



To: A.P. Kohut
Senior Geological Engineer
Groundwater Section

Date: October 28, 1987

Our File: 92 B12 #16

RE: Cobble Hill Improvement District -
Well Pumping Test Assessment

Introduction:

As requested by Mr. George Buble for Mr. T. Pollard, Head of Engineering of the Community Water Supply Section a review has been completed of the well test data submitted. The well was tested by B.C. Aquifer Testing and Equipment in October 1984. The results obtained over the last 5 hours of the test indicated the well was capable of yielding 114 USgpm, however the well was equipped with a submersible pump that was capable of pumping only 26 USgpm to storage. As this amount is insufficient to meet the requirements, the Groundwater Section has been requested to reassess the well test in order that the pump can be replaced with a higher capacity pump.

Well Construction:

The well in question is 152 mm (6-inch) diameter completed to a depth of 74.4 metres (244 feet). The well was drilled by Drillwell Enterprises Ltd. in September 1984 by the Cable Tool Method. It is completed with thirteen feet of stainless steel screen set between 231 and 244 feet in material described as clean coarse gravel.

Well Test Assessment:

The well was tested on October 11, 1984 for a period of 375 minutes (6.25 hours). The pumping rate was initially set at 27 USgpm and readjusted and increased to a constant 114 USgpm after 50 minutes. The rate was held at 114 USgpm for the final 325 minutes of the test. The final drawdown from the pump test was 17.246 meters (56.6 feet). As the original water level before pumping was 43.236 meters (141.9 feet) and the top of the screen is 70.4 meters (231 feet) there was 27.1 meters (89.1 feet) of available drawdown at the time of testing. The pump test drawdown represents 63.5 percent of this drawdown. Near stabilization of water level was reached at the end of the test. Based on utilizing 70 percent of the available drawdown and a specific capacity of 2.01 USgpm per foot of drawdown the well could be pumped theoretically at a rate of 125 USgpm ($2.01 \times 89.1 \times 0.70$). As the specific capacity would likely decrease with an increase in pumping rate above 114 USgpm the well yield would likely lie between 114 and 125 USgpm. Upon pump shutdown the water level recovered to within 0.093 meters (.305 feet) of the pre-pumping level after 30 minutes.

APL

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Neighbouring Wells:

Well density in the Cobble Hill area is very high and pumping interference between wells may be a problem. Well depths and yields vary considerably from shallow wells (34 feet) to deep wells (500 feet) and a few gallons per minute to 100+gpm. It should be noted that our files indicate that two other wells are located near this well at the corner of Galliers and Holland Road. These wells are also rated at 75+gpm (R5-S13 #3) and 100+ gpm (R5-S13 #2).

Summary:

On the basis of the test carried out the well should be capable of meeting a maximum daily demand of 114 to 125 USgpm. The test was carried out at an ideal time of year (October 11, 1984) when water levels would be at or near their lowest level and recharge would be nil or minimal.

The fact, however, that the well was only tested for 375 minutes should be taken into consideration when determining the long term yield of the well. The possible effects of well interference should also be considered.

Complete chemical analysis has not be submitted with this test. Field analysis results indicate the water is hard and moderately high in iron. (200 mg/L and 0.1 mg/L respectively).

The well should be equipped with a suitable water meter to effectively monitor the performance of the well and provisions should be made to record the monthly water level.

W. S. Hodge

W.S. Hodge
Senior Technician
Groundwater Section

WSH/slk
AES:W2259

Drawdown in meters

Time-Drawdown
Curverate
increased
to 114 USgpm

$$T = \frac{264 Q}{\Delta s} = \frac{(264)(114)}{2.3} = \underline{13082 \text{ USgal./ft}}$$

where $\Delta s = 0.7 \text{ m (2.3 ft)}$ $Q = 114 \text{ USgpm}$

Time in Minutes



