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Is Well Water An Answer?

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As we all know, district water prices have risen tremendously over the past several years. Because of the high cost of imported water, interest in well drilling has grown recently. However, is drilling a well an answer to your problems, or will it be the start of many more?

Any decision to drill a well should be influenced by four factors: potential water production, potential water quality, cost of well installation, and the comparative cost of well water production and district water purchase.

What is the production potential in San Diego County? In the larger valleys of the state, ground water is generally contained in alluvium, layers of sand and gravel that have been deposited over time by flowing water. Large areas on the coastal side of Ventura, Los Angeles, Riverside and San Bernardino counties are underlain by alluvium and thus have good potential for ground water.

Unlike these areas, coastal San Diego County lacks large valleys and consequently large basins of alluvium that store ground water. The alluvial areas that do exist are generally small, and are adjacent to active rivers and streams. Because of the hilly terrain of the county, most of the ground water that does occur in upland areas comes from deeply weathered hard rock.

In hard rock areas, ground water is stored in fractures and other open areas in the rock, and water availability is dependent on a particular well site's soil and rock composition. Because of this, water quality and availability can vary widely between areas on a single piece of property, and estimating well water production in these hard rock areas is difficult at best.

The only absolutely reliable way to assess the ground water production potential of a particular location is to drill a hole and test pump it. The success or failure of neighboring wells in upland areas is not a good measure of how a well on your property will perform. Another disadvantage is that wells drilled in hard rock areas often exhibit poor recharge characteristics. Initial production may be good, but poor recharge may not allow for the well to operate 24 hours a day.

Estimating water quality in hard rock areas is equally difficult, but for the most part, quality tends to be poor. A survey of the electrical conductivity (EC) of 150 well water samples analyzed between 1988 and 1995 at the Mission Resource Conservation

District/Soil Conservation Service office in Fallbrook bears this out. Only 20 percent of all samples had an EC of 1.0 dS/m or less, a level comparable to Colorado River based district water, which is marginal for avocados in the first place.

Well installation costs can be considerable. The cost to drill a standard 6-inch hole can range from aver $10 to $14 per vertical foot. Pumps, depending on capacity, can range from $1500 to over $25,000. Power for the pump is another consideration. If the well is located adjacent to an existing utility pole, the cost will be minimal. If electricity as to be brought in, the costs can be substantial. If electricity is not an option, diesel power can be used.

The costs of producing well water is a function of the cost of electricity, well maintenance and repair and the depreciation of the well equipment over a set amount of time. Straight pumping costs are dependent on the amount of lift needed, the capacity of the pump and the cost of electricity. Pumping costs are generally small when compared to the cost of purchasing district water ($75 to $150 an acre foot to pump well water vs. $590 an acre foot for district water). If your well can supply all of your irrigation water needs, the payback time on your investment can be short. However, if your well can only supply a portion of your water needs, the payback time can well exceed the depreciation life of the equipment.