

## Questions?

Contact the Groundwater Section in the local regional office of the Division of Water Quality or check the Groundwater Section web site at: <http://gw.ehnr.state.nc.us>

or

contact the DWQ Central Office at:

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# North Carolina WATER WELLS



## WHAT YOU SHOULD KNOW ABOUT DRILLING AND CONSTRUCTION STANDARDS FOR A SAFE AND DEPENDABLE WATER SUPPLY

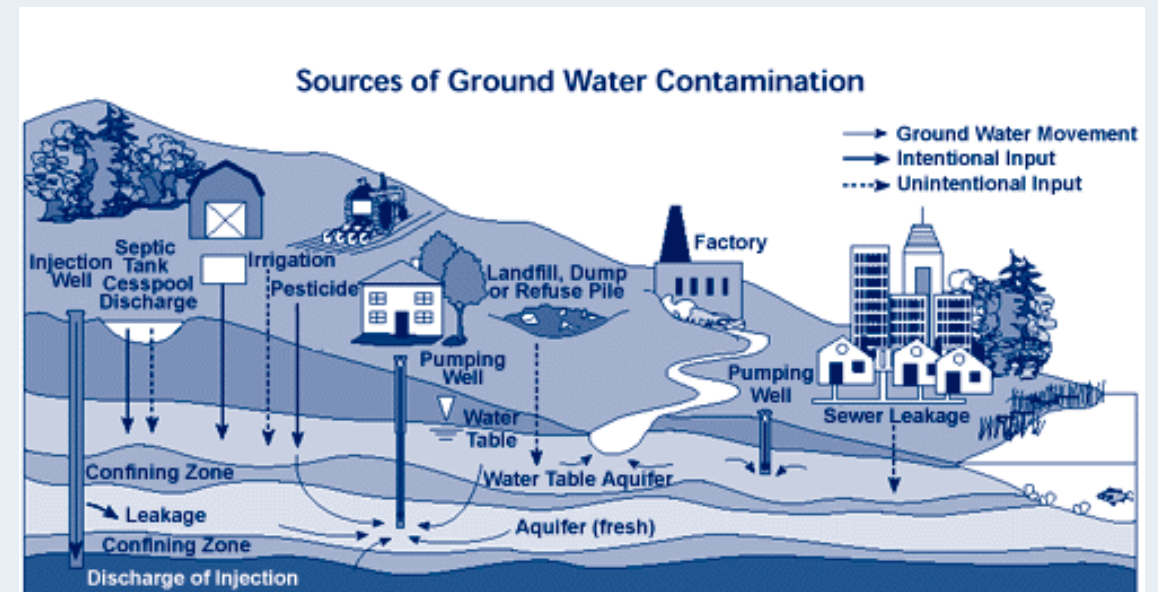
# WATER WELLS

## Introduction

Groundwater is a source of fresh, unpolluted water. More than half of the people who live in North Carolina rely on groundwater wells as their primary source of household water.

A properly located and constructed well is a safe, dependable and economical source of water for most municipal, industrial and domestic uses. Well pollution that does occur is usually due to improper location or construction.

In North Carolina, contractors must build wells in accordance with the North Carolina Well Construction Requirements found in Title 15A, NCAC 2C.0100, Well Construction Standards, and be certified as a Well Contractor, by the State's Well Contractors Certification Commission under Title 15A, Chapter 27 of the North Carolina Administrative Codes.



# Well Construction Requirements

The General Assembly enacted legislation, known as the Well Construction Act of 1967, to protect the health and safety of groundwater resources in North Carolina. Since 1972, N. C. Well Construction Regulations and Standards governs the location, construction, repair and abandonment of wells and regulates the installation and repair of pumps and pumping equipment.

In addition to the above listed NC State Well Construction rules, the Forsyth County Board of Health adopted local well construction rules that became effective in 1988. It is necessary to obtain a permit from the Forsyth County Health Dept. prior to constructing, repairing, or abandoning a water well in Forsyth County.

