

Ministry of the Environment

June 2009

ANNUAL REPORT 2007-2008

CHIEF DRINKING WATER INSPECTOR



Protecting our environment.

 **Ontario**

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TABLE OF CONTENTS

Message from the Chief Drinking Water Inspector	2
Introduction	5
2007-08 Report Highlights	6
Ontario's Drinking Water Safety Net	9
Working Together to Protect Drinking Water - Key Initiatives	13
Source Protection	13
Municipal Licensing	18
Lead in Drinking Water	22
New Approach to Regulating Small Drinking Water Systems	28
Performance of Ontario's Drinking Water Systems	31
2007-08 Drinking Water Quality Report	31
Setting Drinking Water Standards	32
Overview of Performance	
• <i>Municipal Residential Drinking Water Systems</i>	34
• <i>Non-Municipal Year-Round Residential Drinking Water Systems</i>	34
• <i>Systems Serving Designated Facilities</i>	36
2007-08 Drinking Water Test Results from:	
• <i>Municipal Residential Drinking Water Systems</i>	37
• <i>Non-Municipal Year-Round Residential Drinking Water Systems</i>	37
• <i>Systems Serving Designated Facilities</i>	37
2007-08 Drinking Water Inspection Report	51
Drinking Water System Inspection Program	
• <i>Municipal Residential Drinking Water System Inspection Results</i>	53
• <i>Non-Municipal Year-Round Residential Drinking Water Systems and Systems Serving Designated Facilities Inspection Results</i>	58
2007-08 Licensed Laboratory Inspection Program	61
2007-08 Convictions	66
Certification and Training	67
2007-08 Education and Outreach Activities	71
The Year Ahead	77
Glossary	80
List of Figures, Charts and Tables	82
Appendices	84
1: New Municipal Residential Drinking Water System Inspection Rating Methodology for 2008-09	85
2: 2007-08 Inspection Ratings and Drinking Water Quality Results	88
3: 2007-08 Orders	106
4: 2007-08 Convictions	109
5: Examples of Health Related Chemical Drinking Water Quality Standards	110

Message from the Chief Drinking Water Inspector

As Ontario's new Chief Drinking Water Inspector, I am very pleased to present the fourth Chief Drinking Water Inspector's Annual Report, which highlights drinking water protection activities for the period from April 1, 2007 to March 31, 2008.



The past year has been busy for those of us who manage drinking water issues in Ontario. We have moved towards a model of continuous improvement through our provincial licensing program for municipal drinking water systems. We continue to set a national example in source protection planning through our current technical assessment and planning phase. We are dealing with important issues such as lead in

our drinking water and have demonstrated how we can address these issues through collaboration and partnership, with initiatives such as the Lead Action Plan.

This year's report has a new format that provides perspectives on these successes and examples of partnerships that help to deliver safe drinking water to Ontarians. This annual report, required under the Safe Drinking Water Act, also demonstrates our commitment to transparency and accountability, providing information and performance data to reinforce your understanding of the quality of drinking water across the province. We are also using this year's report to profile key partnerships and actions that help to ensure Ontario's reputation as a leader in drinking water management.

We believe that everyone in Ontario is entitled to expect that the drinking water that comes from regulated drinking water systems is of high quality. For example, in 2007-08, municipal residential drinking wa-

ter systems across the province had more than 520,000 drinking water quality tests analyzed by licensed laboratories—and 99.85 per cent of the tests met Ontario’s rigorous drinking water quality standards. This is just one of the successful results in this year’s report.

The ministry and its partners share a common commitment to excellence through continuous improvement, and we will continue to work together toward the goal of 100 per cent regulatory compliance, while continuing to identify and address areas for improvement in the future.

Since the release of the first Chief Drinking Water Inspector’s Annual Report in 2006, Ontario has continued to safeguard drinking water

sources and treatment systems.

Ontario’s drinking water safety net continues to evolve and set the example for leadership in drinking water protection.

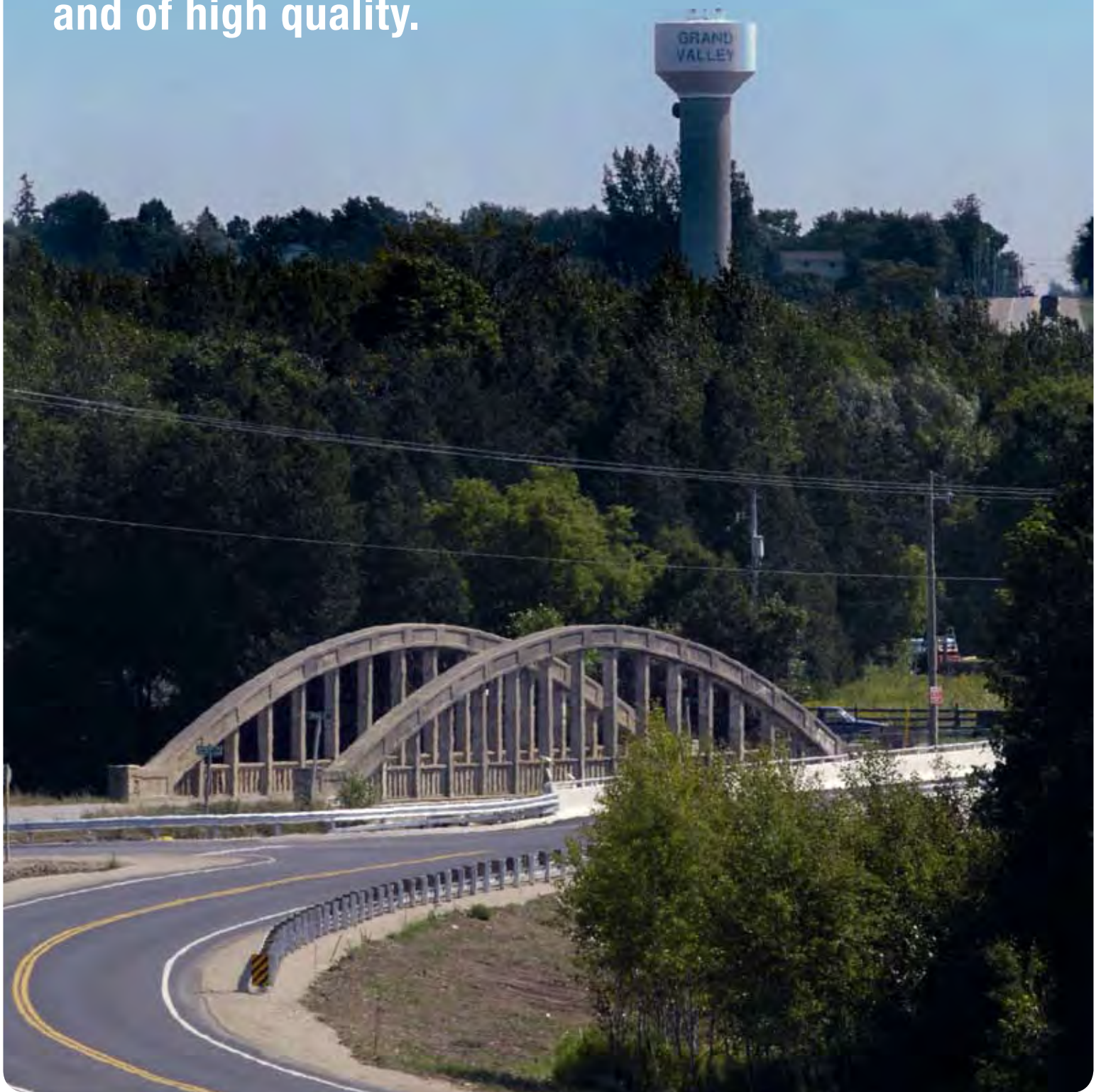
I want to take this opportunity to thank all of our drinking water partners and stakeholders across Ontario for their hard work and continued support. Rest assured that we take our drinking water management responsibility very seriously.

John Stager

Chief Drinking Water Inspector



Everyone in Ontario is entitled to expect that the drinking water that comes from regulated drinking water systems is safe and of high quality.



Introduction

This is the fourth Chief Drinking Water Inspector's annual report. The report provides details on the performance of Ontario's drinking water systems between April 1, 2007 and March 31, 2008.

Ontario's Chief Inspector is appointed under the Safe Drinking Water Act. The Chief Drinking Water Inspector plays a leadership role in ensuring that regulated drinking water systems across the province meet Ontario's rigorous, health-based standards for drinking water protection. Some of the Chief Drinking Water Inspector's other responsibilities include the oversight of:

- Developing and implementing a source protection program to minimize the risk to drinking water from **raw water** sources
- Creating and delivering training programs that improve the skills and knowledge of drinking water system operators, ministry inspectors and other stakeholders
- Providing an annual report to the Minister that describes the state of Ontario's drinking water and the actions being taken to protect it
- Making sure that the ministry meets its legal and regulatory obligations for inspecting municipal residential drinking water systems and laboratories licensed to perform drinking water testing.

This report provides an overview of Ontario's drinking water and includes statistics on inspection and drinking water quality test results, to help inform the public about the safety and quality of their drinking water. In some cases, the information provided in this report goes beyond the fiscal year end of March 31, 2008.



A drinking water treatment plant interior.

2007-08 Report Highlights

The findings contained in this report should reinforce the public's confidence in their drinking water.

Key 2007-08 report findings regarding the performance of Ontario's drinking water systems include:

- 99.85 per cent of drinking water tests reported by municipal residential drinking water systems met the province's rigorous, health-based drinking water quality standards during the year. These systems serve more than 80 per cent of Ontario's population
- 99.40 per cent of drinking water quality tests reported by non-municipal year-round residential drinking water systems met provincial standards
- 99.39 per cent of drinking water quality tests reported by systems serving designated facilities met provincial standards
- As required by provincial law, the ministry inspected all municipal residential drinking water systems in the province, to monitor regulatory compliance at their facilities. Fifty per cent of all municipal residential drinking water system inspection ratings were 100 per cent (i.e., had no regulatory compliance problems) and 95 per cent of these systems achieved ratings of 90 per cent or better



- Ministry staff conducted a total of 114 inspections at 56 laboratories licensed to perform drinking water testing during 2007-08, including 53 inspections that were unannounced. The ministry thus met the regulatory requirement that every licensed laboratory receive at least two inspections each year.

Other highlights contained within the report include:

- Ongoing work by Source Protection Committees to finalize and submit their terms of reference documents for approval
- Continuing progress on the new Municipal Drinking Water Licensing Program
- The results from the first year of drinking water system testing in schools, private schools, day nurseries and round 1 community testing in relation to Ontario's Lead Action Plan
- The transfer of oversight responsibilities for small drinking water systems from the Ministry of the Environment to the Ministry of Health and Long-Term Care.



TAPPING IN

Drinking Water System Facility Types

For the purposes of this report, detailed information is provided on three groupings of drinking water systems that may include more than one category of drinking water system as described by O. Reg. 170/03. These groupings of systems will be referred to in the report as facility types and are described as follows:

Municipal residential drinking water systems – drinking water systems or part of a drinking water system that serve six or more private residences that meet the definition of municipal drinking water system* including the categories of large municipal residential and small municipal residential drinking water systems under O. Reg. 170/03.

Non-municipal year-round residential drinking water systems – means a non-municipal drinking water system (other than a seasonal residential system) that serves a major residential development (six or more private residences) or a trailer park or campground with more than five service connections. These systems are a single category defined in O. Reg. 170/03.

Drinking water systems serving designated facilities – for example, drinking water systems serving children's camps, daycare centres, schools or health care facilities. These systems fall under the five categories of non-residential and seasonal residential systems defined in O. Reg. 170/03. They are large municipal non-residential, small municipal non-residential, large non-municipal non-residential, small non-municipal non-residential and non-municipal seasonal residential categories of drinking water systems.

* A municipal drinking water system is a drinking water system or part of a drinking water system:

- That is owned by a municipality or by a municipal service board established under the Municipal Act (MA), 2001 or a city board established under the City of Toronto Act (CTA), 2006
- That is owned by a corporation established under sections 9, 10 and 11 of the MA in accordance with section 203 of that act or under sections 7 and 8 of the CTA in accordance with sections 148 and 154 of that act
- From which a municipality obtains or will obtain water under the terms of a contract between the municipality and the owner of the system; or
- That serves a major residential development (six or more private residences) and is established after May 2, 2003 under an agreement with a municipality pursuant to Part VI of the Planning Act, if the agreement provides that ownership of the system may be transferred to the municipality, a municipal service board established under section 195 of the MA or a corporation established under section 203 of that act.



**Our safety net gives Ontarians
the confidence that their
municipal drinking water
systems are providing safe,
high quality tap water.**

An Ontario drinking water inspector and a drinking water plant operator during a plant inspection.

Ontario's Drinking Water Safety Net

The ministry and its partners are continually working to strengthen the components of the safety net.

The government has established a drinking water safety net to guide its approach to delivering safe drinking water in Ontario. It builds on the concept that delivering safe drinking water requires a number of key factors woven together to create a web or “net” that minimizes risks to our drinking water. In the pages that follow, we have modified the description of the safety net to better explain its key elements and to emphasize the comprehensive source-to-tap focus. While the description has evolved, the fundamental elements have not changed. The safety net stresses that all of our activities to deliver safe drinking water are inter-related, and together provide the foundation for an effective drinking water protection system. See [Figure 1](#).

The safety net is made up of:

1. Source-to-tap focus — The basis of the safety net is our belief that strong drinking water protection needs to start at the source and continue until you turn on your tap. Safeguards are in place at every step of the process to address risks to the quality of your drinking water, and deal with potential problems before they become issues.

2. A strong legislative and regulatory framework — Ontario's strong laws establish clear rules for drinking water safety and protection. This framework allows everyone to understand the requirements and how they are applied. The Safe Drinking Water Act, the Clean Water Act and their regulations protect drinking water sources, regulate drinking water systems and set out standards for the microbiological and chemical content and other properties of drinking water.

3. Health-based standards for drinking water — Ontario has regulated health-based standards for 158 parameters, and drinking water systems perform thousands of tests a year to make sure they are being met. To assist the ministry in setting these standards, we have an Advisory Council on Drinking Water Quality and Setting Standards who make recommendations to the Minister to help ensure Ontario's standards for drinking water quality and testing are consistent with the most up-to-date information and practices, and that the standards-setting process is transparent. Standards are based on the best available science, and are regularly reviewed to provide the highest possible level of protection.



CHIEF'S PERSPECTIVE:

Everyone in Ontario is entitled to expect that the drinking water their regulated systems deliver is safe and of high quality. Ontario has implemented a system of safeguards that protect drinking water from the source to the tap.

4. Regular and reliable testing —

Protecting drinking water requires regular sampling and rigorous scientific testing to confirm that it meets Ontario's strict health-based standards. System operators take thousands of drinking water samples every year, and these samples are tested for quality at provincially licensed laboratories. Testing is undertaken on a continuous basis and the tests are tailored according to the nature of the drinking water system.

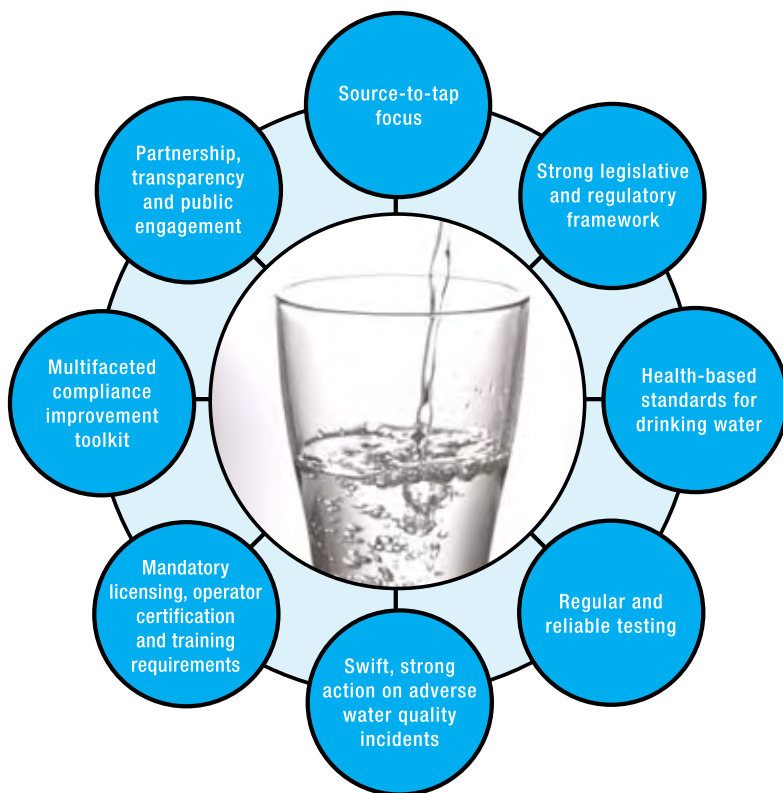
5. Swift, strong action on adverse water quality incidents —

When drinking water safety or quality problems are suspected, we have a system in place – based on precaution – to resolve the issue quickly. We have people who are on-call to address any issue that arises, and checks and balances to make sure that **corrective action** is taken. Adverse water quality incidents require the engagement of system operators, drinking water inspectors, the ministry's Spills Action Centre and public health inspectors—all of whom work together to take effective action.

6. Mandatory licensing, operator certification and training requirements —

With the introduction of the municipal licensing program, municipal residential drinking water systems will be required to incorporate a drinking water quality management approach at their facility to enhance consumer protection. Operating a drinking water system is one of the most important responsibilities in any community. System operators are required to meet rigorous, mandatory standards that ensure they have the knowledge and skills to provide safe drinking water to the public. The goal in any community is to have operators appropriately certified and trained. The government works to provide training that is tailored for individual types of systems and communities, enabling high standards of capacity and knowledge across Ontario.

FIGURE 1: The Drinking Water Safety Net



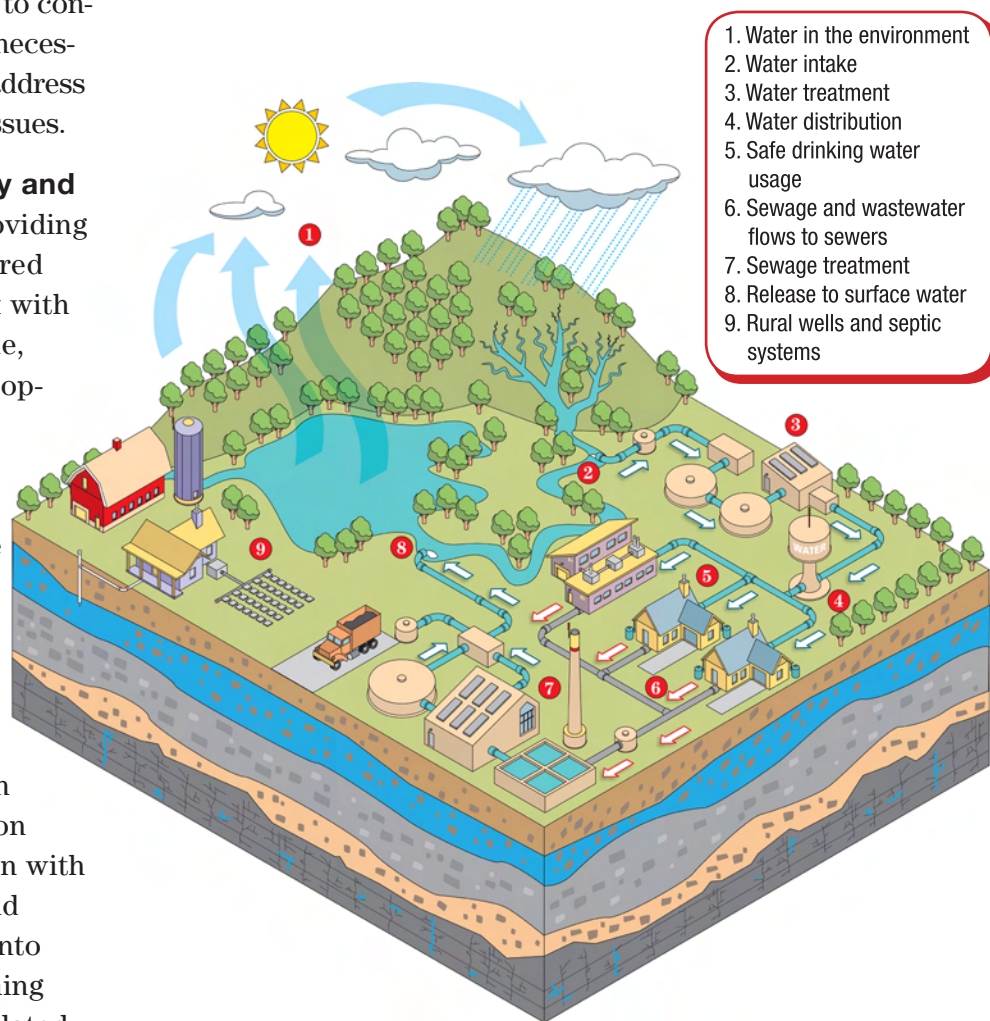
Further information on the safety net is available online, at www.ontario.ca/drinkingwater, and from the ministry's Public Information Centre at (416) 325-4000 or 1-800-565-4923 (toll-free).

7. A multifaceted compliance improvement toolkit — Compliance with Ontario's drinking water laws and regulations is mandatory, and those responsible for providing drinking water to the public are required to operate their systems in compliance with the law. In support of that requirement, we undertake a range of activities, including effective targeting based on the level of risk, providing compliance support tools to increase understanding and enable informed and effective actions, targeted inspections to confirm compliance and, where necessary, enforcement action to address significant non-compliance issues.

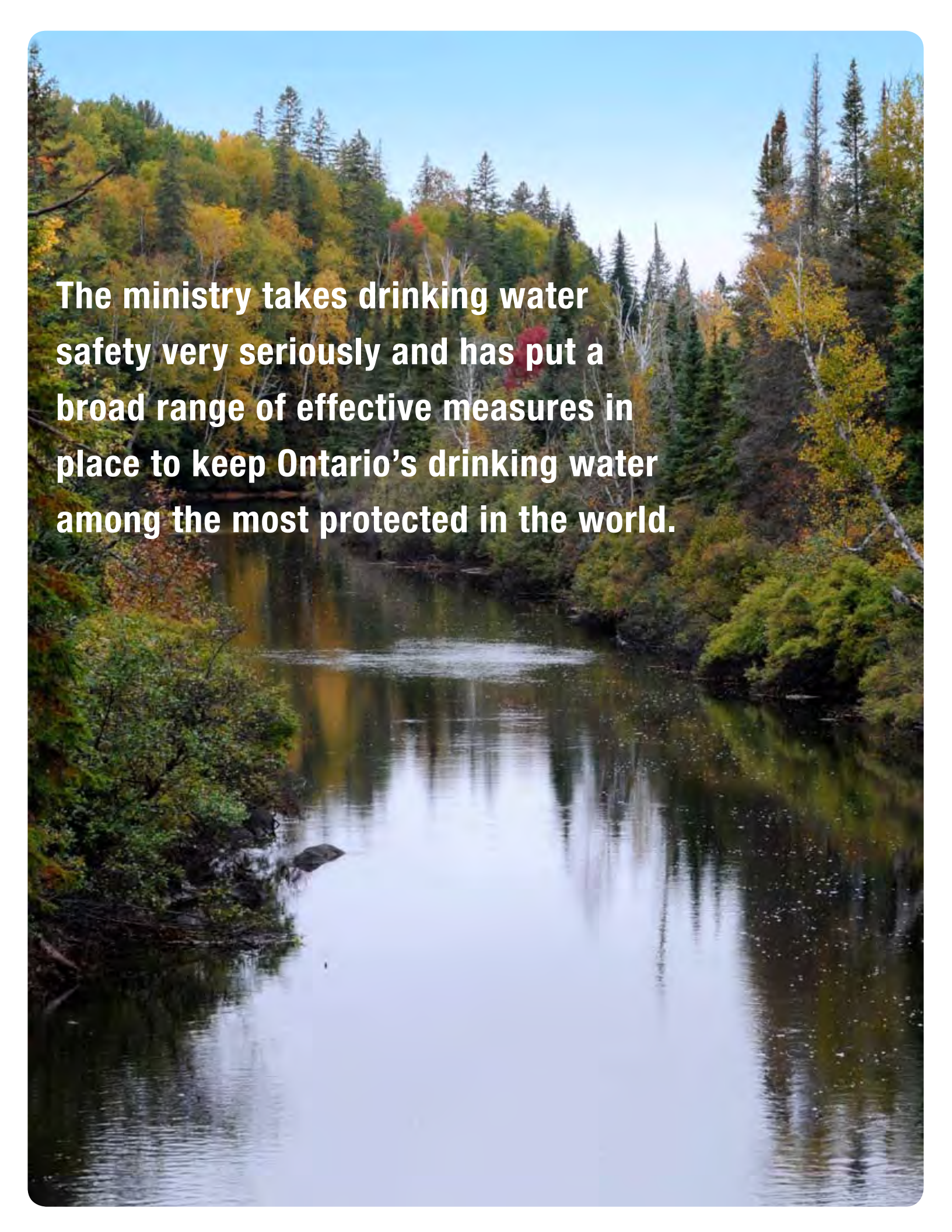
8. Partnership, transparency and public engagement — Providing safe drinking water is a shared responsibility, and we work with many partners – for example, municipalities, owners and operators, local health units, the Walkerton Clean Water Centre and stakeholder associations – to make sure high quality tap water is delivered to your homes. Our efforts to protect drinking water sources are undertaken in conjunction with local source protection committees and conservation authorities; and consultation with the public, stakeholders, and local First Nations is built into the source protection planning process. Engaging the regulated community and the public on drinking water issues is a key

element of the safety net. Our aim is to be proactive in working with our partners, and provide clear information to support the regulated community in achieving excellence and meeting Ontario's legal requirements. We provide the public with information about local drinking water systems to inform, educate, and to meet our commitment to transparency and accountability.

FIGURE 2: The Drinking Water Cycle: From Source-to-Tap and Back Again



A graphical representation, of the drinking water cycle, can be seen in **Figure 2**. It demonstrates how water flows from the source through the water treatment process to your tap and back to the source.



The ministry takes drinking water safety very seriously and has put a broad range of effective measures in place to keep Ontario's drinking water among the most protected in the world.

Working Together to Protect Drinking Water - Key Initiatives

The ministry's drinking water regulations, plus a suite of complementary activities, help promote positive behavioural change among members of the regulated community.

This section highlights four key initiatives that demonstrate both the viability of Ontario's drinking water safety net and the strength of multi-disciplinary approaches.

Source Protection

What is source protection in Ontario?

With the passage of the Clean Water Act in 2006, drinking water protection in Ontario entered a new era. This act recognizes that taking action to protect the sources that provide drinking water – Ontario's lakes, rivers and underground water supplies – is the first vital step to providing safe drinking water to people and communities. It empowers communities to be able to protect their drinking water supplies through collaborative, locally driven, **watershed**-based source protection plans.

Leading the way in science-based source protection planning

Locally driven source protection plans represent a significant step forward for Ontario and demonstrate why the province is now considered to be among North America's leading jurisdictions in drinking water protection.

Ontario's source protection planning process is well underway in Ontario communities. This process is unique because, for the first time in Ontario, each source protection committee is preparing a science-based plan to protect the quality and quantity of drinking water sources. The act's provisions include:

- Requiring the preparation of terms of reference, science-based assessment reports, and source protection plans for all 40 source protection areas in Ontario



DRINKING WATER FACTS:

The Great Lakes store about 95 per cent of North America's supply of fresh water which is about one-fifth of the world's supply of fresh surface water and only one per cent of this water is renewed every year by rain and snowfall.

- Adopting a risk-based approach to protecting sources of water for municipal residential and other drinking water systems
- Specific authority to protect Great Lakes drinking water sources
- Giving municipalities and the Minister of the Environment the authority to protect drinking water sources for systems other than municipal residential drinking water systems
- Making it possible to engage First Nations communities with respect to their drinking water sources, at their request
- Establishing a financial assistance program for landowners to take action to protect sources of drinking water and to help those that may be affected by the Clean Water Act.

By December 2007, all 19 source protection committees were established. To address threats to local drinking water sources, the source protection committees are responsible for preparing terms of reference, threat assessment reports and source protection plans that cover each of the source protection areas.

The source protection committees have completed their first major

TAPPING IN



The Ontario Drinking Water Stewardship Program

Property owners who want to protect their local sources of drinking water or who live near a municipal well or intake are using Ontario Drinking Water Stewardship Program funding to accomplish a wide range of source protection activities across the province. Projects eligible for funding include:

- **Early action projects:** Eligible projects can include septic system upgrades and repairs; well decommissioning and upgrading; run-off and erosion protection measures; land conservation measures; pollution prevention reviews for small and medium-sized businesses; fuel storage management practices; and additional beneficial management practices to protect municipal drinking water sources.
- **Special projects:** Eligible projects can include those that complement early actions, illustrate a new or innovative approach to protecting sources of municipal drinking water, protect sources of municipal drinking water outside of source protection areas, or promote water quantity and water conservation and have a direct link to protecting municipal drinking water sources. They also include First Nations projects that protect sources of municipal drinking water and/or First Nations communal drinking water sources.
- **Education and outreach activities:** Eligible projects can include organizing community information events, holding "kitchen table" meetings with farmers, developing web sites to give communities access to source protection data, and door-to-door campaigns to talk with owners of vulnerable properties about the goals of source protection and the funding opportunities available.

task—preparing terms of reference. These are important because they outline the committees' plans for undertaking future work and the steps needed to prepare an assessment report and the source protection plan for each source protection area. By January 2009, all terms of reference documents had been submitted to the Minister of the Environment for approval.

The ministry has been supporting the source protection planning process by developing technical rules and regulations in 2008. The subject matter of the regulations and rules includes:

- Training requirements for people who enter a property under the authority of Section 88 of the act to prepare an assessment report or source protection plan
- A list of activities that are drinking water threats
- Requirements for the preparation of assessment reports, including technical rules for the scientific risk assessments as the basis of the reports
- Implementation of the Ontario Drinking Water Stewardship Program, which provides funding to farmers, property owners and small or medium businesses to take action to protect their local sources of drinking water.

The ministry posted these draft regulations and technical rules on the Environmental Bill of Rights registry

for public comment, convened a series of consultation sessions across Ontario and hosted information sessions for First Nations. The new General Regulation (O. Reg. 287/07) and technical rules came into force in November 2008.

