environmental farm plan
sustainably farmed

INFOSHEET #2

WATER WELLS

How to address concerns identified in Environmental Farm Plan Worksheet #2

Based on Environmental Farm Plan Workbook, 5th ed. 2025

This infosheet outlines options to address concerns identified in your Environmental Farm Plan (EFP) as they relate to existing private rural water wells.

It describes management options for private well owners to consider in order to maintain safe drinking water and to protect the water supply. It also provides links to technical and regulatory information.

For help with technical terms, please see the full glossary in your EFP Workbook.

For assistance with the Regulation, seek advice from the Ontario Ministry of the Environment, Conservation and Parks (MECP) through the Wells Helpdesk. Call 1-888-396-9355 or email **wellshelpdesk@ontario.ca**.

All options in this infosheet are classed as **Actions** or **Compensating Factors**.

- **Actions** address the identified concern, and will change the EFP rating to (3) or (4) Best.
- **Compensating Factors** are alternatives that will adequately address the concern, but will not change the rating in the EFP worksheet.

In most cases, you'll need more information before choosing and implementing options. Sources for more information are noted at the end of this infosheet.

This document is consistent with, but does not reflect, the full detail of the Wells Regulation (R.R.O. 1990, Reg. 903: WELLS) under the Ontario Water Resources Act.

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LOCATION OF WELL

2-1. Location of an existing well in relation to potential sources of contamination

BACKGROUND

An important factor in maintaining good groundwater quality is the horizontal separation distance between your well and potential contamination sources.

There is always the potential for sources of contaminants (e.g., manure pile or septic system) to impair the quality of water in your well, making it unfit for human or livestock consumption. If a source of contamination is located upslope of the well and runoff is allowed to flow or pond near the well, there is a potential for the contamination to impair the quality of the well water and its associated groundwater aquifer.

Consider the following:

- is your well downslope from a source of contaminants such as a livestock yard or manure storage? **Note:** both groundwater and surface water typically flow downhill following the slope of the land (e.g., topography).
- will surface water runoff flow towards or pond near the well?
- are there any structures that could prevent proper maintenance, repairs, or if necessary, abandonment (plugging and sealing) of the well?

Read these OMAFA factsheets:

- **Private rural water supplies**
- **Protecting the quality of groundwater supplies**
- **Understanding groundwater**

Read these Ministry of the Environment, Conservation and Parks documents:

- **Wells on your property**
- **Water supply wells: requirements and best practices**

WHAT CAN YOU DO?

OPTION 1 – ACTION

Move upslope contaminant sources to a location downslope of the well:

- if you are considering improvements to fixed-point contaminant sources such as storages for manure, pesticides or fuels, consider the location of your well, and if needed, relocate these potential sources of contaminants to an appropriate site that is downslope and achieves an EFP distance rating of at least a (3) for a particular contaminant source structure

Minimum separation distances between your well and potential contaminant sources are specified in the Wells Regulation of the Ontario Water Resources Act.

OPTION 2 – ACTION

Construct a new well upslope of all potential sources of contamination:

- in an area and at a distance that achieves at least a (3) EFP distance rating and is compliant with the Wells Regulation siting requirements
- outside of a known or suspected floodplain and where flooding or surface water runoff will not impact the well
- at least 15 m (49 ft) away from any property boundary
- the person constructing the new well is a licensed well technician who also holds a valid well contractor licence or works for a licensed well contractor
- the old well is properly abandoned (plugged and sealed) according to the Wells Regulation

Note: **Consider a new well only if the existing well is being replaced due to age, condition or unacceptable water quantity or quality.**

Regrade soil around the well to prevent surface water from ponding near the casing.

OPTION 3 – COMPENSATING FACTOR

Direct surface drainage from potential sources of contamination away from your well with consideration given to the following:

- depending on local topography, surface water can be redirected by means of land reshaping, grassed waterways, etc.
- existing surface drainage should prevent ponding in the vicinity of the well – regrade if necessary by sloping the ground surface away from the well casing

OPTION 4 – COMPENSATING FACTOR

Monitor storages on your farmstead that contain potential sources of contaminants. This could include fuel storages, manure storages, or silage storages. In addition:

- check for leaks, cracks, seepage, overtopping or flooding
- avoid overfilling of storages
- ensure that properly trained and, if necessary, licensed persons repair any damage

CONDITION OF WELL

2–2. Well type and construction

BACKGROUND

Any deep hole drilled or dug into the ground provides a potential path for contaminants to reach groundwater and must be managed accordingly.

