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# ENVIRONMENTAL Fact Sheet

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## **Maintenance of Inactive Wells and Decommissioning of Abandoned Wells**

New Hampshire regulations require wells that are no longer in use to be properly maintained or to be abandoned and decommissioned in an appropriate manner to prevent the entry of contaminants into the groundwater. The responsibility for maintaining an inactive well or decommissioning an abandoned well, lies with the well owner. State law requires that the decommissioning, also known as sealing, of abandoned wells is performed by a licensed New Hampshire water well contractor. Licensed water well contractors have the necessary equipment and experience to complete the job safely and properly.

### **Deciding whether to maintain or decommission a well**

Wells are expensive commodities and are generally an asset to the property even if they are not currently in use as long as they are properly maintained. If it is decided that a well has no useful purpose, has no potential future use or has no real value and may constitute a liability, then the well should be considered abandoned and must be properly decommissioned.

The decision to abandon a well is generally the home owner's, however, the New Hampshire Water Well Board may make the determination in response to reasonable supporting evidence.

### **How to maintain an inactive well**

Proper well maintenance depends on the type and size of the well. The three basic well types used to supply drinking water are drilled bedrock wells, drilled or driven gravel wells, and shallow dug wells.

### **Well Maintenance Procedures**

- Ensure that the well casing and cover are above the land surface where it is protected from flooding. If the top of the well is below the ground surface, the owner should have the well raised above grade by a licensed water well contractor or pump installer. Casings must extend above the finished grade based on the type of well as follows:
  - 1) Drilled wells (private domestic) – 8 inches.
  - 2) Dug wells (private domestic) – 18 inches.
  - 3) Public water supply wells (small community, schools, and facilities used as shelters during public emergencies) – 12 inches.
  - 4) Large Community Public Water Supply Wells – 18 inches, or 3 feet above the 100-year flood level, if the area is known to flood.

- Well covers should be securely attached to protect your well from unwanted insects, snakes, rodents and other small furry animals. Old, cracked, or broken covers should be replaced. Electrical conduits that have pulled away from the well cover should be securely and mechanically attached to the well cover.
- Drilled wells with a casing inside diameter of 4-12 inches must be fitted with a well cover that has a screened vent and the cover is sealed with an o-ring, gasket or other seal so that contaminants cannot enter the well accidentally.
- Drilled wells with a casing inside diameter less than 4 inches must be fitted with a secure cap or plug.
- Dug wells should be equipped with a concrete cover that is difficult to remove by virtue of its weight to prevent children or unauthorized persons from gaining access to the well. Concrete covers should be the solid construction type and should not be equipped with an access plug. Access plugs leak rain water into the well and are commonly a source of bacterial contamination. Wells may be enclosed by a locked structure specifically designed to house the well. Where a well house is provided, covers other than concrete are permitted.

### **Risks posed by improper well abandonment**

There are very good reasons for well owners to make sure abandoned wells on their property are properly decommissioned.

- Improperly abandoned wells threaten drinking water supplies by providing open conduits into aquifers.
- Any contaminants entering an abandoned well from the surface can travel easily into different water-bearing formations (whether in coarse sand and gravel aquifers or in bedrock fracture zones) and can cross-contaminate a number of water-bearing formations within one well.
- If a drinking water well is being replaced because of water quality problems in the original well, the abandoned well is a direct threat to the new water supply if it is not properly sealed.
- Improperly abandoned wells can create a liability problem at the time of property resale or if the well causes contamination in neighboring wells.
- Shallow dug wells create a physical hazard simply because of their large diameter and the potential for animals or people to fall into them. Typically, the older fieldstone-lined wells are the most dangerous because many were finished flush to the ground surface and were covered with wooden covers, which are now decayed or non-existent.

### **How to decommission an abandoned well**

The proper well sealing method depends on the type of well being decommissioned. The three basic well types used to supply drinking water are drilled bedrock wells, drilled or driven gravel wells and shallow dug wells.

