ENGINEERING AND TECHNOLOGY
THE CUTTING EDGE
The Department of Agricultural Engineering • University of Illinois at Urbana-Champaign

Sealing an Abandoned Well

Jerry Dalsin, George Czapar, Mike Hirschi,
and the Illinois Association of Groundwater Professionals

Following the Code

The risk of abandoned wells

An unused water well, commonly known as an "abandoned well," poses one of the greatest threats to groundwater. It provides a direct, unhindered route for pollutants to reach an aquifer—an underground water supply.

The best and only safeguard against this kind of situation is to properly seal all abandoned wells. Sealing a well is generally not an expensive process, but it must be done correctly, preferably by a licensed groundwater professional.

Homeowners do have the right to seal their own wells, as long as they accept all responsibility for sealing the well in compliance with the Illinois Water Well Construction Code and all pertinent county codes. For those homeowners who intend to take this task on themselves, the following guide will help in the process.

Before any work on sealing a well can begin, you must report it to the local public health department. Also, be sure you have obtained all permits and notified well inspectors.

You need to be sure your well sealing plan is approved by the local health department before starting work. After the well has been sealed, you must complete and file the proper sealing affidavits.

The following guidelines list steps that must be taken, regardless of the type of well. Additional guidelines follow on page 2 for different types of wells.

Sealing procedures

Guidelines for sealing all types of wells

1. Contact the local health department to obtain a water well sealing plan form. After consulting with the local health department, complete the sealing plan, which includes a description of the particular sealing method, as well as materials and equipment to be used. Then submit the sealing plan to the local health department.
2. After you receive written approval of your plan, notify the local health department at least 48 hours before you begin sealing and make arrangements for an inspector to be present at the time of sealing.
3. Remove all material from the water well, such as the pump, pipe, pump cylinder, and electric cable. Be sure to use the proper hoisting equipment, safety devices, and safety precautions.
4. Measure the depth and diameter of the well and the static water level. The static water level is the distance from the soil surface to the level of non-pumping water in the well.
5. Make sure there is no foreign matter in the bottom of the well. Remove all debris before sealing.
6. Disinfect the well, following the State of Illinois Water Well Construction Code. You must use the correct amount of chlorine as prescribed by the state code—a concentration of 100 parts per million.
7. Seal the well in accordance with an approved plan.
8. Complete the water well sealing affidavit and submit it to the local health department not more than 30 days after a well is sealed.

The remaining steps depend on the type of well being sealed.

Hand dug or bored wells: additional guidelines

- Place fill material (pea gravel, impervious clay material, or limestone chips) from the bottom of the well to 20 feet below the point where the casing is to be removed.
- In the upper 20 feet of the well, place the sealing material—concrete, cement grout, clean clay, or neat cement.*
- Using proper equipment and safety devices, remove at least the top 2 feet of the well casing. The casing will be either brick, stone, concrete block, porous tile, or other material.
- What remains is a 2-foot-deep hole where the casing was removed (see illustration). Fill this hole with topsoil. Use enough topsoil to allow for settling.

  NOTE: Instead of fill, you can use concrete, cement grout, or clean clay to seal the well from bottom to top.

Drilled wells: additional guidelines

- Place the fill material (pea gravel or limestone chips) from the well bottom to 10 feet below the top of the aquifer or 10 feet below the bottom of the casing (whichever is less).

  If the well extends through *several* types of water-bearing formations, contact the local health department for instructions on well sealing.
- Above the fill material, place a minimum of 20 feet of sealing material—bentonite or neat cement grout.* The sealing material should fill the well to within 2 feet of the surface.
- Using proper equipment and safety devices, remove at least the top 2 feet of the well casing.
- Where the casing was removed, there will be a 2-foot-deep hole. Fill this hole with topsoil. Use enough topsoil to allow for settling.

