

WATER SUPPLY AT THE LEIGH SMITH FARM
TUALATIN VALLEY, OREGON

Location:

The Leigh Smith farm is located along the northeast bank of the Tualatin River in the NE $\frac{1}{4}$ sec. 33, T. 2 S., R. 1 E., a short distance downstream from the river dam park.

Problem:

To determine the best location for securing pure water in adequate amounts.

History and Development of Wells:

The well on the Leigh Smith place was dug some time before the present owners bought the place. The well was cased by Mr. Smith and although it yields an adequate supply of water, it is not pure enough to use. The well which is 24 feet deep is located in the Tualatin floodplain sands and gravel and very near to an old filled millrace but along which water is still probably seeping from the river.

The wells on the Condart place and two other wells for adjoining places are situated along the same old filled millrace. They are likewise shallow. The Condart well which is 21 feet deep may be receiving much of its water from springs seeping out of the basalt. Many boulders were encountered when digging it. However, its base is below the old millrace and it, as well as the neighboring wells, are contaminated some of the time.

A well on the Woods place is located across the road on higher ground. The well is 119 feet deep and yields an adequate supply of water, even though it tends to be hard. The water stands 45 feet deep in the well. Approximately 65 feet of silt and sandy silt were encountered and the rest is basalt.

The well on the Mehren place a short distance to the east of the Woods place is 185 feet deep. It too penetrated basalt in the lower part and likewise produced a good supply of water which tends to be hard. Neighbors across Johnson Road get an ample supply of water from shallow wells 24 feet deep which did not penetrate basalt. This water is evidently from a porous lens of sand in the surficial silt.

A well down stream from the Smith farm was drilled more than 200 feet in basalt and yielded an adequate supply. The top of the hole, although not seen, is evidently much closer to river level.

Mr. Ray R. Sorrels' place a short distance up stream has a well which, according to Mr. Sorrels, penetrated 25 feet of soft formation, 20 feet of hard rock and then continued on to the bottom at 60 feet in easily penetrated strata. This well was not seen.

Geology:

The rock strata of the region is shown in the accompanying cross-section. The underlying Columbia River basalt is the dominant formation in Petes Mountain and the hill to the northeast. The intervening valley has evidently been eroded to its present width, although the strata may be in part downfolded. Folding is not known to have taken place and the wells that penetrate basalt are not notably artesian, a condition that would be expected should the strata dip riverward.

The silt and sandy silt were deposited within the valley to a depth much above the present level. The river has terraced it to its present elevation. The sands and gravel of the present river flood plain are the youngest sediments.

Conclusions:

Wells in the present low flood plain or wells that are very near which penetrate that deep are subject to contamination. This is historically true, as shown by actual tests. As the sediments are very permeable, this would be expectable.

Wells in the silt formation should be pure, but the supply may or may not be adequate. Mr. Woods found insufficient water in the 65 feet of silt above the basalt, yet neighbors across Johnson Road from the Mehren place found adequate water at 24 feet. Exploratory drilling, perhaps with hand tools, might find water near the river road on the Smith place. This would be a gamble.

Wells that penetrate the basalt have yielded adequate water. The drawbacks to this type of well are the high cost and the hardness of the water. Its advantages are purity and sufficiency.

Recommendation:

If exploratory drilling in the silt is not undertaken or is not successful, a well could be drilled through the silt into the basalt. The location could be at the site of the new house, preferably toward the river road and away from the river, although if sufficiently cased, there should be little danger of contamination even if drilled at a low level. The supply would presumably come from a level beneath contamination. The strata would presumably be the same as those encountered in the Woods well. It should be no deeper but this cannot be accurately foretold.

An alternative is a community water system depending upon a deep well.

Report by:

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