agricultural to the west and residential to the south. A GUDI study has not been completed for the Finch Well Supply.

A review of the well logs indicated that both Well 1 and Well 2 were advanced to a depth of 189 feet (61 m). Bedrock was encountered at a depth of 11 feet (3.6 m) in each well, and the overburden was predominantly gravel with some fill and some clay.

A smooth nozzle raw water sample tap is located on both wells. The Inspector collected a raw water sample from both Well 1 and Well 2 in laboratory prepared sample bottles. The samples were subsequently submitted to the MOE Laboratory in Toronto for analyses of the following parameters: Total Coliforms, *E. Coli*, and a Heterotrophic Plate Count. The results of the laboratory analyses are presented in Section 4.2 of this report.

Wellhead Assessment

The inspection revealed that each of the well heads is sealed and extends approximately 50 cm above the basement floor. In addition, each well is situated within a concrete barrier that measures approximately 80 cm above the concrete floor. This barrier should prevent water from coming in contact with the well heads should the basement of the treatment plant flood.

The Inspector was unable to determine the condition of the annular space around each of the well casings. A review of the well logs indicated that bedrock was encountered at a depth of 11 feet (3.6m) and an 8-inch diameter steel casing was extended to a depth of 28 feet (9.2m) and the borehole left open to a depth of 189 feet (61.9m).

Condition 5.1 of the amended CofA required the owner to upgrade the well vents to comply with O.Reg 903 by July 1, 2003. The operating authority indicated that well venting complying with O.Reg. 903 was installed on December 17, 2003.

Permit to Take Water Assessment

At the time of the initial inspection, a single totalizing turbine type flow meter was used to measure the combined raw water flow from both Well No. 1 and Well No. 2. The reading from

the flow meter was recorded manually during each site visit. The flow meter did not have the capacity to record total daily flows or daily peak flows as required by Condition 2.1 of the CofA. Prior to the inspection, the owner had contracted a consultant to install raw water flow meters on both wells. In anticipation of the planned flow meter upgrades, the operating authority did not perform the annual calibration of the raw water flow meter.

The operating authority confirmed that on July 2, 2003 a magnetic flowmeter was installed on each of the supply lines from the production wells. The flowmeters transmit data to an electronic recorder that records total daily flow and peak daily flows.

The Permit To Take Water (PTTW) states that the rate of taking shall not exceed a combined total of 540 L/min or 777,600 L/day from both Well 1 and Well 2. A review of the Annual Records of Water Taking for 2002 and 2003 (to June) indicated that the highest maximum daily flow was calculated to be 438,000 L/day from Well 1 and 276,000 L/day from Well 2. Well 2 was operated in January and February 2002 but was not used subsequently as a source water for the Village. The operator elected not to use Well 2 until the new magnetic flowmeters were installed on the supply lines from each of the production wells.

The operating authority indicated that the flow control valves on the raw water supply lines restrict the flow so that the maximum flow rates specified in the PTTW cannot be exceeded.

PERMIT TO TAKE WATER ASSESSMENT				
PERMIT NUMBER	**RENEWAL DATE**	**SOURCE**	**PERMITTED AMOUNT OF TAKING**	**UNITS**
80-P-4002	March 31, 2010	Groundwater (2 Wells)	777,600	L/day

The PTTW includes Special Condition 14 that requires records regarding the quantity of water taken to be kept at the Township's offices for the purpose of establishing a record of water taking. The Township indicated that these records are kept on file at the Township's offices. A copy of the PTTW is provided in **Appendix B**.

The operating authority records the water level in the source aquifer through instrumentation installed at Well No. 2. The water level is recorded twice weekly.

3.1.2 Treatment Processes

Treatment equipment is installed in accordance with the description provided in the amended CofA. The inspection revealed that the facility and equipment appear to be well maintained. The operating authority indicated that the system operated without interruption since the previous MOE compliance inspection, and that only certified operators made adjustments to treatment equipment.

At the time of the inspection one of the two high lift pumps had been removed for repair. The inspection also revealed that the system is equipped with a flocculation tank installed between the high lift pumps and the filtration system. There is no reference to the flocculation tank in the amended CofA. The operating authority confirmed that the flocculation tank is not used and is bypassed in the treatment process.

Prior to July 2003 the volume of treated water was measured using an orifice plate manufactured by Fielding Crossman. On July 2, 2003 a new magnetic flow meter manufactured by Endress-Hauser was installed on the treated water discharge line. An electronic flow recorder was also installed that records total daily flows and peak flow rate.

Treated water capacity assessment for the previous three years is provided in the following table:

TREATED WATER CAPACITY ASSESSMENT			
ITEM	**2000**	**2001**	**2002**
Avg. Daily Flow (m3/day)	264	324	284
Max. Daily Flow (m3/day)	608	582	423
Rated Capacity (m3/day)	691	691	691
% (Max. Daily / Rated Capacity)	88%	84%	61%

Note: Data obtained from OCWA's performance assessment reports

Condition 1.2 of the amended CofA specifies the following maximum combined flow rate from both wells: 540 L/min. A review of OCWA's performance assessment reports indicates that the maximum recorded flow rate from January 2002 through to June 2003 was 423m3/day, or approximately 61 % of the rated capacity of the drinking water system.

Water is drawn from the treated water discharge line to conduct filter backwashes. There is the potential for partially treated water to bypass the filters via this line, therefore a backflow preventer is installed at this location. There was no indication that raw or partially treated water could be conveyed around key treatment units.

Disinfection

The disinfection system is contained within a dedicated room at the water treatment plant. The system consists of a solution tank, and two chemical metering pumps (1 duty, 1 standby). A 12% solution of sodium hypochlorite is pumped to an injection point on the water line connecting the aeration tower to the clearwell.

The operating authority provided documentation confirming that the sodium hypochlorite used at the Crysler Water Treatment Plant meets the applicable American Water Works Association (AWWA) and American National Standards Institute (ANSI) standards.

A review of the Engineer's Report (Kostuch, 2001) indicated that the Engineer concluded that the facility was in compliance with the MOE's Procedure B13-3 *"Chlorination of Potable Water Supplies in Ontario"*. Section 1.5 of the Engineer's Report provides a summary of the calculation of the chemical disinfection CT values for the treatment process. The Engineer calculated that at the maximum rated capacity of the treatment process (691 m3/day) and a chlorine dosage of 1.6 mg/L the total chemical disinfection CT value would be approximately 24.5 (calculated from the chlorine injection point to the first service connection).

For groundwater sources that are not considered GUDI, the MOE's Disinfection Procedure requires a minimum 2-log inactivation of viruses before the first consumer connection. The MOE's "*Procedure for Disinfection of Drinking Water in Ontario*" (March 17, 2003) specifies that the minimum required CT Value for a 2-log inactivation of viruses by free chlorine is 6 (pH 6 to 9; temp. 0.5'C) and 2 (pH 6 to 9; temp. 15'C). The Engineer's calculated CT of 24 exceeds the minimum disinfection requirements specified the MOE's Disinfection Procedure, and therefore the treatment process is providing the required disinfection, and is operating in accordance with Condition 3.2 of the amended CofA.

In the 2002 Annual Compliance Report, the operating authority indicated that the sodium hypochlorite dosage ranged from 3.56 to 4.65 mg/L.

Upgrade requirements cited in Condition 5.1 of the amended CofA included the following items which were to be completed by July 1, 2003:

- Controls to automatically switch over the sodium hypochlorite metering pumps and alarm in the event of the failure of one pump; and
- Standby- hypochlorite solution tank with automatic switch-over when connected tanks are empty or an alternative approved by the Ministry.

The inspection revealed that secondary containment for sodium hypochlorite solution tank is not provided. The Inspector observed that a standby solution tank and containment were present at the treatment plant but had not yet been installed. Subsequent to the site visit the operating authority confirmed that the solution tanks and containment were installed, but that the automatic switchover was not yet operational. The operating authority indicated that the automatic switchover should be fully functional by January 31, 2004.

The Finch treatment plant is equipped with a Hach CL17 Chlorine Analyzer that is installed on the treated water discharge line providing a continuous measure of chlorine residual. The operating authority confirmed that the results are checked at least once every 72 hours. Water fed to the analyzer is discharged to the sanitary sewer.

The chlorine analyzer is equipped with an alarm system that provides notification to the operating authority if the test result indicates that the free chlorine residual is above the maximum alarm setting of 2.9 mg/L free chlorine or below the minimum alarm setting of 0.30 mg/L free chlorine. The disinfection system is equipped with a high-lift pump lockout when the low alarm is triggered.

Chlorine residual alarm settings are consistent with the maximum concentration of 4.0 mg/L specified in the MOE document "Procedure for Disinfection of Drinking Water in Ontario" (March 17, 2003), and the minimum alarm standard of 0.19 mg/L as calculated based on the requirements of O.Reg 170/03 Schedule 6-5(10). The minimum alarm standard was derived from subtracting 0.1 mg/L from the concentration of free chlorine residual required to achieve primary disinfection.

The concentration of free chlorine residual required to achieve primary disinfection was derived from the following equation:

$$Concentration\ (mg/L) = CT \div Time$$
$$Concentration\ (mg/L) = 6 \div 20.59$$
$$Concentration\ (mg/L) = 0.29$$

Where:

Concentration =	*Concentration of free chlorine residual that is required to achieve primary disinfection.*
CT =	*Chemical Disinfection CT (value taken from Table 7 of the "Procedure for Disinfection of Drinking Water in Ontario" Log Inactivation 2, Temperature 0.5 ℃, and pH 6 to 9)*
Time =	*Total T_{10} Contact Time (value taken from the Engineer's Report prepared by Kostuch Engineering Ltd, 2001 as based on assumed baffling conditions)*

A review of the operations manual for the Hach CL17 indicated that the analyzers are factory calibrated and do not require recalibration. Since the manufacture's instructions do not provide a recommended calibration schedule Schedule 6-5 Section 10 of O.Reg. 170/03 applies and the analyzer is required to be checked and calibrated as often as necessary to ensure that the test results are within 0.05 mg/L at a concentration of 1.0 mg/L or proportionally higher if the concentrations measured are greater then 1.0mg/L.