In the coming months, source protection committees will continue preparing assessment reports identifying threats in their areas. Once the assessment reports are completed and approved, the committees can begin preparing local source protection plans in earnest. The regulation requires that all source protection plans be submitted for approval to the Minister of the Environment by August 2012.



CHIEF'S PERSPECTIVE:

The importance of protecting the sources of drinking water cannot be overstated. Taking this proactive approach is a powerful risk mitigation tool which identifies the highest risk source water issues and enables targeted actions to address those risks.





Trent Conservation Coalition Partners are a Model for Source Protection Planning

Ontario's source protection committees are doing an outstanding job of developing their source protection planning documents. Trent Conservation Coalition Source Protection Committee in the Trent Conservation Coalition Source Protection Region is a great example of this level of excellence.

The source protection areas are comprised of five local conservation authorities (Crowe Valley, Ganaraska Region, Kawartha, Lower Trent and Otonabee) as well as additional areas outside of [conservation authority](#) jurisdiction, in Haliburton/Peterborough Counties.

The conservation authorities and municipalities came together to support the work of the Trent Conservation Coalition Region's source protection committee. This relationship enables the conservation authorities to share knowledge and expertise, integrate the source protection planning process and avoid duplication.

The five terms of reference for the source protection areas prepared by the region's committee were approved by the Minister of the Environment. Municipalities throughout the source protection region praised these terms of reference for their professionalism and organization. The committee is now moving forward with the technical work needed to complete the assessment reports for the source protection areas.

The region has been very active in conducting education and outreach activities. It has developed news releases, a newsletter, a toolkit and information about local seminars on source protection. It also contacted property owners within the vulnerable areas across the region. These activities led to a number of early action initiatives under the Ontario Drinking Water Stewardship Program, including 14 well decommissioning projects, two septic system upgrading projects, one runoff and erosion protection project and a pollution prevention review at a local small business.

Otonabee Conservation, one of the conservation authorities in the region, has

also worked with the City of Peterborough and Trent University on retrofitting a municipal stormwater management pond to protect the [raw water](#) intake quality at the municipal water treatment plant. During 2007-08, the first phase of this project received over \$44,000 in Ontario Drinking Water Stewardship Program funding to help complete the pre-design work and detailed design drawings.

For more information about the Trent Conservation Coalition Source Protection Region and its source protection planning process, please visit www.trentsourceprotection.on.ca.



Trent Conservation Coalition Source Protection Committee

As of the end of January 2009, the Ontario government has flowed \$135 million to conservation authorities and municipalities to fund source protection planning costs. These costs include building capacity in conservation authorities to undertake source protection work, and supporting technical studies carried out by conservation authorities and municipalities.

The Clean Water Act also established the Ontario Drinking Water Stewardship Program (ODWSP) to provide financial assistance to people whose activities or properties are affected by source protection activities. The ODWSP was announced in 2006, and provides funds for early actions to protect drinking water, education and outreach activities and other drinking water related special projects. The government has committed funds to the ODWSP through to March 2011.

Implementing the act is a major undertaking that involves the ministry, many other organizations and communities. This comprehensive approach to source protection is also a clear demonstration of the government's commitment to protect our drinking water sources.



TAPPING IN

Getting Early Results

With the support of the Ontario Drinking Water Stewardship Program, [conservation authorities](#) throughout Ontario are helping local landowners protect their municipalities' drinking water sources and demonstrate good stewardship. Here are just a few examples:

The Moira River (Quinte) Conservation Authority, located in eastern Ontario, helped one property owner replace a malfunctioning septic system with a new "Eco-Flow" system. It also helped another cover the cost of sealing and capping an abandoned, unused drinking water well where the well casing was improperly sealed. Each property owner received up to 80 per cent of project costs through Ontario Drinking Water Stewardship Program funding earmarked for projects in vulnerable source water protection areas.

The Raisin Region Conservation Authority, located near Cornwall, used funding from the Ontario Drinking Water Stewardship Program to:

- Purchase spill response trailers. These trailers will be stationed in municipal drinking water source areas. They will provide local fire department officers, trained in spill response with resources to quickly and effectively contain dangerous spills.
- Update its Emergency Services Contact Directory. It now includes necessary services, such as heavy equipment, pump trucks and personnel, which need to be available to respond to spills 24 hours a day. The conservation authority coordinated this initiative with emergency services across the region.

The Essex Region Conservation Authority, in southwestern Ontario, sponsored an Ontario Drinking Water Stewardship Program project to deal with potential leakage from a fuel storage tank located about 20 feet from the Detroit River, and within the 100 metre intake protection zone (IPZ-1) of the Amherstburg municipal drinking water system. The conservation authority hired a qualified firm to excavate around the tank, remove it and the adjacent piping, and backfill the area with clean fill. It also initiated a public education campaign to inform local residents about the project and its other work in achieving the Clean Water Act's goals.

For more information on the Ontario Drinking Water Stewardship Program, visit Drinking Water Ontario at www.ontario.ca/drinkingwater.

Municipal Licensing

The ministry is now implementing the Municipal Drinking Water Licensing Program. Effective January 2009, all Ontario municipal residential drinking water system owners are required to apply to the Ministry of the Environment for a municipal drinking water licence to operate their systems.

Why a Licensing Program?

In the past, certificates of approval, issued by a Director at the Ministry of the Environment, legally gave municipalities the authority to establish, replace, alter, use or operate new or existing municipal drinking water systems or parts of their systems.

The Municipal Drinking Water Licensing Program extends the focus from the design, construction and operations of the system to the ongoing management of all aspects of the system. The program also

requires that the licence to operate is reviewed every five years for each system.

The Licensing Program mandates that all municipal residential drinking water systems incorporate a quality management system into the operation and management of their systems. Ontario is the first jurisdiction in North America to mandate quality management for municipal residential drinking water systems. Quality management has been very successful in other industrial sectors and some large drinking water systems in Ontario have, in the past, voluntarily implemented these concepts. The ministry worked closely with Ontario's drinking water sector owners and operating authorities to craft our own unique "made in Ontario" quality management standard, called the Drinking Water Quality Management Standard (DWQMS). It provides a framework for operating authorities to develop and document management policies, processes and procedures.

Quality management systems endorse a proactive and preventative approach, which requires the adoption of best practices and continual improvement. The DWQMS encourages a "Plan-Do-Check-Improve" management cycle for systems.



DRINKING WATER FACTS:

One centimetre of rainfall drops 100,000 litres, or 100 metric tons of water, on a 100 metre by 100 metre piece of land (approximately 1.2 football fields).

The Five Elements of the Program

The ministry will issue a licence to the owner of a municipal residential drinking water system once it has the following five elements in place:

- A Drinking Water Works Permit
- A **Permit to Take Water**
- A Financial Plan (if required)
- An Operational Plan
- An Accredited Operating Authority.

Table 1 explains these five elements and their benefits.

A Phased Approach

O. Reg. 188/07 provides dates by which system owners and operating authorities must apply for a drinking water licence and drinking water works permit and submit their operational plans. The application dates range from January 2009 to June 2010. Large municipalities must apply first, followed by medium-sized municipalities, followed by smaller-sized municipalities. The phase-in is also taking place geographically.

TABLE 1: The Five Elements of Ontario's Municipal Drinking Water Licensing Program

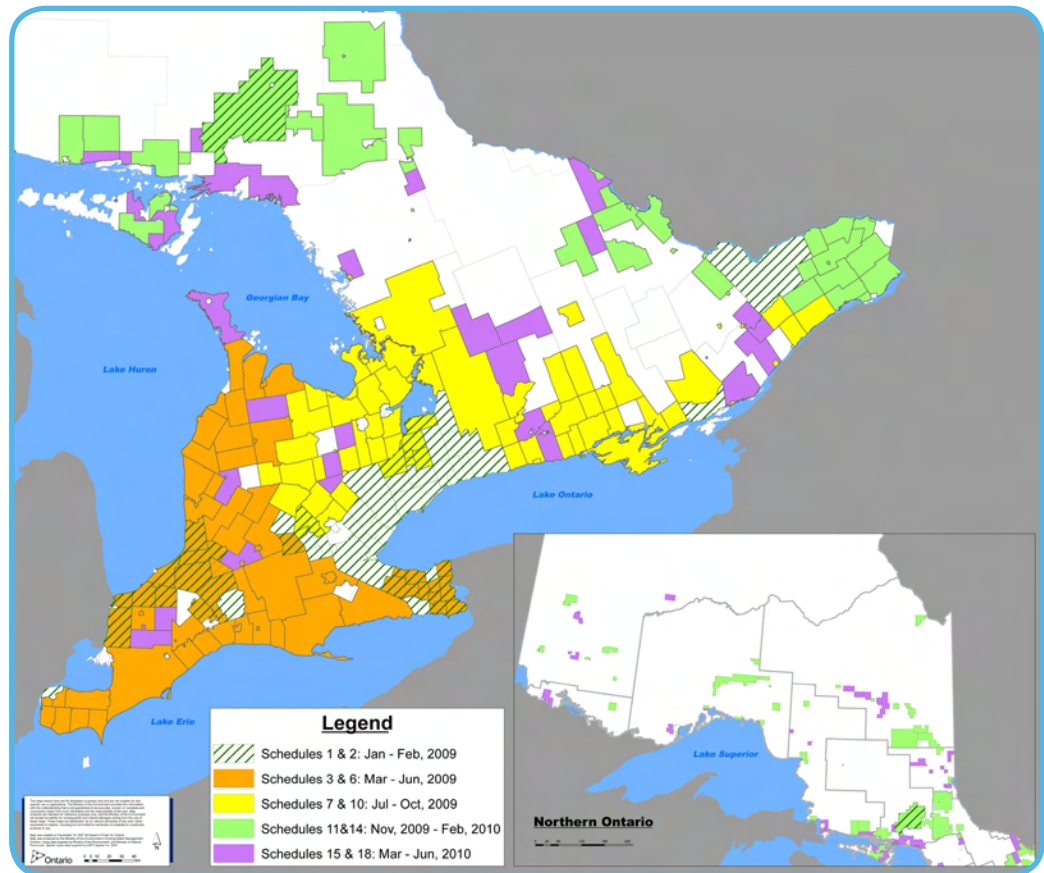
Elements	Description	Benefits
Drinking Water Works Permit (DWWP)	Permit that gives owners the authority to establish, replace or alter their drinking water system.	The DWWP will provide a clear description of the drinking water system at the time of the application, and provide a framework to authorize future alterations (including extensions).
Permit to Take Water	Provides provincial approval for the manner in which the system takes water, and the amount it uses.	The Permit to Take Water helps to ensure the conservation, protection, wise use and management of the source waters of the province.
Financial Plan	Plans must include operating and capital financial projections and be approved by the owner.	Financial plans will help promote the financial sustainability of municipal drinking water systems across the province.
Operational Plan	It explains how the operating authority's quality management system meets the requirements outlined in the Ontario Drinking Water Quality Management Standard (DWQMS) by documenting policies, procedures and processes.	Implementing a quality management system for a municipal residential drinking water system can provide: • Greater efficiency and effectiveness, which can minimize duplication • Consistent policies and procedures communicated throughout the organization • Improved management and operation to support the production of high quality drinking water.
Accreditation of the Operating Authority	Municipal owners must have their system operated by an accredited operating authority. In order to become accredited, an operating authority must have a quality management system, which includes the operational plan, evaluated by a third-party auditor against the DWQMS requirements.	This verifies that the owner and operating authority's quality management system meets the requirements of the DWQMS as verified by a third-party audit.



CHIEF'S PERSPECTIVE:

The Municipal Drinking Water Licensing Program makes sense for municipal residential drinking water systems. It moves Ontario to a streamlined and integrated approach to municipal licensing, while also enabling a continuous improvement approach to drinking water system management.

FIGURE 3: Phased-In Licensing of Municipal Drinking Water Systems



It will start in the southwest part of the province, then move to the southeast, and then into the north. See **Figure 3:** Phased-In Licensing of Municipal Drinking Water Systems.

Services to Accredit Operating Authorities

The ministry entered into an agreement with the Canadian General Standards Board (CGSB) to provide accreditation services under the Municipal Drinking Water Licensing Program. This agreement sets out requirements for the administration of the accreditation program.

CGSB is a revenue-neutral, arms-length organization of the Government of Canada, and a part of the Department of Public Works and Government Services. This federal-provincial partnership was strongly endorsed by municipal stakeholders through the ministry's Licensing Working Group.

Guidance for System Owners, Operating Authorities and Other Stakeholders

Implementing the Licensing Program will require ongoing communication and partnership between the prov-

ince and stakeholders. The ministry has provided a number of resources that give clear guidance and support for each element of the Licensing Program, including:

- An *Overview Guide to the Municipal Drinking Water Licensing Program for Municipal Residential Drinking Water Systems (October 2007)* which provides detailed information for system owners and other stakeholders on all aspects of the transition to municipal licensing, and on the government's expectations and requirements with respect to the five key elements required for licensing.
- A guidance document on preparing financial plans, *Toward Financially Sustainable Drinking Water Systems and Wastewater Systems*.
- Tailored guidance documents and regular targeted updates on Drinking Water Ontario at www.ontario.ca/drinkingwater.
- Pocket guides, including plain language summaries, provided to participants of information workshops that were held across the province.

This information can be found on Drinking Water Ontario at www.ontario.ca/drinkingwater.

Significant work was conducted on Ontario's new municipal licensing process in 2007-08, which will help strengthen Ontario's drinking water safety net. It supports provincial efforts to achieve a consistent framework for drinking water system

The journey since 2002....has been a long and sometimes challenging one but the drinking water profession, including owners, operating authorities, Ontario Water Works Association, Ontario Municipal Water Association and the Ministry should be proud of the steps taken. It's a model in which the rest of the country and the U.S. have an interest.

The OWWA/OMWA Joint Executive Committee Report in Ontario Pipeline, Spring 2009.

operations and enhances the strong protection measures that are already in place to protect Ontario's drinking water from source-to-tap.





CHIEF'S PERSPECTIVE:

The government has taken strong action to protect Ontario's most vulnerable citizens from exposure to lead in drinking water. By implementing and monitoring the province's Lead Action Plan, the ministry and its partners are making an important contribution to drinking water protection. The ministry will continue to support local efforts to address lead in drinking water.

Lead in Drinking Water

The government continues to move forward on implementing a multifaceted Lead Action Plan that includes workable and practical regulations to provide solid protection for human health.

What is the lead issue in Ontario?

When tests found elevated lead levels in drinking water samples from taps in a number of older homes in London in the spring of 2007, the Chief Drinking Water Inspector (CDWI) took swift action:

- Immediately deploying drinking water inspectors to re-test the water from these homes. When re-sampling confirmed the ini-

tial results, the ministry hired international experts to better understand the science behind the elevated results and assist the City of London to address this concern

- Contacting all owners of municipal residential drinking water systems, asking them to voluntarily sample their drinking water
- On May 23, 2007, the CDWI ordered 36 municipalities across the province to undertake precautionary testing of 20 homes likely to contain lead pipes—to get a snapshot of what was happening across the province and to determine if flushing was effective. Sixteen of the 36 municipalities found at least one result that exceeded the lead standard, even after flushing the taps.

In response to these findings and with input from the Advisory Council on Drinking Water Quality and Testing Standards, known as the Ontario Drinking Water Advisory Council (the Advisory Council) and the Chief Medical Officer of Health, the ministry announced a comprehensive Lead Action Plan less than two months after the first elevated lead results were found—in June 2007.

Components of the Lead Action Plan

The Lead Action Plan is multi-faceted and **Table 2** provides a summary of its components.



A drinking water inspector takes a drinking water sample from a kitchen faucet.

TABLE 2: Components of Ontario's Lead Action Plan

Components	Description
Sampling and Submission of Data	It is mandatory, through amendments to O. Reg. 170/03, for municipalities to test tap water for lead twice a year at a specified number of homes, notify home and facility owners of the results from their taps, and provide advice specified by the Medical Officer of Health if elevated lead levels are found. It is mandatory, under O. Reg. 243/07, for all schools and private schools, as well as day nurseries with plumbing installed before 1990, to test their drinking water for lead annually. It is also required that any of these facilities with plumbing installed before 1990 flush their plumbing daily, rather than the previous weekly standard. All drinking water test results for lead must be submitted to the ministry.
Financial Plans	Municipalities must provide details relating to the costs of replacing lead service pipes in the financial plans they are currently developing under the province's new Financial Plans regulation (O. Reg. 453/07).
Corrosion Control	Owners of large municipal residential drinking water systems are required to prepare corrosion control plans for systems where lead is found to be an ongoing problem.
Financial Assistance for Filters	To reduce the potential health risk of lead in drinking water, the province provided \$4.4 million for a special water filter fund, which is administered by municipalities. Under this initiative, low-income families that meet specified criteria are eligible for an annual grant of \$100. The NSF International website has an up-to-date list of filters that meet the standards at www.nsf.org/certified/dwtu .
Best Practices	The ministry provides best practice advice to municipalities, such as on-bill financing, to help make lead line replacement more affordable for homeowners.
Education	The ministry encourages municipalities to conduct public education campaigns, such as inserts in water bill mailings.
Volunteers	Drinking water system owners must recruit volunteers who wish to have tap water in their homes and buildings tested for lead.

TAPPING IN



2007-08 Lead Test Results—Round 1 of Community Testing (O. Reg. 170/03)

Corrosion Control

Lead in drinking water is most likely to come from lead pipes and from old solder that was used to connect the pipes and plumbing fixtures. Homes that were built before the mid-1950s are more likely to have lead pipes and service lines that can contribute to the elevated lead concentrations in drinking water. Plumbing installed prior to 1990 is likely to contain lead solder. The Building Code was amended to prohibit solder containing more than 0.2 per cent lead as of January 1990.

Flushing the plumbing in older buildings has been shown to be an effective way to reduce the lead content in the water. (For information on flushing please go to www.ontario.ca/drinkingwater). Municipalities can also make their water less **corrosive** by modifying the drinking water treatment process and adopting corrosion control methods.

During 2007-08, the ministry worked in partnership with the Ontario Drinking Water Advisory Council on this issue. In June 2007, the Advisory Council provided final recommendations on corrosion control to the Minister, and posted a report of its findings on the Environmental Registry.

Under the amended O. Reg. 170/03, large municipal residential drinking water systems will be required to implement corrosion control measures where the test results from plumbing (tap) samples trigger the requirement based on specific criteria set out in the regulation.

Higher lead levels in two of three testing periods at more than 10 per cent of a municipality's sampling locations indicate that corrosion control is needed. The municipality must submit a corrosion control plan to the ministry. Before implementing this corrosion control plan, the owner may need to apply to the Director to amend the systems approval or drinking water licence.

There are two types of samples—plumbing and distribution. A plumbing sample is a drinking water sample from a tap in a home or a business, intended to test the quality of water in those pipes. A distribution sample is a drinking water sample taken directly from a drinking water system's distribution pipes (often from fire hydrants) or from plumbing. It is intended to test the quality of water from the drinking water distribution system. Priority is given to obtaining plumbing samples from locations where lead-containing pipes and other plumbing materials are either present or suspected. The samples must be taken in each of two specified periods during the year—cold water/winter sampling occurs between December 15 and April 15, while warm water/summer sampling occurs between June 15 and October 15.

In the first round of community testing, about 250 municipal and non-municipal residential drinking water systems were granted some level of relief from meeting the full regulatory testing requirements where full compliance was not feasible, as the system owners could not find enough volunteers to facilitate the tests. The ministry will continue to work with the local drinking water systems and the



Flushing a tap.

public to encourage greater voluntary participation in the community lead testing program.

For round 1 – the first (cold weather) round of municipal testing for lead in drinking water samples at taps between December 15, 2007 and April 15, 2008 – approximately 600 municipal and 400 non-municipal year-round residential systems took more than 37,000 plumbing and 5,000 distribution samples for lead testing. The provincial drinking water quality results from the lead testing were encouraging:

- 97.7 per cent, or 36,654 out of 37,517 plumbing sample test results taken throughout the province, met the Ontario Drinking Water Quality Standard for lead of 10 micrograms per litre (see **Chart 1**), and 97.7 per cent, or 5,019 out of 5,136, of distribution samples also met the standard (see **Chart 2**)

- 99.1 per cent of all plumbing samples from non-municipal year-round residential drinking water systems met the provincial standard for lead, and 99.6 per cent of the distribution samples met the standard
- The majority of drinking water systems throughout the province met the lead standard. There were no geographical trends in the systems where lead **exceedances** were detected.

The summary report on the results of round 1 of community testing for lead released on March 6, 2009 is available at Drinking Water Ontario (www.ontario.ca/drinkingwater). The next Chief Drinking Water Inspector's Annual Report will provide information on round 2 of community testing for lead, which ended on October 31, 2008. The testing results will be posted at Drinking Water Ontario (www.ontario.ca/drinkingwater) in early summer 2009.

CHART 1: Provincial Plumbing Results from Round 1 Community Testing

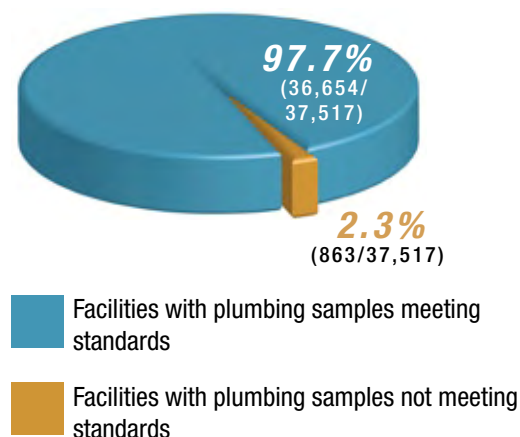
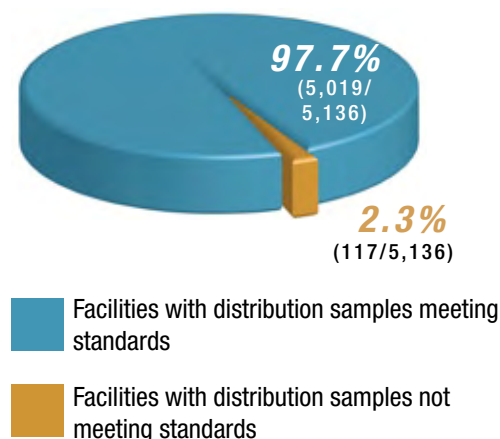


CHART 2: Provincial Distribution Results from Round 1 Community Testing



Lead Test Results in 2007 from Public/Private Schools and Day Nurseries (O. Reg. 243/07)

Schools and day nurseries are required to take both a “standing” and “flushed” sample. The first “standing” sample is taken after the water system has not been in use for a period of six hours or more, usually overnight. The “flushed” sample is taken following a five-minute system flush and a 30-35 minute waiting period.

The initial mandatory drinking water tests for lead took place in private and public schools between June 15 and August 15, 2007. Drinking water in day nurseries was tested between June 7 and October 31, 2007. Ministry and local public health units followed up on results from facilities that exceeded the lead standard and worked with the affected facilities to make sure that appropriate remediation measures were taken.

The drinking water in 99 per cent of Ontario’s public schools was sampled for lead, and 91 per cent of all the schools that submitted samples met the provincial standard for lead after the systems were flushed. The drinking water in about 44 per cent of Ontario’s private schools was sampled for lead, and 95 per cent of the samples tested met the provin-

cial standard. Across the province, 92 per cent of all day nurseries tested their drinking water for lead, and 97 per cent of the test samples from these facilities met the provincial drinking water standard for lead after their systems were flushed.

Overall, the 2007 results for lead testing under O. Reg. 243/07 indicated:

- A good response rate during the Lead Action Plan’s first year. The ministry has implemented a plan to promote better compliance, including continuing education and outreach. The ministry also provided a guide, posters, webcasts and videos on flushing and testing for schools, private schools and day nurseries. Provincial Officers from the Ministry of the Environment in cooperation with the Ministry of Education, the Ministry of Health and Long-Term Care and Ministry of Children and Youth Services are also following up with those facilities that have not complied with O. Reg. 243/07
- Flushing works—the lead concentration was consistently lower in drinking water samples that were taken after the system had been flushed
- 94 per cent of the flushed samples taken at public schools, private schools and day nurseries met the province’s 10 ug/L lead drinking water standard.

As **Chart 3** shows, 80 per cent of all facilities reported that all standing

drinking water samples met the Ontario Drinking Water Quality Standard for lead. As **Chart 4** shows, this percentage increased significantly after the systems were flushed—94 per cent of all schools, private schools, and day nurseries met the standard for lead after flushing.

In September 2008, the ministry released a summary report on the 2007 lead testing in schools, private schools and day nurseries. The report is posted on the Drinking Water Ontario website (www.ontario.ca/drinkingwater). The second year of sampling was concluded on October 31, 2008 and the ministry is currently undertaking analysis of the almost 10,000 regulated facilities. These results will be posted at Drinking Water Ontario (www.ontario.ca/drinkingwater) in the summer of 2009 and will be reported in the next Chief Drinking Water Inspector's Annual Report.



Continued Action

The Lead Action Plan is a good example of the effectiveness of Ontario's drinking water safety net. It also shows that, when problems with drinking water arise, the combination of notification, information sharing, health-based standards and

CHART 3: Results from Public/Private Schools and Day Nurseries Submitting Standing Results in 2007

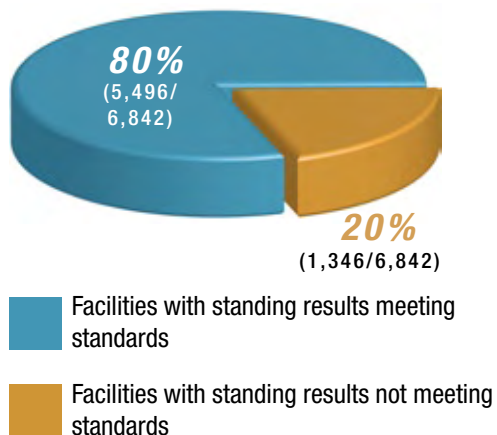
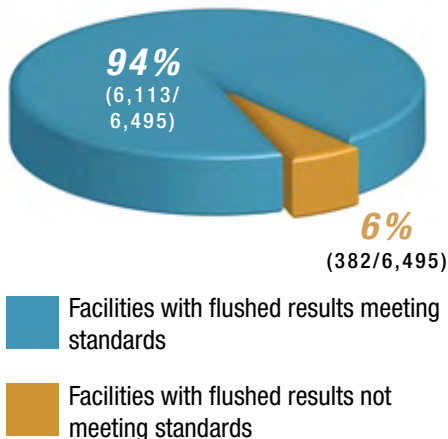


CHART 4: Results from Public/Private Schools and Day Nurseries Submitting Flushed Results in 2007



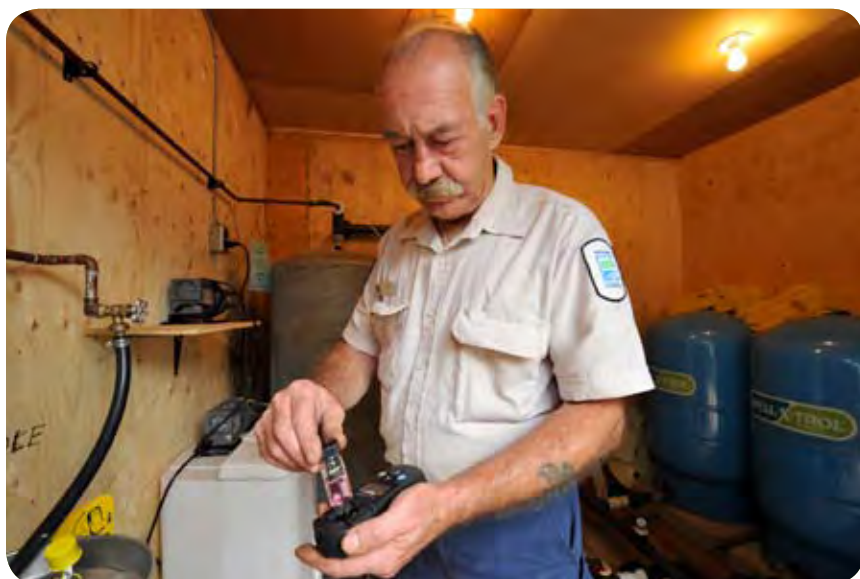
compliance improvement actions work together to safeguard Ontario's drinking water.

In the coming months, work will continue in communities across Ontario to monitor and address any potential issues concerning lead in drinking water. At the same time, the ministry will continue to work closely with its municipal partners and other stakeholders to support these actions.

New Approach to Regulating Small Drinking Water Systems

What are small drinking water systems in Ontario?

Across Ontario, thousands of businesses and other premises supply drinking water to the public.



A small systems operator tests a drinking water sample for chlorine levels.

Many of these facilities do not obtain their drinking water from a municipal system. Under Ontario laws, most of these systems are classified as small drinking water systems.

There are five categories of drinking water systems that are specified as “small drinking water systems” under the Health Protection and Promotion Act and its regulations. For the most part, these small drinking water systems serve restaurants, seasonal trailer parks, seasonal campgrounds, community centres, libraries, motels, resorts and places of worship—along with other public facilities, such as municipally owned airports, industrial parks and sports and recreation facilities.

Sharing oversight for the delivery of healthy drinking water

On December 1, 2008, responsibility for regulating Ontario's small drinking water systems, that do not serve a designated facility was transferred from the Ministry of the Environment to the Ministry of Health and Long-Term Care (please see **Tapping In Box** on page 7 for definition of facility types). Oversight of these small systems is now set out primarily in the Health Protection and Promotion Act and two new regulations made under that act, O. Reg. 318/08

(Transitional – Small Drinking Water Systems), and O. Reg. 319/08 (Small Drinking Water Systems).

Local boards of health are administering the new program—and that means small drinking water system owners and operators will soon be getting a call and a visit from their local public health inspector.

To implement the new regulatory approach, public health inspectors will conduct a site-specific risk assessment of small drinking water systems in the province. Based on these assessments, the inspectors will determine what owners and operators need to do to protect their drinking water, and a directive will be issued for each system. The directive will include requirements such as water testing, treatment where necessary, and operator training. The goal is to develop a customized approach to protecting drinking water for each small drinking water system, depending on the level of risk determined by the public health inspector's assessment.