Driven point wells: additional guidelines

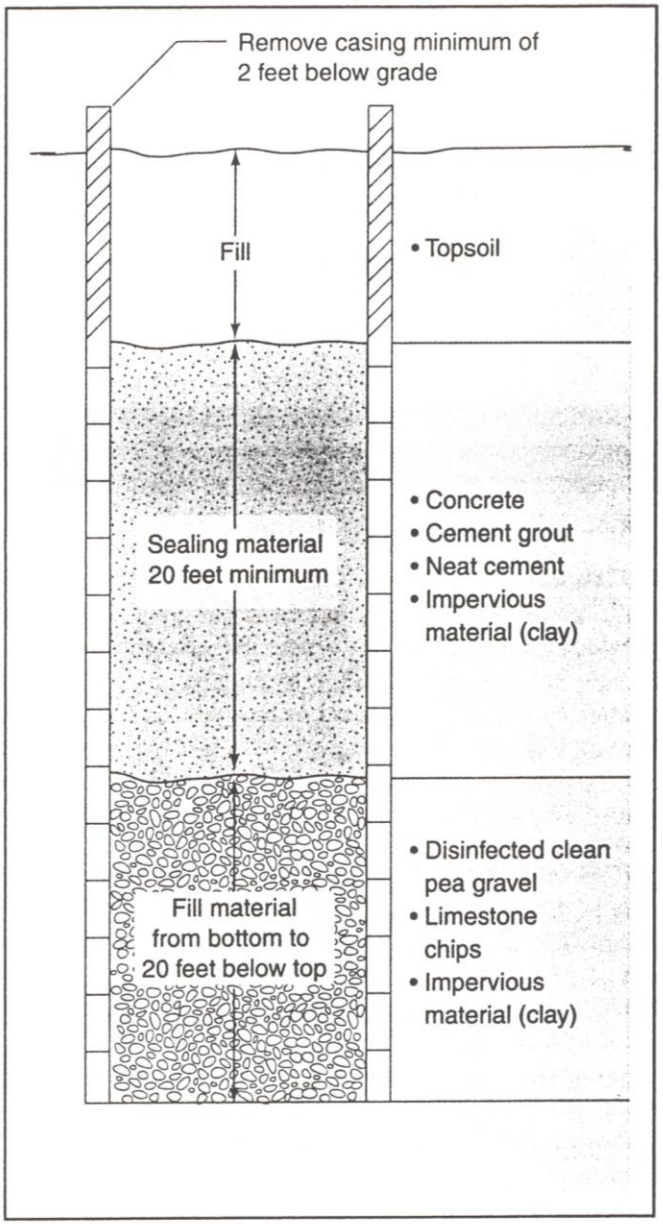
- Sift bentonite chips using a fine-mesh screen. Remove all bentonite "fines"—the powdery residue in the bentonite bag.
- Completely fill the well with the sifted bentonite chips or neat cement.* (Most health departments will request that you use bentonite.)

  Make sure that no "bridging" of the sealing material occurs. If you fill the well with bentonite too rapidly, the bentonite pieces can catch on the sidewall and become lodged there, forming a bridge across the well opening, instead of falling to the bottom. A gap can form below this bridge.

