Provincial Regulation 170/03
Summary Report
For the Period
January 1 to December 31, 2003

Submitted to:

Guelph City Council

Prepared by: The City of Guelph

GUELPH
WATERWORKS DIVISION

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SECTION 1
EXECUTIVE SUMMARY

Section 1 Executive Summary

This report is submitted to satisfy Schedule 22 of Ontario Regulation 170/03 (O.Reg. 170/03, Schedule 22) requirement to prepare and distribute a Summary report. According to this regulation, the Summary report must contain the following information:

- List the requirements of the Safe Drinking Water Act, the regulations, the system's approval and any order that the system failed to meet at any time during the period covered by the report and specify the duration of the failure;
- For each failure, describe the measures that were taken to correct the failure;
- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows, and daily instantaneous peak flow rates; and
- A comparison of the actual flows to the rated capacity and flow rates approved in the system's approval.

Please see Section 2 of this report for a brief description of the drinking-water system.

In 2003, all water was treated consistent with MOE standards using approved treatment chemicals – specifically sodium hypochlorite and sodium silicate.

In 2003, over 25,000 microbiological and chemical quality tests were performed on water provided by Guelph Waterworks. All samples were collected by certified Waterworks operators following industry standard protocols. Analyses were performed by these same operators and by accredited independent laboratories on water samples collected throughout the water system.

In 2003, all water supplied to consumers met or bettered all health-related Ontario Drinking Water Standards.

Of the 2,126 bacteriological analyses performed, only nine samples or 0.4 percent indicated the presence of adverse indicator bacteria or high general bacteria counts. Indicator bacteria are not disease causing but show potential for a bacterial problem. None of these incidents, when resampled, showed any persistent water quality deterioration. At no time was E. coli detected in Guelph drinking water.

In 2003, Waterworks operated and maintained the water supply, treatment, and distribution system in such a manner that water supplied to all consumers serviced by the system met the requirements of the Safe Drinking Water Act, 2002. All management, operation, and maintenance duties were performed by certified, adequately trained supervisors and operators.

In 2003, major maintenance of the water supply and distribution system was accomplished with $4.3 million in funding from the operating budget and $4.5 million in capital funding.

In 2003, Waterworks complied fully with the requirements of the Safe Drinking Water Act, the Drinking-Water Systems Regulation 170/03, and the Consolidated Certificate of Approval in almost all cases. Instances of non-compliance were reported and relate to a flow exceedance for maintenance purposes, the provision of interim disinfection at facilities currently being upgraded, and the failure on behalf of a contract laboratory to complete analysis on a compliance water sample.

SECTION 2
INTRODUCTION

Section 2 Introduction

The mission of the City of Guelph Waterworks Division is to provide customers and the community with valued service through responsible water resource management. Waterworks provides and promotes reliable, cost effective systems for the safe delivery of consistently high quality water.

Guelph Waterworks is a municipally owned and operated water utility first established in 1879. The source of Guelph's drinking water is a series of 23 groundwater wells and a shallow groundwater collector system. Guelph's water supply and distribution system is comprised of the following infrastructure:

- 6 kilometres of 1,067 mm diameter water supply aqueduct;
- 5 underground storage reservoirs with a combined capacity of 48,000 cubic metres;
- 3 water towers with a combined capacity of 11,300 cubic metres;
- 500 kilometres of buried water main ranging is size from 100 mm to 900 mm;
- 3,100 watermain valves;
- 2,100 fire hydrants; and
- 30,000 water services and water meters.

The replacement cost of the entire system is estimated to be $327 million or $3,000 per capita. The 2003 Operating Budget contained expenditures totalling $9.3 million. All Waterworks operations and capital improvement projects are funded directly from the sale of water.

In 2003, a total of 19 million cubic metres of water was pumped and treated. Lost water totalled 13 percent of all water pumped. The average daily water demand was 51,975 cubic metres. The highest daily use of water occurred on June 25 when 65,647 cubic metres of water was pumped.

In 2003, over 25,000 microbiological and chemical quality tests were performed by certified operators and accredited, licensed laboratories on water samples collected throughout the water system. In all cases, the drinking water supplied to all customers was safe and better than all Ontario and Canadian health-related guidelines.

Regulatory Changes

In response to an outbreak of *Escherichia (E.coli):*O157 in Walkerton, the Ontario Provincial Ministry of the Environment (MOE) announced Operation Clean Water and enacted the Safe Drinking Water Act (the Act) in 2002. The Act prescribes strict, mandatory requirements for testing and treatment of all municipal drinking water, and actions necessary when standards are not met. The regulation also identifies accountability for drinking water safety and supports the consumer's right to timely and accurate reporting of water quality information.

The Act has impacted Guelph Waterworks and its customers in the following ways:

- Previously, Waterworks relied on regular bacteriological testing to determine the chlorine levels required for disinfection of our various groundwater supplies. Minimum, prescribed levels of chlorine must now be added to all water supplies and maintained in all water distributed to customers. Customers have noticed and commented on the increased chlorine taste and odour in Guelph's water;

- The additional chlorine in Guelph's water is reacting with natural iron and manganese in the groundwater to create more frequent episodes of discoloured water for customers. Waterworks has increased watermain cleaning activities to limit these incidents;

- Additional sampling and testing, and the generation of both this Summary Report and an Annual report are required by the legislation;

- All water systems must follow minimum disinfection standards. This involves upgrades to system infrastructure including chemical systems, control and monitoring systems, and storage reservoirs;

- System upgrades have resulted in decreased system capacity in the short term as existing supplies undergo treatment upgrades to comply with new legislation; and

- Schedule 22 of Regulation 170/03 requires Waterworks to produce and distribute this annual Summary Report. The Summary Report for 2003 will be completed and submitted to Guelph City Council by March 31, 2004. Copies will be available for customers at both Woods Station at 29 Waterworks Place, and at the Environment & Transportation Group offices located on the 3rd floor of 2 Wyndham Street. An electronic copy of the report will also be available on the City's web site at www.city.guelph.on.ca/waterworks.

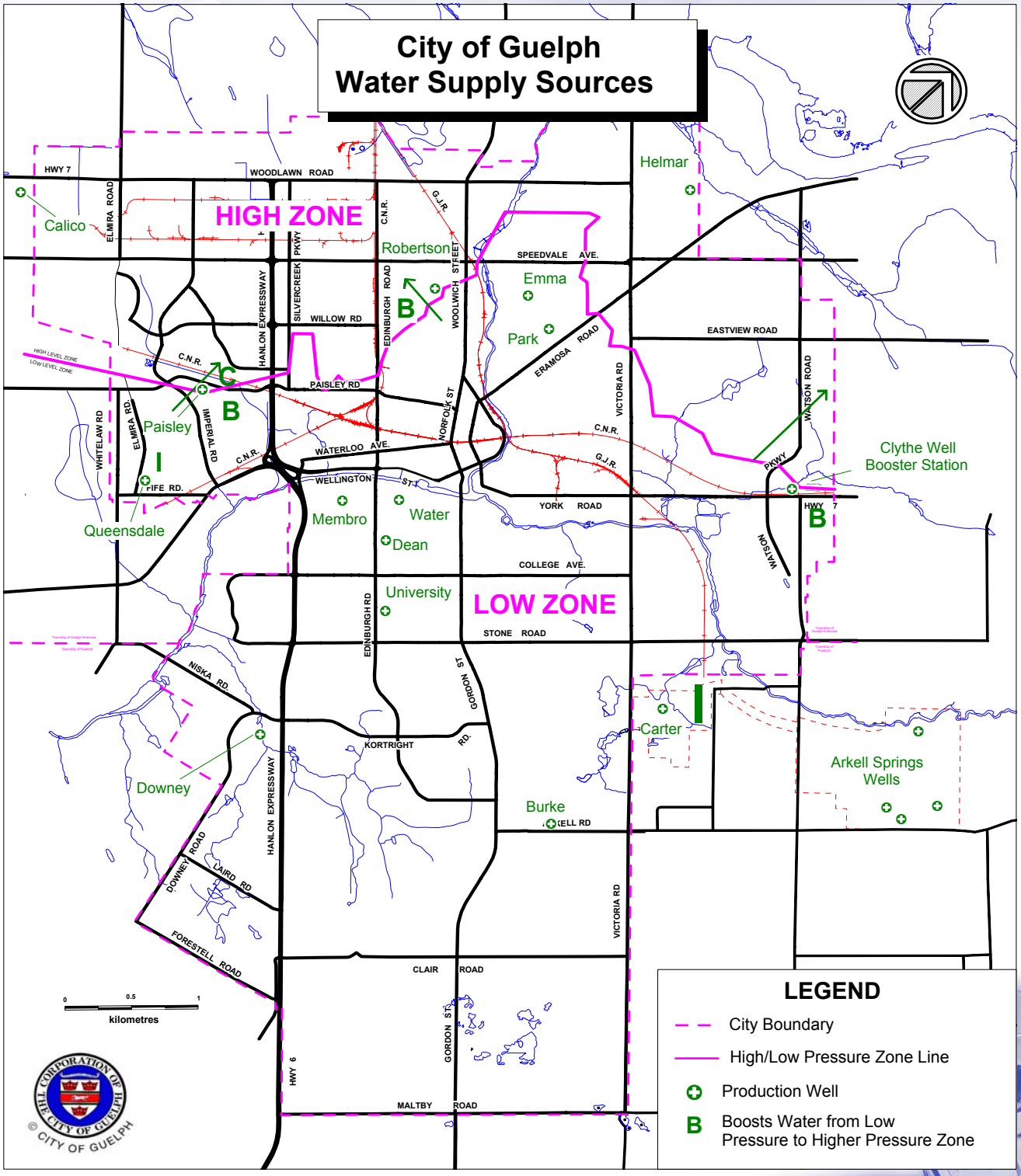
Water rates have been increased significantly to pay for these activities and upgrades with the goal of providing a more secure water supply.

On November 25, 2003 the MOE issued Guelph's latest Consolidated Certificate of Approval (CC of A). The CC of A acts as a license for water supply and distribution operations and sets out a schedule of mandatory facility upgrades to comply with the Act. Currently 8 of our 23 water supply facilities require major disinfection and treatment upgrades.

The Guelph water system is currently licensed as a MOE Class II Water Treatment system and MOE Class III Water Distribution system. Currently 21 water supply and distribution operators and 2 supervisors are licensed to operate and maintain the water system.

Figure A shows the locations of water supply facilities that were active in 2003.

Figure A 2003 Active Water Supply Facilities



SECTON 3
WATER TREATMENT SUMMARY

Section 3 Water Treatment Summary

This section describes the type and amount of drinking water treatment chemicals used in 2003.

In 2003, chlorine in the form of sodium hypochlorite was added to disinfect all water supplied to consumers. Liquid sodium silicate was also added to all water supplied from the Helmar and Queensdale wells to control high levels of naturally occurring iron. Through the act of sequestration, sodium silicate prevents this iron from precipitating when the water is treated and thereby prevents discoloured water.

In 2003, there were no periods of abnormal use of sodium hypochlorite or sodium silicate.

Tables A and B below summarize sodium hypochlorite and sodium silicate use at each supply facility in 2003.

Table A 2003 Sodium Hypochlorite Usage and Chlorine Dosage

FACILITY	SODIUM HYPOCHLORITE kg/Day	WATER PRODUCED Cubic Metres/Day	CHLORINE DOSE mg/L	PURPOSE
Woods	248.3	25,261	1.2	Well water disinfection
Helmar	36.2	939	4.6	Well water disinfection
Park	43.3	4,822	1.1	Well water disinfection
Burke	61.9	5,475	1.4	Well water disinfection
Downey	42.0	4,323	1.2	Well water disinfection
Membro	55.3	3,230	2.0	Well water disinfection
Queensdale	35.0	1,287	3.3	Well water disinfection
Water	20.0	1,702	1.4	Well water disinfection
Dean	6.8	649	1.3	Well water disinfection
University	23.9	1,691	1.7	Well water disinfection
Calico	14.7	972	1.8	Well water disinfection
Emma	38.6	2,377	2.0	Well water disinfection
Clythe	1.4	1,363	0.1	Rechlorination
Paisley	42.0	6,305	0.8	Rechlorination & well water disinfection

mg/L - milligrams per litre. Equivalent to parts per million.