An ideal water source in a rural setting is usually a well which includes a secure and proper casing and a vented and sealed cap. When a well is constructed to accepted standards, it can provide a safe and reliable supply of water. The depth, quantity and quality of groundwater in your area often dictates what type of well you may have. Drilled wells tend to provide more protection from surface sources of contamination than bored/dug wells and generally provide a more dependable quantity and quality of water. Bored/dug wells get water from shallower groundwater sources, which are more easily affected by surface activities and rainfall. They are also more difficult to seal and maintain.

Only a licenced well professional (a licensed well technician or licensed well contractor) can construct a new well as they are trained in the proper construction and maintenance of wells. They are also required to document and submit all information required to the province for it to be recorded in the provincial well records database. All new wells must be constructed in accordance with the Wells Regulation.

If your well was constructed by a licenced well professional, it should be listed in the provincial well records database which can be found at: **Map: Well Records**. The age of your well (date of establishment) is one of the pieces of information included in the well record. Your well's age is an indicator of the technology used in its construction, and the integrity of the casing and cap.

Some dug wells were built a century ago, when well linings were built from stones and bricks. Old wells constructed in this manner are very susceptible to contamination from surface sources of pollution because the joints between the stones or bricks were rarely sealed.

Caution should be exercised when inspecting or working on old wells because they may be deteriorated and prone to collapse.

All parts of a well's structure, particularly the well casing and the well cap, are designed as part of a multiple-barrier approach to help protect:

- the quality of the water in the well
- the groundwater resource used by others for human consumption purposes

Physical considerations that characterize an ideal well are as follows:

- has a casing depth of at least 46 meters (150 feet) or a casing that is sealed into bedrock and the casing is inspected annually
- the casing extends a minimum of 40 cm above ground level
- the well cap is commercially manufactured, vermin proof, tightly secured, and inspected annually
- the well cap has a vent that is in good condition

When replacing a bored/dug or sandpoint water well, consider a drilled well where feasible.

Well type

WHAT CAN YOU DO?

OPTION 1 – ACTION

Replace the old well with a new drilled well:

- if the well cannot be repaired properly or if it is not economically feasible to repair the existing well, consider properly abandoning the well in accordance with the Wells Regulation and, if necessary, construct a new well or use an alternative water source
- take every opportunity to site and construct the replacement well with multi-barrier protection
- regardless of well type, remember to monitor and maintain your well

OPTION 2 – COMPENSATING FACTOR

Upgrade the well to current standards:

- repair the existing casing (e.g., grout joints)
- install a new casing (e.g., install a new casing inside the existing bored/dug well casing)
- ensure it is properly sealed and protected

OPTION 3 – COMPENSATING FACTOR

Carefully inspect the condition of the water well, especially for deterioration of the casing, and:

- ensure the water well is in good condition
- consult a properly licensed well technician who holds a valid well contractor licence, or works for the holder of a licensed well contractor, for advice
- test water quality at least three times per year

Consider factors besides the well's age before deciding if replacement is required. Important factors include impaired water quality, irreparable damage to casing and poor location.

When considering well upgrades or replacement, consult a properly licensed well technician who holds a valid well contractor license, or is employed by a licensed well contractor. A professional engineer or professional geoscientist can also be consulted.

Casing depth

A casing is a pipe, tubing or other material installed in a well to support its sides. Without a casing, soil would collapse into the well.

Drilled wells have a watertight casing, usually made of steel. The casing can extend to the bottom of the well, or in some cases only partway down (i.e., into bedrock).

Bored and dug wells use large-diameter concrete or steel casing, which are harder to make watertight. Although the water must enter the well from the bottom, it can sometimes enter through the sides if the casing joints are not sealed properly. Bored and dug wells also tend to be shallower in depth. Such factors make bored and dug wells more susceptible to contamination.

