Ohio Department of Natural Resources
Division of Water Fact Sheet

Fact Sheet 92–16

How To Read Well Log and Drilling Reports

Your Well Log and Drilling Report is an important legal document filled with useful information about your water supply. The red number in the upper right hand corner of the well log (this number is black on older well log forms) is a reference number that is unique to your log. As a result, the information on the log applies only to your well. Although the well log form has evolved over the years to include more detail, it is typically divided into 5 sections. Each section contains detailed information about your well that can help you understand how your well was constructed and, consequently, the best way for it to be maintained or serviced.

Owner/Location

The owner/location section contains information on the original owner or builder of the home for which the well was drilled. The street address, a written description of the location of the property and a sketch map also help to verify the well as yours. This information is used to help locate the well on a topographic map. Well logs are filed primarily by county, township, and location.

Construction Details

This section describes the materials used in the construction and development of your well. This information is essential should you ever have problems with your well and need to have it serviced.

Casing: The information contained in the casing category includes the length and diameter of the casing, the thickness of the casing wall, and the diameter of the borehole, which is not necessarily the same as the diameter of the casing. In rotary-drilled wells, the borehole is generally about two to three inches larger than the diameter of the casing to be installed. This allows the contractor sufficient annular space (the space between the borehole wall and the outside of the casing) to grout the well properly. There is also information on the type of casing used: steel, galvanized steel or PVC (plastic). Each length of casing (most casing is installed in 10 or 20 foot sections) is joined together in a particular manner, either threaded or welded, as with steel or galvanized steel, or glued (solvent), as with plastic.

Screen: The screen category provides details on the type, length, diameter, placement and slot size of the screen, if used. A true well screen is wire mesh with openings (slots) of a pre-determined size. For example, a .050 slot screen is a screen with openings fifty thousandths of an inch in size. The slot size of the screen is selected based on the grain size of the aquifer materials. The purpose of a screen is to allow water to flow into a well developed in unconsolidated materials, such as sand and gravel, while preventing these materials from filling the bottom of the well, or from entering the pump. In many cases, drilling contractors cut slots in the bottom 2 to 4 feet of casing to serve as a screen. However, this is not as effective as a properly sized and installed mesh screen, and is not recommended.

Gravel Pack: Gravel packing a well involves placing gravel of a particular size around the outside of the screen to filter out the finer particles of sand, silt and clay that could harm your pump and eventually impede the flow of water into the well. This section provides information on the gravel pack type, volume used (usually in pounds or gallons), method of installation and depth of placement. The installation of a screen and gravel pack should go hand-in-hand in rotary-drilled wells.

Grout: Grout is the material used to seal the annular space. Grout can consist of a bentonite product mixed with water (bentonite is a clay that swells when it comes in contact with water), neat cement or a mixture of bentonite and neat cement. Ideally, this material is pumped into the annular space through a 1 to 1 1/2 inch diameter pipe called a tremie tube. The grout is placed in the well from the bottom up to ensure that no bridging occurs. Grouting is important because it prevents contamination of the aquifer by surface water travelling through the annular space, and it also holds the casing in place.

This section also describes the use of the well, i.e. whether it was drilled for domestic, irrigation, public supply, industrial, monitoring, test or municipal use; the method used to drill the well (rotary and cable tool are the most commonly employed methods), and the type of pitless device installed.

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Well Test

Several important items are described in this section:

- production rate - measured in gallons per minute
- static water level - distance from ground level or the top of the casing to the top of the water after the well has been completed
- drawdown - the difference between the static water level and the water level during pumping

After the well is completed, the drilling contractor will test the production ability of the well by bailing, pumping or blowing (air lift) the water out of the well for a specific amount of time, usually anywhere from 15 minutes to several hours. This test rate, when combined with the static level and drawdown information, can give an indication

of the long-term yield available from the well. Water requirements for most homes fall in the 6 to 12 gallons per minute range. Wells producing less than 6 gallons per minute may require the use of larger storage tanks and lower capacity pumps.

Pump: The pump section furnishes information on the type of pump installed, either a submersible or jet pump in domestic wells, the capacity of the pump in gallons per minute, the depth at which the pump is set and the company that installed the pump. The pump setting is determined by the static water level and drawdown data gathered during the well test. The pump must be set below the pumping water level, which is calculated by subtracting the drawdown at a given test rate from the static water level.

Well Log

This section describes the earth materials encountered by the drilling contractor when your well was drilled. Ground water in Ohio can be found in unconsolidated geologic formations such as sand and gravel, or in bedrock (consolidated) formations such as sandstone and limestone. Aquifers are geologic formations that are capable of storing and tranmitting ground water. The geologic log will also indicate the total depth of the well, the thickness of each formation and the depth(s) at which water was encountered. The geologic formation descriptions and well construction information can be used to identify the aquifer being used for water suppply and to evaluate the source of well problems .

For further assistance in interpreting the information presented on your well log and drilling report, feel free

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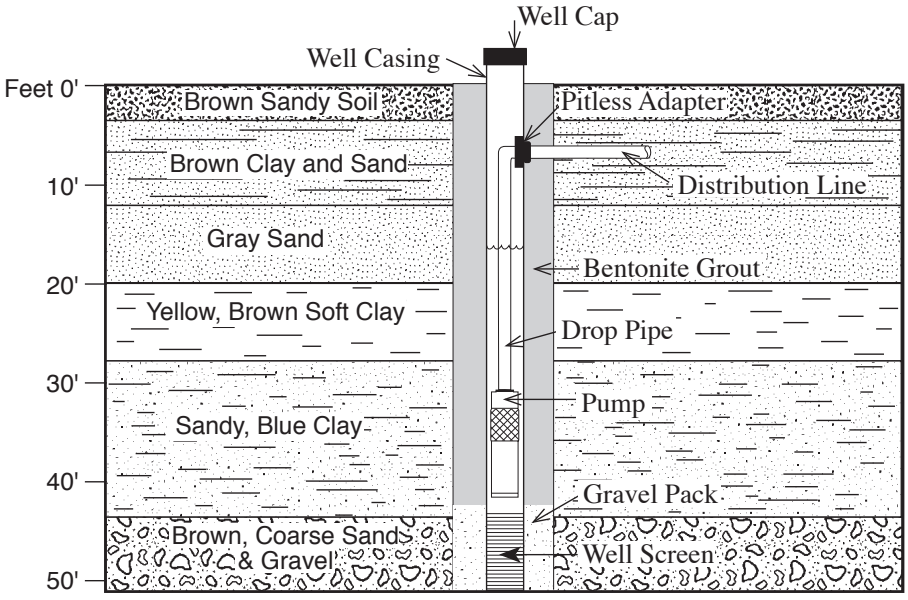
Basic Well Construction



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