- BACTERIA—Bacteria can enter a well through several ways. The drilling process and installing the pump allows bacteria to be introduced. The most common type of bacteria is coliform bacteria. Coliform bacteria are part of a large group of various species of bacteria, they occur naturally in the intestines of warm blooded animals, and are an indicator of possible contaminants. *E.Coli* is a fecal coliform that can be present in a water sample and is an indicator of sewage contamination in the well which can be indicative of other disease causing bacteria.

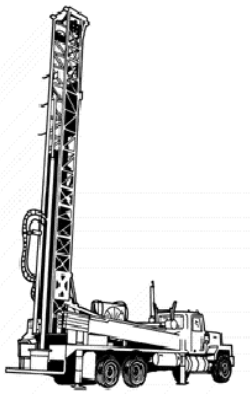
HOW TO CHLORINATE A WELL

The amount of chlorine required to adequately disinfect a well is dependent on the diameter of the well and the depth of the well (see the table below). Standard liquid unscented bleach (5.25%) can be used. If you are chlorinating a well that has had an alteration performed, double the amount of bleach listed below.

Amount of Chlorine needed using Liquid Laundry Bleach (~5.25% Sodium Hypochlorite)

Depth of water in well	Well Casing Diameter			
	4 inches	6 inches	8 inches	12 inches
25 feet	1 cup	1 pint	1 quart	4 ½ pints
50 feet	1 pint	1 quart	½ gallon	1 gallon
100 feet	1 quart	½ gallon	1 gallon	2 gallons
150 feet	1 ½ quarts	¾ gallon	1 ½ gallons	3 gallons

1. Mix the recommended amount of chlorine with water in a 5 gallon bucket.
2. Remove the well cap carefully and pour the bleach into the well (pouring slowly in a circular motion to allow the bleach water to touch all sides of the casing interior).
3. Connect a hose to an outside spigot and run water from the spigot directly into the well until you can smell chlorine water coming out of the hose.
4. Turn off the hose and then turn on every water fixture throughout the home until you smell chlorine at each tap. (It is advised that you turn off your water heater. Any softeners or other treatment equipment should be bypassed and sanitized per manufacturers instructions.)
5. Allow the chlorinated water to sit in the pipes for 8 to 12 hours (typically "overnight").
6. After the 8-12 hours has passed, remove the chlorinated water from the well through an outside hose to a safe area away from your home's foundation. **Do not** discharge the chlorinated water through your septic system. Excess water may cause premature failure of the septic system. It may take several hours before the chlorine is out of the system. **Do not** use a hot water spigot to run the water for an extended period of time since this may damage the heating element.



7. After the outside hose no longer smells of chlorine, open up all taps inside the home to remove the chlorine remaining in the pipes.

A water sample can be taken 48 hours after the chlorine is completely removed from the system.

CRAWFORD COUNTY GENERAL HEALTH DISTRICT

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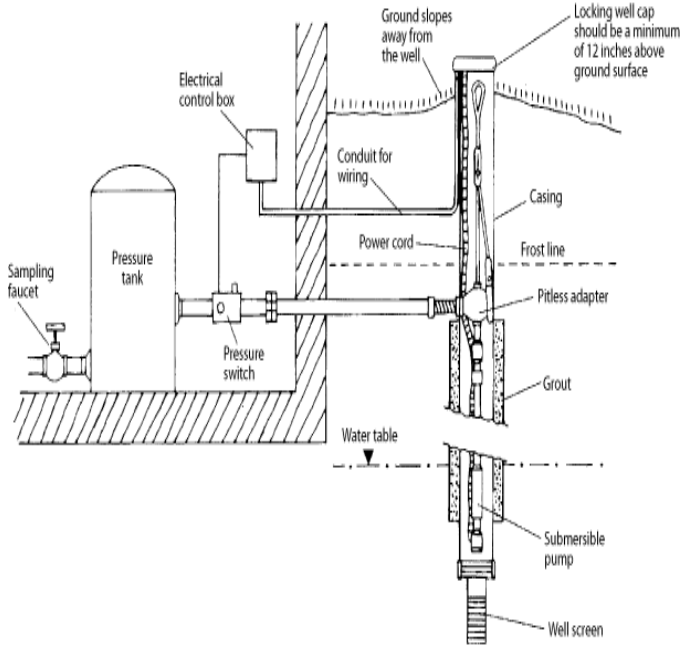
CRAWFORD COUNTY GENERAL HEALTH DISTRICT

YOU AND YOUR WATER SYSTEM



Rev: 4-1-11

What is a Water Well

Residential homes not provided with municipal water supplies must rely on a well (or alternative system) for their drinking water. The following is a description of what needs to be done to have a well drilled and what comprises a well. A new well may be needed when building a new home or for an existing home that is having problems (no water, low water yield, poor quality water, etc.).