The deeper the water source for the well, the more opportunity there is for soil/bedrock to naturally filter and clean the water before it is used. The depth to which the watertight casing extends is an indicator of the minimum distance that water must travel through the soil before it can enter the well and then be used.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Redrill the well to a depth greater than 30 m (100 ft).

Consult a properly licensed well professional for advice.

Note: While most drilled wells are easily installed to depths greater than 30 m (100 ft), this may be inappropriate and should not be done in some areas:

- due to naturally occurring poorer water quality (e.g., sulphur, salt, iron etc.)
- where it is unlikely there is a suitable water source at that depth

OPTION 2 – COMPENSATING FACTOR

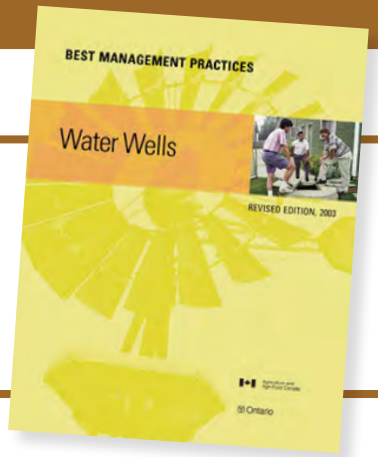
Ensure that the casing depth meets the minimum requirement for the type of well and soil profile:

- drilled wells should have a minimum of 6 m (20 ft) of sealed casing
- bored/dug wells should have a minimum of 3 m (10 ft) of sealed casing

Monitor water quality regularly. Maintain the well and surrounding area.

The deeper the source of your well's water, the greater the opportunity for soil to filter and clean the water before it's used.

For more information about well casings, refer to the Water Wells BMP book.



Like water, healthy soils are a precious resource. Good soil management prevents runoff and protects water quality. These and other BMP publications offer many practical and complementary solutions to protect soils and also protect your well.

Wells less than 3 m (10 ft) deep should not be used because of the short distance and the short time for water to be purified.

Casing height above ground

Your well can be a direct pathway from the surface to the groundwater aquifer. If contaminated surface water enters the well, water quality in the well and the aquifer is at jeopardy and all users of the aquifer are put at risk.

To reduce this risk, the well casing must extend high enough above the ground to prevent surface water from entering the well. The Wells Regulation specifies the minimum casing height for new wells.

OPTION 1 – ACTION

For bored/dug, sandpoint or drilled wells:

Extend the casing to 40 cm (16 in.) or higher above the surrounding ground surface:

- consult a properly licensed well technician who holds a valid well contractor license, or is employed by a licensed well contractor for advice on what to do

OPTION 2 – ACTION

For drilled wells in well pits:

Extend the casing to a minimum of 40 cm (16 in.) above the surrounding ground surface, install a pitless adaptor, and properly fill in the well pit:

- consult a properly licensed well technician who holds a valid well contractor licence or is employed by a licensed well contractor, for advice

Consult a licensed water well contractor for advice and assistance with the extension of the water well casing.

OPTION 3 – COMPENSATING FACTOR

For drilled wells in well pits:

- ensure that the well vent pipe extends 40 cm (16 in.) above the surrounding ground surface
- ensure that the drilled well cap is watertight (sanitary seal), and the well pit is sealed or continuously drained
- keep water from entering the drilled well from the well pit – the risk of contaminating the supply is high
- test the well water for indicator bacteria at least three times a year, and once a year for other parameters such as nitrate

A well pit is an enclosed structure, located at and below the ground surface that houses the top of the well and any associated pumping equipment.

Do not enter any confined space (e.g., well pits, pump houses) unless you are properly trained and equipped. Confined spaces present asphyxiation hazards, and some wells produce naturally occurring gases that are poisonous and/or explosive.

Well cap and well vent

A well cap or cover is another barrier, placed on top of the well's casing, to prevent surface water or other foreign materials such as vermin from entering the well.

A visual inspection of the well cap should be part of your annual well maintenance program.

Usually, a well cap has an air vent. An air vent is an outlet at the top of the casing that allows for the equalization of air pressure between the inside of the casing and the atmosphere. It also allows gases from the well to be released safely.

The air vent needs to be shielded and screened to prevent surface water or other foreign materials such as insects from entering the well.

