

Regulatory Citation(s):

78.83. Surface and coal protective casing and cementing procedures.

(c) The operator shall drill to approximately 50 feet below the deepest fresh groundwater or at least 50 feet into consolidated rock, whichever is deeper, and immediately set and permanently cement a string of surface casing to that depth...

Question:

Questions have come up recently about what we mean by deepest fresh groundwater, as we do not have a numerical definition. One particularly complicated aspect of this issue is that concerns can arise on both ends of the spectrum. For example, the operator of a public water supply well field where groundwater is characterized by relatively low total dissolved solids (TDS) water may desire a surface casing set depth that does not allow cementing across both their aquifer and deeper zones of marginal water quality (e.g., zones with TDS in excess of 500 mg/L), whereas someone considering future uses of groundwater in the same area may be of the opinion that setting surface casing to a depth that isolates only groundwater-bearing intervals characterized by 500 mg/L TDS or less can't possibly protect future groundwater reserves.

What is the appropriateness of casing and cementing across water-bearing zones characterized by different chemistries? Are there any scenarios where setting two water protective strings in succession would be appropriate, or have such well designs ever been employed? Is the fact that surface casing strings must be cemented to the surface sufficient to ensure zonal isolation of water-bearing zones characterized by different chemistries?

Response:

The SWRO has seen the use of two water protective strings in certain instances. The first, shallower casing string is run to the base of currently utilized fresh groundwater in consideration of water wells in the vicinity of the drilling location. The second water protective string is installed to a depth protective of the deepest fresh groundwater formation locally. The regulations, however, currently allow one surface casing string to be set to isolate the deepest fresh groundwater formation from underlying water bearing zones.