Under the new regulatory arrangements, owners and operators of small drinking water systems still have the primary responsibility for protecting the drinking water they provide to the public. They are also responsible for meeting Ontario's regulatory requirements, including regular drinking water sampling and testing, and maintaining up-to-date drinking water sampling records.

CHIEF'S PERSPECTIVE:

The recent transfer of an estimated 18,000 small drinking water systems to the Ministry of Health and Long-Term Care further strengthens the drinking water safety net through effective partnerships with provincial and local public health officials.



The new regulations identify a number of steps that must be taken to protect the safety of small drinking water systems, including:

- Protecting the drinking water at its source
- Monitoring the system regularly
- Maintaining the system properly
- Disinfecting the drinking water if laboratory results and an assessment show unacceptable levels of bacterial contamination
- Notifying the public whenever there is a problem.

More information about the new regulatory approach for small drinking water systems can be obtained by contacting the Safe Water Program Coordinator at the Ministry of Health and Long-Term Care at 416-327-7623, by contacting the nearest local public health unit or by visiting the Ministry of Health and Long-Term Care website at www.health.gov.on.ca/drinkingwater.

**Consistently high quality
test results for Ontario's
drinking water testify to
the high performance of
our drinking
water systems.**



Performance of Ontario's Drinking Water Systems

The next two sections report on the performance of Ontario's drinking water systems. They summarize drinking water quality and inspection information and provide an assessment of the overall performance of these drinking water systems.

2007-08 Drinking Water Quality Report

- 99.85 per cent of municipal residential drinking water systems tests met standards
- 99.40 per cent of non-municipal year-round residential drinking water systems tests met standards
- 99.39 per cent of drinking water systems serving designated facilities tests met standards

Introduction

Information is provided on the quality of the drinking water delivered in 2007-08 by three facility types:

- Municipal residential drinking water systems
- Non-municipal year-round residential drinking water systems
- The five other categories of drinking water systems that serve designated facilities.

Drinking water quality testing and other requirements for these system types are laid out in Ontario's Drinking Water Systems Regulation (O. Reg. 170/03). In 2007-08, test results on samples from these systems showed that Ontario's drinking water contin-

ues to be of high quality. These consistently high quality test results prove that Ontario's drinking water is among the best protected in the world.





CHIEF'S PERSPECTIVE:

The high quality of ongoing test results clearly demonstrates the benefits of the drinking water safeguards that have been put in place.

Setting Drinking Water Standards

The Ontario Drinking Water Quality Standards (ODWQS) are listed in O. Reg. 169/03, which includes 158 health-related standards for microbiological, chemical and radiological parameters. Ontario's drinking water standards are based on Health Canada's Canadian Drinking Water Quality Guidelines (CDWQGs), which are developed by the Federal-Provincial-Territorial Committee on Drinking Water (CDW).

The existing CDWQGs are re-evaluated at least once every five years to determine whether any new information on health impacts or treatment technologies has become available.

After nationwide consultation has been completed by Health Canada and the CDW has approved the new

guideline, Ontario carries out its own consultation, which begins with the Ontario Drinking Water Advisory Council (the Advisory Council). See www.odwac.gov.on.ca. The Advisory Council evaluates the guideline document and makes recommendations to the Minister of the Environment. The Advisory Council may propose that Ontario adopt a more stringent value than the CDWQG as an Ontario Drinking Water Quality Standard (ODWQS). The Minister uses this advice to decide whether to adopt the proposed CDWQG as a standard in Ontario, or whether an even more stringent ODWQS is needed. As extensive as the process is to evaluate the suitability of a CDWQG as an ODWQS, there is a final step – public consultation through the Environmental Bill of Rights Registry – where any Ontarian may make a submission on the standard for consideration by the ministry.



Laboratory technicians working at a licensed laboratory.

Meeting Drinking Water Standards

During the 2007-08 fiscal year, more than 650,000 drinking water test results were submitted to the ministry by laboratories licensed to perform drinking water testing. Water quality tests determine if treated drinking water meet the Ontario Drinking Water Quality Standards. If a drinking water test result exceeds a standard listed in O. Reg. 169/03 appropriate action must be taken.



TAPPING IN

Getting the Levels Right—Drinking Water and Trihalomethanes (THMs)

Disinfection of drinking water has virtually eliminated most **waterborne diseases** caused by pathogens commonly found in water. Chlorine is the most common disinfectant. Maintaining a **chlorine residual** in the distribution system prevents bacteria from re-growing in the pipes while the drinking water is delivered to homes and businesses throughout the community. As a result, all drinking water systems in Ontario currently add chlorine to the water.

Trihalomethanes (THMs) are a group of compounds that may be formed as by-products during the disinfection of drinking water with chlorine. THMs are formed when the chlorine reacts with naturally occurring organic material such as decaying leaves, and can be found in treated drinking water. THMs are much more likely when the source water comes from a lake or a river as opposed to ground water. Because one of the THM compounds – chloroform – is a possible cancer-causing agent, the Ontario's Drinking Water Quality Standards (ODWQS) set the running annual average concentration of THMs at 100 micrograms per litre ($\mu\text{g/L}$).

Health Canada reviewed the Canadian Drinking Water Quality Guideline for THMs and reaffirmed the existing guideline of 100 $\mu\text{g/L}$. The Ontario Drinking Water Advisory Council has recommended reducing the ODWQS standard for THMs in drinking water to 80 $\mu\text{g/L}$. In the Advisory Council's view, this more stringent standard would promote better operational practices at drinking water treatment plants throughout the province, without compromising disinfection.

The most appropriate way to reduce THMs in drinking water is to remove as much of the naturally occurring organic material as possible prior to adding chlorine. However, removal

after the chlorination process is another option available to system operators. Optimizing treatment plant processes can also result in reduced THM production and help reduce the systems' operating costs, by enabling them to use their existing equipment and treatment chemicals more efficiently.

During 2007-08, the ministry conducted a study and began developing new educational information for operators of smaller drinking water systems that will help them optimize their plants to meet the standards for THMs.



A chlorine analyzer used for testing chlorine levels.



CHIEF'S PERSPECTIVE:

During 2007-08, in more than 520,000 drinking water quality test results from municipal residential drinking water systems, 99.85 per cent of the results met Ontario's strict drinking water standards. The consistent high water quality indicated by these test results can reinforce the public's confidence in the quality of their municipal drinking water.

Overview of Municipal Residential Drinking Water Systems Performance

In 2007-08, municipal residential drinking water systems used laboratories licensed to perform drinking water testing to analyze and submit a total of 527,732 microbiological, chemical and radiological test results on their behalf. Of these tests, 99.85 per cent met provincial standards. Overall, only 0.15 per cent of the test results exceeded the maximum allowable concentrations permitted by the Ontario Drinking Water Quality Standards, and **corrective action** was taken in all cases. **Table 3** outlines these encouraging test results over the past four years.

Overview of Non-Municipal Year-Round Residential Systems' Performance

During 2007-08, non-municipal year-round residential drinking water systems registered with the ministry used laboratories licensed to perform drinking water testing to analyze and submit a total of 43,026 drinking water samples. The test results determined that 99.40 per cent of the samples met provincial standards—an identical result to the previous year. Only 0.60 per cent of the test results exceeded provincial drinking water quality standards, and corrective action was required to be taken immediately in each case. The overall test results for the past four years for this facility type are shown in **Table 3**.

The ministry has been undertaking proactive risk-based inspections of non-municipal year-round residential

TABLE 3: Drinking Water Test Results for Drinking Water Systems

Facility Type	Percent of Drinking Water Tests Meeting Standards			
	2007-08	2006-07	2005-06	2004-05
Municipal Residential Drinking Water Systems	99.85	99.83	99.84	99.74
Non-Municipal Year-Round Residential Systems	99.40	99.40	99.45	99.41
Systems Serving Designated Facilities	99.39	99.49	99.42	99.06

drinking water systems. The facilities are selected for inspection based on a number of considerations—including, but not limited to a history of adverse water quality incidents, a system’s compliance history and referrals by the local public health unit.

Table 4 lists the number of drinking water systems registered with the ministry and the number of systems that submitted drinking water tests for analysis by laboratories licensed to perform drinking water testing in 2007-08. An explanation of the difference in numbers is provided in the notations.



TABLE 4: Number of Drinking Water Systems Registered with the Ministry and the Number of Systems Submitting Drinking Water Test Results for 2007-08

Facility Type	Number of Systems Registered	Number of Systems Submitting Drinking Water Test Results	Explanation for Difference Between Systems Registered and Systems Submitting Results
Municipal Residential Drinking Water Systems	697	693	Supplied Water* System not operational**
Non-Municipal Year-Round Residential Systems	488	421	No samples were uploaded to the ministry and owners have been contacted to resolve the issue.
Systems Serving Designated Facilities	1,631	1,382	Cistern System*** or No samples were uploaded to the ministry and owners have been contacted to resolve the issue.

* Supplied Water – systems with agreements in place to have their water supplied by other municipal residential drinking water systems and these systems performed the sample collection and submission

** System registered with the ministry but was not operational for the majority of the fiscal period and therefore not required to sample and have test results submitted

*** Cistern System – systems that receive drinking water for their cistern from municipal residential drinking water systems that carry out the required sampling

CHIEF'S PERSPECTIVE:

Generally non-municipal year-round residential systems and systems serving designated facilities are compliant with regulatory requirements, with some exceptions. The Ministry of the Environment continues to work with the systems that aren't compliant to ensure that they undertake all necessary actions to meet their regulatory requirements.



The ministry continues to work with the owners and operators of these smaller systems to inform them about their regulatory responsibilities, encourage them to register their systems in the provincial drinking water database, and help them comply with the requirements of O. Reg. 170/03. The ministry also contacts systems that do not submit the required test results.

Overview of the Performance of Systems Serving Designated Facilities

During 2007-08, laboratories licensed to perform drinking water testing carried out a total of 84,973 tests on drinking water samples from systems that serve designated facilities, as required by the Safe Drinking Water Act. The test results showed that 99.39 per cent of the samples met the province's drinking water quality standards, compared to 99.49 per cent in 2006-07. **Table 3** shows the overall drinking water quality test results for systems serving designated facilities over the past four years.

As with non-municipal year-round residential systems, the ministry has been undertaking proactive inspections of systems serving designated facilities over the past several years. The ministry is following up with the systems' owners or operators to provide education and outreach and to ensure compliance with the province's sampling and reporting requirements. In addition to working with these systems to help them comply with O. Reg. 170/03, the ministry tracks and follows up with systems that do not submit test results. **Table 5** shows the number of drinking water systems serving various types of designated facilities.

TABLE 5: Number of Registered Systems Serving Different Types of Designated Facilities as of March 31, 2008

Primary Function of Systems Serving Designated Facilities	Number of Systems Serving Designated Facilities	
	2007-08	2006-07
School*	630	637
Social Care	481	483
Health Care	114	116
Children's Camp	392	387
Other	14	10
Total	1,631	1,633

*Includes schools, private schools and universities and college facilities

2007-08 Drinking Water Test Results:

The 2007-08 drinking water quality test results from the three facility types are summarized in **Tables 6, 7 and 8**. These results – and the consistently high quality results that were found in 2004-05, 2005-06 and 2006-07 – confirm that these systems are delivering high quality drinking water.

The information presented in this section of the report summarizes the results of drinking water quality testing for three key types of parameters—microbiological, chemical and radiological. This part of the report also includes information about sodium and fluoride in drinking water, adverse water quality incident results and long-term Boil Water Advisories in 2007-08.

Microbiological Test Results

Testing for Microbiological Parameters

Some microbiological organisms are harmful to human health. Ontario regulations require microbiological tests of drinking water samples to detect the presence of total coli-



DRINKING WATER FACTS:

Consumers actually drink very little of our processed “drinking water”; around 1% of all treated water. The rest goes on lawns, in washing machines, and down toilets and drains!

TABLE 6: Summary of Drinking Water Test Results for Municipal Residential Drinking Water Systems from April 1, 2007 to March 31, 2008

PERIOD	APRIL 01, 2007 to MARCH 31, 2008				
Parameter Name	# of Results	# of Exceedances	# of Drinking Water Systems with Exceedances	% Exceedance	% Meeting Standards
MICROBIOLOGICAL					
<i>E. coli</i>	233,730	23	22	0.01	99.99
Total Coliform	234,380	434	199	0.19	99.81
MICROBIOLOGICAL TOTAL	468,110	457	199	0.10	99.90
CHEMICAL*	59,614	320	83	0.54	99.46
RADIOLOGICAL	8	0	0	0.00	100.00
TOTAL	527,732	777	255	0.15	99.85

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after December 15, 2007, are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.



Chemical analysis of drinking water.

forms and *E. coli* bacteria, because some strains of these organisms can cause serious health problems.

Total Coliforms: Total coliforms are a group of closely related bacteria that live freely in the environment. Although not all coliforms are harmful to human health, their presence in drinking water usually indicates that the system may be vulnerable to contamination, or in rare cases, may be contaminated.

Escherichia coli (E. coli)

Bacteria: *E. coli* are common bacteria that are found in human and animal intestines and are naturally occurring in the environment. There are many different types, or strains, of *E. coli*—and while some strains benefit human health, others can cause serious health problems.

TABLE 7: Summary of Drinking Water Test Results for Non-Municipal Year-Round Residential Systems from April 1, 2007 to March 31, 2008

PERIOD	APRIL 01, 2007 to MARCH 31, 2008				
Parameter Name	# of Results	# of Exceedances	# of Drinking Water Systems with Exceedances	% Exceedance	% Meeting Standards
MICROBIOLOGICAL					
<i>E. coli</i>	17,367	16	13	0.09	99.91
Total Coliform	17,360	179	92	1.03	98.97
MICROBIOLOGICAL TOTAL	34,727	195	92	0.56	99.44
CHEMICAL*	8,299	63	22	0.76	99.24
RADIOLOGICAL	0	0	0	NA	NA
TOTAL	43,026	258	109	0.60	99.40

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after December 15, 2007, are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.

Because of the potential health hazard posed by some strains of *E. coli*, the Ontario Drinking Water Quality Standard for *E. coli* is zero—which means that it should not be detectable at all in drinking water samples. If any level of *E. coli* is detected in a drinking water sample, it is considered to be an adverse water quality incident.

Provincial Microbiological Testing Results

Municipal residential drinking water systems: In 2007-08, results from tests of municipal residential drinking water samples confirmed that Ontarians can be confident that their municipal residential drinking water systems are delivering high quality drinking water to their taps. During the year, 99.90 per cent of all microbiological water quality tests

on municipal residential drinking water system samples met Ontario's legislated standards.

Of the **exceedances** reported by municipal residential drinking water systems in 2007-08, some 59 per cent of the exceedances were for microbiological parameters. In all, 199 municipal residential drinking water systems, 29 per cent of the 688 systems that had microbiological test results submitted by laboratories licensed to perform drinking water testing, had microbiological parameter exceedances in 2007-08. Of these, 94 systems had more than one microbiological exceedance.

TABLE 8: Summary of Drinking Water Test Results for Systems Serving Designated Facilities from April 1, 2007 to March 31, 2008

PERIOD	APRIL 01, 2007 to MARCH 31, 2008				
Parameter Name	# of Results	# of Exceedances	# of Drinking Water Systems with Exceedances	% Exceedance	% Meeting Standards
MICROBIOLOGICAL					
<i>E. coli</i>	29,250	18	18	0.06	99.94
Total Coliform	29,222	258	172	0.88	99.12
MICROBIOLOGICAL TOTAL	58,472	276	172	0.47	99.53
CHEMICAL*	26,501	242	69	0.91	99.09
RADIOLOGICAL	0	0	0	NA	NA
TOTAL	84,973	518	234	0.61	99.39

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after December 15, 2007, are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.



A laboratory technician using laboratory equipment.

Table 9 summarizes the 2007-08 microbiological test results for municipal residential drinking water systems, non-municipal year-round residential systems and systems serving designated facilities.

Non-municipal year-round residential drinking water systems:

During 2007-08, more than 34,000 microbiological tests were carried out on drinking water samples from non-municipal year-round residential drinking water systems across the province. The test results found that 92 of these systems had a total of 195 microbiological **exceedances**—representing only 0.56 per cent of the total number of tests during the year. Overall, 99.44 per cent of the test results submitted by laboratories licensed to perform drinking water testing for this facility type met the provinces' stringent, health-based microbiological standards.

TABLE 9: 2007-08 Microbiological Test Results

Facility Type	Parameter	# of Systems Submitting Results	# of Systems with Exceedances	# Results	# of Exceedances	% Meeting Standards
Municipal Residential Drinking Water Systems	<i>E. coli</i>	688	22	233,730	23	99.99
	Total Coliform	688	199	234,380	434	99.81
	Total Microbiological	688	199	468,110	457	99.90
Non-Municipal Year-Round Residential Systems	<i>E. coli</i>	419	13	17,367	16	99.91
	Total Coliform	419	92	17,360	179	98.97
	Total Microbiological	419	92	34,727	195	99.44
Systems Serving Designated Facilities	<i>E. coli</i>	1,368	18	29,250	18	99.94
	Total Coliform	1,369	172	29,222	258	99.12
	Total Microbiological	1,369	172	58,472	276	99.53

Of all the exceedances reported by non-municipal year-round residential systems in 2007-08, some 76 per cent of the exceedances involved microbiological parameters. Overall, 92 of these systems – representing 22 per cent of the 419 systems that had microbiological test results submitted – reported microbiological exceedances during the year. Of these, 46 per cent (42 systems) reported more than one microbiological exceedance.

During the year, non-municipal year-round residential systems had 17,360 tests results for total coliforms submitted. The test results showed that 92 systems had a total of 179 exceedances for this parameter—representing 1.03 per cent of the samples. Overall, 98.97 per cent of the total coliform samples from these drinking water systems met the provinces' microbiological standards.

Systems serving designated facilities: Drinking water systems serving designated facilities had a total of 58,472 microbiological test results submitted in 2007-08. In all, 172 of these systems reported a total of 276 microbiological exceedances. All told, 99.53 per cent of the microbiological tests carried out on drinking water samples from these systems met the province's rigorous, health-based drinking water quality standards.



TAPPING IN

A Bargain That's Good for Your Health

Since about two-thirds of the human body is water, water is absolutely essential to human health. Ounce for ounce, tap water is probably one of the best bargains available anywhere.

In addition, you can reap the financial and health benefits of Ontario's drinking water with confidence in its high quality. The ministry's drinking water safety net works, making Ontario's drinking water among the best protected in the world. Strong regulations, thorough training, and careful monitoring at drinking water treatment plants help make sure that you can rely on the quality of our drinking water.

Regulated drinking water systems routinely test their water with samples taken at the treatment plant and throughout the distribution system to make sure that these samples meet Ontario's rigorous drinking water quality standards.

Given the healthy benefits of drinking water – and the fact that 15,000 eight-ounce glasses of municipal tap water cost about the same as a six-pack of pop – high quality, reliable Ontario tap water might be the healthiest bargain on tap.

For more information on the benefits of drinking water, visit Drinking Water Ontario www.ontario.ca/drinkingwater.

Of all the exceedances reported by systems serving designated facilities in 2007-08, 53 per cent involved microbiological parameters. Only 172 of the 1,369 systems submitting results reported microbiological exceedances. Of these, 54 systems—representing 31 per cent (54 of 172) reported more than one microbiological exceedance.



DRINKING WATER FACTS:

The average person in Africa uses 3 litres of water per day. The average person in Canada uses about 340 litres of water per day.

E. coli Test Results

Municipal residential drinking water systems: During 2007-08, some 233,730 samples from 688 municipal residential drinking water systems were tested for *E. coli*, and the test results showed only 23 **exceedances** at 22 systems. This represents a significant decrease over 2006-07, when *E. coli* bacteria were detected in 58 drinking water quality results from 233,134 samples tested.

In all, three per cent (22 of 688) of the municipal residential drinking water systems reported exceedances for *E. coli* bacteria in 2007-08 (see **Chart 5**), with one system reporting more than one exceedance. **Corrective action** was taken immediately in all cases—and after re-sampling, 22 of the 23 re-samples were clear of *E. coli* bacteria. The remaining case was resolved by further corrective action and re-samples were clear. This is further evidence that Ontario's drinking water safety net works effectively to reduce and manage any potential health risks that are detected in drinking water.

Non-municipal year-round residential drinking water systems: During 2007-08, non-municipal year-round residential drinking water systems reported a total of 17,367 *E. coli* test results. Of these, 13 systems reported 16 microbiological exceedances involving *E. coli* bacteria. All told, 99.91 per cent of the samples from these systems met the prov-

ince's drinking water quality standards for *E. coli*.

The 16 microbiological exceedances for *E. coli* bacteria represented 0.09 per cent of all tests for this parameter (16 of 17,367 test results). While

E. coli Test Results

CHART 5: Municipal Residential Drinking Water Systems

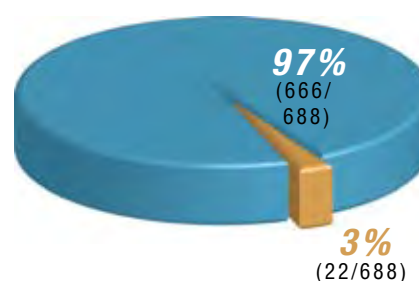


CHART 6: Non-Municipal Year-Round Residential Drinking Water Systems

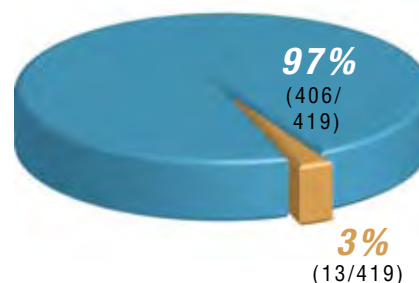
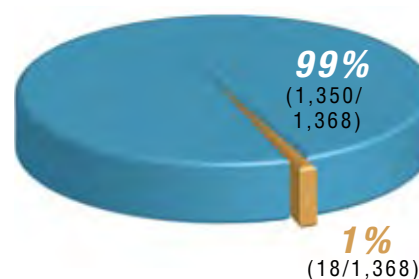


CHART 7: Drinking Water Systems Serving Designated Facilities



■ Drinking water systems that met *E. coli* standards in 2007-08
 ■ Drinking water systems with *E. coli* standard exceedances in 2007-08

only three per cent of these systems (13 of 419) reported *E. coli* bacteria exceedances, three of the 13 systems reported more than one exceedance (see [Chart 6](#)). On re-sampling, however, all of the samples were clear of *E. coli* bacteria.

Systems serving designated facilities: Drinking water systems serving designated facilities used laboratories licensed to perform drinking water testing to analyze and submit a total of 29,250 test results for *E. coli* bacteria in 2007-08, and 18 systems had 18 test results that showed detectable levels of *E. coli* bacteria. This represents just 0.06 per cent of the total number of test results reported—which means that 99.94 per

cent of the test results from systems serving designated facilities met the province's standards for *E. coli*. On re-sampling, all of the samples were clear of *E. coli* bacteria. Overall, only one per cent of these systems (18 of 1,368) had *E. coli* bacteria exceedances, and none of the 18 systems had more than one exceedance (see [Chart 7](#)).

In summary, whenever microbiological exceedances are detected in drinking water, **corrective action** is taken immediately. This is one of the reasons why Ontario consumers can be confident in the safety and quality of the drinking water provided by these systems.

[Charts 5, 6 and 7](#) summarize the 2007-08 test results for *E. coli* for each of the three facility types.



Chemical Test Results

Testing for Chemical Parameters

Drinking water samples from municipal residential drinking water systems, non-municipal year-round residential systems and systems serving designated facilities are tested regularly to help make sure that the drinking water these systems provide is safe to drink. The Drinking Water Testing Services Regulation, O. Reg. 248/03, sets out which tests must be done by a laboratory licensed to perform drinking water testing, and which tests can be carried out by an operator, through on-line monitoring, etc.

The frequency of chemical tests performed on drinking water vary according to the type of chemical, the category of drinking water system, the size of the population the system serves and the source of the water. [Appendix 5](#) of this report provides examples of health-related chemical quality standards for drinking water.

Provincial Chemical Test Results

Ontario's Drinking Water Quality Standards (O. Reg. 169/03) protect Ontario consumers by establishing the maximum allowable concentration of chemicals that can be present in drinking water (see [Standard Setting](#) section). Regular chemical testing of drinking water samples is thus another important component of the drinking water safety net that protects the health of people in communities

Chemical Test Results

CHART 8: Municipal Residential Drinking Water Systems

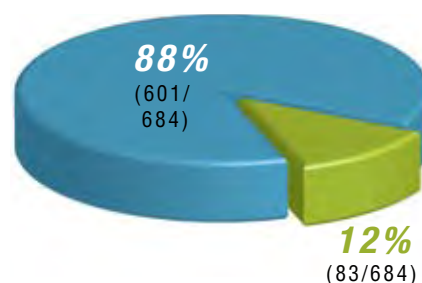


CHART 9: Non-Municipal Year-Round Residential Drinking Water Systems

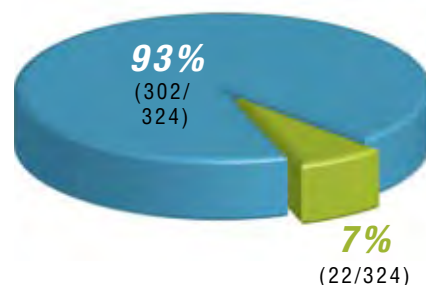
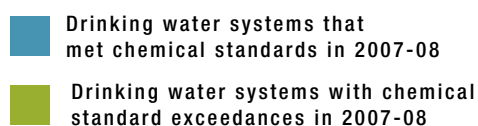
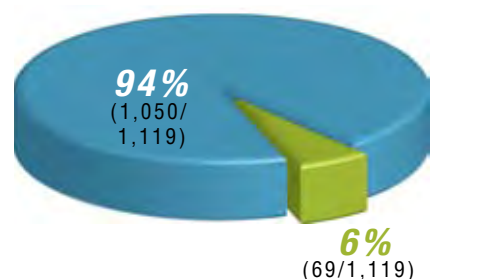


CHART 10: Drinking Water Systems Serving Designated Facilities



throughout the province. [Table 10](#) shows the chemical test results for three facility types.

TABLE 10: 2007-08 Chemical Test Results

Facility Type	# of Systems Submitting Results	# of Systems with Exceedances	# Results	# of Exceedances	% Meeting Standards
Municipal Residential Drinking Water Systems	684	83	59,614	320	99.46
Non-Municipal Year-Round Residential Systems	324	22	8,299	63	99.24
Systems Serving Designated Facilities	1,119	69	26,501	242	99.09

Municipal residential drinking water systems: In 2007-08, a total of 684 municipal residential drinking water systems reported nearly 60,000 chemical test results, and 99.46 per cent of the test results met the province's quality standards. These systems reported a total of 320 chemical **exceedances**—representing 0.54 per cent of the test results. Chemical exceedances represented 41 per cent of all exceedances during the year for municipal residential drinking water systems.

Overall, 83 municipal residential systems, or 12 per cent, had test results that exceeded provincial standards for chemical parameters (see **Chart 8**). A total of 67 systems reported more than one chemical exceedance.

Non-municipal year-round residential drinking water systems: During 2007-08, seven per cent of Ontario's non-municipal year-round residential drinking water systems reported chemical water quality test

TABLE 11: Number of Chemical Standard Exceedances

Parameter	Number of Exceedances		
	Municipal Residential Drinking Water Systems	Non-Municipal Year-Round Residential Systems	Systems Serving Designated Facilities
Arsenic	0	0	2
Barium	1	0	5
Benzene	0	0	2
Benzo[a]pyrene	0	0	1
Bromate	3	0	0
Fluoride	84	29	28
Lead*	124	5	50
Mercury	1	0	1
Nitrates (as Nitrogen)	3	12	66
Nitrogen; Nitrate + Nitrite	3	12	86
Selenium	5	0	0
Uranium	1	3	1
Trichloroethylene	1	0	0
Trihalomethanes**	94	2	0
Chemical Total	320	63	242

*Lead results with sample date prior to December 15, 2007, (the start of community lead testing) are included in this analysis. Lead results after this date are reported through the community lead testing results. Please see section on **Lead in Drinking Water**.

** Trihalomethanes are expressed as the running average of quarterly samples over one year.

results that exceeded the provincial standards. Of the 324 systems submitting samples, 22 systems had chemical exceedances (see [Chart 9](#)), and 18 systems had more than one chemical exceedance. Overall, 99.24 per cent of the chemical tests from this facility type met the health-based standards, with only 0.76 per cent of the tests results indicating exceedances.

Systems serving designated facilities: During 2007-08, six per cent (69 of 1,119) of the systems serving designated facilities that reported test results had chemical exceedances, with 44 systems reporting more than one exceedance (see [Chart 10](#)). Only 242 chemical exceedances were reported from a total of 26,501 test results, and 99.09 per cent of the results from this facility type met the province's drinking water standards.

During the year, 47 per cent of all the exceedances reported by systems serving designated facilities involved chemical parameters.

[Table 10](#) provides a summary of Chemical Test Results for Municipal Residential Drinking Water Systems, Non-Municipal Year-Round Residential Systems and Systems Serving Designated Facilities.

[Table 11](#) provides a breakdown of the number of chemical exceedances, by parameter, reported by the three facility types during 2007-08.

Test Results for Radiological Parameters

Testing for Radiological Parameters

Radiological testing may be required under a drinking water system's [Certificate of Approval](#) or by a [Provincial Officer's](#) or a [Director's Order](#). In some parts of the province, there are naturally occurring deposits of ura-



A pump in a drinking water treatment plant.

nium, and drinking water testing is carried out periodically to determine the levels of radiological parameters in the water.

Municipal residential drinking water systems: During 2007-08, eight municipal residential drinking water systems had a laboratory licensed to perform drinking water testing submit radiological test results, and found no exceedances for radiological parameters (see [Table 6](#)). No radiological tests were required in 2007-08 for drinking water from either non-municipal year-round residential drinking water systems or systems that serve designated facilities.

Testing for Aesthetic Objectives

In addition to the health-based standards set out in Ontario's Drinking Water Quality Standards, the province has adopted operational aesthetic guidelines or objectives for drinking water—which set out desirable properties for such things as colour, odour, taste and [turbidity](#). The objectives also cover chemicals such as sodium, iron and manganese.

