

QUARTERLY REPORT ON DRINKING WATER QUALITY

October - December 2002, Chesterville Water Plant - Serving the Village of Chesterville

Chesterville Drinking Water Quality

Ontario Drinking Water Protection Regulations

The Ontario Clean Water Agency, as the contract operator of the Chesterville Water Treatment Facility on behalf of the Township of North Dundas, is pleased to present the 2002 Fourth Quarter Report on drinking water quality. This report has been prepared in response to legislative changes brought about by "Operation Clean Water", an initiative of Ontario's Ministry of the Environment to ensure high quality drinking water for the residents of Ontario. The new regulations put into law what was formerly the Ontario Drinking Water Objectives (ODWO), and sets requirements for public waterworks with regard to sampling and testing, levels of treatment, licensing of staff, and notification of authorities and the public about water quality.

Further information on the Ontario Drinking Water Regulations can be found on the Ministry of the Environment web site at www.ene.gov.on.ca

Where to contact us for information



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Web site at www.ocwa.com

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Free copies of this report are available at the Township Office at 636 St. Lawrence St. Winchester, or their website @ www.northdundas.com

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Introduction

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We are proud to report that for the period October to December 2002, your water conformed to the Ontario Drinking Water Standards as set out in Ontario Regulation 459/00. The Ontario Clean Water Agency (OCWA) is dedicated to maximizing public health and safety through efficient and reliable operation of your water facility and distribution system.

Plant Description and Treatment Processes

Facility Name:	Chesterville WTP
Total Design Capacity	2,805 cubic meters/day
Raw Water Source	Groundwater
Disinfection Method	Sodium Hypochlorite
Municipal Location	Municipal office, 636 St. Lawrence Street, Winchester
Service Area	Village of Chesterville
Service Population	1,458
Operational Description:	
<u>Raw Water Source:</u> Three drilled wells, one duty and two standby. One well located on Queen Street West (Well # 1), two wells (one duty and one standby) located north of County Road 43, Lot 12, Concession 5, Winchester Township (Well # 5).	
<u>Low Lift Pumps:</u> Well # 5 low lift pump directs the water to a 650 cubic meter underground reservoir through a low pressure feeder line. Sodium Hypochlorite is injected into the feeder line prior to the underground reservoir.	
<u>High Lift Pumps:</u> Two high lift pumps, one duty, one standby, move the treated water from the reservoir into the distribution system and elevated water tower with a storage capacity of 568 cubic meters. Two emergency fire pumps are available when water demand exceeds normal operating capacity.	
<u>Distribution System:</u> There are approximately 1,458 persons supplied with water from the Chesterville Water Treatment System.	

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Quality Control & Compliance With Provincial Regulations

This plant provides multiple barriers against bacteriological contamination. Bacteriological testing is carried out on raw water, treated water and distribution samples on a regular frequency. On-line analysers for chlorine residuals and turbidity ensure daily monitoring of water leaving the plant. Chlorine levels in the distribution system are also checked on a regular basis. More specialized testing occurs monthly and quarterly and includes Volatile Organics, Inorganics, Pesticides and PCB's.

OCWA uses internal compliance auditing techniques by teams from within the organization. OCWA operates the Chesterville Water Treatment Facility in accordance with provincial regulations. Here is how we do it:

- Use of Accredited Labs. Analytical tests to monitor your water quality are conducted by a laboratory audited by the Canadian Association for Environmental Analytical Laboratories (CAEAL) and accredited by the Standards Council of Canada (SCC). Accreditation ensures that the laboratory has acceptable laboratory protocols and test methods in place. It also requires the laboratory to provide evidence and assurances of the proficiency of the analysts performing the test methods.
- Operation by Licensed Operators. Your water treatment plant is operated and maintained by the Ontario Clean Water Agency's competent and licensed staff. The mandatory licensing program for operators of drinking water facilities is regulated under the *Ontario Water Resources Act (OWRA)* Regulation 435/93. Licensing means that an individual meets the education and experience requirements and has successfully passed the certificate exam.
- Sampling and Analytical requirements. OCWA follows a sampling and analysis schedule required by *OWRA* Regulation 459/00, the Ontario Drinking Water Standards. More information on sampling and analysis including results are available in this report and from your municipal office.
- Adherence to Ministry Guidelines and Procedures. To ensure the protection of the health and operational excellence, the OCWA adheres to the guidelines and procedures developed by the Ministry of the Environment and the Ministry of Health

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Annual Compliance Report

The Annual Compliance Report covers the period from January 1, 2002 to December 31, 2002. Copies of the report will be made available for inspection by any member of the public during normal business hours without charge at the Township Office. The Annual Compliance Report for 2002 will be completed and made available no later than March 31, 2003.

