

ENGINEER 1

I am designing a septic drainfield to receive pumped effluent.

The drainfield will contain six dead end leaders, each 50-ft long. The estimated flow rate is 40 gpm, or 6.7 gpm per leader. Orifices spaced along the leader will allow the effluent to exit onto the drainfield surface. The regulatory agency requires that the flow from the least effective hole be at least 75% of the flow from the most effective hole.

The leaders are 1" diameter and are installed level. I initially estimated that 1/4" diameter holes at 12" on center would provide a nice even flow. However the contractor advises that he is accustomed to providing fewer holes and smaller holes. He is concerned that the openings closest to the pump will have significantly more flow coming out of them than those near the dead end.

My thoughts are that the pressure at one end of the 1" leader will be almost the same as the pressure at the other end, since a flow rate of 6.7 gpm in 1" pipe would result in 1 psi drop in the 50-ft length (if the flow rate was constant along the full 50-ft length, which it is not). Please help if you have any experience with this type of situation. I have a feeling that the design may rely more on experience than on calculated values.

ENGINEER 2

It doesn't sound like your Contractor knows what he is talking about. The gravel is what distributes the flow, not the holes. Holes smaller than 1/2" diameter would surely plug as well.

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Sorry, I was not clear but this is a pressure distribution line inside the void space of an ARC chamber drainfield. This type of system is required in Florida for systems with more than 1,000 gpd of flow. The purpose, aside from the needed lift, is to evenly distribute the effluent within the drainfield.

Thanks for your detailed response and I am sure it will help someone else in the future.

Anyone know about sizing / spacing the orifices on the 1" line?

ENGINEER 3

Designing a pressurized distribution system is complex and involves many variables. The size, and length of the delivery line, manifold line and laterals, the orifice size and spacing, and change in elevation are all taken into consideration. Once these variables are understood then a pump size can be selected. Fortunately many pump manufacturers offer programs to design a pressurized system.

The pump moves the effluent through the supply line and manifold to the distribution laterals in the trenches under a low pressure. The laterals are a network of PVC pipes, perforated with small holes (usually 4 mm to 6.5 mm in diameter) and spaced in intervals up to 1.5 m (exact dimensions are determined for each system). The laterals are placed in narrow, gravel filled trenches or in chambers which allow enough storage volume so that the effluent does not exceed 5 to 7.5 cm of the total trench depth during each dosing cycle.

You might try contacting the DELETED systems for guidance.

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Update - the contractor has built the system using 12" spacing and it was determined that the flow was not being distributed evenly. He reduced the spacing of the openings to 48" and it functioned acceptably.