Adverse Water Quality Incidents

Swift, strong action on adverse water quality incidents (AWQI) is a critical element of the drinking water safety net. It is important to note that an AWQI does not in itself in-



TAPPING IN

Some Hard Truths about Soft Water

In some areas of Ontario, where drinking water systems rely on groundwater sources, high levels of dissolved calcium and magnesium make the water “hard.” Hard water is generally not a health concern, but may cause lime build up in plumbing and may also cause irritated skin.

The most common treatment for hard water is to install a water softener that uses sodium as the softening agent. Adding sodium to the water helps reduce problems with pipes and clothing. Water softened with sodium is generally not suitable for human or animal consumption, and higher levels of sodium in drinking water can pose a health risk for people with certain medical conditions.

Ontario's aesthetic objective for sodium in drinking water is a maximum of 200 mg per litre. Provincial regulations require that sodium levels in drinking water of 20 mg per litre trigger notification of the local Medical Officer of Health and the ministry's Spills Action Centre.

The notification is required so that the Medical Officer of Health can tell physicians in the area about the high sodium content in the drinking water. The physicians can then advise their patients who require a sodium-restricted diet to limit their consumption of tap water.

Because of the potential health problems with sodium-softened water, the ministry recommends that anyone who installs a water softening system should also install a separate water line that bypasses the water softener, to provide water for cooking and drinking.



CHIEF'S PERSPECTIVE:

Responding to AWQIs at drinking water systems is an important element of the drinking water safety net. This ensures effective oversight, strict monitoring and prompt action in the event of an incident and effective oversight.

dedicate unsafe water, but rather that an **exceedance** of a drinking water standard has occurred or an issue has arisen within a drinking water system. Under provincial regulations and the Safe Drinking Water Act, any drinking water sample test result that exceeds the prescribed Ontario Drinking Water Quality Standards is an adverse water quality incident, or AWQI, with certain exceptions.

Ontario's drinking water is among the best protected in the world. This protection includes stringent standards, extensive sampling requirements and strong regulatory oversight. As a result of over 500,000 samples collected annually at regulated systems, less than 0.5% result in an AWQI.

In the event that the adverse result is a result of a test conducted by a laboratory, the laboratory must notify the owner or operating authority of the system, the Ministry of the Environment's Spills Action Centre, and the local Medical Officer of Health.

When a drinking water system owner or operator is aware of an adverse test result – either through their testing observations or notification from a laboratory licensed to perform drinking water testing – they must notify the Ministry of the Environment's Spills Action Centre and the local Medical Officer of Health. This duplication of reporting is a key component of the drinking water safety net and helps make sure that all appropriate notifications are made and actions taken.

Corrective actions may include re-sampling immediately or as soon as reasonably possible, adjustment of the system or treatment process or notification to system users. In all instances, the owner must take any additional measures as directed by the local Medical Officer of Health, which could include the issuing of a Boil Water (BWA) or Drinking Water Advisory (DWA).

A BWA can be used when boiling the water will remove the **contaminant** to ensure the water is safe to drink. When a system is operating under a BWA notice, system users throughout the community are advised to boil or disinfect their drinking water before consuming it.

If the drinking water quality problem causing the AWQI cannot be addressed by boiling the water or by **disinfection**, the local Medical Officer of Health may direct that a DWA be issued. Under a DWA notice, the system's consumers are advised to use another source of drinking water until the DWA is lifted.

The process of issuing water advisories is designed to take effect any time there are the slightest concerns about the safety of drinking water – the system is all about precaution. In Ontario, we will always act quickly to safeguard public health.

Throughout this process, ministry inspectors and the local public health inspector work with the owner or operating authority to make sure

they understand their regulatory requirements, and that all required actions have been taken to resolve the issue.

Provincial Adverse Water Quality Incidents Results

Municipal residential drinking water systems: Between April 1, 2007 and March 31, 2008, a total of 427 municipal residential drinking water systems reported 1,768 AWQIs containing 2,030 results within the AWQIs. Microbiological exceedances accounted for 25.8 per cent of these results within AWQIs, while 20 per cent were chemical test results, 0.2 per cent were radiological test results¹ and 54 per cent were for other parameters. The “other” category includes high sodium, **turbidity**, low chlorine, high chlorine, low pressure, low ultraviolet voltage dosage and water main breaks.

Non-municipal year-round residential drinking water systems: A total of 181 non-municipal year-round residential drinking water systems reported 456 AWQIs containing 537 results within the AWQIs in 2007-08. Systems in this facility type reported that 50.8 per cent of their results within AWQIs were related to microbiological test results, while 10.6 per cent were chemical test results, and 38.6 per cent were for other parameters.

Systems serving designated facilities: During 2007-08, a total of 406 drinking water systems serving designated facilities reported 721 AWQIs containing 864 results within AWQIs—35 per cent of which were



TAPPING IN

Long-Term Boil Water Advisories in 2007-08

Whenever an AWQI is reported, immediate **corrective action** must be taken to address the cause of the problem. A number of potential actions are available—ranging from re-sampling the drinking water and flushing the system’s lines, to the local Medical Officer of Health issuing a Boil Water Advisory (BWA).

In some situations, if additional treatment equipment must be installed, a BWA or Drinking Water Advisory (DWA) may remain in place for longer periods. If a system has a BWA in place for 12 consecutive months it is considered to be under a Long-Term Boil Water Advisory.

As reported in last year’s CDWI annual report, there were six municipal residential drinking water systems in Ontario that had ongoing BWAs or DWAs in place for 12 consecutive months, as of March 31, 2007. Since then, four of those drinking water systems have either been upgraded or replaced, and their advisories have been lifted.

As of March 31, 2008, a total of four municipal residential systems had an ongoing BWA or DWA in place for at least 12 consecutive months. One of these systems was new on the list, and its BWA notice has since been lifted. One system listed in the 2006-07 report recently had its BWA lifted. Two of the municipal residential systems listed with long term boil water advisories in the 2006-07 CDWI report still have the advisories in place, and therefore remain on the list while corrective actions are being undertaken.

microbiological, 30.4 per cent of which were chemical, and 34.6 per cent of which were other test results.

Overall, the effective response provided by regulated systems to AWQIs during 2007-08 demonstrates that Ontario’s drinking water safety net continues to work very well.

¹The test results were reported as AWQIs. The test results were not uploaded into the ministry’s database at the time of publication and therefore not reported as exceedances. The ministry is working with the laboratory to have these results uploaded to the database.

A photograph of two men in a water treatment plant. The man on the left, wearing a dark jacket with a patch, holds a clipboard and pen. The man on the right, in a grey sweater, is adjusting a valve on a piece of machinery. They are standing on a metal grate floor. The background shows industrial equipment and pipes.

**The ministry and our
partners share a common
commitment to excellence
through continuous
improvement.**

An Ontario drinking water inspector and a drinking water plant operator during a plant inspection.

2007-08 Drinking Water Inspection Report

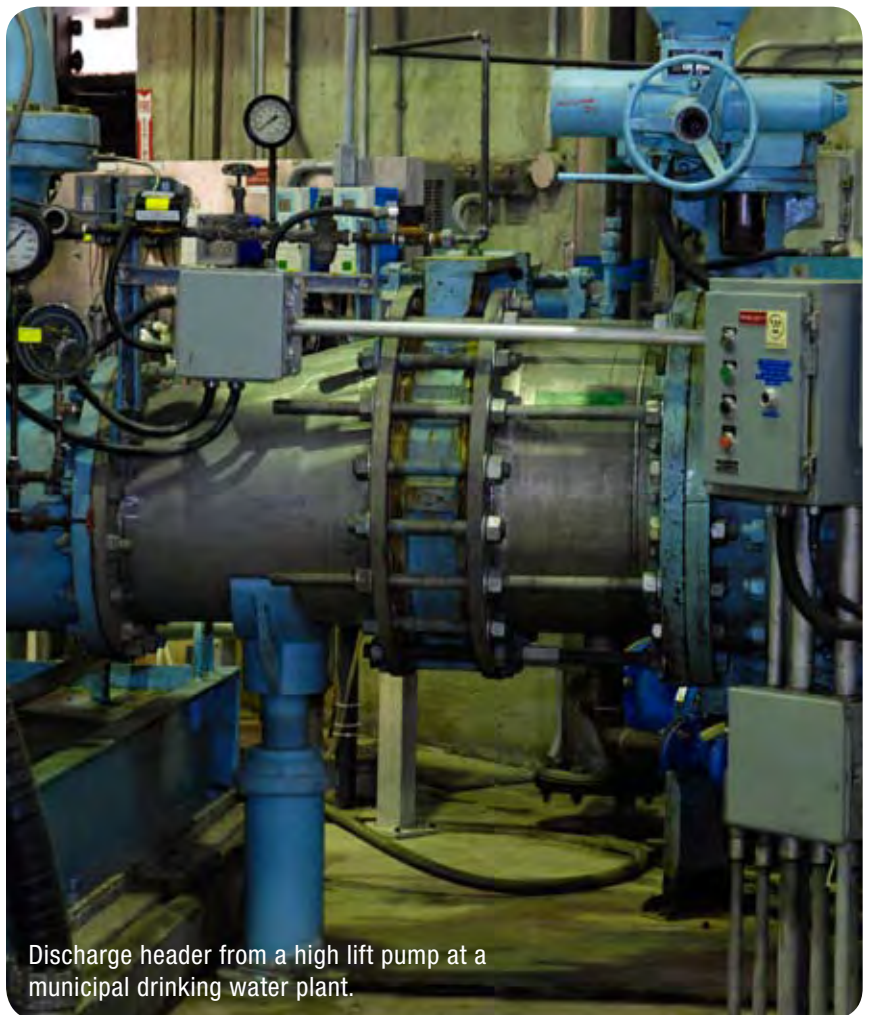
- All 697 of Ontario's municipal residential drinking water systems were inspected
- 95 percent of these systems received an inspection rating of over 90 per cent

This section includes information on the ministry's 2007-08 inspection programs for both drinking water systems and laboratories licensed to perform drinking water testing, plus information highlighting the ministry's efforts over the past year to inform and educate the public and stakeholders.

Drinking Water System Inspection Program

This part of the annual report discusses the results of the ministry's inspection program for drinking water systems in 2007-08. The inspection program includes municipal residential and other regulated systems. Information is provided on the inspection ratings the ministry calculates for each municipal residential drinking water system in the province and also includes the main areas for improvement for these systems.

A summary of convictions and **Provincial Officer's Orders** issued during the 2007-08 year is also included in this section.



Discharge header from a high lift pump at a municipal drinking water plant.

Assessing the Performance of Municipal Residential Drinking Water Systems

The ministry's annual inspection program is one of the most important factors in determining a drinking water system's performance. The ministry's rigorous, comprehensive inspection program is a key component of Ontario's drinking water safety net. The annual inspections are designed to determine how well each system is complying with the province's strict regulations

The Compliance and Enforcement Regulation (O. Reg. 242/05) requires that at least one out of every three municipal residential drinking water system inspections be unannounced. This requirement was met during 2007-08, with 37 per cent (259 of 699) of the municipal system inspections being unannounced. The ministry is also required by regulation to send an

inspection report to municipal residential drinking water system owners or operating authorities within 45 days of the inspection—and this requirement was met in every case during the past year.

The ministry's formal inspection protocol for municipal residential drinking water systems in 2007-08 consisted of 156 regulatory questions arranged in 14 modules. Each question is risk assessed and contributes to the inspection rating. Administrative and best practice questions are also included in the protocol, but do not contribute to the rating.

There are two different types of inspections – detailed and focused. Before visiting the facility, the inspectors select those questions that are relevant to the municipal residential drinking water system they are about to inspect. They take a number of local factors into consideration when selecting the protocol questions – such as the drinking water source, the type of system being inspected and whether it is a focused or detailed inspection, in effect customizing the inspection for every system. Focused inspections can be carried out at municipal residential drinking water systems that have been fully inspected three times in a row and have been found to have no regulatory compliance deficiencies.

The ministry has developed a comprehensive, risk-based inspection rating process that provides a quantitative



measure of the drinking water systems' inspection results. [Appendix 1](#) provides detailed information on an enhanced methodology for calculating the risk ratings for municipal residential drinking water systems that took effect April 1, 2008.

Municipal Residential Drinking Water System Inspection Program Results

In 2007-08 the ministry completed its planned annual inspection program of all 697 municipal residential drinking water systems in Ontario, which generated a total of 699 inspection ratings. One system was inspected twice in order to capture both its treatment works and distribution system while another received an inspection to make sure that equipment had been properly decommissioned.

Of the 699 inspection ratings, 50 per cent were 100 per cent, which means that the inspectors found no areas of non-compliance with regulations. This is a 10 per cent improvement from 2006-07, when 40 per cent of inspection ratings achieved 100 per cent, and a 17 per cent increase from 2005-06, when 33 per cent of ratings were 100 per cent. Ninety-five per cent of the inspections achieved a rating of more than 90 per cent in 2007-08, compared to 92 per cent in the previous year, and 91 per cent the year before that.



A drinking water treatment plant operator takes a water sample.

The number of systems achieving 100 per cent has been increasing steadily over the past three years. These results are a strong indicator that the efforts by the ministry and its partners to promote continuous improvement are having a significant positive impact.

The results of the 2007-08 inspection program showed that of the inspection ratings in common with 2006-07, 44 per cent of the inspection ratings improved, while 28 per cent remained unchanged from the previous year, and 28 per cent received lower ratings than the year before.

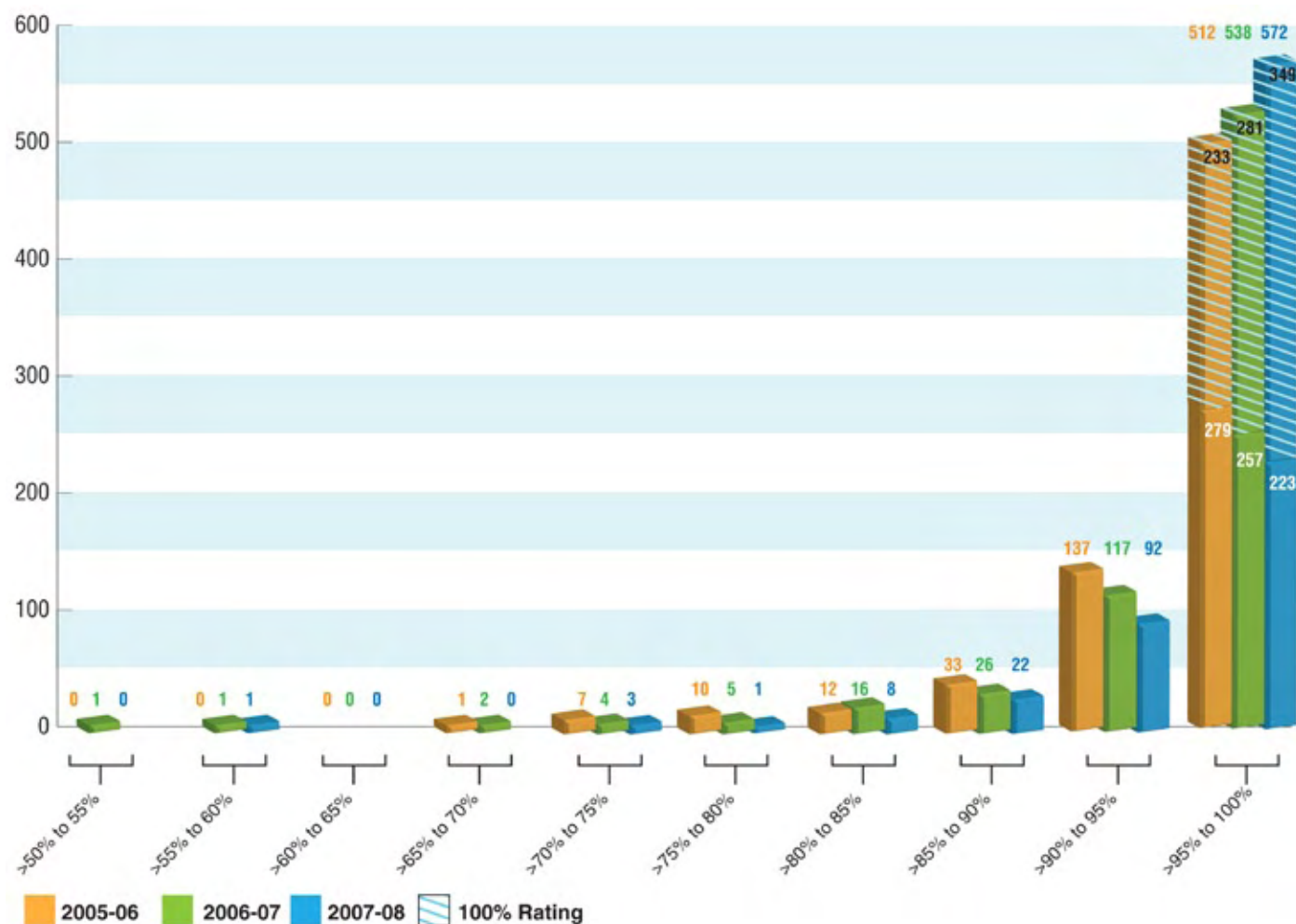
Whenever ministry inspectors find non-compliance issues, they use a range of compliance tools to help municipal system owners and operators resolve the compliance issues effec-



tively. **Chart 11** shows the distribution of inspection ratings for municipal residential drinking water systems over the past three years.

Appendix 2 of this report provides a detailed table showing the location of municipal residential drinking water systems in Ontario, the name of the systems, their 2007-08 individual inspection rating and the percentage of their drinking water quality tests that met provincial standards.

CHART 11: Distribution of Municipal Residential Drinking Water System Inspection Ratings in 2005-06, 2006-07 and 2007-08.



Municipal Residential Drinking Water Systems—Deficiencies, Orders and Orders Resolution

Deficiencies

Under the Compliance and Enforcement Regulation (O. Reg. 242/05), the ministry is required to take action within 14 days if an inspection finds deficiencies at a municipal residential drinking water system. A deficiency is a violation of provisions of Section 18 of the Safe Drinking Water Act and certain provisions of its regulations, where the violation is deemed to pose a drinking water health hazard. If the deficiency represents an existing drinking water health hazard, mandatory action must be taken immediately.

During 2007-08, the ministry's inspection program found a total of four deficiencies at municipal residential drinking water systems. Mandatory abatement action was taken within 14 days either by the issuance of a **Provincial Officer's Order** or a referral to the Investigation and Enforcement Branch. By comparison, three deficiencies were found during municipal system inspections in 2006-07, while 14 deficiencies were found in 2005-06.

Orders and Order Resolution

In 2007-08, the ministry completed a total of 699 inspections. There were a total of 14 contravention orders issued to 14 municipal residential drinking water systems. Eleven of



TAPPING IN

Ensuring Accountability — Meeting the Requirements of the Compliance and Enforcement Regulation

Under the Compliance and Enforcement Regulation (O. Reg. 242/05) the Ministry of the Environment is required to fulfill a number of specific responsibilities with respect to inspecting municipal residential drinking water systems and laboratories licensed to perform drinking water testing. During 2007-08, the Ministry of the Environment once again fulfilled its regulatory responsibilities.

Municipal Residential Drinking Water Systems

Actions included:

- Inspecting all 697 municipal residential drinking water systems in the province
- Sending inspection reports to appropriate authorities within 45 days of the completion of the inspection
- Ensuring that at least one of every three inspections was unannounced (in 2007-08 259 of 699* inspections were unannounced)
- Responding as required to adverse water quality test reports or other reported problems
- Taking mandatory action within 14 days of finding a deficiency at a municipal residential drinking water system (or taking immediate action in cases where a drinking water health hazard was present).

Laboratories Licensed to Perform Drinking Water Testing

Actions included:

- Inspecting all 56 licensed laboratories
- Completing 114 inspections at licensed laboratories while two inspections were completed at unlicensed laboratories. 53 of the laboratory inspections were unannounced, 56 were announced and five were responsive. (By regulation, at least one in two inspections must be unannounced.)
- Providing all laboratories with a inspection report within 45 days of the completion of the inspection
- Taking mandatory action within 14 days of finding an infraction at a licensed laboratory (or taking immediate action in cases where a drinking water health hazard was present).

Request for Drinking Water Investigation

The Compliance and Enforcement Regulation provides the public with the right to request an investigation of an alleged contravention of the Safe Drinking Water Act or any of its regulations or instruments. There were no applications from the public during 2007-08.

* See explanation of number of municipal residential drinking water systems, inspections and ratings on page 53.

these orders were issued as a result of inspections. Since the 14 orders were issued, 11 systems have complied with the requirements of the orders, while three systems continue to work towards complying with provincial regulations. No preventative orders were issued during the year.

Table 12 shows the number of municipal residential drinking water systems that received orders, as a result of an inspection, from the ministry over the past four years. In this regard, it is worth noting that the number of orders issued in 2004-05 was 77, while only 11 orders were issued in 2007-08 – a solid indicator of the continuous progress being made by municipal systems across the province. See [Appendix 3-A-1](#) for details of contravention orders issued to municipal residential drinking water systems as a result of an inspection.

The ministry also issued three contravention orders to three municipal

residential drinking water systems as a result of an incident involving the facility. See [Appendix 3-A-2](#) for details of these three contravention orders.

The ministry is in the fifth year of a program that focuses on drinking water systems from source-to-tap, and has been working with municipalities and other partners across the province to ensure compliance with the province's regulations. Through the continued efforts of the ministry's inspection staff, municipal system owners and operators have become more knowledgeable about meeting their regulatory obligations.

A number of ministry initiatives, including education and outreach and voluntary and mandatory compliance efforts, have helped to bring about a significant reduction in the overall levels of non-compliance. Higher compliance levels have also greatly reduced the number of Provincial Officer's Orders that have been issued.

Across the province, municipal residential drinking water system owners and operators are working hard to achieve the goal of 100 per cent compliance in all aspects of their operations and to ensure that they continue providing their customers and communities with safe, and high quality water. The ministry recognizes and appreciates these efforts—and the public benefits

TABLE 12: Municipal Residential Drinking Water Systems (MRDWS) that Received Inspection Related Orders

	2007-08	2006-07	2005-06	2004-05
Total number of MRDWS with orders	11	20*	43**	77
Total number of inspections of MRDWS	699	712	709	729
Percentage of MRDWS that were inspected and received orders	1.6 %	2.8 %	6.1 %	10.6%

* Four MRDWS were issued preventative orders in 2006-07

** 12 MRDWS were issued preventative orders in 2005-06

directly. These key drinking water partners can be proud of the tremendous progress they have made over the past several years.

Local Services Boards

Some communities in Northern Ontario do not have a formal municipal structure and are managed by a Local Services Board. Such boards are defined and governed by the Northern Services Board Act, which is administered by the Minister of Northern Development and Mines.

A Local Services Board can be established by a group of 10 or more residents who must be Canadian citizens and over the age of 18. Drinking water systems that are operated by Local Services Boards are categorized as non-municipal year-round residential drinking water systems under O. Reg. 170/03.

Local Services Boards Orders and Orders Resolution

During 2007-08, the ministry performed nine inspections of drinking water systems operated by Local Services Boards (LSBs). Following the inspections, the ministry issued three orders to three of the LSB systems. Since the orders were issued, all of the systems operated by LSBs have complied with their orders.

With respect to the four orders issued to LSBs in 2006-07, one of the boards is still working toward compliance. The same Local Servic-



es Board also received a Provincial Officer's Order during the 2005-06 inspection year. This Local Services Board recently received funding to install drinking water **disinfection** equipment. The ministry is continuing to work with the LSB to make sure that all disinfection requirements are met. See **Appendix 3-B** for details on contravention orders issued to Local Services Boards.

Inspection Results for Non-Municipal Year-Round Residential Drinking Water Systems and Systems Serving Designated Facilities



Key Facts in 2007-08:

- **The ministry undertook 196 inspections of non-municipal year-round residential drinking water systems and systems serving designated facilities in 2007-08.**
- **These inspections resulted in the issuance of 53 orders.**

Ministry inspectors have been conducting proactive risk based inspections of non-municipal year-round residential drinking water systems and systems serving designated facilities for several years. The criteria for selecting these smaller systems for an inspection include a number of considerations, such as a history of adverse water quality incidents, compliance history and referrals by the local public health unit.

During 2007-08, ministry inspectors carried out a total of 196 inspections of drinking water systems in these two facility types – 112 systems that serve designated facilities, and 84 non-municipal year-round residential systems. As a result of these inspections, the ministry issued a total of 53 orders to 43 systems – 37 orders to 27 non-municipal year-round residential drinking water systems, and 16 orders to 16 systems serving designated facilities.

This is an increase compared to the two previous years. In 2006-07, for example, 44 orders were issued to systems in these two facility types, while 40 orders were issued to these types of systems in 2005-06. The increased number of orders links directly to the ministry targeting those systems that are of higher risk.

Areas for Improvement—Regulated Drinking Water Systems

After the ministry completes its annual inspection program for regulated drinking water systems, the inspection results are carefully analyzed for trends in non-compliance. Based on this analysis, the ministry's inspectors gain a better understanding of the regulatory compliance areas that may require greater emphasis to help drinking water systems continuously improve.

This section of the report describes several of these compliance areas identified in previous annual reports. The ministry will continue to work on these areas for improvement with its partners and build the information from the compliance trend analysis into drinking water system operator training programs.

Certificate of Approval

Compliance—During 2007-08, the ministry's inspectors found numerous violations arising because equipment sizes did not match those contained in the **Certificate of Approval** (e.g., tank sizes, generation set capacity, pump capacity ratings, etc.). Other non-compliance findings were either the result of not installing equipment, or having equipment that was installed but not operational at the time of the inspection. Ministry staff continue to work with municipalities to make sure that system upgrades are completed in a timely manner, and that new equipment is installed and operating correctly.

Physical/Chemical Water Quality

Sampling—A number of systems have not monitored the physical/chemical water quality in accordance with the Drinking Water Systems Regulation (O. Reg. 170/03) or the system's Certificate of Approval. Numerous compliance violations in this area are related to collecting samples at the wrong times – typically for nitrates/nitrites and THMs – while others were caused because some drinking water systems did not sample for all required parameters.

Operations and Maintenance

Manual Compliance—A number of system's operations and maintenance manuals did not meet the requirements of their Certificate of Approval. In 2007-08, the most common issues identified in this area

related to process drawings that did not match the processes used at the facility, or to supporting documents that were mentioned in the facility's manual, but were not readily available to operators of the system at the time of the inspection.

Flow Rate Exceedance—In 2007-08, there were a number of drinking water systems whose flow rate exceeded the capacity permitted by their Certificate of Approval. While drinking water systems are allowed to exceed their approved flow rate for fire fighting and maintenance purposes, ministry inspectors found that a number of systems pumped more than their allowed capacity during 2007-08, usually in the summer. A number of systems also shut down some of their wells and pump houses to perform maintenance. This led to increased pumping from other locations, which is not an acceptable practice under provincial regulations.



CHIEF'S PERSPECTIVE:

Some non-municipal year-round residential drinking water systems and systems serving designated facilities continue to experience non-compliance issues. The ministry is leading a series of compliance activities working with these systems to bring them into compliance.



Ministry Works with Mennonite Schools to Keep Drinking Water Safe

Most Ontario Mennonites live in the Kitchener-Waterloo area throughout Waterloo Region, Wellington, Perth and Renfrew counties. To serve the educational needs of children in these small communities, the Markham Waterloo Mennonite Conference and the Old Order Mennonite Church operate 48 schools.

Under the Safe Drinking Water Act and its regulations, the schools' drinking water systems serve designated facilities and are thus required to meet the requirements of the Drinking Water Systems Regulation (O.Reg. 170/03). The ministry has been working with the schools' owners and operators to bring the Mennonite schools' drinking water systems into compliance with O. Reg. 170/03.

In 2008, some Mennonite schools planned to disconnect their taps from their drinking water systems. Seven local public health units, the Ministry of Health and Long-Term Care and the ministry determined that drinking water should be available in every school in the province, since it is a basic need and essential to children's well being.

To bring the schools into compliance, individual site visits and assessments by ministry inspectors and public health officials were planned, with the ministry providing hands-on assistance

wherever possible, and considering regulatory relief wherever appropriate.

Mennonite representatives agreed to conduct regular bacterial testing of their schools' drinking water systems and committed to taking additional measures to protect the children's health where necessary, by drilling new wells, connecting to alternative drinking water supplies or providing treatment. The ministry provided assistance in completing registration forms for drinking water systems at unregistered schools, and to correct any inaccuracies from earlier attempts at registration.

Site assessments focused on drinking water systems that were most vulnerable. All but two of the systems at these schools have now been replaced by new drilled wells or alternative drinking water sources. The two remaining schools have provided hand washing stations and alternative water for their students, and are looking at providing new drilled wells or alternative drinking water supplies in the spring of 2009.

Five Mennonite schools installed state-of-the-art ultra-violet irradiation treatment devices and several other schools are now considering the installation of similar systems. The site assessments and reports for all 48 Mennonite schools were completed in February 2009.

2007-08 Licensed Laboratory Inspection Program

This section of the annual report provides information on the 2007-08 results of the ministry's inspection program of laboratories licensed to perform drinking water testing. Twice-yearly laboratory inspections – like annual municipal residential drinking water system inspections – are a key component of Ontario's drinking water safety net.

Laboratory inspections are designed to confirm that laboratories licensed to perform drinking water testing are operating in compliance with provincial regulations. At the same time, the inspection program helps to ensure that immediate action is taken to correct any regulatory compliance issues the ministry's inspectors identify.

During 2007-08, Ontario's laboratories licensed to perform drinking water testing analyzed more than half a million drinking water samples from municipal residential drinking water systems alone. Samples are tested for a total of 158 health-related microbiological, chemical and radiological parameters which have associated Ontario Drinking Water Standards. They are also tested for specific aesthetic qualities.

In an announced inspection, the laboratory inspector schedules an on-site

Key Facts in 2007-08:

- **There were 53 unannounced inspections, 56 announced inspections and five responsive inspections at the 56 laboratories licensed to perform drinking water testing.**
- **Three orders were issued to three laboratories licensed to perform drinking water testing, and all laboratories have since complied with the orders.**



visit in advance with the laboratory.

In an unannounced inspection, the inspector gives the laboratory up to 24 hours notice before arriving at the facility to conduct the inspection. Laboratories licensed to perform drinking water testing may also receive a third type of inspection – called a responsive inspection – where the inspector arrives unannounced to conduct an inspection based on a complaint or concern raised by a ministry staff member or an external source.