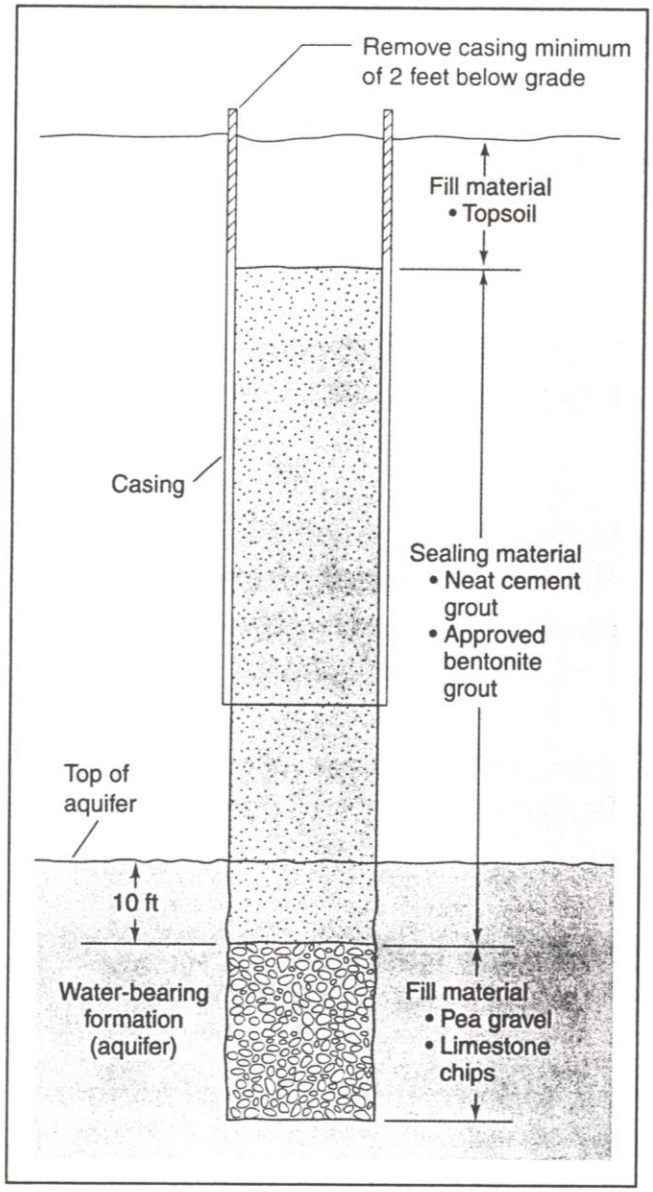
*Neat cement grout is a mixture of one bag of cement (94 pounds) with no more than 6 gallons of clean water.

- Remove the top 2 feet of casing. This can be done by digging around the outside of the well and then cutting off the top 2 feet of casing. Fill the hole with topsoil.