- PERMIT REQUIRED—**A permit is required prior to any residential water system being installed or altered.** The health department has to inspect the site and verify that proper setback distances are being observed.
- DISTANCE REQUIREMENTS—The following is a brief listing of required minimum distances for a water supply:

Sewer pipe	10 ft.
Underground fuel oil	varies
Sewage tanks	50 ft.
Septic fields	50 ft.
Stables, manure piles	varies
Road Right-of-Way	25 ft.
Existing well	10 ft.
Houses, buildings	10 ft.
Geo-thermal loops	25-50 ft.
Lot lines	10 ft.
Driveways	5 ft.

- HOW A WELL IS DRILLED—There are several different methods used throughout Ohio to drill a well. The well driller may use any of the following methods:

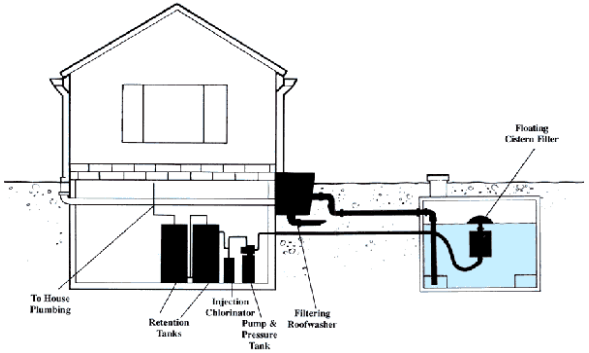
  •**The Cable Tool** method uses a rig that lifts and drops a drill bit that breaks through the soil/rock formations. A water slurry is used to help the drill bit work through the soil. Typically the casing is driven along with the drill bit so that the hole will stay open. This type of well is grouted during the drilling process.

  •**The Rotary Rig** utilizes mud and/or air. (Generally a mud rotary is used in Crawford County.) A drill bit is used along with water and/or drilling mud that is re-circulated while the drill bit is rotated down into the soil. When water is reached, the drill bit and rods are removed and a casing is put in place. The well is then pressure grouted to ensure a tight seal.

- WELL CASING—A well casing must be of an approved material and extend 12 inches above the ground. The casing can be steel, or PVC. The purpose of the casing is to hold open the borehole and prevent contaminants from entering the water supply.
- WELL CAPS—All wells installed or altered are required to have a weather tight and vermin proof well cap. An improper well cap can allow dirt and insects into the well which could contaminate the well.
- SCREENS—A screen must be installed when a well is drilled in sand/gravel, and may be utilized in other formations to prevent collapsing of the hole. It should have uniform openings and be an approved material. Typically a plastic screen is utilized, but a metal one can be used.
- GRAVEL/FILTER PACK—A gravel/filter pack is used by the driller to prevent fines from entering the well through a screen. The gravel/filter pack is placed over part of the screen then upward above the screen.

ALTERNATIVE SYSTEMS

- HAULED WATER STORAGE TANK—This is a concrete or plastic tank that is typically placed underground. The minimum size is 1,000 gallons. Water is brought in on an as needed basis from a licensed hauled water delivery company.
- CISTERN—This is a concrete or plastic tank placed underground and is filled by runoff water from the roof. The minimum size is 2,500 gallons. A roof washer or filtering device is required. The water must be continuously disinfected through an approved method. It is also recommended that a cyst filter be used with a cistern.



Typical Cistern Components

- PONDS— Ponds are to only be considered as a last resort for a water supply. Detailed plans must be submitted, a cyst filter must be used, and a continuous disinfection device is required. Contact the health department for further information.

WELL COMPLETION AND TESTING

- CHLORINATING—If the well driller installs your pump, they are required to chlorinate the well after their work is completed. If the well driller is not installing the pump then they must chlorinate the well and whoever installs the pump must also chlorinate the well. The amount of chlorine used will depend on the diameter of the well casing and the depth. Anytime work is done on a well it should be chlorinated to remove contaminants.
- TESTING—All new and altered wells are required to be tested for coliform bacteria and nitrates. If a sample comes back positive (unsafe), the well must be re-chlorinated and tested again. The acceptable level for coliform bacteria is zero, for nitrates it is 10 mg/l. The first two water samples are included in the price of the permit. If additional samples are needed, there is a required fee. For the current fee rate and for water sample scheduling, please contact the health department. Typically, water testing is conducted on Tuesday afternoons or Wednesday mornings, but you must call for an appointment.