Note: Upgrading or repairing venting where there is a flowing well or where natural or hazardous gas is present should be done by an experienced and properly licensed well technician and in accordance with the Wells Regulation.

WHAT CAN YOU DO?

OPTION 1 - ACTION

Repair or replace any faulty or inadequate materials associated with the well cap.

For bored/dug wells: Ensure the well cap is strong enough to stand on, keeps water and debris out, has no cracks and is childproof (e.g., concrete lid).

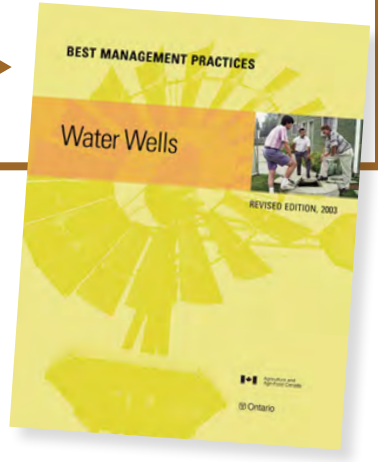
For drilled wells: Ensure the well cap, which should be commercially manufactured, is tightly secured without defects (e.g., cracks), provides a sanitary seal and is vermin-proof.

A visual inspection of the well cap should be part of your annual well maintenance program.

The Ontario Ministry of the Environment, Conservation and Parks has information outlining requirements of well construction, maintenance and abandonment.

Refer to Water Supply Wells: Requirements and Best Practices

For more information refer to this BMP. ▶



OPTION 2 – ACTION

Inspect well vent and screening.

For bored/dug wells:

If your bored or dug well has a concrete lid, it is considered vented:

- screening is generally not required here
- the lid should fit tightly enough to keep out debris, insects, and small animals

Bored/dug wells with concrete lids are considered vented.

For drilled wells:

If your drilled well has a sanitary cap, ensure that your well has a proper vent and is screened as follows:

- a small opening in the underside of the well cap, or a small pipe extending a minimum of 40 cm (16 in.) above ground level upward from the well cap, with the end turned down to prevent water entry
- the opening is screened

2–3. Condition of surface material around well casing

BACKGROUND

Water well sealing materials seal the space between the drilled borehole or excavation wall and the well casing. Their purpose is to prevent surface water or shallow groundwater from seeping directly into the well, and to prevent contaminated water from entering any aquifers along the casing.

To prevent preferential flow of contaminants along the outside of the well casing, an annular seal, made up of cement or bentonite (manufactured swelling clay) is placed around the casing at the time of construction. This annular seal fills the void between the casing and the soil or bedrock formation, providing an impermeable barrier.

Cracking or settling of the annular sealing materials can result if the wrong materials are used. Settling or a space at or near the casing may indicate unsatisfactory sealing of the casing.

