MINISTRY OF THE ENVIRONMENT

ALEXANDRIA WATER TREATMENT PLANT

DRINKING-WATER SYSTEM INSPECTION REPORT

TOWNSHIP OF NORTH GLENGARRY

ISSUED AUGUST 2004

Ontario

Ministry of the Environment
Ministére de l'Environnement

133 Dalton Avenue
Kingston ON
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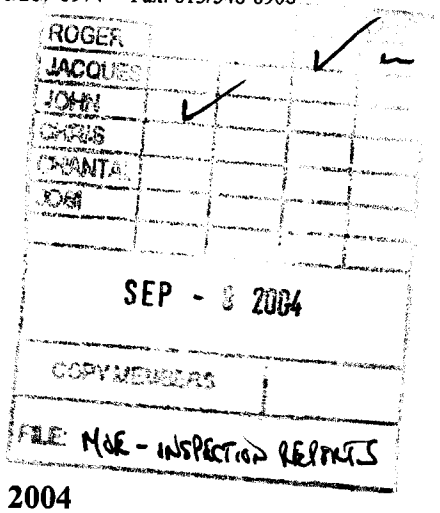

September 2, 2004

Mr. Andre Bachand, Manager - Water Works Department
The Corporation of the Township of North Glengarry
P.O. Box 700, 90 Main Street South
Alexandria, Ontario K0C 1A0

Dear Mr. Bachand:

RE: Ministry of the Environment Drinking Water Inspection - 2004
Alexandria Drinking-Water System

The Alexandria Drinking-Water System was inspected on June 9, 2004 and June 10, 2004, to assess compliance with applicable Acts, Regulations, and site-specific authorizing and control documents. The report is also based upon a review of in-house and laboratory analytical results for samples collected between July 2003 and June 2004, and interviews held with operational personnel. Enclosed is a copy of the inspection report for your review. A copy will also be sent to Robert Boisvenue, who is designated as the Deputy Clerk for the Corporation of the Township of North Glengarry. Copies will also be sent to the local Medical Officer of Health and the Raisin Region Conservation Authority.

Your attention is directed to the sections "Actions Required" and "Recommended Actions" of the report. Please provide an Action Plan by no later than the date specified within the report, detailing how the municipality plans to address these issues.

Should you have any questions pertaining to the report, please do not hesitate to contact me at this office at extension 2666.

Yours truly,

Shannon Hamilton-Browne

Shannon Hamilton-Browne
Inspector / Provincial Officer
Safe Drinking Water Branch
Kingston Office

Eastern Region

SHB
Enclosure

cc: Mr. Robert Boisvenue, Deputy-Clerk, The Corporation of the Township of North Glengarry, P.O. Box 700, 90 Main Street South, Alexandria, ON K0C 1A0

Dr. Robert Bourdeau, Medical Officer of Health, Eastern Ontario Health Unit, 1000 Pitt Street, Cornwall, ON K6J 5T1

Mr. Mirek Tybinkowski, P. Eng., Water and Wastewater Specialist, MOE Environmental Assessment and Approvals Branch, 2 St. Clair Ave, West, Floor 12A, Toronto, ON M4V 1L5

✓ Mr. Roger Hood, General Manager, Raisin Region Conservation Authority, P.O. Box 429, 6589 Boundary Road, Cornwall, ON K6H 5T2

Ontario

Ministry of the Environment

ALEXANDRIA WTP

Drinking Water System Inspection Report

DWS Number:	220001030
Inspection Number:	1-PG3L
Date of Inspection:	Jun 09, 2004
Inspected By:	Shannon Hamilton-Browne

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APPENDICES

OWNER INFORMATION:

Company Name:	North Glengarry, The Corporation Of The Township Of		
Street Number:	22	**Unit Identifier:**	
Street Name:	Gernish, West St		
County/District:			
District/Area Office:	Cornwall		
City:	North Glengarry		
Province:	ON	**Postal Code:**	K0C 1A0

CONTACT INFORMATION

Type:	Main Contact	**Name:**	Andre Bachand
Phone:	(613) 525-1110	**Fax:**	(613) 525-1649
Email:	bachand@northglengarry.com		
Title:	Water Works Manager		

Type:	Other - specify - EOHU	**Name:**	Robert Bourdeau
Phone:	(613) 933-1375	**Fax:**	(613) 933-7930
Email:			
Title:	Medical Officer of Health, Eastern Ontario Health Unit		

Type:	Other - specify	**Name:**	Michael Gundry
Phone:	(905) 668-9363	**Fax:**	(905) 668-0221
Email:			
Title:	Project Manager, Totten Sims Hubicki Associates		

Type:	Other - specify- CA	**Name:**	Roger Hood
Phone:	(613) 938-3611	**Fax:**	(613) 938-3221
Email:			
Title:	General Manager, Raisin Region Conservation Authority		

Type:	Owner	**Name:**	Leo Poirier
Phone:	(613) 525-1110	**Fax:**	(613) 525-1649
Email:			
Title:	Clerk, The Corporation of the Township of North Glengarry		

INSPECTION DETAILS:

DWS Name:	Alexandria WTP
DWS Category:	Large Municipal Residential
DWS Number:	220001030
Inspection Type:	Unannounced
Inspection Number:	1-PG3L
Date of Inspection:	Jun 09, 2004
Date of Previous Inspection:	Jul 10, 2003

DWS COMPONENT LOCATIONS

Site (Name): Alexandria Mill Lake (Mill Pond)
Type: Source **Sub Type:** Surface
Comments:
The plant draws water from Alexandria Mill Lake (Mill Pond), which is supplied by the Garry River system. The raw water intake works consists of the intake structure located in Alexandria Mill Lake (Mill Pond) approximately 425 m southwest of the water treatment plant comprising a vertical 1.5 m diameter, 760 mm high precast concrete pipe placed on a concrete slab housed in a 2.4 by 2.4 m timber crib including screening. The intake pipe is approximately 425 m of 350 mm diameter asbestos cement pipe from the intake crib to the low lift chamber well.

Site (Name): Alexandria WTP
Type: Treated Water POE **Sub Type:** Surface
Comments:
The raw water is conveyed by gravity through the intake pipe to the low lift chamber/raw well, including two coarse screens, raw water well with powdered activated carbon feeding system and low lift pump compartments. The two coarse screens separate the raw well and low lift pump compartments. The raw well is gravity fed, and the level in the well fluctuates with the level in Alexandria Lake (Mill Pond). Two vertical turbine low lift pumps are located in the low lift chamber/raw water well. Each pump is rated at 6,200 m3/d, and equipped with an automated flow control valve on the pump discharge restricting flows to the Permit To Take Water allowance. The discharge valve is set by the plant control system based on the level in the flocculation chambers. The pumps discharge to the flocculating chamber inlets. Coagulation/flocculation takes place in two concrete flocculating chambers that operate in series, each equipped with an agitator, polymer feeding system, coagulant feeding system and an in-line mixer. Coagulant is pumped from the feed tank to the flocculating chambers feed line, upstream of the in-line mixer. The in-line mixer is not currently in service. Sedimentation is facilitated within four concrete sedimentation tanks operating in parallel. Each sedimentation tank is baffled, equipped with tube settlers, and includes sludge hoppers and drains discharging to the sanitary sewer. When settled water from the sedimentation tanks reaches a top water elevation of 87.2 m, it flows into a conduit leading to the filters. Filtration is provided within four concrete chambers with mixed media operating in parallel, and each capable of filtering a maximum flow of approximately 2,003 m3/d complete with surface wash facilities, turbidity and head loss instrumentation and an underdrain system. The filter bed consists of an underdrain support system, support gravel, and a bed of mixed anthracite and sand. The underdrain system in filters no. 1 and 2 were changed in 2002. The new underdrain system does not require gravel. The filter media has been changed to anthracite and sand in all four filters. Water flows by gravity through the filter media and is discharged into individual conduits that are equipped with turbidity meters. The filter effluent lines are connected to a header that directs filtered water to the clear wells. The filtration system also consists of an automatic filter backwash system and a backwash tank with a supernatant pipe draining to the sanitary sewer system. The filters are backwashed with treated water from the clear wells. Wash water overflows at the trough to the backwash tank which drains to the sanitary sewer. During backwash, the filter inlet line closes and the flow is distributed to the other operating filters. The butterfly valve at the conduit between the sedimentation and filtration tank closes and the water filters to the clear well until the required surface wash level is reached. When the water level in the filter is drained to below the trough elevation, the surface wash arms direct treated water under pressure from the distribution line to the top of the filter media. After surface wash, the filter is backwashed with treated water from the clear wells. The backwash water is pumped to the filter underdrain by one of two backwash pumps. The current frequency and duration are approximately once every 24 hours and 15 minutes respectively based on a 60% head loss. The disinfection system uses chlorine gas in solution, injected at pre- and post-chlorination points. Chlorine gas is supplied in 68 kg cylinders, which are stored in the chlorine room. The chlorination system comprises three duty chlorinators, equipped with two vacuum regulators (injectors) to draw chlorine into solution.

Site (Name): Elevated Storage Tank

Type: Other **Sub Type:** Reservoir

Comments:

The distribution network consists of 50-350 mm diameter water mains constructed of various materials including cast iron, ductile iron and carbon steel. There are approximately 170 valves and 92 hydrants located within the distribution system. There are two standpipes (one active, one inactive) that serve the Town of Alexandria. The active standpipe is used to control pressure, store water, and supply the distribution system. It is located approximately 1,200 m northwest of the water treatment plant, is 12.2 metres in diameter and 33.5 metres high and has a capacity of 3,916 cubic metres. The active standpipe was constructed in 1985 and is made of steel. There are no disinfection facilities at the standpipe. An older standpipe was formerly used to provide pressure and flow in the distribution system. This standpipe was taken off-line in 1999, however it has not been decommissioned. The old standpipe is located approximately 850 metres north of the plant on Main Street, is 4.3 metres in diameter and 30.5 metres high and has a capacity of 443 cubic metres. The inactive standpipe was constructed around 1900 and is made of riveted steel. There are no disinfection facilities at the old standpipe.

INSPECTION SUMMARY

INTRODUCTION

* **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.**

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

  Please note that "LMR" which is identified in each section title of the report means Large Municipal Residential.

  Digital images of various components of the drinking-water system were taken during the physical inspection. These images are presented in Appendix C.

  The MOE Inspector was accompanied during the inspection by Andre Bachand, Water Works Manager and Dean McDonald, Overall Responsible Operator. The Township of North Glengarry is the owner and operating authority for the Alexandria Drinking-Water System. The drinking-water inspection included a physical inspection of the treatment plant and distribution facilities, and a document review for the period of July 10, 2003 to June 9, 2004. The period of July 10, 2003 to June 9, 2004 is referred to as the "inspection period" in this report. Samples from the raw water, treated water and distribution system were obtained for analyses. As well, field measurements for free chlorine residuals were obtained from the drinking-water at time the samples were collected. Plant operators were interviewed to determine their overall perception as to how the plant was equipped and is being operated.

  The previous compliance inspection, conducted on July 10, 2003 and July 11, 2003, identified ten (10) issues of non-compliance with regulatory requirements and twenty-two (22) best practice recommendations. The MOE Inspector required the owner to submit an action plan complete with implementation dates, outlining how the required actions and/or best practice recommendations will be addressed. The owner submitted an action plan dated January 5, 2004 to the MOE Inspector addressing all of required actions identified in the inspection report. Many of the responses to the findings indicated that the issues are ongoing and that many will be addressed by July 1, 2004. The previous inspection findings were reviewed with the owner during the inspection of June 9, 2004. Several of the issues have been resolved and several remain ongoing. The issues that remain ongoing and/or outstanding are detailed in the sections "Non-Compliance With Regulatory Requirements/Actions Required" and/or "Summary of Best Practice Issues/Recommended Actions" of this report.

LMR - SOURCE/SUPPLY -SURFACE

* **A zebra mussel control system is not required by the Certificate of Approval or other direction.**

* **Trends in source water quality are being monitored by the owner/operating authority.**

  The raw water is monitored for manganese and ammonia on a weekly basis from January to March; pH, colour and turbidity on a daily basis. These tests are performed in-house by the operators.

  In December 2003, the flow in the intake was reversed and air was forced back out the intake. Divers inspected the intake in December 2003 and again in early June 2004. In the winter of 2004, the owner plans to install a five-foot high culvert around the intake to prevent sediment from accumulating in the intake.

LMR - PERMIT TO TAKE WATER

LMR - PERMIT TO TAKE WATER

* **A PTTW is required and exists for the system.**

  Pursuant to Section 34 of the Ontario Water Resources Act, the owner requires a Permit To Take Water since more than 50,000 litres of water is taken on any one day.

* **All of the production sources are identified on the PTTW.**

  Permit To Take Water Number 88-P-4006 was issued to the Corporation of the Township of North Glengarry and authorizes the taking of water from Alexandria Mill Lake located at 22 Gernish Street West, Alexandria. The Permit is subject to the General Conditions and Special Conditions that are stated on the Permit. The Permit is valid until July 12, 2012. The rate of taking shall not exceed 3,900 litres per minute or 5,616,000 litres per day.

* **The maximum water takings are in accordance with those allowed under the PTTW during the inspection review period.**

  The maximum rate of taking is 3,900 litres per minute or 5,616,000 litres per day. The 2003 Annual Report indicates that the average day raw water flow rate was 3,906 cubic metres per day and the maximum day raw water flow rate was 5,586 cubic metres per day. The maximum day flow rate occurred in February 2003. The drinking-water system was operating at 99.5% of its permitted amount of water taking in 2003. For the period of January 1, 2004 to May 31, 2004, the average day raw water flow rate was 3,430 cubic metres per day and the maximum day raw water flow rate was 4,843 cubic metres per day. The maximum day flow rate occurred in March 2004. The drinking-water system was operating at 86% of its permitted amount of water taking during this period. TSH Associates submitted on behalf of the Township of North Glengarry an application for amendment of Permit To Take Water No. 88-P-4006. An increase in the maximum water taking has been requested. The Director for section 34 of the OWRA has returned the application indicating that it was incomplete and that rationale must be provided for the proposed increase in water taking. TSH Associates has submitted additional information to the Director. The application is being reviewed by the Technical Support Section of the Ministry of the Environment's Kingston Regional Office.

* **Trends in water quantity/takings are being monitored by the owner/operating authority.**

  Raw water flows are being measured and monitored on a continuous basis through an orifice plate.

* **No complaints of interference due to the water taking have been received by the owner/operating authority.**

* **The owner complied with the special conditions in the PTTW during the inspection review period.**

  Special Condition No. 13 requires the Permit Holder to measure and record daily water takings and to ensure copies of these records are kept at the offices of the Corporation of the Township of North Glengarry, with a copy to be kept on-site at the Town of Alexandria water treatment plant. The reason for the imposition of Special Condition No. 13 is to establish a record of water taking. The 2003 Compliance Status Report was prepared and summarizes the daily water takings for the drinking-water system.

* **There is a water conservation plan for this system.**

  The municipality has a water conservation plan in place. The Township of North Glengarry in cooperation with the Raisin Region Conservation Authority has developed and implemented a water conservation program that includes, but is not limited to, providing residents with low flow shower heads and a "Guide for Household Water Efficiency". In addition, the municipality restricts lawn watering during the summer months in order to conserve water.

* **Water conservation is being practiced by the owner or operating authority.**

LMR - CAPACITY ASSESSMENT

* **Flow rates were maintained below the maximum flow rates or the rated capacity identified in the CofA.**

  The plant's rated capacity of 8,014 cubic metres per day is documented in the Certificate of Approval (6848-5V8RSN). The average and maximum day flows for raw water were obtained from the Compliance Status Report and Plant Performance Sheets generated and provided by the Township of North Glengarry. The maximum flow rate was not exceeded in 2003 and/or during the inspection period. In 2003, the average day raw water flow was 3,906 cubic metres per day and the maximum day raw water flow was 5,586 cubic metres per day. The Alexandria Water Treatment Plant was operating at 70% of its rated capacity in 2003. For the period of January 1, 2004 to May 31, 2004, the average day flow was 3,430 cubic metres per day and the maximum day flow was 4,843 cubic metres per day. During this period, the system was operating at approximately 60% of its rated capacity. In 2003, the average day flow for treated water that was conveyed to the distribution system was 3,189 cubic metres per day and the maximum day flow was 4,496 cubic metres per day. For the period of January 1, 2004 to May 31, 2004, the average day treated water flow conveyed to the distribution system was 2,823 cubic metres per day and the maximum day treated water flow was 4,314 cubic metres per day. The difference between the average day raw water and average day treated water flows in 2003 and 2004 (January to May) was 18% (717 cubic metres) and 18% (607 cubic metres), respectively. This water at the Alexandria Water Treatment Plant was used within the plant or wasted, i.e. process wastewater, laboratory, continuous water quality analyzers, washrooms, etc.

