

## “Flowing” Artesian Wells in Minnesota

“Artesian wells,” are wells that are completed in aquifers that contain groundwater that is under sufficient pressure such that water rises in the well above the top of the aquifer. Such aquifers are termed “artesian aquifers.” Artesian aquifers are typically located below an overlying, geologic layer which confines, and exerts pressure on the underlying groundwater. The level to which water will rise in a well completed in an artesian aquifer is called the piezometric surface. The piezometric surface may be either below, or above the land surface. When the piezometric surface is below the land surface, the water level in the well is above the top of the aquifer, but below the land surface. When the piezometric surface is above the land surface, water will freely flow from the well at the land surface without the aid of a pump.

These wells are called “**flowing, artesian wells.**” The volume of water that flows at the land surface is determined by the diameter of the well, how it is constructed, and the pressure of the water in the aquifer. The word Artesian has its origins from the Artois region in northern France where many flowing, artesian wells were drilled as far back as the Middle Ages. Flowing, artesian wells are usually found in areas of lower elevation and are common in river valleys and on some lakeshore properties.



Flowing, artesian well, St. Paul, Minnesota.

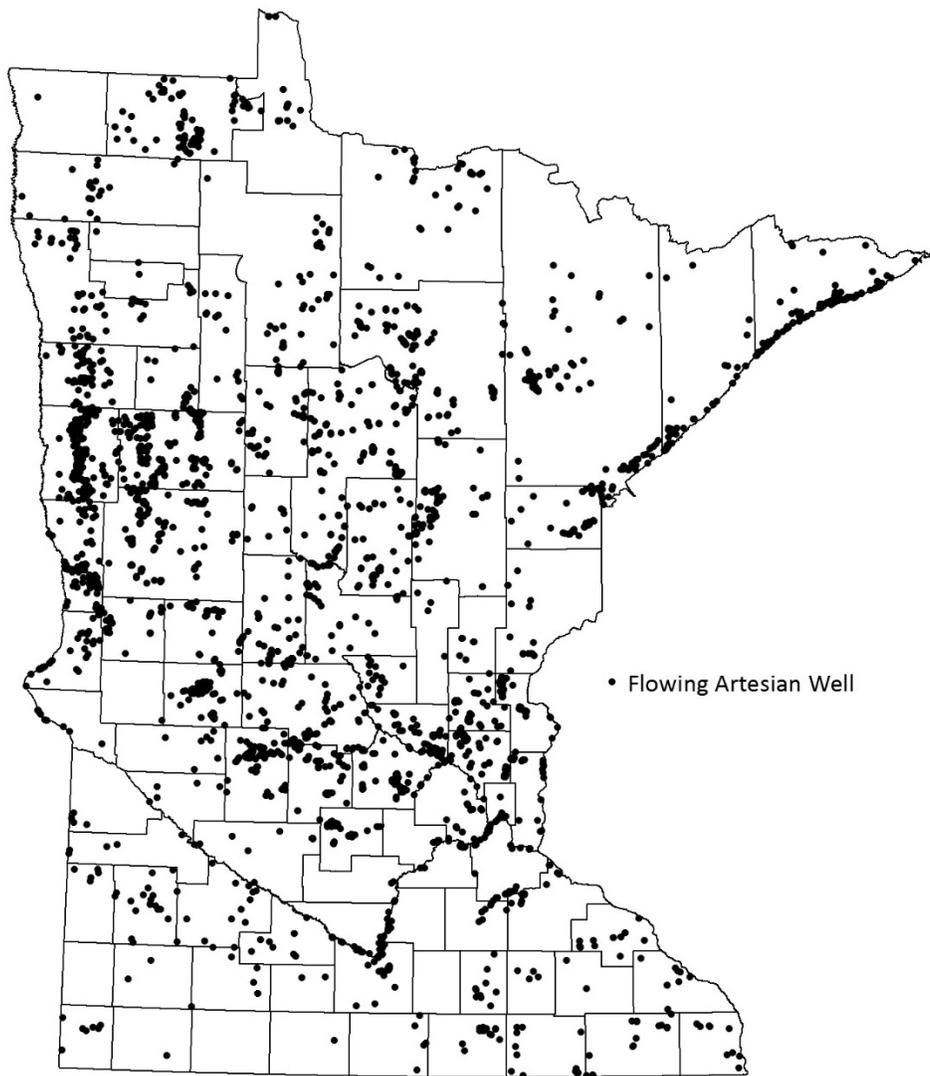
In Minnesota, the volume of water that flows from a flowing, artesian well is variable. High volume flows occur in some wells in all parts of the state. One well at the University of Minnesota in Minneapolis (that has since been permanently sealed) was estimated to be flowing at 2,000 gallons per minute. Most flowing, artesian wells in Minnesota have low volume flow, and produce only a trickle of water to a few gallons per minute.

The Minnesota Well Code has specific construction requirements for flowing, artesian wells. In some areas of Minnesota, where high volume and high pressure flowing, artesian wells are common, additional, special well construction regulations are needed to assure that they are constructed in a safe manner that contains the flowing water, prevents soil erosion, prevents property damage, and minimizes the unnecessary wasting of groundwater. In 2000, the Minnesota Department of Health (MDH) established a “Flowing Well and Boring Special Construction Area” near Kabekona and Benedict Lakes in Hubbard County to notify well contractors and the public of high volume and high pressure flowing wells in the area, and to establish special flowing, artesian well construction requirements.

The well code also requires that newly constructed flowing, artesian wells have flow control. Controls may include valves or flowing well pitless units that can shut off the flow of water when the well is not in use. Owners of flowing, artesian wells may be subject to water conservation requirements and water appropriation regulations, both of which are administered by the Minnesota Department of Natural Resources.

A recent search of well records in the Minnesota Well Index application has revealed that flowing, artesian wells are found in 85 of Minnesota's 87 counties. The only counties that do not have record of flowing, artesian wells are Pipestone and Jackson Counties in southwestern Minnesota.

### Flowing Artesian Wells in Minnesota



Article Source: Minnesota Department of Health, Well Management Section