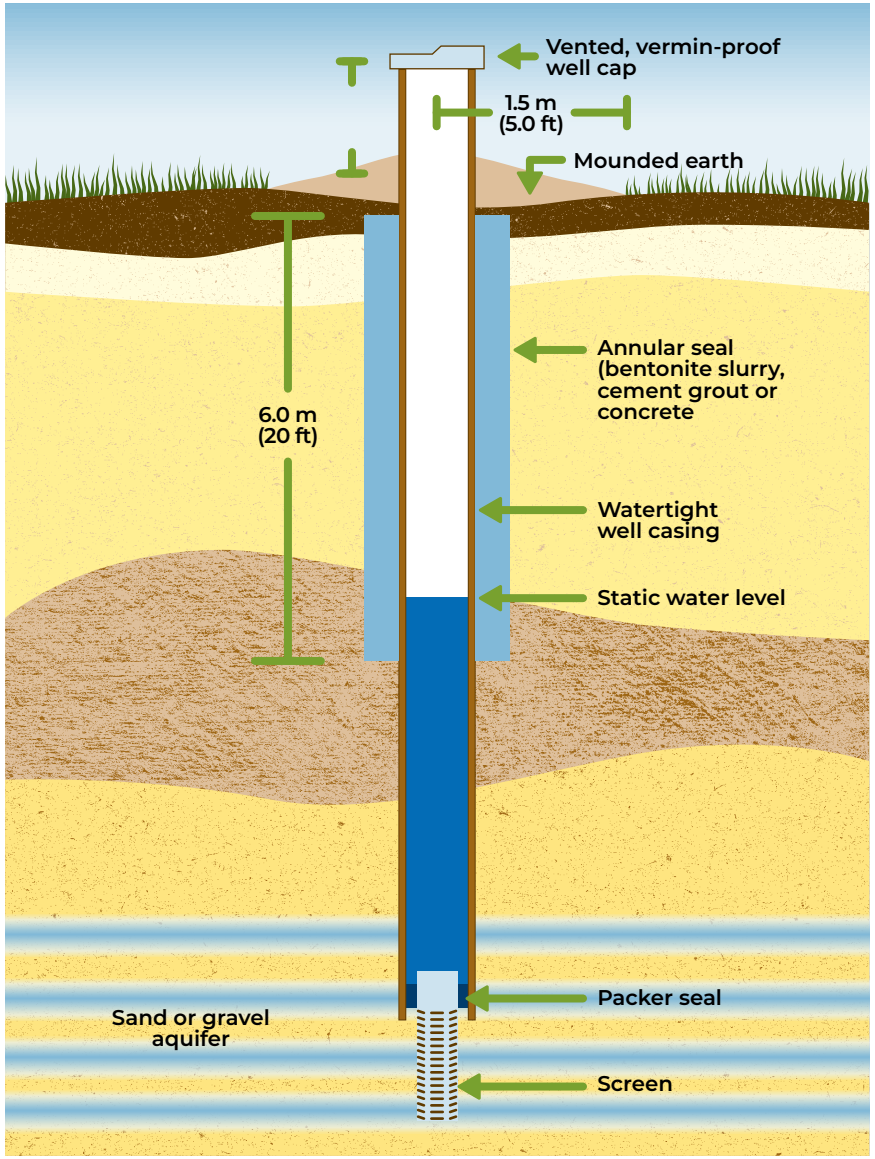
WHAT CAN YOU DO?

OPTION 1 – ACTION

Consult a properly licensed well technician who also holds a valid well contractor licence or is employed by a licensed well contractor, for advice.

OPTION 2 – ACTION

Mound soil around the well above normal ground level and slope it away from the well. Inspect annually. If unusual settlement occurs, follow Option 1.



Water well sealing materials such as bentonite, cement grout or concrete fill and seal the space between the drill borehole or excavation wall and the well casing.

2–4. Backflow prevention

BACKGROUND

The well and plumbing system are designed to bring clean water to the surface. If you don't take precautions, liquids can also be conducted in the opposite direction.

If a tap or hose is used to fill applicators or injectors or medicators are hard plumbed into the water system, then contaminants (e.g., pesticides, soap, medication) can potentially backflow into the system. This could endanger human and animal health.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Install anti-backflow devices on all outside faucets, or faucets that are used to fill containers with a hose, and maintain a 15 cm (6 in.) air gap between the liquid level and end of the hose:

- if more than one well is in use, operate them as separate systems, or separate them by manually controlled valves

Types of anti-backflow devices

Vacuum breakers are inexpensive anti-backflow devices that simply screw onto the tap and prevent liquids from siphoning back into the water system – but material can still be siphoned onto the ground surface.

In-line check (one-way) valves are better devices to prevent liquids from siphoning back into the water system. They can be installed in-line between the pressure tank and the tap, but usually are installed just before the outside tap.

This drilled well metal casing has a frost-free hydrant faucet with an anti-backflow device.

Unused and improperly abandoned wells are pathways for contaminants to move into groundwater.

For more information about abandoning a well, refer to the appropriate section of Water Supply Wells: Requirements and Best Practices.

Review OMAFA factsheet: Locating existing water, gas or oil wells

2–5. Unused or abandoned wells

BACKGROUND

Unused and improperly abandoned wells are pathways for contaminants to enter groundwater.

The Wells Regulation requires the well owner to maintain all wells as if they are being used. If you are not planning to maintain an unused well, consider properly abandoning the well.