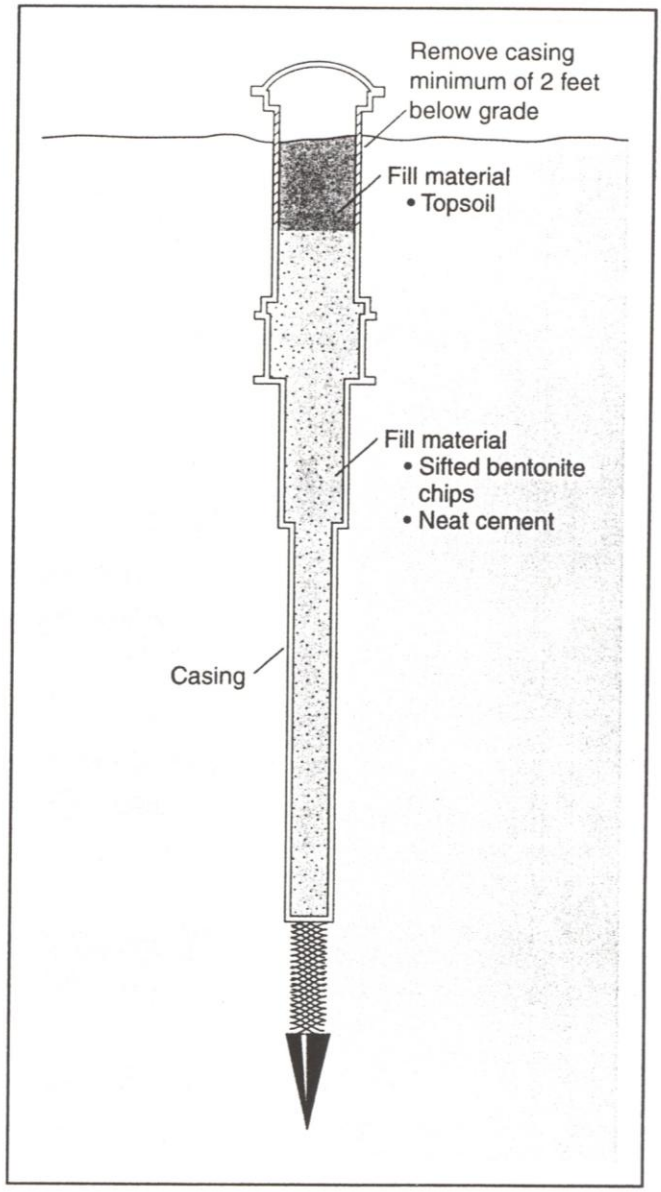
Sealing an abandoned dug or bored well



Sealing an abandoned drilled well



Sealing an abandoned sandpoint well



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The Department of Agricultural Engineering
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Head of Department: Loren Bode

Writers: The Illinois Association of Groundwater Professionals; Jerry Dalsin, Illinois Department of Public Health; and George Czapar and Mike Hirschi, University of Illinois Extension
Editor: Doug Peterson, UI Information Technology and Communication Services
Technical Illustrator: Mic Greenberg

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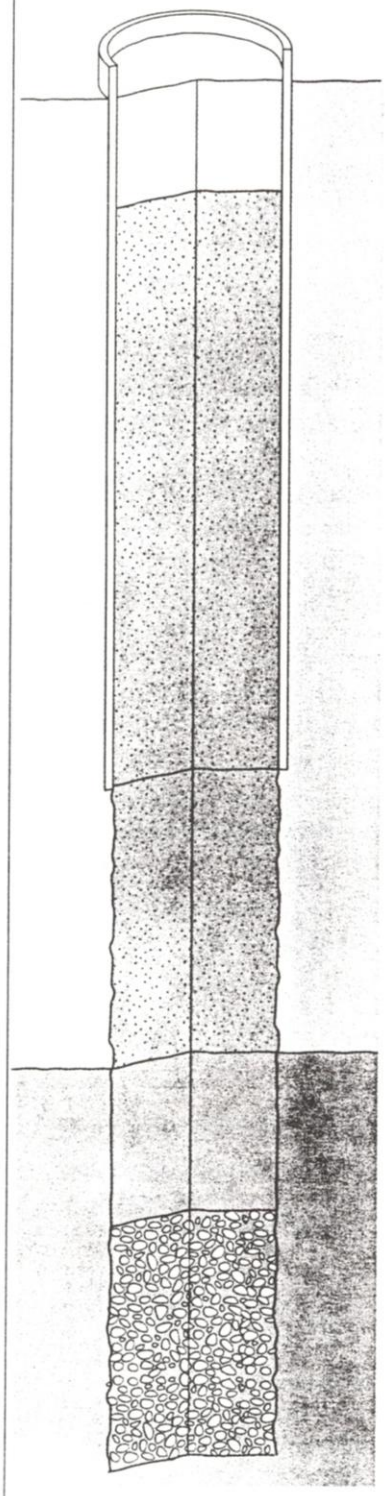
Sealing a water well

Guidelines for all types of wells

For more details, see page 1. Also, see page 2 for additional guidelines for specific wells.



1. ***Submit a sealing plan to the local public health department.***
2. ***Notify the local public health department at least 48 hours before sealing.***
3. ***Remove all material from the well (pump, pipe, pump cylinder, electric cable, etc.). Use proper equipment, safety devices, and safety precautions.***
4. ***Measure the depth and diameter of the well and the static water level.****
5. ***Remove debris from the well.***
6. ***Disinfect the well, following the State of Illinois Water Well Code.***
7. ***Seal the well according to an approved plan.***
8. ***Complete and submit a sealing report to the local public health department not more than 30 days after the well is sealed.***

*The static water level is the distance from the soil surface to the level of non-pumping water in the well.