The Compliance Report will include, at a minimum, the following:

- A statement as to compliance with all of the terms and conditions of the certificate and a detailed description of all of the measures taken to ensure compliance with the certificate, including and supporting data or other information;
- In the event of any non-compliance during the reporting period, details of the non-compliance as well as details of how and when any non-compliance was corrected;
- A summary and discussion of the quantity of water supplied during the reporting period compared to the rated capacity specified in the Certificate of Approval, including monthly average and maximum daily flows;
- A summary of records related to flow rate exceedences, and a summary of analytical results of sampling required by the certificate, including raw water and in-process parameters as specified in the operations manual in accordance with the Certificate of Approval;
- A summary listing treatment chemicals used, including average dosage rates with special reference to any abnormal usages

Did We Exceed the Standards?

During the fourth quarter 2002, in the month of October, two water samples were found to exceed the Ontario Drinking Water Standards as set out in Ontario Regulation 459/00. On October 7, 2002, the distribution sample collected at the Nestle's Lagoon Laboratory sink faucet was found to have an overgrown HPC count. There were no E. Coli or Total Coliforms present. Subsequent resampling as per Reg. 459 was completed with no adverse results. On October 21, 2002, the treated sample collected at Well #5 was found to have an overgrown HPC count. There were no E. coli or Total Coliforms present. Subsequent resampling as per Reg. 459 was completed with no adverse results.

On each occasion, the Ministry of Environment and the Ministry of Health were immediately notified as per the Ontario Drinking Water Standards.

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Definitions & Terms

m³ -	Cubic Meter, 1 m ³ = 1000 litres
TCU -	True Colour Units
CaCO₃ -	Calcium Carbonate
mg -	milligram
mg/L -	milligrams per litre.
ug/L -	micrograms per litre.
ng/L -	nanograms per litre.
NTU -	Nephelometric Turbidity Units.
MAC -	Maximum Acceptable Concentration
IMAC -	Interim Maximum Acceptable Concentration

Coliform Bacteria - a group of commonly occurring rod shaped bacteria. Their presence in a water sample is indicative of inadequate filtration and/or disinfection.

Fecal Coliform Bacteria - refers to a subgroup of coliform bacteria present in the digestive system of warm blooded animals and humans

Background Count - a method of measuring bacterial content in water samples

Heterotrophic Plate Count - a method of measuring bacterial content in water samples. Also known as Standard Plate Count.

Organic Parameter - a group of chemical compounds containing carbon

Inorganic Parameter - a group of chemical compounds not containing carbon

Raw Water - Surface or ground water available as a source of drinking water that has not received any treatment.

Required Testing

The Ontario Drinking Water Regulations and Certificates of Approval (C of A) set sampling requirements for the plant. All other sampling conforms to the Drinking Water Protection Regulation schedule for sampling and analysis. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases can pick up substances resulting from the presence of animals or from human activity. Your water is extensively tested for the presence of dozens of compounds. The results of all analytical tests are available at your municipal office. The following table lists all compounds analyzed.