The operating authority indicated that the analyzer is compared with the results from a Hach pocket colorimeter during each site visit, and that the analyzer undergoes a monthly maintenance check. The Operating Authority provided documentation that showed that the manufacturer calibrated the pocket colorimeter in May 2003.

Turbidity Monitoring

A Hach model 1720C turbidimeter is installed on the treated water discharge line and provides a continuous measure of turbidity. The quality control band for this specific model of turbidimeter is ± 2% (ie: ± 0.02 at 1 NTU). The high alarm setting on the turbidimeter is set at 0.99 NTU. Water feed to the turbidimeter is discharged to the sanitary sewer.

Section 8 of Schedule 6-5 of O.Reg 170/03 requires that continuous monitoring equipment be calibrated in accordance with the manufactures instructions. A review of the 1720C Operations Manual indicated that the manufacturer of this instrument recommends that it be recalibrated using a formazin primary standard after any significant maintenance or repair and at least once every four months of normal operation. A review of the calibration work orders revealed that the turbidimeter was last serviced and calibrated with a formazin standard on May 29, 2003.

O. Reg 170/03 does not require the monitoring of turbidity of treated water originating from a groundwater source, therefore the operation and reporting requirements for the subject turbidimeter do not apply.

3.1.3 Process Wastewater

Process wastewater generated from the backwashing of filters is discharged to a 15 m^3 capacity surge tank located at the treatment plant. This wastewater is discharged directly to the sanitary sewer. Waste water from the floor drains is also directed to the to the sanitary sewer.

Upgrade requirements cited in Condition 5.1 of the amended CofA necessitate that the owner remove the direct connection of the well pump to the waste line. The inspection confirmed that these modifications have been made.

3.1.4 Distribution System

The Operating Authority stated that there is no proactive leak detection programs undertaken in the distribution system. The operating authority confirmed the existence of plans of the distribution system, and stated that pressure problems have not been encountered in the distribution system, and that pesticide applicators are not permitted to use hydrants for the mixing of product.

The Township indicated that meters are installed at some of the residents in Finch but that these meters are not currently read.

Maintenance Programs

The operating authority indicated that there is no proactive program to rebuild/replace segments of the distribution system.

There have been no watermain breaks since the previous MOE compliance inspection. The operating authority indicated that if a break were to occur, that operational duties would be performed by certified operators and that the repairs would be documented in the operations logbook. It was reported by the operating authority that the owner excavates the breakage and OCWA operators perform the repair.

The operating authority confirmed that disinfection of repaired distribution system components is undertaken in accordance with the AWWA (American Water Works Association) Standards for Disinfecting Watermains (AWWA C652-92) and Storage Facilities (C653-97).

Operating authority staff confirmed that fire hydrants connected to the distribution system are inspected and exercised on a routine basis in accordance with AWWA standards. Hydrants are inspected during spring and fall flushing activities. The most recent fall and spring flushing events took place on October 8 and 9, 2002 and May 6 and 7, 2003. Hydrants are pumped dry each fall to avoid damage caused by freezing.

Cross Connection and Backflow Prevention

A review of the municipal by-laws provided by the owner, indicated that the Finch Well Supply does not have a by-law that addresses cross-connections.

Storage Structure Assessment

It was reported that the elevated storage tank is inspected every five years and that it was last inspected in 1999 by Robovideo Underwater Inspection of Port Elgin, Ontario.

3.2 WATER SYSTEM MANAGEMENT PRACTICES

3.2.1 Operational Manuals

Operations and maintenance manuals are located in the water treatment plant. The manuals contain plans, drawings and process descriptions, a sampling schedule and sampling procedures, notification and corrective actions instructions for adverse conditions, and procedures for disinfection and repair of watermains.

3.2.2 Logbooks

The Operations Log is a bound notebook kept at the water treatment plant. A review of the logbook indicated that it provided an excellent summary of operating conditions at the plant. Operational checks are documented to have been performed at the treatment plant several times a week. Site visits are documented to have occurred when system alarms are triggered. Entries in the logbook are made chronologically, and the operators provide the dates and times of the site visits and information concerning the operation of the facility and any departures from normal operating conditions. At least two years of logbook entries are available at the site.

3.2.3 Contingency and Emergency Planning

The Finch Water Treatment Plant is equipped with security and alarm system capable of remote notification of the Operator in Charge in the event of an alarm condition. If an alarm is triggered the Operator in Charge will receive notification via the on-call pager and/or the operator's cell phone. If the Operator in Charge does not respond to the on-call pager within a specified period of time then backup operators will be notified until one is contacted.

Alarms at the water treatment plant include: chlorine high and low alarms, clearwell high and low level alarms, intrusion, turbidity high and low, and basement flood. Additional alarms at the elevated tower include high and low tower level, low tower temperature, and intrusion.

An Environmental Contingency Plan has been developed for the facility. The Plan identifies contingencies for: disinfection system failure, contaminated raw water, power failure, water main break, pump failure, and spills. Also included in the Contingency Plan is a procedure for responding to an adverse water quality incident, which includes written procedures for the notification of the Medical Officer of health and the MOE as required by Condition 3.7 of the amended CofA. The Environmental Contingency Plan is kept at the water treatment plant.

Although the system is not equipped with a standby power source, the elevated storage tank ensures that positive pressure is maintained in the distribution system should a power outage occur. For extended power outages, the operating authority has a mobile generator unit that can be mobilized to the site as required.

The operating authority has developed a contingency plan for the position of Operator in Overall Responsibility to ensure that overall operation of the facility is placed with an operator who holds a license that is applicable to the facility.

3.2.4 Security

Doors into the treatment plant building and water tower are locked and equipped with alarms. The water tower is enclosed within security fencing.

3.2.5 Communication with Consumers

The operating authority manages and responds to customer complaints using the OPEX Incident Reporting System; a database that OCWA uses to record and report a wide range of incidents including community complaints. Over the course of the inspection period, OCWA recorded one consumer complaint. On January 29, 2003 a resident complained that the water had an unpleasant odour. The operating authority investigated the situation and recommended that the resident flush out their hot water tank.

The following documents are available to the public during normal business hours at OCWA's Chesterville Office:

- All of the lab reports on the analysis of water samples taken under section 7 of O. Reg. 170/03;
- All of the approvals, orders, and directions related to the system;
- Annual Compliance Reports; and,
- The Ontario Drinking Water Standards (Ontario Regulation 169/03).

3.2.6 Operator Certification and Training

The operator in overall responsibility for the Finch drinking water system is Mr. Blair Henderson. Mr. Henderson possesses a Class 2 Water Treatment License and a Class 3 Water Distribution License. The Finch drinking water system is classified as a Class 2 Water Treatment System and a Class 2 Distribution System.

The following table provides a list of the operators who work at the Finch Water Treatment Plant and their levels of certification for treatment and distribution systems. Certification details for each of the operators are also provided in Appendix D.

Operator Name	Treatment System Classification	Distribution System Classification
Dave Markell	Class 2	Class 3
William Michels	Class 2	Class 2
Jean Veilleux	Class 3	Class 3
Andrew Barrie	Class 2	Class 2
Tony Kelly	Class 3	Class 3
Mark Lauzon	Operator in Training	Operator in Training
Brian Huskinson	Class 2	Class 2
Lisa Bortolussi	Operator in Training	Operator in Training
James Roach	Operator in Training	Operator in Training

As required by O.Reg 435/93, operator licenses are conspicuously displayed at OCWA's office in Chesterville, and the plant classification certificate is conspicuously displayed at the Finch Water Treatment Plant.

As of the end of 2002, all the operators had received a minimum of 40 hours of annual training as required by Regulation 435/93 Section 17, and the operating authority indicated that all of its operating staff are aware of the established emergency contingency procedures.

SECTION 4 WATER QUALITY MONITORING & ASSESSMENT

4.1 WATER QUALITY MONITORING

The water quality monitoring requirements for the Finch Water Supply as specified in Regulation 170/03 are as follows:

Raw Water

- one sample per week from each well for microbiological analyses; and
- one sample per month tested immediately for turbidity

Treated Water

- one sample per week for microbiological analyses;
- one sample per quarter for nitrates/nitrites;
- one sample per annum for sodium analysis (Condition 2.1 of amended CofA);
- one sample every three years for inorganics (Schedule 23);
- one sample every three years for organics (Schedule 24); and
- one sample every 60 months for fluoride;

Distribution System

- eight samples per month (at least one per week) for microbiological analyses, including 25% of each batch of samples for a heterotrophic plate count;
- one sample for trihalomethanes per quarter, collected at a point reflecting the maximum residence time in the system; and
- one sample for lead per annum, collected at a point reflecting the maximum residence time in the system.

It is important to note that under Schedule 13-5 of Regulation 170/03, where a test result for lead, or an organic parameter (Schedule 24) exceeds half of the standard prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards (Regulation 169/03), then the frequency of sampling and testing for that parameter must be increased to one sample every three months.

From July 24, 2002 to February 1, 2003 the operator routinely collected weekly raw water samples from only one of the two wells. Upon receipt of the preceding Inspection Report (issued January 8, 2003) the operator promptly began to collect the required samples from both wells. Raw water samples are collected from sample ports located upstream of the aeration system and chlorine injection point. Raw water samples were submitted to Caduceon Environmental Laboratories of Ottawa, Ontario for microbiological analyses. All samples were analyzed for *E.Coli* and Total Coliforms.

The operating authority collects weekly treated water samples at the treatment plant, and submits them to Caduceon Environmental Laboratories of Ottawa, Ontario for microbiological analysis. Samples are analyzed for *E.Coli*, Total Coliforms and heterotrophic plate count.

Treated water samples were submitted for analysis of nitrates/nitrites, volatile organics, and pesticides and PCBs on August 8 and October 15, 2002 and January 21 and April 24, 2003. The samples were analyzed for all the parameters listed in Regulation 170/03 Schedule 24 with the exception of Benzo(a)pyrene. Benzo(a)pyrene was not included as an organic parameter in the legislation that was applicable (Regulation 459/00) at the time of the sampling. The operator must submit its first test of Benzo(a)pyrene prior to June 1, 2004 as required by Schedule 13-10 (b) of Ontario Regulation 170/03.

