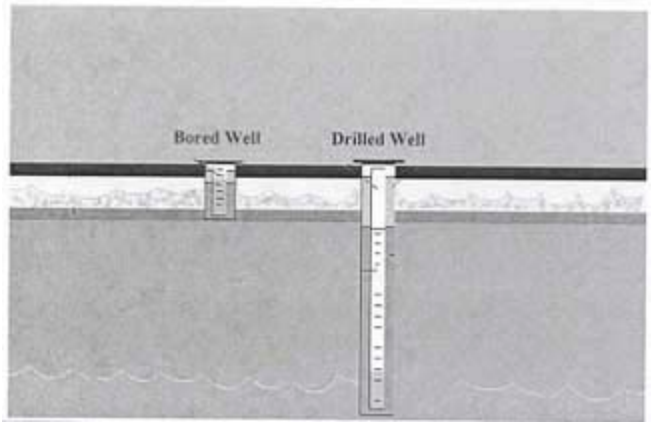
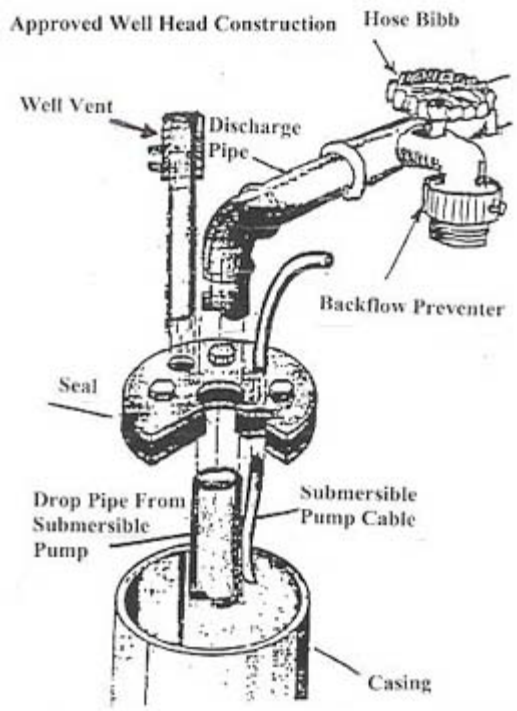
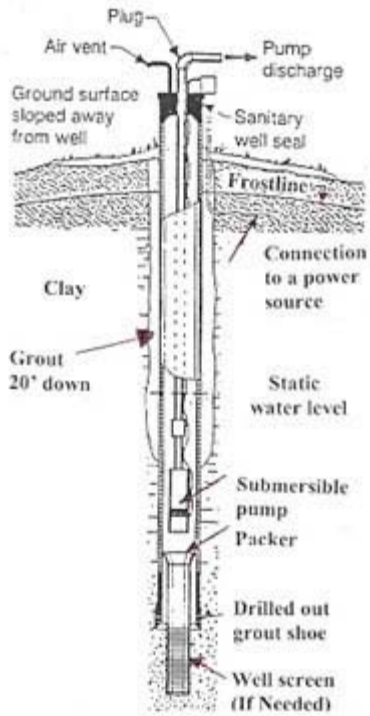
BORED AND DRILLED WELLS IN PIEDMONT NORTH CAROLINA



DRILLED WELLS

Drilled wells are wells that are typically created with an air rotary drill, a good method for drilling into medium-packed to hard-packed bedrock, to access ground water. As seen in the drawing above , drilled wells are cased in 6 inch polyvinyl chloride (PVC) piping or steel casing from the surface through the first five feet of hard-packed rock, to guard against mud and other contaminant in the water. The casing is also grouted to a point twenty feet below the surface. The amount of water obtained from drilled wells will depend on the number and size of the fractures made by the bore hole in the bedrock, and may range from 1/2 gallon per minute to 100 gallons per minute. This type of well is usually not affected by short-term drought conditions, because of the natural geology and the ways in which water reacts with land in Piedmont North Carolina. Drilled wells may sometimes have excessive mineral problems such as iron, iron sulfide, manganese, magnesium, calcium, etc., which can only be removed by filtration.





BORED WELLS

Bored wells are wells which are constructed with an auger that digs until it reaches the water table or encounters a material such as rock, which restricts or stops the auger. Unlike drilled wells, bored wells are shallow in depth and draw water from sections of the earth above the bedrock. The amount of water obtained will depend directly on the level of water in the water table and how quickly the well is able to refill. Bored wells are cased by 24-inch diameter concrete pipe, which is set when it reaches the water table. Pea gravel is placed in the bottom of well and poured on the outside of the casing to act as a filter, or screen, to keep out sediment and support the side walls of the bored hole. Bored wells are also grouted on the outside of the casing at a level twenty feet below the surface. Bored wells are the modern version of the older style of dug wells. They are usually more susceptible to changes in the level of the water table from periods of drought or excessive rain. They typically have fewer problems in the Piedmont with excessive minerals in the water such as iron, manganese, calcium, etc., but are more affected by surface water and possible contaminates. From the time period of January 1, 2001 to October 25, 2002, there have been approximately 841 bored wells and 3 drilled wells replaced due to lack of water.