  A copy of the C of A can be found in Appendix A.

* **Flow rates were maintained below the maximum flow rates or the rated capacity identified in the CofA.**

* **Only certified operators make adjustments to the treatment equipment.**

* **The annual average daily flow was less than 80% of the capacity of the plant.**

  The annual average daily flow in 2003 was 49% of the capacity of the plant. For the period of January 1, 2004 to May 31, 2004, the average daily flow was approximately 43% of the capacity of the plant.

* **The number of installed flow measuring devices is sufficient to meet the requirements of the PTTW or CofA.**

  Condition No. 5.1 of Certificate of Approval No. 6848-5V8RSN requires the owner to install a sufficient number of flow-measuring devices within the drinking-water system to permit the measurement and recording of the daily maximum flow rate and maximum daily volume of water conveyed into the treatment system; and the daily maximum flow rate and maximum daily volume of water conveyed from the treatment system to the distribution system. Condition No. 5.3 stipulates that all flow measuring devices must be checked and calibrated in accordance with the manufacturer's instructions or at least once every year. At the time of the inspection, there was a raw water flow meter (orifice plate) installed near the raw water wet well on the raw water header and a treated water flow meter (orifice plate) measuring the flow rate of treated water being supplied to the distribution system.

LMR - CAPACITY ASSESSMENT

* **The flow measuring devices are calibrated to the specifications of the manufacturer or at regular intervals not exceeding one year.**

  The raw water and treated water flow meters were most recently calibrated on July 24, 2003, by Instrumentation Saint-Laurent Inc. The calibration sheets indicate that the raw water flow meter has 100% accuracy (0% error) and the treated water flow meter has an error of -0.18% to -0.06%.

  It is recommended that the owner replace the orifice plates for both the raw water and treated water with electromagnetic flow meters to ensure better accuracy and measurement of the daily maximum flow rates.

LMR - TREATMENT PROCESSES

* **Records reviewed during the inspection indicate that the drinking-water system provides the required minimum level of treatment at all times.**

* **The drinking-water system provides adequate primary disinfection.**

  The water treatment equipment is designed to be capable of achieving, at all times, at least 99 per cent removal or inactivation of viruses before water enters the distribution system. Additional piping has been installed in the clear well including elbows on the effluent line to increase the chlorine contact time. All the piping has been replaced with stainless steel piping.

* **The owner has ensured that water treatment equipment is installed in accordance with regulatory requirements and the CofA.**

  Since the previous inspection, the following treatment equipment has been installed: a new hopper system for the powdered activated carbon feed system; and four new ProMinent chemical metering pumps (10 L/hr) for the polymer and coagulant feed systems (two for each system, one duty and one standby) with manual switchover. The owner plans to install an automatic switchover mechanism on the coagulant feed system.

  The system description of the Certificate of Approval states that Alexandria Water Treatment Plant consists of an automated control system monitoring and recording plant process data such as flows, chlorine residuals and turbidities. In fact, the treatment plant does not have such a system. The flow meters and continuous water quality analyzers are connected to chart recorders but not to an automated control system. It is recommended that the owner install a computerized plant monitoring and control (SCADA -supervisory control and data acquisition) system. A SCADA system allows control and monitoring from a central location; allows monitoring and alarming of several parameters; and allows logging of data on a continual basis. Advantages of a SCADA system are that it is always "on"; logged records provide good trending information; set points and alarms provide early warning of potential difficulties with equipment and with water quality; and control functions allow a rapid and coordinated response to process upsets. Given that the Alexandria Water Treatment Plant has a history of process upsets and water quality issues, it would be advantageous to install a SCADA system. The system would log data on a continual basis, provide an early warning to operational staff of water quality issues and provide a quicker response to address those issues.

* **The owner does not have up-to-date plans for the drinking water system.**

  The plans of the drinking-water system need to be updated to reflect the recent upgrades.

LMR - TREATMENT PROCESSES

* **The chlorine residual in water entering the distribution system is maintained at the level identified in the Operations Manual as the level required to achieve adequate disinfection.**

  The concentration of free chlorine residual required to achieve adequate disinfection is 0.4 mg/L. The free chlorine residual in the clear well is maintained between 1.2 mg/L and 1.8 mg/L. In 2003, the average free chlorine residual leaving the plant and entering the distribution system was 1.79 mg/L. For the period of January to June 2004, the average free chlorine residual leaving the plant and entering the distribution was 1.61 mg/L, with a range of 0.65 mg/L to 2.26 mg/L.

* **The facility and equipment appear to be maintained and in a fit state of repair.**

* **The filters are monitored and/or inspected.**

  The filters are monitored and/or inspected on a daily basis as part of the operator's daily duties. The turbidity above the filters is being monitored on a daily basis using grab samples. The turbidity of each filter effluent line is continuously monitored. Filter backwashing is triggered through the SCADA system based on loss of head (60%) and/or filter effluent turbidity levels.

  The owner plans to replace the filter media and underdrain system in 2005.

* **It is not possible for raw water or partially treated water to bypass key treatment units.**

* **The owner has evidence indicating that all chemicals used in the treatment process and all materials contacting the water have met the AWWA and ANSI standards in accordance with the CofA.**

  The Alexandria Water Treatment Plant uses the following chemicals to provide treatment:

  • PASS 100 (Polyaluminum Silicate Sulphate) supplied by Eaglebrook Inc. of Canada (distributed from Varennes, Quebec)

  - PASS-C supplied by Eaglebrook Inc. of Canada (distributed from Varennes, Quebec)

  • Polymer (Magnafloc LT25) supplied by CIBA Specialty Chemicals Canada Inc. (distributed from Toronto, Ontario)

  • Chlorine gas supplied by Brenntag Canada Inc. (distributed from Etobicoke, Ontario)

  - Potassium Permanganate supplied by Carus Chemical Company

  • PAC (Powdered Activated Carbon) supplied by Calgon Carbon Corporation

  Documentation exists which confirms that the chlorine gas, coagulant, polymer and potassium permanganate used at the Alexandria Water Treatment Plant all meet the American National Standards Institute (ANSI) ANSI/NSF Standard 60. Documentation exists which confirms that the PAC used at the Alexandria WTP meets the ANSI/NSF Standard 61. In addition, the polymer and chlorine gas meet the American Water Works Association (AWWA) standards. At the time of the inspection, PASS-C was being used as a coagulant. It was advised that operators will be conducting jar tests with a chemical supplier (Eaglebrook) using a new coagulant (PHAS) and plan to also conduct jar tests with PASS-100 to determine the most suitable coagulant for the Alexandria WTP.

* **Spill containment provided for process chemicals and for the standby power generator fuel is adequate.**

* **The floor drains are placed in such a manner that contaminants cannot come in contact with or impact upon the source water, the treated water, or the natural environment.**

LMR - TREATMENT PROCESSES

* **The operator is aware of the required CT value and the CT value is used in process calculations and process control.**

  Operators are aware of the required CT value. Operators started performing CT value calculations on March 9, 2004, and now calculate the CT value on a daily basis. It was advised during the inspection that the Alexandria WTP did not meet the required CT value until recently due to the clear wells being out of service for repairs.

* **The owner has initiated measures to address potential cross-connections at the treatment plant.**

  A backflow preventer has been installed on the surface wash system to prevent surface wash wastewater from entering into the clear well and/or distribution system.

* **Pesticides are not applied, stored, or mixed in a location that is away from the immediate vicinity of water intakes, treatment facilities or storage structures.**

LMR - PROCESS WASTEWATER

* **The facility generates process wastewater.**

  The backwash wastewater from the filters is discharged to a holding tank and both the sludge in the holding tank and the backwash wastewater are discharged to the sanitary sewer. Each sedimentation tank includes a drain that discharges to the sanitary sewer. The operating authority practices filter-to-waste where filtered water is discharged to the sanitary sewer instead of the clear well for the first few minutes after a filter is backwashed to prevent turbidity spikes and/or when the turbidity of the filter effluent reaches and/or exceeds 1.0 NTU.

* **Process wastewater is not recycled.**

* **Process wastewater was discharged in such a manner so as to prevent an environmental impact from occurring as a result of the discharge.**

* **Residual solids/sludge are being generated as part of the treatment process or maintenance activities.**

* **Sludge is being monitored and is being regularly withdrawn from clarifiers as per equipment manufacturers' specifications.**

LMR - DISTRIBUTION SYSTEM

* **The owner has been able to maintain proper pressures in the distribution system.**

* **Consumer water use is fully metered.**

  All residential, industrial and commercial users of water are metered within the Town of Alexandria.

* **Cross connections to other water sources such as wells, cisterns or surface water are known to exist.**

  A cross-connection survey has been conducted within the Town of Alexandria to identify if wells or cisterns are connected to plumbing which is connected to the distribution system. Mr. Bachand, Water Works Manager indicated that the local hospital had a well connected to plumbing which is connected to the distribution system. Mr. Bachand advised that the hospital installed a backflow prevention device on their service connection but was unsure if the well had been disconnected.

LMR - DISTRIBUTION SYSTEM

* **There is a by-law in place to prohibit the creation of cross connections.**

  By-law No. 3002 dated August 14, 1990 prohibits cross connections in the distribution system. Section 4 of the by-law relates to cross connections and backflow prevention. The owner has also developed a policy entitled "Water Works Policy", approved by the council and Water Works Committee. The policy states that all new water service connections are to have backflow preventers installed on the service entering the building.

* **The owner has a proactive leak detection program in place.**

  A leak detection study has been completed on the distribution system. Mr. Bachand, Water Works Manager indicated that if the demand increases significantly at the water treatment plant then they investigate by listening at fire hydrants and/or by visual detection.

* **It is estimated that greater than 10% of the distributed water is not accounted for.**

  Mr. Bachand could not provide an estimate of unaccounted-for distribution water. However, in the previous inspection, Mr. Bachand estimated the unaccounted-for distribution water for 2003 to be approximately 14%.

* **The owner has maintained the integrity of the system by using standards or procedures for design and material selection and by using plumbing code requirements.**

* **The disinfection of new or repaired water mains or facilities is conducted in accordance with procedures equivalent to the applicable AWWA standards.**

  American Water Works Association (AWWA) Standard C651-99 for Disinfecting Water Mains is followed and a copy of the above standard is available at the water treatment plant. The municipality purchased a dechlorinator and is using the dechlorinator when discharging all wastewater from the distribution system. The municipality is in the process of developing a written procedure for all wastewater discharges from the distribution system.

* **There is a maintenance and repair recording system which documents repairs, leak detection surveys and scheduled inspection/clean-out of water storage structures.**

  Records of fire hydrant inspection and seasonal flushing of the distribution system consists of a binder with a log sheet for each hydrant, showing information on the hydrant (location, number, manufacturer, hydrant year), the date of inspection, if the hydrant was flushed, the operators initials, duration of the flushing, the condition of the hydrant, and whether the drains are working. A separate binder is maintained for water main break reports. As well, records on the water distribution system consists of a binder with copies of the treatment plant logs and includes information on the record keeping procedure, public relations, contact names and phone numbers, contractor information, sampling instructions, cross connections and backflow prevention, normal operation, system operation, winterizing and flushing. Other binders are used to document hydrant flushing and inspections and valve exercising. The valves were most recently exercised in April and May 2004. The active standpipe will be inspected and cleaned on June 29 and 30, 2004 by Misco Inspection Services. As well, the owner plans to evaluate the costs of activating the old standpipe. The owner plans to inspect the standpipe approximately once every 5 years. Maintenance activities are recorded in a bound, numbered logbook and include daily and weekly activities performed such as cleaning the continuous water quality analyzers, testing of the standby diesel generator set, greasing pumps, cleaning of the sludge tanks and wells, calibration of monitoring equipment and inspection of the clear wells/intake/wet well/flocculation tanks, etc.

* **Repairs to the distribution system are performed by authorized personnel.**

LMR - DISTRIBUTION SYSTEM

* **Backflow preventers are not installed at each lateral connection to major industries.**

  The municipality has developed a policy entitled "Water Works Policy" which has been approved by council and the WaterWorks Committee. The policy indicates that all new water service connections are to have backflow prevention devices installed on the service entering the building. The municipality assumes the cost to install the backflow preventers. Installation occurs at the same time as water meter installation. The local hospital recently installed a backflow preventer on their water service connection. No backflow preventers are installed at any industries in the Town of Alexandria.

* **There is a program for the flushing and swabbing of watermains per AWWA standards.**

  It was reported that all water mains in the distribution system are flushed twice a year in the spring and fall. It was advised that if a free chlorine residual of approximately 0.20 mg/L is measured in the distribution system, then that water main from which the sample was collected, is flushed to increase the free chlorine residual. The water mains were most recently flushed in April and May of 2004. Previously the water mains were flushed in November 2003.

* **Pesticides are applied and stored away from the immediate vicinity of the storage works in the distribution system.**

LMR - OPERATIONS MANUALS

* **An Operations Manual does exist.**

  The Operations Manual (Operating & Contingency Manual, dated July 2002) is located in the office of the Alexandria WTP in a binder. The manual is easily accessible, and upon discussing with the operators, they are aware of the manual, its location and contents. The manual includes a description of the treatment processes, plans and some drawings of the water treatment plant. The process descriptions are up-to-date.

* **The Operations Manual meets the requirements of the Certificate of Approval or Engineering Evaluation Report.**

* **The Operations Manual is accessible to staff.**

* **The Operations Manual contains plans, drawings and process descriptions that are sufficent for the safe and efficient operation of the drinking water system.**

* **The Operations Manual contains a sampling plan.**

* **The Operations Manual does not contain criteria that operators can use to determine when a filter requires backwashing.**

* **The Operations Manual does not contain documentation of procedures for bringing newly backwashed filters back into service at low rates that are gradually increased to minimize post-backwash turbidity spikes.**

  The Manual did not include any guidance on when the filters at the Alexandria WTP require backwashing, or any procedures to ensure that newly backwashed filters are brought back into service at low rates and are gradually increased in order to minimize post-backwash turbidity spikes. The municipality is currently working on updating the manual to include written procedures for sediment removal, filter operation and maintenance, etc. Mr. Bachand advised that the procedures would be completed by July 1, 2004.

LMR - OPERATIONS MANUALS

* **The Operations Manual contains instructions that pertain to the identification of adverse drinking-water conditions and to the prescribed notification and corrective actions.**

  The written procedure "Reporting to the Public and Notice to the MOH, MOE" needs to be updated to reflect recent changes in legislation (O. Reg. 170/03). This is in the process of being completed and will be done by July 1, 2004, according to Mr. Bachand, Water Works Manager.

* **There is a procedure in place and it is followed to ensure that all equipment used in the processes is monitored, inspected and evaluated.**

LMR - LOGBOOKS

* **Logbooks or some other record keeping system are being maintained.**

  The facility maintains a logbook which is a bound document with numbered pages that is kept in the lab/control room of the water treatment plant. A logsheet "Daily Performance" sheet for each day is also used as the record keeping system and records the temperature of the air and water; raw water and treated water flows; water plant use; chemical amounts and dosages; operational tests (pH, colour, manganese, turbidity, ammonia, free and total chlorine residuals); number of backwashes and clarifier washes, etc.

* **Log books confirm that only certified operators, trained persons or water quality analysts are performing operational testing not performed by continuous monitoring equipment.**

* **For every required operational test and for every required sample, a record is made of the date, time location and name of the person who performed the test and the result of the analysis.**

* **The logbooks identify who is serving as Operator-in-Charge.**

* **The owner/operator has measured and recorded the daily disinfection residuals in the distribution system since the date of the last inspection.**

* **Logbook entries have been made in chronological order.**

* **All entries in the logbook have been made by the Operator-in-Charge or by personnel who have been authorized by the Operator-in-Charge to make an entry in the logbook .**

* **The record system does not allow the reader to unambiguously identify the person making a logbook entry.**

  Operators do not always initial their entries made in the logbook.

* **Departures from normal operating procedures and the time that they occurred are documented in the log book.**

* **Unusual or abnormal conditions observed at the facility and the action taken are recorded in the logbook.**

* **A logbook record was made of equipment that was taken out of service or that ceased to operate during the shift and of the action taken to maintain or repair the equipment.**

* **Logbooks for at least two years prior to the date of the most recent entry are accessible in the facility.**

* **There is consistency between the information contained in the adverse reports and the records maintained in logs or information provided in reports.**

  All adverse test results are recorded in the daily operation log comment section of the logsheet.

LMR - LOGBOOKS

* **Records of the amount of time each operator works as Operator-in-Charge are maintained.**

  Since January 1, 2004, the amount of time each operator works as Operator-in-Charge is recorded in the logbook. Previously, records were not being maintained of the amount of time each operator works as Operator-in-Charge.