The required sample for inorganics was submitted on January 21, 2003. The sample was analyzed for all the parameters listed in Regulation 170/03 Schedule 23 with the exception of Antimony. Antimony was not included as an inorganic parameter in the legislation that was applicable (Ontario Regulation 459/00) at the time of the sampling. The operating authority must submit its first test of Antimony prior to June 1, 2004 as required by Schedule 13-10 (b) of Ontario Regulation 170/03.

A treated water sample was submitted for analysis of fluoride on January 21, 2003, and the required annual sample for sodium was submitted on April 24, 2003.

The operating authority collected a minimum of eight samples per month from the distribution system and submitted them to Caduceon Environmental Laboratories of Ottawa, Ontario for microbiological analyses. All samples were analyzed for *E.Coli*, Total Coliforms. The required percentage of distribution samples were also analyzed for a heterotrophic plate count.

The required quarterly distribution samples for trihalomethanes, were collected on August 8 and October 15, 2002 and January 21, and April 24, 2003. The required annual distribution sample for lead was collected on January 21, 2003.

A review of the sampling schedule and laboratory analytical reports indicated that from July 24, 2002 (date of previous MOE inspection) until June 17, 2003, the Finch Drinking Water System operated in compliance with the sampling requirements of Condition 2.1 of the amended CofA, with the exception of raw water microbiological sampling. All water samples submitted for analyses during the aforementioned period were analyzed by a laboratory accredited for the specific parameter that was analyzed.

The Operating Authority is aware of the requirement to conduct a monthly turbidity test on the raw water, and the results of these tests are recorded in the logbook.

A review of the operations log indicated that the operating authority began daily monitoring of the distribution system chlorine residual on June 1, 2003. A review of the analytical results indicated that chlorine residual readings are being collected at the same time as microbiological samples.

On March 3, 2003 Dave Markell signed and submitted the required "Notification of Laboratory Services Provided to Waterworks" form to the MOE's Laboratory Services Branch. A review of the Standards Council of Canada (SCC) scopes of accreditation for the laboratories indicated on the "Notification of Laboratory Services Provided to Waterworks" form indicated that the subject laboratories are accredited to conduct the tests requested by the operating authority.

Laboratory analytical reports are retained for required periods of time directed within O. Reg. 170/03. The operating authority indicated that there have been no historical fluctuations in water quality.

4.2 WATER QUALITY ASSESSMENT

4.2.1 Bacteriological

A review of the raw water data for the production wells, for the period of July 17, 2002 to June 24, 2003, indicated that *E.Coli* was not detected in any sample. Total Coliforms were detected in only sample (1 colony forming unit (cfu) per 100mL). Neither Total Coliforms nor *E.Coli* was detected in the treated water over the course of the inspection period.

During the June 17, 2003 site visit, the Inspector collected distribution system samples from the following locations: the cold water tap in the staff room at St.Bernard Catholic School (38 Victoria Street), the outdoor tap at Smith & Son's Cartage Limited (83 Front Street), and the water tap at the sink in the basement of the Sewage Treatment Plant (62 Main Street). Water samples were collected in laboratory prepared sample bottles containing the preservative sodium thiosulphate, and were subsequently submitted to the MOE Laboratory in Toronto for analyses of the following parameters: Total Coliforms, *E. Coli*, and a heterotrophic plate count.

The results from the on-site analyses of chlorine residual are provided in the following table.

Free Chlorine Results Finch Distribution System – June 17, 2003			
	St. Bernard School	Smith & Son's Cartage	Sewage Treatment Plant
Free Chlorine (mg/L)	1.24	1.18	0.75
Total Chlorine (mg/L)	1.49	1.41	1.01

The results of the onsite analyses of free chlorine residual in the Finch distribution system indicated that the free chlorine residual were well above the minimum required concentration of 0.05 mg/L required by O.Reg 170/03 Schedule 1-2.

4.2.2 Physical/Chemical

A review of the results from the free chlorine residual monitoring of the treated water discharged from the treatment plant indicated that, since the last MOE compliance inspection, the minimum recorded value was 0.2 mg/L and the maximum recorded value was 2.4 mg/L.

On October 10, 2001, the operating authority submitted a letter to the Medical Officer of Health, confirming that the sodium concentration in the treated water sample was 80 mg/L.

As required by O.Reg 170/03 Schedule 13-3 and 13-6, the operating authority collects its lead and THM samples at locations likely to have elevated concentrations for those parameters. A review of the THM data indicated that concentrations in the distribution system ranged from 0.057 mg/L to 0.092 mg/L. These concentrations are relatively high but are still below the drinking water standard of 0.100 mg/L.

Analytical results for samples collected by the operating authority on January 21, 2003 indicated that all Schedule 23 inorganic parameter detections were well below the applicable Ontario Drinking Water Quality Standard, with the exception of Antimony which was not analyzed. A review of the analytical results indicated that Pesticides and PCBs were not detected.

A sample of treated water collected by the inspector was submitted to the MOE laboratory in Toronto for organic and inorganic analyses. A review of the analytical results indicated that the Schedule 23 inorganic parameters were well below the Ontario Drinking Water Quality Standards with the exception of Barium which was detected at a concentration of 0.475 mg/L. The ODWQS for Barium is 1.0 mg/L. The most recent treated water sample submitted by the operating authority for inorganic analysis indicated that on January 21, 2003 the concentration of Barium was 0.38 mg/L. Barium is a common constituent in sedimentary rocks such as limestone.

A review of the analytical results from the audit sample collected by the MOE, indicated that the Schedule 24 organic parameters were well below the Ontario Drinking Water Quality Standards. Please note that the organic analysis of the MOE sample did not include the analysis of the following Schedule 24 parameters: benzo(a)pyrene, and pesticides compounds.

4.2.3 Reporting, Notification & Corrective Action

A total of five adverse water quality conditions were identified at the Finch Water Supply over the course of the inspection period. Four of the five incidents were turbidity exceedance that occurred between October 23 and October 31, 2002. During this period new sand filters were being installed and therefore the filter units were not operational. The operator increased the chlorine dosage during the filter replacement.

The other adverse water quality condition was an overgrown Heterotropic Plant Count on a treated water sample that was collected on February 17, 2003. The operator was notified of the adverse sample on February 20, 2003 and collected a resample on the same day. The results of the resampling showed that the adverse condition was no longer present. For all five incidents the operator provided the required notification within the required time frames.

The laboratory analytical reports for the regulated samples collected from the drinking water system are kept on file at OCWA's Chesterville office for a minimum of five years. The Annual Compliance Reports and Engineers Report are also kept at OCWA's Chesterville Office along with a copy of the Drinking Water Systems Regulation. These reports are available to the public without charge during normal business hours.

The 2002 Annual Report was submitted to the Township Council and was received and reviewed on April 8, 2003. The annual report included a listing of treatment chemicals used and a discussion of the quantity of water supplied during the reporting period compared to the design values for the population serviced. The report included a summary of the monthly average daily flows and maximum daily flows but does not include the daily instantaneous peak flow rates. The operating authority indicated in the report that the flow measuring devices did not permit the total daily flows and daily peak flows to be recorded. The reported average daily flows and maximum daily flows are extrapolated from the manual readings taken from the totalizing flow meter.

SECTION 5 ASSESSMENT OF PREVIOUS INSPECTION ISSUES

5.1 NON COMPLIANCE WITH REGULATORY REQUIREMENTS

The previous MOE inspection did not document violations that are likely to cause an adverse human health impact or environmental impairment. The inspection did however reveal the following regulatory issue:

i) **Weekly raw water samples were <u>not</u> being collected from each well as required by O.Reg. 459/00.**

In a letter dated February 4, 2003, the operating authority committed to the collection of weekly raw water samples from both source wells commencing January 27, 2003.

5.2 BEST MANAGEMENT PRACTICES RECOMMENDATIONS

The previous inspection report provided the following recommendations to the owner / operating authority:

1) It is recommended that water usage meters should be installed and that the owner give consideration to how it plans to meet water demand now that usage exceeds 80% of the water works rated capacity.

2) The operating authority should ensure that the actual rated capacity is reflected on the Performance Assessment Reports.

In a letter dated February 4, 2003, the operating authority stated that the owner had discontinued sales of water from the Finch Water System and that in 2002 the maximum daily flow was 54% of the rated capacity. The letter indicated that the operating authority will ensure that the actual rating capacity would be reflected in their Performance Assessment Reports.

SECTION 6 SUMMARY OF NON COMPLIANCE ISSUES & ACTIONS REQUIRED

The inspection revealed that required upgrades to the chlorine disinfection system and upgrades to the well vents had not been completed by the July 1, 2003 deadline specified in the CofA.

Subsequent to the inspection the operating authority confirmed that the required upgrades to the well vents had been completed, and that the upgrades to the disinfection system were underway. No further actions are required provided that the upgrades to the disinfection system are completed in a timely manner.

SECTION 7 SUMMARY OF BEST PRACTICE RECOMMENDATIONS

In the interest of fostering continuous improvement, the inspector provides the following recommendations.

1. It is recommended that a Well Head Protection Plan be developed for the Finch Well Supply. This Plan should include an evaluation of potential sources of pollutants that could negatively impact the source. The Well Head Protection Plan should delineate and protect the area of recharge of the wells.

2. Prior to returning Well No. 2 to production, collect a bacteriological sample of raw water to ensure that supply has not become contaminated and flush the well to waste.

3. It is recommended that the owner should investigate the benefits of installing isokinetic monitoring stations for routine distribution system sampling.

4. The owner should implement a by-law to protect the drinking water system from backflow through potential cross connections. Cross connections provide a pathway for contaminants to enter and negatively impact the drinking water supply. Such a by-law should provide the Municipality with enforcement authority to remove cross connections and/or require the installation of backflow prevention devices where specific cross connection hazards exist.

Please provide a response by February 29, 2004 detailing how the owner plans to address these Best Practice Recommendations.