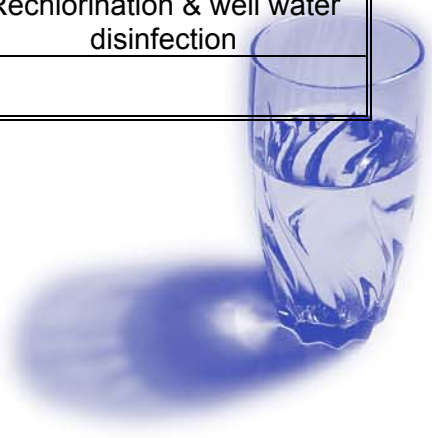


Table B 2003 Sodium Silicate Usage and Dosage				
FACILITY	**SODIUM SILICATE kg/Day**	**WATER PRODUCED Cubic Metres/Day**	**SILICATE DOSE mg/L**	**PURPOSE**
Helmar	6.3	946	1.9	Iron control
Queensdale	7.1	1,231	1.6	Iron control
mg/L - milligrams per litre. Equivalent to parts per million.				

SECTION 4
SUMMARY OF WATER TEST RESULTS

Section 4 Summary of Water Test Results

This section summarizes water quality test results required by the Ontario Drinking-Water System Regulation 170/03 for the period January to December, 2003.

In 2003, all water supplied to consumers met or bettered all health-related Ontario Drinking Water Standards. Of the 2,126 bacteriological analyses performed, only nine samples or 0.4 percent showed the presence of adverse indicator bacteria or high general bacteria counts. Indicator bacteria are not disease causing but show potential for a bacterial problem. None of these incidents, when resampled, showed any persistent water quality deterioration. At no time was E. coli detected in Guelph drinking water.

The more than 25,000 analytical results for inorganic, organic and radiological parameters also bettered all health-related Ontario Drinking Water Standards.

Hardness and total dissolved solids were the only aesthetic parameters that consistently exceeded the levels prescribed by the MOE. These parameters measure the mineral content of groundwater. Groundwater by its nature has a high natural mineral content. This contributes to the pleasant taste of Guelph drinking water and has no adverse effect on public health.

Iron levels in a number of samples were also higher than the aesthetic objective prescribed by the MOE. The Queensdale well may require treatment to remove iron. This issue is being considered in the Waterworks capital improvement strategy.

The following Tables C through H provide a summary of 2003 laboratory and process parameter results.

Table C 2003 Water Supply Bacteriological Results Summary							
Parameter	**O.D.W.S.**	**Total Samples**	**Adverse Samples**	**Percent Adverse**	**Range**	**Average**	**Typical Source of Contaminant**
Total Coliform count/100 mL	*	734	0	0	N/A	N/A	Indicates possible presence of fecal matter
E. Coli count/100 mL	*	734	0	0	N/A	N/A	Definite indicator of fecal matter
Heterotrophic Plate Count count/100 mL	500	710	5**	0.7	2-1700	16	Indicator of water quality deterioration
Raw Water Bacti Tests	N/A	914	0	0	N/A	N/A	Indicator of Environmental Water Quality

O.D.W.S. – Regulation 169/03 Ontario Drinking Water Standards
N/A – Not Applicable
mL - Millilitre
* Indicator of Adverse Water Quality if Detected in Treated Water
** Resample Results Were Good and below O.D.W.S guidelines.

Table D 2003 Water Distribution Bacteriological Results Summary							
Parameter	**O.D.W.S.**	**Total Samples**	**Adverse Samples**	**Percent Adverse**	**Range**	**Average**	**Typical Source of Contaminant**
Total Coliform count/100 mL	*	1,392	0	0	N/A	N/A	Indicates possible presence of fecal matter
E. Coli count/100 mL	*	1,392	0	0	N/A	N/A	Definite indicator of fecal matter
Heterotrophic Plate Count count/mL	500	755	4**	0.5	2-2200	17	Indicator of water quality deterioration

O.D.W.S. – Regulation 169/03 Ontario Drinking Water Standards
N/A – Not Applicable
mL - Millilitre
* Indicator of Adverse Water Quality if Detected in Treated Water
** Resample Results Were Good and below O.D.W.S. guidelines.

Table E 2003 Water Supply & Distribution Process Parameter Results Summary

Parameter	O.D.W.S.	Total Samples	Adverse Samples	Average	Range	Health Exceedance	Typical Source of Contaminant
Turbidity in Supply (NTU)	1	4,179	0	0.2	0.07-0.9	NO	Indicator of particles in water
Free Chlorine in Supply (mg/L)	4	4,808	0	0.66	0.21-1.5	NO	MOE recommends 0.2 mg/L to maintain microbiological quality
Free Chlorine in Distribution (mg/L)	4	1,908	0	0.37	0.17-0.88	NO	MOE recommends 0.2 mg/L to maintain microbiological quality

O.D.W.S. – Regulation 169/03 Ontario Drinking Water Standards
NTU – Nephelometric Turbidity Units
mg/L – milligrams per litre. Equivalent to parts per million

Table F 2003 Reg. 170/03 Schedule 23 Results Summary							
Parameter	**ODWS mg/L**	**Total Samples**	**Samples Above Detection**	**Average mg/L**	**Range mg/L**	**Health Exceedance**	**Typical Source of Contaminant**
Antimony	0.006	52	8	0.0007	0.0006 – 0.0008	NO	Natural Component of Water
Arsenic	0.025	52	0	0.002	0.002	NO	Natural Component of Water
Barium	1	52	52	0.057	0.027-0.079	NO	Natural Component of Water
Boron	5	52	52	0.028	0.009-0.097	NO	Natural Component of Water
Cadmium	0.005	52	3	0.0001	0.0001-0.0002	NO	Natural Component of water
Chromium	0.05	52	0	0.005	0.005	NO	Natural Component of water
Mercury	0.001	52	0	0.00005	0.00005	NO	Rare in Groundwater
Selenium	0.01	52	0	0.002	0.002	NO	Natural Component of Water
Uranium	0.1	52	49	0.0012	0.0001-0.0021	NO	Natural Component of Water

O.D.W.S. – Regulation 169/03 Ontario Drinking Water Standards
mg/L - milligrams per litre. Equivalent to parts per million

Table G 2003 Reg. 170/03 Schedule 24 Results Summary						
Parameters	**O.D.W.S. mg/L**	**Total Samples**	**Samples Above Detection**	**Average mg/L**	**Range mg/L**	**Health Exceedance**
Alachlor	0.005	44	0	ND	N/A	NO
Aldicarb	0.009	44	0	ND	N/A	NO
Aldrin + Dieldrin	0.0007	44	0	ND	N/A	NO
Atrazine + N-dealkylated metabolites	0.005	44	0	ND	N/A	NO
Azinphos -methyl	0.02	44	0	ND	N/A	NO
Bendiocarb	0.04	44	0	ND	N/A	NO
Benzene	0.005	88	0	ND	N/A	NO
Benzo(a)pyrene	0.00001	21	0	ND	N/A	NO
Bromoxynil	0.005	44	0	ND	N/A	NO
Carbaryl	0.09	44	0	ND	N/A	NO
Carbofuran	0.09	44	0	ND	N/A	NO
Carbon Tetrachloride	0.005	88	0	ND	N/A	NO
Chlordane (Total)	0.007	44	0	ND	N/A	NO
Chlorpyrifos	0.09	44	0	ND	N/A	NO
Cyanazine	0.01	44	0	ND	N/A	NO
Diazinon	0.02	44	0	ND	N/A	NO
Dicamba	0.12	44	0	ND	N/A	NO
1,2-Dichlorobenzene	0.2	88	0	ND	N/A	NO
1,4-Dichlorobenzene	0.005	88	0	ND	N/A	NO
DDT + metabolites	0.03	44	0	ND	N/A	NO
1,2-Dichloroethane	0.005	88	0	ND	N/A	NO
1,1-Dichloroethylene (Vinylidene Chloride)	0.014	88	0	ND	N/A	NO
Dichloromethane	0.05	88	0	ND	N/A	NO
2,4-Dichlorophenol	0.9	44	0	ND	N/A	NO
2,4-D	0.1	44	0	ND	N/A	NO

O.D.W.S. – Regulation 160/03 Ontario Drinking Water Standards
mg/L - milligrams per litre. Equivalent to parts per million.

Table G 2003 Reg. 170/03 Schedule 24 Results Summary Continued						
Parameters	**O.D.W.S. mg/L**	**Total Samples**	**Samples Above Detection**	**Average mg/L**	**Range mg/L**	**Health Exceedance**
Diclofop-methyl	0.009	44	0	ND	N/A	NO
Dimethoate	0.02	44	0	ND	N/A	NO
Dinoseb	0.01	44	0	ND	N/A	NO
Diquat	0.07	44	0	ND	N/A	NO
Diuron	0.15	44	0	ND	N/A	NO
Glyphosate	0.28	44	0	ND	N/A	NO
Heptachlor + Heptachlor Epoxide	0.003	44	0	ND	N/A	NO
Lindane (Total)	0.004	44	0	ND	N/A	NO
Malathion	0.19	44	0	ND	N/A	NO
Methoxychlor	0.9	44	0	ND	N/A	NO
Metolachlor	0.05	44	0	ND	N/A	NO
Metribuzin	0.08	44	0	ND	N/A	NO
Monochlorobenzene	0.08	88	0	ND	N/A	NO
Paraquat	0.01	44	0	ND	N/A	NO
Parathion	0.05	44	0	ND	N/A	NO
Pentachlorophenol	0.06	44	0	ND	N/A	NO
Phorate	0.002	44	0	ND	N/A	NO
Picloram	0.19	44	0	ND	N/A	NO
Polychlorinated Biphenyls (PCB)	0.003	44	0	ND	N/A	NO

O.D.W.S. – Regulation 160/03 Ontario Drinking Water Standards
mg/L - milligrams per litre. Equivalent to parts per million.

Table G 2003 Reg. 170/03 Schedule 24 Results Summary Continued						
Parameters	**O.D.W.S. mg/L**	**Total Samples**	**Samples Above Detection**	**Average mg/L**	**Range mg/L**	**Health Exceedance**
Prometryne	0.001	44	0	ND	N/A	NO
Simazine	0.01	44	0	ND	N/A	NO
Temephos	0.28	44	0	ND	N/A	NO
Terbufos	0.001	44	0	ND	N/A	NO
Tetrachloroethylene (perchloroethylene)	0.03	88	3	0.0001	0.0001-0.0005	NO
2,3,4,6-Tetrachlorophenol	0.1	44	0	ND	N/A	NO
Triallate	0.23	44	0	ND	N/A	NO
Trichloroethylene	0.05	88	29	0.0004	0.0001-0.0031	NO
2,4,6-Trichlorophenol	0.005	44	0	ND	N/A	NO
2,4,5-T	0.28	44	0	ND	N/A	NO
Trifluralin	0.045	44	0	ND	N/A	NO
Vinyl Chloride	0.002	88	0	ND	N/A	NO

O.D.W.S. – Regulation 169/03 Ontario Drinking Water Standards
mg/L - milligrams per litre. Equivalent to parts per million.

Table H 2003 Miscellaneous Test Results Summary						
Parameters	**O.D.W.S. mg/L**	**Total Samples**	**Samples Above Detection**	**Average mg/L**	**Range mg/L**	**Health Exceedance**
Nitrate	10	74	72	2.5	0.2 – 10.9*	NO
Nitrite	1.0	74	0	ND	N/A	NO
Lead in Distribution Samples	0.01	4	2	0.00065	0.0005 – 0.0008	NO
Trihalomethanes in Distribution Samples	0.1	4	4	0.023	0.013 – 0.027	NO
Sodium	N/A	24	24	40.6	14.1 – 96.7	NO
Fluoride	1.5	22	19	0.289	0.1 – 0.5	NO

O.D.W.S. – Regulation 169/03 Ontario Drinking Water Standards
mg/L - milligrams per litre. Equivalent to parts per million.
*Only one test result greater than O.D.W.S. of 10 mg/L. This test was conducted on raw water prior to treatment.

SECTION 5
SUMMARY OF ADVERSE TEST RESULTS AND CORRECTIVE ACTIONS

Section 5 Summary of Adverse Test Results and Corrective Actions

This section summarizes adverse water quality test results and corresponding corrective actions taken for the period January to December, 2003.

Schedule 16 of the Drinking-Water Systems Regulation 170/03 prescribes the reporting procedures that must be followed when adverse water quality is detected during routine testing. Waterworks contract laboratories must notify the MOE, the Wellington-Dufferin-Guelph Health Unit (Health Unit), and the Waterworks Supervisor of the adverse result by phone immediately. The Waterworks Supervisor must then again notify, both by phone and in writing, the MOE and Health Unit of the adverse result and the conditions of operation at the time of sampling. If applicable, the Supervisor will then implement corrective actions such as resampling, increasing the chlorine dose, isolating a source, or flushing the system. Waterworks must then report the results of the corrective actions taken to both the MOE and Health Unit within seven days of the issue resolution.

