

QUARTERLY REPORT ON DRINKING WATER QUALITY

January - March 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 First 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



Web site at www.ocwa.com

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You may also contact the Township of North Dundas directly by contacting Howard Smith, C.A.O., Tel. (613) 774-2105 or e-mail address: ndadmin@sympatico.ca.

Free copies of this report are available at the Township office in Winchester or their website @ www.northdundas.com



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Introduction

We are proud to report that for the period January to March 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	2,781 cubic meters/day
Raw Water Source	Groundwater
Disinfection Method	Sodium Hypochlorite
Municipal Location	Municipal Office, 547 St. Lawrence St., Winchester
Service Area	Village of Chesterville
Service Population	1,458

Operational Description:

Raw Water Source: 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).

Low Lift Pumps: 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.

High Lift Pumps: 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.

Distribution System: 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.

Did We Exceed the Standards?

During the First Quarter, Sodium was found to exceed the Ontario Drinking Water Standards concentration of 20 mg/L as set out in Ontario Regulation 459/00. The sodium concentrations of the treated water at Chesterville Well Water System in the first quarter were 23 mg/L and 26 mg/L. The local Medical Officer of Health must be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to the local physicians for their use with patients on sodium restricted diets. The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste.

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As a result we actively undertook the following remedial actions:

Immediately notified the Ministry of Environment and the Ministry of Health as per the Ontario Drinking Water Standards. The result of the first sample was 23 mg/L and as per Reg. 459 re-sampling was initiated and the results were 26 mg/L.

Definitions & Terms

m³ - Cubic Meter, 1m³ = 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.

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.

AO - Aesthetic Objectives - aspects of drinking water quality (namely taste, odour, colour and clarity) that are perceivable by the senses.

OG - Operational Guidelines are established for parameters which need to be controlled to ensure efficient treatment and distribution of the water.

Required Testing

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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.

Chesterville Water Quality Test Results

Microbiological Parameters	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d)	Range	Exceedence?	Typical Source of Contaminant
Total Coliform (counts/100ml)	0	52	0	01/01-03/31	n/a	no	Indicate possible presence of coliform
Escherichia Coliform (counts/100 ml)	0	52	0	01/01-03/31	n/a	no	Definite indicator of fecal contamination
Heterotrophic Plate Count (count/100 ml)	500	26	5	01/01-03/31	2-26	no	Indicator of deteriorating water quality if greater than 500
Parameters related to Microbiological Quality	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d)	Range	Exceedence?	Typical Source of Contaminant
Turbidity (NTU)	1	Continuous	Continuous	01/01-03/31	0.03-0.37	no	Turbidity is a measure of particles in water
Free Chlorine – Plant Effluent (mg/l)	-	Continuous	continuous	01/01-03/31	0.70-1.32	no	Chlorine added for Disinfection
Free Chlorine-Distribution (mg/l min 0.05 & max. 4.0)	-	Grab Sample weekly	Weekly	01/01-03/31	0.7-1.20	no	Objective is 0.20 mg/l in the Distribution System (min. 0.05 mg/l required)
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	01/21/02	<0.1	no	Natural component of water
Nitrite	1	1	1	01/21/02	<0.10	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	