SIGNATURES

Inspected By: Jan Franssen	*Signature: (Inspector):*
Reviewed & Approved By: James Mahoney	*Signature (Supervisor):* for: Jim Mahoney
Review & Approval Date: (yyyy/mm/dd) *January 23, 2004*	

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

cc: Rheal Charbonneau, Clerk-Treasurer – Township of North Stormont
Blair Henderson, Water System Manager – OCWA Chesterville Hub
Dr. Robert Bourdeau, Medical Officer of Health – Eastern Ontario Health Unit
Mirek Tybinkowski, Specialist: Water and Wastewater – MOE EAAB
Richard Pilon, Director of Planning & Engineering – South Nation Conservation Authority
District Office File – SI ST FI 241

Ontario

APPENDIX A

CERTIFICATE OF APPROVAL

(AS ATTACHED)

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE WATER WORKS
NUMBER [redacted]

The Corporation of the Township of North Stormont
PO Box 99
Berwick, Ontario
K0C 1G0

Site Location: Village of Finch Water System
20 William Street
Finch, Ontario
K0C 1K0

You have applied in accordance with Section 52 of the Ontario Water Resources Act for approval of:

a groundwater supply system serving the community of Finch, located on Part 2 of RP52R-1181 in the Township of North Stormont, United Counties of Stormont, Dundas and Glengarry consisting of two (2) wells and process treatment units, rated at a maximum daily flow of 540 L/min, consisting of the following:

PROPOSED WATER WORKS -Upgrades
(as per Application for Approval, dated August 07, 2002)

Well No. 1 & 2

- Upgrading of well vents to comply with O. Reg. 903;

Treatment Plant / Pumphouse

- Replacement of one of the two existing chemical metering pumps with one (1) sodium hypochlorite metering pump, capable of delivering a minimum of 3.0 L/hr, via a feed line to the well pump header inside the pumphouse upstream of the clearwell and pressure filters, complete with automatic switchover from duty to standby pump, and alarm;

- Replacement of existing sodium hypochlorite solution tank with two (2) sodium hypochlorite solution tanks each capable of holding 100 L, complete with secondary containment, tank level alarm and automatic tank switchover system;

- Removal of the direct connection between the well pump to waste line and the receiving sewer;

- Installation of two (2) 80 mm diameter magnetic flow meters, one on each pump discharge piping and one (1) 100 mm diameter magnetic flow meter on the treated water pipeline;

all in accordance with the Application for Approval, dated August 07, 2002; design report prepared by Genivar Consulting Group.

EXISTING WATER WORKS
(as per consolidated CofA No. 8401 - 542SHK, dated January 31, 2002)

Well No. 1

- a 200 mm diameter 54 m deep drilled groundwater production well with sealed well head, located inside the treatment plant described below (NAD 27: UTM Zone 18: 492995.00 m E. and 4998745.00 m N.), equipped with a submersible well pump rated at 5 L/s at 50 m total dynamic head (TDH) and pump to waste facilities;

Well No. 2

- a 200 mm diameter 54 m deep drilled groundwater production well with sealed well head, located adjacent to Well No. 1 inside the treatment plant described below (NAD 27: UTM Zone 18: 492995.00 m E. and 4998745.00 m N.), equipped with a submersible well pump rated at 5 L/s at 50 m TDH and pump to waste facilities;

Treatment Plant/Pumphouse

- a two level 12.75 m by 8.75 m masonry treatment plant/pumphouse (NAD 27: UTM Zone 18: 492995.00 m E. and 4998745.00 m N.), that houses treatment, pumps and control facilities including:

    - an aeration system consisting of one (1) 0.84 m^2 forced draft aeration tower with a capacity of 8 L/s, equipped with plastic packing, a water distribution system at the top, an air supply system, air exhaust piping and air intake heating and one (1) 264 L/s capacity aeration blower,

    - a sodium hypochlorite disinfection system, consisting of one (1) sodium hypochlorite solution storage tank capable of holding 125 L, two (2) chemical metering pumps (one duty, one standby) each capable of delivering a minimum of 3.0 L/hr, via a feed line to the well pump header inside the pumphouse upstream of the clearwell and pressure filters,

    - two (2) vertical turbine high lift pumps (one duty, one standby), each rated at 5 L/s at 60 m TDH and

    - a filtration system, consisting of one (1) 1.5 m diameter baffled pressure vessel available for flocculation (if necessary) with a volume of approximately 4 m^3 and two (2) dual media pressure filters, each with a capacity of 4 L/s at a flow rate of 9 m/hr (with backwash wash water provided from the treated discharge water header);

Clearwell

- a rectangular clearwell, 4.5 m by 3 m and a minimum depth (low water level) of 1.52 m;

Waste Water Handling

- a process wastewater handling and disposal system, consisting of a 15 m^3 surge tank to hold collected backwash washwater and to directly discharge the washwater to the sanitary sewer;

- approximately 22 m of 150 mm diameter and 12 m of 100 mm diameter watermain with no service connections over their entire length;

together with all associated piping, electrical and mechanical equipment, ventilation, monitoring, control, metering, alarm system and instrumentation;

all in accordance with the Engineer's Report entitled, "Village of Finch Water System Engineers' Report for Water Works", prepared by Kostuch Engineering Limited and dated March, 2001 (1st Revision May 30, 2001; 2nd Revision July 3, 2001), and any additional information and documentation that may have been provided in support of the Report.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

(1) "certificate" means this entire certificate of approval document, issued in accordance with Section 52 of the *Ontario Water Resources Act*, and includes the schedules to it, if any, and any applications for approval for which certificates of approval have previously been issued, and supporting information to the applications;

(2) "Director" means any Ministry employee appointed as Director pursuant to Section 5 of the *Ontario Water Resources Act*;

(3) "Ministry" means the Ontario Ministry of the Environment;

(4) "Owner" means the Corporation of the Township of North Stormont, and includes its successors and assignees;

(5) "works" means the water works described in this certificate and in the supporting documentation included in the Engineer's Report for Water Works, to the extent approved by this certificate;

(6) "water treatment plant" means the entire water treatment system, including the groundwater wells, and any water storage facilities associated with the water treatment plant;

(7) "water treatment or distribution system" means a system for collecting, producing, treating, storing, supplying or distributing water that includes one or more water works;

(8) "quarter" means the three-month period beginning on January 1, April 1, July 1 and October 1 in each year;

(9) "maximum flow rate" means the maximum rate of water flow for which the plant or process unit was designed;

(10) "contact time" means the detention time T_{10} which is the time for 10% of the water (tracer) to pass through the process unit, storage reservoir or pipe;

(11) "operating authority" means the Ontario Clean Water Agency, hired by the Owner to operate the works, and includes any subsequent operating authority hired by the Owner in the future to operate the works.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. PERFORMANCE

1.1 The Owner shall ensure that, subject to Conditions 3.1 through 3.14, the water treatment or distribution system is operated and maintained in such a manner, and with such facilities that water supplied to the consumers serviced by the system satisfies the requirements of the "Ontario Drinking Water Standards", dated January 2001, as amended from time to time.

1.2 The groundwater wells have been approved to supply water at the following maximum flow rates:

Well No. 1	540 L/min*
Well No. 2	540 L/min*

* Combined maximum flow rate of Well No. 1 and Well No. 2 running together is 540 L/min

(a) The Owner shall have a valid Permit To Take Water;

(b) The Owner shall submit an application for an amendment to this certificate when the maximum flow rates of the approved wells are exceeding the flow rates specified in the valid Permit To Take Water.

1.3 The Owner shall ensure that, subject to Conditions 3.1 through 3.14, the water treatment plant is operated to treat water at a rate not exceeding the maximum flow rate of 540 L/min.

1.4 The Owner shall ensure that the flows into the water treatment plant do not exceed the maximum flow rate set out in Condition 1.3, except:

(a) where necessary to meet an unusual water demand for fighting a large fire, **or**

(b) where necessary for the purpose of maintenance of the works and essential to its efficient operation,

and provided that the treated water quality satisfies the requirements set out in the Ministry Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", dated January 2001, as amended from time to time.

1.5 The Owner shall ensure that the disinfection facilities in the water treatment plant are operated and maintained in such a manner and with such facilities as is necessary to be in accordance with the Ministry Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", dated January 2001, as amended from time to time.

2. MONITORING AND RECORDING

2.1 The Owner shall ensure that the following monitoring program is established and carried out:

(a) Install, maintain and operate a sufficient number of flow measuring devices to measure:

(i) the flow rate and daily quantity of water being taken from each well and conveyed to and through the water treatment plant, and

(ii) the flow rate of treated water supplied to the distribution system.

(b) Calibrate the flow measuring devices required by clause (a) above at regular intervals not exceeding one year to ensure their accuracy to within plus or minus 5% of actual rate of flow within the range of 10% to 100% of the full scale reading of the measuring devices, or as specified by the instrument manufacturer's instructions.

(c) Record the results of the flow measurements made in accordance with clause (a) above as total daily flow and as daily peak flows.

(d) Record the date, time, duration and cause of each occasion that the flow rate exceeds that specified in Condition 1.3.

(e) Samples of raw water and treated water shall be collected and analyzed for parameters at the locations and frequencies in accordance with Regulation 459/00, Drinking Water Protection, Schedule 2, Sampling and Analysis Requirements, as amended from time to time.

NOTE: Works which do continuous monitoring of chlorine residual or turbidity may do so instead of taking and analyzing grab samples as may be required by O. Reg. 459/00.

NOTE: Samples of raw water do not need to be analyzed for heterotrophic plate count or background colonies.

(f) In addition to the sampling and analysis requirements of O. Reg. 459/00, collect and analyze:

(i) samples of treated water from the point of entrance to the distribution system annually for the following parameter:

Sodium

(g) The sampling required by clause (f) above shall be performed in a manner that ensures samples have a composition which is representative of the water stream from which they are taken, and also in accordance with the instructions provided by the accredited laboratory engaged to perform the analyses.

2.2 The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring, sampling and analyzing activities required by this certificate.

3. OPERATIONS AND MAINTENANCE

3.1 The Owner, when making decisions within its authority, shall consider the impact of these decisions on the drinking water supply source for water works approved by this Certificate.