* **Logbooks identify special instructions given to depart from normal operating conditions.**

* **Logbooks maintain monitoring and measurement records to verify that they meet procedures in Operations Manuals.**

LMR - CONTINGENCY AND EMERGENCY PLANNING

* **The owner has developed a written contingency/emergency plan.**

  The Operating and Contingency Manual was revised in July 2002, and is located in the office of the Alexandria WTP in a binder. The binder contained a phone list of all operators for the Township of North Glengarry Waterworks Department, including their contact numbers at home, cell phones and pagers. Contact names and numbers were listed for the MOE SAC and local offices, the MOH, the security company for the WTP, Accutest Laboratories, equipment suppliers, calibration company for the WTP (Instrumentation Saint-Laurent) and the process chemical suppliers.

* **The contingency/emergency plan does not include provisions for operating the facility when key operating staff are absent or unable to act for an extended period or the provisions are not in accordance with Ontario Regulation 435/93 .**

* **The contingency/emergency plan does not include a provision for the notification of the Director when the operator who has overall responsibility for plant operations is absent for sixty days or more within any consecutive twelve month period.**

  The contingency plans did not include written procedures to notify the Director in the event that the OIOR is absent for greater than 60 days (O. Reg. 435/93 s. 13 (4)). Mr. Bachand indicated that this procedure is currently being worked on and will be completed by July 1, 2004. However, as of August 1, 2004, this is no longer a legal requirement. O. Reg. 128/04 revoked and replaced sections of O. Reg. 435/93 and comes into effect on August 1, 2004. Under O. Reg. 128/04, the requirement to notify the Director in the event that the operator-in-overall-responsibility is absent for greater than 60 days is no longer required.

* **The contingency/emergency plan provides for key equipment needed in the event of an emergency or upset requirements to be made available.**

* **Standby equipment is available for critical treatment processes.**

  The WTP has available in the event of an emergency standby critical equipment including a standby 175 kW diesel generator set, standby chlorinators, standby chlorine gas cylinders, standby regulators, and standby chemical feed pumps.

* **The treatment facility can achieve the required capacity with its largest unit out of service.**

* **Standby power generators are available.**

  A standby 175 kW diesel generator set is available and is located adjacent to the water treatment plant. An automatic switchover mechanism has been installed so in the event of a power failure the generator set will start automatically.

LMR - CONTINGENCY AND EMERGENCY PLANNING

* **Standby power generators are tested under normal load conditions.**

  The diesel generator set is tested on a monthly basis to ensure that it will operate under normal load conditions. Operators record such tests on a log sheet.

* **Procedures exist for the periodic training and testing of the contingency/emergency plan.**

  The contingency plan manual is being reviewed by operational staff on a monthly basis during staff meetings. A different section/aspect of the manual is reviewed each month. Minutes of the staff meeting are recorded on a log sheet and kept in the manual's binder.

* **The contingency/emergency plan addresses spill scenarios.**

  Contingency plans are provided for chemical spills.

* **Clean-up equipment and materials are in place for the clean up of spills.**

  Provisions are in place for clean up of potential spills. The waterworks department maintains absorbent pads, bags of saw dust and a new spill kit at the WTP for the clean up of spills.

* **The contingency/emergency plan is posted in a prominent location in the facility.**

  The contingency plan binder is located in the office of the Alexandria Water Treatment Plant.

LMR - SECURITY

* **All storage facilities are completely covered and secure.**

* **Air vents associated with reservoirs and elevated storage structures are equipped with screens.**

* **The owner has provided adequate security measures to protect wells, intakes, treatment facilities and components of the distribution system.**

  The raw water intake for the Alexandria WTP is marked with a buoy. The Alexandria WTP and associated property does not have any security fencing. All doors to the plant are equipped with locks, intrusion alarms and motion detectors. As well, all windows at the plant are equipped with contactor alarms. "Authorized Personnel Only" signs are posted at the WTP. The WTP is staffed by operators daily.

  The standpipe is not surrounded by security fencing and there are no security alarms installed. Signage regarding trespassing is not provided at the standpipe. The active standpipe is covered, and both the ladder and access hatch on the standpipe are locked. The standpipe is visited by an operator daily. Mr. Bachand indicated that the standpipe will be connected to the SCADA system, which is monitored from the waterworks department's office, as part of the upgrades. Mr. Bachand advised that the municipality plans to install security fencing around the standpipe after the rechlorination system is installed.

LMR - COMMUNICATION WITH CONSUMERS

* **There is a water conservation plan for this system.**

LMR - COMMUNICATION WITH CONSUMERS

* **A documented system exists that records consumer complaints, steps taken to determine the cause of the issue, and corrective measures taken to alleviate the cause and prevent its reoccurrence.**

  A binder is used to maintain the Record of Public Complaint sheets which record consumer complaints. The record includes the date and time of the complaint, complainant contact information, location of problem, description of the complaint, commitments made to the complainant, action taken and follow-up. There were 11 complaints documented between July and December 2003 related to coloured water, low water pressure and water main breaks. To date in 2004, there were 27 complaints documented related to low pressure, coloured water and no water.

* **Required documents are available free-of-charge, are available during normal business hours, and are at a location accessible to the public.**

* **The owner takes effective steps to advise consumers of the availability of annual reports.**

  The municipality places an ad in the local newspapers (Glengarry News and Vankleek Hill Review) advising consumers of the availability of the annual report. The ad is also posted in the municipal office and on the municipality's web site.

LMR - OPERATOR CERTIFICATION AND TRAINING

* **The people who have overall responsibility for the treatment facility and the distribution system possess applicable certificates that are of the same class or higher than the class of the facilities they have responsibility for.**

  The person having overall responsibility for the drinking-water system is Dean McDonald. Mr. McDonald holds a Class 2 Water Treatment System certificate (No. 13423, Expiry Date: March 31, 2007) and a Class 2 Water Distribution System certificate (No. 15247, Expiry Date: March 31, 2007). Both the Alexandria Water Treatment Plant and the Alexandria Water Distribution System are Class 2 systems. Therefore, Mr. McDonald possesses the applicable certificates that are of the same class of the facilities that he is responsible for.

* **Personnel at the drinking water system are not under the supervision of persons having the prescribed qualifications.**

  Andre Bachand is the Water Works Manager. Mr. Bachand directs and supervises the personnel at the Alexandria Water Treatment Plant. At the time of the inspection, Mr. Bachand only had an Operator-in-Training's certificate for both the water treatment and water distribution systems. Mr. Bachand advised that he will be writing the Class 2 water treatment system and Class 2 water distribution system exams in August 2004 and has already submitted his application for Class 1 certificates.

* ***All operators working at the treatment facility and the distribution system possess the required certification.***

  Guy Girard, Operator and Foreman holds a Class 1 Water Treatment System certificate (No. 11980, Expiry Date: May 31, 2004). Mr. Girard's certificate expired on May 31, 2004 and had not been renewed at the time of the inspection. It was advised that Mr. Girard will be writing the exams for both Class 2 water treatment and water distribution systems on July 2, 2004.

  John Kitchen and Jason St. Pierre both have operator-in-training certificates for the water treatment system and the water distribution system. Mr. Kitchen's certificate numbers are OT23071 and OT23072, respectively. Mr. St. Pierre's certificate numbers are OT22958 and OT22959. Both their certificates expire on February 28, 2007.

* **Operator certificates are displayed in a prominent location.**

  All operator certificates are displayed within the Alexandria Water Treatment Plant.

LMR - OPERATOR CERTIFICATION AND TRAINING

* **The treatment plant and distribution system certificates conspicuously displayed at the facility or at the premises from which the facility's operations are managed.**

  Both the treatment plant and distribution certificates are displayed within the Alexandria Water Treatment Plant.

* **The owner has maintained every record or report related to a test required under an approval or order, the corresponding documents and records required under Reg. 170, and records or reports related to tests required under schedules 6, 7, 10, 11 and 22 and under sections 17-5 to 17-9 and 18-5 to 18-9 of Reg. 170 for at least 5 years.**

* **The owner has maintained for a period of at least 15 years those records and reports related to tests required under an approval or an order, every report prepared by a professional engineer or hydrogeologist pertaining to a determination whether a ground water supply is GUDI or groundwater, and records or reports required under schedule 13 and sections 17-10 to 17-13 and 18-10 to 18-13 of Reg. 170.**

* **Up-to-date, as-built plans of the water system are not available and/or subsequent modifications, if any, have been noted on the drawings.**

  Up-to-date, as-built plans of the water treatment plant were not available at the time of the inspection. The existing as-built plans do not include the upgrades that have been completed. However, the owner has until December 31, 2004, to complete the remaining upgrades required. In accordance with Condition 6.9 of Certificate of Approval No. 6848-5V8RSN, the owner has within one year from the substantial completion of the alteration(s) to the treatment system to incorporate the alteration(s) into Process and Instrumentation Diagrams (P&ID) and record drawings and diagrams. These diagrams are to be retained and be made readily available for inspection by Ministry staff.

* **The owner did comply with the requirement to seek change to the C of A where required, when changes were made.**

  An application for approval was submitted byTSH & Associates on behalf of the owner in 2003. A new Certificate of Approval was issued in February 2004 for the proposed upgrades.

* **Records of actions required of the Permit Holder as a result of conditions on the PTTW have been maintained in accordance with the requirements of the PTTW.**

  Special Condition No. 13 of Permit To Take Water No. 88-P-4006 requires the Permit Holder to measure and record daily water takings and to ensure copies of these records are kept at the offices of the Corporation of The Township of North Glengarry, with a copy to be kept on-site at the Town of Alexandria water treatment plant. The reason for the imposition of Special Condition No. 13 is to establish a record of water taking. The owner is measuring and recording daily water takings and are maintaining copies of these records at the offices of the Township of North Glengarry. The record of water taking for 2003 was submitted to the Ministry in June 2004.

* **There were no instances where the Operator in Overall Responsibility was unable to act for more than 150 consecutive days.**

  The Operator in Overall Responsibility was absent for more than 60 days but less than 150 days from mid-December 2003 to March 2004. The owner notified the Director of the absence since it lasted more than 60 days in a letter dated March 5, 2004, in accordance with section 13 of O. Reg. 435/93. The Director responded to the owner and advised that the municipality is in non-compliance with O. Reg. 435/93 until such time that the municipality obtains the services of a certified operator.

LMR - OPERATOR CERTIFICATION AND TRAINING

* **All operators have received all the required training.**

  All the operators received all the required training in 2003, except for Julien Chartrand. Mr. Chartrand was no longer employed by the municipality as of December 2003. The remaining operators received between 41 hours and 56 hours of training in 2003. For the period of January to June 2004, operators received between 7 hours and 47 hours of training. Mr. Bachand's training record for 2004 was not provided during the inspection because he had not received any training to date in 2004.

* **The records of operator training identify the names and positions of operators who attended the training sessions, the dates of training sessions, the duration of each of the training sessions and the subjects considered at each training session.**

  The training records included a summary of the dates of training, number of hours of training, location where the training was held, a description of the material covered in the training session and identified the person and/or company who provided the training. Training included laboratory's sampling procedure, hydrant flushing, hydrant inspection and maintenance, confined space training, computer course, skills path/managing multiple projects and deadlines and due diligence.

* **Operators are regularly trained with respect to the contents of the Operations Manual and Contingency/Emergency Plan.**

  During monthly staff meetings, operators review an aspect of the Operating and Contingency Manual.

LMR - WATER QUALITY MONITORING

* **All microbiological water quality monitoring required by the legislation is being conducted.**

  The microbiological results were reviewed during the inspection from July 8, 2003 to May 27, 2004. The owner collected a minimum of 11 samples per month from the distribution system (3/week) and a minimum of 1 sample per week from both the raw and treated waters and submitted them to Accutest Laboratories for microbiological analyses. All samples were analyzed for E. coli, total coliforms and heterotrophic plate counts. Occasionally raw, treated and distribution water samples were analyzed for background counts. Based on a review of records for 2003, a total of 53 samples were collected from the raw water, 52 samples were collected from the treated water, and 324 samples were collected from the distribution system for microbiological analyses. Based on a review of records for January 1, 2004 to May 27, 2004, a total of 21 samples were collected from the raw water, 21 samples were collected from the treated water, and approximately 63 samples were collected from the distribution system for microbiological analyses. A review of the weekly raw water data for the period of July 8, 2003 to May 27, 2004, indicated that E. Coli was detected in most of the samples with concentrations ranging from 1count/100 mL to 122 counts/100 mL, and that Total Coliforms, background counts and heterotrophic plate counts were reoccurring as well during that period with results ranging from 1 count/100 mL to 700 counts/100mL for total coliforms; 0->500 counts/mL for HPC; and 0->200 for background. A review of the treated water and distribution system data for the same period, indicated that E. Coli was detected in 1 treated water sample (12 counts/100mL), and that Total Coliforms were detected in a treated water sample (90 counts/100mL), and were detected in many distribution samples collected with concentrations ranging from 1 count/100 mL to overgrown. HPC and background colonies were detected in both the treated water and distribution system (1-178 cts/mL;0->200 counts/100 mL).

LMR - WATER QUALITY MONITORING

* **All physical/chemical water quality monitoring required by the legislation is being conducted.**

  The physical/chemical results were reviewed during the inspection from July 8, 2003 to May 27, 2004. Treated water samples were submitted for analysis of nitrate/nitrite on May 27, 2004, February 17, 2004, December 10, 2003 and September 9, 2003. Treated water samples were submitted for analysis of organics on February 17, 2004, December 10, 2003 and September 9, 2003. The samples were analyzed for all the parameters listed in O. Reg. 170/03 Schedule 24, including benzo(a)pyrene. The required sample for inorganics was submitted on February 17, 2004. The sample was analyzed for all the parameters listed in Schedule 23 of O. Reg. 170/03, including antimony. The required quarterly distribution samples for THMs were collected on May 27, 2004, February 17, 2004, December 10, 2003 and September 9, 2003. The distribution samples for THMs were collected from the O.P.P. Station which is one of the extremities of the system and is expected to have an elevated concentration. The required annual distribution sample for lead was collected on June 1, 2004, from one of the extremities of the system. Fluoride was most recently sampled and tested for on May 22, 2003, in the treated water. No exceedances of the Ontario Drinking Water Quality Standards (O. Reg. 169/03) were noted for the samples collected from the treated water or water from the distribution system, except for several turbidity exceedances in the filtered water. The concentration of THMs ranged between 45.3 ug/L and 104 ug/L during the inspection period. The four quarter moving annual average is 79.75 ug/L, previously it was 73 ug/L, both below the standard of 100 ug/L. In 2003, the average treated water turbidity was 0.27 NTU with a maximum of 1.23 NTU. From January 1 to May 31, 2004, the average turbidity in the treated water was 0.16 NTU; and in the filtered water turbidity averaged from 0.07 NTU to 0.09 NTU.

* **Samples of raw water can be collected prior to treatment from an acceptable tap with a smooth nozzle.**

* **Testing for parameters required by legislation, CofA or order is being conducted by laboratories accredited to test for that parameter**

  The Township of North Glengarry submits their drinking-water samples to Accutest Laboratories Ltd. for testing. Following the physical inspection, it was advised that the Township has changed laboratories and as of July 22, 2004, the Township submits their samples to Caduceon Environmental Laboratories and SGS Lakefield Research Limited. A review of the Standard Council of Canada (SCC) scopes of accreditation for the laboratories indicated on the "Laboratory Services Notification" form indicated that the subject laboratories are accredited to conduct the test requested by the owner.

* **The drinking water system owner has submitted all written notices to the Director providing the names of laboratories that are conducting tests for parameters required by legislation, CofA or Order.**

  On May 20, 2003, Andre Bachand signed and submitted the required "Notification of Laboratory Services Provided to Waterworks" form to the MOE's Laboratory Services Branch. More recently, Mr. Bachand signed and submitted the required "Laboratory Services Notification" form to the Ministry's Laboratory Services Branch on July 22, 2004 and again on August 9, 2004, updating the existing registration information.

* **Samples are being taken and handled in according to instructions provided by the drinking water system's laboratories.**

* **Continuous water quality analyzers and indicators with alarm systems are installed at the prescribed locations, and are maintained and operated as required by the regulation.**

  The Alexandria WTP has a continuous water quality analyzer that monitors and records the free chlorine residual of the treated water leaving the plant and entering the distribution system (after the high lift pump discharge). The Alexandria WTP also has continuous water quality analyzers that monitor and record the pH of both the raw water and treated water and the turbidity of each filter effluent line. The continuous water quality analyzers and chart recorders used for

LMR - WATER QUALITY MONITORING

monitoring and recording the raw water and treated water flows, pH, chlorine residuals and filtered water turbidity, are calibrated on an annual basis by Instrumentation Saint-Laurent Inc. The calibration reports were reviewed during the inspection. The most recent calibrations were performed on August 1, 2003, and included the portable pH meter, turbidimeters (Hach 1720C for each filter - 4 in total), treated water chlorine analyzer and the portable Hach 2100P turbidimeter. The portable Hach colorimeters (chlorine analyzers) were most recently calibrated on September 5, 2003, by Instrumentation Saint-Laurent Inc. The Calibration Reports indicate that all the analyzers have an accuracy within the range of -4% to +2.0%.