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Chesterville Water Quality Test Results

Microbiological Parameters	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates	Range	Exceedence?	Typical Source of Containment
Total Coliform, Raw (CFU/100mL)	n/a	15	0	10/07 - 12/30 weekly	n/a	n/a	Indicate possible presence of fecal matter
E. Coli, Raw (CFU/100 mL)	n/a	15	0	10/07 - 12/30 weekly	n/a	n/a	Definite indicator of fecal contamination
Background Count, Raw (CFU/100 mL)	n/a	13	2	10/07 - 12/30 weekly	1-4	n/a	Indicator of adverse water quality
Hetrotrophic Plate Count, Raw (CFU/1 mL)	n/a	2	1	10/07 - 12/30 weekly	2	n/a	Indicator of adverse water quality
Total Coliform, Treated (CFU/100mL)	0	15	0	10/07 - 12/30 weekly	n/a	no	Indicate possible presence of fecal matter
E. coli, Treated (CFU/100 mL)	0	15	0	10/07 - 12/30 weekly	n/a	no	Definite indicator of fecal contamination
Hetrotrophic Plate Count, Treated (CFU/1 mL)	500	15	3	10/07 - 12/30 weekly	4 - >500	yes	Indicator of adverse water quality
Total Coliform, Dist. (CFU/100mL)	0	62	0	10/07 - 12/30 weekly	n/a	no	Indicate possible presence of fecal matter
E. Coli, Dist. (CFU/100 mL)	0	62	0	10/07 - 12/30 weekly	n/a	no	Definite indicator of fecal contamination
Hetrotrophic Plate Count, Dist. (CFU/1 mL)	500	36	4	10/07 - 12/30 weekly	2->500	yes	Indicator of adverse water quality

Parameters related to Microbiological Quality	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d/y)	Range	Exceedence	Typical Source of Contaminant
Turbidity (NTU)	1	Continuous	Continuous	10/01/02 - 12/31/02	0.05-0.27	no	Turbidity is a measure of particles in water
Free Chlorine – Plant Effluent (mg/l)	-	Continuous	continuous	10/01/02 - 12/31/02	0.88-1.21	no	Chlorine added for Disinfection
Free Chlorine-Distribution (mg/l min 0.05 & max. 4.0)	-	Grab Sample weekly	Weekly	10/07/02 - 12/30/02	0.6-1.3	no	Objective is 0.20 mg/l in the Distribution System (min. 0.05 mg/l required)

Comments: MAC/IMAC values do not apply to Raw Water results. MOE recommend a level of at least 0.2 mg/l free chlorine residual in system to maintain microbiological quality in system. Adverse water quality occurs when the free chlorine residual is less than 0.05mg/l.

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Inorganic Parameters (mg/l)	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d/y)	Range	Exceedence	Typical Source of Contaminant
Lead - Distribution	0.01	1	1	01/21/02	<0.001	no	Leached from lead solder or brass plumbing fixtures
Nitrate	10	1	1	10/15/02	<0.1	no	Natural component of water
Nitrite	1	1	1	10/15/02	<0.1	no	
Arsenic	IMAC=0.025	1	1	09/18/00	<0.001	no	
Barium	1	1	1	09/18/00	0.18	no	
Boron	IMAC=5.0	1	1	09/18/00	0.01	no	
Cadmium	0.005	1	1	09/18/00	<0.0001	no	
Chromium (Total)	0.05	1	1	09/18/00	<0.01	no	
Copper	1	1	1	09/18/00	0.004	no	
Iron	0.3	1	1	01/28/02	<0.01	no	
Lead	0.01	1	1	09/18/00	<0.001	no	
Manganese	0.05	1	1	09/18/00	<0.01	no	
Mercury	0.001	1	1	09/18/00	<0.0001	no	
Selenium	0.01	1	1	09/18/00	<0.001	no	
Uranium	0.1	1	1	09/18/00	0.001	no	
Sodium	200	1	1	01/28/02 -02/13/02	23-26	no	
Fluoride	2.4	1	1	01/28/02	0.15	no	