When an adverse bacteriological result is detected, the first action required under Schedule 17 of Regulation 170/03 is the resampling of the source of the adverse result. It is the nature of microbiological analysis to occasionally have false positive results. If additional adverse results are not detected, then no additional action is taken.

Table I 2003 Summary of Adverse Test Results and Corrective Actions

#	Date	Location	Description	Corrective Action	Resample Results Good
1	July 23	Clythe Station	HPC >1,000 (O.D.W.S. < 500)	Increased Chlorine Residual and Resampled	Yes
2	August 11	Woods Station	HPC >2,200 (O.D.W.S. < 500)	Maintained Chlorine Residual and Resampled	Yes
3	August 13	Clythe Station	HPC =1,700 (O.D.W.S. < 500)	Maintained Chlorine Residual and Resampled	Yes

HPC – Heterotrophic Plate Count: An indicator of general bacterial quality. HPC is measured in colony forming units per millilitre (cfu/mL).
O.D.W.S. – Regulation 169 Ontario Drinking Water Standards

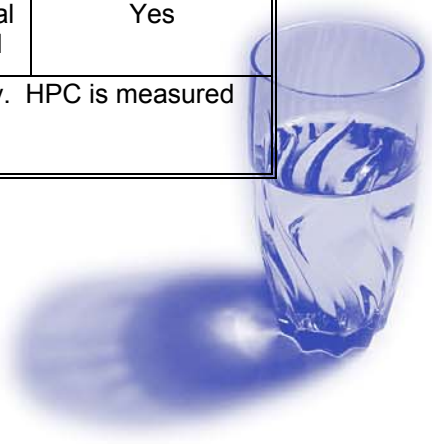


Table I 2003 Summary of Adverse Test Results and Corrective Actions Continued					
#	Date	Location	Description	Corrective Action	Resample Results Good
4	Sept. 2	Pine Drive	HPC = 1,100 (O.D.W.S. < 500)	Increased Chlorine Residual and Resampled	Yes
5	Sept. 5	Park Well	HPC = 690 (O.D.W.S. < 500)	Maintained Chlorine Residual and Resampled	Yes
6	Sept. 11	Wyndham St.	HPC > 500 (O.D.W.S. < 500)	Maintained Chlorine Residual and Resampled	Yes
7	Sept. 29	Calico Well	HPC = 1,000 (O.D.W.S. < 500)	Increased Chlorine Residual and Resampled	Yes
8	Nov. 3	Victoria Rd. N.	HPC = 710 (O.D.W.S. < 500)	Maintained Chlorine Residual and Resampled	Yes
9	Nov. 11	Burke Well	HPC > 1,500 (O.D.W.S. < 500)	Maintained Chlorine Residual and Resampled	Yes
HPC – Heterotrophic Plate Count: An indicator of general bacterial quality. HPC is measured in colony forming units per millilitre (cfu/mL). O.D.W.S. – Regulation 169 Ontario Drinking Water Standards					

SECTION 6
SUMMARY OF MAINTENANCE

Section 6 Summary of Maintenance

This section summarizes the 2003 major operating and capital expenses incurred to maintain the water supply and distribution system.

The Waterworks Division of the Environmental Services Department is responsible for the supply and distribution of potable water to the citizens of Guelph. Water quality objectives established by the MOE are achieved through a combination of groundwater protection initiatives, disinfection of water from 23 groundwater wells and the maintenance of a distribution network consisting of almost 500 km of watermain. All Waterworks revenue is derived directly from the sale of water to customers.

The water programs and services described below contribute to the Waterworks and Wastewater vision:

> "We will be a recognized leader in municipal water management, moving forward consistently at the forefront of our industry and setting a standard for others to follow."

Regulatory Compliance

In February 2002, the Ministry of the Environment (MOE) issued a Consolidated Certificate of Approval (CCofA) to Waterworks based on the findings of the *2001 Engineers Report*. The CCofA outlines the following requirements that have direct budgetary impact:

A) Completion of Disinfection Upgrades by June 2006

Disinfection upgrades are required at nine facilities with one facility complete, four underway, and the remaining to be initiated in 2004 and 2005. Funding for these upgrades is split equally between the municipality, province and federal government with the City portion forecast at approximately $3.5 million.

B) Completion of Groundwater Under the Direct Influence of Surface Water (GUDI) Compliance Treatment Study and Potential Treatment Upgrades

In July of 2002, the City completed and submitted for MOE review a GUDI study on five water sources. In November of 2003, a revised CC of A was received listing additional treatment upgrades and a compliance schedule. The upgrades will likely be required to be completed by the middle of 2006. Staff anticipate these upgrades will cost an additional $5 million and are seeking Provincial and Federal support.

Sustaining Infrastructure

The Waterworks mission supports sustaining infrastructure to ensure reliable service. Over 80 percent of the water system is underground. In 2003, $550,000 was spent on watermain and valve replacement.

Operating Budget Highlights

In 2003, Waterworks budgeted $2 million and $2.3 million to operate and maintain the water distribution and supply systems respectively.

The following maintenance activities were funded by the Waterworks Operating budget in 2003:

- Repair of an annual record of 101 watermain breaks at a cost of $590,000;
- Replacement of 57 watermain valves at a cost of $193,000;
- Repair of 66 fire hydrants at a cost of $74,000;
- Replacement of 1,056 water meters at a cost of $200,000;
- Rehabilitation of 3 water supply wells at a cost of $70,000;
- Lining of 5 water supply wells at a cost of $300,000; and
- Replacement of 9 water supply pumps at a cost of $300,000.

SECTON 7
COMPLIANCE WITH TERMS AND CONDITIONS OF THE CONSOLIDATED CERTIFICATE OF APPROVAL

Section 7 Compliance with Terms and Conditions of the Consolidated Certificate of Approval

In 2003, Waterworks operated under three Consolidated Certificates of Approval (CC of A). CC of A 7263-58LQVW was issued on April 10, 2002 and was replaced by CC of A 6306-5MXHLN on May 29, 2003. The most recent CC of A, 2866-5SQHGF, was issued on November 18, 2003 and replaces the previous CC of A. This section of the Summary Report consists of a sequential description of Waterworks compliance with terms and conditions as listed in the various CC of As. Condition numbers listed in square brackets '[ ]' refer to the condition listed specifically in the most recent CC of A 2866-5SQHGF.

Condition 1.1 [3.1] – Water Supplied Satisfies "Ontario Drinking Water Standards"

In 2003, Waterworks operated and maintained the water treatment and distribution system in such a manner that water supplied to all consumers serviced by the system met the requirements of the "Ontario Drinking Water Standards". Over 20,000 tests of Guelph drinking water were performed. The results demonstrate that Guelph tap water is safe. These results are summarized in the tables provided in section 4 of this Summary Report.

Condition 1.2 – Possessing Valid Permits to Take Water

In 2003, Waterworks had valid permits to take water for all municipal water supplies at the rates listed in the CC of A.

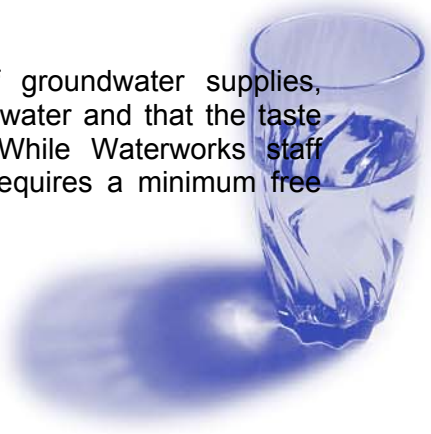
Condition 1.4 [4.1] – Ensuring Distribution Flows Do Not Exceed Maximum Flow Rates

In 2003, Waterworks ensured that distribution flows did not exceed the maximum flow rates as set out in the various CC of As.

Condition 1.5 – Chlorination Practiced Satisfies "Chlorination of Potable Water Supplies in Ontario B13-3"

In 2003, the City of Guelph operated and maintained most disinfection facilities in accordance with MOE Procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario", specifically all aspects of section *2.1 Groundwater Supply Chlorination Requirements*. Information on those facilities currently undergoing disinfection upgrades is presented later in this Section of the Summary Report under Condition 5.2. Chlorine dosage information for each water supply facility is provided in Section 3 of this Summary Report.

While Waterworks met all MOE requirements for chlorination of groundwater supplies, customers are concerned about the chlorine taste and odour of City water and that the taste implies chemicals have been introduced into the water supply. While Waterworks staff answered customer enquiries courteously and explained the MOE requires a minimum free



chlorine residual of 0.2 mg/L at the farthest extent of the water distribution system, customers were generally not satisfied.

To provide additional assistance, Waterworks staff provided customers with a description of how to make bottled water to eliminate chlorine taste. Customers are instructed to run the tap until the water is cold, and then to fill a jug and let it sit for 24 hours at room temperature to allow the chlorine to dissipate. Following these instructions will ensure the water has no chlorine taste or odour. The customer has essentially made their own bottled water.

Condition 2.1 (a) [5.1] – Presence of Flow Measuring Devices

In 2003, Waterworks operated and maintained 33 devices to measure the flow rate and daily quantity of water being supplied from each source. The instantaneous flow rate is currently measured during the daily site visit by the water supply operator.

Condition 2.1 (b) [5.3] – Calibration of Flow Measuring Devices

In 2003, Waterworks verified the accuracy of each flow measuring device. The results of these certification tests were provided to the Provincial Officer during the March 2004 Waterworks Inspection.

Condition 2.1 (c) [5.1] – Recording of Total Daily Flows

In 2003, Waterworks recorded total daily flows at each water supply and provided this information to the Provincial Officer during the March 2004 Waterworks Inspection. Summary tables of this information are included in Section 9 of this Summary Report.

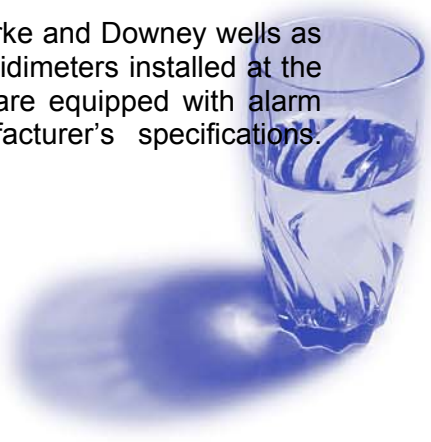
Condition 2.1 (d) [5.2] – Logging of Flow Rate Exceedances

In 2003, Waterworks recorded the date, time, duration and cause of each occasion where flow rates were exceeded. A summary table of this information is included in Section 8 of this Summary Report. This information was provided to the Provincial Officer during the March 2004 Waterworks Inspection.

Condition 2.1 (e) – Install, Operate, and Maintain Continuous Water Quality Analyzers

In 2003, Waterworks operated and maintained online chlorine analyzers at all facilities where disinfection is practiced. These analyzers satisfy MOE accuracy guidelines, are equipped with alarm systems, and have been maintained in compliance with manufacturer's specifications. Chlorine residuals were maintained within MOE standards.

In 2003, Waterworks installed additional online turbidimeters at the Burke and Downey wells as required by the CC of A. These turbidimeters, as well as existing turbidimeters installed at the Scout Camp and Woods Station, satisfy MOE accuracy guidelines, are equipped with alarm systems, and have been maintained in compliance with manufacturer's specifications. Turbidity levels were maintained within MOE standards.



Condition 2.1 (f) – Collection and Analysis of Raw and Treated Water Samples

In 2003, Waterworks collected and analyzed raw and treated water samples for parameters at the locations and frequencies specified in the "Drinking Water Protection Regulation 459" Schedule 2 and the "Drinking-Water Systems Regulation 170/03". This information is summarized in Section 4 of this Summary Report. Additional information is provided in the 2003 Quarterly Report, which is available on the City web site.

Condition 2.1 (g) – Adherence to Sampling Protocols

In 2003, Waterworks followed the sampling instructions provided by each accredited laboratory engaged to performing analyses.

Condition 2.2 [3.18] – Retention of Water Quality Records

In 2003, Waterworks continued to maintain all records and information related to or resulting from the water quality monitoring, sampling and analyzing programs for a minimum period of five years.

Condition [3.1] – Operation of the System in Compliance with all Legislation and Regulations

In 2003, Waterworks operated the municipal water supply and distribution system in accordance with the Safe Drinking Water Act, related regulations, and the CC of A.

