



# MONTGOMERY COUNTY HEALTH DEPARTMENT

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## **Division of Water Quality Management Geothermal Well Construction Guidance & Recommendations**

The following recommendations should enhance the operation and efficiency of geothermal well systems:

1. If using bentonite as a grout material, it shall consist of pure product with at least 20% solids by weight when mixed with water. Hydration of the bentonite must be delayed until the bentonite mix has been placed down the well.
2. The system should be pressure tested prior to grouting but after flushing the pipe to remove debris.
3. For a geothermal well trench system, a minimum of six (6) inches of sand or screenings should be added to the trench bottom to prevent abrasion of the loop piping against rock or stones.
4. For geothermal well vertical boreholes, the pipe loops should be placed in close contact with soil or grout to minimize air pockets. Three to five percent of the piping should extend above the boreholes or trenches to compensate for relaxation or stretching.
5. Open-loop geothermal boreholes should be drilled a minimum sixty (60) apart to enhance temperature exchange. Lot size and system proximity to landmarks such as sewage disposal systems may prevent maximizing this distance.
6. The heat exchanger should be isolated and tested to 150% of design pressure or 300% of system operating pressure. No leaks should occur within a 30 minute period.
7. All geothermal well pipe and heat fused material shall be manufactured to outside diameters, wall thickness and respective tolerances as specified in ASTM D3035, D2447, as specified in the PPI handbook of Polyethylene Pipe HVAC Applications.
8. The pipe loop should be installed by a contractor certified in the proper method of heat fusion specified by the pipe manufacturer. The well contractor/installer must insure the pipe loop is installed according to specifications of the ground source heat pump system manufacturer and pipe manufacturer.
9. Review all related guidance and recommendations set forth by the International Ground Source Heat Pump Association (IGSHPA) accessed at [www.igshpa.okstate.edu/](http://www.igshpa.okstate.edu/).