The inspection of a laboratory licensed to perform drinking water testing may include an assessment of several areas, including: accreditation requirements, facilities and resources, testing methodologies, the laboratory's adverse notification and reporting requirements, management practices,



An Ontario drinking water laboratory inspector and laboratory technicians during a licensed laboratory inspection.

adoption of best laboratory management practices, records management and data retention and sample handling and reporting.

During an inspection, the laboratory inspector may interview the laboratory personnel, review records, tour the facility, collect samples, take photographs and copy documents. The inspector may also request the laboratory to analyze proficiency testing samples, and provide the ministry with timely results from these samples as part of the inspection.

Ministry inspectors also inspected two laboratories not licensed to perform drinking water testing during the year, and these inspections fall under several categories. For example, the inspectors will conduct a

pre-licensing inspection for Ontario drinking water laboratories that have applied for a drinking water testing licence with the mandatory condition that they are accredited.

Laboratories outside the province wishing to perform testing of Ontario drinking water must also apply to the ministry and may be inspected before being placed on the Director's eligibility list. In addition, laboratory inspectors may perform responsive inspections on laboratories not licensed to perform drinking water testing or companies, to ensure these organizations are not performing drinking water analysis without an appropriate licence. The laboratory inspectors inspect laboratories not licensed to perform drinking water testing and other facilities that apply for a licence using the same criteria they use for licensed laboratories, to ensure compliance with Ontario's drinking water legislation.

As with inspections for municipal residential drinking water systems, laboratory inspectors use a formal protocol to assess the regulatory performance of laboratories licensed to perform drinking water testing. The laboratories must obtain accreditation from a designated accreditation body to be permitted to perform specific types of tests. And because each laboratory specializes in certain kinds of tests, the ministry's inspectors tailor the

inspection to focus on their regulatory requirements along with other activities (i.e., test procedures that each laboratory actually carries out, laboratory management and standard operating procedures).

Under the Compliance and Enforcement Regulation, the ministry is required to provide the laboratory with an inspection report within 45 days of the inspection. The report must identify any problem areas and non-compliance issues that were found and provide guidance on how those areas and issues are to be addressed (see [Tapping In: Ensuring Accountability](#) on page 55).

Mandatory action must be taken within 14 days to address the problem if the inspector identifies a regulatory infraction. The mandatory action must be taken immediately if the infraction represents a drinking water-related health hazard.

Provincial regulations also require the licensed and outside-Ontario eligible testing laboratories to submit all their drinking water test results electronically to the ministry's Drinking Water Information System. This large database provides a comprehensive record of all the tests performed on drinking water system samples from across the province. The ministry analyzes the data to identify trends in drinking water quality, and to get an overall picture of how regulated drinking water systems have performed over time.

Licensed Laboratory Inspection Summary

The 2007-08 laboratory inspection program found that laboratories licensed to perform drinking water testing met the majority of the regulatory requirements. There were 56 laboratories licensed to perform drinking water testing registered with the ministry in 2007-08, and the ministry completed a total of 114 inspections of these facilities during the year. All told, 53 of these inspections were unannounced, while 56 were announced and five were responsive in nature. The ministry also carried out two inspections of unlicensed testing facilities in 2007-08. **Table 13** provides a summary of the laboratory inspections completed over the past four years, broken down by the type of inspection.

TABLE 13: Summary of Laboratory Inspections

Inspection Type	Licensed Laboratory Inspections Completed			
	2007-08	2006-07	2005-06	2004-05
Announced	56	59	1	57
Unannounced	53	57	113	60
Issue resolution* Announced	2	-	5	5
Responsive	5	10	15	14
Total	116	126	134	136

* Inspections performed at unlicensed testing facilities

TAPPING IN



Laboratory Inspection Program Update Project (LIPUP)

During 2007-08, the ministry began a comprehensive review of the ministry's laboratory inspection program and how it relates to laboratory licensing. The review was designed to accomplish a number of goals, including:

- Reviewing and updating the ministry's laboratory inspection protocol
- Providing guidance and detailed operating procedures to inspectors
- Creating more consistent approaches to compliance and stakeholder relations across the province
- Enhancing the functionality of the Laboratory and Waterworks Inspection System, one of the ministry's main databases for storing inspection information
- Creating a modern, effective and flexible training program for laboratory inspectors
- Enhancing overall operational effectiveness
- Developing and implementing a laboratory licence renewal process for drinking water testing licences that have expired.

A multi-jurisdictional scan of best practices in drinking water protection during the year was completed and determined that Ontario is best in class in terms of accreditation, inspections and licensing of drinking water laboratories. Ontario has the first and only mandated laboratory licensing and inspection program and many other jurisdictions are now moving to follow Ontario's lead, by requiring drinking water testing laboratories to be accredited and licensed (visit www.ontario.ca/drinkingwater for more information on the licensing program).

The ministry has also established a successful long-term agreement with two key accreditation bodies—the Standards Council of Canada and the Canadian Association for Laboratory Accreditation.

The ministry's review included examining Ontario's existing laboratory inspection program and developing new protocols and laboratory inspection questions that parallel those used during inspections of regulated drinking water systems. The review also evaluated the application of focused laboratory inspections, as well as the regulatory inspection question risk-rating model used on municipal residential drinking water systems (see [Appendix 1](#)).

The ministry has consolidated the recommended improvements into an updated program, with revised inspection protocol questions and standardized guidance for its laboratory inspectors effective April 1, 2009.

During the ministry's 2007-08 inspection program, three laboratories voluntarily withdrew from the provincial licensing program in the period between their announced and unannounced inspections.

Licensed Laboratory Orders

During 2007-08, ministry inspectors issued a total of three orders to three laboratories licensed to perform drinking water testing. In all cases, the laboratories complied with their orders. (See [Appendix 3-C](#) for details on orders issued to licensed laboratories.)

Licensed Laboratories—Areas for Improvement

As with inspections of regulated drinking water systems, the ministry analyzes the results of its licensed laboratory inspection program to identify common areas where regulatory improvement is needed. Using this information, the ministry's inspectors can better target their laboratory inspections, and also help the laboratories achieve the goal of continuous improvement through increased compliance with provincial regulations.

The ministry's licensed laboratory inspection results did identify some common areas where administrative and other procedures need to be improved.

One of the most common problem areas involved record keeping. For example, laboratories are required to retain records that confirm they have provided a drinking water system owner and operator with sample-handling and transportation directives, and the ministry's inspectors found that this was not always the case in 2007-08. Some laboratories also failed to have an acceptable policy for handling test results.

Training of laboratory staff was another area for improvement that was identified in the 2007-08 inspection program. For example, some laboratories did not train their staff on procedures for validating drinking water data after they had modified their internal computer systems used to upload data to the ministry. In addition, some laboratories did not maintain the required training records to demonstrate that the appropriate analysts had been trained to follow the laboratories' policy for calculating results.



TAPPING IN

Only Laboratories Licensed to Perform Drinking Water Testing Can Test Your Water

Because drinking water is vital to public health, the ministry strictly regulates how it is tested. Under the provisions of the Safe Drinking Water Act, and the Health Protection and Promotion Act, only fully accredited laboratories that are licensed by the Ministry of the Environment may perform health-based drinking water tests.

During 2008-09, unsolicited door-to-door representatives are offering to perform drinking water tests on tap water in Halton, Peel, Toronto and other communities. In some cases, the companies leave behind vials, asking homeowners to fill them with tap water so that the samples can be collected later for testing.

Consumers should be aware that testing performed by these representatives is only permitted for parameters such as hardness or some other aesthetic quality of the drinking water found in a home's plumbing. If you do find that they are testing and/or reporting results for any health-related testing related to the quality of water in the drinking water systems serving the home (i.e., *E. coli*, total coliform or other parameters listed in O. Reg. 169/03), you should immediately contact the Ministry of the Environment, your municipality or your local public health unit. If you suspect fraud, you may also contact your local police or the Consumer Protection Branch of the Ontario Ministry of Small Business and Consumer Services at (416) 326-8800 in Toronto, or 1-800-889-9768 toll-free.

If a company is not compliant with Ontario's legislative and regulatory requirements, a ministry inspector could issue a [Provincial Officer's Order](#) requiring the company to stop performing tests, and/or refer the matter to the ministry's Investigations and Enforcement Branch.

CHIEF'S PERSPECTIVE:

The 2007-08 laboratory inspection program found that laboratories licensed to perform drinking water testing met the majority of the regulatory requirements. The ministry continues to work with the licensed laboratory community to address the mainly administrative non-compliance issues identified during the year.





CHIEF'S PERSPECTIVE:

The ministry continues to work with its drinking water partners to overcome areas of non-compliance. In the meantime, drinking water consumers can be confident that, when potential violations occur, action is taken which could include pursuing the matter through the court system.

2007-08 Convictions

Under Ontario law, those who are responsible for delivering safe drinking water to the public are accountable for their actions. The ministry's Investigation and Enforcement Branch (IEB) is responsible for investigating potential violations of Ontario's environmental protection laws, including the Safe Drinking Water Act and its regulations.

Moreover, the ministry's investigators must conduct their business fairly and impartially, since they are gathering what could become legal evidence used to prosecute people or businesses in the courts. Convictions could involve fines, prison sentences, or both.

The process from investigation to prosecution involves several steps:

- The ministry's drinking water inspector files an incident report and refers the alleged drinking water violation to IEB
- IEB reviews the inspector's report and, if necessary, begins an investigation (an investigation involves interviewing witnesses and taking formal statements – sometimes requiring **cautioned statements** from people who may face charges – and acquiring search warrants or other judicial authorizations, as needed)
- When IEB completes its investigation, the investigator reviews all the evidence gathered, and decides whether or not to recommend the laying of charges
- If the laying of charges is recommended, a Crown Attorney reviews the evidence, evaluates the benefits to the public of pursuing a conviction, and also evaluates the likelihood of securing a conviction
- If the Crown Attorney decides to pursue a conviction, charges are laid.



An Ontario drinking water inspector and drinking water plant operators during a plant inspection.

Drinking Water Systems Convictions Overview

During the period between April 1, 2007 and March 31, 2008, there were 19 cases involving convictions related to drinking water systems regulated under the Safe Drinking Water Act and

O. Reg. 170/03. Of the 19 cases, three cases also included contraventions under the Ontario Water Resources Act. The cases with convictions resulted in fines totalling \$214,900 (please note that the conviction statistics reflect the year in which the conviction took place, not the year when the offence was committed).

Of the 19 cases, there were 11 cases with convictions in 2007-08 involving 13 municipal residential drinking water systems. The resulting convictions led to fines totalling \$157,000. Of these, eight cases involved convictions of municipal residential drinking water system owners that led to fines of \$134,500. In addition, two cases with convictions involving three individuals resulted in fines of \$12,500 for drinking water violations at municipal systems. As well, one case involving an operating authority resulted in a fine of \$10,000.

Of the 19 cases, there were four cases with convictions involving non-municipal year-round residential drinking water systems in 2007-08, resulting in fines totalling \$44,000. During the year, four systems serving designated facilities received a total of four convictions, resulting in fines totalling \$13,900.

There were no convictions in 2007-08 involving laboratories licensed to perform drinking water testing.

These results are summarized in **Table 14**. See **Appendix 4** for details on drinking water system-related convictions and fines in 2007-08.

TABLE 14: Summary of 2007-08 Convictions for Drinking Water Prosecutions by Facility Type

Facility Type	2007-08 Total Cases with Convictions	Number of Systems/Laboratories	2007-08 Fines
Municipal Residential Drinking Water Systems*	11	13	\$157,000
Non-Municipal Year-Round Residential Systems	4	4	\$44,000
Systems Serving Designated Facilities	4	4	\$13,900
Licensed Laboratories	-	-	-
Total	19	21	\$214,900

* Includes two cases with convictions against three individual operators and one conviction against an operating authority with fines totalling \$22,500

Certification and Training

Certification and training of the people that deliver drinking water to consumers in Ontario is a key component of the province's drinking water safety net. Ontario's requirements in this area are among the most stringent in North America, and this is one more reason why consumers can have confidence in the safety and quality of the water they get from their taps. All operators must complete comprehensive training at the beginning of their careers and

DRINKING WATER FACTS:

A normal dishwasher uses 41 litres of water per cycle.
Five minutes of rinsing dishes under a faucet uses up to 95 litres of water.





Ontario drinking water operator certificates.

continue to complete an additional 20 to 50 hours of training/continuing education each year, depending on the complexity of the system where they work.

2007-08 Operator Certification Data

All drinking water operators are required to be certified, through completion of training, examinations and verification of experience. Operators can hold different types of certificates, depending on the type of drinking water system for which they are responsible. System operators who are beginning their careers start out by qualifying for an Operator-in-Training (OIT) certificate which allows them to

TABLE 15: Numbers of Certificates for Certified Operators Issued (as of March 31, 2008)

System Type	OIT*	Class 1**	Class 2**	Class 3**	Class 4**	2007-08 Total	2006-07 Total
Water Treatment: system collects, produces and treats drinking water	1,160	851	622	357	352	3,342	3,867
Water Distribution (includes Water Distribution and Supply): system distributes water only or distributes and treats water only by disinfection	1,372	1,194	1,433	414	231	4,644	5,143
Limited Surface/Ground Water***						287	254
Total Certificates						8,273	9,264

* Operator-in-training certificate

** Drinking water systems are classified on a scale of 1 to 4 based on operational complexity and population served. Correspondingly, operators are certified from Class 1 to 4 based on education, training, examination and experience.

*** A Limited System certificate is the minimum requirement for operating the following categories of systems: small municipal residential (groundwater), non-municipal year-round residential, large non-municipal non-residential serving a designated facility, and large municipal non-residential serving a designated facility.

work in a drinking water system under proper supervision while they continue their training.

Another type of certificate – called a Limited System Certificate – is the minimum requirement for operating a number of system categories. These system types include small municipal residential (groundwater) systems, non-municipal year-round residential systems, large non-municipal non-residential systems that serve a designated facility, and large municipal non-residential systems that serve a designated facility.

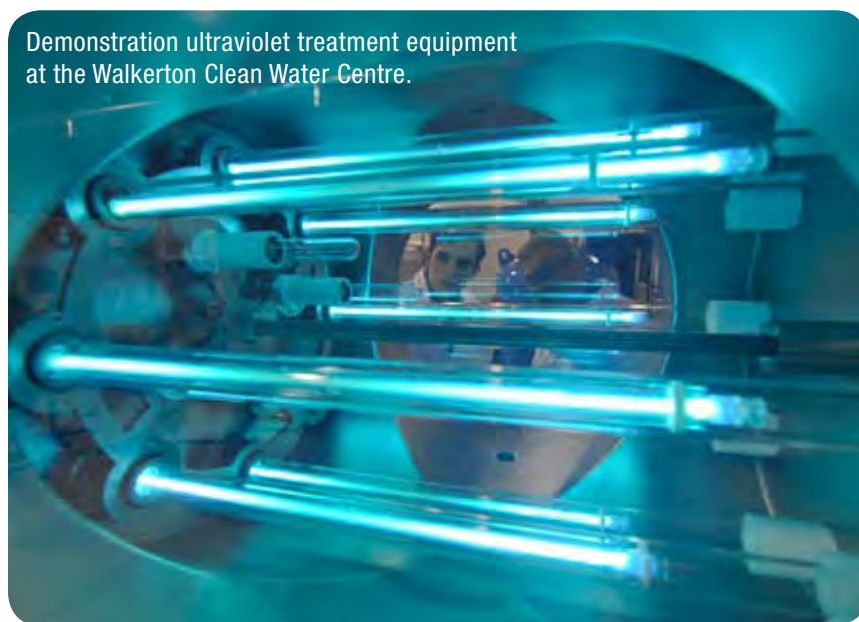
As of March 31, 2008, there were 6,243 certified drinking water operators in Ontario, and those operators held a total of 8,273 active certificates. This represents a decrease of 361 certified operators and 991 certificates, compared to March 31, 2007². **Table 15** summarizes the numbers of certificates held by certified operators as of March 31, 2008.

The change in the number of certified operators is a result of a decrease in the number of people who hold the OIT certificates. The OIT is the initial certificate obtained by new operators and acts as a transitional certificate to Class 1. Prior to 2004 wastewater treatment operators and college students would often maintain drinking water OIT certificates even though they were not employed as a drinking water operator. As a result of stricter certification requirements introduced

in 2004, these operators were no longer eligible to maintain drinking water certificates without operating experience. By contrast with the drop in the number of OITs, the number of Class 1 to 4 operators increased slightly during the same period, indicating that the number of persons employed as drinking water operators in the province has remained fairly constant.

2007-08 Walkerton Clean Water Centre Initiatives

One of the key stakeholders in the ministry's education and outreach activities is the Walkerton Clean Water Centre, which works with the ministry to deliver drinking water training and education. The Centre has been located in temporary quarters in Walkerton, Ontario, for four years and a new,



Demonstration ultraviolet treatment equipment at the Walkerton Clean Water Centre.

²Please note that the 2006-07 CDWI annual report inadvertently reported the total number of drinking water system operators and the total number of active certificates for 2006-07. The actual number of operators as of March 31, 2007 was 4,897, and the actual number of active certificates was 9,264.



DRINKING WATER FACTS:

If the total world's water supply was 100 litres, the amount of drinkable water is equivalent to only half a teaspoon!

permanent facility is currently under construction.

The Centre was created to coordinate and deliver training for owners and operating authorities of drinking water systems with a focus on smaller, remote and older systems. They are also working with stakeholders in other jurisdictions on research projects involving water quality and treatment processes. Centre staff also work with the ministry and stakeholders to provide access to training for First Nations on a cost-recovery basis. The Centre's vision is to create a world-class institute dedicated to safe and secure drinking water for the people of Ontario. Each year, the Walkerton Clean Water Centre produces an annual report, which is available at www.wcwc.ca/en/about/corporate.asp.

In 2007-08, the Centre coordinated and delivered training for a total of 4,821 drinking water professionals from across the province. On behalf of the ministry, the Centre provides two training courses that are mandatory for drinking water system operators—*Entry Level Drinking Water Operator and Safeguarding*

Drinking Water Quality. The Centre also offers the ministry's *Operation of Small Drinking Water Systems* course, which is mandatory for limited system operators. In addition, the Centre provides \$3,500 support to each college delivering the Operator-In-Training program.

The Centre offers courses both at its facility in Walkerton and in various other locations throughout the province. More than 25 specialized courses and workshops on drinking water treatment are available and the Centre can make arrangements to have these courses and workshops delivered on-site.

As part of its province-wide mandate, the Centre is also working to build positive relations with First Nations communities through selective training and outreach, and to improve the capabilities of people who operate First Nations drinking water systems.

The Centre operates two mobile training units that provide training on water treatment technologies and information to people in northern Ontario. During 2009-10, the Centre plans to add a third mobile unit, which will be based in southern Ontario.

Construction began in the fall of 2008 to build a new permanent facility for the centre in Walkerton, Ontario. The 19,150 square foot facility will be finished by the fall of 2009,

and will be constructed to Leadership in Energy and Environmental Design (LEED) Gold Building Certification specifications.

Training Program Update

Ongoing education and training is an important part of continuous improvement. The ministry works with the Operator Certification Working Group and other stakeholders each year to continually review the provincial guidelines for training and certifying drinking water system operators. In 2007-08, work in this area included revising the Operator-in-Training (OIT) exam, and reviewing the OIT guideline to help streamline student applications for OIT certificates.

As of March 31, 2008, a total of 11 community colleges had signed agreements with the ministry to deliver the Entry Level Drinking Water System Operator Course as part of their Environmental Technician programs. The colleges with agreements in place with the ministry are Canadore College, Centennial College, Confederation College, Durham College, Fleming College, Humber College, Georgian College, Mohawk College, Northern College of Applied Arts and Technology, St. Lawrence College and Sault College of Applied Arts and Technology. A number of other colleges have expressed their intention to sign similar agreements.



Operator training at the Walkerton Clean Water Centre.

2007-08 Education and Outreach Activities

Education and outreach activities are an important part of Ontario's drinking water safety net. The ministry works to educate and inform both stakeholders and the public throughout the drinking water community, using a range of information tools such as fact sheets, guides, technical documents, webcasts and videos. Each year, the Chief Drinking Water Inspector and other ministry staff also participate in numerous conferences, symposia, meetings and other special events—attending and speaking to audiences that range from drinking water system owners and operators and related associations, world-class scientists, researchers and academics, to children in elementary school.



CHIEF'S PERSPECTIVE:

A key element of the ministry's commitment to public accountability and transparency is to provide information about the measures taken to protect drinking water. Our public reports and education and outreach activities give people access to reliable, comprehensive information on regulatory requirements and the state of their drinking water.

The ministry uses a collaborative, informative approach to achieve its regulatory goals and to build trust and strong, effective partnerships with all stakeholders in the drinking water community. Ultimately, the goal of these proactive education and outreach activities is to promote compliance with regulations, continuous improvement and common understanding of the roles and responsibilities of everyone involved in protecting and delivering safe drinking water across Ontario.

This section of the annual report provides highlights of some of the ministry's major activities in education and outreach area during 2007-08.

Drinking Water Ontario

The Ministry of the Environment launched an online gateway to drinking water information in the spring of 2007 to meet Justice O'Connor's information management related recommendations.

From its inception, the site was organized to help stakeholders and the public access relevant drinking water information. Stakeholders such as owners and operators, laboratories licensed to perform drinking water tests and private well owners can select a personalized view. Likewise, students can choose a view that links them with age appropriate information about programs that deal with drinking water in their schools, people

who work in the drinking water field, and other resources about Ontario's drinking water.

During 2007-08, the site continued to provide the public with easy-to-navigate information about drinking water services. It also updated stakeholders with business intelligence and facts relevant to their regulatory requirements, and provided internal ministry staff and drinking water partners with information to help them better coordinate their activities and collaborate on initiatives.

In addition, Drinking Water Ontario's content continued to grow. It was regularly updated with data from the Drinking Water Information System (DWIS) and the Laboratory and Waterworks Inspection System (LWIS)—the ministry's two main drinking water databases. It includes municipal residential drinking water system inspection results, map-based access to profiles of owner and operators of these drinking water systems, links to municipal websites and drinking water quality test results for each municipal residential drinking water system in the province.

Looking toward the future, the site will include historical drinking water quality test results and inspection rating results.

Please visit Drinking Water Ontario at www.ontario.ca/drinkingwater.



TAPPING IN

Local Festivals Stir Children's Interest in Water

Working with the Children's Water Education Council (the Council), the ministry is helping to stir interest in water among tens of thousands of young people each year. The first Children's Water Festival was held in Milton in 1994. Since then, an estimated 300,000 children have attended water festivals organized by the Council. The water festivals are usually held in the spring or fall, and are interactive events that aim to raise awareness among elementary school children about safe water and safe water practices.

In 2008, a total of 23 communities held children's water festivals including first-time festivals in St. Thomas and Hamilton. More than 80,000 students attended the festivals, supported by some 4,000 volunteers. Local high school students were provided with an opportunity to learn new skills, provide leadership to younger students and earn volunteer credits. The Council also introduced a new assessment tool that allows them to gather feedback from each festival.



In 2007-08, the ministry provided funding to the Children's Water Education Council for drinking water education and outreach to youth and children and for the Council's activities that support local festival committees.

The communities that held festivals in 2008 included Brantford, Chatham-Kent, Durham, Essex, Eastern Ontario (four festival locations), Grey Bruce, Kenora, Halton, Haliburton, Hamilton, Niagara, Peterborough, Sault Ste. Marie, St. Thomas, Sudbury, Trenton and Thunder Bay. To learn more about the Children's Water Education Council and festivals being held across Ontario in 2009, visit the Council's website at www.cwec.ca.

Education and Outreach Activities for O. Reg. 170/03

During 2007-08, the ministry continued its efforts to educate and inform owners and operators of smaller drinking water systems about the requirements and

obligations involved in complying with O. Reg. 170/03.

Ministry staff produced and distributed new fact sheets on the regulation during the year, and held a series of owner and operator information sessions for systems

TAPPING IN



Outreach Through Webcast Technology

When the government announced its Lead Action Plan in June 2007, it was vital to communicate the information about Ontario's new sampling and testing requirements under O. Reg. 170/03 to all municipal and non-municipal system owners quickly and effectively. Complete and systematic coverage was important since system owners and operators needed to recruit volunteer households who would permit drinking water samples to be taken from their taps.

To communicate the new regulatory requirements involving lead in drinking water, the ministry developed a plan for a number of regional information sessions. To broaden the reach of these sessions, the ministry webcast two of the sessions on the Internet.

The ministry's Barrie field office staff led these webcasts, guiding the session participants through a series of information slides and interactive questions. The sessions were accessible to people on their office computers, enabling them to view the presentations, listen to the audio feed and e-mail questions to the presenters in real time.

In June 2007, when O. Reg. 243/07 introduced new flushing and sampling for lead requirements for schools, private schools and day nurseries, close to 10,000 facility operators needed to learn how to comply with the new regulation. In most cases, these were people who work in buildings that receive water from municipal residential drinking water systems and who had never before taken a drinking water sample to be used for laboratory testing. This presented another opportunity to use webcast technology to reach a large group that is spread out across the province. The ministry took full advantage of this new technology by hosting five separate webcasts tailored to meet the needs of each type of regulated facility. The ministry also produced two instructional videos for operators of schools, private schools and day nurseries to show them how to properly flush a building's plumbing and how to take a drinking water sample for lead testing. These videos were produced in both English and French, and are available in DVD format or online through the Drinking Water Ontario website (www.ontario.ca/drinkingwater).

On-line and DVD Workshops Summary Available

In addition to using webcasts to reach out to stakeholders in 2007-08, the ministry created a DVD with an audiovisual summary of the Municipal Drinking Water Licensing Program workshops that were held in the fall of 2007. The voice-over recorded in the studio was synchronized to a presentation that

summarizes the information from the workshops. The DVDs were distributed to each municipal residential drinking water system owner in Ontario. By using new technology to reach out to its drinking water partners and stakeholders, the ministry is making an important difference.



TAPPING IN

Reaching Out to Students and Young People

Recognizing the importance of reaching Ontario's next generation of water consumers, the ministry developed a number of special education and outreach initiatives in 2007-08 that were specifically targeted at students, teens and young children.

In 2007-08, the Drinking Water Ontario website added a new comic book feature called *Pipe Dreams—the Drinking Water Adventures of Danny Droplet*—a colourful, informative book about drinking water treatment. *Pipe Dreams* is targeted primarily at children in Grades 2 to 5, and is complemented by fun learning activities and a colourful classroom poster.

For teens and high school students, the Drinking Water Ontario website contains information on careers in water, as well as a link to job opportunities at the Ontario Water Works Association.

The site also offers information on the Walkerton Clean Water Centre Scholarship Program, which supports graduate students in universities who are pursuing studies in drinking water quality.

For younger children, the Drinking Water Ontario website offers an animated tour of a drinking water plant, which explains the various steps involved in making sure our drinking water is clean and safe.

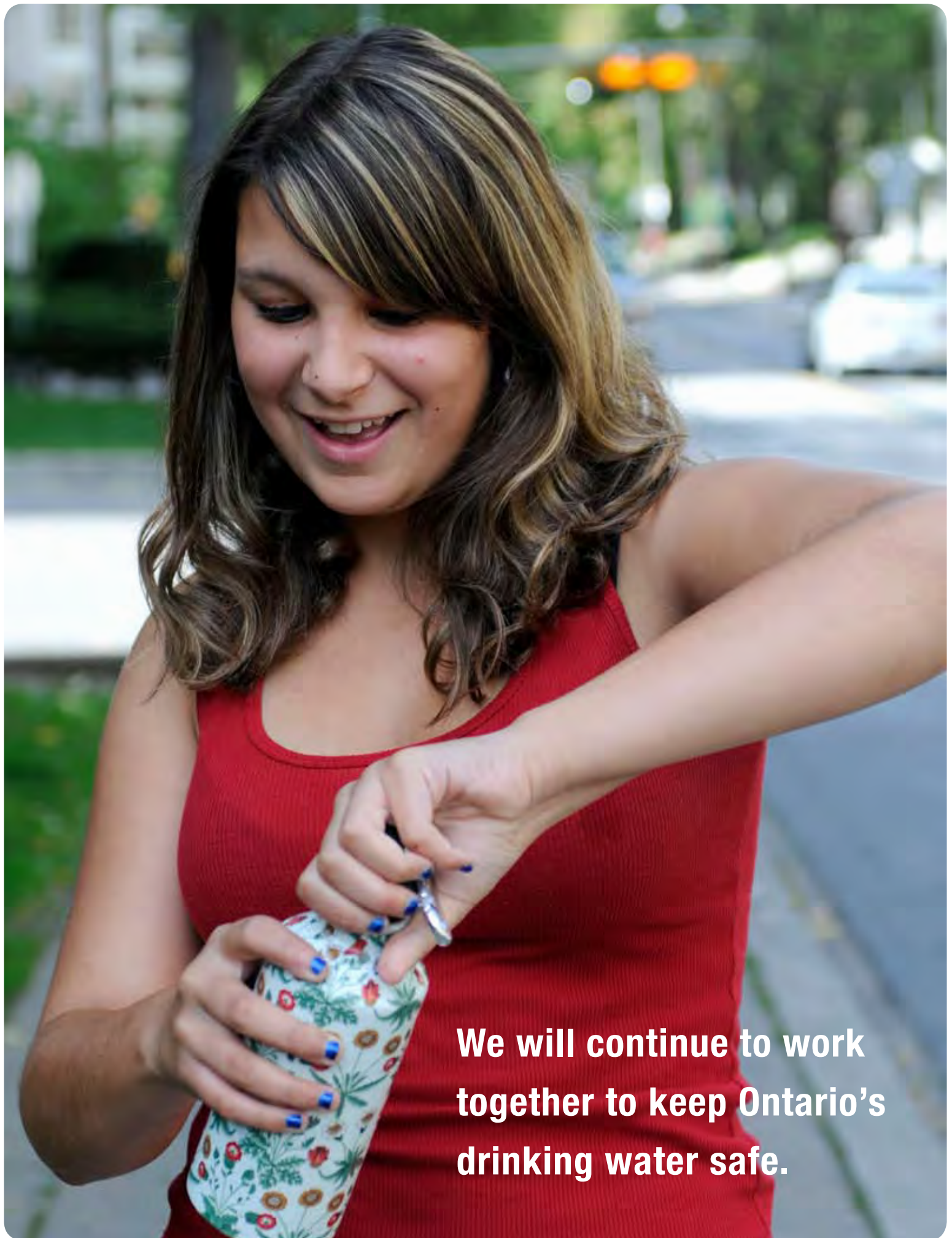
Also on the website are descriptions of how water-related issues are covered by the Ontario school curriculum, and links to sites such as the American Water Works Association's children's page, which offers information on the story of drinking water and ideas for water-related science projects.

serving designated facilities and non-municipal year-round residential systems throughout the province.