Condition [3.3] – Ensuring Others Working on the System Are Aware and Adhere to Legislation and Regulations

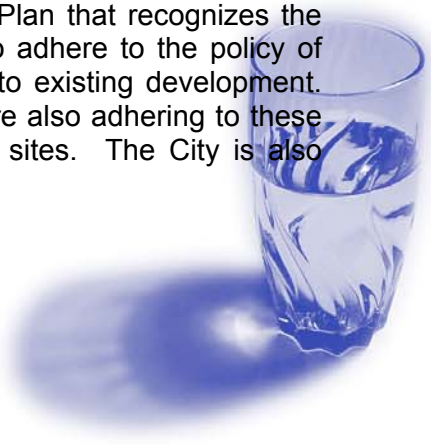
In 2003, Waterworks began informing contractors working on the water supply and distribution system of the requirements of regulations and legislation related to the work being conducted. City inspectors are assigned to oversee contractors where the work being completed may have a direct impact on the integrity of the system.

Condition [3.4] – Making the Consolidated Certificate of Approval Available

Waterworks has appended a copy of the most recent Consolidated Certificate of Approval to this Summary Report. Copies of the Summary Report are available at Woods Station and on the City Web site.

Condition 3.1– Consideration of Impact of Decisions on Water Supply

In 2002, the Guelph City Council approved an update to the Official Plan that recognizes the importance of source water protection. The municipality continues to adhere to the policy of source protection in the approval of new development and changes to existing development. Through the Brownfield Strategy approved by Council in 2002, staff are also adhering to these policies as they apply to contaminated and potentially contaminated sites. The City is also



participating in a Provincially funded Groundwater Protection Study with the Grand River Conservation Authority and Township of Puslinch.

Condition 3.2 - Disinfection after System Repairs or Negative Pressure Conditions

In 2003, Waterworks followed approved American Waterworks Association (AWWA) procedures C651-92, C652-92, C653-87 and C654-87 related to disinfection of watermains, wells, and water storage and treatment facilities during and after the performance of repair activities.

In 2003 Waterworks did not experience negative pressure conditions in the water supply and distribution system.

Condition 3.3 – Valid Licenses for Operators in Direct Responsible Charge

In 2003, the Waterworks manager, supervisor of supply, and supervisor of distribution held operator's licenses valid for managing the operation of the City of Guelph water supply and distribution system.

Condition 3.4 – Proper Operation and Maintenance of Water Supply and Distribution System

In 2003, Waterworks ensured the proper operation and maintenance of the water supply and distribution system through performance monitoring, appropriate staffing, operator training, funding, lab facilities, process controls and alarms, and the use of process chemicals. These issues were reviewed by the Provincial Officer during the March 2004 Waterworks Inspection.

Condition 3.5 [6.1 & 6.2] – Use Of AWWA and ANSI Approved Chemicals and Materials

In 2003, Waterworks had available for use American National Standards Institute (ANSI) and American Water Works Association (AWWA) approved sodium hypochlorite and sodium silicate. Copies of supporting information are filed at Waterworks and were provided to the Provincial Officer during the March 2004 Waterworks Inspection.

With regards to existing distribution and supply stock, materials and infrastructure, Waterworks forwarded a list of all current inventory to the MOE Approvals Branch in 2003. The City respectfully requests that the MOE identify any equipment that may be of concern with regards to the identified standards and forward a deficiencies list to the City. As part of the City's maintenance program, the City will then take the appropriate action including replacing, relining or refurbishment.

With regards to new stock, materials, and infrastructure, Waterworks ensures that all new equipment, materials and chemicals comply with the AWWA and ANSI standards. The City has implemented a standard paragraph on all purchasing documents that stipulates that all water materials, stock, and equipment must meet these standards.

Condition 3.6 – Discontinue Use of Chemicals upon Notice from Director

In 2003, Waterworks did not receive notice from the MOE to discontinue the use of any water treatment chemicals.

Condition 3.7 – Ministries of Environment and Health Adverse Water Quality Notification Procedures

In 2003, Waterworks continued to follow written standard operating procedures for the notification of both the MOE and Health Unit in the event of adverse water quality as defined by the Drinking Water Protection Regulation and the Drinking-Water Systems Regulation.

Condition 3.8 [6.5] – Emergency Contingency Plans and Adequate Equipment and Material

In 2003, Waterworks continued to develop the Waterworks Emergency Plan to support the overall City of Guelph Emergency Plan. Staff training was provided on standard operating procedures related to incident and emergency response.

In 2003, Waterworks ensured the availability of adequate equipment and materials to assist with incident and emergency response.

Condition 3.9 [6.4] – Up to Date Operation and Maintenance Manual

In 2003, Waterworks revised the operation and maintenance manuals for all 29 water supply, distribution, and storage facilities. These manuals were reviewed by the Provincial Officer during the March 2004 Waterworks Inspection.

Condition 3.10 [6.5] – Content of Operation and Maintenance Manuals

In 2003, Waterworks ensured that the operation and maintenance manuals for all 29 water supply and storage facilities contained guidance on water quality monitoring, disinfection, and monitoring equipment operation and maintenance.

Condition 3.11 [6.8] – Availability of As Constructed Drawings for New Works

In 2003, Waterworks retained copies of the as constructed drawings, where available, for all works.

Condition 3.12 [6.7] – Availability of Process and Instrumentation Diagrams

In 2003, Waterworks prepared Process and Instrumentation Diagrams for all 29 water supply facilities.

Condition 3.13 [6.8] – Retention of Record Drawings and Diagrams

In 2003, Waterworks continued to maintain an inventory of as constructed drawings and related diagrams for staff use and MOE review.

Condition 3.14 [6.5] – Procedures for Responding to Customer Complaints

In 2003, Waterworks maintained procedures for receiving, responding to, and documenting customer complaints. Staff received customer complaints and entered relevant information into the complaints database. This database allowed management to track and resolve issues and review trends in complaint information.

In 2003, a total of 251 complaints were recorded in the complaints database. The majority of these complaints were related to yellow or brown water caused by disruption of rust in water mains. The following Table J summarizes the types of complaints received in 2003.

Table J 2003 Customer Water Quality Complaints

Number	Complaint Type	Complaint Group
155	Yellow, Brown, Black	Appearance
25	Chlorine	Taste/Odour
12	Stale/Poor	Taste/Odour
10	Health Concern	Request
10	Data Request	Request
9	Milky Water	Appearance
9	Water Treatment Info	Request
8	Sulfurous	Taste/Odour
3	Metallic/Mineral	Taste/Odour
3	Hardness Level	Request
2	White Sediment	Appearance
2	Fluoride Level	Request
1	Sand	Appearance
1	Oily Water	Appearance
1	Green, Blue	Appearance

Condition 4.1 (a & b) – Completion of Annual Compliance Report

Waterworks has prepared this 2003 Summary Report to detail its compliance with all terms and conditions of the CC of A and the requirements of Schedule 22 of the Drinking-Water Systems Regulation.

Condition 4.1 (c (i) to c (v)) – Required Contents of Compliance Report

The 2003 Summary Report has been prepared with a table of contents to match the requirements of Schedule 22 of the Drinking-Water Systems Regulation.

Condition 4.1 (d) – Designated Signature on Compliance Report

In March 2003, Guelph City Council approved a resolution to designate the Director of Environmental Services and the Waterworks Manager as signatories of the Annual Compliance Report required by the now defunct Drinking Water Protection Regulation 459/00.

Condition 4.1 (e) – Presentation of Compliance Report to Council

Waterworks submitted the 2002 Compliance Report to City Council in April 2003. This Summary Report will be submitted to City Council in March 2004.

Condition 4.1 (f) – Availability of Compliance Report

Copies of the Waterworks Summary report will be made available at Woods Pumping Station located at 29 Waterworks Place, Guelph. An electronic copy will also be posted on the City Web site.

Condition [8.2] – Submission of Report and Completion of Appropriate Disinfection Upgrades at Burke and Downey Wells

In March 2004, Waterworks will submit to the MOE a hydrogeological report indicating that Burke and Downey wells are groundwater supplies. Burke well is already receiving the disinfection required by a groundwater supply. Downey well will be upgraded to receive similar disinfection by July 31, 2005.

Condition [8.3] – Completion of Enhanced Disinfection Upgrades at Carter Wells and Arkell Glen Collector System

Waterworks has selected an engineering consultant to proceed with design and project management of these upgrades. All work will be completed by June 30, 2006.

Condition 5.2 (a) (i) [8.4] – Chlorine Contact Upgrades at Identified Facilities

1) Emma Street Well Pumping Station – Design stage is 100% complete. The project is tendered and construction to commence in April 2004. The project is to be completed by August 31, 2004.

2) Park Street Well Pumping Station – Design stage is 100% complete. The project is tendered and construction to commence in April 2004. The project is to be completed by August 31, 2004.

3) Water Street Well Pumping Station – An engineering consultant has been hired to perform design and project administration. The project is to be completed by June 30, 2005.

Condition 5.2 (a) (iii) [8.4 & 8.5] – Re-chlorination System Facility Upgrades

1) Paisley Road Well Pumping Station and Reservoir – This project must be completed by June 30, 2004.

2) Robertson Booster Pumping Station – This project must be completed by June 30, 2004.

Condition 5.2 (a) (iv) [8.5] – Control System Facility Upgrades

This project must be completed by June 30, 2006.

Condition [8.5 (iv)] – Conditional Inspection of Burke, Downey, and Carter Wells

Waterworks will complete a conditional inspection of the Burke, Downey, and Carter wells and submit the results to the MOE by March 31, 2004.

Condition [8.5 (v)] – Implement Monitoring Program for Arkell Glen Collector

Waterworks will design and implement a monitoring program to assess the *in-situ* filtration provided by the glen collector system by March 31, 2004.

Condition [8.5 (vi)] – Conditional Inspection of the Arkell Glenn Collector System

Waterworks will complete a conditional inspection of the glen collector system and submit the results to the MOE by March 31, 2004.

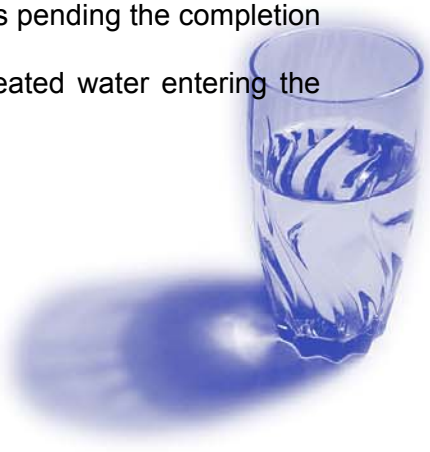
Condition [8.5 (vii)] – Conditional Inspection of City-Owned Wells Located in the 50 Day Time of Travel of Municipal Supply Wells

Waterworks will complete a conditional inspection of all City-owned wells located in the 50 day time of travel of municipal supply wells and submit the results to the MOE by March 31, 2004. All identified deficiencies must be completed by June 30, 2006.

Condition [8.6] – Interim Measures to Enhance Disinfection at Burke and Downey Wells Until Disinfection Upgrades are Completed

As required by the CC of A, Waterworks has implemented the following interim measures to ensure the quality of the water provided by the Burke and Downey wells pending the completion of disinfection upgrades:

1. Maintain a target free chlorine residual of 0.75 mg/L in the treated water entering the distribution system;
2. Provide a low chlorine alarm;
3. Provide continuous monitoring of chlorine residual; and



4. Provide continuous monitoring of reservoir water level.

Condition [8.6.1] – Interim Measures to Enhance Disinfection at Glen Collector and Carter Wells Until Disinfection Upgrades are Completed

As required by the CC of A, Waterworks has implemented the following interim measures to ensure the quality of the water provided by the glen collector system and Carter wells pending the completion of disinfection upgrades:

1. Maintain a target free chlorine residual of 0.85 mg/L in the treated water entering the distribution system;
2. Provide a low chlorine alarm;
3. Provide continuous monitoring of chlorine residual; and
4. Provide continuous monitoring of reservoir water level.

Condition 5.3 & 5.4 [8.9] – Timely Approvals Obtained for New Construction

In 2002, Waterworks did not conduct new construction related to the projects described in this Summary Report without first obtaining the necessary MOE approvals. Waterworks will also ensure that applications for approval are submitted to allow for the completion of all projects within the schedules set out in the CC of A.

Section 6 – Completion of Second Engineers' Report

The CC of A mandates the completion of the second Engineers' Report by December 31, 2005.

Section 7 – Revocation of Existing Approvals

In 2003, there were no actions required by Waterworks to comply with this section of the CC of A.

Section 8 – Information

In 2003, there were no actions required by Waterworks to comply with this section of the CC of A.

Section 9 – Change of Ownership

In 2003, there were no actions required by Waterworks to comply with this section of the CC of A.

Section 10 – Interpretation

In 2003, there were no actions required by Waterworks to comply with this section of the CC of A.