3.2 The Owner shall ensure that, subsequent to repairs to the water supply or distribution system, or interruptions in the operation of the water supply resulting in negative pressure conditions in the distribution system, and prior to utilization of the affected parts of the works for the supply of potable water, the affected parts of the water supply or distribution system have been adequately disinfected in accordance with the Ministry Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", dated January 2001, as amended from time to time.

3.3 The Owner shall ensure that there is an operator who holds a valid licence that is applicable to this type of water treatment plant and that is of the same class as or higher class than the class determined for the water treatment plant in accordance with O. Reg. 435/93, as amended from time to time, and who is responsible for the operation of the water treatment plant.

3.4 The Owner shall exercise due diligence in ensuring that, at all times, the works and the related equipment and appurtenances used to achieve compliance with this certificate are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this certificate and the Act and regulations, adequate laboratory facilities, process controls and alarms, and the use of process chemicals and other substances that come in contact with water being treated, that are suitable for the process, compatible with each other and appropriate for drinking water.

3.5 In addition to the requirements of Condition 3.4, the Owner shall ensure that all chemicals used in the treatment process and all materials contacting the water meet both the American Water Works Association (AWWA) quality criteria as set out in AWWA standards and the American National Standards Institute (ANSI) safety criteria as set out in ANSI standard NSF/60 or NSF/61. For all chemicals used in the water treatment process and all materials contacting the water being treated, the Owner shall have evidence of current chemical and material product registration by a testing institution accredited under the Standards Council of Canada Act or by the ANSI or documents showing the Ministry is satisfied that the information provided by the product manufacturer indicates the chemical or material product will meet the criteria of the ANSI standards.

3.6 The Owner shall immediately discontinue use of any chemical upon written notice by the Director.

3.7 The Owner shall establish written procedures for the notification of the Medical Officer of Health and the Ministry required by O. Reg. 459/00, and shall ensure that these procedures are followed.

3.8 The Owner shall ensure that contingency plans and procedures are established and adequate equipment and material are available for dealing with emergencies, upset conditions and equipment breakdowns in the works, and that such plans and procedures are implemented.

3.9 The Owner shall ensure that an operations manual that incorporates, at a minimum, the requirements of this certificate, and any adopted operation and maintenance recommendations of the Engineer's Report based on which this certificate has been issued, is prepared within twelve (12) months of issuance of this certificate of approval, and ensure that the operations manual is kept up to date. Upon request, the Owner shall make the manual available for inspection by the Ministry personnel.

3.10 The Owner shall ensure that based on the raw water source characterization and the treatment process, the operations manual includes monitoring and reporting of the necessary raw water and in-process parameters that are essential for control of the treatment process and for the assessment of the performance of the works. The manual shall also contain procedures that are required for adequate operation and maintenance of the monitoring equipment.

3.11 Within one (1) year of substantial completion of the construction of the new water works required by this Certificate, the Owner shall ensure that drawings accurately showing the new works as constructed (record drawings) are prepared and kept up-to-date, including timely incorporation of all modifications made to the works throughout its operational life.

3.12 The Owner shall ensure that a Process and Instrumentation Diagram (PID) for the entire water treatment plant is prepared and kept up-to-date, including timely incorporations of all modifications made to the works throughout its operational life.

3.13 The Owner shall keep a complete set of up-to-date record drawings and diagrams required to be prepared by Conditions 3.11 and 3.12, and all existing record drawings which are currently in retention throughout the operational life of the water works, and upon request, shall make them readily available for inspection by Ministry staff.

3.14 The Owner shall ensure that procedures are established and followed for receiving, responding to, and recording complaints about any aspects of the works, including recording the steps that were taken, if any, to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.

4. COMPLIANCE REPORT

4.1 (a) The Owner shall ensure that a written report detailing compliance with all terms and conditions of this approval is completed annually ("Compliance Report").

(b) The first Compliance Report shall cover a period commencing not later than the date of issue of this certificate to the end of the calendar year in which the certificate is issued and shall be completed and made available not later than March 31 of the following year. Each subsequent Compliance Report shall be completed and made available not later than March 31 following the end of the calendar year to which the Compliance Report applies.

(c) A Compliance Report shall include, at a minimum, the following information:

(i) Under a heading of 'Compliance with Terms and Conditions of the Certificate of Approval', a statement as to compliance with all of the terms and conditions of the certificate and a detailed description of the measures taken to ensure compliance with the certificate, including any supporting data or other information;

(ii) In the event of any non-compliance during the reporting period, and under a heading of 'Non-Compliance with Terms and Conditions of the Certificate of Approval', details of the non-compliance as well as details of how and when any non-compliance was corrected;

(iii) A summary and discussion of the quantity of water supplied during the reporting period compared to the rated capacity specified in this certificate of approval, including monthly average and maximum daily flows;

(iv) A summary of records made under Condition 2.1 related to flow rate exceedances, and a summary of analytical results of sampling required by the certificate, including raw water and in-process parameters as specified in the operations manual in accordance with Condition 3.10; and

(v) A summary listing treatment chemicals used, including average dosage rates with special reference to any abnormal usages.

(d) The Compliance Report shall be signed by a person designated by the Council of the municipality that owns the works.

(e) Within three months of completion of the Compliance Report, the Owner shall confirm by a resolution of council that the Compliance Report has been presented to council.

(f) The Owner shall ensure that copies of the Compliance Report are available for inspection by any member of the public during normal business hours without charge and at the same location as that required by s.11 of O.Reg. 459/00 for reports under that regulation. Each 4th quarter report required under section 12 of that regulation shall include information about when the Compliance Report is required to be completed, an outline of the requirements for its contents, and the location where the completed report can be inspected.

5. UPGRADING REQUIREMENTS

5.1 Subject to Condition 5.2 below, by **July 01, 2003,** the Owner shall implement the following physical improvements to the works, in keeping with recommendations of the Engineers' Report and related correspondence:

(a) All works necessary to ensure that a free chlorine residual of 0.2 mg/L after 15 minutes contact time determined as T_{10} at maximum flow and before the first consumer is maintained in all disinfected water entering the distribution system in accordance with requirements of the "Procedure B13-3 Chlorination of Potable Water Supplies in Ontario", including but not limited to:

(i) controls to automatically switch over the sodium hypochlorite metering pumps and alarm in the event of the failure of one pump and

(ii) stand-by hypochlorite solution storage tank with automatic switch-over when connected tank is empty or alternative approved by the Ministry.

(b) All works and measures necessary to ensure the effective treatment and integrity of the works, including but not limited to:

(i) upgrading of all well vents to comply with Ontario Regulation 903 and

(ii) removing the direct connection of the well pump to the waste line to the sewer.

5.2 The Owner shall not construct or allow the construction of any portion of the works necessary to comply with the requirements of Condition 5.1 above for which an approval under the *Ontario Water Resources Act* or the *Environmental Protection Act* is required unless a complete application for approval of such portion of the works, including detailed design drawings, specifications and a design brief containing detailed design calculations, has been submitted to and approved by the Director.

5.3 The Owner shall ensure that a complete application for approval under Section 52 of the *Ontario Water Resources Act*, and if necessary, under Section 9 of the *Environmental Protection Act*, is submitted to the Director for each item listed in Condition 5.1 above for which an approval is required at a date which will allow the Owner to obtain approval for the required physical upgrades to the works, and implement the upgrades on or before the compliance date stipulated in Condition 5.1 above.

6. SUBSEQUENT ENGINEERS' REPORTS

6.1 The Owner shall ensure that not later than **September 30, 2004** a Second Engineer's Report, prepared in accordance with the Ministry publication "Terms of Reference for Second and Subsequent Engineers' Reports for Water Works" current at the time of the preparation of the Report, is submitted to the Director.

6.2 The Owner shall ensure that each subsequent Engineer's Report, required by O. Reg. 459/00 to be submitted to the Director not later than the third anniversary of the submission of the previous report, is prepared in accordance with the Ministry publication "Terms of Reference for Second and Subsequent Engineers' Reports for Water Works" current at the time of the preparation of the Report.

7. REVOCATION OF EXISTING APPROVALS

7.1 The descriptions of the approved works and conditions of approval in this certificate apply in place of all existing descriptions and conditions in the certificates of approval under the *Ontario Water Resources Act* for water works which are part of the works approved by this certificate.

7.2 Notwithstanding Condition 7.1 above, the original applications for approval, including design calculations, engineering drawings and reports prepared in support of the existing certificate(s) of approval whose descriptions of the approved works and conditions are now replaced pursuant to Condition 7.1 above, shall form part of this certificate.

7.3 Where an existing certificate of approval referred to in Condition 7.1 above applies to works in addition to the works approved by this certificate, it shall continue to apply to those additional works.

8. INFORMATION

8.1 The requirements in this certificate shall not be construed as limiting in any way the ability of the Ministry to request or require the Owner to furnish any information related to compliance with this certificate, as limiting in any way the authority of the Ministry to require certain steps be taken, or as evidence of the fulfillment of the obligation to report or notify of non-compliance where reporting or notification is required by a statute, regulation, order or other approval.

8.2 In the event the Owner provides the Ministry with information, records, documentation or notification in accordance with this certificate ("Information"),

(a) the receipt of the Information by the Ministry;

(b) the acceptance by the Ministry of the Information's completeness or accuracy; or

(c) the failure of the Ministry to prosecute the Owner or to require the Owner to take any action, under this certificate or any statute or regulation in relation to the Information;

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Owner relating to the Information, amounting to non-compliance with the certificate.

9. CHANGE OF OWNERSHIP

9.1 The Owner shall notify the Manager of the local District office of the Ministry in writing of any of the following changes within 30 days of the change occurring:

(a) change of owner or operating authority, or both;

(b) change of address of owner or operating authority or address of new owner or operating authority;

(c) change of partners where the owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Partnerships Registration Act* shall be included in the notification to the Manager of the local District office of the Ministry;

(d) change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current "Initial Notice or Notice of Change" (Form 1, 2 or 3 of O.Reg. 189, R.R.O. 1980, as amended from time to time), filed under the *Corporations Information Act* shall be included in the notification to the Manager of the local District office of the Ministry;

9.2 In the event of any change in ownership of the works, other than change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this certificate, and a copy of such notice shall be forwarded to the Manager of the local District office of the Ministry.

