

## WELL UPGRADING GUIDELINES

The following guidelines are intended for use when upgrading water wells. Only experienced and qualified personnel should complete any well upgrading work.

### Upgrading of Wells Completed in Well Pits

Historically, it was common practice to construct a large diameter pit around a small diameter well. The pit provides convenient access to underground water line connections below the frost line. Unfortunately, wells pits are always unsanitary because they literally invite drainage into the well creating a contamination hazard to the water well system. Well pits should be eliminated by extending the casing above grade and installing a pitless unit.

Pitless units, consisting of a pitless adapter and casing fitting, are commercially manufactured underground discharge assemblies which provide a frost-free connection and water tight seal where the water line passes through the wall of the well casing. They provide a sanitary connection by preventing the entrance of contaminants from surface sources and permits access to the water systems parts within the well without exterior excavation or disruption of the earth.



Pitless adapter and casing fitting

Each well pit situation will differ, but the procedure for upgrading typically involves the following steps:

1. In cases where work may be required inside of a well pit, entry into the pit must comply with Manitoba's Code of Practice for confined space entry work. In these instances, only qualified personnel who have confined space entry safety training, experience and related equipment must perform this task.
2. Power to the well must be turned off before starting any work. Disconnect all electrical wiring and associated piping and remove the pump from the well. Only qualified personnel should perform any electrical work.



Well located in flooded well pit

3. The well pit cribbing can be removed using a backhoe or other appropriate equipment. Any work in an open excavation must follow Manitoba's Workplace Safety and Health regulations on excavation and construction safety.



Removal of well pit cribbing

4. The type and condition of the casing must be checked. If steel casing exists, any corroded sections must be removed before an extension can be made to the remaining structurally sound casing. The extension of a steel casing is done by threading or welding a metal casing extension to the existing well casing. Alternatively, if the casing extension cannot be threaded or welded, a pitless connector or rigid coupler should be used to join the existing well casing to a casing extension. Fernco couplings are not recommended as they have been found to split open or slip off the casing after burial. If the existing casing is PVC, the extension is done by solvent welding a PVC casing extension to the existing casing. All new joints must be water tight. The extended well casing should be completed to a level of 0.30 to 0.45 meters (12 to 18 inches) above the finished grade.



Extension of well casing above grade

5. Install a pitless unit onto the new casing to provide a sanitary connection to the well. The pitless adapter should be constructed of corrosion resistant material, preferably brass. The Manitoba Water Services Board Water Facts pamphlet entitled "Pitless Adapter for Submersible Pumps" should be used as an installation guideline (contact The Manitoba Water Services Board for a copy or visit Manitoba Water Stewardship's web site). The pumping mechanism and any electrical and associated piping must be re-installed, including a properly attached conduit for any electrical works.
6. The excavation hole must be backfilled following proper construction practices. Due care must be taken during the backfilling and compaction procedures to ensure the well casing and extension are kept vertical and inline at all times and the pitless unit is not damaged or dislodged. The area around the top of well should be built up with good clay soil and final grading should be completed to ensure adequate drainage away from the well.

7. Install a properly vented well cap onto the well casing.
8. Disinfect the well, pump and household plumbing system. Refer to the Manitoba Health Well Water Fact Sheet entitled "How Do I Disinfect My Well?" available at: [www.Manitoba.ca/drinkingwater](http://www.Manitoba.ca/drinkingwater)
9. Collect a water sample and have it tested for bacteria. Refer to the Manitoba Health Well Water Fact Sheet entitled "How Do I Test My Well Water for Bacterial Contamination?" available at: [www.Manitoba.ca/drinkingwater](http://www.Manitoba.ca/drinkingwater)



Completed well pit upgrade

### **Extension of Well Casing Stick-up**

Well casings should extend (stick-up) 12 to 18 inches (0.30 to 0.45 meters) above the finished grade. For guidance on extending a well casing, refer to the above section on Upgrading of Wells Completed in Well Pits.

### **Drainage Problems around Wells**

The following items should be considered:

- 1) The area around the well should be built up with good clay soil.
- 2) Final grading should ensure adequate drainage away from the well.
- 3) The well casing stick-up should be 12 to 18 inches (0.30 to 0.45 meters) above the finished grade.

### **Well Lids or Caps**

The following items should be considered:

- 1) A watertight and vermin resistant well lid or cap should be installed to shed water and prevent bugs, mice or other creatures from entering the well.
- 2) The well lid or cap should be sized properly to fit tight and securely onto the well casing.
- 3) The well lid or cap should be vented to the atmosphere and the open end of the air vent should be screened in a manner to prevent the entry of any materials into the well. Wells in flood prone areas should have a check valve type air vent to prevent flood waters from entering the well.
- 4) Openings for electrical conduits entering the well should be properly sealed.

## **For more information**

For more information on upgrading wells, contact:

- Groundwater Management at 204-945-7425 in Winnipeg

For information on well water testing and disinfection, contact:

- Manitoba Office of Drinking Water at 204-945-5762 in Winnipeg
- Your local drinking water officer (contacts available at: [www.Manitoba.ca/drinkingwater](http://www.Manitoba.ca/drinkingwater)).
- Health Links-Info Santé at 204-788-8200 in Winnipeg; toll free 1-888-315-9257

For information on confined space entry practices and excavation and construction safety, contact:

- Manitoba Workplace Safety and Health at 957-7233 in Winnipeg or 1-866-929-7233 outside Winnipeg

Associated websites include:

- [www.Manitoba.ca/drinkingwater](http://www.Manitoba.ca/drinkingwater)
- [www.gov.mb.ca/health/publichealth/cmoh/water](http://www.gov.mb.ca/health/publichealth/cmoh/water)
- [www.gov.mb.ca/labour/safety](http://www.gov.mb.ca/labour/safety)

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