SECTION 8
NON-COMPLIANCE WITH TERMS AND CONDITIONS OF THE CONSOLIDATED CERTIFICATE OF APPROVAL AND REGULATIONS

Section 8 Non-Compliance with Terms and Conditions of the Certificate of Approval and Regulations

This section of the Summary Report consists of a sequential description of issues of non-compliance with the terms and conditions as listed in the CC of A and with applicable provincial regulations.

Condition 1.3 and 1.4 – Exceedance of Maximum Flow Rates

Guelph Waterworks operates a system of 23 water wells, and the Arkell collectors and recharge system to satisfy varying customer water demand. In the vast majority of cases (over 99% of the time), these supplies are routinely operated below the maximum flow rates listed in the CC of A. In the event of significant water demand caused by major fires, or during maintenance activities where major facilities or supplies are temporarily out of service, Waterworks increases flows from other municipal supplies to ensure treated water stored for fire protection remains at an acceptable level.

When Waterworks temporarily increases the flow from a supply, operational adjustments are implemented to ensure the additional water receives the required treatment as mandated by MOE regulations. Monitoring is also conducted to ensure the increased flows do not result in environmental degradation or neighbouring water supply interference.

In 2003, Waterworks experienced one event when flows from the Arkell Springs bedrock wells were increased temporarily to add replacement water to treated water storage during times of maintenance of other facilities or supplies. Adequate treatment was provided during these events. These events did not result in negative environmental impact or neighbouring water supply interference. A summary of this event is provided in Table K below.

Table K 2003 Summary of Flow Exceedances for Maintenance Purposes

#	Dates	Duration	Description	Maintenance Issue
1	January 27 to 28	2 days	Flows at Arkell well 7 increased above 6,546 to a maximum of 6,730 cubic metres per day	Arkell well 6 maintenance

Condition 1.5 – Chlorination Practiced Satisfies "Chlorination of Potable Water Supplies in Ontario B13-3"

The promulgation of the Provincial "Drinking Water Protection Regulation 459/00" in August of 2000 placed a number of Waterworks facilities in non-compliance in terms of disinfection treatment. MOE procedure B13-3 entitled "Chlorination of Potable Water Supplies in Ontario",

dated January 2001, requires all supply facilities to have chlorine contact chambers providing a minimum of 15 minutes of effective chlorine contact time. The following facilities were found not to comply with this requirement:

1. Woods Station;
2. Burke Well;
3. Park Well;
4. Emma Well;
5. Water St. Well;
6. Membro Well;
7. Downey Well;
8. Paisley Rechlorination, and
9. Robertson Rechlorination.

The required upgrades to Woods Station and Burke Well were completed in 2002. The MOE approved upgrade schedules for the remaining supplies can be found in the CC of A appended to this Summary Report.

At no time in 2003 did the operation of these supplies result in the provision of unchlorinated or unsafe water to customers.

Compliance with Schedule 10 of the Drinking-Water Systems Regulation 170/03

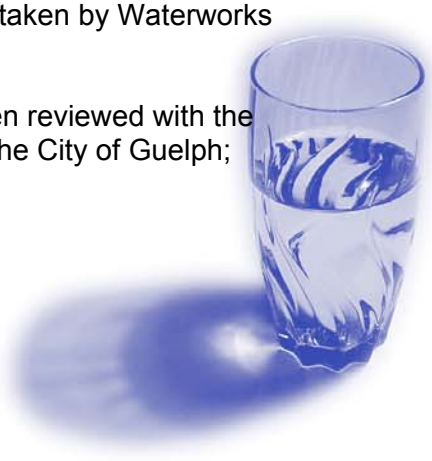
Schedule 10 of the Drinking-Water Systems Regulation 170/03 prescribes minimum sampling requirements for Large Municipal Residential water systems. Waterworks employs certified water supply operators to collect the prescribed samples which are forwarded to MOE licensed laboratories for analysis.

In December of 2003, the weekly, treated point of entry sample for Calico well supply was collected by Waterworks operations staff and couriered to MDS contract laboratory in London. Staff at MDS subsequently failed to perform the requested HPC analysis detailed on the chain of custody for the samples and Waterworks was not notified of its error until January 5, 2004. Failure to have this analysis performed has resulted in Waterworks being out of compliance with the prescribed sampling requirements.

The Waterworks manager informed the MOE of this non-compliance issue on Tuesday January 6, 2004.

To prevent a reoccurrence of this error by the contract laboratory, and by all contract laboratories that Waterworks employs, the following actions have been taken by Waterworks staff:

1. Laboratory Quality Assurance and Control Procedures have been reviewed with the management of all contract laboratories currently employed by the City of Guelph;



2. Waterworks has re-issued its contract for bacteriological testing of water with additional performance clauses to prevent a reoccurrence of this error;

3. Waterworks has reviewed its contract for chemical testing with the contract laboratory to ensure reporting protocols are already in place to avoid a similar error from occurring; and

4. Waterworks has advised the MOE fully on the above actions.

SECTION 9
SUMMARY OF QUANTITY OF WATER SUPPLIED

Section 9 Summary of Quantity of Water Supplied

In 2003, 19 of 20 water supplies were operated to satisfy customer water demand. A total of 18,902,864 cubic metres of water was pumped to the water distribution system. This total represents a 3 percent decrease from the previous year's total.

The 2003 total average day demand was 51,975 cubic metres per day. This volume is lower than the current dry perennial water system capacity of 63,000 cubic metres per day. The continuous multi-year drought, degradation in water quality, and compliance with new regulations has reduced system capacity below the rated capacity of about 75,000 cubic metres per day.

The following Tables L and M detail 2003 monthly maximum daily pumpage, instantaneous flow, and monthly average pumpage from all active water supplies.

Table L 2003 Pumpage Summary

	Arkell 1	Arkell 6	Arkell 7	Arkell 8	Arkell Collectors	Arkell Recharge	Carter
Monthly Maximum Day in Cubic Metres Per Day							
Capacity	3,273	6,546	6,546	6,546	25,000	**9,092	7,855
Jan-03	0	5,850	*6,730	6,260	5,270	0	6,120
Feb-03	1,728	6,262	6,307	6,330	4,539	0	6,490
Mar-03	1,693	6,443	6,540	6,480	3,956	0	6,390
Apr-03	1,336	6,462	6,304	6,320	5,933	8,467	6,290
May-03	898	6,272	6,096	5,970	11,594	8,402	6,300
Jun-03	1,032	6,387	~7,434	6,230	14,674	8,122	5,986
Jul-03	1,617	6,257	6,240	5,930	12,240	7,884	3,510
Aug-03	1,026	~7,027	~7,895	6,970	12,367	7,906	3,420
Sep-03	921	5,787	5,856	5,950	4,545	0	6,010
Oct-03	992	5,544	5,950	5,950	10,714	8,478	3,480
Nov-03	955	5,429	6,421	6,290	13,267	8,402	5,280
Dec-03	966	6,372	6,406	6,460	8,177	0	6,030
Monthly Maximum Flow Rate in Litres Per Second							
Capacity	56.8	113.7	113.7	113.7	433.33	Not Applicable	136.4
Jan-03	0	67.4	77.6	69.3	61.0	0	70.8
Feb-03	20.7	72.6	74.5	73.3	52.5	0	73.3
Mar-03	20.0	75.0	75.7	75.8	45.8	0	72.5
Apr-03	15.6	75.0	95	73.0	68.7	98.0	76.7
May-03	10.8	73.9	72.8	73.5	134.2	97.3	71.7
Jun-03	12.2	90.8	90.2	90.7	169.8	94.0	70.2
Jul-03	13.0	74.9	74.9	72.7	141.7	91.3	38.3
Aug-03	12.4	90.5	90	91.7	143.1	91.5	71.7
Sep-03	10.8	71.0	72.2	74.7	52.6	0	70.0
Oct-03	11.2	68.9	72.7	74.8	124.0	98.1	40.0
Nov-03	11.4	65.3	76	75.8	153.6	97.3	71.7
Dec-03	11.5	75.7	75.5	76.5	94.6	0	70.8

* Flow increased to replace supply out of service for maintenance.

** Capacity varies depending on time of year.

~Flow increase permitted under Temporary Permit To Take Water 03-P-2217 (T).

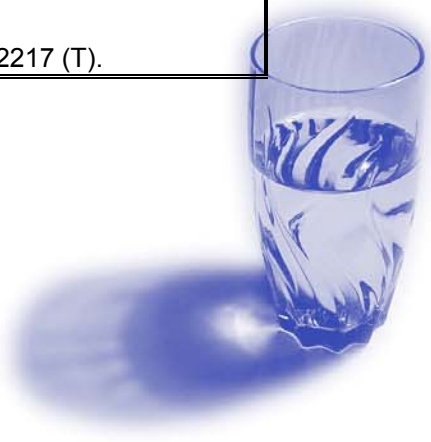


Table L 2003 Pumpage Summary Continued

	Burke	Calico	Clythe Well	Clythe Booster	Dean	Downey	Emma	Helmar
Monthly Maximum Day in Cubic Metres Per Day								
Capacity	6,546	5,237	5,237	5,443	2,300	5,237	3,100	3,273
Jan-03	5,933	1,093	0	5,349	579	4,074	2,980	1,012
Feb-03	5,946	1,130	0	5,439	0	4,092	1,878	1,006
Mar-03	5,940	1,049	0	5,435	888	4,517	2,525	1,003
Apr-03	5,918	1,053	0	5,428	883	4,506	2,465	1,253
May-03	5,891	1,083	0	5,355	777	4,464	2,970	1,739
Jun-03	6,183	1,076	0	5,041	0	4,383	2,921	1,388
Jul-03	6,055	1,053	0	5,085	0	4,609	2,766	936
Aug-03	5,998	986	0	5,439	1,164	4,371	2,742	859
Sep-03	5,964	1,115	0	5,438	1,210	4,360	2,676	848
Oct-03	5,872	992	0	5,439	1,187	4,618	2,860	866
Nov-03	5,728	1,089	0	5,187	934	4,442	2,939	1,065
Dec-03	5,770	980	0	5,176	1,409	4,411	2,955	983
Monthly Maximum Flow Rate in Litres Per Second								
Capacity	113.7	90.9	90.9	189	39.9	90.9	53.8	56.8
Jan-03	74.5	16.6	0	63.2	9.5	47.9	20.8	14.6
Feb-03	74.8	16.6	0	65.0	0	51.8	22.2	15.6
Mar-03	74.8	15.1	0	65.5	15.2	57.9	29.0	14.6
Apr-03	74.7	17.1	0	66.2	13.8	58.3	29.0	20.2
May-03	75.0	17.5	0	62.0	13.4	52.4	35.9	18.9
Jun-03	78.6	17.4	0	58.0	0	51.8	37.7	17.8
Jul-03	75.8	17.7	0	60.5	0	56.8	33.2	14.0
Aug-03	75.5	19.3	0	77.7	16.3	51.5	31.4	13.9
Sep-03	74.8	17.9	0	75.0	16.8	51.6	31.4	14.0
Oct-03	72.8	15.9	0	66.2	16.7	52.6	32.4	14.1
Nov-03	75.7	15.7	0	63.0	17.5	58.7	34.2	14.2
Dec-03	72.8	16.0	0	62.8	20.3	52.1	34.4	14.5

Table L 2003 Pumpage Summary Continued

	Membro	Paisley Well	Paisley Booster	Park	Queensdale	University	Water	Woods
Monthly Maximum Day in Cubic Metres Per Day								
Capacity	6,050	3,200	13,738	10,300	5,237	3,300	3,400	65,000
Jan-03	5,077	1,250	8,610	5,880	1,719	2,431	1,927	28,350
Feb-03	4,850	1,240	9,220	5,900	1,927	2,525	2,085	29,750
Mar-03	5,396	1,380	7,050	5,660	1,858	2,447	2,587	28,650
Apr-03	4,768	1,700	7,610	5,620	1,770	2,055	1,967	28,770
May-03	4,772	1,370	7,820	5,660	1,754	2,470	2,119	29,021
Jun-03	4,743	1,370	8,190	6,070	2,494	2,030	2,151	34,330
Jul-03	4,703	1,360	9,930	7,750	1,322	1,914	1,827	30,770
Aug-03	4,646	1,340	7,710	8,100	1,352	1,820	1,902	30,130
Sep-03	4,651	1,480	7,390	7,400	1,387	1,889	1,625	27,730
Oct-03	3,110	1,410	7,310	6,890	1,227	1,950	1,572	27,250
Nov-03	5,287	1,505	8,220	6,770	1,187	2,388	3,047	26,330
Dec-03	5,131	1,420	6,480	4,190	1,229	2,256	1,862	29,870
Monthly Maximum Flow Rate in Litres Per Second								
Capacity	105	55.6	511	178.8	90.9	57.3	59	1,592
Jan-03	62.1	14.5	86.7	68.4	26.7	31.3	19.4	641.9
Feb-03	62.0	14.7	141.7	70.0	28.0	31.6	24.1	655.0
Mar-03	64.3	16.3	139.2	66.7	26.7	30.8	36.3	785.2
Apr-03	65.6	16.0	105.0	65.0	26.0	30.5	23.4	672.6
May-03	65.2	17.5	90.5	70.0	25.0	28.9	26.4	677.2
Jun-03	64.8	16.7	101.7	71.7	20.0	28.5	25.7	690.3
Jul-03	66.3	15.8	114.9	93.3	26.7	28.5	21.6	688.9
Aug-03	67.0	15.7	89.2	95.0	19.2	31.0	22.2	659.5
Sep-03	67.1	28.3	156.7	98.3	19.2	28.9	19.0	658.1
Oct-03	67.7	19.2	101.7	77.5	20.0	28.1	19.4	794.0
Nov-03	68.0	17.4	101.7	81.7	20.0	30.2	18.2	849.3
Dec-03	67.3	16.5	101.7	47.5	19.2	30.3	22.1	657.0

