

Best Management Practices for Decommissioning Water Supply Wells

Why do wells have to be decommissioned?

Abandoned or unused wells can deteriorate over time and become a threat to groundwater. Near the ground surface, failures in a well casing, cap or surface seal can allow surface contaminants into the well. Deeper in the well, holes in a well casing can allow water from different aquifers to mix (see Figure 1). Abandoned wells may also represent a potential hazard to human safety. As a well owner, you must make sure your well is compliant with legislation so that it does not pose a risk to groundwater. The **Water Sustainability Act** (the Act) and **Groundwater Protection Regulation** (GWPR) state that unused wells that have no plans for future use must be decommissioned. Unused wells intended for future use must be deactivated.

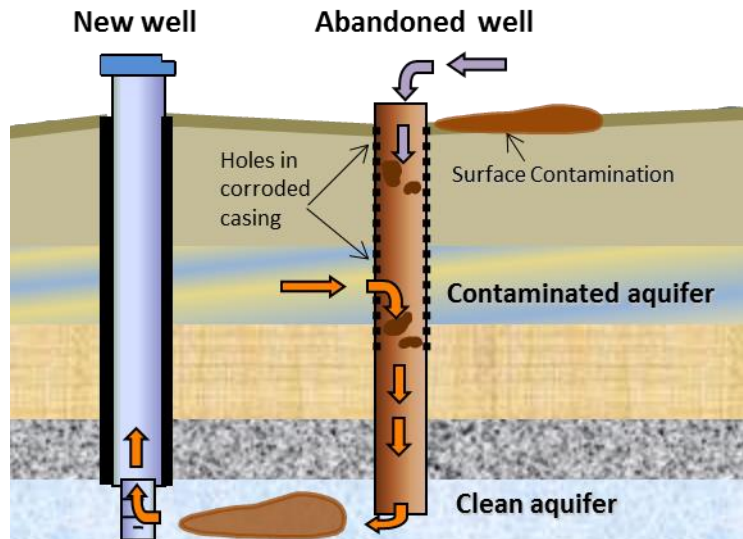


FIGURE 1 Potential groundwater contamination pathways in an abandoned well

When does a well have to be deactivated or decommissioned?

The *GWPR* states that if a well has not been used for a period of 5 years it must be **deactivated**. A deactivated well has a secure cap or cover, has no power to the pump, is maintained in a safe and sanitary condition, and is accessible to inspection. If a well has been deactivated for 5 years, or not in use for 10 years, and if there is no intent to use the well in future, the well must be decommissioned.

The basics of well decommissioning

Well **decommissioning** involves completely filling in the well. This work can only be done by, or under direct supervision of, a Registered Well Driller, Registered Pump Installer or a qualified professional (Professional Engineer or Professional Geoscientist with expertise in hydrogeology). **Note that a well owner can do this work themselves ONLY on drilled wells less than 5 metres deep or excavated/dug well less than 15 metres deep.** See the “Best Practices for Dug Wells” link at the end of this brochure for more information on decommissioning dug wells.

Well decommissioning specifics

The person responsible for decommissioning a well is required to follow the standards of the *GWPR*. The summary overleaf is for the benefit of home owners who are curious about the requirements. However, it is not intended as a technical guide for contractors. The full text of the *GWPR* is available at:

http://www.bclaws.ca/civix/document/id/complete/statreg/39_2016

Disclaimer: This document is intended for the owner of a private water well to understand the well decommissioning requirements. It is meant as a guide to the Groundwater Protection Regulation (GWPR) in plain language. In the event of any inconsistency between this text and the GWPR, the Regulation prevails.

The GWPR requires the following to decommission a well (see Figure 2):

- If feasible, all equipment (e.g. pumps, pipes, etc.) and instrumentation should be removed.
- The well must be completely filled with layers of clean backfill and sealant, and finished with a closure plug.
- The backfill material can be any clean fill that is available. The sealant and closure plug is a non-toxic, low-permeability material, such as mixtures of bentonite clay, cement and/or concrete.
- Backfill layers must not exceed 6 metres long and each sealant layer must be at least 1 metre long. The closure plug must be at least 5 metres long, or as long as possible. For shallower wells, the entire well can also be filled completely with sealant.
- Every attempt should be made to seal off two different aquifers (e.g. install a sealant layer at the same depth as the formation dividing two aquifers).
- The well casing may be left in place and cut down to below ground level.
- The performance of bentonite, a swelling-clay often used in well closure, is hindered in salty water. If you have issues with high salt content in your well, advise the person closing the well.

- The person who does the work must complete a well closure report and submit it to the Province of BC (see link below). The contractor should also provide a copy to the well owner.

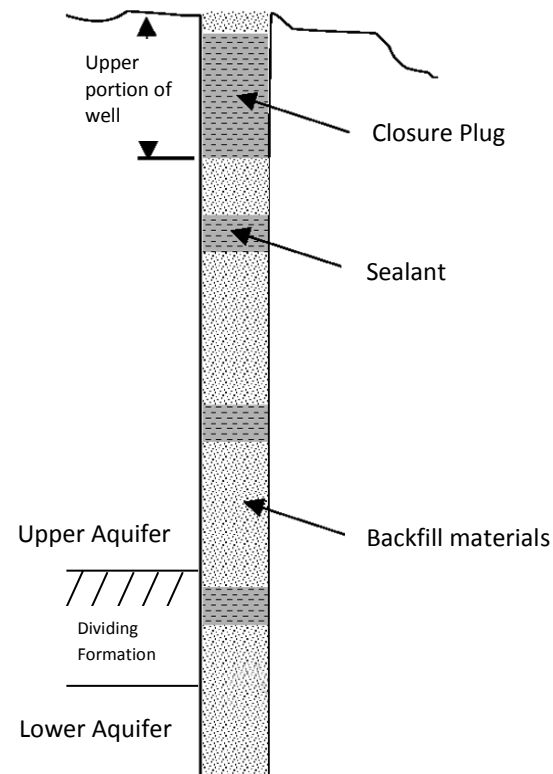


FIGURE 2 Well closure with sealants, backfill materials and closure plug

Attention should be paid when installing sealant because it can stick to the sides of the well casing before it reaches the bottom, causing a backup, or “bridging”. One method to overcome bridging is to use a large hose, called a tremie-line, which fills the well from the bottom up with a pre-mixed sealant. Another method is to slowly pour bentonite chips across a coarse mesh screen, to remove the finer particles, before the chips enter the well.

Useful Links

Best Practices for Dug Wells: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-wells/best_practices_for_dug_wells.pdf

Construction, Alteration and Decommissioning Reports: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells-aquifers/groundwater-wells/information-for-well-drillers-well-pump-installers>

Registries of Well Drillers and Pump Installers: <https://apps.nrs.gov.bc.ca/gwells/registries>

Regional Groundwater Staff Contacts: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells-aquifers/groundwater-wells/regional-groundwater-contacts>