At the time of the inspection, the continuous chlorine analyzer was showing a free chlorine residual in the treated water leaving the plant of 1.96 mg/L; the turbidimeters were showing readings of 0.224 NTU, 0.269 NTU, 0.288 NTU and 0.487 NTU for filters 1 through 4, respectively.

* **Continuous water quality analyzers and indicators with alarm systems are installed at the prescribed locations.**

* **Continuous disinfectant residual analyzers are equipped with alarms to ensure continuous disinfection.**

Several alarms are installed on the continuous water quality monitoring equipment at the Alexandria Water Treatment Plant. At the time of the inspection, alarms were installed for filtered water turbidity on each filter effluent line (high level alarm of 0.7 NTU), finished water turbidity (high level alarm of 0.7 NTU), treated water free chlorine residual (low level alarm of 0.5 mg/L and high level alarm of 2.5 mg/L).

* **Samples for chlorine residual analysis are tested using continuous monitoring equipment, an electronic direct read-out colourimetric, an amperometric chlorine analyzer, or an equivalent device.**

The free chlorine residual in the treated water leaving the plant and entering the distribution system is continuously monitored using a Capital Controls Series 1870E Residual Analyzer/Indicator/Transmitter. Following the physical inspection, Mr. Bachand advised that the continuous chlorine residual analyzer had been replaced by a SWAN AMI Trides Disinfectant Monitor/Controller. Operators check the continuous chlorine analyzer readings on a daily basis using a portable Hach colourimeter (electronic direct read-out colourimetric device).

* **The required minimum levels of residual disinfectant are maintained throughout the distribution system.**

The "Daily Distribution Sampling" log records the free chlorine residual taken on a daily basis in the distribution system. The results were reviewed from July 10, 2003 to June 9, 2004. The results range from 0.10 mg/L to greater than 2.20 mg/L. Only on two occasions was the free chlorine residual less than the recommended minimum concentration of 0.20 mg/L. However, during microbiological sampling there were three incidents where the free chlorine residual taken was less than 0.05 mg/L in a distribution sample. For 2003, the free chlorine residual in the distribution system ranged from 0.01 mg/L to greater than 2.20 mg/L. In the long-term, the owner plans to replace the cast iron and ductile iron water mains with PVC water mains; and to loop parts of the distribution system to ensure the required minimum levels of chlorine residual are maintained throughout the distribution system. As well, a school is being built near one of the extremities and "dead ends" of the distribution system. The volume of water used by the school will assist in maintaining the minimum level of free chlorine residual in that end of the distribution system.

* **Records confirm that the maximum free chlorine residual in the distribution system was less than 4.0 mg/L or that the combined chlorine residual was less than 3.0 mg/L.**

LMR - WATER QUALITY MONITORING

* **The disinfectant residual is measured and recorded daily in the distribution system.**

  The free chlorine residual is measured and recorded on a daily basis (seven days per week including holidays) in the distribution system.

* **Records confirm that disinfectant residuals are routinely checked at the extremities and "dead ends" of the distribution system.**

  A review of the Daily Distribution Sampling log indicates that the free chlorine residual is tested on a weekly basis at the extremities and "dead ends" of the distribution system.

* **Monitoring equipment is capable of measuring chlorine residuals with the required accuracy.**

  Based on a review of the equipment manual, the free chlorine residual analyzer (Capital Controls Series 1870E) for the Alexandria Water Treatment Plant is capable of achieving the required levels of accuracy of +/- 0.05 mg/L. The chlorine residual analyzer's accuracy is 0.002 mg/L or 0.5 % of range whichever is larger for 0-2 mg/L range and below; and 0.02 mg/L or 0.5 % of range whichever is larger for 0-3 mg/L range and above.

* **Continuous monitoring for turbidity is being performed at each filter effluent line.**

  Filter effluent discharged from each of the four filters is monitored with continuous (on-line) turbidity meters. Treated water leaving the clear well is monitored for turbidity with on-line instrumentation.

* **Turbidity testing is carried out using a meter that measures turbidity in Nephelometric Turbidity Units (NTUs).**

* **Turbidity testing is being carried out in accordance with the regulation.**

  As well, the portable hand-held turbidity meters used to compare the turbidity readings against the continuous turbidimeter and used to check the turbidity in the distribution system measure turbidity in NTU.

  In 2003, the average treated water turbidity value was 0.27 NTU with a maximum of 1.23 NTU. In the distribution system, approximately 105 samples were tested for turbidity in 2003 and the results ranged from 0 to 2.2 NTU. For the period of January 1, 2004 to May 31, 2004, the average treated water turbidity was 0.158 NTU and for filtered water turbidity was 0.09 NTU, 0.08 NTU, 0.07 NTU and 0.08 NTU for filters 1 through 4, respectively.

* **The owner of the drinking-water system has not been required to increase the frequency of monitoring for any chemical parameter as a result of having exceeded half the value of an applicable O. Reg. 169/03 standard.**

* **Primary disinfection chlorine monitoring is being conducted at or near a location where the intended CT has just been achieved or at a point representing that location.**

  The continuous free chlorine residual analyzer monitors and records the free chlorine residual in the treated water leaving the clear well. This is at or near the point representing the location where the intended CT value has just been achieved.

* **Secondary disinfection chlorine residual monitoring is being conducted on a daily basis.**

* **Daily records of the measured disinfectant are maintained.**

  Operational staff maintain a "Daily Distribution Sampling" logsheet to record the daily free chlorine residual in the distribution system. The logsheet records the date, time, location, free chlorine residual, total chlorine residual, turbidity and the operator's initials. The logsheets are maintained in a binder.

LMR - WATER QUALITY MONITORING

* **The drinking water system is providing chlorination or chloramination.**

The drinking-water system provides chlorination using chlorine gas in solution, injected at pre- and post-chlorination points. Pre-chlorination is not currently being practiced at the plant. Post-chlorination consists of injecting a chlorine solution into the clear well influent. Since the previous inspection, new chlorinators and regulators have been installed. As well, a new electronic direct read-out weigh scale was installed for the chlorine cylinders. An automatic switchover mechanism on the regulators for loss of pressure was also installed to ensure continuous disinfection.

* **Trihalomethane samples are being collected as required.**

Trihalomethane samples are being collected on a quarterly basis from the distribution system. Samples were collected for trihalomethanes on May 27, 2004; February 17, 2004; December 10, 2003; and September 9, 2003.

* **The trihalomethane samples are being collected from a point in the distribution system or in the connected plumbing system that is likely to have an elevated potential for the formation of trihalomethanes.**

The trihalomethane samples are being collected from one of the extremities in the distribution system (O.P.P. Station) that is likely to have an elevated potential for the formation of trihalomethanes.

* **Samples for lead analysis are being collected from a point in the distribution system, or the connected plumbing system that is likely to have an elevated concentration of lead.**

Samples for lead analysis are being collected from one of the extremities in the distribution system that is likely to have an elevated concentration of lead.

* **The owner is conducting sampling in addition to that required.**

Additional sampling is being conducted for Cryptosporidium and Giardia in the raw water on a quarterly basis. Additional sampling was being conducted for colour, conductivity, pH, hardness, calcium, magnesium in the treated water on a quarterly basis up until February 17, 2004. Additional sampling is being conducted for manganese and ammonia in the raw water and treated water when necessary. Manganese was being tested on a daily basis but will now only be done on an occasional basis during the winter and early spring months. Manganese levels become elevated during those months indicated above, therefore sampling is only necessary during that period. The Alexandria WTP uses potassium permanganate to remove the manganese from the drinking-water.

* **Additional sampling is being conducted and the information pertaining to these samples is not being included in the reports required by legislation or authorizing documents.**

In 2003, additional sampling was performed for Cryptosporidium, Giardia, colour, conductivity, pH, hardness, calcium, magnesium, manganese, ammonia, hydrogen sulphide, dioxins and furans. The sample results for these parameters were not included in the 2003 Annual Report.

* **Records of water quality analyses are retained for the period of time prescribed by regulation.**

* **Operators are examining continuous monitoring test results and they are examining the results within 72 hours of the test.**

Operators are examining continuous monitoring test results and they are examining the results within 24 hours of the test.

LMR - WATER QUALITY MONITORING

* **Audit samples were collected during the inspection.**

Sampling was conducted at the Alexandria WTP by the MOE Inspector on June 10, 2004. Samples of the raw water, treated water and four (4) samples from the distribution system were collected. All samples were collected as per the "Protocol for Standardized Sampling During the Performance of SWIP Inspections" dated May 1997 and "Practices for the Collection and Handling of Drinking-Water Samples", May 2003. The samples were sent to the MOE's Laboratory Services Branch in Toronto on the same day for analysis. The distribution samples were collected from the following locations: O.P.P. Station, North Glengarry Memorial Hospital, Community Nursing Home and MacEwen Petroleum Inc. At all four locations the MOE Inspector also collected samples for on-site analysis of the free chlorine residual. The MOE Inspector used a Hach Pocket Colorimeter to perform the analyses. The results from the on-site analysis of the chlorine residuals are:

- O.P.P. Station, 0.45 mg/L free chlorine residual;

- Community Centre Nursing Home, 1.29 mg/L free chlorine residual;

- MacEwen Petroleum Inc., 0.61 mg/L free chlorine residual;

- North Glengarry Memorial Hospital, 1.25 mg/L.

Microbiological samples were collected at each of the above locations and "distribution end" samples were collected from the O.P.P. Station, which includes analysis for lead and trihalomethanes.

LMR - WATER QUALITY ASSESSMENT

* **The results of Ministry audit sampling shows compliance with Ontario Drinking Water Quality Standards (Regulation 169/03).**

The water quality results for the raw water sample collected by the MOE in June 2004 indicate that E. Coli was detected in the sample with a concentration of 120 counts/100 mL, Total Coliforms were detected with a concentration of 150 counts/100 mL, and a background count of greater than 200 counts/100 mL. The water quality results for the treated water sample and the four (4) distribution system samples collected by the MOE in June 2004 indicate that there were no detections of deterioration indicators, E. Coli or total coliforms and heterotrophic bacteria was detected in the treated water and all four distribution samples, but the results were less than 10 counts/mL. The operational guideline of 0.10 mg/L for aluminum was exceeded with a result of 0.121 mg/L. Aluminum found in coagulant treated water is due to the presence of aluminum left over from the use of coagulant. Optimization of treatment should be applied to reduce this "residual" aluminum to under the operational guideline of 0.1 mg/L. High residual aluminum can cause coating of the pipes in the distribution system resulting in increased energy requirements for pumping, interferences with certain industrial processes and flocculation in the distribution system.

The concentration of trihalomethanes in a distribution sample was 108 ug/L, however the four quarter moving annual average of test results was below the maximum acceptable concentration (MAC) of 100 ug/L (0.10 mg/L). Primarily, trihalomethanes in drinking water are produced by the reaction of chlorine and the naturally occurring organics left in the water after filtration. A copy of the audit results are in Appendix B.

* **The owner's monitoring results are comparable to the results of the Ministry's audit samples.**

LMR - REPORTING, NOTIFICATION & CORRECTIVE ACTION

LMR - REPORTING, NOTIFICATION & CORRECTIVE ACTION

* **A review of monitoring data provided by the operating authority does not confirm that the water provided by the system meets the requirements of the prescribed drinking water quality standards.**

  Since the previous inspection period, there have been approximately 32 incidents of adverse water quality for the Alexandria Drinking-Water System where the water provided by the system did not meet the requirements of the prescribed drinking-water quality standards (turbidity in the filter effluent exceeded 1.0 NTU, Total Coliforms were detected in drinking-water samples and Background colony counts were greater than 200 counts/100 mL.

  Manganese concentrations exceeded the aesthetic objective of 0.05 mg/L, almost on a daily basis, during the months of January and February 2004. Manganese is objectionable in water supplies because it stains laundry and fixtures black and can cause undesirable tastes in beverages. Manganese is present, seasonally, in surface waters when anaerobic decay processes in sediments is occurring. The owner installed a potassium permanganate feed system to remove manganese from the drinking-water.

* **All required notifications of adverse water quality incidents were provided to the Spills Action Centre and Medical Officer of Health.**

  Since the previous inspection period, there have been approximately 32 incidents of adverse water quality for the Alexandria Drinking-Water System, all of which were reported to the Ministry's Spills Action Centre and the local Medical Officer of Health within the prescribed time frames.

* **There were instances where a written notice of issue resolution was required by regulation.**

  A written notice of issue resolution was required by regulation for each of the approximate 32 adverse test results that were reported since the previous inspection period.

* **Notice was not provided within 7 days of the issue being resolved.**

  There were two incidents of adverse water quality for which the Notice of Issue Resolution was not provided. On August 9, 2003, and August 10, 2003, the turbidity of the filter effluent exceeded 1.0 NTU and was reported to the Ministry's Spills Action Centre and the local Medical Officer of Health. However, once the issues were resolved the Notice of Issue Resolution was not provided in accordance with subsection 16-9 of Schedule 16, O. Reg. 170/03.

* **The notice contained a summary of the actions taken and the results achieved.**

  The notices of issue resolution contained a summary of the actions taken, results achieved and if applicable, included a copy of the resample results.

* **Corrective actions have been taken to address exceedances and resampling provisions have been met including any other steps as directed by the Medical Officer of Health.**

  Corrective actions have been taken to address exceedances and resampling provisions have been met including any other steps as directed by the Medical Officer of Health. The local Medical Officer of Health directed the owner to collect microbiological samples in the distribution system on several occasions when the turbidity of the filter effluent was greater than 1.0 NTU. The owner complied with the direction given by the Medical Officer of Health.

LMR - REPORTING, NOTIFICATION & CORRECTIVE ACTION

* **When alarms for continuous monitoring equipment sounded, appropriate actions were taken in a timely manner by a qualified person.**

  Other alarms aside from those for the continuous water quality analyzers monitor system pressure, raw water turbidity, generator start up alarm, security alarms, a chlorine gas detector alarm, loss of pressure from the chlorine cylinders, loss of flow through the chlorinators, and door contactor alarms. Low and high water level alarms are installed for the wet well, the clear well and the water tower. Operators respond to alarms in a timely manner and take the appropriate actions necessary. Responses to alarms are documented in the logbook and include the type of alarm, cause, remedy and the operator who responded.

* **When no one was at the location where/when the alarm sounded, a qualified person was promptly dispatched.**

  If no one was at the water treatment plant where/when the alarm sounded, an operator was promptly dispatched. The alarms are connected to a dialer which pages the on-call operator.

* **The Engineer's Report/Engineering Evaluation Report was prepared and submitted within required time frames.**

  The First Engineer's Report is dated March 30, 2001, and was prepared by M.S. Thompson & Associates Limited. The Second Engineer's Report is due five (5) years from the date of the First Engineer's Report, i.e. March 2006.

* **Annual Reports were not completed, were not made available to the public on time, and/or did not contain the required information.**

  The 2003 Annual Report was completed in April 2004 and submitted to council on April 13, 2004. The Annual Report was submitted to the Ministry on April 21, 2004. The 2003 Annual Report should have been submitted to the Ministry by February 28, 2004, in accordance with section 11 (3) of O. Reg. 170/03.

* **Summary Reports have not been completed on time and distributed in accordance with the regulatory requirements.**

  The 2003 Summary Report for Municipalities was not completed on time. The 2003 Summary Report was submitted to the municipal council on April 13, 2004, as confirmed by Resolution No. 19. In accordance with subsection 22-2 (1) of Schedule 22, O. Reg. 170/03, the owner of a drinking-water system shall ensure that, not later than March 31 of each year after 2003, a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year and is given to the members of the municipal council.

NON COMPLIANCE WITH REGULATORY REQUIREMENTS

* The owner does not have up-to-date plans for the drinking water system.
* The record system does not allow the reader to unambiguously identify the person making a logbook entry.
* Personnel at the drinking water system are not under the supervision of persons having the prescribed qualifications.
* Up-to-date, as-built plans of the water system are not available and/or subsequent modifications, if any, have been noted on the drawings.
* Notice was not provided within 7 days of the issue being resolved.
* Annual Reports were not completed, were not made available to the public on time, and/or did not contain the required information.
* Summary Reports have not been completed on time and distributed in accordance with the regulatory requirements.