Groundwater monitoring wells are another type specifically designed and used for aquifer assessment purposes including groundwater flow and water quality observations.

**Well Decommissioning Procedures** – Prior to decommissioning, all wells should be investigated to determine their condition, the details of construction and whether or not any obstructions exist that will interfere with the filling and sealing process. Any obstructions should be removed by cleaning out the hole if possible.

If the well was constructed after January 1, 1984, a report describing its relevant characteristics should be on file at the N.H. Geological Survey. Copies may be obtained by calling (603) 271-1973.

- Abandoned drilled wells penetrating unconsolidated materials or fractured bedrock should be sealed by grouting the entire length of the well.
- Drilled wells that have been contaminated due to a construction deficiency or continue to cause an environmental hazard should be sealed by the pressure grout method. This is done with a conductor pipe, called a tremie pipe, starting at the bottom of the well and slowly raising the conductor pipe toward the top of the well at a rate no faster than the grout material fills and displaces water from the well and until the well is completely filled. The grout mixture used should be a Portland cement mixed with 2 percent to 10 percent high solids bentonite clay according to the correct water-to-cement ratio. Commercially available premixed bentonite grout designed for sealing wells may also be used.
- Abandoned shallow dug wells should be filled and sealed by placing clean fill material free of organic matter into the well. Often, locally available fill materials are adequate to complete the job. The upper two feet should be filled with impervious material such as clay or hardpan and slightly mounded to prohibit surface water runoff from entering the filled excavation.
- Monitoring wells shall be decommissioned based on site specific hydrogeologic and contaminant conditions and site use. Some monitoring wells can be decommissioned by simply filling the well screen and casing with grout, cutting the well casing off below grade and completing surface application such as pavement or loam and seed. In some instances it may be appropriate to over drill and/or tremie grout a well such as in the case of wells that bridge confined units or bedrock wells, respectively. Please contact DES Waste Management Division staff at (603) 271-6645, with proposed decommissioning procedures to obtain approval.

### **Materials to safely seal a well**

There are a variety of acceptable grout and fill materials used for sealing wells.

- **Portland cement**, otherwise known as neat cement, mixed with five to six gallons of clean water per 94-pound bag.
- **Cement-Bentonite** grout is a mixture of Portland cement with 2 percent to 10 percent bentonite clay mixed according to the proper water-to-cement ratio depending on the percent by weight of bentonite added. This sealant is the recommended material to use when decommissioning a contaminated well because, unlike neat cement that shrinks and can crack upon curing, cement-bentonite grout swells and remains plastic when cured creating a superior seal.
- **Bentonite chips** can be used for filling and sealing wells or portions of wells by applying directly into the well through the top at a rate no greater than three minutes per bag. When hydrated, bentonite chips will swell up to 12 to 13 times their dry volume and effectively seal the well. If the chips are applied at a rate greater than three minutes per bag, bridging can occur within the well and the well will not be filled.

Licensed water well contractors are required to file an Abandoned Well Registration Report with the Water Well Board within 90 days after a well has been decommissioned.

**The following state laws and administrative rules are relevant to maintenance of inactive wells or decommissioning of abandoned wells**

- RSA 482-B:15 Maintenance and Repair of Wells and Pumps (Chapter 482-B New Hampshire Water Well Board).
- RSA 485:37 Fencing or Covering and RSA 485:38 Nuisance (Chapter 485 New Hampshire Safe Drinking Water Act).
- Administrative Rules We 603 Well Maintenance and We 604 Abandonment of Wells (Water Well Board Administrative Rules, Chapters We 100-1000).

**For Additional Information**

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or [dwgbinfo@des.nh.gov](mailto:dwgbinfo@des.nh.gov) or visit our website at <http://des.nh.gov/organization/divisions/water/dwgb/index.htm>.

Note: This fact sheet is accurate as of October 2010. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.