9.3 The Owner shall ensure that all communications made pursuant to Conditions 9.1 and 9.2 will refer to this certificate's number.

10. INTERPRETATION (Severability and Conflicts)

10.1 The requirements of this certificate are severable. If any requirement of this certificate, or the application of any requirement of this certificate to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

10.2 In all matters requiring the interpretation and implementation of this certificate, the conditions of the certificate shall take precedence, followed by the documentation submitted in support of the applications associated with any previously issued certificates of approval for works which are part of the works approved by this certificate.

The reasons for the imposition of these terms and conditions are as follows:

1. Conditions 1.1, and 1.5 are included so that the water quality delivered by the water treatment plant satisfies the current Ontario Drinking Water Standards in order to protect public health and so that the water is aesthetically acceptable.

2. Conditions 1.2, 1.3 and 1.4 are included so that the flow rate of water through the works is within the approved treatment capacity of the works.

3. Conditions 2.1 and 2.2 related to the flow metering, sampling and monitoring program are imposed so that all pertinent data are available for the works performance evaluation and so that the works is operated and maintained at the level consistent with the design objectives, and is effective in producing water of an acceptable quality at all times.

4. Conditions 3.1 through 3.9 and 3.11 through 3.14 are included so that the works will be operated, maintained, funded, staffed and equipped in a manner enabling compliance with the terms and conditions of this certificate and that the Owner can deal with contingency and/or emergency situations.

5. Condition 3.10 is included so that adequate information is available to allow proper control of the treatment process in order to achieve the desired water quality and efficiency of the treatment process.

6. Condition 4.1 is included so that the Owner will regularly review compliance with the terms and conditions of this certificate, be alerted to its obligations with respect to any non-compliance, and allow the public enhanced participation in monitoring compliance.

7. Condition 5.1 is included to require the Owner to implement improvements to the works necessary for the works to be capable of providing safe drinking water in accordance with Ontario Regulation 459/00 and Ontario Drinking Water Standards in a consistent and reliable manner.

8. Conditions 5.2 and 5.3 are included so that the Owner is aware that Condition 5.1, which identifies the requirements for improvements to the works, does not constitute an approval for the implementation of the improvements, and before undertaking any of the improvements, the Owner must apply for and

obtain Director's approval under Section 52 of the *Ontario Water Resources Act*.

9. Conditions 6.1 and 6.2 are included to set specific dates for the submission of a second and subsequent engineers' reports, which are required by Ontario Regulation 459/00.

10. Conditions 7.1 through 7.3 are included to stipulate that this certificate replaces all previous approvals for the works being the subject of this certificate, and that the existing approvals remain in force for the purpose of any works which are not subject to this certificate (e.g., a distribution system or its portions, including any in-distribution storage facilities not associated with a water treatment process).

11. Conditions 8.1 and 8.2 are included to emphasize the distinction between the requirements of this certificate and other legal requirements with which the Owner is required to comply.

12. Conditions 9.1 through 9.3 are included so that the Ministry records are kept accurate and current with respect to approved works, and so that subsequent owners of the works are made aware of the certificate and continue to operate the works in compliance with it.

13. Conditions 10.1 and 10.2 are included to clarify how the certificate is to be judicially interpreted, and specifically, to clarify that the requirements of the certificate are severable and that they prevail over supporting documentation.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 8401-542SHK issued on January 31, 2002

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 52, *Ontario Water Resources Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted water works are approved under Section 52 of the Ontario Water Resources Act.

DATED AT TORONTO this 1st day of October, 2002

Mohamed Dhalla, P.Eng.
Director
Section 52, *Ontario Water Resources Act*

AW/

c: District Manager, MOE Cornwall
J. C. Johnston, Genivar Consulting Group Ltd.
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards Development Branch

APPENDIX B

PERMIT TO TAKE WATER

(AS ATTACHED)

Ontario Ministry of the Environment / Ministère de l'Environnement

PERMIT TO TAKE WATER
Number 80-P-4002

Notice of Terms and Conditions
Section 100, Ontario Water Resources Act, R.S.O. 1990

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 permission is hereby granted

TO: Township of North Stormont
2 Victoria Street
Berwick, ON
K0C 1G0

for the taking of water from two (2) wells located at 20 William Street in the Village of Finch, Township of North Stormont, County of Stormont, for municipal water supply. The combined total rate of taking shall not exceed 540 litres per minute, or a combined total of 777,600 litres per day for Well #1 and Well #2.

Except where modified by this Permit the water taking shall be in accordance with the application dated February 15, 2000, and signed by Blair Henderson, Ontario Clean Water Agency as agent on behalf of the Permit Holder.

You are hereby notified that this Permit is issued to you subject to the following Definitions, General Conditions and Special Conditions.

DEFINITIONS

1. (a) "Director" means a Director, Section 34, Ontario Water Resources Act, R.S.O. 1990.

(b) "Ministry" means Ontario Ministry of the Environment.

(c) "Permit" means this entire Permit to Take Water including its schedules, if any, issued in accordance with Section 34 of the Ontario Water Resources Act, R.S.O. 1990.

(d) "Permit Holder" means Township of North Stormont.

GENERAL CONDITIONS

2. This Permit shall be kept available at the offices of the Township of North Stormont, 2 Victoria Street, Berwick, ON, with a copy to be kept on-site at 20 William Street in the Village of Finch, ON, for inspection by Ministry staff at all times.

3. The Director may, from time to time, where a situation of interference or anticipated interference with water supplies exists, or in a situation requiring information on water takings for purposes of water resource inventory and planning, give written notice to the Permit Holder to undertake any of the following actions. The Permit Holder shall comply with any such notice:

   (a) To establish and maintain a system for the measurement of the quantities of water taken;
   (b) To operate such a system and to record measurements of the quantities of water taken on forms provided by the Director, with such frequency or for such time periods as the Director may specify;
   (c) To return to the Director records made pursuant to clause 3(b) at such times or with such frequency as the Director may specify; and
   (d) To keep records made pursuant to clause 3(b) available for inspection until such time as they are returned to the Director pursuant to clause 3(c).

4. The Permit Holder shall immediately notify the Director of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint.

5. For Surface-Water Takings, the taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

6. For Ground-Water Takings, if the taking of water is forecast to cause any negative impact, or is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent the forecast negative impact or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of so doing.

7. Prior to the taking of water under the authority of this Permit to Take Water, the Permit Holder shall ensure that the works complies with Section 52 of the Ontario Water Resources Act, R.S.O. 1990.

8. Prior to the taking of water under the authority of this Permit to Take Water, the Permit Holder shall ensure that the discharge complies with Section 53 of the Ontario Water Resources Act, R.S.O. 1993.

9. The Permit Holder shall report to the Director any changes of address or telephone number, or change of ownership of the property for which this Permit is issued and shall report to the Director any changes in the general conditions of water taking from those described in the Permit application within thirty days of any such change. The Permit Holder shall not assign his rights under this Permit to another person without the written consent of the Director.

10. No water may be taken under authority of this permit after the expiry date of this Permit, unless the Permit is renewed, or after the expiry date shown on any subsequent renewal of this permit, unless it is likewise renewed.

11. This Permit does not release the Permit Holder from any legal liability or obligation and remains in force subject to all limitations, requirements, and liabilities imposed by law. This Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

12. The Permit Holder must forthwith, upon presentation of credentials, permit Ministry personnel, or a Ministry authorized representative(s) to carry out any and all inspections authorized by Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990 of Section 19 or 20 of the Pesticides Act, R.S.O. 1990.

13. The Director may, at times of drought or water shortage in the locality of the taking, give notice to the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director. The suspension or reduction in the taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect the right to appeal the notice to the Environmental Appeal Board under the Ontario Water Resources Act, Subsection 100(3).

SPECIAL CONDITIONS

14. Records with respect to the measurement and reporting criteria defined under General Condition 3(d) listed above shall be kept daily by the Permit Holder at the offices of Township of North Stormont, 2 Victoria Street, Berwick, ON, with a copy to be kept on-site at 20 William Street in the Village of Finch, ON, until this Ministry requests them to be submitted or states otherwise.

15. No water shall be taken under authority of this Permit after March 31, 2010.

The reason for the imposition of Special Condition 14 is to establish a record of water taking.

The reason for the imposition of Special Condition 15 is to ensure that this Ministry has an opportunity to review the continued availability of water to be taken under authorization by this Permit as it relates to interference with other established uses.

You may, by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each Term or Condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to <u>each</u> portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit number;
6. The date of the Permit;
7. The name of the Director;
8. The municipality within which the taking is located;

And the Notice should be signed and dated by the appellant.

This notice must be served upon:

The Secretary
Environmental Appeal Board
P.O. Box 2382
2300 Yonge Street, 12th Floor
TORONTO, Ontario
M4P 1E4

AND The Director
Section 34, Ontario Water Resources Act
Ministry of the Environment
133 Dalton Avenue, Box 820
KINGSTON, Ontario
K7L 4X6

Dated at Kingston this 14th day of March, 2000.

L. Clyde Hammond

Director
Section 34, Ontario Water Resources Act
Ministry of the Environment.