## Regulations and Standards includes:

**1. Permits:** Wells must conform to certain minimum specifications for construction and testing. Certain wells must conform to additional regulations and require a permit. A permit is necessary for:

- ◆ any well or well system having a designed capacity of 100,000 gallons per day or greater.
- ◆ use of any well for recharge, injection or disposal purposes.

**2. Location:** A well must be located in an area not subject to flooding, 100 feet from any septic and drain field, and 50 feet from any building foundation and surface water body. For an **existing** single-family dwelling, if it is not possible to meet the separation distances, the well must be located the maximum possible distance but no less than 50 feet from the septic tank and drain field and 25 feet from any building foundation. Any deviation to the above must be approved by the Groundwater Environmental Regional Supervisor. The well contractor or property owner must submit a request for a variance **prior** to well construction.

**3. Casing:** A well must be cased with approved

pipe to a depth of at least 20 feet. Some localities require greater casing depths. Check with the nearest Department of Environment and Natural Resources regional office to determine the required casing depth for that particular area. The casing must be seated and sealed into consolidated rock, unless the water is obtained from strata other than rock. In that case, a screen must be installed to prevent sand from getting into the well.

In wells that obtain water from the rock, a drive shoe must be attached to the bottom of the casing. The drive shoe protects the casing from damage during installation. If the casing bottom becomes crimped or bent, sand, clay and surface water might enter the well.

**4. Grouting:** When a hole is drilled to install the well casing, a void or open space, called an annular space, is left around the outside of the casing. The annular space must be sealed to prevent surface water and shallow undesirable groundwater from entering the well. The most effective method of filling the open area is with a slurry of cement grout which hardens to form a secure seal. State well construction standards require that the well contractor grout the area from the top of the ground to at least 20 feet below ground level. Some localities require greater depths of grout. Check with the nearest regional office for the grout depth in the area.

**5. Well Identification Plate:** The well contractor must attach an identification plate to the well head. The plate must include the name of the well contractor, the date the well was completed, the total depth of the well, the depth and diameter of the well casing, the depth at which the water stands in the well and the yield (gallons per minute) of the well.

**6. Disinfection:** Well construction equipment and materials can carry bacteria that cause health or maintenance problems. To reduce the possi-

bility of contamination, the well contractor must disinfect the well.

Chlorine tablets or granular powder (HTH, CHLOR-TABS, etc.) may be used as a disinfectant. Approximately two ounces of 70 percent HTH are needed per 100 gallons of water in the well. Chlorine must be dispersed throughout the well and the casing washed above the water level. The chlorine shall remain in the system a minimum of 24 hours. The chlorinated water should be pumped out before the well is used.

If the pump is not installed when the well is constructed, the well must be disinfected again after installation of the pump.

*For more information concerning well disinfection, contact the nearest regional office.*



**7. Pump Installation:** Pump installers are required to register with DENR. Ask the pump installer if he is currently registered and have him provide you with his registration number.

**8. Well Head Completion:** One of the main ways that pollution enters a well is through the top. To prevent this, the well casing must be completely sealed and maintained at least 12 inches above land surface.

Also, a watertight enclosure should be built around the well. This protects the well head and pump piping from freezing and keeps the well accessible.

To prevent contamination, never store herbicides, insecticides, gasoline, batteries or other toxic substances near a well.

**9. Well Records:** The contractor must complete a standardized, detailed record of construction and send it to DENR within 30 days. This record will be included in the contractor's permanent file. The well contractor is also required to give the well owner a copy of this well record. Keep the record in a safe place. Future owners of the property will want a copy for their records.

**10. Well Abandonment:** Specific rules on proper well abandonment are found in N. C. Well Construction Regulations and Standards. Wells that are not properly abandoned or maintained could allow pollution to enter the well and contaminate the water supply. Unprotected and unfilled wells can be safety hazards. Report unprotected wells to the nearest DENR regional office immediately.

**11. Inspection:** Although DENR conducts a program of well inspection, vigilance by the well owner is an important tool. The well owner should inspect his own well during construction and report any discrepancies to the nearest regional office before paying for the well.



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