In November 2007, the ministry held a series of information sessions for drinking water system owners and operators on the government's new requirements for lead testing and monitoring. Six of these sessions were held for municipal system owners and operators, and nine sessions were held for owners and operators of non-municipal year-round residential systems. In all, 558 people attended the sessions, including many who participated by webcast.



A Ministry of the Environment employee explaining the drinking water cycle to children at the Royal Winter Fair.



**We will continue to work
together to keep Ontario's
drinking water safe.**

The Year Ahead

Many dedicated and highly skilled partners work together to provide our homes and businesses with high quality drinking water.

Maintaining safe, high quality drinking water is a major undertaking—one that involves the ministry and many partners and stakeholders across Ontario. The ministry is committed to continuous improvement, and to making sure that the province's regulatory requirements for drinking water quality are met. And to deliver on those commitments, work on several key drinking water initiatives will continue over the coming months.

One example is the ministry's continuing implementation of the new Municipal Drinking Water Licensing Program. Ministry staff will continue to work closely with drinking water system owners, operators, operating authorities and other stakeholders in the coming months to enable a smooth, seamless transition to the new system. The implementation is currently on track, and the ministry expects that every municipal residential drinking water system will have obtained a licence by 2012. Within the next few months, the ministry will be publishing two ad-

ditional guidance documents related to this program.

During the coming year, local public health units and the Ministry of Health and Long-Term Care will continue to move forward on their new responsibility for oversight of small drinking water systems. This involves using a risk-based approach to the treatment and monitoring of these systems. The Ministry of Health and Long-Term Care will be contributing information from the local public health units on small drinking water systems for future reports.

Another initiative that will be reported in the next annual report involves the new inspection ratings for municipal residential drinking water systems, which will be prepared for the first time using the ministry's enhanced risk assessment methodology. These changes in the risk assessment methodology are described in detail in [Appendix 1](#). The ministry's inspectors began using the methodology on April 1, 2008. This means that all the inspection



ratings reported for 2008-09 will be based on this new approach.

I look forward to further progress on the implementation of the Lead Action Plan and reporting results from the second round of community testing. The ministry will continue to work with owners and operating authorities of municipal residential drinking water systems, schools, private schools and day nurseries over the coming months to address the lead issue and to make sure that the province's new regulatory requirements for flushing and testing are met.

Progress on source protection planning will also continue, as local source protection committees complete and obtain approval for their

required terms of reference, and move on to prepare local assessment reports that identify threats to drinking water sources. Source protection planning represents a major undertaking for the ministry and its partners, and next year's annual report will give another detailed update on our progress.

The ministry expects to continue working on source protection with First Nations communities during the coming year. Under the Clean Water Act, First Nations communities located within the 40 source protection areas in Ontario can choose to include their drinking water systems in the local source protection planning process, by submitting a Band Council resolution to the Minister of the Environment requesting that their drinking water systems be included. The systems can then be included in the local process through the passing of a provincial regulation.

The ministry will continue to report on the quality of Ontario's drinking water, through subsequent Chief's reports and the Minister's Annual Report on Drinking Water. These reports can be found on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

Ontario's drinking water safety net works to safeguard public health by protecting the drinking water on which we all rely. Our drinking

water is among the best protected in the world—and working together, we can make sure it stays that way. Drinking water partners will continue to safeguard all aspects of Ontario's drinking water safety net through ongoing cooperation, protective measures and, when required, immediate **corrective action**.

The Chief Drinking Water Inspector welcomes feedback on this report, as well as comments and ideas for future editions of the report. The Chief can be reached at **drinking.water@ontario.ca**.



Glossary

C

Cautioned Statement:	in the course of an investigation, an Investigator may ask a person suspected of committing an offence whether he/she wishes to give a statement regarding the alleged offence before charges are issued. If the Investigator has reasonable and probable grounds to believe that the person has committed the offence, the Investigator must first caution that person. A caution is administered either verbally or in writing to inform the person of the right to remain silent, the right to retain counsel before being interviewed and that anything said may be used as evidence against the person.
Certificate of Approval:	under the Safe Drinking Water Act, a legal instrument which permits the construction or alteration and operation of certain categories of drinking water system, or parts thereof. The Ministry issues this document after an engineering review of the proposed facilities and when it is satisfied that the facilities will work as intended and will be able at all times to supply drinking water meeting Ontario Drinking Water Quality Standards and requirements of O.Reg. 170/03.
Chlorine Residual:	the concentration of chlorine remaining in the chlorinated water at the end of a given contact time that is available to continue to disinfect. Measured as Free Chlorine, Combined Chlorine and Total Chlorine.
Conservation Authority:	local watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations (www.conservation-ontario.on.ca).
Contaminant:	any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect.
Corrective Action:	steps that must be taken following an adverse water quality incident as specified by O. Reg. 170/03, Schedules 17 & 18, directed by the local medical officer of health or drinking water inspector, that are necessary to protect human health.
Corrosivity:	water or liquids having the ability to leach material (especially metals) from the surface of the material with which it is in contact.

D

Disinfection:	the destruction or inactivation of pathogenic and other kinds of microorganisms by physical or chemical means.
Director's Order:	a legal instrument issued by an appointed Ministry of the Environment Director under the authority of a provision of a statute administered by the Minister of the Environment.

E	
<i>E. coli</i> (<i>Escherichia coli</i>):	a species of bacteria naturally present in the intestines of humans and animals. If animal or human waste containing <i>E. coli</i> contaminates drinking water it may cause gastrointestinal disease in humans. Most types of <i>E. coli</i> are harmless, but some active strains, especially O157:H7, produce harmful toxins and can cause severe illness.
Exceedance:	violation of a limit for a contaminant as prescribed in the Ontario Drinking Water Quality Standards regulation (O.Reg. 169/03).
F	
Filtration:	the separation of suspended solid particles from a fluid stream by passage of the fluid through a granular or membrane filter medium that retains most of the solids on or within itself.
P	
Permit to Take Water (PTTW):	any person that takes more than 50,000 litres of water per day from any source requires a permit from the Ministry of the Environment under the Ontario Water Resources Act.
Provincial Officer Order:	an order issued by a Ministry of the Environment Provincial Officer to any person that contravenes any act governed by the Ministry of the Environment.
R	
Raw Water:	surface or groundwater that is available as a source of drinking water but has not received any treatment.
T	
Turbidity:	a visible haze or cloudiness in water caused by the presence of suspended matter, resulting in the scattering and absorption of light. The cloudier the water, the greater the turbidity.
U	
Ultrafiltration:	a pressure-driven membrane filtration process that removes submicron particles (including viruses) and some large molecule dissolved organics.
W	
Waterborne Disease:	a disease transmitted through the ingestion of contaminated water. Water acts as a passive carrier of the infectious agent, chemical or waterborne pathogen.
Watershed:	a region or area bounded peripherally by a divide and draining ultimately to a particular water-course or body of water.

List of Figures, Charts and Tables



FIGURES

FIGURE 1: The Drinking Water Safety Net	10
FIGURE 2: The Drinking Water Cycle: From Source-to-Tap and Back Again	11
FIGURE 3: Phased In Licensing of Municipal Drinking Water Systems	20

CHARTS

CHART 1: Provincial Plumbing Results from Round 1 Community Testing	25
CHART 2: Provincial Distribution Results from Round 1 Community Testing	25
CHART 3: Results from Public/Private Schools and Day Nurseries Submitting Standing Results in 2007	27
CHART 4: Results from Public/Private Schools and Day Nurseries Submitting Flushed Results in 2007	27
CHART 5: <i>E. coli</i> Results from Municipal Residential Drinking Water Systems	42
CHART 6: <i>E. coli</i> Results from Non-Municipal Year-Round Residential Drinking Water Systems	42
CHART 7: <i>E. coli</i> Results from Drinking Water Systems Serving Designated Facilities	42
CHART 8: Chemical Test Results from Municipal Residential Drinking Water Systems	44
CHART 9: Chemical Test Results from Non-Municipal Year-Round Residential Drinking Water Systems	44
CHART 10: Chemical Test Results from Drinking Water Systems Serving Designated Facilities	44
CHART 11: Distribution of Municipal Residential Drinking Water Systems Inspection Ratings in 2005-06, 2006-07 and 2007-08	54

TABLES

TABLE 1:	The Five Elements of Ontario's Municipal Drinking Water Licensing Program	19
TABLE 2:	Components of Ontario's Lead Action Plan	23
TABLE 3:	Drinking Water Test Results for Drinking Water Systems	34
TABLE 4:	Number of Drinking Water Systems Registered with the Ministry and the Number of Systems Submitting Drinking Water Test Results for 2007-08	35
TABLE 5:	Number of Registered Systems Serving Different Types of Designated Facilities as of March 31, 2008	36
TABLE 6:	Summary of Drinking Water Test Results for Municipal Residential Drinking Water Systems from April 1, 2007 to March 31, 2008	37
TABLE 7:	Summary of Drinking Water Test Results for Non-Municipal Year-Round Residential Systems from April 1, 2007 to March 31, 2008	38
TABLE 8:	Summary of Drinking Water Test Results for Systems Serving Designated Facilities from April 1, 2007 to March 31, 2008	39
TABLE 9:	2007-08 Microbiological Test Results	40
TABLE 10:	2007-08 Chemical Test Results	45
TABLE 11:	Number of Chemical Standard Exceedances	45
TABLE 12:	Municipal Residential Drinking Water Systems (MRDWS) that Received Inspection Related Orders	56
TABLE 13:	Summary of Laboratory Inspections	63
TABLE 14:	Summary of 2007-08 Convictions for Drinking Water Prosecutions by Facility Type	67
TABLE 15:	Numbers of Certificates for Certified Operators Issued (as of March 31, 2008) . . .	68



Appendices

1: New Municipal Residential Drinking Water System Inspection Rating Methodology for 2008-09	85
2: 2007-08 Municipal Residential Drinking Water System Inspection Ratings and Drinking Water Quality Results	88
3: 2007-08 Orders	106
3-A-1: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of an Inspection	106
3-A-2: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of a Response to an Incident	107
3-B: Summary of Local Services Board Drinking Water Systems Receiving Contravention Orders in 2007-08	108
3-C: Summary of Laboratories Licensed to Perform Drinking Water Testing Receiving Contravention Orders in 2007-08	108
4: 2007-08 Summary of Municipal Residential Drinking Water Systems Convictions.....	109
5: Examples of Health Related Chemical Drinking Water Quality Standards	110

APPENDIX 1: New Municipal Residential Drinking Water System Inspection Rating Methodology for 2008-09

The ministry's annual inspection ratings are designed to encourage drinking water systems to strive for continuous improvement and ultimately to meet the ministry's long-term goal of 100 per cent compliance by all systems. The ratings also help measure each system's progress from year to year, and provide a straightforward way of comparing performance in a single year, and from one year to the next.

Background

The risk-based inspection rating process developed by the ministry provides a quantitative measure of the inspection results. The rating is expressed as a number out of 100, where a rating of 100 per cent means that the inspector found zero non-compliance issues during the system's annual inspection.

Calculating the annual inspection ratings focuses on a risk-based assessment methodology. Risk management is a systematic way of identifying and addressing existing and potential hazards. It requires understanding the risks that are involved in a process, the likelihood that they will occur, the consequences and/or potential consequences if they do occur, and the actions that can be taken to eliminate or mitigate the impact.

This approach to risk management aligns closely with the Inspection, Investigation and Enforcement (IIE) Risk Management Framework. This framework is built on universally accepted risk assessment standards, and has now been adopted by ministries as a standard approach to managing risk.

On April 1, 2008, the ministry adopted a revised, improved methodology for

calculating the risk ratings for municipal residential drinking water systems. The changes are designed to give the ministry an improved metric for evaluating risk and safety in the inspections of these drinking water systems. The improved methodology uses a larger scale for consequence which further refines risk values.

The inspection rating system will continue to highlight to the public and inform municipal system owners and operators regarding their own performance results and trends compared to other similar systems across the province.

The ministry introduced the inspection ratings in the CDWI 2005-06 Annual Report, and these ratings are available on the Drinking Water Ontario website. The current report provides individual ratings in **Appendix 2**, based on the original methodology. These inspection ratings are also available on the Drinking Water Ontario website (www.ontario.ca/drinkingwater).

Determining Likelihood and Consequence Values

Ministry drinking water specialists studied the existing risk rating methodology used to calculate annual inspection ratings for municipal residential drinking water systems. It was concluded that by making a number of changes, the rating system could be made more accurate and effective. For example, the new methodology has enhanced the approach to calculating risk, especially the likelihood component, and its accuracy in reflecting the frequency of a consequence occurring.

Every question in the ministry's inspection protocol for drinking water system

inspections was analyzed. For every regulatory issue covered by each question, the potential consequences of non-compliance to the delivery of safe drinking water were determined.

In the ministry's previous risk rating methodology, an inspection finding of compliance resulted in a likelihood value of zero, while a finding of non-compliance resulted in a likelihood value of one. Similarly, values were assigned to the potential consequences of non-compliance, on a sliding scale. The consequence value of a non-compliance finding ranged from one to four, depending on the potential impact of the non-compliance to human health and the environment.

In the revised risk rating methodology, a wider range of values are assigned to the likelihood of non-compliance. Instead of either zero or one, the likelihood values now range from zero to four. A likelihood value of zero means "possible but highly unlikely," while a likelihood value of four means "almost certain." **Table 1-A** describes the likelihood values assigned to the ranges of a consequence occurring.

Similarly, the revised methodology has an extended sliding scale for the values assigned to the consequences of non-compliance. These values range from one to eight—where a value of one means "medium administrative consequence," and a value of eight means

"major health consequence." **Table 1-B** describes the assigned consequence values.

Using these new values, the ministry calculates a risk rating for every inspection question. The formula for calculating risk is:

$$\text{RISK} = \text{LIKELIHOOD VALUE (0 to 4)} \times \text{CONSEQUENCE VALUE (1 to 8)}$$

As a result, in the revised risk rating methodology, the lowest possible risk value for a question is zero (0 X 1), while the maximum risk is 32 (4 X 8). **Table 1-C** provides several examples of the typical calculations involved.

To arrive at the overall rating for each municipal residential drinking water system, the risk ratings for each protocol question where the answer was "no" are added up. This number is then divided by the sum of the risk ratings for all the questions asked during the inspection, which is the maximum question rating. The resulting inspection risk rating percentage is subtracted from 100 per cent, which produces the final inspection rating for that system.

In 2008-09, the ministry's inspection protocol for municipal drinking water systems contained a total of 117 regulatory questions. The protocol questions cover the comprehensive range of drinking water regulatory issues from relatively minor administrative items to the health impacts of drinking water quality.

Beginning in the 2008-09 year, municipal residential drinking water system owners and operators received reports for inspections that were carried out using the revised risk rating methodology. The next series of inspection ratings, based on the 2008-09 inspection program, will be published in next year's edition of the Chief Drinking Water Inspector's Annual Report.

TABLE 1-A: Likelihood Values Assigned To Range Of Consequence Occurring

Likelihood of the Consequence Occurring	Likelihood Value
0%	0
1 – 10%	1
11 – 49%	2
50 – 89%	3
90 – 100%	4

TABLE 1-B: Description of Consequence Values Used in the Risk Rating Model

Consequence Value	Consequence	Description
1 & 2	Medium & Major Administrative Consequence	Administrative non-compliance that does not result in or does not have the potential to result in any environmental or health impacts. It generally includes the violation of reporting and record-keeping requirements and some monitoring and sampling requirements (examples of exclusions would be those under the Safe Drinking Water Act).
3	Minor Environmental Consequence	Known or likely impact to animal, plant, property, business or resource that requires little or no remediation.
4	Minor Health Consequence	Known or likely minor human health impact i.e. does not require hospitalization or emergency treatment and does not result in illness.
5	Medium Environmental Consequence	Known or likely adverse impact to animal, plant, property, business or resources which is short term, localized, and is amenable to full remediation through the application of abatement measures.
6	Major Environmental Consequence	Known or likely adverse impact to animal, plant, property, business or resources that is widespread, long term, difficult to remediate, or lethal in effect.
7	Medium Health Consequence	Known or anticipated human health impact that may be life shortening, may result in hospitalization or serious illness, may be reversible, i.e. requires hospitalization/emergency care for treatment of impact/illness but is not known in chronic long term health impacts.
8	Major Health Consequence	Known or likely human health impact that is lethal or severe in effect, can result in hospitalization of persons, may result in death or long term health impacts.

TABLE 1-C: Sample Inspection Rating Calculation

Inspection Question	Maximum Question Risk Rating	Inspector's Response	Question Risk Rating
Does a valid Certificate of Approval exist for the facility?	$4 \times 1 = 4$	NO	4
Are all required microbiological water quality monitoring requirements being met?	$3 \times 7 = 21$	YES	0
Does the record system allow the reader to unambiguously identify the person making the logbook entry?	$2 \times 2 = 4$	YES	0
Maximum Inspection Rating	29		4 / 29
Inspection Risk Rating	$4 \div 29 = 13.79\%$		
Final Inspection Rating	$100\% - 13.79\% = 86.21\%$		

APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Adjala-Tosorontio, Township of	Colgan Well Supply	100.00%	99.18%
Adjala-Tosorontio, Township of	Everett Well Supply	100.00%	100.00%
Adjala-Tosorontio, Township of	Hockley Well Supply	100.00%	100.00%
Adjala-Tosorontio, Township of	Lisle Well Supply	100.00%	100.00%
Adjala-Tosorontio, Township of	Loretto Heights Well Supply	100.00%	100.00%
Adjala-Tosorontio, Township of	Rosemont Well Supply	100.00%	100.00%
Adjala-Tosorontio, Township of	Weca Well Supply	100.00%	100.00%
Ajax, Town of	Ajax Water Treatment Plant	100.00%	99.95%
Alfred and Plantagenet, Township of	Lefavre Water Treatment Plant	100.00%	100.00%
Alfred and Plantagenet, Township of	Plantagenet Water Treatment Plant	100.00%	98.94%
Alfred and Plantagenet, Township of	Wendover Water Treatment Plant	100.00%	100.00%
Alnwick/Haldimand, Township of	Grafton Well Supply	100.00%	100.00%
Amaranth, Township of	Waldemar Well Supply	98.39%	100.00%
Amherstburg, Town of	Amherstburg Water Treatment Plant	91.86%	99.90%
Armstrong, Township of	Earlton Well Supply	100.00%	100.00%
Arnprior, Town of	Arnprior Water Treatment Plant	86.67%	99.87%
Arran-Elderslie, Municipality of	Arran-Elderslie Well Supply	94.18%	100.00%
Arran-Elderslie, Municipality of	Tara Well Supply	90.04%	100.00%
Ashfield-Colborne-Wawanosh, Township of	Benmiller Inn Well Supply	100.00%	97.22%
Ashfield-Colborne-Wawanosh, Township of	Century Heights Subdivision Well Supply	95.38%	98.72%
Ashfield-Colborne-Wawanosh, Township of	Courtney Subdivision Distribution System	100.00%	99.37%
Ashfield-Colborne-Wawanosh, Township of	Dungannon Well Supply	100.00%	99.52%
Ashfield-Colborne-Wawanosh, Township of	Huron Sands Well Supply	100.00%	96.08%
Ashfield-Colborne-Wawanosh, Township of	Maitlandview Estates Well Supply	96.70%	100.00%
Ashfield-Colborne-Wawanosh, Township of	South Lucknow Distribution System	95.35%	99.27%
Asphodel-Norwood, Township of	Norwood Well Supply	94.29%	100.00%
Asphodel-Norwood, Township of	Trentview Estates Development Distribution System	95.52%	100.00%
Assignack, Township of	Assignack Water Treatment Plant	91.54%	100.00%
Assignack, Township of	Sunsite Estates Subdivision Water Treatment Plant	94.62%	100.00%
Atikokan, Township of	Atikokan Water Treatment Plant	86.47%	100.00%
Aurora, Town of	Aurora Distribution System	100.00%	99.94%
Aurora, Town of	Aurora Well Supply	100.00%	100.00%
Aylmer, Town of	Aylmer (Elgin Area Water Supply) Distribution System	100.00%	100.00%
Aylmer, Town of	Aylmer Secondary Distribution System	100.00%	100.00%
Bancroft, Town of	Bancroft Water Treatment Plant	100.00%	100.00%
Barrie, City of	Barrie Well Supply	96.86%	99.84%
Bayham, Municipality of	Bayham (Elgin Area Water Supply) Distribution System	100.00%	99.71%
Belleville, City of	Belleville Water Treatment Plant	96.20%	99.84%
Belleville, City of	Point Anne Hamlet Water Treatment Plant	100.00%	100.00%
Billings, Township of	Kagawong Water Treatment Plant	98.05%	100.00%
Black River-Matheson, Township of	Holttyre Well Supply	95.52%	100.00%

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Black River-Matheson, Township of	Matheson Well Supply	98.84%	100.00%
Black River-Matheson, Township of	Ramore (Playfair) Well Supply	97.20%	100.00%
Black River-Matheson, Township of	Val Gagne Well Supply	98.05%	98.72%
Blandford-Blenheim, Township of	Bright Well Supply	100.00%	100.00%
Blandford-Blenheim, Township of	Drumbo Well Supply	100.00%	99.45%
Blandford-Blenheim, Township of	Plattsville Well Supply	100.00%	99.76%
Blandford-Blenheim, Township of	Princeton Countryside Manor Cistern System	92.36%	100.00%
Blind River, Town of	Blind River Well Supply	83.91%	99.28%
Bluewater, Municipality of	Bluewater Distribution System	100.00%	100.00%
Bluewater, Municipality of	Carriage Lane Well Supply	100.00%	100.00%
Bluewater, Municipality of	Harbour Lights Development Well Supply	100.00%	100.00%
Bluewater, Municipality of	Hensall Well Supply	97.88%	100.00%
Bluewater, Municipality of	Zurich Well Supply	95.71%	99.73%
Bonnechere Valley, Township of	Eganville Water Treatment Plant	88.89%	100.00%
Bracebridge, Town of	Bracebridge (Kirby Beach) Water Treatment Plant	100.00%	100.00%
Bradford West Gwillimbury, Town of	Bradford/Bondhead Well Supply	100.00%	99.65%
Brant, County of	Airport Well Supply	100.00%	100.00%
Brant, County of	Cainsville Distribution System	100.00%	100.00%
Brant, County of	Mount Pleasant Well Supply	100.00%	100.00%
Brant, County of	Paris Well Supply	100.00%	99.78%
Brant, County of	St. George Well Supply	100.00%	100.00%
Brantford, City of	Brantford (Holmedale) Water Treatment Plant	96.70%	98.96%
Brighton, Municipality of	Brighton Well Supply	93.82%	100.00%
Brock, Township of	Beaverton Water Treatment Plant	100.00%	100.00%
Brock, Township of	Cannington Well Supply	100.00%	99.95%
Brock, Township of	Sunderland Well Supply	98.18%	99.90%
Brockton, Municipality of	Hanover Water Treatment Plant	76.89%	100.00%
Brockton, Municipality of	Lake Rosalind Well Supply	95.95%	100.00%
Brockton, Municipality of	Powers Subdivision Well Supply	93.19%	100.00%
Brockton, Municipality of	Walkerton Well Supply	95.44%	99.09%
Brockville, City of	Brockville Water Treatment Plant	100.00%	100.00%
Brooke-Alvinston, Municipality of	Alvinston Distribution System	100.00%	100.00%
Bruce Mines, Town of	Bruce Mines Water Treatment Plant	96.59%	100.00%
Burk's Falls, Village of	Burk's Falls Well Supply	94.92%	100.00%
Burlington, City of	Bridgeview Community Distribution System	100.00%	100.00%
Burlington, City of	Burlington Water Treatment Plant	100.00%	99.32%
Caledon, Town of	Alton Well Supply	100.00%	100.00%
Caledon, Town of	Caledon East Well Supply	100.00%	100.00%
Caledon, Town of	Caledon Village Well Supply	100.00%	100.00%
Caledon, Town of	Cheltenham-Terra Cotta Well Supply	100.00%	100.00%
Caledon, Town of	Inglewood Well Supply	100.00%	100.00%

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Caledon, Town of	Palgrave Well Supply	100.00%	100.00%
Callander, Municipality of	Callander Water Treatment Plant	100.00%	100.00%
Cambridge, City of	Cambridge Distribution System	100.00%	99.97%
Cambridge, City of	Cambridge Well Supply	90.18%	100.00%
Carleton Place, Town of	Carleton Place Water Treatment Plant	95.74%	99.90%
Casselman, Village of	Casselman Water Treatment Plant	100.00%	100.00%
Cavan-Monaghan, Township of	Millbrook Well Supply	92.50%	100.00%
Central Elgin, Municipality of	Belmont Well Supply	100.00%	100.00%
Central Elgin, Municipality of	Central Elgin (Elgin Area Water Supply) Distribution System	100.00%	99.86%
Central Elgin, Municipality of	Elgin Primary Area Water Supply	100.00%	100.00%
Central Huron, Municipality of	Auburn Well Supply	100.00%	100.00%
Central Huron, Municipality of	Clinton Well Supply	100.00%	98.82%
Central Huron, Municipality of	Kelly Well Supply	100.00%	100.00%
Central Huron, Municipality of	McClinchey Well Supply	100.00%	100.00%
Central Huron, Municipality of	S.A.M. Well Supply	100.00%	100.00%
Central Huron, Municipality of	Vandewetering Subdivision Well Supply	100.00%	100.00%
Central Manitoulin, Municipality of	Mindemoya Water Treatment Plant	100.00%	100.00%
Centre Wellington, Township of	Elora Well Supply	100.00%	100.00%
Centre Wellington, Township of	Fergus Well Supply	96.34%	99.75%
Champlain, Township of	L'Orignal Distribution System	100.00%	100.00%
Champlain, Township of	Vankleek Hill Distribution System	98.04%	100.00%
Chapleau, Township of	Chapleau Water Treatment Plant	56.32%	99.63%
Chapple, Township of	Barwick Well Supply	100.00%	100.00%
Charlton and Dack, Municipality of	Bradley Subdivision Distribution System	95.83%	100.00%
Charlton and Dack, Municipality of	Charlton Water Treatment Plant	99.21%	100.00%
Chatham-Kent, Municipality of	Bothwell (West Elgin Area Water Supply) Distribution System	100.00%	99.84%
Chatham-Kent, Municipality of	Chatham Water Treatment Plant	94.70%	99.97%
Chatham-Kent, Municipality of	Highgate Pure Water Well Supply	100.00%	99.53%
Chatham-Kent, Municipality of	North Wallaceburg Distribution System	100.00%	100.00%
Chatham-Kent, Municipality of	Ridgetown Well Supply	100.00%	99.49%
Chatham-Kent, Municipality of	South Chatham-Kent Water Treatment Plant	100.00%	100.00%
Chatham-Kent, Municipality of	Wallaceburg Water Treatment Plant	100.00%	100.00%
Chatham-Kent, Municipality of	Wheatley Water Treatment Plant	100.00%	100.00%
Chatsworth, Township of	Chatsworth Well Supply	91.58%	100.00%
Chatsworth, Township of	Walter's Falls Well Supply	81.14%	100.00%
Clarence-Rockland, City of	Rockland Water Treatment Plant	90.51%	99.81%
Clarington, Municipality of	Bowmanville Water Treatment Plant	95.56%	99.66%
Clarington, Municipality of	Newcastle Water Treatment Plant	97.01%	99.90%
Clarington, Municipality of	Orono Well Supply	100.00%	100.00%

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APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Clearview, Township of	Buckingham Woods Well Supply	100.00%	100.00%
Clearview, Township of	Colling-Woodlands Well Supply	100.00%	100.00%
Clearview, Township of	Creemore Well Supply	100.00%	99.78%
Clearview, Township of	McKean Subdivision Well Supply	100.00%	100.00%
Clearview, Township of	New Lowell Well Supply	100.00%	99.77%
Clearview, Township of	Stayner Well Supply	96.18%	99.85%
Cobalt, Town of	Cobalt Water Treatment Plant	96.44%	99.22%
Cobourg, Town of	Cobourg Water Treatment Plant	100.00%	100.00%
Cochrane, Town of	Cochrane Well Supply	99.25%	99.85%
Coleman, Township of	Coleman Distribution System	100.00%	99.22%
Collingwood, Town of	Collingwood (Raymond A. Barker Ultrafiltration Plant) Water Treatment Plant	98.28%	100.00%
Cornwall, City of	Cornwall Water Treatment Plant	93.44%	100.00%
Cramahe, Township of	Colborne Well Supply	100.00%	99.78%
Dawn-Euphemia, Township of	Dawn-Euphemia Water Distribution System	100.00%	100.00%
Deep River, Town of	Deep River Water Treatment Plant	91.94%	99.32%
Deseronto, Town of	Deseronto Water Treatment Plant	97.20%	100.00%
Dryden, City of	Dryden Water Treatment Plant	94.27%	100.00%
Dubreuilville, Township of	Dubreuilville Well Supply	100.00%	100.00%
Dutton/Dunwich, Municipality of	Dutton/Dunwich (West Elgin Area Water Supply) Distribution System	98.30%	100.00%
Ear Falls, Township of	Ear Falls Water Treatment Plant	94.82%	100.00%
East Garafraxa, Township of	Marsville Subdivision Well Supply	98.30%	100.00%
East Gwillimbury, Town of	Holland Landing Well Supply	100.00%	100.00%
East Gwillimbury, Town of	Holland-Queensville-Sharon Distribution System	100.00%	100.00%
East Gwillimbury, Town of	Mount Albert Distribution System	100.00%	100.00%
East Gwillimbury, Town of	Mount Albert Well Supply	100.00%	100.00%
East Gwillimbury, Town of	Queensville (York Region) Well Supply	100.00%	100.00%
East Luther Grand Valley, Township of	East Luther Grand Valley Well Supply	100.00%	100.00%
East Zorra-Tavistock, Township of	Hickson-King Subdivision Well Supply	94.67%	98.67%
East Zorra-Tavistock, Township of	Innerkip Well Supply	100.00%	100.00%
East Zorra-Tavistock, Township of	Tavistock Well Supply	100.00%	100.00%
Edwardsburgh/Cardinal, Township of	Bennett Street Well Supply	98.13%	100.00%
Edwardsburgh/Cardinal, Township of	Cardinal Water Treatment Plant	100.00%	100.00%
Edwardsburgh/Cardinal, Township of	Edwardsburgh Industrial Park Distribution System	97.81%	100.00%
Elizabethtown-Kitley, Township of	Elizabethtown-Kitley Distribution System	100.00%	98.91%
Elliot Lake, City of	Elliot Lake Water Treatment Plant	100.00%	100.00%
Emo, Township of	Emo Water Treatment Plant	100.00%	100.00%
Englehart, Town of	Englehart Well Supply	100.00%	99.48%
Enniskillen, Township of	Enniskillen Township Distribution System	100.00%	100.00%
Erin, Town of	Erin Well Supply	100.00%	100.00%