Volatile Organics (ug/l)	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d/y)	Range	Exceedence	Typical Source of Contaminant
Trihalomethanes - Plant	100	1	1	10/15/02	7.2	no	
Trihalomethanes - Dist.	100	1	1	10/15/02	9.3	no	
Benzene	5	1	1	10/15/02	<0.5	no	
Carbon Tetrachloride	5	1	1	10/15/02	<0.9	no	
Dichloromethane	50	1	1	10/15/02	<4.0	no	
1,2 - Dichlorobenzene	200	1	1	10/15/02	<0.4	no	
1, 4 - Dichlorobenzene	5	1	1	10/15/02	<0.4	no	
1,2 - Dichloroethane	IMAC=5	1	1	10/15/02	<0.7	no	
1,1 - Dichloroethylene	14	1	1	10/15/02	<0.5	no	
Ethylbenzene	24	1	1	10/15/02	<0.5	no	
Monochlorobenzene	80	1	1	10/15/02	<0.2	no	
Tetrachloroethylene	30	1	1	10/15/02	<0.3	no	
Toluene	24	1	1	10/15/02	<0.5	no	
Trichloroethylene	50	1	1	10/15/02	<0.3	no	
Vinyl chloride	2	1	1	10/15/02	<0.5	no	
Xylene	300	1	1	10/15/02	<2.0	no	
Bromodichloromethane	n/a	1	1	10/15/02	2.3	no	
Bromoform	n/a	1	1	10/15/02	<0.4	no	
Chloroform	n/a	1	1	10/15/02	3.5	no	
Dibromochloromethane	n/a	1	1	10/15/02	1.4	no	

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Pesticides & PCB (ug/L)	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d/y)	Range	Exceedence	Typical Source of Contaminant
Alachlor	IMAC=5	1	1	10/15/02	<0.5	no	
Aldicarb	9	1	1	10/15/02	<5.0	no	
Aldrin+Dieldrin	0.7	1	1	10/15/02	<0.012	no	
Atrazine	IMAC=5	1	1	10/15/02	<0.5	no	
Azinphos-methyl	20	1	1	10/15/02	<2.0	no	
Bendiocarb	40	1	1	10/15/02	<2.0	no	
Bromoxynil	IMAC=5	1	1	10/15/02	<0.5	no	
Carbaryl	90	1	1	10/15/02	<5.0	no	
Carbofuran	90	1	1	10/15/02	<5.0	no	
Chlordane	7	1	1	10/15/02	<0.012	no	
Chorpyrifos	90	1	1	10/15/02	<1.0	no	
Cyanazine	IMAC=10	1	1	10/15/02	<1.0	no	
Diazinon	20	1	1	10/15/02	<1.0	no	
Dicamba	120	1	1	10/15/02	<1.0	no	
2,4 Dichlorophenol	900	1	1	10/15/02	<0.5	no	
DDT + Metapolites	30	1	1	10/15/02	<0.024	no	
2,4 - Dichlorophenexy acid (2,4 -D)	IMAC=100	1	1	10/15/02	<1.0	no	
Diclofop-methyl	9	1	1	10/15/02	<0.9	no	
Dimethoate	IMAC=20	1	1	10/15/02	<2.5	no	
Dinoseb	10	1	1	10/15/02	<1.0	no	
Diquat	70	1	1	10/15/02	<7	no	
Diuron	150	1	1	10/15/02	<10	no	
Glyphosate	IMAC=280	1	1	10/15/02	<10	no	
Heprachlor + Heptachlor epoxide	3	1	1	10/15/02	<0.012	no	
Lindane	4	1	1	10/15/02	<0.006	no	
Malathion	190	1	1	10/15/02	<5.0	no	
Methoxychlor	900	1	1	10/15/02	<0.024	no	
Metolachlor	IMAC=50	1	1	10/15/02	<0.5	no	
Metribuzin	80	1	1	10/15/02	<5.0	no	
Paraquat	IMAC=10	1	1	10/15/02	<1.0	no	
Parathion	50	1	1	10/15/02	<1.0	no	
Pentachlorophenol	60	1	1	10/15/02	<0.5	no	
Phorate	IMAC=2	1	1	10/15/02	<0.5	no	
Picloram	IMAC=190	1	1	10/15/02	<5.0	no	
Polychlorinated Biphenyls	IMAC=3	1	1	10/15/02	<0.05	no	
Prometryne	IMAC=1	1	1	10/15/02	<0.25	no	
Simazine	IMAC=10	1	1	10/15/02	<1.0	no	
Temephos	IMAC=280	1	1	10/15/02	<10	no	
Terbufos	IMAC=1	1	1	10/15/02	<0.7	no	
2,3,4,6 Tetrachlorophenol	100	1	1	10/15/02	<0.5	no	
Triallate	230	1	1	10/15/02	<1.0	no	
Pesticides & PCB	MAC or	# of	# of	Sampling	Range	Exceedence	Typical Source of

