



## **RESPONSIBILITY FOR WELL ABANDONMENT**

A well must be permanently abandoned or repaired if it acts as a source or channel of contamination. If a well is required to be abandoned, the well owner is responsible for having the well permanently abandoned except in the following situations:

- (1) the well contractor is responsible for well abandonment if abandonment is required because the well contractor improperly locates, constructs, repairs, or completes the well; and
- (2) the person who installs, repairs, or removes the well pump is responsible for well abandonment if that abandonment is required because of improper well pump installation, repair, or removal.

Any person abandoning a well must submit a record of abandonment (form GW-30) to the Division of Water Quality within 30 days after completion.

There are two major categories of wells: Drilled and Bored.

- 1) Drilled Wells are usually 2-10 inches in diameter, have steel or thermoplastic casing and are typically “punched” or drilled into unconsolidated sediments or consolidated bedrock.
- 2) Bored Wells are usually 18-36 inches in diameter, have clay or concrete casings and usually are hand dug, or bored with a large diameter power auger into unconsolidated sediments or weathered bedrock. The requirements for well abandonment are different for these two well types.

### **Bored Well Abandonment**

The following is the generalized process for abandoning bored wells:

- 1) The well should be disinfected in accordance with the procedures found in Title 15A NCAC 02C .0111.

- 2) Remove all plumbing or piping, along with any obstructions in the well.

- 3) Remove as much of the well casing as possible, but no less than 3 feet below land surface.

- 4) Remove all soil or other subsurface material present down to the top of the remaining well casing and extending to a width of at least 12 inches outside of the well casing;

- 5) Fill the entire well up to land surface with grout, dry clay, or material excavated during construction of the well. If dry clay or material excavated during the construction of the well is used, it shall be emplaced in lifts no more than 5 feet thick and then compacted in place prior to emplacement of the next lift.

- 6) Pour a 6-inch concrete plug that covers the entire excavated area above the top of the casing, including the area extending on all sides of the casing out to a width of at least 12 inches on all sides.

- 7) Complete the abandonment process by filling the remainder of the well above the plug with additional grout or soil.

### **Drilled Well Abandonment**

Any casing not grouted must be removed or properly grouted. Casing that is grouted can be removed if such removal does not contribute to contamination of the groundwater.

The entire depth of the well has to be sounded to ensure freedom from obstructions that may interfere with sealing operations.

The well should be disinfected using a solution made from calcium hypochlorite containing 65% - 75% available chlorine, such as HTH. Do not use calcium hypochlorite products containing fungicides, algicides, or other disinfectants. Do not use a common household bleach, as it is too weak. A complete description of

disinfection procedures can be found in Title 15A NCAC 02C .0111.

If the well is gravel-packed and the casing and screen have not been removed, neat cement or bentonite grout must be injected into the well, completely filling it from the bottom of the casing to the top of the well.

Wells constructed in unconsolidated formations shall be completely filled with grout by introducing it through a pipe extending to the bottom of the well. The pipe is then raised as the well is filled (commonly called a tremmie pipe).

Wells constructed in consolidated formations may be filled with grout, sand, gravel, or drilling cuttings opposite the zones of consolidated rock. The top of any sand, gravel, or cutting fill shall terminate at least 10 feet below the top of consolidated rock or 5 feet below the bottom of the casing. Grout shall be placed beginning 10 feet below the top of the consolidated rock or five feet below the bottom of the casing in a manner to ensure complete filling of the casing, and extending up to the land surface.

**Other Wells**

This pamphlet has summarized the abandonment procedures for water wells. However, there are many other types of wells in North Carolina that must be abandoned properly. For monitoring wells and other miscellaneous wells, refer to Title 15A NCAC 2C .0100: Criteria and Standards Applicable to Water Supply and Certain Other Wells.

**Well Disinfection Tip**

The following table can be used to determine how much chlorine compound is needed to dose 100 feet of a water-filled well to at least 100mg/l.

Borehole or Casing Diameter (inches)	Gallons of Water per 100 ft of Water Filled Well	Amount of Calcium Hypochlorite (65%-70% available chlorine)
2	16.3	0.5 oz.
4	65.3	2 oz.
6	146.9	4.4 oz.
8	261.1	7.8 oz.
10	408	12.2 oz.
12	587	1 lb.2 oz.
18	1321	2 lb. 8 oz.
20	1632	3 lbs. 1 oz.
24	2350	4 lbs. 7 oz.
30	3672	6 lbs. 14 oz.
36	5287	9 lbs. 15 oz.

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For more information or a copy of the 15A NCAC 02C .0100 Well Construction Standards Criteria and Standards Applicable to Water Supply and Certain Other Wells, you can visit our webpage

<http://portal.ncdenr.org/web/wq/aps/gwpro>

or contact us at:

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