ACTIONS REQUIRED

1. The owner does not have up-to-date plans for the drinking water system. The plans of the drinking-water system need to be updated to reflect the recent upgrades. Condition No. 6.9 of Certificate of Approval No. 6848-5V8RSN requires the Owner to ensure that an alteration to the treatment system is incorporated into Process and Instrumentation Diagrams (P&ID) and record drawings and diagrams within one year of the substantial completion of the alteration and shall be retained and shall be made readily available for inspection by Ministry staff. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, complete with implementation dates, committing to ensuring that all alterations to the treatment system are incorporated into P&ID within one year of the substantial completion of the alterations.

2. The entries in the logbook were not always initialed by the operators. The owner shall ensure that a person who makes an entry in a log or other record-keeping mechanism shall do so in a manner that permits the person to be unambiguously identified as the maker of the entry in accordance with section 20 (4) of O. Reg. 435/93 and section 27 (4) of O. Reg. 128/04. O. Reg. 128/04 came into force on August 1, 2004, and revokes and replaces O. Reg. 435/93. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to ensuring all entries made in the logbook unambiguously identify the person who made the entry.

3. Personnel at the drinking-water system are not under the supervision of persons having the prescribed qualifications. Andre Bachand is the Water Works Manager and is responsible for directing and supervising the operational staff. At the time of the inspection, Mr. Bachand held an operator-in-training certificate for both the water treatment and water distribution systems. Mr. Bachand has submitted his application for Class 1 certificates. The owner of the drinking-water system shall ensure that personnel at the drinking-water system are under the supervision of persons having the prescribed qualifications. By no later than September 30, 2004, provide documentation to the undersigned Provincial Officer, confirming that Mr. Bachand holds Class 1 certificates for the water treatment and distribution systems.

4. There were two incidents of adverse water quality for which the Notice of Issue Resolution was not provided. On August 9, 2003 and August 10, 2003, the turbidity of the filter effluent exceeded 1.0 NTU and was reported to the Ministry's Spills Action Centre and the local Medical Officer of Health. However, once the issues were resolved the Notice of Issue Resolution was not provided in accordance with subsection 16-9 of Schedule 16, O. Reg. 170/03. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to ensuring that all notices of issue resolution are provided to the Ministry's Spills Action Centre and local Medical Officer of Health within 7 days of the issue being resolved.

5. The 2003 Annual Report was completed in April 2004 and submitted to council on April 13, 2004. The 2003 Annual Report was submitted to the Ministry on April 21, 2004. The 2003 Annual Report was due February 28, 2004, in accordance with section 11 (3) of O. Reg. 170/03. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to completing and submitting the Annual Report by February 28 of each year.

6. The 2003 Summary Report for Municipalities was not completed on time. The 2003 Summary Report was submitted to the municipal council on April 13, 2004, as confirmed by Resolution No. 19. In accordance with subsection 22-2 (1) of Schedule 22, O. Reg. 170/03, the owner of a drinking-water system shall ensure that, not later than March 31 of each year after 2003, a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year and is given to the members of the municipal council. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to ensuring the Summary Reports are prepared and given to the members of the municipal council by no later than March 31 of each year.

7. The owner has not established a written procedure for dealing with complaints related to the drinking-water system in accordance with Condition No. 6.5 (vi) of Certificate of Approval No. 6848-5V8RSN. The procedure is to be incorporated into the operations manual. By no later than September 30, 2004, provide documentation to the undersigned Provincial Officer, confirming that a written procedure for dealing with complaints has been developed.

8. Certificate of Approval Air No. 7254-5MTJZH, issued May 23, 2003, for the 175 kW diesel generator set, stipulates in Condition No. 5 that the owner was to have prepared a manual within three months of issuance of this certificate, outlining the operating procedures and a maintenance program for the equipment including routine operations and maintenance procedures, emergency procedures, procedures for record keeping and measures to minimize noise and odourous emissions. It was advised that the owner had applied for an extension to the three month requirement and that the manual will be prepared by July 1, 2004. By no later than September 30, 2004, provide documentation to the undersigned Provincial Officer, confirming that the manual has been prepared.

9. As previously recommended, the owner should include the rate of taking in litres per minute in the Annual Report(s) and Records of Water Taking. Condition No. 5.1 of Certificate of Approval No. 6848-5V8RSN stipulates that the daily maximum flow rate for both the raw water and treated water is to be measured and recorded. Permit To Take Water No. 88-P-4006 stipulates that the rate of taking shall not exceed 3,900 litres per minute or 5,616,000 litres per day. The daily maximum flow rate is being recorded on the system's chart recorders but the data is not being included in the system's Annual Report(s). Subsection 22-2 (3) of Schedule 22 (O. Reg. 170/03) requires the Suumary Report to include a summary of the quantities and flow rates of the water supplied during the period covered by the report, including daily instantaneous peak flow rates. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to ensuring that the daily maximum flow rates for both the raw water and treated water are measured and recorded; and that this data is included in the drinking-water system's reports (performance reports, summary reports and records of water taking).

SUMMARY OF BEST PRACTICE ISSUES

* Cross connections to other water sources such as wells, cisterns or surface water are known to exist.
* It is estimated that greater than 10% of the distributed water is not accounted for.
* Backflow preventers are not installed at each lateral connection to major industries.
* The Operations Manual does not contain criteria that operators can use to determine when a filter requires backwashing.
* The Operations Manual does not contain documentation of procedures for bringing newly backwashed filters back into service at low rates that are gradually increased to minimize post-backwash turbidity spikes.
* The contingency/emergency plan does not include provisions for operating the facility when key operating staff are absent or unable to act for an extended period or the provisions are not in accordance with Ontario Regulation 435/93 .
* The contingency/emergency plan does not include a provision for the notification of the Director when the operator who has overall responsibility for plant operations is absent for sixty days or more within any consecutive twelve month period.
* Additional sampling is being conducted and the information pertaining to these samples is not being included in the reports required by legislation or authorizing documents.
* A review of monitoring data provided by the operating authority does not confirm that the water provided by the system meets the requirements of the prescribed drinking water quality standards.

RECOMMENDED ACTIONS

1. Backflow preventers are not installed at each lateral connection to major industries. It is recommended that the owner consider requiring all industries to have a backflow preventer installed on their service connection in order to reduce the potential for contaminated water to enter the distribution system. The owner has developed a policy "Water Works Policy" which has been approved by council and the Water Works Committee. The policy states that all new water service connections are to have backflow preventers installed on the service entering the building. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, complete with implementation dates, committing to installing backflow preventers at all of the industries in the Town of Alexandria.
2. The Operations Manual does not contain criteria that operators can use to determine when a filter requires backwashing. The Manual does not contain documentation of procedures for bringing newly backwashed filters back into service at low rates that are gradually increased to minimize post-backwash turbidity spikes. The Manual should include formal written procedures for filter operation (backwashing of filters). By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, complete with implementation dates, committing to developing procedures for filter operation including backwashing of filters and incorporate them into the Operating and Contingency Manual.
3. The contingency plan does not include provisions for operating the facility when key operating staff are absent or unable to act for an extended period in accordance with O. Reg. 435/93. The contingency plan does not include a provision for the notification of the Director when the operator who has overall responsibility for plant operations is absent for sixty days or more within any consecutive twelve month period. A procedure outlining the provisions for operating the facility when key operating staff are absent or unable to act for an extended period should be developed and included in the contingency plans. Under O. Reg. 128/04, which came into force on August 1, 2004 and replaces O. Reg. 435/93, the requirement to notify the Director when the operator who has overall responsibility for plant operations is absent for sixty days or more is no longer required. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, complete with implementation dates, committing to developing a procedure for operating the facility when key operating staff are absent or unable to act for an extended period.
4. A review of monitoring data provided by the operating authority does not confirm that the water provided by the system meets the requirements of the prescribed drinking-water quality standards. Since the previous inspection period, there have been approximately 32 adverse test results for the Alexandria Drinking-Water System. The adverse test results include turbidity values in the filter effluent greater than 1.0 NTU, total coliforms detected in drinking-water samples and background colony counts greater than 200 counts/100 mL in drinking-water samples. The owner should make every effort to ensure the drinking-water meets the requirements of the prescribed drinking-water quality standards. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to ensuring that the system will be operated so that the drinking-water meets the requirements of the prescribed drinking-water quality standards.
5. Additional sampling is being conducted and the information pertaining to these samples is not being included in the Annual Report(s). In 2003, additional sampling was performed for Cryptosporidium, Giardia, colour, conductivity, pH, hardness, calcium, magnesium, manganese, ammonia, hydrogen sulphide, dioxins and furans. The sample results for these parameters were not included in the 2003 Annual Report. It is recommended that the results of all additional sampling be included the Annual Report(s). By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to including the results of additional monitoring in the Annual Report(s).

6. It is estimated that greater than 10% of the distributed water is not accounted for. During the inspection, an estimate of unaccounted-for distribution water could not be provided. However, during the previous inspection, it was estimated the unaccounted-for distribution water for 2003 to be approximately 14%. Current Ministry design guidelines recommend that unaccounted-for water greater than 15% of total pumpage is considered excessive. All consumers except for commercial users are metered. An estimate of the unaccounted-for distribution water can be calculated using the total volume of water billed for through the owner's billing system and the total volume of treated water pumped out of the Alexandria WTP. A more formal leak detection program should be considered in 2004. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to calculating the unaccounted-for distribution water and developing and implementing a more formal leak detection program in order to reduce the unaccounted-for distribution water.
7. Guy Girard, Operator and Foreman holds a Class 1 Water Treatment System certificate (No. 11980, Expiry Date: May 31, 2004). Mr. Girard's certificate expired on May 31, 2004 and had not been renewed at the time of the inspection. The owner is obligated to ensure all operator's hold a valid operator's certificate. It was advised that Mr. Girard will be writing the exams for both Class 2 water treatment and water distribution systems on July 2, 2004. By no later than September 30, 2004, provide documentation to the undersigned Provincial Officer, confirming that Mr. Girard's Class 1 certificates were renewed and/or Mr. Girard has received his Class 2 certificates.
8. After water mains are shock chlorinated, the flushed water is dechlorinated prior to being discharged to the storm sewer. A written procedure for all wastewater discharges from the distribution system should be developed and included in the operating manual and hydrant binder. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, complete with implementation dates, committing to developing a written procedure for all wastewater discharges from the distribution system.
9. The owner's procedure for response to adverse water quality incidents included the reporting requirements of O. Reg. 459/00 and did not reference O. Reg. 170/03. The reporting procedure needs to be updated to reflect the changes in legislation. By no later than September 30, 2004, provide documentation to the undersigned Provincial Officer, confirming that the above-noted procedure has been updated to reference the requirements of O. Reg. 170/03 and the Ministry's notification forms.
10. The hydrant information binder for the distribution system did not include a written procedure for inspecting and exercising valves. A procedure outlining the valve exercising program should be developed and included in the hydrant information binder and the Operating & Contingency Manual. The owner has records documenting the exercising of the valves (both main and gate valves). By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, complete with implementation dates, committing to the development of a procedure for the valve exercising program.
11. Cross connections to other water sources such as a well are known to exist. The North Glengarry Memorial Hospital has a well that is connected to the distribution system. A backflow prevention device has been installed on the service connection to the hospital. It is recommended that the well be abandoned in accordance with Regulation 903. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to ensuring the well located at the hospital is abandoned in accordance with Regulation 903.
12. The system description of the Certificate of Approval states that Alexandria Water Treatment Plant consists of an automated control system monitoring and recording plant process data such as flows, chlorine residuals and turbidities. In fact, the treatment plant does not have such a system. The flow meters and continuous water quality analyzers are connected to chart recorders but not to an automated control system. It is recommended that the owner install a computerized plant monitoring and control (SCADA -supervisory control and data acquisition) system. A SCADA system allows control and monitoring from a central location; allows monitoring and alarming of several parameters; and allows logging of data on a continual basis. Advantages of a SCADA system are that it is always "on"; logged records provide good trending information; set points and alarms provide early warning of potential difficulties with equipment and with water

quality; and control functions allow a rapid and coordinated response to process upsets. Given that the Alexandria Water Treatment Plant has a history of process upsets and water quality issues, it would be advantageous to install a SCADA system. The system would log data on a continual basis, provide an early warning to operational staff of water quality issues and provide a quicker response to address those issues. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to evaluating the purchase and installation of a computerized plant monitoring and control (SCADA) system.

13. It is recommended that the owner replace the orifice plates for both the raw water and treated water with electromagnetic flow meters to ensure better accuracy and measurement of the daily maximum flow rates. By no later than September 30, 2004, provide an action plan to the undersigned Provincial Officer, committing to evaluating the purchase and installation of electromagnetic flow meters to measure and record both the raw water and treated water flows.

SIGNATURES

Inspected By:	Signature: (Inspector):
Shannon Hamilton-Browne	Shannon Hamilton-Browne

Reviewed & Approved By:	Signature: (Supervisor):
James Mahoney	James Mahoney

Review & Approval Date: August 30, 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."

DWS COMPONENT LOCATIONS DETAILS

Name: Alexandria Mill Lake (Mill Pond)
Station Id #: 2200010307002
Type: Source
Sub Type: Surface

Map Datum:	NAD 83		
Geo-Referencing Method:	GPS		
Accuracy Estimate:	1-10 Meters (Good Quality GPS)		
Location Reference:	Near Object	**UTM Zone:**	18
UTM Northing:	5016890	**UTM Easting:**	528350

Name: Alexandria WTP
Station Id #: 2200010307414
Type: Treated Water POE
Sub Type: Surface

Street Number: 22 **Street Name:** Gernish Street West
Municipality: Field has to be added to GUI

Map Datum:	NAD 83		
Geo-Referencing Method:	GPS		
Accuracy Estimate:	1-10 Meters (Good Quality GPS)		
Location Reference:	Near Object	**UTM Zone:**	18
UTM Northing:	5016994	**UTM Easting:**	528584

Name: Elevated Storage Tank
Station Id #:
Type: Other
Sub Type: Reservoir

Street Number: 210 **Street Name:** Industrial Blvd.
Municipality: Field has to be added to GUI

Map Datum:	NAD 83		
Geo-Referencing Method:	GPS		
Accuracy Estimate:	1-10 Meters (Good Quality GPS)		
Location Reference:	Near Object	**UTM Zone:**	18
UTM Northing:	5017660	**UTM Easting:**	527540

APPENDIX A

CERTIFICATE OF APPROVAL

(AS ATTACHED)

DUPLICA

Ministry of the Environment
Environmental Assessment and Approvals Branch
Floor 12A
2 St Clair Ave W
Toronto ON M4V 1L5
Fax: (416)314-8452
Telephone: 416-212-3707

Ministère de l'Environnement
Direction des évaluations et des autorisations environnementales
Étage 12A
2 av St Clair O
Toronto ON M4V 1L5
Télécopieur: (416)314-8452
Téléphone :

Ontario

February 16, 2004

Morris McCormick, P. Eng., Township Engineer,
The Corporation of the Township of North Glengarry
PO Box 700
Alexandria, Ontario
K0C 1A0

Dear Sir:

Re: Application for Approval of Municipal Drinking Water Systems
Extension for upgrading requirements for Alexandria Water Treatment Plant
North Glengarry Township, United Counties of Stormont, Dundas & Glengarry
MOE Reference Number 4803-5LHS4Z

As of June 1, 2003 all municipal and non-municipal drinking water systems in Ontario are governed by the Safe Drinking Water Act (SDWA), 2002, S.O. 2002, and its Regulations.

We have enclosed a Certificate of Approval for the above noted water works, in accordance with Part V of the SDWA. This Certificate revokes and replaces Certificate of Approval No. 9065-4Z5J74 previously issued in accordance with Section 52 of the Ontario Water Resources Act (OWRA). We draw your attention to Part 8 of the Certificate which contains all required studies and/or upgrades for the drinking-water system.

As requested we have granted an extension to the time allowed for completion of the works to December 31, 2004.

You will note that the description is divided into two sections - Proposed Water Works and Existing Water Works. At the time of the next Engineer's Report these two descriptions will be consolidated.

If you have any questions regarding the above, please contact David Filman, MA Sc., P. Eng., at the above telephone number.

