

From: Kvech, Steve (VDH) [<mailto:Steve.Kvech@vdh.virginia.gov>]
Sent: Friday, July 24, 2015 2:27 PM
To: jsmith@lakeisgreat.com
Subject: Lake Anna Resort - groundwater trends in area

Jonathan,

As discussed on the phone your company is looking to develop a resort property on Route 208 in Louisa County just south of the bridge to Spotsylvania County. Based on our conversation it sounds like the resort would definitely meet the definition of a waterworks that would require regulation by our office. You had questions about groundwater quantity and quality in the area to serve the intended resort.

The amount of water you will need will certainly depend on the type of facilities at the resort property and the number of people. That said this area of Louisa County seems to have pretty good groundwater quantity in the wells at other systems in the area that we regulate. Water quality can be an issue in some wells out that way, particularly with respect to aesthetic parameters like iron and manganese that can cause discoloration, staining of laundry and disagreeable taste and odor. Your design engineer will have a feel for the amount of water needed to meet projected demands.

We regulate the Lake Anna Plaza waterworks which is apparently right across Route 208 from your property. The main well at Lake Anna Plaza is a good producer and tested out at a stable yield of 60 gal/min. It does have iron and manganese issues however that will require filtration treatment. The next nearest public wells that we have information on are over a mile away at the Cutalong property and the North Anna Power Station. The Power Station wells have comparable yields between 55 -70 gal/min. The wells at the Cutalong property that are planned for use as that development gets going will produce anywhere from 10 – 75 gal/min. You could probably expect similar well production on your property, although I cannot guarantee it.

I hope this information is helpful. Here is a weblink that will help you better understand the process for developing a groundwater supply for a new facility: <http://www.vdh.virginia.gov/ODW/PermitandDesign.htm> Scroll down to Well Development Procedures at the bottom and click on the Well Development Handbook.

Please contact me if you have any additional questions or would like to schedule a well site visit.

Steve

Steven J. Kvech, PE

District Engineer

VDH Office of Drinking Water

Lexington Field Office

131 Walker Street

Lexington, VA 24450

 direct (540) 463-0424

 main line (540) 463-7136

Fax (540) 463-3892

 <http://www.vdh.virginia.gov/ODW/>

From: Kvech, Steve (VDH) [<mailto:Steve.Kvech@vdh.virginia.gov>]
Sent: Wednesday, July 29, 2015 9:50 AM
To: jsmith@lakeisgreat.com
Subject: well drilling for planned resort property

Jonathan,

As requested, some additional information on test wells and their applicability. Test wells are used in the coastal plain where the groundwater is contained in aquifers at different depths, separated by confining layers. They are used to gather information for the final design of a production well that will have screens, be of a larger diameter (because total screen area is important) and have much higher capacity, expensive pumps. The geology in Louisa County (Piedmont region) is still in fractured rock, not the same aquifer zones made up of sand and gravel further east. The well should not need screens. It is a borehole down into the rock and you get what you get.

True "test wells" are not usually drilled in Louisa County and points westward in the District I cover.

A well drilled in Louisa County, even if called a "test well" to start is very likely going to be the same well that is used permanently to produce water. The expense of drilling a slightly smaller diameter test well is comparable to what you would spend to drill the ~8 inch diameter production well and you will not gain any information to better design the production well. There are no screens to design and the diameter of the well is pretty standard and sized to fit the pump itself, not for screen area.

I hope this information is useful. Any additional questions, feel free to contact me.

Steve

Steven J. Kvech, PE

District Engineer

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