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Erin, Town of	Hillsburgh Well Supply	100.00%	100.00%
Espanola, Town of	Espanola Water Treatment Plant	96.43%	100.00%
Essa, Township of	Angus Well Supply	100.00%	99.85%
Essa, Township of	Baxter Well Supply	100.00%	100.00%
Essa, Township of	Glen Ave (Thornton) Well Supply	96.87%	100.00%
Essex, Town of	Essex (Union Water Treatment Plant) Distribution System	100.00%	100.00%
Essex, Town of	Harrow-Colchester South Water Treatment Plant	98.47%	99.90%
Fauquier-Strickland, Township of	Fauquier Water Treatment Plant	100.00%	100.00%
Fort Erie, Town of	Fort Erie (Rosehill) Water Treatment Plant	99.21%	100.00%
Fort Erie, Town of	Fort Erie Distribution System	97.69%	99.82%
Fort Frances, Town of	Fort Frances Water Treatment Plant	100.00%	100.00%
Front of Yonge, Township of	Miller Manor Apartments Well Supply	92.63%	100.00%
Galway-Cavendish and Harvey, Township of	Alpine/Pirates Glen Well Supply	96.15%	99.77%
Galway-Cavendish and Harvey, Township of	Buckhorn Lake Estates Well Supply	89.44%	100.00%
Gananoque, Town of	James W. King Water Treatment Plant	85.71%	99.27%
Georgian Bay, Township of	MacTier (Beech Avenue) Water Treatment Plant	100.00%	99.80%
Georgian Bay, Township of	Port Severn Water Treatment Plant	100.00%	100.00%
Georgian Bluffs, Township of	East Linton and Area Water Treatment Plant	93.02%	100.00%
Georgian Bluffs, Township of	Oxenden Distribution System	100.00%	99.59%
Georgian Bluffs, Township of	Pottawatomi Village Well Supply	92.11%	100.00%
Georgian Bluffs, Township of	Presquile Water Treatment Plant	98.50%	99.19%
Georgian Bluffs, Township of	Shallow Lake Well Supply	90.49%	99.10%
Georgina, Town of	Georgina Water Treatment Plant	97.72%	100.00%
Georgina, Town of	Keswick Water Treatment Plant	100.00%	99.71%
Georgina, Town of	Keswick-Sutton Distribution System	94.59%	100.00%
Goderich, Town of	Goderich Water Treatment Plant	96.09%	100.00%
Gore Bay, Town of	Gore Bay Water Treatment Plant	97.24%	100.00%
Gravenhurst, Town of	Gravenhurst Water Treatment Plant	95.56%	100.00%
Greater Napanee, Town of	A.L. Dafoe Water Treatment Plant	100.00%	100.00%
Greater Napanee, Town of	Sandhurst Shores Water Treatment Plant	100.00%	100.00%
Greater Sudbury, City of	Blezard Valley Well Supply	94.27%	100.00%
Greater Sudbury, City of	Capreol Well Supply	97.93%	100.00%
Greater Sudbury, City of	Dowling Well Supply	98.67%	100.00%
Greater Sudbury, City of	Falconbridge (Sudbury) Distribution System	98.14%	100.00%
Greater Sudbury, City of	Falconbridge Well Supply	96.20%	99.77%
Greater Sudbury, City of	Garson Well Supply	96.36%	99.76%
Greater Sudbury, City of	Levack (Sudbury) Distribution System	100.00%	100.00%
Greater Sudbury, City of	Levack Well Supply	100.00%	100.00%
Greater Sudbury, City of	Onaping (Sudbury) Distribution System	100.00%	100.00%
Greater Sudbury, City of	Onaping Well Supply	100.00%	99.80%

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Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Greater Sudbury, City of	Sudbury (David St.) Water Treatment Plant	100.00%	99.91%
Greater Sudbury, City of	Sudbury (Wahnapeit) Water Treatment Plant	100.00%	100.00%
Greater Sudbury, City of	Vermillion (Inco) Water Treatment Plant	97.35%	100.00%
Greater Sudbury, City of	Vermillion Distribution System	100.00%	100.00%
Greenstone, Municipality of	Beardmore Water Treatment Plant	100.00%	100.00%
Greenstone, Municipality of	Caramat Water Treatment Plant	71.76%	98.14%
Greenstone, Municipality of	Geraldton Water Treatment Plant	100.00%	100.00%
Greenstone, Municipality of	Longlac Water Treatment Plant	92.02%	100.00%
Greenstone, Municipality of	Nakina Well Supply	88.19%	99.43%
Grey Highlands, Municipality of	Kimberley-Amik-Talisman Well Supply	86.67%	100.00%
Grey Highlands, Municipality of	Markdale Well Supply	82.93%	100.00%
Grimsby, Town of	Grimsby Distribution System	100.00%	99.85%
Grimsby, Town of	Grimsby Water Treatment Plant	100.00%	100.00%
Guelph, City of	Guelph Well Supply	100.00%	99.98%
Guelph/Eramosa, Township of	Gazer Mooney Subdivision Distribution System	100.00%	100.00%
Guelph/Eramosa, Township of	Hamilton Drive Well Supply	95.12%	100.00%
Guelph/Eramosa, Township of	Rockwood Well Supply	95.35%	99.84%
Haldimand County	Caledonia/Cayuga (Hamilton Water Treatment Plant) Distribution System	100.00%	100.00%
Haldimand County	Dunnville Water Treatment Plant	96.93%	99.89%
Haldimand County	Nanticoke and Trunk Main Water Treatment Plant	95.44%	99.87%
Halton Hills, Town of	Acton Well Supply	100.00%	99.92%
Halton Hills, Town of	Georgetown Well Supply	100.00%	100.00%
Hamilton, City of	Carlisle Well Supply	100.00%	100.00%
Hamilton, City of	Fifty Road Distribution System	100.00%	100.00%
Hamilton, City of	Freelton Well Supply	100.00%	100.00%
Hamilton, City of	Greenville Well Supply	98.52%	100.00%
Hamilton, City of	Hamilton Water Treatment Plant	98.88%	99.83%
Hamilton, City of	Lynden Well Supply	100.00%	100.00%
Hamilton, Township of	Camborne Well Supply	99.28%	100.00%
Hamilton, Township of	Creighton Heights Well Supply	98.31%	99.77%
Hamilton, Township of	Hamilton Township Water Agreement Distribution System	94.83%	100.00%
Havelock-Belmont-Methuen, Township of	Havelock Well Supply	98.12%	100.00%
Hawkesbury, Town of	Hawkesbury Water Treatment Plant	98.07%	100.00%
Hearst, Town of	Hearst Water Treatment Plant	96.67%	99.54%
Highlands East, Municipality of	Cardiff Well Supply	94.81%	99.07%
Highlands East, Municipality of	Dyno Estates Well Supply	100.00%	99.18%
Hilton Beach, Village of	Hilton Beach Well Supply	100.00%	100.00%
Hornepayne, Township of	Hornepayne Well Supply	95.24%	99.86%
Huntsville, Town of	Fairyview Water Treatment Plant	100.00%	99.58%

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Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Huntsville, Town of	Port Sydney Well Supply	95.73%	100.00%
Huron East, Municipality of	Brucefield Well Supply	100.00%	100.00%
Huron East, Municipality of	Brussels Well Supply	96.51%	99.82%
Huron East, Municipality of	Seaforth Well Supply	97.74%	100.00%
Huron East, Municipality of	Vanastra Distribution System	100.00%	100.00%
Huron-Kinloss, Township of	Huronville Subdivision Distribution System	100.00%	99.87%
Huron-Kinloss, Township of	Lakeshore Well Supply	94.76%	99.37%
Huron-Kinloss, Township of	Lucknow Well Supply	98.48%	99.27%
Huron-Kinloss, Township of	Ripley Well Supply	70.48%	99.45%
Huron-Kinloss, Township of	Whitechurch Well Supply	72.73%	100.00%
Ignace, Township of	Ignace Well Supply	96.01%	99.57%
Ingersoll, Town of	Ingersoll Well Supply	93.14%	99.92%
Innisfil, Town of	Alcona Water Treatment Plant	92.22%	99.81%
Innisfil, Town of	Churchill Well Supply	100.00%	99.14%
Innisfil, Town of	Cookstown Well Supply	94.03%	100.00%
Innisfil, Town of	Goldcrest Well Supply	92.99%	100.00%
Innisfil, Town of	Golf Haven Well Supply	97.74%	98.94%
Innisfil, Town of	Innisfil Heights Well Supply	94.74%	100.00%
Innisfil, Town of	Stroud Well Supply	90.26%	98.91%
Iroquois Falls, Town of	Iroquois Falls Well Supply	97.27%	99.77%
Iroquois Falls, Town of	Monteith Correctional Centre Well Supply	98.47%	100.00%
Iroquois Falls, Town of	Monteith Distribution System	95.00%	99.37%
Iroquois Falls, Town of	Porquis Junction Well Supply	100.00%	100.00%
James, Township of	Elk Lake Well Supply	96.05%	99.71%
Johnson, Township of	Desbarats Water Treatment Plant	83.33%	100.00%
Kapuskasing, Town of	Kapuskasing Well Supply	98.48%	99.85%
Kawartha Lakes, City of	Birchpoint Estates Well Supply	100.00%	100.00%
Kawartha Lakes, City of	Bobcaygeon Water Treatment Plant	96.55%	99.81%
Kawartha Lakes, City of	Canadiana Shores Well Supply	96.36%	100.00%
Kawartha Lakes, City of	Fenelon Falls Water Treatment Plant	100.00%	99.71%
Kawartha Lakes, City of	Janetville Well Supply	95.77%	100.00%
Kawartha Lakes, City of	King's Bay Well Supply	100.00%	100.00%
Kawartha Lakes, City of	Kinmount Water Treatment Plant	95.97%	98.68%
Kawartha Lakes, City of	Lindsay Water Treatment Plant	100.00%	99.15%
Kawartha Lakes, City of	Manilla Well Supply	94.64%	100.00%
Kawartha Lakes, City of	Manorview Well Supply	92.28%	100.00%
Kawartha Lakes, City of	Mariposa Estates Well Supply	100.00%	97.18%
Kawartha Lakes, City of	Norland Water Treatment Plant	99.25%	100.00%
Kawartha Lakes, City of	Omemee Well Supply	96.67%	100.00%
Kawartha Lakes, City of	Pinewood Well Supply	86.67%	99.56%
Kawartha Lakes, City of	Pleasant Point Well Supply	95.75%	100.00%

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Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Kawartha Lakes, City of	Sonya Village Subdivision Well Supply	99.25%	100.00%
Kawartha Lakes, City of	Southview Estates Water Treatment Plant	99.22%	100.00%
Kawartha Lakes, City of	Victoria Place Well Supply	97.79%	99.76%
Kawartha Lakes, City of	Western Trent/Palmina Well Supply	98.94%	100.00%
Kawartha Lakes, City of	Woodfield Well Supply	100.00%	100.00%
Kawartha Lakes, City of	Woodville Well Supply	94.68%	100.00%
Kenora, City of	Kenora Area Water Treatment Plant	93.61%	99.65%
Killaloe, Hagarty and Richards, Township of	Killaloe Well Supply	94.95%	100.00%
Killarney, Municipality of	Killarney Water Treatment Plant	100.00%	100.00%
Kincardine, Municipality of	Kincardine Water Treatment Plant	98.42%	99.87%
Kincardine, Municipality of	Scott's Point Well Supply	100.00%	96.85%
Kincardine, Municipality of	Tiverton Well Supply	98.16%	98.01%
Kincardine, Municipality of	Underwood Well Supply	100.00%	97.04%
King, Township of	Ansnoeveldt Distribution System	97.62%	100.00%
King, Township of	Ansnoeveldt Well Supply	100.00%	100.00%
King, Township of	King City Distribution System	97.66%	100.00%
King, Township of	King City Well Supply	100.00%	100.00%
King, Township of	Nobleton Distribution System	97.66%	99.73%
King, Township of	Nobleton Well Supply	100.00%	100.00%
King, Township of	Schomberg Distribution System	97.79%	100.00%
King, Township of	Schomberg Well Supply	100.00%	100.00%
Kingston, City of	Cana Well Supply	95.71%	100.00%
Kingston, City of	Kingston Central Water Treatment Plant	95.47%	100.00%
Kingston, City of	Kingston West Water Treatment Plant	98.92%	100.00%
Kingsville, Town of	Kingsville (Union Water Treatment Plant) Distribution System	100.00%	99.90%
Kingsville, Town of	Union (Essex County) Area Water Treatment Plant	100.00%	100.00%
Kirkland Lake, Town of	L.J. Sherratt Water Treatment Plant	100.00%	99.88%
Kitchener, City of	Kitchener Distribution System	97.66%	99.94%
Kitchener, City of	Mannheim Water Supply System	95.29%	99.49%
Lake of Bays, Township of	Baysville Birch Glen Water Treatment Plant	97.56%	100.00%
Lakeshore, Town of	Belle River Water Treatment Plant	100.00%	99.80%
Lakeshore, Town of	Lakeshore (Tecumseh Water Service Area) Distribution System	100.00%	99.60%
Lakeshore, Town of	Lakeshore (Union Water Treatment Plant) Distribution System	100.00%	100.00%
Lakeshore, Town of	Lighthouse Cove Distribution System	100.00%	100.00%
Lakeshore, Town of	Stoney Point Water Treatment Plant	100.00%	99.70%
Lambton Shores, Municipality of	Arkona Well Supply	100.00%	98.78%
Lambton Shores, Municipality of	East Lambton Shores Water Distribution System	100.00%	99.93%
Lambton Shores, Municipality of	Thedford Water Distribution System	100.00%	99.37%
Lambton Shores, Municipality of	West Lambton Shores Water Distribution System	100.00%	99.85%

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Larder Lake, Township of	Larder Lake Well Supply	100.00%	99.32%
LaSalle, Town of	Town of Lasalle (Windsor) Distribution System	93.33%	99.80%
Latchford, Town of	Latchford Water Treatment Plant	100.00%	100.00%
Laurentian Hills, Town of	Chalk River Water Treatment Plant	99.21%	99.41%
Laurentian Valley, Township of	Laurentian Valley Distribution System	93.08%	98.33%
Leamington, Municipality of	Leamington (Union Water Treatment Plant) Distribution System	100.00%	100.00%
Leamington, Municipality of	Leamington (Wheatley) Distribution System	90.91%	100.00%
Leeds and the Thousand Islands, Township of	Lansdowne Well Supply	100.00%	100.00%
Lincoln, Town of	Lincoln (Beamsville) (Grimsby Water Treatment Plant) Distribution System	100.00%	99.87%
Lincoln, Town of	Lincoln (Vineland/Jordan) (Decew Water Treatment Plant) Distribution System	100.00%	100.00%
London, City of	City of London Distribution System	98.19%	99.87%
Loyalist, Township of	Bath Water Treatment Plant	100.00%	99.80%
Loyalist, Township of	Fairfield Water Treatment Plant	100.00%	99.91%
Lucan Biddulph, Township of	Lucan Biddulph (Lake Huron Area Water Supply) Distribution System	97.30%	100.00%
Macdonald, Meredith and Aberdeen Additional, Township of	Echo Bay Water Treatment Plant	89.47%	100.00%
Machin, Township of	Vermilion Bay Water Treatment Plant	100.00%	100.00%
Madawaska Valley, Township of	Barry's Bay Water Treatment Plant	96.00%	100.00%
Madoc, Township of	Madoc Well Supply	89.97%	100.00%
Malahide, Township of	Malahide (Elgin Area Water Supply) Distribution System	100.00%	100.00%
Malahide, Township of	Port Burwell Secondary Distribution System	100.00%	100.00%
Manitouwadge, Township of	Manitouwadge Well Supply	100.00%	100.00%
Mapleton, Township of	Drayton Well Supply	96.20%	99.73%
Mapleton, Township of	Moorefield Well Supply	96.00%	100.00%
Marathon, Town of	Marathon Well Supply	98.04%	100.00%
Markham, Town of	Markham Distribution System	100.00%	99.79%
Markstay-Warren, Municipality of	Markstay Distribution System	98.19%	99.70%
Markstay-Warren, Municipality of	Warren Well Supply	100.00%	100.00%
Marmora and Lake, Municipality of	Deloro Well Supply	86.25%	98.95%
Marmora and Lake, Municipality of	Marmora Water Treatment Plant	100.00%	99.79%
Matachewan, Township of	Matachewan Well Supply	99.20%	100.00%
Mattawa, Town of	Mattawa Well Supply	87.84%	100.00%
Mattice-Val Côté, Township of	Mattice Water Treatment Plant	100.00%	100.00%
McDougall, Township of	McDougall Nobel Distribution System	98.78%	99.41%
McGarry, Township of	Virginiatown-Kearns Well Supply	100.00%	98.74%
Meaford, Municipality of	Leith Distribution System	95.89%	100.00%
Meaford, Municipality of	Meaford Public Utilities Commission Water Treatment Plant	99.21%	100.00%

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Merrickville-Wolford, Village of	Merrickville Well Supply	100.00%	100.00%
Middlesex Centre, Municipality of	Birr Well Supply	95.14%	100.00%
Middlesex Centre, Municipality of	Delaware Distribution System	88.82%	100.00%
Middlesex Centre, Municipality of	Kilworth Heights Subdivision Well Supply	91.61%	100.00%
Middlesex Centre, Municipality of	Melrose Well Supply	96.34%	100.00%
Middlesex Centre, Municipality of	Middlesex Centre Distribution System	100.00%	100.00%
Midland, Town of	Midland Well Supply	100.00%	100.00%
Milton, Town of	Campbellville Well Supply	100.00%	100.00%
Milton, Town of	Milton Well Supply	100.00%	99.77%
Minden Hills, Township of	Lutterworth Pines Trailer Park Well Supply	82.95%	98.81%
Minden Hills, Township of	Minden Well Supply	100.00%	100.00%
Minto, Town of	Clifford Well Supply	100.00%	100.00%
Minto, Town of	Harriston Well Supply	96.34%	100.00%
Minto, Town of	Minto Pines Subdivision Well Supply	98.08%	100.00%
Minto, Town of	Palmerston Well Supply	100.00%	99.90%
Mississauga, City of	South Peel (Lakeview) Water Treatment Plant	97.59%	99.92%
Mississauga, City of	South Peel (Lorne Park) Water Treatment Plant	99.25%	99.88%
Mississippi Mills, Town of	Mississippi Mills Well Supply	97.77%	100.00%
Mono, Town of	Cardinal Woods Subdivision Well Supply	100.00%	100.00%
Mono, Town of	Island Lake Well Supply	100.00%	100.00%
Montague, Township of	Montague Distribution System	96.80%	100.00%
Moonbeam, Township of	Moonbeam Well Supply	100.00%	100.00%
Moosonee, Town of	Moosonee Water Treatment Plant	90.91%	99.36%
Morris-Turnberry, Municipality of	Belgrave Well Supply (Formerly McCrae Street (Belgrave) Well Supply and Jane Street (Belgrave) Well Supply systems)	100.00%	99.51%
Mulmur, Township of	Mansfield Well Supply	96.55%	100.00%
Muskoka Lakes, Township of	Bala Water Treatment Plant	100.00%	99.81%
Muskoka Lakes, Township of	Port Carling (Ferndale Road) Water Treatment Plant	100.00%	100.00%
Nairn and Hyman, Township of	Nairn Centre Water Treatment Plant	98.86%	99.30%
New Tecumseth, Town of	Alliston Well Supply	100.00%	99.96%
New Tecumseth, Town of	Tottenham Well Supply	100.00%	99.39%
Newbury, Village of	Newbury (West Elgin Area Water Supply) Distribution System	97.27%	100.00%
Newmarket, Town of	Newmarket Distribution System	100.00%	99.88%
Newmarket, Town of	Newmarket Well Supply	100.00%	100.00%
Niagara Falls, City of	Niagara Falls Distribution System	100.00%	99.88%
Niagara Falls, City of	Niagara Falls Water Treatment Plant	99.22%	100.00%
Niagara-on-the-Lake, Town of	Bevan Heights Distribution System	100.00%	100.00%
Niagara-on-the-Lake, Town of	Niagara-on-the-Lake Distribution System	100.00%	99.71%
Nipigon, Township of	Nipigon Water Treatment Plant	94.23%	99.82%
Norfolk County	Delhi Water Supply System	100.00%	100.00%

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APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Norfolk County	Port Dover Water Treatment Plant	100.00%	100.00%
Norfolk County	Port Rowan Water Treatment Plant	100.00%	99.30%
Norfolk County	Simcoe Well Supply	100.00%	99.92%
Norfolk County	Waterford Well Supply	100.00%	99.81%
North Bay, City of	North Bay Water Treatment Plant	99.23%	99.96%
North Dumfries, Township of	Ayr Well Supply	100.00%	100.00%
North Dumfries, Township of	Branchton Well Supply	100.00%	99.66%
North Dumfries, Township of	Lloyd Brown Distribution System	100.00%	100.00%
North Dumfries, Township of	Roseville Well Supply	100.00%	99.67%
North Dundas, Township of	Chesterville Well Supply	100.00%	100.00%
North Dundas, Township of	Winchester Well Supply	100.00%	99.88%
North Glengarry, Township of	Alexandria Water Treatment Plant	100.00%	100.00%
North Glengarry, Township of	Glen Robertson Well Supply	94.72%	100.00%
North Grenville, Municipality of	Kemptville Well Supply	88.37%	99.56%
North Huron, Township of	Blyth Well Supply	100.00%	99.41%
North Huron, Township of	Humphrey Subdivision/Belgrave Well Supply	100.00%	100.00%
North Huron, Township of	Wingham Well Supply	97.56%	100.00%
North Middlesex, Municipality of	North Middlesex (Lake Huron Area Water Supply) Distribution System	90.58%	99.95%
North Perth, Municipality of	Atwood Well Supply	97.42%	100.00%
North Perth, Municipality of	Gowanstown Subdivision Well Supply	98.85%	100.00%
North Perth, Municipality of	Listowel Well Supply	96.39%	100.00%
North Perth, Municipality of	Molesworth Well Supply	95.08%	100.00%
North Stormont, Township of	Crysler Well Supply	100.00%	99.75%
North Stormont, Township of	Finch Well Supply	100.00%	100.00%
North Stormont, Township of	Moose Creek Well Supply	98.84%	100.00%
Northeastern Manitoulin and The Islands, Town of	Little Current Water Treatment Plant	98.85%	99.81%
Northeastern Manitoulin and The Islands, Town of	Sheguiandah Water Treatment Plant	100.00%	100.00%
Northern Bruce Peninsula, Municipality of	Lion's Head Water Treatment Plant	100.00%	100.00%
Norwich, Township of	Norwich Well Supply	100.00%	100.00%
Norwich, Township of	Oterville-Springford Well Supply	94.64%	100.00%
Oakville, Town of	Oakville Water Treatment Plant	100.00%	99.79%
Oakville, Town of	South Halton Water Distribution System	100.00%	99.61%
Oil Springs, Village of	Oil Springs Water Distribution System	100.00%	100.00%
Oliver Paipoonge, Municipality of	Rosslyn Village Subdivision Well Supply	92.31%	100.00%
Opasatika, Township of	Opasatika Well Supply	100.00%	98.78%
Orangeville, Town of	Orangeville Well Supply	100.00%	99.97%
Orillia, City of	Orillia Water Supply System	95.59%	100.00%
Oro-Medonte, Township of	Canterbury Subdivision Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Cedar Brook Subdivision Well Supply	100.00%	100.00%

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Oro-Medonte, Township of	Craighurst Well Supply	100.00%	98.73%
Oro-Medonte, Township of	Harbourwood Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Horseshoe Valley Subdivision Well Supply	100.00%	99.73%
Oro-Medonte, Township of	Maplewood Estates Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Medonte Hills Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Robin Crest Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Shanty Bay Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Sugar Bush Well Supply	100.00%	100.00%
Oro-Medonte, Township of	Warminster Well Supply	100.00%	100.00%
Oshawa, City of	Oshawa Water Treatment Plant	100.00%	99.78%
Otonabee-South Monaghan, Township of	Elgeti and Crystal Springs Subdivisions Well Supply	100.00%	100.00%
Otonabee-South Monaghan, Township of	Keene Heights Subdivision Well Supply	99.19%	100.00%
Ottawa, City of	Britannia Water Treatment Plant	100.00%	99.89%
Ottawa, City of	Carp Well Supply	93.33%	100.00%
Ottawa, City of	Kings Park Well Supply	100.00%	100.00%
Ottawa, City of	Lemieux Island Water Treatment Plant	100.00%	99.87%
Ottawa, City of	Munster Hamlet Well Supply	97.10%	100.00%
Ottawa, City of	Vars Well Supply	100.00%	100.00%
Owen Sound, City of	Owen Sound (Richard H. Neath) Water Treatment Plant	89.69%	99.27%
Parry Sound, Town of	Tony Agnello Water Treatment Plant (Formerly Parry Sound Water Treatment Plant)	96.64%	100.00%
Pelham, Town of	Pelham Distribution System	100.00%	100.00%
Pembroke, City of	Pembroke Water Treatment Plant	100.00%	99.68%
Penetanguishene, Town of	Lepage Subdivision (Penetanguishene) Well Supply	100.00%	100.00%
Penetanguishene, Town of	Payette (Penetanguishene) Well Supply	100.00%	99.86%
Perth East, Township of	Milverton Well Supply	96.39%	100.00%
Perth East, Township of	Shakespeare (Miller Ave.) Well Supply	99.16%	100.00%
Perth South, Township of	Sebringville (Black Creek Estates) Well Supply	97.28%	100.00%
Perth South, Township of	St. Pauls Well Supply	98.44%	100.00%
Perth, Town of	Perth Water Treatment Plant	98.02%	100.00%
Petawawa, Town of	Petawawa Water Treatment Plant	98.56%	99.65%
Peterborough, City of	Peterborough Water Treatment Plant	100.00%	100.00%
Petrolia, Town of	Town of Petrolia Bright's Grove Water Treatment Plant	99.18%	100.00%
Pickle Lake, Township of	Pickle Lake Well Supply	99.18%	100.00%
Plympton-Wyoming, Town of	Plympton-Wyoming (Lambton Area Water Supply) Distribution System	85.71%	100.00%
Point Edward, Village of	Point Edward (Lambton Area Water Supply) Distribution System	100.00%	100.00%
Port Colborne, City of	Port Colborne Distribution System	100.00%	99.67%
Port Colborne, City of	Port Colborne Water Treatment Plant	100.00%	100.00%
Port Hope, Municipality of	Port Hope (New) Water Treatment Plant	100.00%	100.00%
Powassan, Municipality of	Powassan Well Supply	95.71%	100.00%

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Prescott, Town of	Prescott Water Treatment Plant	100.00%	100.00%
Prince Edward County, City of	Ameliasburgh Hamlet Water Treatment Plant	100.00%	100.00%
Prince Edward County, City of	Consecon/Carrying Place Distribution System	100.00%	99.02%
Prince Edward County, City of	Fenwood Gardens/Rossmore Distribution System	100.00%	100.00%
Prince Edward County, City of	Peats Point Subdivision Well Supply	100.00%	100.00%
Prince Edward County, City of	Pictou Water Treatment Plant	87.64%	99.85%
Prince Edward County, City of	Wellington Water Treatment Plant	100.00%	100.00%
Quinte West, City of	Batawa Water Treatment Plant	100.00%	99.76%
Quinte West, City of	Bayside Water Treatment Plant	85.48%	100.00%
Quinte West, City of	Frankford Water Treatment Plant	100.00%	100.00%
Quinte West, City of	Trenton Water Treatment Plant	99.21%	100.00%
Rainy River, Town of	Rainy River Water Treatment Plant	98.24%	100.00%
Ramara, Township of	Bayshore Village Subdivision Well Supply	99.19%	100.00%
Ramara, Township of	Brechin & Lagoon City Water Treatment Plant	100.00%	99.42%
Ramara, Township of	Davy Drive Subdivision Well Supply	99.21%	100.00%
Ramara, Township of	Park Lane Subdivision Well Supply	100.00%	100.00%
Ramara, Township of	Somerset/Knob Hill Water Distribution System	100.00%	98.65%
Ramara, Township of	South Ramara Water Treatment Plant	100.00%	100.00%
Ramara, Township of	Val Harbour Subdivision Well Supply	100.00%	100.00%
Red Lake, Municipality of	Golden Ward Water Treatment Plant	100.00%	100.00%
Red Lake, Municipality of	Madsen Water Treatment Plant	100.00%	100.00%
Red Lake, Municipality of	Red Lake Water Treatment Plant	98.42%	100.00%
Red Rock, Township of	Red Rock Water Treatment Plant	95.72%	99.70%
Renfrew, Town of	Renfrew Water Treatment Plant	99.24%	100.00%
Richmond Hill, Town of	Richmond Hill Distribution System	100.00%	99.94%
Russell, Township of	Embrun-Russell-Marionville Well Supply	100.00%	100.00%
Sables-Spanish Rivers, Township of	Massey Water Treatment Plant	100.00%	100.00%
Sarnia, City of	Lambton Area Water Supply System	98.42%	100.00%
Sarnia, City of	Sarnia (Lambton Area Water Supply) Distribution System	98.21%	100.00%
Saugeen Shores, Town of	Port Elgin Water Treatment Plant	97.44%	99.84%
Saugeen Shores, Town of	Southampton Water Treatment Plant	100.00%	100.00%
Sault Ste. Marie, City of	Sault Ste. Marie Water Supply System	94.50%	100.00%
Schreiber, Township of	Schreiber Water Treatment Plant	80.71%	99.76%
Scugog, Township of	Blackstock Well Supply	100.00%	99.55%
Scugog, Township of	Greenbank Well Supply	100.00%	100.00%
Scugog, Township of	Port Perry Well Supply	100.00%	100.00%
Severn, Township of	Bass Lake Woodlands Well Supply	100.00%	99.43%
Severn, Township of	Coldwater Well Supply	99.24%	99.78%
Severn, Township of	Sandcastle Estates Water Treatment Plant	94.87%	100.00%
Severn, Township of	Severn Estates Well Supply	100.00%	100.00%