Ontario

APPENDIX C

GPS COORDINATES

GPS REFERENCING	
ITEM	GLOBAL POSITIONING SYSTEM (GPS) COORDINATES
MAP DATUM:	NAD83
UTM ZONE:	18T
TREATMENT PLANT:	0493021 / 4998971 (±7.1m)
DISTRIBUTION SYSTEM: St. Bernard Catholic School	0493578 / 4998444 (±9.2m)
DISTRIBUTION SYSTEM: Smith & Son's Cartage Limited	0494012 / 4999147 (±5.9m)
DISTRIBUTION SYSTEM: Sewage Pumping Station	0492823 / 4999729 (±7.6m)

Ontario

APPENDIX D

PLANT CLASSIFICATION

Plant Name: Village of Finch Drinking Water System

Facility Level: Class 2 Water Treatment and Class 2 Water Distribution

Certificate Number: 666 and 667

Date of Issue: February 18, 1988

PLANT PERSONNEL

Operator Name: Blair Henderson

Title: Operations Manager

Water Treatment Classification: Class 2

Water Distribution Classification: Class 3

Certificate Number: 3695

Certificate Number: 3643

Expiry Date: October 31, 2005

Expiry Date: October 31, 2005

Operator Name: Dave Markell

Title: Process/Compliance Technician

Water Treatment Classification: Class 2

Water Distribution Classification: Class 3

Certificate Number: 9396

Certificate Number: 7807

Expiry Date: November 30, 2004

Expiry Date: September 30, 2005

Ontario

Ministry of the Environment
Drinking Water Inspection Report

Operator Name: William Michels	**Title:** Operator
Water Treatment Classification: Class 2	**Water Distribution Classification:** Class 2
Certificate Number: 13519	**Certificate Number:** 14646
Expiry Date: September 30, 2006	**Expiry Date:** September 30, 2006

Operator Name: Jean Veilleux	**Title:** Operator
Water Treatment Classification: Class 3	**Water Distribution Classification:** Class 3
Certificate Number: 7171	**Certificate Number:** 7172
Expiry Date: May 31, 2006	**Expiry Date:** May 31, 2006

Operator Name: Andrew Barrie	**Title:** Operator
Water Treatment Classification: Class 2	**Water Distribution Classification:** Class 2
Certificate Number: 11395	**Certificate Number:** 11396
Expiry Date: October 31, 2005	**Expiry Date:** January 31, 2005

Operator Name: Tony Kelly	**Title:** Operator
Water Treatment Classification: Class 3	**Water Distribution Classification:** Class 3
Certificate Number: 9394	**Certificate Number:** 7805
Expiry Date: November 30, 2004	**Expiry Date:** November 30, 2003

Operator Name: Mark Lauzon	**Title:** Operator
Water Treatment Classification: OIT	**Water Distribution Classification:** OIT
Certificate Number: OT18272	**Certificate Number:** OT18273
Expiry Date: September 30, 2005	**Expiry Date:** September 30, 2005

Ontario

Ministry of the Environment
Drinking Water Inspection Report

Operator Name: Brian Huskinson	**Title:** Operator
Water Treatment Classification: Class 2	**Water Distribution Classification:** Class 2
Certificate Number: 13539	**Certificate Number:** 2225
Expiry Date: October 31, 2005	**Expiry Date:** August 31, 2005

Operator Name: Lisa Bortolussi	**Title:** Operator in Training
Water Treatment Classification: OIT	**Water Distribution Classification:** OIT
Certificate Number:	**Certificate Number:**
Expiry Date: June 30, 2006	**Expiry Date:** June 23, 2006

Operator Name: James Roach	**Title:** Operator in Training
Water Treatment Classification: OIT	**Water Distribution Classification:** OIT
Certificate Number:	**Certificate Number:**
Expiry Date: March 31, 2005	**Expiry Date:** November 30, 2005

Ontario

APPENDIX E

CONTACT INFORMATION

Local Health Unit

Eastern Ontario Health Unit
1000 Pitt Street
Cornwall, ON

Attention: Dr. Bourdeau

Medical Officer of Health:

Dr. Robert Bourdeau

Phone: 613-933-1375
Fax: 613-933-9707

Conservation Authority or Ministry of Natural Resources

South Nation Conservation Authority
15 Union Street
Berwick, Ontario
K0C 1G0

Attention: Richard E. Pilon

Phone: 613-984-2948
Fax: 613-984-2872

MOE Environmental Assessment and Approvals Branch

Ministry of the Environment
2 St. Clair Avenue West
Floor 12A
Toronto ON M4V 1L5

Attention: Mirek Tybinkowski
Water and Wastewater
Specialist

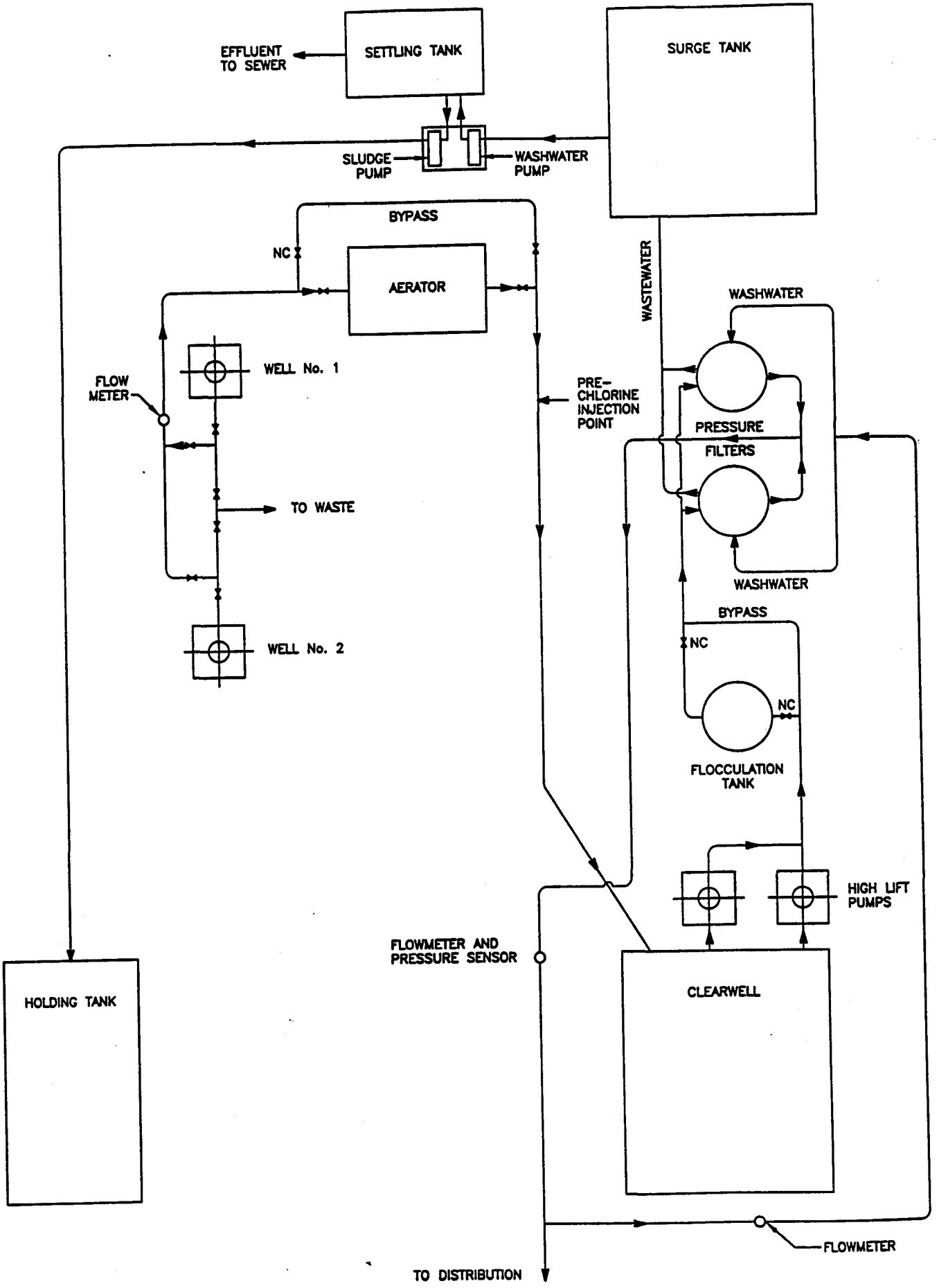
Phone: 416-314-8202
Fax: 416-314-6935

Ontario

APPENDIX F

PLANT SCHEMATIC

(SEE ATTACHED)



SCHEMATIC PROCESS FLOW DIAGRAM FOR FINCH WATER SYSTEM

Ontario

APPENDIX G

MINISTRY AUDIT SAMPLE RESULTS

(SEE ATTACHED)

APPENDIX
Table 1
FINCH WELL SUPPLY
AUDIT SAMPLE RESULTS - 17-JUN-2003
CHEMICAL / PHYSICAL PARAMETERS - HEALTH RELATED

Sample # 1 - (REG) TREATED WATER

Parameter	Units	MAC [1]	IMAC [2]	AO [3]	SAMPLE # 1
ANTIMONY, UNFILTERED TOTAL	UG/L		6		.38 +/-0.13
ARSENIC, UNFILTERED TOTAL	UG/L		25		.1 +/-0.10
BARIUM, UNFILTERED TOTAL	UG/L	1000			475 +/-35.00
BENZENE C6H6	UG/L	5			.05 <=W
BORON, UNFILTERED TOTAL	UG/L		5000		158 +/-15.00
BROMODICHLOROMETHANE	UG/L				6.4
BROMOFORM	UG/L				1 <T
CADMIUM, UNFILTERED TOTAL	UG/L	5			0 +/-0.05
CARBON TETRACHLORIDE	UG/L	5			.2 <=W
CHLOROBENZENE	UG/L	80			.05 <=W
CHLORODIBROMOMETHANE	UG/L				6
CHLOROFORM CHCL3	UG/L				6.9
CHROMIUM, UNFILTERED TOTAL	UG/L	50			2.3 +/-0.50
DICHLOROBENZENE 1,2	UG/L	200			.05 <=W
DICHLOROBENZENE 1,4	UG/L	5			.05 <=W
DICHLOROETHANE 1,2	UG/L		5		.05 <=W
DICHLOROETHYLENE 1,1	UG/L	14			.05 <=W
FLUORIDE, UNFILTERED REACTIVE	MG/L	1.5 b			.45
LEAD, UNFILTERED TOTAL	UG/L	10 c			.05 +/-0.05
MERCURY, UNFILTERED TOTAL	UG/L	1			.02 <=W
METHYLENE CHLORIDE	UG/L	50			.2 <=W
NITRATES TOTAL, UNFIL.REAC	MG/L	10 d			.131
NITRITE, UNFILTERED REACTIVE	MG/L	1 d			.001 <=W
SELENIUM, UNFILTERED TOTAL	UG/L	10			0 +/-1.00
TETRACHLOROETHYLENE	UG/L	30			.05 <=W
TRICHLOROETHYLENE C2HCL3	UG/L	50			.05 <=W
TRIHALOMETHANES, TOTAL	UG/L	100 e			20.5
URANIUM, UNFILTERED TOTAL	UG/L	20			.2 +/-0.05
VINYL CHLORIDE C2H3CL	UG/L	2			.05 <=W

