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**WATER SUPPLY WELLS -
REQUIREMENTS
AND
BEST MANAGEMENT PRACTICES**

PIBs # 7333e

Protecting our environment.



Note: The numbers and details presented in this manual are current as of the date of publication. Any new regulation or legislation that has been written or revised following this date takes precedence over what is stated here

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1. About This Manual

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PURPOSE

The intention of this manual is two-fold. First, it provides quick access to a simplified, clear and concise discussion of Regulation 903 as amended under the *Ontario Water Resources Act* R.R.O. 1990 (The **Wells Regulation**¹). Second, it provides best management practices and recommended techniques that help a person constructing a well to go beyond the minimum standards set by the **Wells Regulation** and better protect and minimize adverse impacts to our environment. In this manual, best management practices are recommended actions or steps that exceed the minimum regulatory requirements to better protect the groundwater and the natural environment. If there are any discrepancies between this guidance and the **Wells Regulation**, the **Wells Regulation** takes precedence.

This manual covers requirements and best management practices for water supply wells. Examples of water supply wells include public, domestic, livestock, irrigation, industrial, municipal, and earth energy system (groundwater source) wells.

The best management practices presented in this manual provide a practice or combination of practices based on research, field-experience, and expert review, which are both effective and practical. At the time of release of this document, a separate manual is being prepared for test holes and dewatering wells titled *Test Holes and Dewatering Wells – Requirements and Best Management Practices*.

The terms “test hole” and “dewatering well” do not include any well that is used or intended for use in the future as a source of water for agriculture or human consumption. These types of wells must always comply with the **Wells Regulation** requirements covered in this manual.

Note: *This manual is not intended to replace the Wells Regulation*, but to enhance the understanding and application of the **Wells Regulation**. The **Wells Regulation** must still be used and referenced as the legal and binding regulatory requirement. If there are any conflicts between this manual and the **Wells Regulation** or the *Ontario Water Resources Act*, the *Ontario Water Resources Act* and the **Wells Regulation** take precedence over this manual.

Note: This manual supercedes a number of previous Ministry publications including any and all fact sheets and technical bulletins regarding water wells in Ontario, published prior to the date of this publication, and the following:

- Water Wells and Groundwater Supplies in Ontario
- Tagging Ontario’s Wells

¹ For the purposes of this Best Management Practices manual, Regulation 903 will be referred to as the **Wells Regulation**.

HOW TO USE THIS MANUAL

Each chapter in this manual is based on a specific topic of the well construction process. The Master Table of Contents found prior to Chapter 1 indicates the chapter titles.

Use this manual on the job and/or at the office to better understand, confirm and follow the requirements of the **Wells Regulation**, and go beyond the minimum requirements as recommended.

Note: *Each chapter is intended to be read in conjunction with the entire manual* and the chapters are not intended to be stand alone documents. Essential information may be missed if an individual chapter is taken out of the context of the manual.

Note: The graphics in this document

- are for illustrative purposes only,
- do not show all regulatory requirements, and
- are not to scale.

Note: The numbers and details presented in this manual are current as of the date of this publication. Any new regulation or legislation that has been written or revised following this date takes precedence over what is stated here.

ELEMENTS INCLUDED

Each chapter in this manual includes the following:

- **Table of Contents** – Identifies sections, sub-sections, figures, and tables found within the chapters.
- **Chapter Description** – Describes the purpose and gives an overall summary of the content covered within the chapter
- **Regulatory Requirements** – Summarizes the minimum requirements relevant within the chapter
 - Relevant Sections – The **Wells Regulation** – Lists the sections of the regulation that are relevant and referenced within the chapter
 - The Requirements – Plainly Stated – Provides a “basic terms” summary of the requirements laid out in the **Wells Regulation**
 - Relevant Sections – Additional Regulations or Legislation – Lists additional sections of regulations or legislation that are relevant and referenced within the chapter
 - Relevant Standards – Lists additional standards that are relevant and referenced within the chapter
- **Key Concepts** – Provides an overview of the processes, procedures and the Best Management Practices for completing the task(s) relevant to the chapter. The Key Concepts are expanded upon in the chapters.
- **Detailed Information** – Expands upon the Key Concepts and provides **best management practices**
- **Tools** – Where appropriate, provides tools that may be helpful on the job when completing the task(s) relevant to the chapter

The manual also includes the following:

- **Glossary**– Provides a list of relevant terms and their definitions
- **Ontario Legislation Section** - Contains the following:
 - **Ontario Water Resources** – Provides the current version of the sections of the *Ontario Water Resources Act* relevant to wells
 - **The Wells Regulation** – Provides the current version of the **Wells Regulation**
- **Resources** – Provides quick access to important contact information and additional related resources

ICON DESCRIPTIONS

The following icons are used throughout the manual for easy reference.



The Wells Regulation – Indicates specific references to requirements



Best Management Practice – Indicates a best management practice



Definition – Indicates the definition of a term



Reminder – Indicates a reminder or note regarding important information

ROLE OF ENVIRONMENTAL LEGISLATION AND REGULATIONS

In addition to everyone's responsibility to practice good environmental stewardship, legislation and regulations have been established for environmental protection.