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(cont'd) (ug/L)	IMAC	Samples	Detectable Results	Dates (m/d/y)			Contaminant
2,4,6-Trichlorophenol	5	1	1	10/15/02	<0.5	no	
2,4,5 - trichlorophenoxy acetic acid	IMAC=280	1	1	10/15/02	<1.0	no	
Trifluralin	45	1	1	10/15/02	<1.0	no	

Additional Parameters Non-Health Related (mg/L)	AO or OG	# of Samples	# of Detectable Results	Sampling Dates (m/d/y)	Range	Exceedance	Typical Source of Contaminant
Colour	5	1	1	01/28/02	<2	no	
pH	6.8-8.5	1	1	01/28/02	7.93	no	
Alkalinity	30-500	1	1	01/28/02	200	no	
Total Hardness	80-100	1	1	01/28/02	256	yes	Limits are set as an operational guideline
Sulphate	500	1	1	01/28/02	53	no	
Conductivity	---	1	1	01/28/02	578	no	
Chloride	250	1	1	01/28/02	39	no	
Free Ammonia	---	1	1	01/28/02	<0.02	no	
Total Kjeldahl Nitrogen	---	1	1	01/28/02	<0.05	no	
Dissolved Organic Carbon	5	1	1	01/28/02	<0.5	no	
Calcium	---	1	1	01/28/02	63	no	
Magnesium	---	1	1	01/28/02	24	no	
Ammonia Unionized	---	1	1	01/28/02	<0.02	no	

Comment: Hardness (inorganic)

The operational guideline for hardness in drinking water is set at between 80 and 100 mg/L as calcium carbonate. This value is set to aid in water source selection where a choice exists. Hardness is caused by dissolved calcium and magnesium, and is expressed as the equivalent quantity of calcium carbonate. On heating, hard water has a tendency to form scale deposits and can form excessive scum with regular soaps. However, certain detergents are largely unaffected by hardness. Conversely, soft water may result in accelerated corrosion of water pipes. Hardness levels between 80 and 100 mg/L as calcium carbonate (CaCO₃) are considered to provide an acceptable balance between corrosion and encrustation. Water supplies with a hardness greater than 200 mg/L are considered poor but tolerable. Hardness in excess of 500 mg/L in drinking water is unacceptable for most domestic purposes.

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Questions & Answers

Q. *What is an Accredited Laboratory?*

A. Accredited labs must have undergone an on-site assessment and performance review of their methods by the Canadian Association of Environmental and Analytical Laboratories. The Standards Council of Canada grants accreditation to the lab based on the recommendation of the CAEAL. The accreditation requirements are repeated every two years.

Q. *What had to be done to meet the new regulations?*

A. The Chesterville Water Treatment Plant was following the Ontario Drinking Water Objectives (ODWO) before they became law, so little change was required to meet the new regulations. Our chlorine residual in the water leaving the plant was raised slightly to achieve the (0.20 mg/L free chlorine) required level in the distribution system, and some changes were required in the way results are reported. This report to the public is also the result of the new regulations.

Q. *What parameters did you test for?*

A. Microbiological parameters, volatile organic, inorganic and pesticides & PCBs have been tested. The results are included in this report.

Q. *Sometimes my water looks rusty or coloured. Why is that, and what should I do about it?*

A. This is quite often caused when the tanks in older water heaters start to decay. If the colour is seen only in your hot water, this may be the problem. If the colour is also noticed in your cold water it could be coming from the water main. Various maintenance procedures in the distribution system - such as fire hydrant and valve maintenance, or main break repairs - require flushing of the water mains. Flushing can cause small particles of sediment to break off adding colour to the water. Please note that there is no health risk associated with this problem. This is usually only temporary, and opening your taps for a while to flush out your service line (the pipe from the water main to your house) should take care of the problem. Let the water run until the colour disappears.