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Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Severn, Township of	Washago Water Treatment Plant	98.41%	99.50%
Severn, Township of	West Shore Water Treatment Plant	97.55%	100.00%
Shelburne, Town of	Shelburne Well Supply	90.23%	100.00%
Sioux Lookout, Municipality of	Hudson Water Treatment Plant	97.74%	99.55%
Sioux Lookout, Municipality of	Sioux Lookout Urban Water Treatment Plant	98.02%	100.00%
Smith-Ennismore-Lakefield, Township of	Lakefield Water Treatment Plant	100.00%	100.00%
Smith-Ennismore-Lakefield, Township of	Woodland Acres Subdivision Distribution System	100.00%	100.00%
Smiths Falls, Town of	Smiths Falls Water Treatment Plant	98.48%	98.69%
Smooth Rock Falls, Town of	Smooth Rock Falls Water Treatment Plant	89.47%	100.00%
South Bruce Peninsula, Town of	Cambridge-Collins Well Supply	92.96%	100.00%
South Bruce Peninsula, Town of	Forbes Subdivision Well Supply	95.79%	100.00%
South Bruce Peninsula, Town of	Foreman Well Supply	97.92%	100.00%
South Bruce Peninsula, Town of	Gremik Subdivision Well Supply	98.89%	100.00%
South Bruce Peninsula, Town of	Huronwoods Well Supply	96.54%	100.00%
South Bruce Peninsula, Town of	Oliphant Well Supply (Formerly Fiddlehead Subdivision Well Supply and Cambridge-Collins Well Supply)	98.86%	96.97%
South Bruce Peninsula, Town of	Robins Well Supply	96.34%	100.00%
South Bruce Peninsula, Town of	Thomson Subdivision Well Supply	97.37%	97.84%
South Bruce Peninsula, Town of	Trask Well Supply	97.14%	94.70%
South Bruce Peninsula, Town of	Warton Water Treatment Plant	93.29%	100.00%
South Bruce Peninsula, Town of	Winburk Subdivision Well Supply	92.75%	100.00%
South Bruce, Municipality of	Mildmay Well Supply	100.00%	99.48%
South Bruce, Municipality of	Teeswater Well Supply	91.67%	100.00%
South Dundas, Township of	South Dundas Regional Water Treatment Plant	97.97%	100.00%
South Frontenac, Township of	Sydenham Water Treatment Plant	99.28%	99.05%
South Glengarry, Township of	Glen Walter Water Treatment Plant	100.00%	100.00%
South Glengarry, Township of	Lancaster Water Treatment Plant	94.31%	100.00%
South Glengarry, Township of	Redwood Estates Well Supply	97.76%	99.48%
South Huron, Municipality of	Exeter Water Supply System	98.53%	99.64%
South Huron, Municipality of	Huron Park Distribution System	95.89%	100.00%
South Huron, Municipality of	Lake Huron Primary Area Water Supply	97.03%	99.71%
South Huron, Municipality of	South Huron (Lake Huron Area Water Supply) Distribution System	97.86%	100.00%
South River, Village of	South River Water Treatment Plant	96.68%	100.00%
South Stormont, Township of	Long Sault/Ingleside Regional Water Treatment Plant	97.30%	99.57%
South Stormont, Township of	Newington Well Supply	98.90%	100.00%
South Stormont, Township of	St. Andrews/Rosedale Terrace Distribution System	100.00%	100.00%
Southgate, Township of	Dundalk Well Supply	100.00%	99.56%
Southwest Middlesex, Municipality of	Southwest Middlesex (West Elgin Area Water Supply) Distribution System	100.00%	100.00%
South-West Oxford, Township of	Beachville-Loweville Subdivision Well Supply	100.00%	100.00%
South-West Oxford, Township of	Brownsville Well Supply	94.57%	99.71%

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South-West Oxford, Township of	Dereham Centre Well Supply	100.00%	100.00%
South-West Oxford, Township of	Mount Elgin Well Supply	100.00%	100.00%
Southwold, Township of	Southwold (Elgin Area Water Supply) Distribution System	100.00%	100.00%
Spanish, Town of	Spanish Well Supply	98.98%	99.64%
Springwater, Township of	Anten Mills Well Supply	100.00%	100.00%
Springwater, Township of	Del Trend Subdivision Well Supply	100.00%	99.70%
Springwater, Township of	Elmvale Well Supply	100.00%	99.78%
Springwater, Township of	Hillsdale Well Supply	100.00%	100.00%
Springwater, Township of	Midhurst Well Supply	100.00%	99.71%
Springwater, Township of	Minesing Well Supply	100.00%	98.95%
Springwater, Township of	Phelpston Well Supply	100.00%	100.00%
Springwater, Township of	Snow Valley Highlands Well Supply	98.92%	99.85%
Springwater, Township of	Sunnidale Road Well Supply	98.97%	88.57%
Springwater, Township of	Vespra Downs Subdivision Well Supply	100.00%	100.00%
St. Catharines, City of	St. Catharines (Decew) Water Treatment Plant	100.00%	100.00%
St. Catharines, City of	St. Catharines Distribution System	100.00%	99.78%
St. Clair, Township of	St. Clair Township (Lambton Area Water Supply) Distribution System	100.00%	100.00%
St. Joseph, Township of	Richards Landing Well Supply	99.27%	100.00%
St. Marys, Town of	St. Marys Well Supply	97.65%	99.90%
St. Thomas, City of	St. Thomas (Elgin Area Water Supply) Distribution System	100.00%	99.48%
St. Thomas, City of	St. Thomas Secondary Area Water Supply	100.00%	99.75%
Stirling-Rawdon, Township of	Stirling Well Supply	89.35%	100.00%
Stratford, City of	Stratford Well Supply	99.28%	99.21%
Strathroy-Caradoc, Township of	Mount Brydges Well Supply	86.59%	99.61%
Strathroy-Caradoc, Township of	Strathroy Distribution System	97.58%	99.75%
Tay, Township of	Rope Subdivision Water Treatment Plant	99.24%	98.61%
Tay, Township of	Victoria Harbour Water Treatment Plant	95.42%	99.73%
Tay, Township of	Waubashene Water Treatment Plant	99.23%	N/A*
Tecumseh, Town of	Tecumseh (Windsor Water Treatment Plant) Distribution System	100.00%	99.91%
Tehkummah, Township of	South Baymouth Water Treatment Plant	100.00%	100.00%
Temagami, Municipality of	Temagami North Water Treatment Plant	94.90%	100.00%
Temagami, Municipality of	Temagami South Water Treatment Plant	96.61%	100.00%
Temiskaming Shores, City of	Dymond Well Supply	97.08%	99.77%
Temiskaming Shores, City of	Haileybury (Lake Timiskaming) Water Treatment Plant	94.78%	100.00%
Temiskaming Shores, City of	New Liskeard Well Supply	92.64%	100.00%
Terrace Bay, Township of	Terrace Bay Water Treatment Plant	97.20%	99.76%
Thames Centre, Municipality of	Dorchester Well Supply	96.00%	100.00%
Thames Centre, Municipality of	Thorndale Well Supply	92.41%	99.49%

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The Blue Mountains, Town of	Thornbury Water Treatment Plant	96.67%	99.78%
The Nation, Municipality of	Limoges Well Supply	100.00%	100.00%
The Nation, Municipality of	St. Isidore Well Supply	100.00%	99.41%
The North Shore, Township of	Pronto East Subdivision Water Treatment Plant	98.44%	99.07%
The North Shore, Township of	Serpent River (The North Shore Township) Water Treatment Plant	100.00%	97.18%
Thessalon, Town of	Thessalon Water Treatment Plant	100.00%	99.70%
Thorold, City of	Thorold (Port Robinson Area) Distribution System	100.00%	100.00%
Thorold, City of	Thorold (South End of Thorold) Distribution System	100.00%	100.00%
Thorold, City of	Thorold Distribution System	100.00%	100.00%
Thunder Bay, City of	Thunder Bay (Bare Point Road) Water Treatment Plant	95.09%	99.78%
Thunder Bay, City of	Thunder Bay (Loch Lomond) Water Treatment Plant	91.57%	99.78%
Tillsonburg, Town of	Tillsonburg Well Supply	94.18%	100.00%
Timmins, City of	Timmins (Mattagami) Water Treatment Plant	92.75%	99.61%
Timmins, City of	Timmins (Shaw Township) Well Supply	92.11%	N/A*
Tiny, Township of	Bluewater Well Supply	84.51%	100.00%
Tiny, Township of	Cook's Lake Well Supply	94.03%	100.00%
Tiny, Township of	Georgian Bay Estates Well Supply	95.35%	99.70%
Tiny, Township of	Georgian Highlands Well Supply	94.94%	100.00%
Tiny, Township of	Georgian Sands Well Supply	95.18%	100.00%
Tiny, Township of	Lafontaine Well Supply	100.00%	100.00%
Tiny, Township of	Lefaive Well Supply	100.00%	100.00%
Tiny, Township of	Pennorth Well Supply	95.18%	100.00%
Tiny, Township of	Perkinsfield Well Supply	90.36%	99.57%
Tiny, Township of	Rayko Water System Well Supply	94.29%	100.00%
Tiny, Township of	Sand Castle Well Supply	94.03%	100.00%
Tiny, Township of	Sawlog Bay Well Supply	94.03%	100.00%
Tiny, Township of	Tee Pee Point Well Supply	94.94%	100.00%
Tiny, Township of	Thunder Bay Well Supply	94.94%	100.00%
Tiny, Township of	Vanier Woods Well Supply	94.03%	100.00%
Tiny, Township of	Whip-Poor-Will II Well Supply	90.14%	100.00%
Tiny, Township of	Woodland Beach Well Supply	95.18%	100.00%
Tiny, Township of	Wyevale Well Supply	94.37%	100.00%
Toronto, City of	F.J. Horgan Water Treatment Plant	95.76%	99.97%
Toronto, City of	Toronto (Island) Water Treatment Plant	96.08%	99.93%
Toronto, City of	Toronto (R.C. Harris) Water Treatment Plant	94.26%	99.83%
Toronto, City of	Toronto (R.C. Harris) Water Treatment Plant (Toronto Distribution System)	100.00%	99.83%
Toronto, City of	Toronto (R.L. Clark) Water Treatment Plant	100.00%	99.85%
Trent Hills, Municipality of	Campbellford Water Treatment Plant	100.00%	99.74%
Trent Hills, Municipality of	Hastings Water Treatment Plant	100.00%	99.81%

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Trent Hills, Municipality of	Warkworth Water Treatment Plant	100.00%	100.00%
Tweed, Municipality of	Tweed Well Supply	92.13%	100.00%
Uxbridge, Township of	Uxbridge Well Supply	100.00%	100.00%
Val Rita-Harty, Township of	Val Rita Well Supply	100.00%	100.00%
Vaughan, City of	Kleinburg Distribution System	100.00%	100.00%
Vaughan, City of	Kleinburg Well Supply	100.00%	100.00%
Vaughan, City of	Vaughan (Toronto Water) Distribution System	100.00%	99.81%
Vaughan, City of	York Distribution System	100.00%	100.00%
Warwick, Township of	Warwick (Lambton Area Water Supply) Distribution System	97.41%	100.00%
Wasaga Beach, Town of	Wasaga Beach Well Supply	100.00%	99.91%
Waterloo, City of	Kitchener Well Supply	98.94%	99.89%
Waterloo, City of	Maryhill Village Heights Well Supply	98.81%	100.00%
Waterloo, City of	Waterloo Distribution System	94.53%	100.00%
Waterloo, City of	Waterloo Well Supply	98.50%	99.89%
Wawa, Municipality of	Michipicoten River Village Well Supply	100.00%	100.00%
Wawa, Municipality of	Wawa Water Treatment Plant	96.59%	99.49%
Welland, City of	Welland Distribution System	100.00%	99.85%
Welland, City of	Welland Water Treatment Plant	98.76%	100.00%
Wellesley, Township of	Linwood Well Supply	100.00%	100.00%
Wellesley, Township of	St. Clements Well Supply	100.00%	100.00%
Wellesley, Township of	Wellesley Well Supply	100.00%	100.00%
Wellington North, Township of	Arthur Well Supply	90.67%	99.83%
Wellington North, Township of	Mount Forest Well Supply	82.54%	100.00%
West Elgin, Municipality of	West Elgin Water Treatment Plant	100.00%	100.00%
West Grey, Municipality of	Durham Well Supply	96.51%	100.00%
West Grey, Municipality of	Neustadt Well Supply	97.93%	100.00%
West Lincoln, Township of	Smithville (Grimsby Water Treatment Plant) Distribution System	100.00%	100.00%
West Nipissing, Municipality of	Sturgeon Falls Water Treatment Plant	93.33%	100.00%
West Nipissing, Municipality of	Verner Water Treatment Plant	95.56%	100.00%
West Perth, Municipality of	Mitchell Well Supply	98.89%	99.52%
Westport, Village of	Westport Well Supply	97.39%	99.69%
Whitby, Town of	Whitby Water Treatment Plant	99.30%	99.96%
Whitchurch-Stouffville, Town of	Ballantrae/Musselman's Well Supply	100.00%	100.00%
Whitchurch-Stouffville, Town of	Ballantrae/Musselman Lake Distribution System	100.00%	99.44%
Whitchurch-Stouffville, Town of	Stouffville Distribution System	100.00%	99.60%
Whitchurch-Stouffville, Town of	Stouffville Well Supply	100.00%	100.00%
White River, Township of	White River Water Supply System	95.63%	100.00%
Whitewater Region, Township of	Beachburg Well Supply	90.24%	99.49%
Whitewater Region, Township of	Cobden Water Treatment Plant	94.68%	99.76%

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

APPENDIX 2: Municipal Residential Drinking Water System 2007-08 Inspection Ratings and Water Quality Results (Percentage of Tests Meeting Standards)

Municipal Location (Municipality Where the Drinking Water System is Located)	Drinking Water System Name	2007-08 Inspection Rating	2007-08 Water Quality (% of Tests Meeting Standards)
Whitewater Region, Township of	Haley Well Supply	96.33%	100.00%
Wilmot, Township of	Foxboro Well Supply	100.00%	100.00%
Wilmot, Township of	Mannheim Village Distribution System	100.00%	100.00%
Wilmot, Township of	Mannheim Village Well Supply	100.00%	100.00%
Wilmot, Township of	New Dundee Distribution System	100.00%	100.00%
Wilmot, Township of	New Dundee Well Supply	100.00%	100.00%
Wilmot, Township of	New Hamburg-Baden Distribution System	100.00%	99.63%
Wilmot, Township of	New Hamburg-Baden Well Supply	95.49%	100.00%
Wilmot, Township of	Shingletown Distribution System	100.00%	99.51%
Wilmot, Township of	Shingletown Well Supply	100.00%	100.00%
Wilmot, Township of	St. Agatha Distribution System	100.00%	100.00%
Wilmot, Township of	St. Agatha Well Supply	100.00%	100.00%
Wilmot, Township of	St. Agatha/Sararas Well Supply	100.00%	100.00%
Wilmot, Township of	St. Agatha/Swartzentruber Well Supply	100.00%	100.00%
Windsor, City of	Windsor Water Treatment Plant	98.28%	99.98%
Woodstock, City of	Woodstock Well Supply	93.60%	99.84%
Woolwich, Township of	Breslau (Elroy Acres) Distribution System	95.49%	100.00%
Woolwich, Township of	Conestoga Plains Distribution System	98.28%	100.00%
Woolwich, Township of	Conestogo Golf Distribution System	100.00%	100.00%
Woolwich, Township of	Conestogo Golf Well Supply	98.40%	100.00%
Woolwich, Township of	Conestogo Plains Well Supply	99.14%	100.00%
Woolwich, Township of	Heidelberg (Woolwich Township) Distribution System	94.57%	99.69%
Woolwich, Township of	Heidelberg Well Supply	99.29%	99.80%
Woolwich, Township of	Maryhill Distribution System	97.66%	100.00%
Woolwich, Township of	Maryhill Village Heights Distribution System	100.00%	99.56%
Woolwich, Township of	Maryhill Well Supply	94.81%	100.00%
Woolwich, Township of	St. Jacobs/Elmira Distribution System	97.74%	99.67%
Woolwich, Township of	West Montrose Distribution System	100.00%	100.00%
Woolwich, Township of	West Montrose Well Supply	100.00%	100.00%
Zorra, Township of	Embro Well Supply	88.73%	100.00%
Zorra, Township of	Lakeside Well Supply	94.37%	100.00%
Zorra, Township of	Thamesford Well Supply	99.32%	100.00%

* Water quality data is not available as one system was officially unregistered and one system ceased pumping drinking water in the previous fiscal year.

APPENDIX 3-A-1: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of an Inspection

Drinking Water System Owner	Drinking Water System Name	Date Order Issued	Order Synopsis
Chapleau, The Corporation of the Township of	Chapleau Water Treatment Plant	December 3, 2007	• Ensure that operations and maintenance manuals are up-to-date and readily available • Provide procedures for the operation and maintenance of monitoring equipment. • Ensure that drinking water samples are taken at an appropriate location. • Ensure that water quality monitoring equipment is installed at approved locations • Ensure that chemical tanks are equipped with the appropriately sized metering pumps.
Cobalt, The Corporation of the Town of	Cobalt Water Treatment Plant	March 28, 2008	• Ensure that chemical sampling and testing is conducted • Review monthly turbidity data to verify compliance.
Galway-Cavendish-Harvey, The Corporation of the Township of	Buckhorn Lake Estates Well Supply	February 4, 2008	• Ensure that a chlorine analyzer be located in the appropriate location • Ensure that turbidity measuring devices be installed in the appropriate location • Ensure that the contingency/emergency plan meets Ministry of the Environment requirements • Update operations and maintenance manuals • Ensure that process flow diagrams for the treatment system be on site.
Gananoque, The Corporation of the Town of	James W. King Water Treatment Plant	January 30, 2008	• Replace the existing sand filter with granulated activated carbon media and update the physical description of the drinking water system • Provide an action plan to ensure that all microbiological sampling and testing requirements will be met • Provide an action plan to address the required corrective actions when an adverse drinking water test result(s) is received • Provide an action plan to ensure that primary disinfection is achieved and filter turbidity is sampled and tested.
Haldimand, The Corporation of the County of	Nanticoke and Trunk Main Water Treatment Plant	April 11, 2008	• Modify filter operation to ensure effective backwashing of all units • Update procedures related to filtration unit operation to be consistent with Ministry of the Environment criteria • Retain a qualified professional to evaluate filter operation for the purpose of improving the existing operations manual, associated equipment and confirm alarm set-points • Update the operating procedures to allow for more timely identification of adverse conditions associated with filter operation • Update the computer control system to provide better information to the operators related to filter operation • Provide training to all operators on all changes made as a result of improvements to filter operations.

APPENDIX 3-A-1: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of an Inspection

Drinking Water System Owner	Drinking Water System Name	Date Order Issued	Order Synopsis
Haldimand, The Corporation of the County of	Dunnville Water Treatment Plant	May 23, 2008	• Update procedures related to filtration unit operation to be consistent with Ministry criteria • Update the operating procedures to allow for more timely identification of adverse conditions associated with filter operation • Update the computer control system to provide better information to the operators related to filter operation • Provide training to all operators on all changes made as a result of improvements to filter operations.
Havelock-Belmont-Methuen, The Corporation of the Township of	Havelock Well Supply	August 29, 2007	• Provide the required logbooks and information as requested by the Provincial Officer.
Innisfil, The Corporation of the Town of	Alcona Water Treatment Plant	August 28, 2007	• Ensure that continuous monitoring equipment is operated and performs alarm notification or shut down sequences as required.
Johnson, The Corporation of the Township of	Desbarats Water Treatment Plant	December 4, 2007	• Ensure that primary and secondary disinfection is achieved at all times • Ensure that the drinking water system is maintained in a fit state of repair while in service • Ensure an appropriately trained operator is designated as the Overall Responsible Operator and Operator in Charge.
Sault Ste. Marie, The Corporation of the City of	Sault Ste. Marie Water Supply System	February 28, 2008	• Submit an application for approval to upgrade each of the four well pumping stations.
Timmins, The Corporation of the City of	Timmins (Shaw Township) Well Supply	October 3, 2007	• Provide the required logbooks and information pertaining to the operation and maintenance of the drinking water system.

APPENDIX 3-A-2: Summary of Municipal Residential Drinking Water Systems Receiving Contravention Orders in 2007-08 as a Result of a Response to an Incident

Drinking Water System Owner	Drinking Water System Name	Date Order Issued	Order Synopsis
Highlands East, The Corporation of the Municipality of	Dyno Estates Well Supply	January 28, 2008	• Ensure that primary disinfection is achieved at all times • Ensure that the online chlorine residual analyzer is maintained, and that alarms are set to ensure continuous disinfection.
Laurentian Hills, The Corporation of the Township of	Chalk River Water Treatment Plant	October 3, 2007	• Develop and implement a procedure for sampling, packaging and shipping drinking water samples • Take all steps necessary to ensure that all chlorine analyzers are properly evaluated, maintained and calibrated.
South River, The Corporation of the Village of	South River Water Treatment Plant	November 9, 2007	• Ensure that all necessary improvements to the wastewater treatment system are completed.

APPENDIX 3-B: Summary of Local Services Board Drinking Water Systems Receiving Contravention Orders in 2007-08

Drinking Water System Owner	Drinking Water System Name	Date Order Issued	Order Synopsis
Moose Factory Island Local Services Board	Moose Factory Island Distribution System	January 7, 2008	• Have an Engineering Evaluation Report completed by a qualified engineer • Ensure that all required documents are made available free of charge at a location accessible to the public • Ensure an appropriately trained operator is designated as the Overall Responsible Operator • Ensure that all microbiological, chemical and physical water quality monitoring/sampling is being conducted as required • Ensure that secondary disinfection residual monitoring is being conducted and a sampling plan is created • Ensure that copies of chain of custodies are being retained.
Peace Tree Woods Local Services Board	Peace Tree Woods Subdivision Well Supply	March 26, 2008	• Ensure that a certified operator is in place to operate and maintain the drinking water system • Maintain chlorine residual until the system has completely fragmented, or install the minimum required treatment • Provide all treatment required or fragment in order to absolve the requirement to be in compliance.
Thorne Local Services Board	Thorne Water Treatment Plant	June 29, 2007	• Have an Engineering Evaluation Report completed by a qualified engineer • Have a qualified consultant determine the cause and possible solutions to reducing suspended solids levels.

APPENDIX 3-C: Summary of Laboratories Licensed to Perform Drinking Water Testing Receiving Contravention Orders in 2007-08

Municipal Location	Laboratory Name	Date Order Issued	Order Synopsis
Kingston, City of	Accutest Laboratories Ltd.	February 7, 2008	• Cease providing drinking water testing services for specific tests until a licence is obtained from the Ministry of the Environment.
Ottawa, The Corporation of the City of	Accutest Laboratories Ltd.	February 7, 2008	• Cease providing drinking water testing services for specific tests until a license is obtained from the Ministry of the Environment.
Ottawa, The Corporation of the City of	Caduceon Environmental Laboratories	March 6, 2008	• Correct discrepancies found between the final drinking water results sent to clients and the results submitted to the Ministry's Drinking Water Information System (DWIS) with respect to units of measure • Ensure that all results submitted to the Ministry's DWIS adhere to specific reporting criteria (i.e. positive integers, use of value qualifiers, data error corrective action).

APPENDIX 4: Summary of Municipal Residential Drinking Water System Convictions - April 1, 2007 to March 31, 2008

Owner of Drinking Water System	System Name	Synopsis	Sworn Date	Conviction Date	Fine
Timmins, The Corporation of the City of	Timmins (Shaw Township) Well Supply, Timmins (Mattagami) Water Treatment Plant, Timmins (McDonald Lake) Water Treatment Plant (this system has since been decommissioned)	Operate a water treatment works in contravention of a condition of the Certificate of Approval, failure to comply with terms of a Provincial Officer Order, and failure to take required water tests.	August 28, 2006	May 24, 2007	\$84,000
Red Rock, The Corporation of the Township of	Red Rock Water Treatment Plant	Failure to report adverse drinking water test result.	March 13, 2007	July 16, 2007	\$2,000
Pembroke, The Corporation of the City of	Pembroke Water Treatment Plant	Failure to review continuous monitoring results within 72 hours and failure to properly operate water treatment equipment.	December 28, 2007	February 25, 2008	\$13,000
Northeastern Manitoulin & The Islands, The Corporation of the Town of	Little Current Water Treatment Plant	Exceeded the water taking limit prescribed under the Permit to Take Water, and failure to keep test records of drinking water system sample test results.	January 23, 2007	October 25, 2007	\$8,000
Ignace, The Corporation of the Township of	Ignace Well Supply	Failure to designate a responsible certified operator for the type of drinking water system.	September 4, 2007	January 22, 2008	\$3,500
Parry Sound, The Corporation of the Town of	Parry Sound Water Treatment Plant (Currently Tony Agnello Water Treatment Plant)	Failure to report adverse drinking water test result.	September 4, 2007	February 26, 2008	\$5,000
Chatham-Kent, The Corporation of the Municipality of	Highgate Pure Water Well Supply	Failure to maintain proper operation of UV disinfection system, and failure to properly operate chlorination system.	August 23, 2007	August 29, 2007	\$10,000
Atikokan, The Corporation of the Township of	Atikokan Water Treatment Plant	Operate a water treatment works in contravention of a condition of the Certificate of Approval to maintain operations manual, and failure to comply with terms of a Provincial Officer Order.	January 4, 2007	June 7, 2007	\$9,000
Total					\$134,500

In addition, in 2007-08, three individuals were convicted and fined a total of \$12,500 for drinking water violations at municipal drinking water systems. Two individual operators were convicted for a violation under the Safe Drinking Water Act, 2002 and fined \$5,000 each for failing to report an adverse drinking water test result. One individual operator was convicted for a violation under the Safe Drinking Water Act, 2002 and fined \$2,500 for entering false records of a drinking water test result. One operating authority was convicted and fined \$10,000 under the Safe Drinking Water Act, 2002 for submitting false information to a Provincial Officer.

APPENDIX 5: Examples of Health Related Chemical Drinking Water Quality Standards

Chemical	Standard as per O. Reg. 169/03	Description
Arsenic	0.025 mg/L	A known carcinogen that can pose a potential health risk if the level in the water supply exceeds the standard. Can be found naturally in both ground and surface water.
Barium	1.0 mg/L	Commonly found in hard water but seldom at levels above the standard. Small exceedances are not expected to cause human health impacts. Levels higher than 10 mg/L have been linked with high blood pressure.
Benzene	0.005 mg/L	A known carcinogen that is occasionally found in groundwater in the vicinity of landfill sites or facilities where gasoline and solvents may have been spilled. The removal of benzene from drinking water is recommended when the standard is exceeded.
Benzo[a]pyrene	0.00001 mg/L	Formed during the incomplete burning of natural compounds that contain carbon. One-time exceedances are not uncommon and are not expected to threaten human health.
Bromate	0.010 mg/L	May be formed during the disinfection of drinking water using ozone or a combination of ozone and hydrogen peroxide. Intrusion of road salt into surface water sources may also result in the presence of bromate in drinking water. Short-term exceedances are not likely to lead to adverse health impacts.
Fluoride	1.5 mg/L	Some areas in Ontario have naturally occurring high levels in drinking water. Where levels exceed 2.4 mg/L, the Ministry of Health and Long-Term Care recommends that the local Medical Officer of Health raise public and professional awareness to control excessive exposure from other sources.
Lead	0.01 mg/L	Typically enters drinking water from corrosion of pipes, solder, and plumbing fixtures. Ingestion should be avoided, particularly by pregnant women and young children, who are most susceptible. Ontario has introduced new regulations to monitor lead in drinking water in facilities where children are likely to be exposed. Municipalities are required to conduct monitoring programs for corrosion control and take appropriate action ranging from consumer education to lead line replacements.
Mercury	0.001 mg/L	Mercury exceedances in drinking water are rare and not expected. The most common source may be releases from the leachate flowing from a landfill site that may impact source water (either surface water or groundwater) in the vicinity of drinking water systems. Common sources of mercury at landfill sites include fluorescent tubes, disposable batteries, and mercury thermometers. Short-term exceedances are not expected to cause human health impacts.
Nitrates: Nitrates, Nitrogen (Nitrate + Nitrite)	10 mg/L for nitrate (as nitrogen) 1.0 mg/L for nitrite (as nitrogen) 10 mg/L nitrate+nitrite (as nitrogen)	Can be present in source water as a result of decaying plant and animal material, contamination by agricultural fertilizers, sewage and naturally occurring soluble nitrogen compounds. Short-term exceedances are not uncommon. In areas where nitrate levels are above the standard, the public is informed of the potential dangers of giving the water to infants.
Selenium	0.01 mg/L	Presence in drinking water can almost always be attributed to natural background. Generally accepted as a required trace element for humans and animals. Short-term exceedances are not expected to cause human health impacts.
Trichloroethylene (TCE)	0.005 mg/L	Ontario revised the standard for TCE by adopting a lower value of 0.005 mg/L in June, 2006. This was the result of new scientific information of the toxicity of TCE. The levels at which exceedances were reported are not a cause for concern in the short-term but should be addressed by the municipality.
Trihalomethanes (THMs)	0.10 mg/L as a running annual average of quarterly samples	By-products of drinking water disinfection through chlorination. Drinking water systems that consistently exceed the standards are required to take corrective action to reduce THM formation. Short-term exceedances of THMs are not expected to result in human health risk.
Uranium	0.02 mg/L	Normally present at low levels in rock, soil and water. Short-term exceedances are not considered to result in human health risks.

For More Information:

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