Table M 2003 Monthly Average Daily Pumpage in Cubic Metres Per Day

	Arkell 1	Arkell 6	Arkell 7	Arkell 8	Arkell Collectors	Arkell Recharge	Carter
Capacity	3,273	6,546	6,546	6,546	25,000	9,092	7,855
Jan-03	0	5,137	5,491	5,434	4,420	0	3,502
Feb-03	908	5,887	6,071	5,670	3,350	0	4,620
Mar-03	1,575	6,338	6,127	5,801	2,769	0	3,718
Apr-03	1,007	6,237	3,939	5,235	3,700	1,567	5,989
May-03	843	4,095	4,415	4,049	9,625	8,111	4,167
Jun-03	904	1,412	5,089	4,611	11,137	7,956	3,964
Jul-03	1,039	4,137	3,974	3,520	9,990	7,610	2,234
Aug-03	953	4,589	4,212	4,022	8,410	4,574	376
Sep-03	917	4,714	4,700	4,655	3,832	0	4,616
Oct-03	918	4,586	4,808	4,656	8,121	8,109	2,234
Nov-03	905	3,215	5,069	4,578	7,687	3,347	1,516
Dec-03	740	5,208	5,657	5,071	4,522	0	3,031

	Burke	Calico	Clythe Well	Clythe Booster	Dean	Downey	Emma
Capacity	6,546	5,237	5,237	5,443	2,300	5,237	3,100
Jan-03	5,906	1,029	0	5,220	488	4,052	1,490
Feb-03	5,908	1,069	0	5,361	0	4,018	1,706
Mar-03	5,902	913	0	5,339	187	4,254	2,372
Apr-03	5,870	945	0	5,337	709	4,388	2,388
May-03	5,564	1,023	0	5,104	299	4,384	2,208
Jun-03	5,825	1,028	0	4,921	0	4,352	2,749
Jul-03	5,955	976	0	4,963	0	4,385	2,633
Aug-03	5,775	885	0	4,869	471	4,250	2,532
Sep-03	5,835	1,022	0	5,331	1,143	4,317	2,526
Oct-03	5,639	944	0	5,189	1,066	4,394	2,637
Nov-03	5,638	946	0	4,682	802	3,784	2,686
Dec-03	4,944	920	0	4,943	1,292	4,351	2,859

Table M 2003 Monthly Average Daily Pumpage in Cubic Metres Per Day Continued

	Helmar	Paisley Well	Paisley Booster	Park
Capacity	3,273	3,200	13,738	10,300
Jan-03	996	1,240	5,707	5,144
Feb-03	994	1,229	6,388	5,281
Mar-03	970	1,276	6,154	5,296
Apr-03	764	1,377	6,509	5,412
May-03	1,291	1,312	6,561	3,428
Jun-03	1,285	1,272	6,661	4,491
Jul-03	845	1,345	6,516	6,285
Aug-03	813	539	5,825	6,432
Sep-03	834	1,279	5,717	6,555
Oct-03	834	1,387	5,512	5,100
Nov-03	854	1,409	4,973	5,059
Dec-03	858	1,417	4,854	228

	Queensdale	University	Water	Woods
Capacity	5,237	3,300	3,400	65,000
Jan-03	1,401	2,135	1,702	22,144
Feb-03	1,573	2,366	1,962	24,487
Mar-03	1,619	744	1,941	24,468
Apr-03	1,706	1,049	1,876	23,884
May-03	1,326	1,983	1,860	24,141
Jun-03	1,309	1,879	1,869	24,098
Jul-03	1,245	1,764	1,688	22,086
Aug-03	1,394	1,642	1,660	20,532
Sep-03	1,323	1,780	1,542	21,802
Oct-03	1,161	1,847	983	23,771
Nov-03	1,141	1,793	1,640	21,790
Dec-03	1,178	1,820	1,479	23,034

APPENDIX A
CONSOLIDATED CERTIFICATE OF APPROVAL

Ontario

Ministry of the Environment **Ministere de l'Environnement**

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL DRINKING WATER SYSTEMS
NUMBER 2866-5SQHGF

The Corporation of the City of Guelph
59 Carden Street
Guelph, Ontario
N1H 3A1

Site Location: P.M. Woods Station
29 Waterworks Place
Guelph City, County of Wellington
N1E 6P7

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 City of Guelph
59 Carden Street
Guelph, Ontario
N1H3A1

PART 1 - APPROVED DRINKING-WATER SYSTEM DESCRIPTION

1.1 for part of a drinking-water system serving the City of Guelph, rated as set out in Part 4 of this approval, consisting of the following:

Treatment System

F. M. Woods Station

- consisting of five distinct systems, the Arkell Well Field, the Arkell Spring Collector System, the Arkell Artificial Recharge System, the Carter Well Field, and the P.M. Woods Pumping Station and Reservoir.

Arkell Well Field

- a groundwater supply system, comprising of four drilled production wells consisting of the following:

Arkell Well #1

a 300 mm diameter, 14.2 m deep drilled groundwater production well

(Well PW1/66) located in the Arkell Spring Grounds, at East Part of Lot 5, Conc. 10 in the Township of Puslinch, County of Wellington at (NAD27: UTM Zone 17: 567470.00 m E, 4822357.00 m N), rated for 37.9 L/s to a maximum volume of 3,273 m^3/d, equipped with a vertical turbine well pump rated at 37.9 L/s at a TDK of 19.8 m, with a 200 mm diameter discharge line, discharging to a 400 mm transmission main to Arkell Manhole #29.

Arkell Well #6

a 300 mm diameter, 44.2 m deep drilled groundwater production well (Well PW6/63) located in the Arkell Spring Grounds, at Lot 5 Conc. 10 in the Township of Puslinch, County of Wellington at (NAD27: UTM Zone 17: 567470.00 m E, 4822419.00 m N.), rated for 75.8 L/s to a maximum volume of 6,546 m^3/d, equipped with a submersible well pump rated at 75.8 L/s at a TDH of 39.6 m, with a 200 mm diameter discharge line, discharging to 350 mm transmission main to Arkell Manhole #30.

Arkell Well #7

a 300 mm diameter, 43.8 m deep drilled groundwater production well (Well PW7/63) located in the Arkell Spring Grounds, at Lot 4 Conc. 10 in the Township of Puslinch, County of Wellington at (NAD27: UTM Zone 17: 567492.00 m E, 4822419.00 m N), rated for 75.8 L/s to a maximum volume of 6,546 m^3/d, equipped with a submersible well pump rated at 75.8 L/s at a TDH of 38.1 m, with a 200 mm diameter discharge line, discharging to a 400 mm transmission main to Arkell Manhole #29, a 300 kW Diesel Engine Standby Power Generator set located in a separate enclosure adjacent to the pumphouse.

Arkell Well #8

a 300 mm diameter, 42.1 m deep drilled groundwater production well (Well PW8/63) located in the Arkell Spring Grounds, in the Township of Puslinch, County of Wellington at (NAD27: UTM Zone 17: 568412.00 m E, 4822459.00 m N), rated for 75.8 L/s to a maximum volume of 6,546 m^3 /d, equipped with a submersible well pump rated at 75.8 L/s at a TDH of 39.6 m, with a 200 mm diameter discharge line, discharging to 350 mm transmission main to Arkell Manhole #30.

Arkell Springs Collector System (Glen Collector System)

- consisting of a series of small diameter collector pipes capturing shallow groundwater rated for 289.4 L/s and a maximum daily flow of 25,000 m^3 /d, discharging to an aqueduct consisting of 900 mm diameter reinforced concrete gasketed pipe between the Arkell Spring Grounds and Scout

Camp and a 1,050 mm concrete section installed to the F.M.Woods Pumping Station.

Arkell Artificial Recharge System

- located in the Arkell Spring Grounds at Lot 3, Conc. 10, Township of Puslinch, County of Wellington, (NAD27: UTM Zone 17: 567193.00 m E, 4823156.00 m N), consisting of one (1) vertical turbine pump rated at 107.17 L/s at a TDH of 47.2 m, 300 mm discharge line to infiltration basin and trenches.

Carter Well Field

- consisting of two drilled production wells, located at 747 Victoria Road South in the Carter-Stone Spring Grounds, in the City of Guelph, (NAD27: UTM Zone 17: 564119.00 m E, 4820874.00 m N), rated for 91 L/s to a maximum volume of 7,855 m^3/d, consisting of the following:

Carter Well No.1 (Well PW1/89)

a 250 mm diameter, 20.1 m deep drilled groundwater production, equipped with a submersible well pump rated at 61 L/s at a TDH of 29 m, with a 350 mm diameter discharge line, discharging to the Scout Camp valve chamber.

Carter Well No.2 (Well PW2/62)

a 250 mm diameter, 20.7 m deep drilled groundwater production well, equipped with a submersible well pump rated at 61 L/s at a TDH of 29 m, with a 350 mm diameter discharge line, discharging to the Scout Camp valve chamber.

F. M. Woods Pumping Station and Reservoir

- located at 29 Waterworks Place in the City of Guelph with a firm capacity of 1,061 L/s, housing treatment, storage and control facilities, including:

-underground reservoir approximately 38 m x 82 m x 3 m with a storage volume of 9,000 m^3;

-underground reservoir approximately 53 m x 53 m x 5 m S.W.D. with a storage volume of 14,000 m^3;

-underground reservoir approximately 41 m x 44 m x 5.7 m S.W.D. with a storage volume of 9,000 m^3;

-five (5) high lift, vertical turbine pumps drawing from wet wells in the 9,000 m^3 reservoir with the following capacities:

two (2) @ 379 L/s at a TDK of 80.5m,

one (1) @ 227 L/s at a TDK of 69.5 m,

one (1) @ 303 L/s at a TDK of 71.3 m,

one (1) @ 152 L/s at a TDK of 85.3 m;

-valve chambers, metering chamber, discharge piping, flowmeter, valving and appurtenances;

-one (1) low lift pump with a capacity of 379 L/s at a TDK of 6.1 m to fill the 14,000 m^3 reservoir;

-a sodium hypochlorite disinfection system, consisting of three (3) 5,900 L capacity sodium hypochlorite solution storage tanks and three (3) chemical metering pumps (two duty, one standby) with a feed line discharging into the reservoir inlet at valve chamber 1A and the water outlet from the reservoir;

-emergency eyewash station and shower station;

-a 750 kW diesel engine stand-by power generator set located in an adjacent room.

Burke Well

- a groundwater supply system serving the City of Guelph, rated at a maximum daily flow of 6,546 m^3/d;

- a 300 mm diameter, 78.9 m deep drilled groundwater production well (Well PW2/66) located at 164 Arkell Road in the City of Guelph, (NAD27: UTM Zone 17: 564611.00 m E, 4818626.00 m N) rated for 75.8 L/s to a maximum volume of 6,546 m^3/d, equipped with a vertical turbine well pump rated at 75.7 L/s at a TDK of 48.8 m, with 250 mm diameter discharge piping, flowmeter, valving and appurtenances, discharging to an on-site underground reservoir;

- underground reservoir approximately 6.9 m x l3.9 m x 3.0 m S.W.D. with an useable storage volume of 303 m^3;

- pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 75.7 L/s at a TDK of 67.1 m, equipped with 250 mm diameter discharge piping, flowmeter, valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a 750 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and chlorine residual analyzer.