Yours truly,

Indra R. Prashad, P. Eng.
Director,
Part V, of the Safe Drinking Water Act

c: District Manager, MOE ~~Cornwall~~ Kingston
Micahel Gundry, P.Eng., TSH
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards Development Branch
Area Supervisor MOE Cornwall

Ontario

The Corporation of the Township of North Glengarry
PO Box 700
Alexandria, Ontario
K0C 1A0

Site Location: Alexandria Water Treatment Plant
90 Main Street South
North Glengarry Township, United Counties of Stormont, Dundas & Glengarry

Pursuant to the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this approval is issued under Part V of the Safe Drinking Water Act, 2002, S.O. 2002, c.32 to:

The Corporation of the Township of North Glengarry
PO Box 700
Alexandria, Ontario
K0C 1A0

PART 1 - DRINKING-WATER SYSTEM DESCRIPTION

1.1 for a drinking-water system serving the hamlet of Alexandria in the Township of North Glengarry located within the hamlet on the north-east edge of Mill Pond (UTM coordinates: NAD 83, Zone 18. Northing 5,016,994.00 m, Easting 528,584.00 m), rated as set out in Part 4 consisting of the following:

PROPOSED WATER WORKS
(as per Application for Approval dated May 21, 2003)

Coagulation/Flocculation

- provide 150mm by 400mm containment curb for one (1) 23,00 L and one (1) 9,000 L alum solution storage tanks;

- remove existing polymer feed system and provide two (2) diaphragm metering pumps (one duty, one standby), each rated at 0.2 L/s, together with a 400 litre storage tank;

Filtration

- modifications to piping to provide for filter to waste and to provide the surface wash system with backflow prevention;

Disinfection

- piping modifications to provide for chlorine solution injection to the clear well;

Clear Wells

- modifications to clearwell piping to improve baffling factor;

Manganese Removal System

- installation of a potassium permanganate feed system consisting of two (2) metering pumps (one duty, one standby), each rated at 17.5 L/h, together with a 1000 litre storage tankand feeding to the flocculation tanks;

Emergency Generator

- removal of the esisting diesel generator set,

- install ation of a 160 kW diesel/natural gas powered emergency generator complete with sound attenuation enclosure, double walled base fuel tank, battery charger and and automatic transfer switch, capable of operating the water treatment plant at full capacity in the event of power outages;

High Lift Pumps

- replacement of Pump No. 2 with a vertical turbine high lift pumps to be relocated to a position above the clearwells adjacent to the filter,

- relocation of pump No.1 to a position above the clearwells adjacent to the filter,

- each to be capable of pumping 75 L/s at 41 m TDH (Total Dynamic Head) and complete with a flow control valves and instrumentation and controls;

Standpipe

- a 3,916 m^3 standpipe located at 210 Industrial Boulevard, (UTM Coordinates: NAD83, Zone 18, 527540.00 m E, 5017660.00 m N)

- two (2) chemical feed panels each having one (1) sodium hypochlorite feed pump rated at

0.59 L/h at 800 kPa and two (2) 200 L solution tanks with secondary containment, with one (1) magnetic flow meters for control of dosage;

EXISTING WATER WORKS
(as per Engineers' Report entitled "Engineers' Report for Water Works, Alexandria Water Works, Township of North Glengarry", prepared by M. S. Thompson & Associates Ltd. dated March 2001)

Raw Water Intake Works

Intake Structure

- located in Mill Pond approximately 425 m southwest of the water treatment plant comprising a vertical 1.5 m diameter, 760 mm high precast concrete pipe placed on a concrete slab housed in a 2.4 by 2.4 m timber crib including screening;

Intake Pipe

- approximately 425 m of 350 mm diameter pipe from the intake crib to the low lift chamber well;

Low Lift Chamber/Raw Well

- a 4.7 by 1.5 by 4.0 m low lift chamber/raw well located in the southwest corner of the water treatment plant including two coarse screens with an effective opening size of approximately 645 mm^2, raw water well with powdered activated carbon feeding system and low lift pump compartments;

Low Lift Pumping Station

- two (2) 14.9 kW vertical turbine low lift pumps located in the low lift chamber/raw water well, each rated at 6,200 m^3/d at 14.6 m total dynamic head (TDH) and equipped with an automated flow control valve on the pump discharge restricting flows to the Permit To Take Water (PTTW) allowance;

Coagulation/Flocculation

- two (2) 2.6 by 2.6 by 4.6 m concrete flocculating chambers operate in series each equipped with a 0.37 kw, 5 rpm agitator; coagulant feeding system; and an in-line mixer;

Taste and Odour Control

- a powdered activated carbon (PAC) chemical fed system with a maximum capacity of 13/kg/d for taste and odour control;

Sedimentation

- four (4) concrete sedimentation tanks with overall internal dimensions of 11.7 by 3.6 by 4.9 m operating in parallel, gravity fed by a 0.76 by 16 by 1.3 m conduit; each baffled with a 4.7 by 2.7 m wall from the inlet and equipped with tube settlers having a cross sectional area of 3.6 by 6.1 m and including sludge hoppers and drains discharging to the sanitary system;

Filtration

- four (4) concrete 3.9 by 2.9 by 2.8 m filters with mixed media operating in parallel each having a surface area of 11.3 m^2 and each capable of filtering a maximum flow of approximately 2,003 m^3/d complete with surface wash facilities, turbidity and head loss instrumentation and an underdrain system,

- an automatic filter backwash system comprising two (2) pumps (one duty, one standby), one rated at 114 L/s, 9.2 m TDH and the other one 120 L/s, 10.2 m TDH and a backwash tank with a supernatant pipe draining to the sanitary sewer system;

Disinfection

- a disinfection system using chlorine gas in solution, injected at pre- and post-chlorination points comprising three duty chlorinators two (2) having a capacity of 50 kg/d and one (1) having a capacity of 22.7 kg/d, equipped two (2) vacuum regulators (injectors) and chlorine cylinders;

Clear wells

- two (2) concrete clear wells joined by a sluice gate at the base of the wells having an effective volume of 567 m^3 Clear Well No.1 and 160 m^3 Clear Well No. 2;

High Lift Pumps

- two (one duty, one stand-by) vertical turbine high lift pumps located above the clearwells adjacent to the filters, capable of delivering treated water to the distribution system at approximately 6,500 m^3/d, 41 m TDH and approximately 4,300 m^3/d, 41 m TDH powered by a 56 kW and a 37 kW electric motors respectively including a flow control valve and instrumentation and controls;

Emergency Power

- a 125 kw diesel powered emergency generator capable of operating the water treatment plant at full capacity in case of power outages;

Automated Monitoring and Control

- an automated control system monitoring and recording plant process data such as flows, chlorine residuals and turbidities;

1.2 all in accordance with the applications and plans and other supporting documents listed in Schedule "A", and all other Schedules, which are attached to, and form part of this approval, except as specified in the conditions contained herein.

PART 2 - DEFINITIONS AND INFORMATION

2.1 In this approval, unless the context otherwise requires, words and phrases shall be given the same meaning as those set out in the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32 and any regulations made in accordance with that act.

2.2 In this approval

"approval" means this entire approval document, issued in accordance with section 36 of the *SDWA*, and includes any schedules to it

"Director" means a director appointed pursuant to s. 6 of the *SDWA* for the purposes of Part V of the *SDWA*

"drinking-water system" includes the works set out in Part 1

"operating authority" and "owner" mean, in addition to the respective meanings given in the Act, The Corporation of the Township of North Glengarry

"provincial officer" means a provincial officer appointed pursuant to s. 8 of the *SDWA*

"rated capacity" means the maximum flow rate and maximum daily volume of water which can be treated when operating the drinking-water system under design conditions

"SDWA" means the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, as amended

PART 3 - GENERAL

Compliance

3.1 The owner and operating authority shall operate the drinking-water system in accordance with the *SDWA*, any applicable regulations made thereunder, and this approval.

3.2 Despite any condition of this approval to the contrary, the owner and operating authority set out in Part 2 are jointly and severally liable to comply with all conditions of this approval.

3.3 The owner and operating authority shall ensure that any person authorized to carry out work on or operate any aspect of the drinking-water system has been informed of the *SDWA*, all applicable regulations made in accordance with that act, and this approval and shall take all reasonable measures to ensure any such person complies with the same.

3.4 A copy of this approval shall be kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking-water system.

Build, etc. in Accordance

3.5 Except as otherwise provided by this approval, the drinking-water system shall be designed, developed, built, operated and maintained in accordance with Part 1 above and the documentation listed in Schedule "A".

Interpretation

3.6 Where there is a conflict between the provisions of this approval and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

i. The *SDWA*;

ii. a condition imposed in this approval in accordance with s. 38 of the *SDWA*;

iii. any regulation made under the *SDWA*;

iv. this approval;

v. any application documents listed in Schedule "A" from most recent to earliest; and

vi. all other documents listed in Schedule "A" from most recent to earliest.

3.7 The requirements of this approval are severable. If any requirement of this approval, or the application of any requirement of this approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of

this approval shall not be affected thereby.

3.8 Nothing in this approval shall be read to provide relief from the need for strict compliance with the *Environmental Assessment Act,* R.S.O. 1990, c E.18.

Other Legal Obligations

3.9 The issuance of, and compliance with the conditions of, this approval does not:

i. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

ii. limit in any way the authority of the ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with this approval.

3.10 For greater clarity, nothing in this approval shall be read to provide relief from regulatory requirements in accordance with section 38 of the *SDWA,* except as provided in Part 9.

Adverse Effects

3.11 Nothing in this approval shall be read as to permit: i) the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or ii) the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

3.12 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking-water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

3.13 Fulfillment of one or more conditions imposed by this approval does not eliminate the requirement to fulfill any other condition of this approval or the requirements of any applicable statute, regulation, or other legal requirement resulting from any act or omission that causes or is likely to cause an adverse effect on the natural environment or the impairment of water quality.

Change of Owner

3.14 The owner or the operating authority, as the case may be, shall notify the director, in writing, of any of the following changes within 30 days of the change occurring:

i. change of owner or operating authority;

ii. change of address;

iii. change of partners where the owner is or at any time becomes a partnership, and a copy of

the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17; or

iv. change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C.39.

3.15 In the event of any change in ownership of the drinking-water system, other than change to a successor municipality, the owner shall notify the successor of and provide the successor with a copy of this approval, and the owner shall provide a copy of the notification to the district manager of the local office of the ministry and the director.

Inspections

3.16 No person shall hinder or obstruct a provincial officer in the performance of their duties, including any and all inspections authorized by the *SDWA*.

Information

3.17 Any information requested, by the ministry, concerning the drinking-water system and its operation under this approval, including but not limited to any records required to be kept by this approval shall be provided to the Ministry, upon request.

3.18 Records required by or created in accordance with this approval, unless specifically referenced in s. 12 of O. Reg. 170/03, shall be retained for at least 5 years in a location where a provincial officer who is inspecting the treatment system can conveniently view them.

3.19 The receipt of any information by the ministry or the failure of the ministry to prosecute any person or to require any person to take any action, under this approval or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:

i. an approval, waiver, or justification by the ministry of any act or omission of any person that contravenes any term or condition of this approval or any statute, regulation or other legal requirement; or

ii. acceptance by the ministry of the information's completeness or accuracy.

PART 4 - PERFORMANCE

Rated Capacity

4.1 The drinking-water system shall not be operated to exceed the rated capacity for maximum flow rate and maximum volume set out below:

Treatment System	Maximum Flow Rate (L/sec)	Maximum Daily Volume (m^3/day)
Alexandria Water Works		8,014

Increase to Rated Capacity

4.2 Despite condition 4.1, the drinking water system may be operated at a rate above the rated capacity set out in condition 4.1 where necessary for:

i. the maintenance of the drinking-water system.

4.3 Condition 4.2 shall not be construed to allow drinking-water to be supplied that does not meet all other applicable standards and legal requirements.

PART 5 - MONITORING AND RECORDING

Flow measuring devices

5.1 Install a sufficient number of flow-measuring devices within the drinking-water system to permit the measurement and recording of:

i. the daily maximum flow rate and maximum daily volume of water conveyed into the treatment system; and

ii. the daily maximum flow rate and maximum daily volume of water conveyed from the treatment system to the distribution system.

5.2 Records shall be maintained that set out the parameters recorded in accordance with condition 5.1, and where the parameters measured exceed the daily peak flow rate and daily maximum volume set out in Part 1, the amount, date, time and duration of the exceedence shall also be recorded.

Calibration of flow measuring devices

5.3 All flow measuring devices must be checked and calibrated in accordance with the

manufacturer's instructions.

5.4 If the manufacturer's instructions do not indicate how often to check and calibrate the flow measuring devices, the equipment must be checked and calibrated at least once every year during which the drinking-water system is in operation.

PART 6 - OPERATIONS AND MAINTENANCE

Chemical standards

6.1 All chemicals and materials used in the operation of the drinking-water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60 and NSF/61.

6.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution shall be available at all times for each chemical and material used in the operation of the drinking-water system that comes into contact with water within the system.

6.3 Condition 6.2 does not apply in the context of any particular chemical or material where the Owner has written documentation signed by the director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking-water system and that chemical or material is only used as permitted by the documentation.

Operations manual

6.4 An up-to-date operations manual shall be maintained and available for reference by all persons responsible for all or part of the operation of the drinking-water system.

6.5 The operations manual shall include at a minimum:

i. the requirements of this approval and associated procedures;

ii. the operation and maintenance recommendations from the most recent engineers' report;

iii. procedures for the monitoring and recording of in-process parameters necessary for the control of the treatment system and assessing the performance of the drinking-water system;

iv. procedures for the operation and maintenance of monitoring equipment;

v. contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset and equipment breakdown;

vi. procedures for the dealing with complaints related to the drinking-water system, including the recording of the nature of the complaint and any investigation and corrective action taken that in respect of the complaint.

6.6 Procedures necessary to the operation of any physical alterations of the drinking-water system shall be incorporated into the operations manual prior to the alterations coming into operation.

Drawings

6.7 An up-to-date Process and Instrumentation Diagram for the treatment system shall be kept on site at the drinking water system.

6.8 All drawings and diagrams in the possession of the owner or operating authority that show the treatment system as constructed shall be retained.

6.9 An alteration to the treatment system shall be incorporated into Process and Instrumentation Diagrams (P&ID) and record drawings and diagrams within one year of the substantial completion of the alteration and shall be retained and shall be made readily available for inspection by Ministry staff.

PART 7 - FUTURE ALTERATIONS

Approved future alterations

7.1 *Not Applicable*

Certificate of compliance

7.2 *Not Applicable*

PART 8 - STUDIES AND UPGRADES REQUIRED

8.1 Subject to Condition 8.2 below, by **December 31, 2004,** 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 and measures necessary to ensure that appropriate free chlorine residual and associated contact time calculated at the plant rated capacity with the unit processes providing contact time at a minimum operating level and under limiting temperature and pH conditions meet requirements of the "O.Reg. 170/03 and Procedure For Disinfection of Drinking Water in Ontario", including but not limited to:

(i) All works necessary to ensure that the effective chlorine contact time downstream of the filters is sufficient to provide 0.5 log inactivation of giardia cysts and 2 log inactivation of viruses

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

(i) upgrade the chlorination system by installing a standby chlorinator as backup to the existing three duty chlorinators and an additional vacuum regulator (injector) injecting chlorine solution to the clearwell;

(ii) install flow and pressure instrumentation devices on chlorination solution lines and install an alarm on the chlorine analyzer;

(iii) provide backflow prevention in sedimentation tank drains and filter backwash drains by installing backflow preventer devises or an equivalent system;

(iv) provide facilities for filtering-to-waste;

(v) install instrumentation for filter and filter backwash flows;

(vi) install backflow/antisiphoning devises in filter surface wash arms;

(vii) provide re-chlorination at the active standpipe including an in-line chlorine analyzer with linkage to the automated monitoring and control system;

(viii) automate the activation of the standby diesel generator in case of power outages.

Requirement not an approval

8.2 The owner shall not construct any works required by this part until all associated approvals, licenses and permits have been obtained from the Ministry

PART 9 - RELIEF FROM REGULATORY REQUIREMENTS

Relief from regulatory requirements

9.1 *Not applicable*

Conditions in exchange for relief from regulatory requirements

9.2 *Not applicable*

SCHEDULE - A

The following supporting documents form part of this approval.

1. Application dated May 21, 2003
   - Correspondence dated: April 1, 2003 - request for extension
     May 16, 2003 - schedule
     December 11, 2003 - Status
   - Final Plans and Specifications dated November 2003
   - Design Brief - December 2003
   - Design calculations - February 10, 2004

2. The original applications for approval, including design calculations, engineering drawings and reports, and other supporting documents prepared in support of any previous certificate(s) of approval issued for any works now approved and replaced by this approval, unless this approval states otherwise.

This Certificate of Approval revokes and replaces Certificate of Approval No. 9065-4Z5J74 issued on January 31, 2002.

All or part of this approval may be reviewable with the provisions of Part X of the SDWA. In accordance with Section 129(1) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, 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 129(2) sets out a procedure upon which the 15 days may be extended by the Tribunal. Section 129(3) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, provides that the Notice requiring the hearing shall state:

1. The aspect of the decision, including the portion of the permit, licence, approval, order or notice of administrative penalty in respect of which the hearing is required; and
2. The grounds for review to be relied on by the person at the hearing.