Shortforms:

<T	-	A measurable trace amount; interpret with caution	NA	-	Result not available
<W	-	No measurable response (zero)	NS	-	Not sampled
<=W	-	No measurable response (zero)	FTU = NTU	-	Nephelometric Turbidity Unit
<	-	Actual result is less than reported value	NG/L	-	Nanograms per litre
ND	-	Not detected	UG/L	-	Micrograms per litre
!NP	-	No appropriate procedure available	MG/L	-	Milligrams per litre

Footnotes:

1 Maximum Acceptable Concentration

2 Interim Maximum Acceptable Concentration

3 Aesthetic Objective

4 Includes *alpha*-chlordane, *gamma*-Chlordane and Oxychlordane

5 Includes *p,p'*-DDE, o,p'-DDT, *p,p'*-DDD and *p,p'*DDT

a) Total toxic equivalents when compared with 2,3,7,8,-TCDD (tetrachlorodibenzo-p-dioxin)

b) Where fluoride is added to drinking water, it is recommended that the concentration be adjusted to 0.5 - 0.8 mg/L. Where supplies contain naturally occurring fluoride at levels higher than 1.5 mg/L but less than 2.4 mg/L the Ministry of Health and Long Term Care recommends an approach through local boards of health to raise public and professional awareness to control excessive exposure to fluoride from other sources. Levels above the MAC must be reported to the local Medical Officer of Health.

c) This standard applies to water at the point of consumption. Since lead is a component in some plumbing systems, first flush water may contain higher concentrations of lead than water that has been flushed for five minutes.

d) Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen).

e) The standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system.

f) A MAC for turbidity of 1.0 NTU in drinking water leaving the treatment plant was established to ensure the efficiency of the disinfection process. Distribution system protection processes can result in increased turbidity in the distribution system. To ensure that the aesthetic quality is not degraded, an aesthetic objective for turbidity at the free flowing outlet of the ultimate consumer has been set at 5 NTU.

APPENDIX
Table 2
FINCH WELL SUPPLY
AUDIT SAMPLE RESULTS - 17-JUN-2003
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WELL 1 RAW
Sample # 2 - WELL 2 RAW
Sample # 3 - (REG) TREATED WATER
Sample # 4 - (REG) ST. BERNARD SCHOOL
Sample # 5 - (REG) SMITH & SONS CARTAGE
Sample # 6 - (REG) STP

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 1	SAMPLE # 2
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200		0	0
COLIFORM, TOTAL MF	C/100ML	0		0	0
ESCHERICHIA COLI MF	C/100ML	0		0	0
HETEROTROPH MF 35 C	C/ML	500			
NT: DETERIORATION INDICATORS	C/100ML		0		
NT: ESCHERICHIA COLI	C/100ML	0			
NT: TOTAL COLIFORMS	C/100ML	0			

APPENDIX
Table 2
FINCH WELL SUPPLY
AUDIT SAMPLE RESULTS - 17-JUN-2003
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WELL 1 RAW
Sample # 2 - WELL 2 RAW
Sample # 3 - (REG) TREATED WATER
Sample # 4 - (REG) ST. BERNARD SCHOOL
Sample # 5 - (REG) SMITH & SONS CARTAGE
Sample # 6 - (REG) STP

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 3	SAMPLE # 4
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			
COLIFORM, TOTAL MF	C/100ML	0			
ESCHERICHIA COLI MF	C/100ML	0			
HETEROTROPH MF 35 C	C/ML	500		10 <	10 <
NT: DETERIORATION INDICATORS	C/100ML		0	NOT DETECTED	NOT DETECTED
NT: ESCHERICHIA COLI	C/100ML	0		ABSENT	ABSENT
NT: TOTAL COLIFORMS	C/100ML	0		ABSENT	ABSENT

APPENDIX
Table 2
FINCH WELL SUPPLY
AUDIT SAMPLE RESULTS - 17-JUN-2003
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - WELL 1 RAW
Sample # 2 - WELL 2 RAW
Sample # 3 - (REG) TREATED WATER
Sample # 4 - (REG) ST. BERNARD SCHOOL
Sample # 5 - (REG) SMITH & SONS CARTAGE
Sample # 6 - (REG) STP

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 5	SAMPLE # 6
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200			
COLIFORM, TOTAL MF	C/100ML	0			
ESCHERICHIA COLI MF	C/100ML	0			
HETEROTROPH MF 35 C	C/ML	500		10 <	10 <
NT: DETERIORATION INDICATORS	C/100ML		0	NOT DETECTED	NOT DETECTED
NT: ESCHERICHIA COLI	C/100ML	0		ABSENT	ABSENT
NT: TOTAL COLIFORMS	C/100ML	0		ABSENT	ABSENT

Notes:

- Escherichia coli is a more definitive indicator of fecal contamination than fecal coliforms or total coliforms.
- At elevated levels, the general bacterial population may interfere with the detection of coliforms. This general population can be estimated from either background colony counts on the total coliform membrane filters or heterotrophic plate counts (HPC).

Shortforms:

C/100mL - Count per 100 millilitre

C/mL - Count per millilitre

Footnotes:

1. Maximum Acceptable Concentration
2. Aesthetic objective

Indicators of adverse water quality, notification procedure and corrective actions (from ODWS section 4.2.2)

Each of the following is an indicator of adverse water quality:

a) *Escherichia coli (E.coli)* or fecal coliform is detected in any required sample other than a raw water sample. (Corrective action: Increase the chlorine dose and flush the mains to ensure that a total chlorine residual of at least 1.0 mg/L or a free chlorine residual of 0.2 mg/L is achieved at all points in the affected part(s) of the distribution system. Resample and analyze. Corrective action should begin immediately and continue until *E. coli* and fecal coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.)

b) Total coliforms detected (but not *Escherichia coli* or other fecal coliforms) in any required sample other than a raw water sample. (Corrective action: Resample at the same site and analyze. If confirmed to be positive, increase the chlorine dose and flush the mains to ensure that a total chlorine residual of at least 1.0 mg/L or a free chlorine residual of 0.2 mg/L to all points in the affected part(s) of the distribution system. Corrective action outlined should begin immediately and continue until total coliforms are no longer detected in two consecutive sets of samples or as instructed by the local Medical Officer of Health.)

c) Unchlorinated water is directed to the distribution system, where chlorination is used or required. This includes water in the distribution system which has less than 0.05 mg/L of free chlorine residual when tested. (Corrective action: Restore chlorination immediately and follow instructions as directed by the local Medical Officer of Health.)

d) Samples, other than raw water samples, containing more than 500 colonies per mL on a heterotrophic plate count analysis. (Corrective action: Resample and analyze. On confirmation, call the local Medical Officer of Health again and consult.)

e) Samples, other than raw water samples, containing more than 200 background colonies on a total coliform membrane filter analysis. (Corrective action: Resample and analyze. On confirmation, call the local Medical Officer of Health again and consult.)

f) Aeromonas spp., *Pseudomonas aeruginosa,,Staphylococcus aureus, Clostridium* spp. or fecal streptococci (Group D streptococci) are detected in samples, other than raw water samples. (Corrective action: Resample and analyze. On confirmation, call the local Medical Officer of Health again and consult.)

Pursuant to the Drinking Water Protection Regulation, when a, b, c, d, e, and/or f occurs, the laboratory and the owner of the water works shall immediately notify the MOE Spills Action Centre (SAC) and the local Medical Officer of Health. In the case of c the owner of the water works shall immediately notify the MOE SAC and the local Medical Officer of Health.

APPENDIX
Table 3
FINCH WELL SUPPLY
AUDIT SAMPLE RESULTS - 17-JUN-2003
CHEMICAL / PHYSICAL PARAMETERS - NOT HEALTH RELATED

Sample # 1 - (REG) TREATED WATER

Parameter	Units	OBJECTIVE	TYPE OF OBJECTIVE	SAMPLE # 1	
ALUMINIUM, UNFILTERED TOTAL	UG/L	100	OG	.8	+/-0.60
AMMONIUM, TOTAL UNFIL.REAC	MG/L	a	a	.002	<=W
COPPER, UNFILTERED TOTAL	UG/L	1000	AO	18.7	+/-1.50
ETHYLBENZENE C8H10	UG/L	2.4	AO	.05	<=W
IRON, UNFILTERED TOTAL	UG/L	300	AO	0	+/-6.00
MANGANESE,UNFILTERED TOTAL	UG/L	50	AO	.87	+/-0.62
TOLUENE C7H8	UG/L	24	AO	.05	<=W
TURBIDITY	FTU	5	AO	.05	<=W
XYLENE-M C8H10	UG/L	300	AO	.15	<T
XYLENE-O C8H10	UG/L	300	AO	.05	<=W
XYLENE-P C8H10	UG/L	300	AO	.05	<=W
ZINC, UNFILTERED TOTAL	UG/L	5000	AO	3.6	+/-0.90

Shortforms:

<T	-	A measurable trace amount; interpret with caution	DEG	-	Degree celsius
<W	-	No measurable response (zero)	AO	-	Aesthetic Objective
<=W	-	No measurable response (zero)	OG	-	Operational Guideline
<	-	Actual result is less than reported value	TCU	-	True Colour Units
ND	-	Not detected	NG/L	-	Nanograms per litre
NA	-	Result not available	UG/L	-	Micrograms per litre
NS	-	Not sampled	MG/L	-	Milligrams per litre

Footnotes:

a No limit has been established for this parameter.

b Organic Nitrogen = (Total Kjeldahl Nitrogen - Ammonia)

c The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

d When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.