

## **ABANDONED WATER WELLS SHOULD BE PLUGGED**

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Water wells that are no longer being used are considered to be abandoned. Abandoned wells are a safety hazard for children and pets and a potential source of groundwater contamination. Unfortunately, the effects of groundwater contamination are not usually recognized until it's too late. Groundwater contamination can occur in several ways in an old abandoned well:

- Directly from the surface through the top of the well casing,
- From the surface through unsealed spaces along the outside of the casing, and
- From a shallower aquifer containing poor quality water either through corroded casing or along the outside of the casing if there is a poor formation seal.

Landowners may not even be aware that abandoned wells exist on their land. The most obvious sign of an old well is a pipe sticking out of the ground. Windmills are often located over abandoned wells. In some cases an old pumphouse or an unexplained depression in the ground at an old homesite may be the only indicators of abandoned wells. Landowners may be able to determine the location of an abandoned well from old photos or records. For those that are aware of an abandoned well location, now is the time to do something about it! The best solution for these abandoned wells is not to merely cap or cover the well, but to have it permanently sealed.

Proper plugging of an abandoned well prevents:

- Contamination from reaching the aquifer from the surface,
- Mixing of poor quality water from one aquifer with better quality water in another aquifer,
- Bodily injury or accidents from occurring.

Proper plugging of an abandoned well does not involve filling the well with rocks, sand or gravel. It is generally recommended that a licenced well driller complete the plugging process. There are several steps to complete before a well can be plugged. The total depth of the well and water level should be determined. The entire well depth must be checked to see that it is clear of any obstruction. Ideally the casing should be removed from the well before the plugging process begins. The casing can be left intact if it is too difficult to remove. The well should be disinfected with a 200 mg/L chlorine solution for a minimum of 8 hours.

To create an effective seal, the casing or bore hole must be filled from the bottom up with bentonite grout, cement grout or other manufactured bentonite products. A well driller can pump bentonite slurry or cement through a tremie pipe with the use of a drilling rig or pump it through hoses placed at the bottom of the well. This ensures that material is placed at the bottom of the well first. The only exception to pumping material down a well is to use coated bentonite pellets. These pellets have a weighted material added to ensure that they sink to the bottom of the hole. They are also coated to prevent swelling on contact with water before reaching the

bottom of the hole. Large diameter or bored wells can be costly to seal off because of the size of the opening and the volume of material required to fill them. A low cost alternative is to use impervious clay for these type of wells. Finally, once the well has been properly plugged, if the casing was not already removed it should be cut off 0.5 m below the ground surface and backfilled with compacted clay to ground level. Flowing wells present special problems for plugging sometimes requiring different techniques, methods or materials.

For more information about plugging abandoned wells, contact the AAFC-PFRA office in Medicine Hat at (403) 526-2429.