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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)	Range	Exceedence?	Typical Source of Contaminant
Trihalomethanes - Plant	100	1	1	01/21	9.7	no	
Trihalomethanes - Dist.	100	1	1	01/21	4.7	no	
Benzene	5	1	1	01/21	<0.5	no	
Carbon Tetrachloride	5	1	1	01/21	<0.9	no	
Dichloromethane	50	1	1	01/21	<4	no	
1,2 - Dichlorobenzene	200	1	1	01/21	<0.4	no	
1,4 - Dichlorobenzene	5	1	1	01/21	<0.4	no	
1,2 - Dichloroethane	IMAC=5	1	1	01/21	<0.7	no	
1,1 - Dichloroethylene	14	1	1	01/21	<0.5	no	
Ethylbenzene	24	1	1	01/21	<0.5	no	
Monochlorobenzene	80	1	1	01/21	<0.2	no	
Tetrachloroethylene	30	1	1	01/21	<0.3	no	
Toluene	24	1	1	01/21	<0.5	no	
Volatile Organics (ug/l)	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d)	Range	Exceedence?	Typical Source of Contaminant
Trichloroethylene	50	1	1	01/21	<0.3	no	
Vinyl chloride	2	1	1	01/21	<0.5	no	
Xylene	300	1	1	01/21	<2.0	no	
Bromodichloromethane	n/a	1	1	01/21	2.6	no	
Bromoform	n/a	1	1	01/21	<0.4	no	
Chloroform	n/a	1	1	01/21	4.5	no	
Dibromochloromethane	n/a	1	1	01/21	2.6	no	
Pesticides & PCB (ug/L)	MAC or IMAC	# of Samples	# of Detectable Results	Sampling Dates (m/d)	Range	Exceedence?	Typical Source of Contaminant
Alachlor	IMAC=5	1	1	01/21	<0.5	no	
Aldicarb	9	1	1	01/21	<5.0	no	
Aldrin+Dieldrin	0.7	1	1	01/21	<0.7	no	
Atrazine	IMAC=5	1	1	01/21	<1.0	no	
Azinphos-methyl	20	1	1	01/21	<2.0	no	
Bendiocarb	40	1	1	01/21	<2.0	no	
Bromoxynil	IMAC=5	1	1	01/21	<0.5	no	
Carbaryl	90	1	1	01/21	<5.0	no	
Carbofuran	90	1	1	01/21	<5.0	no	
Chlordane	7	1	1	01/21	<0.7	no	
Chorpyrifos	90	1	1	01/21	<1.0	no	
Cyanazine	IMAC=10	1	1	01/21	<1.0	no	
Diazon	20	1	1	01/21	<1.0	no	
Dicamba	120	1	1	01/21	<1.0	no	
2,4 Dichlorophenol	900	1	1	01/21	<0.5	no	
DDT + Metapolites	30	1	1	01/21	<3	no	
2,4 - Dichlorophenexy acid (2,4 -D)	IMAC=10 0	1	1	01/21	<1.0	no	
Diclofop-methyl	9	1	1	01/21	<0.9	no	

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Dimethoate	IMAC=20	1	1	01/21	<2.5	no	
Dinoseb	10	1	1	01/21	<1.0	no	
Diquat	70	1	1	01/21	<7	no	
Diuron	150	1	1	01/21	<10	no	
Glyphosate	IMAC=280	1	1	01/21	<10	no	
Heprachlor + Heptachlor epoxide	3	1	1	01/21	<0.3	no	
Lindane	4	1	1	01/21	<0.4	no	
Malathion	190	1	1	01/21	<5.0	no	
Methoxychlor	900	1	1	01/21	<90	no	
Metolachlor	IMAC=50	1	1	01/21	<0.5	no	
Metribuzin	80	1	1	01/21	<5.0	no	
Paraquat	IMAC=10	1	1	01/21	<1.0	no	
Parathion	50	1	1	01/21	<1.0	no	
Pentachlorophenol	60	1	1	01/21	<0.5	no	
Phorate	IMAC=2	1	1	01/21	<0.5	no	
Picloram	IMAC=190	1	1	01/21	<5.0	no	
Polychlorinated Biphenyls	IMAC=3	1	1	01/21	<0.3	no	
Prometryne	IMAC=1	1	1	01/21	<0.25	no	
Simazine	IMAC=10	1	1	01/21	<1.0	no	
Temephos	IMAC=280	1	1	01/21	<10	no	
Terbufos	IMAC=1	1	1	01/21	<0.7	no	
2,3,4,6 Tetrachlorophenol	100	1	1	01/21	<0.5	no	
Triallate	230	1	1	01/21	<1.0	no	
2,4,6-Trichlorophenol	5	1	1	01/21	<0.5	no	
2,4,5 - trichlorophenoxy acedic acid	IMAC=280	1	1	01/21	<1.0	no	
Trifluralin	45	1	1	01/21	<1.0	no	

Certificate of Approval Additional Parameters Non-Health Related (mg/L)	AO or OG	# of Samples	# of Detectable Results	Sampling Dates (m/d/y)	Range	Exceedence?	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)

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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 incrustation. 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.

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 organics, inorganics, PCB's and pesticides 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.