Except with leave of the Tribunal, a person requiring a hearing in relation to a reviewable decision is not entitled to,

(a) a review of an aspect of the decision other than that stated in the notice requiring the hearing; or
(b) a review of the decision other than on the grounds stated in the notice

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
Part V, *Safe Drinking Water Act*
Ministry of Environment
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 Part V of the Safe Drinking Water Act

DATED AT TORONTO this 23rd day of February, 2004

THIS CERTIFICATE WAS MAILED
ON Feb. 25, 2004
9c
(Signed)

Indra Prashad, P.Eng.
Director
Part V *of the Safe Drinking Water Act, 2002*

DF/
c: District Manager, MOE ~~Cornwall~~ Kingston
Micahel Gundry, P.Eng., TSH
Manager, Drinking Water, Wastewater and Watershed Standards Section, Standards Development Branch
Area Supervisor MOE Cornwall

APPENDIX B

MINISTRY AUDIT SAMPLE RESULTS

(AS ATTACHED)

Ontario Ministry of Environment
Central Laboratory - Resources Road
FINAL REPORT(manager.rdf)
Jun. 25, 2004 09:21 AM

Login: **C116140**

Program Code 130072201

Program: MOE OPERATIONS DIVISION
Study: WATER, COMMUNAL
Project: EASTERN REGION - KINGSTON DIST
Activity: WTP MUNIC INSPECT/ADVERS NOTIF
Organization: District Manager Cornwall

Org. Id: 4615

Mail this copy to : HAMILTON-BROWNE, SHANNON
MOE - CORNWALL AREA OFFICE
113 AMELIA STREET
CORNWALL,ONT
K6H 3P1

SHB Aug 9/04

Final reports to : HAMILTON-BROWNE, SHANNON

Inquires to: RUSTY MOODY Telephone : 416-235-5863
PAUL YANG Telephone : 416-235-6004

LOGIN DESCRIPTION: 220001030 ALEXANDRIA WTP SHANNON HAMILTON-BROWNE 613-549-4000

Login: **C116140**

Field Id	Station ID	Sample Location Description	Sampling Date	Time	Zone	Sampler Information
AL-01	2200010307002	RAW WATER	10 JUN 2004	09:45	5	
	Sample ID C116140-0001	Sample Comment Description				

MOE*LIMS Products Requested:

WD	E3371A	TCEC3371												

Field Id	Station ID	Sample Location Description	Sampling Date	Time	Zone	Sampler Information
AL-02	2200010307414	TREATED WATER	10 JUN 2004	09:50	5	
	Sample ID C116140-0002	Sample Comment Description				

MOE*LIMS Products Requested:

WD	E3051A	MET3051	WD	E3060B	HG3060	WD	E3144B	VOL3144	WD	E3172A	F3172			
WD	E3196A	IBC3196	WD	E3226A	PA3226	WD	E3274A	LIC3274	WD	E3364A	DISNUT3364			
WD	E3408A	PC3408												

Field Id	Station ID	Sample Location Description	Sampling Date	Time	Zone	Sampler Information
AL-03	2200010308017	OPP STATION DISTRIBUTION	10 JUN 2004	10:40	5	
	Sample ID C116140-0003	Sample Comment Description				

MOE*LIMS Products Requested:

WD	E3051A	PB3051	WD	E3144B	VOL3144	WD	E3226A	PA3226	WD	E3408A	PC3408			

Field Id	Station ID	Sample Location Description	Sampling Date	Time	Zone	Sampler Information
AL-04	2200010308017	92 CENTRE ST. COMMUNITY NURSING HOME DISTRIBUTION	10 JUN 2004	10:55	5	
	Sample ID C116140-0004	Sample Comment Description				

MOE*LIMS Products Requested:

WD	E3226A	PA3226	WD	E3408A	PC3408									

Field Id	Station ID	Sample Location Description	Sampling Date	Time	Zone	Sampler Information
AL-05	2200010308017	275 BISHOP ST. MACEWEN PETROLEUM INC. DISTRIBUTION	10 JUN 2004	11:15	5	
	Sample ID C116140-0005	Sample Comment Description				

MOE*LIMS Products Requested:

WD	E3226A	PA3226	WD	E3408A	PC3408									

Login: **C116140**

Field Id	Station ID	Sample Location Description	Sampling Date	Time	Zone	Sampler Information
AL-06	2200010308017	NORTH GLENGARRY MEMORIAL HOSPITAL DISTRIBUTION	10 JUN 2004	11:30	5	

Sample ID
C116140-0006

MOE*LIMS Products Requested:

WD	E3226A	PA3226	WD	E3408A	PC3408	

Sample Comment Description

Login: **C116140**

	Field ID:		AL-01				AL-02				AL-03				
	Sample ID:		C116140-0001				C116140-0002				C116140-0003				
	MOE*LIMS ID:		2004WD23-00121				2004WD23-00122				2004WD23-00123				
	Station ID:		2200010307002				2200010307414				2200010308017				
	Collect Date:		10 JUN 2004				10 JUN 2004				10 JUN 2004				
	Sample Location Description:		RAW WATER				TREATED WATER				OPP STATION DISTRIBUTION				
	Sample Comments Description:														
Listid	Parmname	Value	Units	Qual	Rmk1	Value	Units	Qual	Rmk1	Value	Units	Qual	Rmk1
3051L1	Copper					5.6	ug/L	+/-0.60					
	Nickel					.1	ug/L	+/-0.20					
	Zinc					3.9	ug/L	+/-0.90					
	Cadmium					-.02	ug/L	+/-0.05					
	Chromium					1	ug/L	+/-0.50					
	Lead					.06	ug/L	+/-0.06					
	Iron					3	ug/L	+/-6.00					
	Manganese					9.62	ug/L	+/-0.96					
	Aluminum					121	ug/L	+/-10.00	0.121 mg/L > OG = 0.10 mg/L				
	Vanadium					.26	ug/L	+/-0.08					
	Molybdenum					.08	ug/L	+/-0.08					
	Silver					.01	ug/L	+/-0.05					
	Barium					15.2	ug/L	+/-1.40					
	Beryllium					.04	ug/L	+/-0.05					
	Strontium					101	ug/L	+/-14.00					
	Titanium					.1	ug/L	+/-0.50					
	Thallium					.02	ug/L	+/-0.05					
	Uranium					.01	ug/L	+/-0.05					
	Boron					5	ug/L	+/-2.00					
	Arsenic					.4	ug/L	+/-0.10					
	Selenium					0	ug/L	+/-1.00					
	Antimony					.58	ug/L	+/-0.15					
	Cobalt					.01	ug/L	+/-0.02					
3051L3	Lead									.75	ug/L	+/-0.36	
3060L1	Mercury					.02	ug/L	<=W					
3144L1	Chloroethene					.05	ug/L	<=W		.05	ug/L	<=W	
	1,1-dichloroethene					.05	ug/L	<=W		.05	ug/L	<=W	
	Dichloromethane					.2	ug/L	<=W		.2	ug/L	<=W	
	Tert-butyl methyl ether					.05	ug/L	<=W		.05	ug/L	<=W	
	trans-1,2-dichloroethene					.05	ug/L	<=W		.05	ug/L	<=W	
	1,1-dichloroethane					.05	ug/L	<=W		.05	ug/L	<=W	
	cis-1,2-dichloroethene					.05	ug/L	<=W		.05	ug/L	<=W	
	Chloroform					67.1	ug/L			104.	ug/L		
	1,1,1-trichloroethane					.05	ug/L	<=W		.05	ug/L	<=W	
	1,2-dichloroethane					.05	ug/L	<=W		.05	ug/L	<=W	
	Carbon tetrachloride					.2	ug/L	<=W		.2	ug/L	<=W	
	Benzene					.05	ug/L	<=W		.05	ug/L	<=W	

Login: **C116140**

Field ID:	AL-01	AL-02	AL-03
Sample ID:	C116140-0001	C116140-0002	C116140-0003
MOE*LIMS ID:	2004WD23-00121	2004WD23-00122	2004WD23-00123
Station ID:	2200010307002	2200010307414	2200010308017
Collect Date:	10 JUN 2004	10 JUN 2004	10 JUN 2004
Sample Location Description:	RAW WATER	TREATED WATER	OPP STATION DISTRIBUTION
Sample Comments Description:			

Listid	Parmname	Value	Units	Qual	Rmk1	Value	Units	Qual	Rmk1	Value	Units	Qual	Rmk1
3144L1	1,2-dichloropropane					.05	ug/L	<=W		.05	ug/L	<=W	
	Trichloroethene					.05	ug/L	<=W		.05	ug/L	<=W	
	Bromodichloromethane					2.0	ug/L			4.2	ug/L		
	Toluene					.05	ug/L	<=W		.05	ug/L	<=W	
	1,2-dibromoethane					.1	ug/L	<=W		.1	ug/L	<=W	
	1,1,2-trichloroethane					.1	ug/L	<=W		.1	ug/L	<=W	
	Dibromochloromethane					.2	ug/L	<=W		.2	ug/L	<=W	
	Tetrachloroethene					.05	ug/L	<=W		.05	ug/L	<=W	
	Chlorobenzene					.05	ug/L	<=W		.05	ug/L	<=W	
	Ethylbenzene					.05	ug/L	<=W		.05	ug/L	<=W	
	m- and p-xylene					.05	ug/L	<=W		.05	ug/L	<=W	
	Bromoform					.5	ug/L	<=W		.5	ug/L	<=W	
	Styrene					.05	ug/L	<=W		.05	ug/L	<=W	
	o-xylene					.05	ug/L	<=W		.05	ug/L	<=W	
	1,1,2,2-tetrachloroethane					.2	ug/L	<=W		.2	ug/L	<=W	
	1,4-dichlorobenzene					.05	ug/L	<=W		.05	ug/L	<=W	
	1,3-dichlorobenzene					.05	ug/L	<=W		.05	ug/L	<=W	
	1,2-dichlorobenzene					.05	ug/L	<=W		.05	ug/L	<=W	
	Trihalomethanes; total					69.0	ug/L			108.	ug/L		
3172L3	Fluoride					0.02	mg/L	<T					
3226L1	NT: Total Coliforms					See Non-Target Textual result				See Non-Target Textual result			
3364L1	Nitrogen; ammonia+ammonium					0.004	mg/L	<T					
	Nitrogen; nitrite					.001	mg/L	<=W					
	Nitrogen; nitrate+nitrite					0.020	mg/L	<T					
	Phosphorus; phosphate					0.0020	mg/L	<T					
3371L7	Total coliform	150	c/100mL	>									
	Total Coliform Background	200	c/100mL	>									
	Escherichia coli	120	c/100mL										
3408L1	Heterotrophic bacteria (HB35)					10.	c/mL	<		10.	c/mL	<	

Login: **C116140**

Field ID:	AL-04	AL-05	AL-06
Sample ID:	C116140-0004	C116140-0005	C116140-0006
MOE*LIMS ID:	2004WD23-00124	2004WD23-00125	2004WD23-00126
Station ID:	2200010308017	2200010308017	2200010308017
Collect Date:	10 JUN 2004	10 JUN 2004	10 JUN 2004
Sample Location Description:	92 CENTRE ST. COMMUNITY NURSING HOME DISTRIBUTION	275 BISHOP ST. MACEWEN PETROLEUM INC. DISTRIBUTION	NORTH GLENGARRY MEMORIAL HOSPITAL DISTRIBUTION
Sample Comments Description:			

Listid	Parmname	Value	Units	Qual	Rmk1	Value	Units	Qual	Rmk1	Value	Units	Qual	Rmk1
3226L1	NT: Total Coliforms	See Non-Target Textual result				See Non-Target Textual result				See Non-Target Textual result			
3408L1	Heterotrophic bacteria (HB35)	10.	c/mL	<		10.	c/mL	<		10.	c/mL	<	

Login: **C116140**

CODE	DESCRIPTION
<	ACTUAL RESULT IS LESS THAN THE REPORTED VALUE
<=W	NO MEASURABLE RESPONSE (ZERO): <REPORTED VALUE
<T	A MEASURABLE TRACE AMOUNT:INTERPRET WITH CAUTION
>	ACTUAL RESULT GREATER THAN THE REPORTED VALUE
A2C	BACKGROUND COUNTS GREATER THAN 200
APS	ADDITIONALPEAK,SMALL,NOTPRIORITYPOLLUTANT
NDAE	NO DATA: ABSENT NT: ESCHERICHIA COLI
NDAT	NO DATA: ABSENT NT: TOTAL COLIFORMS
NDDN	NO DATA: NOT DETECTED NT: DETERIORATION INDICATORS
NDID	NO DATA: INSUFFICIENT DATA TO PERFORM CALC.
SIP	SAMPLE IMPROPERLYPRESERVED

Login: **C116140**

NON-TARGET TEXTUAL RESULT

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0002	3226L1	NT: Total Coliforms		NDAT	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0002	3226L1	NT: Escherichia coli		NDAE	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0002	3226L1	NT: Deterioration Indicators		NDDN	

Not Detected

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0003	3226L1	NT: Total Coliforms		NDAT	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0003	3226L1	NT: Escherichia coli		NDAE	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0003	3226L1	NT: Deterioration Indicators		NDDN	

Not Detected

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0004	3226L1	NT: Total Coliforms		NDAT	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0004	3226L1	NT: Escherichia coli		NDAE	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0004	3226L1	NT: Deterioration Indicators		NDDN	

Not Detected

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0005	3226L1	NT: Total Coliforms		NDAT	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0005	3226L1	NT: Escherichia coli		NDAE	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0005	3226L1	NT: Deterioration Indicators		NDDN	

Login: **C116140**

Not Detected

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0005	Listid : 3226L1	NT: Total Coliforms		NDAT	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0006	Listid : 3226L1	NT: Escherichia coli		NDAE	

Absent

Sample ID	Listid	Parmname	Value:	Qual:	Remarks
C116140-0006	Listid : 3226L1	NT: Deterioration Indicators		NDDN	

Not Detected

TEXT COMMENTS

Sample ID	Matrix	Method	Product	Parameter
C116140-0002	Matrix : Drinking Water	Method : E3144B	Product: VOL3144	Parameter: Bromodichloromethane

Mass spectrometric analysis has confirmed the presence of dichloroacetonitrile in this sample.

Sample ID	Matrix	Method	Product	Parameter
C116140-0003	Matrix : Drinking Water	Method : E3144B	Product: VOL3144	Parameter: Bromodichloromethane

Mass spectrometric analysis has confirmed the presence of dichloroacetonitrile in this sample.

** End of Report **

APPENDIX D
Table 1
ALEXANDRIA WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 10-JUN-2004
CHEMICAL / PHYSICAL PARAMETERS - HEALTH RELATED

Sample # 1 - TREATED WATER
Sample # 2 - OPP STATION DISTRIBUTION

Parameter	Units	MAC [1]	IMAC [2]	AO [3]	SAMPLE # 1	SAMPLE # 2
ANTIMONY, UNFILTERED TOTAL	UG/L		6		.58 +/-0.15	
ARSENIC, UNFILTERED TOTAL	UG/L		25		.4 +/-0.10	
BARIUM, UNFILTERED TOTAL	UG/L	1000			15.2 +/-1.40	
BENZENE C6H6	UG/L	5			.05 <=W	.05 <=W
BORON, UNFILTERED TOTAL	UG/L		5000		5 +/-2.00	
BROMODICHLOROMETHANE	UG/L				2	4.2
BROMOFORM	UG/L				.5 <=W	.5 <=W
CADMIUM, UNFILTERED TOTAL	UG/L	5			-.02 +/-0.05	
CARBON TETRACHLORIDE	UG/L	5			.2 <=W	.2 <=W
CHLOROBENZENE	UG/L	80			.05 <=W	.05 <=W
CHLORODIBROMOMETHANE	UG/L				.2 <=W	.2 <=W
CHLOROFORM CHCL3	UG/L				67.1	104
CHROMIUM, UNFILTERED TOTAL	UG/L	50			1 +/-0.50	
DICHLOROBENZENE 1,2	UG/L	200			.05 <=W	.05 <=W
DICHLOROBENZENE 1,4	UG/L	5			.05 <=W	.05 <=W
DICHLOROETHANE 1,2	UG/L		5		.05 <=W	.05 <=W
DICHLOROETHYLENE 1,1	UG/L	14			.05 <=W	.05 <=W
FLUORIDE, UNFILTERED REACTIVE	MG/L	1.5 b			.02 <T	
LEAD, UNFILTERED TOTAL	UG/L	10 c			.06 +/-0.06	.75 +/-0.36
MERCURY, UNFILTERED TOTAL	UG/L	1			.02 <=W	
METHYLENE CHLORIDE	UG/L	50			.2 <=W	.2 <=W
NITRATES TOTAL, UNFIL.REAC	MG/L	10 d			.02 <T	
NITRITE, UNFILTERED REACTIVE	MG/L	1 d			.001 <=W	
SELENIUM, UNFILTERED TOTAL	UG/L	10			0 +/-1.00	
TETRACHLOROETHYLENE	UG/L	30			.05 <=W	.05 <=W
TRICHLOROETHYLENE C2HCL3	UG/L	50			.05 <=W	.05 <=W
TRIHALOMETHANES, TOTAL	UG/L	100 e			69	108
URANIUM, UNFILTERED TOTAL	UG/L	20			.01 +/-0.05	
VINYL CHLORIDE C2H3CL	UG/L	2			.05 <=W	.05 <=W

Shortforms:

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

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, the optimum level for control of tooth decay. 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.

