

Guidance for R309-515. Facility Design and Operation: Source Development.

R309-515-4. General.

Issues to be Considered before Selecting a Source.

- *Among the issues which should be considered before source selection and any preparation of development plans are the following: Communication with the Division, Number of Sources and Quantity Requirements, Quality Requirements, Initial Analyses, Source Classification, and Latitude and Longitude.*

R309-515-6. Ground Water - Wells.

Utah Division of Water Rights.

- *The most current set of Administrative Rules for Water Well Drillers should be consulted for additional well drilling information. The engineer and driller should be aware that requirements governing the design of public drinking water wells, as described herein, are generally more stringent than requirements of the State Engineer's Office.*

Source Protection.

- *R309-515-6(4) applies to all sewer lines and laterals carrying wastewater from a building or home to a public sewer, an onsite wastewater system (septic system), or other point of dispersal.*

Inspection of Well Sealing During Construction.

- *A conflict of interest occurs whenever a duty, such as acting in the interest of the public, intersects with a personal desire (either positive or negative), such as monetary gain or a personal relationship, requiring a decision to be made between them. Each individual faced with a conflict between acting in the public's interest or acting for personal benefit is expected to act in the public's interest as it relates to sealing a well. Questions relating to possible conflicts may be referred to the Director.*

Non-Ferrous Casing Material.

- *Approval for non-ferrous well casing will be determined considering well depth, formations, temperatures, corrosion potential, well seal material, and other pertinent information.*

Well Screen Diameter - Aperture Entrance Velocities.

- *Usually the entrance velocities should not exceed 0.1 fps.*

Well Sealing Techniques and Requirements – Pitless Adapter.

- *If a public drinking water well will be equipped with a pitless adapter or unit, a well seal shall be installed to a minimum depth of 110 feet to take into account the top 10 feet of compromised seal interval. This is required in order to prevent the seepage of undesirable surface or shallow ground water along the casing into the water bearing aquifer. The Division of Water Rights Administrative Rules for Water Wells Rule R655-4-11.7.5, Pitless Adapters/Units states, “A cement grout seal shall not be allowed within the pitless unit or pitless adapter sealing interval. The pitless adapter or unit sealing interval shall be sealed with unhydrated bentonite. The pitless adapter or unit, including the cap or cover, pitless case and other attachments, shall be designed and constructed to be watertight to prevent the entrance of contaminants into the well from surface or near-surface sources.” Therefore, a cement seal should not be used in the future pitless interval as a cement seal would need to be chipped and broken away from the casing when the pitless area is excavated and installed which could lead to casing damage. A bentonite seal must be used in the future pitless interval.*

Determining the Dimension of an Annular Opening for Grout Seal.

- *For the purpose of determining the dimension of the annular opening between the drilled hole and or any carrier casing or permanent casing which may be used, the nominal pipe dimension of casing or hole can be used. Centralizers, casing spacers, or welded guides are recommended to center the casing and to provide uniform grout thickness.*

Public Water Supply Well Grouting Requirements and Procedures.

- *“Public Water Supply Well Grouting Requirements and Procedures” is available on the Division’s website as additional information for grout placement.*

Capping Requirements.

- *A welded metal plate or a threaded cap is the preferred method for capping a completed well until permanent equipment is installed.*

Constant-Rate Test.

- *It is recommended to monitor any existing wells in the area during the pump test to perform a more useful aquifer test and determine if there will be interference from other wells.*

Well Equipping.

- *It is recommended that discharge piping be provided with a means of pumping to waste. All pump-to-waste discharge lines should be designed for complete drainage to minimize freezing and unprotected cross connection problems.*
- *Provisions should be made for venting the well casing to atmosphere, particularly if a large or sudden water drawdown is expected. The vent should terminate in a down turned position, at or above the top of the casing or pitless unit in a minimum 1.5 inch diameter opening covered with a No. 14 mesh, corrosion*

resistant screen (refer to section R309-545-15). The pipe connecting the casing to the vent should be of adequate size to provide rapid venting of the casing.

R309-515-7. Ground Water - Springs.

Pre-construction Submittal.

- *The public water system management and the design engineer should refer to R309-505-7(1) before considering a spring as a source for a public water system.*
- *An assessment of whether the spring is under the direct influence of surface water can be based on site inspection, known geological conditions, or specific water analysis, such as Microscopic Particulate Analysis (MPA) and chemical analysis.*