Environmental impairment can exist in many forms including liquid waste spills or releases into lakes; improper application of pesticides sprayed on food crops; excessive discharge of exhaust material into the atmosphere; and entry of surface water or other foreign material into a well or aquifer. Whenever an activity involves impacts or potential impacts to the environment, a wide range of legislation and regulations usually apply at all levels of government. Legislation and regulations provide minimum requirements intended to protect human health, safety and the environment.

THE ONTARIO WATER RESOURCES ACT: AN OVERVIEW

Reference is made throughout this manual to the *Ontario Water Resource Act*.

Well construction in Ontario is governed by the *Ontario Water Resources Act* and the **Wells Regulation**. The Ministry of the Environment's (the Ministry or MOE) legislative authority to regulate water comes primarily from two acts, the *Ontario Water Resources Act* and the *Environmental Protection Act* (EPA).

The purpose of the *Ontario Water Resources Act* is to provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. The *Ontario Water Resources Act*, which gives the Ministry extensive powers to regulate water supply, sewage disposal and to control sources of water pollution, expressly states in subsection 29(1) that for the purpose of the Act, the Minister has the supervision of all surface waters and groundwaters in Ontario.

The EPA prohibits the discharge of contaminants to the natural environment, including water except where specifically permitted by a certificate of approval. The goals, policies, and guidelines set out in this document assist persons making decisions under or related to the EPA and *Ontario Water Resources Act*. They give, for example, directions that assist in defining site-specific effluent limits, which then may be incorporated into certificates of approval or control orders. These control documents are issued under the authority of the legislation, and thus become legally binding and constitute the basis for compliance and enforcement actions. The policies and guidelines that are not incorporated into regulation or legislation by reference, do not have any formal legal status but, by their successful use over the years, are now seen as standard practices for water resources management.

There are other statutes that the Ministry uses to protect water resources and users, such as the *Safe Drinking Water Act, 2002* and the *Clean Water Act, 2006*. The *Clean Water Act* is not discussed in detail in this manual but the relevant sections of the *Safe Drinking Water Act* dealing with potable water are discussed in Chapter 14: *Abandonment: When to Plug & Seal Wells*.

There are many other important aspects of water management that do not fall under the jurisdiction of the Ministry, but are the responsibility of other provincial ministries and federal government departments, most notably the Ontario Ministries of Natural Resources, Health and Long Term Care, Agriculture Food and Rural Affairs, Conservation Authorities and the Federal Departments of Fisheries and Oceans and Environment Canada.

The *Ontario Water Resources Act* also sets out the consequences for non-compliance with the *Ontario Water Resources Act* and the **Wells Regulation**.

THE WELLS REGULATION: AN OVERVIEW



Ontario

The **Wells Regulation** helps to ensure that groundwater quality, well water quality, and the environment are protected by the following means:

- The elements contained in the **Wells Regulation** are aimed at protection – of the resource, the well owner, the industry, and the well water
- The **Wells Regulation** identifies what must be done by the person constructing the well to ensure that well construction activities do the following:
 - Protect aquifers and water resources,
 - Protect aquitards,
 - Protect water quality and quantity, and
 - Protect the health and safety of the well owner and users
- The **Wells Regulation** covers the minimum standards for obtaining licences and carrying out the elements of the work that can affect the well, the environment, human health and the owner



Ontario

The **Wells Regulation** covers the following:

- Qualifications and requirements for obtaining and maintaining both well contractor and well technician licences
- Required steps before work on the well begins
- Required steps during the well construction process
- Approved materials and steps relating to casing, well screens, sealant, disinfection and pumping test
- Required steps for sealing the annular space
- Required steps to take after the well construction is complete such as notifications (e.g. tags and records)
- Requirements for when to abandon a well and how to seal a well
- Well owner's responsibilities
- Exemptions for certain types of excavations, activities, persons and shallow works

PROTECTING THE ENVIRONMENT

A condition of both the well technician licence and the well contractor licence is that licence holders must comply with all of the provisions of the legislation and **Wells Regulation** at all relevant times. Also, any other person working on a well must also comply with the legislation and the **Wells Regulation**. It is important to understand that carelessness or cost cutting during well construction and maintenance, costs everyone.

The nature of an aquifer makes it difficult, if not impossible to repair. Cleanup, if it is even possible, is very costly and positive results can take years to achieve. Remember that a single well can contaminate an entire aquifer, and affect the lives of many people.

The **Wells Regulation** benefits all of the people of Ontario.

It is a privilege and a responsibility to be guardians or stewards of water, which is the basis of the livelihoods of licensed well technicians and other professionals. Each of us must do our part to protect groundwater from contamination, and all harmful practices.

The continued protection of the groundwater resource will ensure that people will continue to want to use groundwater as their water source. Nobody wants or can use a new well constructed in a contaminated aquifer. Old wells may have to be abandoned.

KEY MESSAGE

The **Wells Regulation** sets out the minimum requirements for well construction. It is a good idea to exceed these minimum requirements where the professional judgment of the person constructing the well indicates that actions beyond the minimum regulatory requirements are needed. During construction, situations may be identified where it may be beneficial to exceed the requirements to better protect the natural environment.