APPENDIX D
Table 2
ALEXANDRIA WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 10-JUN-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - RAW WATER
Sample # 2 - TREATED WATER
Sample # 3 - OPP STATION DISTRIBUTION
Sample # 4 - 92 CENTRE ST. COMMUNITY NURSING HOME DISTRIBUTION
Sample # 5 - 275 BISHOP ST. MACEWEN PETROLEUM INC. DISTRIBUTION
Sample # 6 - NORTH GLENGARRY MEMORIAL HOSPITAL DISTRIBUTION

Parameter	Units	MAC [1]	AO [2]	SAMPLE # 1	SAMPLE # 2
COLIFORM, TOTAL M/F BCKGRD	C/100ML	200		200 >	
COLIFORM, TOTAL MF	C/100ML	0		150 >	
ESCHERICHIA COLI MF	C/100ML	0		120	
HETEROTROPH MF 35 C	C/ML	500			10 <
NT: DETERIORATION INDICATORS	C/100ML		0		NOT DETECTED
NT: ESCHERICHIA COLI	C/100ML	0			ABSENT
NT: TOTAL COLIFORMS	C/100ML	0			ABSENT

APPENDIX D
Table 2
ALEXANDRIA WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 10-JUN-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - RAW WATER
Sample # 2 - TREATED WATER
Sample # 3 - OPP STATION DISTRIBUTION
Sample # 4 - 92 CENTRE ST. COMMUNITY NURSING HOME DISTRIBUTION
Sample # 5 - 275 BISHOP ST. MACEWEN PETROLEUM INC. DISTRIBUTION
Sample # 6 - NORTH GLENGARRY MEMORIAL HOSPITAL DISTRIBUTION

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 D
Table 2
ALEXANDRIA WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 10-JUN-2004
MICROBIOLOGICAL PARAMETERS - HEALTH RELATED

Sample # 1 - RAW WATER
Sample # 2 - TREATED WATER
Sample # 3 - OPP STATION DISTRIBUTION
Sample # 4 - 92 CENTRE ST. COMMUNITY NURSING HOME DISTRIBUTION
Sample # 5 - 275 BISHOP ST. MACEWEN PETROLEUM INC. DISTRIBUTION
Sample # 6 - NORTH GLENGARRY MEMORIAL HOSPITAL DISTRIBUTION

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

According to section 16-3 of O.Reg. 170/03,the following are prescribed as adverse results of a drinking-water test for the purpose of section 18 of the Safe Drinking Water Act 2002:

1. A result that exceeds any of the standards prescribed by Schedule 1, 2 or 3 to the *Ontario Drinking-Water Quality Standards*, other than the standard for fluoride, if the result is from a sample of drinking water.

2. A result indicating the presence of Aeromonas spp., Pseudomonas aeruginosa, Staphylococcus aureus, Clostridium spp. or fecal streptococci (Group D streptococci) in a sample of drinking water.

3. A result indicating the presence of a pesticide not listed in Schedule 2 to the Ontario Drinking-Water Quality Standards in a sample of drinking water, at any concentration.

4. A result indicating that the concentration of free chlorine residual is less than 0.05 milligrams per litre in a distribution sample, if the drinking-water system provides chlorination and does not provide chloramination.

5. A result indicating that the concentration of combined chlorine residual is less than 0.25 milligrams per litre in a distribution sample, if the drinking-water system provides chloramination.

6. If the drinking-water system is required to provide filtration and a report under subsection 18 (1) of the Act has not been made in respect of turbidity in the preceding 24 hours, a result indicating that turbidity exceeds 1.0 Nephelometric Turbidity Units (NTU) in,

i. a grab sample of water taken from a filter effluent line, or

ii. two samples of water from a filter effluent line that are tested by continuous monitoring equipment, if the two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample.

7. If an approval or order, including an OWRA order, identifies a parameter as a health-related parameter and establishes a maximum concentration for the parameter, a result indicating that the parameter exceeds the maximum concentration in a sample of drinking water.

8. A result indicating that the concentration of sodium exceeds 20 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of sodium in the preceding 60 months.

9. A result indicating that the concentration of fluoride exceeds 1.5 milligrams per litre in a sample of drinking water, if,

i. the drinking-water system provides fluoridation and a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 24 hours, or

ii. the drinking-water system does not provide fluoridation and a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 60 months.

APPENDIX D
Table 3
ALEXANDRIA WATER TREATMENT PLANT
AUDIT SAMPLE RESULTS - 10-JUN-2004
CHEMICAL / PHYSICAL PARAMETERS - NOT HEALTH RELATED

Sample # 1 - TREATED WATER
Sample # 2 - OPP STATION DISTRIBUTION

Parameter	Units	OBJECTIVE	TYPE OF OBJECTIVE	SAMPLE # 1	SAMPLE # 2
ALUMINIUM, UNFILTERED TOTAL	UG/L	100	OG	121 +/-10.00	
AMMONIUM, TOTAL UNFIL.REAC	MG/L	a	a	.004 <T	
COPPER, UNFILTERED TOTAL	UG/L	1000	AO	5.6 +/-0.60	
ETHYLBENZENE C8H10	UG/L	2.4	AO	.05 <=W	.05 <=W
IRON, UNFILTERED TOTAL	UG/L	300	AO	3 +/-6.00	
MANGANESE,UNFILTERED TOTAL	UG/L	50	AO	9.62 +/-0.96	
TOLUENE C7H8	UG/L	24	AO	.05 <=W	.05 <=W
XYLENE-M AND P	UG/L	300	AO	.05 <=W	.05 <=W
XYLENE-O C8H10	UG/L	300	AO	.05 <=W	.05 <=W
ZINC, UNFILTERED TOTAL	UG/L	5000	AO	3.9 +/-0.90	

Shortforms:

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

e) Applicable for all water at the point of consumption.

APPENDIX C

MINISTRY INSPECTION PHOTOGRAPHS

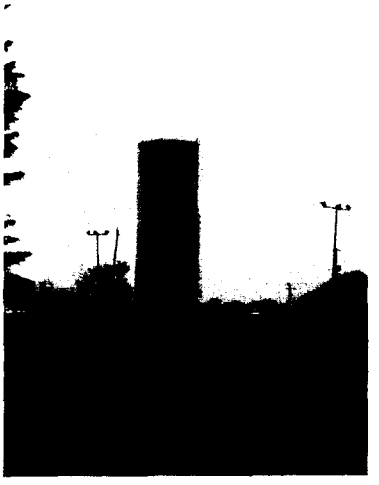
(AS ATTACHED)

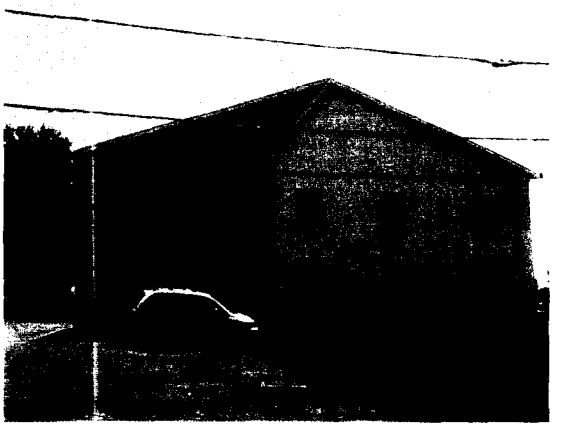
Alexandria Water Treatment Plant - MOE Inspection, June 9, 2004

DRINKING WATER INSPECTION REPORT

ALEXANDRIA

DRINKING-WATER SYSTEM



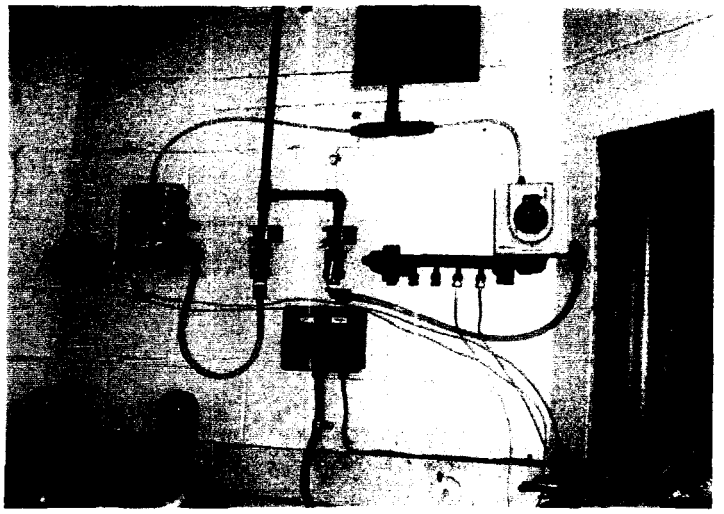


REPORT PREPARED BY THE KINGSTON OFFICE OF THE MINISTRY OF THE ENVIRONMENT, SAFE DRINKING WATER BRANCH, EASTERN REGION

Inspected By: Shannon Hamilton-Browne
Inspection Date: June 9, 2004 and June 10, 2004

MINISTRY INSPECTION PHOTOGRAPHS - JUNE 9, 2004 & JUNE 10, 2004

(Photos taken using Ministry's Fujifilm FinePix 2600 Zoom Digital Camera)

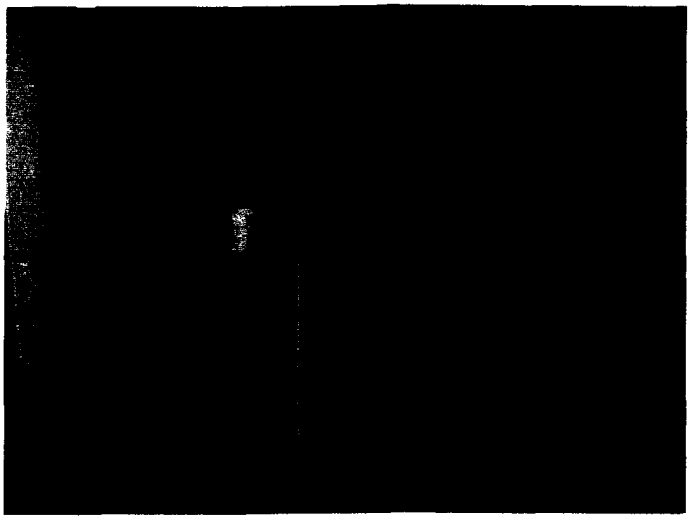


Alexandria WTP - Automatic Switchover on Chlorination System

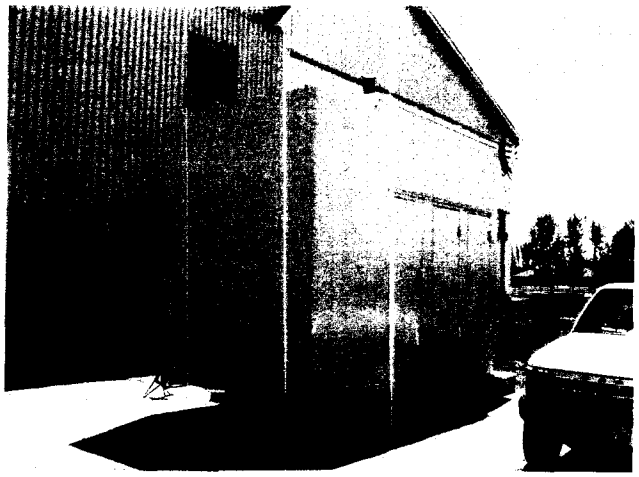
Alexandria WTP - Chlorinators

Alexandria WTP -

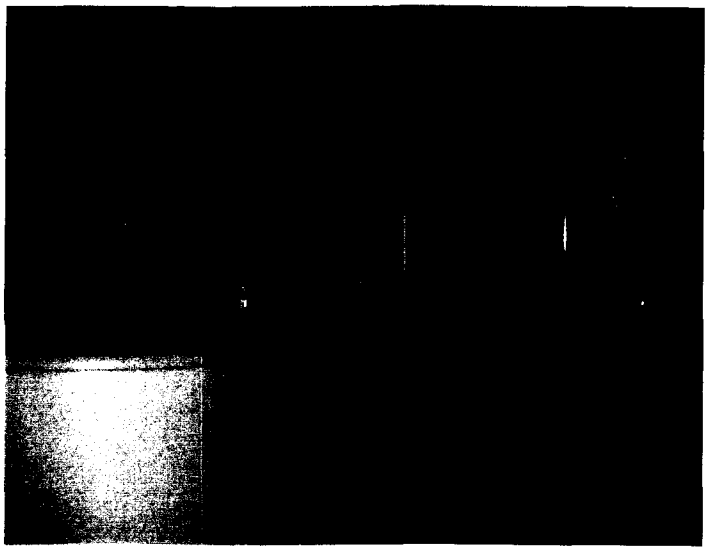
Containment for Coagulant & Polymer Solution Storage Tanks



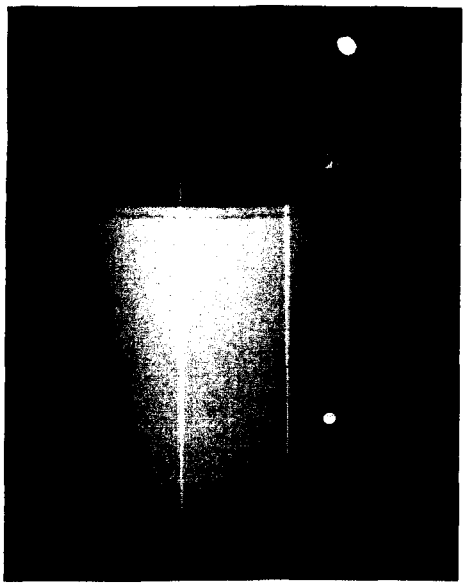
Alexandria WTP - Containment for Coagulant and Polymer Solution Storage Tanks



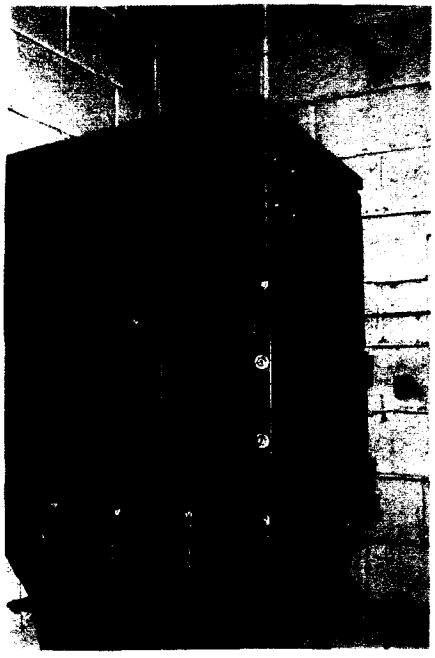
Alexandria WTP - Diesel Generator Set



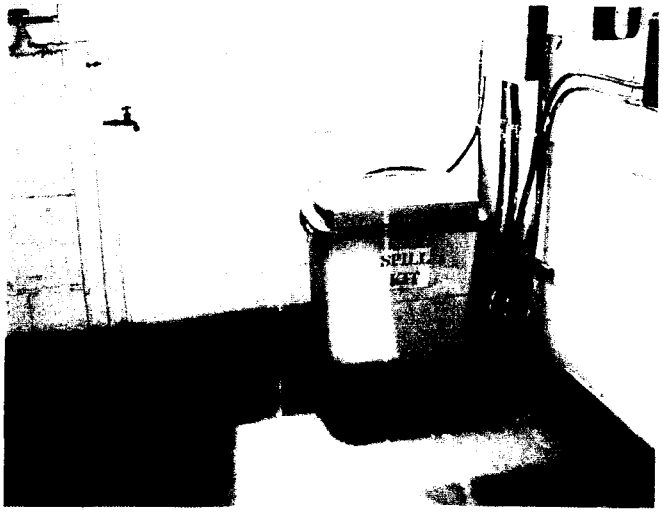
Alexandria WTP - Potassium Permanganate Feed System



Alexandria WTP - Potassium Permanganate Solution Storage Tank



Alexandria WTP - Powdered Activated Carbon Feed System (Hopper)



Alexandria WTP - Spill Kit

Alexandria WTP - Mill Pond (Raw Water Source)