
ENVIRONMENTAL Fact Sheet



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WD-DWGB-1-6

2019

Screened Well Design (Wash & Point Driven Wells)

Screened wells (also called gravel wells, point wells or washed wells) are viable sources of domestic water supply in areas where sand and gravel exists. Screened wells are typically driven or “jetted” into the ground with specialty drill rigs. In very shallow applications they can be installed by hand or with a tripod or hammer. Screened wells are installed exclusively in the unconsolidated materials (sand and gravel formations, also known as aquifers) below ground surface. The groundwater extracted is under the influence of the water table. Therefore, screened wells should be installed as deep as reasonably possible. In many areas these materials are not present underground and a screened well is not an option. However, when these materials exist at a property where a well is being considered, it is recommended homeowners speak with a water well contractor to discuss the option of a screened well.

Well Location Considerations

Well drillers and pump installers in New Hampshire are licensed by the Water Well Board under [NH RSA 482](#). The rules of the Board are We 100-1000. These rules govern contractor licensing, well construction standards (including location requirements), and well reporting processes. For a private single family home, water wells shall be located 75 feet from any potential source of groundwater contamination (septic system components, livestock pens), 75 feet from property lines, and 50 feet from a surface water body. A well should not be placed in locations subject to any flooding unless the immediate vicinity (25-foot radius) of the well is built up above the maximum possible flood level. Refer to WD-DWGB-21-1, “Site Selection for Private Drinking Water Wells” for more information on well locations.

If a screened well must be installed at a location that does not meet a required setback, a Setback Reduction Form must be signed by the homeowner. This form is an acknowledgement that there is a risk of potential contamination of the well from land uses directly around the well.

Well Yield Considerations

There are no state requirements for what a private water well needs to yield. Ultimately, a well shall yield enough water to meet the daily demands of the home day after day. Screen wells typically have good yields as they are installed in hydraulically transmissive unconsolidated materials (meaning water can move relatively quickly through the sand and gravel). There is little meaningful water “stored” within small diameter screened wells well casing; the water enters the well as fast as it is pumped out. Well drillers test and report the yield of a well after it is installed. However, a well’s yield may change with time. A properly installed screen well is finished to a depth significantly below the anticipated seasonal

low water table. Often, hand driven screened wells cannot reach these depths and therefore, are affected by the seasonal variability in the water table and can run dry during a drought.

The yield of screened wells can change with time due to mineral buildup inside the well screen and/or development in the upstream watershed changing the groundwater recharge patterns. In this case, attempts can be made to clean out the screen, however, installing a new screened well may be the best option.

Water Quality Considerations

There are no state laws requiring private wells meet a certain water quality. Local ordinances may give Towns authority to withhold building or occupancy permits if the water quality is poor. Water extracted from screened wells often has elevated levels of iron and manganese. The occurrence of arsenic, fluoride and radiological problems is less common in screened wells than in bedrock wells. Screen wells typically have a low pH which can lead to a corrosive condition within the plumbing of the home. Corrosion can leach lead out of older copper pipes and cause issues within appliances. Blue and green staining is indicative of copper leaching, if this is observed lead may be present. Households that use screened wells shall test for lead in their water and take step to remediate if detected.

Properly installed screen wells are normally resistant to bacterial problems since the screened area (where water enters the well) is at a depth allowing water to percolate and filter through the soil. However, shallow screened wells and/or wells that may have construction issues at the wellhead or in the water lines can pose the risk of bacteria entering the water supply. If this is the case and a suction pump is being issued, any opening in the casing will break the vacuum, preventing pumping and thus giving notice of the problem.

Screened wells are recharged by groundwater that is under the influence of the water table, therefore they are sensitive to contaminants from land use activities that take place in the immediate vicinity of the well. The best and least costly approach to protect the drinking water quality is pollution prevention rather than treatment. Be careful with the use and disposal of chemicals (fertilizers, pesticides, inappropriate disposal of oils, paints, or solvents, or water treatment backwash) near and upstream of your well or the wells of others.

For recommendations on water quality testing, refer to a brochure developed by NHDES and the New Hampshire Department of Human Health Services titled "What's in Your Water" or fact sheet WD-DWGB-2-1, "Suggested Water Quality Testing for Private Wells."

Note: It is not recommended for individuals to sanitize (chlorinate) a small diameter (1 ¼" to 3") screened well; it is wise to call a licensed water well contractor with screen well experience. The pump system for these wells operates under a vacuum and damage can be done to the well by attempting to remove the cap. Larger diameter screen wells with submersible pumps and traditional wells can be chlorinated according to the same guidelines as drilled wells.

Construction of a Screened Well

Wash wells are installed with equipment that drives or washed open ended casing into the ground. Static water levels help determine the appropriate depth required and soil samples help determine the proper screen size. Once the casing is installed, a screen is placed inside the casing and the casing is either bumped back out of the hole to expose the screen, or the screen is driven out of the casings. Wells screens come in various lengths with holes (slots) at various widths that allow water to flow through. A

wells screen length and slot size is selected based on the materials that will surround it.

Point wells differ from wash wells in that their screen is attached to the pipe before it is washed, jetted or hammered into the ground. With the screen attached, the installer should have knowledge of the material underground and choose a screen with an appropriate slot size.

Screened wells shall be finished with at least 8" of casing sticking up above ground surface and incorporate a sealed well cap. Some existing screened wells, especially deeper wells with packer systems are installed in a well pit below ground surface. This is done to prevent freezing of the water service line exiting the well head and in some cases the well pump is installed at the well head inside the pit.

The water line to the home comes off the well and is buried four to five feet deep for frost protection. The water line shall be steel or thick plastic rated for 160 psi or greater. Fittings used shall not be made of plastic or nylon. If a submersible pump is used, seal the electrical conduit at the well and as it enters the home to reduce radon entry into the home and to keep groundwater out of the basement.

Pumping from a Screened Well

Larger diameter screened wells (4" or greater) may be able to utilize submersible pumps. Typically, pump installers typically recommend a submersible pump system be used, if possible. The typical pump for a small diameter (1 ¼" to 2") screened well is a centrifugal pump (also known as a jet pump or suction pump) located in the basement of your home or in a protective enclosure at the top of the well. The pump creates a vacuum within the well point. This vacuum pulls the water into the well and up and into the pump impellers. This configuration is subject to at least two operational limitations discussed below.

First, no matter how good the pump's vacuum, water can not be raised by suction more than approximately 32 feet at sea level. As a practical reality, conventional centrifugal pumps can only raise water by suction 20-25 feet. Where the water table is deeper than 25 feet below the centerline of the pump, conventional pumping equipment will not work. A "deep well" packer jet pump mechanism can be installed, although this requires a larger vertical casing/well screen, which creates more expense.

The second constraint occurs if the vacuum is lost by air entering the well point through leakage at the piping joints or because the water level is below the screen of the well point. The most important part of using a suction pump is that the entire assembly is airtight and the pump maintains a vacuum within the well. Air entering a point well will cause a loss of vacuum and the inability to pump. Piping joints must be tight and the well point must be below the lowest seasonal water table.

For More Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit our website at www.des.nh.gov.

Note: This fact sheet is accurate as of September 2019. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.