The Wells Regulation requires that the well owner immediately abandon (plug and seal) a well in accordance with the Wells Regulation if it contains natural gas or other gas, or permits any movement of natural gas, contaminants or other materials into or between aquifer(s), unless measures are taken that prevent the movement at all times.

WHAT CAN YOU DO?

OPTION 1 – ACTION

If an unused water well is to remain in place, it must be maintained and managed:

- all unused water wells are considered active and should be included in your EFP, and meet the requirements of an active water well

OPTION 2 – ACTION

Properly abandon (plug and seal) the well.

Unless exempted by the Wells Regulation, the well owner must do the following:

- retain the services of a licensed well contractor
- ensure the contract with the well contractor contains a provision that the well technician who will do the abandonment work is licensed to construct the same type of well as the one to be abandoned

2-6. Water testing

BACKGROUND

Groundwater quality in Ontario is generally quite good. However, as part of a multiple-barrier strategy to protect a drinking water supply, it is important to know the well's water quality and to monitor its changes.

Routine water quality testing is an important aspect of well maintenance for a well owner. A well owner should submit a water sample at least three times each year for bacteria testing, or more frequently if a problem is suspected (e.g., in spring and fall, and after a major rain event). **Retain your water well tests for your records.** The water test report will indicate any water quality problems and what you should do (e.g., boil water). Contact your Public Health Unit for further assistance.

Repeated detection of bacteria in the well water samples means that there is a chronic source of bacteria affecting the well water. In these cases, measures should be taken to identify the source and then prevent it from accessing the well. This may include hiring a licensed well technician working for a licensed well contractor.

If problems with well water quality are reported by neighbours or there are changes in taste or visual quality of the water, test the well water for the appropriate bacterial and chemical parameters.

WHAT CAN YOU DO?

OPTION 1 – ACTION

Sample and test well water at least three times a year for indicator bacteria, and once a year for other parameters such as nitrate:

- follow the instructions on the sample bottle
- submit it to your local Public Health Unit for analysis
- contact your local Public Health Unit if you need help to interpret test results

For chemical testing, contact the Ministry of the Environment, Conservation and Parks (MECP) Wells Help Desk (1-888-396-9355) for more information, or to get a list of accredited licensed laboratories.

- Details about chemical testing are provided in Chapter 11 of the Water Supply Wells: Requirements and Best Management Practices manual (Dec. 2009) published by the MECP. Refer to **Water Supply Wells: Requirements and Best Practices.**

Test water for indicator bacteria at least three times a year, and once a year for other parameters.

When a well produces well water that is not potable (i.e., does not meet one or more of the Ontario Drinking Water Quality Standards), the well owner may seek the advice of and take measures directed by the local Public Health Unit as an alternative to immediately abandoning the well.

FOR MORE INFORMATION

ONTARIO MINISTRY OF AGRICULTURE, FOOD AND AGRIBUSINESS (OMAFA)

- Agricultural Information Contact Centre (AICC)
  Toll free: 1-877-424-1300 | e-mail: ag.info.omafa@ontario.ca

  Find most of the resources listed below at www.ontario.ca

Factsheets

- Pesticide contamination of farm water sources
- Managing your water well in times of water shortage
- Water quality for horses
- Water quality for dairy cattle
- Locating existing water, gas or oil wells
- Testing and treating private water wells
- Disinfecting private water wells
- Private rural water supplies
- Protecting the quality of groundwater supplies
- Understanding groundwater

Best Management Practices Series

- Water Wells

PUBLIC HEALTH ONTARIO

- Well Water Testing (Private Drinking Water)
- Drinking Water Testing – Private Citizen
- List of Licensed Laboratories

ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS

- Toll-free: 1-888-396-9355

Factsheets

- Managing your water well in times of water shortage
- Well Regulation – Well Maintenance
- Wells Regulation – Well Repairs and Other Alterations
- Wells Regulation – Well Abandonment: How to Plug and Seal a Well
- Wells On Your Property
- Wells Regulation – Siting a New Well

Publications

- Water Supply Wells: Requirements and Best Practices

LEGISLATION/ACTS

- Ontario Water Resources Act, R.S.O. 1990
- R.R.O. 1990, Reg. 903: Wells
- Nutrient Management Act, 2002
  - Ontario Regulation 267/03 – General