Calico Well

- a groundwater supply system serving the City of Guelph, rated at a maximum daily flow of 5,237 m^3 /d:

  - a 305 mm diameter, 64.3 m deep drilled groundwater production well (Well PW4/76) located in Part Lot 10, Concession 2, Township of Guelph-Eramosa, County of Wellington (NAD27: UTM Zone 17: 554177.00 m E, 4820725.00 m N), rated for 60.6 L/s to a maximum volume of 5,237 m^3/d, equipped with a vertical turbine well pump rated at 60.7 L/s at a TDK of 31.4 m, with a 200 mm diameter discharge line, discharging through a Trevi fountain to an on-site underground reservoir;

  - underground reservoir approximately 6.7 m x 8.8 m x 2.54 m S.W.D. with a useable storage volume of 147 m^3 ;

  - pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 60.7 L/s at a TDK of 67.1 m, equipped with 200 mm diameter discharge piping, flowmeter, valving and appurtenances;

  - a sodium hypochlorite disinfection system, consisting of a 300 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and a chlorine residual analyzer.

Clythe Creek Well and Booster Pumping Station

- a groundwater supply system rated at a maximum daily flow of 5,237 m^3/d and a booster pumping station with a firm capacity of 5,443 m^3/d, serving the City of Guelph, consisting of the following:

  - a 305 mm diameter, 64 m deep drilled groundwater production well (Well PW1/73) located at 22 Watson Road in the City of Guelph, (NAD27: UTM Zone 17: 563587.00 m E, 4824911.00 m N), rated for 60.6 L/s to a maximum volume of 5,237 m^3/d, equipped with a submersible well pump rated at 60.7 L/s at a TDK of 47.2 m, with a 200 mm diameter discharge line, discharging to an on-site underground reservoir, currently not connected;

  - 250 mm reservoir fill line from the distribution system;

- underground reservoir approximately 21.9 m x 13.75 m x 3.25 m S.W.D. with a useable storage volume of 672 m^3 ;

- pumphouse building located above the reservoir, housing the well pump and two vertical turbine high lift pumps each rated at approximately 63 L/s at a TDK of 76 m, equipped with 200 mm diameter discharge piping, flowmeter, valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a 300 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and chlorine residual analyzer;

- a 300 kW Diesel Engine Stand-by Power Generator set located in the pump house.

Dean Well

- a groundwater supply system serving the City of Guelph rated at a maximum daily flow of 2,300 m^3 /d consisting of the following:

    - a 330 mm diameter, 57.2 m deep drilled groundwater production well (Well PW1/58) located at 103 Dean Avenue in the City of Guelph, (NAD27: UTM Zone 17: 560351.00 m E, 4820500.00 m N) rated for 26.6 L/s and a maximum daily flow of 2,300 m^3/d; equipped with a submersible well pump currently rated at 26.7 L/s at a TDK of 57.9 m, with a 100 mm diameter discharge line, discharging to an on-site underground reservoir;

    - underground reservoir approximately 7.1 m x 7.1 x 2.2 m with a useable storage volume of 109 m^3 ;

    - pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 26.7 L/s at a TDK of 70.1 m, equipped with 150 mm diameter discharge piping, flowmeter, valving and appurtenances;

    - a sodium hypochlorite disinfection system, consisting of a 500 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and a chlorine residual analyzer.

Downey Road Well

- a groundwater supply system serving the City of Guelph, rated at a maximum daily flow of 5,237 m^3/d consisting of the following:

- a 300 mm diameter 73.8 m deep drilled groundwater production well (Well PW5/67) located at 28 Downey Road in the City of Guelph, (NAD27: UTM Zone 17: 560072.00 m E, 4819047.00 m N), rated for 60.6 L/s to a maximum volume of 5,237 m^3/d, equipped with a vertical turbine well pump rated at 60.7 L/s at a TDK of 5.7 m, with a 200 mm diameter discharge line, discharging to an on-site underground reservoir;

- underground reservoir 6.1 m x 4.3 mx l.6 m and circular wetwell with a radius of 0.61 m and 1.5 m S.W.D. with a useable storage volume of 42.6 m^3;

- pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 60.7 L/s at a TDK of 70.1 m, equipped with 200 mm diameter discharge piping, flowmeter, valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a 500 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and a chlorine residual analyzer.

Emma Street Well

- a groundwater supply system serving the City of Guelph rated at a maximum daily flow of 3,100 m /d consisting of the following:

  - a 457 mm diameter, 47.2 m deep drilled groundwater production well (Well PW1/31) located at 93 Emma Street, between Metcalfe Street and Delhi Street in the City of Guelph, (NAD27: UTM Zone 17: 559490.00 m E, 4823947.00 m N), rated for 35.9 L/s and a maximum daily flow of 3,100 m^3/d currently equipped with a submersible well pump rated at 34.8 L/s at a TDH of 47.2m, with a 100 mm diameter discharge piping, flowmeter, valving and appurtenances;

  - a sodium hypochlorite disinfection system, consisting of one (1) 500 L capacity sodium hypochlorite storage tank and two (2) chemical metering pumps (one duty and one standby) with a feed line discharging to the well discharge line and a chlorine residual analyzer.

Helmar Well

- a groundwater supply system serving the City of Guelph, rated at a maximum daily flow of 3,273 m^3/d, consisting of the following:

- a 305 mm diameter, 77.7 m deep drilled groundwater production well (Well PW6/66) located at 673 Woodlawn Road between Muskoka Drive and the entrance to Guelph Lake Conservation Area in the City of Guelph, (NAD27: UTM Zone 17: 560206.00 m E, 4826731.00 m N), rated for 37.9 L/s to a maximum volume of 3,273 m^3/d, equipped with a submersible well pump rated at 37.8 L/s at a TDK of 42.6 m, with a 200 mm diameter discharge line, discharging through a Trevi fountain to an on-site underground reservoir;

- raw water aeration system consisting of 1.2 kW air blower and vent hood;

- underground reservoir approximately 8.8 m x 6.7 m x 2.3 m S.W.D. with a useable storage volume of 124.5 m^3 ;

- pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 37.8 L/s at a TDH of 53 m, equipped with 150 mm diameter discharge piping, flowmeter, valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a 750 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and chlorine residual analyzer;

- a sodium silicate system for iron sequestration, consisting of a 200 L capacity sodium silicate solution storage tank and one (1) chemical metering pump with a feed line to the well pump discharge line.

Membro Well

- a groundwater supply system serving the City of Guelph, rated at a maximum daily flow of 6,050 m^3/d, consisting of the following:

    - a 254 mm diameter , 75.0 m deep drilled groundwater production well (Well PW1/53) located at 290 Water Street in the City of Guelph, approximately 67.0 m east of Denver Road, (NAD27: UTM Zone 17: 560059.00 m E, 4820590.00 m N), rated for 70 L/s to a maximum volume of 6,050 m^3/d, equipped with a submersible well pump rated at 70 L/s at a TDH of 36.6 m, with a 200 mm diameter discharge line, discharging through a Trevi fountain to an on-site underground reservoir;

    - underground reservoir approximately 9.15 m x 6.15 m x 1.6 m S.W.D. with a useable storage volume of 78.73 m^3;

- pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 70 L/s at a TDH of 85.3 m, equipped with 200 mm diameter discharge piping, flowmeter, valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a 500 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and a chlorine residual analyzer;

- a 250 mm diameter watermain from the pumphouse to the watermain on Water Street.

Paisley Well and Booster Pumping Station

- a groundwater supply system serving the City of Guelph, and a booster pumping station with a firm capacity of 13,738 m^3/d, consisting of the following:

    - a 305 mm diameter, 71.9 m deep drilled groundwater production well (Well PW4/59) located at 810 Paisley Road in the City of Guelph, (NAD27: UTM Zone 17: 557346.00 m E, 4820196.00 m N) rated for 37.0 L/s and a maximum daily flow of 3,200 m^3/d, currently equipped with a submersible well pump rated at 32.7 L/s at a TDH of 61.0 m, with a 150 mm diameter discharge line, discharging to an on-site underground reservoir;

    - underground reservoir consisting of two cells approximately 48 m x 36 m x 4.2 m S.W.D. enclosing chlorine contact chambers and a high lift wet well with a 5.8 m S.W.D, with a useable storage volume of 13,608 m^3;

    - pumphouse building located above the reservoir;

    - 250 mm diameter reservoir fill line from the distribution system;

    - three (3) centrifugal in-line booster pumps: two rated at 53 L/s at a TDH of 36.6 m, one rated at 75.8 L/s at a TDH of 36.6 m, one (1) vertical turbine in-line booster pump, drawing from the high lift wet well, rated at 53 L/s at a TDH of 62.2 m, discharging into a 450 mm diameter discharge line with valving and appurtenances;

    - four (4) vertical turbine high lift booster pumps, drawing from the high lift wet well, three rated at 53 L/s at a TDH of 82.3 m and one rated at 75.4 L/s at a TDH of 82.3 m, discharging into a 450 mm diameter discharge line with valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a two (2) 700 L capacity sodium hypochlorite solution storage tanks and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and a chlorine residual analyzer;

- a 379 kW Diesel Engine Stand-by Power Generator set located in the pumphouse.

Park Wells

- a groundwater supply system serving the City of Guelph rated at a maximum daily flow of 10,300 m^3/d consisting of the following:

    - two groundwater production wells housed in a pumphouse at 183 Metcalfe Street south of Pleasant Road in the City of Guelph, (NAD27: UTM Zone 17: 560300.00 m E, 4823708.00 m N);

    - Park Well No. 1 (Well PW1/37) is a 508 mm diameter drilled well, 56.3 m deep, currently equipped with a vertical turbine well pump rated at 50.8 L/s at a TDH of 85.3 m, with a 200 mm diameter discharge line;

    - Park Well No. 2 (Well PW1/47) is a 508 mm diameter drilled well, 57.9 m deep, currently equipped with a submersible well pump rated at 50.8 L/s at a TDH of 85.3 m, with a 200 mm diameter discharge line;

    - 200 mm diameter discharge piping, flowmeters, valving and appurtenances;

    - a sodium hypochlorite disinfection system, consisting of two (2) 300 L capacity sodium hypochlorite solution storage tanks and four (4) chemical metering pumps (two duty, two standby) with a feed line discharging into the well discharge lines;

    - a 150 kW Diesel Engine Stand-by Power Generator set located in the separate room in the pumphouse.

Queensdale Well

- a groundwater supply system serving the City of Guelph, rated at a maximum daily flow of 5,237 m^3/d, consisting of the following:

    - a 305 mm diameter 64 m deep drilled groundwater production well (Well PW1/70) located at 69 Queensdale Crescent in the City of Guelph, (NAD27: UTM Zone 17: 557938.00 m E, 4819214.00 m N), rated for 60.7 L/s to a maximum of 5,237 m^3/d, equipped with a submersible well pump rated at 60.7 L/s at a TDH of 32 m, with a 200 mm diameter discharge line, discharging to an on-site underground reservoir;

- underground reservoir approximately 12.5 m x 6.9 m x 2.74 m S.W.D. with a useable storage volume of 225 m^3;

- pumphouse building located above the reservoir, housing the well pump and vertical turbine high lift pump rated at approximately 60.7 L/s at a TDK of 64 m, equipped with 200 mm diameter discharge piping, flowmeter, valving and appurtenances;

- a sodium hypochlorite disinfection system, consisting of a 500 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and chlorine residual analyzer;

- a sodium silicate system for iron sequestration, consisting of a 200 L capacity sodium silicate solution storage tank and one (1) chemical metering pumps with a feed line to the well pump discharge line.

University of Guelph Well and Booster Pumping Station

- a groundwater supply system and booster pumping station with a capacity of 5,108 m /d serving the City of Guelph, consisting of the following:

    - a 305 mm diameter, 64 m deep drilled groundwater production well (Well PW1/73) located at 420 Edinburgh Road in the City of Guelph, (NAD27: UTM Zone 17: 560572.00 m E, 4820903.00 m N), rated for 38.2 L/s and a maximum daily flow of 3,300 m^3/d; currently equipped with a submersible well pump rated at 30.3 L/s at a TDK of 77.1 m, with a 200 mm diameter discharge line, discharging to an on-site underground reservoir;

    - 200 mm reservoir fill line from the distribution system;

    - underground reservoir approximately 25.6 m x 25.6 m x 3.6 m S.W.D. with a useable storage volume of 2,287 m^3;

    - pumphouse building located above the reservoir, housing the well pump and two vertical turbine high lift pumps one rated at approximately 25.3 L/s at a TDK of 82.3 m and one rated at approximately 47.3 L/s at a TDK of 82.3 m, equipped with 200 mm diameter discharge piping, flowmeter, valving and appurtenances;

    - a sodium hypochlorite disinfection system, consisting of a 500 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the reservoir inlet and chlorine residual analyzer;

    - a 120 kW Diesel Engine Stand-by Power Generator set located in the pumphouse.

Water Street Well

- a groundwater supply system serving the City of Guelph rated at a maximum daily flow of 3,400 m^3/d consisting of the following:

  a 305 mm diameter 64 m deep drilled groundwater production well (Well PW3/53) located at 200 Water Street in the City of Guelph, (NAD27: UTM Zone 17: 560354.00 m E, 4820160.00 m N), rated for 39.4 L/s and a maximum daily flow of 3,400 m^3/d; currently equipped with a vertical turbine well pump rated at 18.9 L/s at a TDK of 106.7 m, with a 100 mm diameter discharge line, flowmeter, valving and appurtenances;

  a sodium hypochlorite disinfection system, consisting of a 500 L capacity sodium hypochlorite solution storage tank and two (2) chemical metering pumps (one duty, one standby) with a feed line discharging into the well discharge line and a chlorine residual analyzer.

all in accordance with the Engineer's Report entitled 'Guelph Waterworks', prepared by Acres & Associated Environmental Limited and dated January 31, 2001, and any additional information and documentation that may have been provided in support of the Report.

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 Words and phrases not defined in this approval 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, unless the context requires otherwise.

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

"approved drinking-water system" means the part of the drinking-water system to which this approval applies

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

"operating authority" and "owner" mean, in addition to the respective meanings given in the Act, the Corporation of the City of Guelph

"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 for all or part of the approved drinking-water system as set out in Table 4.0

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

"adverse effect", "contaminant", "impairment" and "natural environment" shall have the same meanings as in the *Environmental Protection Act,* R.S.O.1990, and the *Ontario Water Resources Act,* R.S.O.1990, c. O.40

PART 3 - GENERAL

Compliance

3.1 The owner and operating authority shall operate the approved drinking-water system in accordance with the SDWA, any applicable regulations made there under, 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 approved 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 approved drinking-water system.

Build, etc. in Accordance

3.5 Except as otherwise provided by this approval, the approved 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.I 8.

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 approved 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 approved 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 under the SDWA, including any and all inspections authorized by the SDWA.

Information

3.17 Any information requested, by the Ministry, concerning the approved 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 approved drinking-water 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 quantity of water treated by the treatment systems listed in column one of Table 4.0 shall not exceed the corresponding maximum flow rate set out in column two and the maximum daily volume set out in column three.

Table 4.0; Rated Capacity

Treatment System	Maximum Flow Rate (L/sec)	Maximum Daily Volume (m^3/day)
Burke Well Pumphouse	114	6,546
Calico Well Pumphouse	91	5,237
Clythe Creek Well and Booster Pumping Station	189	5,443
Dean Well Pumphouse	40	2,300
Downey Road Well Pumphouse	91	5,237
Emma Street Well Pumphouse	54	3,100
Helmar Well Pumphouse	57	3,273
Membro Well Pumphouse	105	6,050
Paisley Well and Booster Pumping Station	511	13,738

Park Well Pumphouse	179	10,300
Queensdale Well Pumphouse	91	5,237
University of Guelph Well and Booster Pumping Station	109	5,108
Water Street Well Pumphouse	59	3,400
F.M.Woods Station (treating water from Arkell Wells #1,#6,#7 and #8; Carter Wells #1 and #2; Arkell Spring Collector system; and Arkell Artificial Recharge System)	1592	65,000

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. fighting a large fire; or

ii. 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 approved 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 or systems; and

ii. the daily maximum flow rate and maximum daily volume of water conveyed from the treatment system or systems 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 4, 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 approved 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 approved 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 approved 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 approved 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 approved 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 or systems and assessing

the performance of the approved 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 approved 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.

vii. scheduled inspections of all production wells, standby wells, test wells and monitoring wells;

viii. procedures for the inspection and maintenance of all above grade and below grade well structures and appurtenances; and

ix. a remedial action plan to be implemented where an inspection reveals that the status of a well or well component does not meet regulatory requirements or presents a drinking water health hazard.

6.5.1 Subparagraphs vii, viii and ix of condition 6.5 come into effect on **March 31, 2004.**

6.6 Procedures necessary to the operation of any physical alterations of the approved 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 approved drinking-water 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 approved drinking-water system as constructed shall be retained.

6.9 An alteration to the approved drinking-water system shall be incorporated into Process and Instrumentation Diagrams 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 For the purpose of this Part, the following upgrade lists shall apply:

Upgrade List A -Good Groundwater

1. Provide primary disinfection appropriate for a ground water raw water supply in accordance with O. Reg. 170/03, Schedule 1, section 1-3.

Upgrade List B - GUDI with insitu-filtration

1. Provide treatment appropriate for ground water supply that is under the direct influence of surface water and has effective "in-situ" filtration, in accordance with O. Reg. 170/03, Schedule 1, section 1-4;

2. Delineate all wellhead protection areas in accordance with the latest version of the Ministry protocol titled *"Delineation of Wellhead Protection Areas For Municipal Groundwater Supply Wells Under Direct Influence of Surface Water"* and provide copies of the resulting reports to the Director; and

3. Submit a report to the Director prepared in accordance with the latest version of the Ministry document titled *"Development ofMicrobial Contamination Control Plans for Municipal Groundwater Supply Wells under Direct Influence of Surface Water with Effective In-situ Filtration "*.

8.2 In accordance with O. Reg. 170/03, the owner shall implement the upgrade requirements set out in **either** Upgrade List A or Upgrade List B for each of the Burke Well and the Downey Road Well works by the date specified:

Burke Well:	Upgrade List A by **June 30,2003**
	Upgrade List B by **March 31, 2006**
Downey Road Well:	Upgrade List A by **July 31,2005**
	Upgrade list B by **March 31 2006**

8.2.1 Prior to implementing Upgrade List A in respect of the Burke Well or the Downey Road Well, or both, the owner shall submit a report to the Director, prepared in accordance with the work plan, detailed in the December 20, 2002 letter of Gartner Lee Limited and obtain written approval from the Director to proceed with implementing Upgrade List A.

8.3 In accordance with O. Reg. 170/03, for each of Carter Well No. 1, Carter Well No. 2, the Arkell Springs Collector System (Glen Collector System) and the Arkell Artificial Recharge system, the owner shall implement the upgrade requirements set out in Upgrade List B by **June 30, 2006:**

8.4 In accordance with O. Reg. 170/03, the owner shall implement the upgrade requirements set out in Upgrade List A for the following systems by the dates specified:

Water Street Well by **June 30, 2005**
Park Well Nos. 1 and 2 by **August 31, 2004**
Emma Street Well by **August 31, 2004**
Paisley Road Well Pumping Station by **June 30, 2004**

8.5 By date specified, the owner shall implement the following works and measures:

(i) install backflow prevention devices on all existing reservoir overflow lines by **June 1, 2004;**

(ii) install a re-chlorination system at the Paisley Road Well Pumping Station and Reservoir and the Robertson Booster Pumping Station by **June 30, 2004;**

(iii) provide a control system at each supply and treatment system connected to the City of Guelph drinking-water distribution system to alarm operator staff when the level of free chlorine residual concentration in the treated water goes below a pre-set level by **June 30, 2006;**

(iv) engage a Professional Geoscientist, a Professional Engineer who is exempt from the *Professional Geoscientists Act, 2000,* S.O. 2000, c. 13, by s. 3(3)2 of that act, or a Licensed Well Contractor to inspect the Burke, Downey and Carter Outside wells to investigate whether the wells are in a fit state of repair that is:

(a) equal to or better than the construction requirements, including casing, annular space, siting, pump installation and venting, that the person constructing the well was required to meet on the day that the well was constructed;

(b) sufficient to prevent the entry of surface water or other foreign materials;

(c) secure against vandalism or sabotage; and

(d) remedy any deficiencies identified during the investigation required so that the well is brought into a fit state of repair

that is in compliance with sub section (a), (b) and (c);

(v) implement a monitoring program at the Arkell Spring Collector and Arkell Artificial Recharge Systems to monitor changes in source water quality and to provide an indication of potential changes in the degree of effective filtration by **March 31, 2004;**

(vi) submit a report to the Director, prepared by a Professional Geoscientist or a Professional Engineer who is exempt from the *Professional Geoscientists Act, 2000,* S.O. 2000, c. 13, by 3(3)1f2 of that act, that assesses the structural condition of the Arkell Artificial Recharge System and Arkell Spring Collector System and identifies any structural deficiencies that may render the system susceptible to surface contamination by **March 31, 2004;**

(vii) submit a report to the Director that is prepared by a licensed well contractor detailing any deficiencies from the construction standards set out in sections 12 through 14 of O. Reg. 903 for all monitoring wells owned or operated by the owner located within a 50 day time of travel to the production wells serving the approved drinking-water system by **March 31, 2004;** and

(viii) correct any deficiencies outlined in the reports required by 8.5(vi) and 8.5(vii) by **June 30, 2006.**

Interim Measures

8.6 For the Burke Well and Downey Road Well works, the owner shall implement the following interim measures:

(i) maintain a target free chlorine residual of at least 0.75 mg/L in the treated water entering the distribution system;

(ii) provide for the activation of a centralized alarm when the free chlorine residual in water entering the distribution system is below 0.5 mg/L;

(iii) provide continuous monitoring of free chlorine residual and turbidity in the treated water entering the distribution system; and

(iv) provide continuous monitoring of the level of water in the respective reservoirs.

8.6.1 For the Carter Well, Arkell Springs Collector System (Glen Collector System) and the Arkell Artificial Recharge system, the owner shall implement the following interim measures:

(i) maintain a target free chlorine residual of at least 0.85 mg/L in the treated water entering the distribution system;

(ii) provide for the activation of a centralized alarm when the free chlorine residual in water entering the distribution system is below 0.6 mg/L;

(iii) provide continuous monitoring of free chlorine residual and turbidity in the treated water entering the distribution system; and

(iv) provide continuous monitoring of the level of water in the respective reservoirs.

8.6.2 The interim measures required by conditions 8.6 and 8.6.1 shall be maintained from the date the conditions come into force to the commencement of operation of the associated upgrades required by conditions 8.2 through 8.4.

8.7 In lieu of or more of the requirements of conditions 8.2 through 8.4, the owner may construct an alternative to one of more parts of the approved drinking-water system provided all necessary approvals are obtained and the alternative part is fully operational on or before **the earliest applicable deadline from 8.2 to 8.4.**

8.8 All reports required by this part shall be in a form and content satisfactory to the Director.

Requirement not an approval

8.9 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. - Correspondence dated September 30, 2003 from James B. Etienne, P.Eng., Director of Environmental Services, The City of Guelph

- an E.mail dated October 20, 2003 from Iva Danilovic, Process Designer, Associated Engineering, attaching a copy of October 3, 2003 minutes of meeting No.2 held at P.M. Woods Pumping Station

- an E.mail dated October 21 2003 from Elia Edwards, P.Eng., Process Engineer,
Associated Engineering attaching a table dated October 21 2003, demonstrating
"CT" assessment of drinking water systems in the City of Guelph

- a CD detailing photographs of wells confirming upgrade items described in
condition 5.1.b. (i), (ii), (iii), (iv) and (v) of certificate 6306-5MXHLN dated May
29, 2003

-an E.mail dated October 27, 2003 from Dennis Mutti, P.Eng., Practice Area Leader, Environmental Infrastructure, Stantec

- an E.mail dated October 27, 2003 from Iva Danilovic, Process Designer, Associated Engineering, attaching a spread sheet describing "Guelph Water Works South End Free Chlorine Residual"

- an E.mail dated October 27, 2003 from Iva Danilovic, Process Designer, Associated Engineering, attaching a letter dated October 29, 2003 from Elia Edwards, M.A.S.S., P.Eng., Process Engineer - Water Division, Associated Engineering, addressed to Ranee Mahalingam, P.Eng., Ministry of the Environment

- an E.mail dated October 29,2003 from Dennis Mutti, P.Eng., Practice Area Leader, Environmental Infrastructure, Stantec

- an E.mail dated October 31,2003 from Dennis Mutti, P.Eng., Practice Area Leader, Environmental Infrastructure, Stantec

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 Certificate of Approval revokes and replaces Certificate(s) of Approval No. 6306-5MXHLN issued
on May 29, 2003

All or part of this approval may be reviewable in accordance 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 any 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, 2002*
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 18th day of November, 2003

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

RM/
District Manager, MOE Guelph
Elia Edwards, Acres & Associated Environmental Ltd.
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