

Watermaster's Report

Ground Water District 63-S (Stewart Gulch)

March 1, 2011 to March 1, 2012

A couple atypical things occurred in the Stewart Gulch Ground Water District 63-S (GWD63-S) this past year that need to be discussed before the withdrawal and water level information are presented. First, the meter for the Quail Hollow Lower well ceased functioning in 2011. This was not detected till after the summer/fall pumping season. Thus, the withdrawal for Quail Hollow Lower was estimated for WY11. Second, a calculation mistake was made by the watermaster in last year's analysis that resulted in an error for the Quail Hollow Upper well withdrawal. Instead of 16.7 mgal as reported in last year's report, the actual withdrawal was 1.2 mgal in WY10. The following figures and tables take into account the aforementioned items.

Withdrawals

The total withdrawal of low temperature geothermal water in GWD63-S in WY11 was 170.8 mgal (Figure 1). This amount was 1.5 mgal more than the withdrawal in WY10, which is a 1% increase (Table 1). Overall, the withdrawal from the Stewart Gulch aquifer system was 524.0 acre feet.

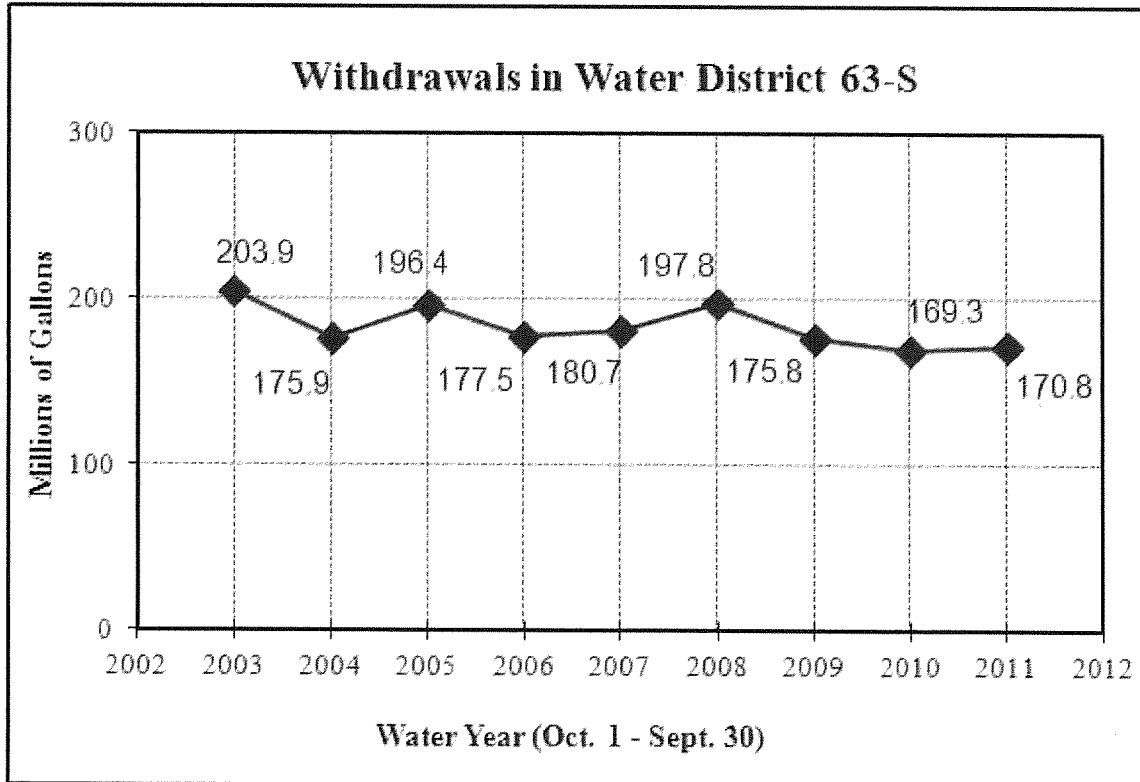


Figure 1. Low-temperature geothermal ground water withdrawals in Ground Water District 63-S for Water Years 2003-2011.

Table 1. Withdrawals¹ from Stewart Gulch Ground Water District 63-S geothermal wells for Water Year 2011 (October 1, 2010 through September 30, 2011).

Well	Withdrawals in WY11 (millions of gallons)	Change from WY10 (millions of gallons)	Percent Change from WY10
TTCI Tiegs (Triangle)	0	0	0
TTCI Silkey (Shed)	7.6	+1.8	+31%
TTCI House (Office)	0.8	+0.3	+60%
Edwards Greenhouse	65.0	-2.4	-4%
Terteling Ranch Windsock	69.3	-4.4	-6%
Terteling Ranch Pool	18.6	+3.7	+25%
Quail Hollow (Tee Ltd) Upper	<0.1	-1.1	See Comments ²
Quail Hollow (Nibbler) Lower	4.2 ³	+2.6	+135%
Whitehead	5.1	+0.9	+20%
Total	170.8	+1.5	+1%

¹These numbers contain some degree of uncertainty which is typically associated with measurement equipment and methods. Therefore, the amounts are being reported in millions with one decimal place.

²The withdrawal in WY11 was only 59,500 gallons compared to 1.15 million gallons in WY10. Thus, a calculated percent change would be exceptionally large and not valid for comparison with the other wells.

³The meter for Quail Hollow Lower ceased working sometime in WY11, so the total for the water year was calculated by multiplying an estimated usage rate of 220 gallons per minute times an estimated duration of usage of 320 hours.

The ownerships and locations of the wells allow them to be grouped into four individual withdrawal centers, which is a useful approach for summarizing the withdrawals in these localized areas within the District. Table 2 shows the four centers and the changes in withdrawals from WY10 to WY11.

Table 2. Four withdrawal centers in GWD63-S and changes from WY10 to WY11.

Withdrawal Center	Number of Wells	Numerical change from WY10 to WY11	Percentage change from WY10 to WY11
Edwards Greenhouse	1	-2.4 mgal	-4%
Terteling Garden Center	3 (2 in use; 1 unused)	+2.1 mgal	+33%
Quail Hollow	2	+1.5 mgal	+56%
Terteling Ranch	2	-0.7 mgal	-1%

Water Levels

Overall, ground water levels in GWD63-S wells showed stable to slightly increasing trends in WY11. The Edwards well had an increase in the maximum and minimum water levels of 1.2 feet and 2.3 feet, respectively, in WY11 (Figure 2). The TTCI Ties (Triangle) well had increases in the maximum and minimum water levels of 0.7 feet and 3.6 feet, respectively (Figure 3). The TTCI House (Office), and Silkey (Shed) also had similar water level trends as the Ties well (Figures 4 and 5). The Quail Hollow Lower well has shown higher maximums in the last two years as compared to the previous seven years (4 – 7 feet higher)(Figure 6). The maximum value for the Quail Hollow Upper well was 1.5 feet lower in WY11 (Figure 7). The Terteling Ranch Windsock and Pool wells showed slight declines in maximum values (2.3 feet in both wells)(Figures 8 and 9). The trends for the minimum values for the Quail Hollow and Terteling Ranch wells are difficult to discern because of pumping effects.

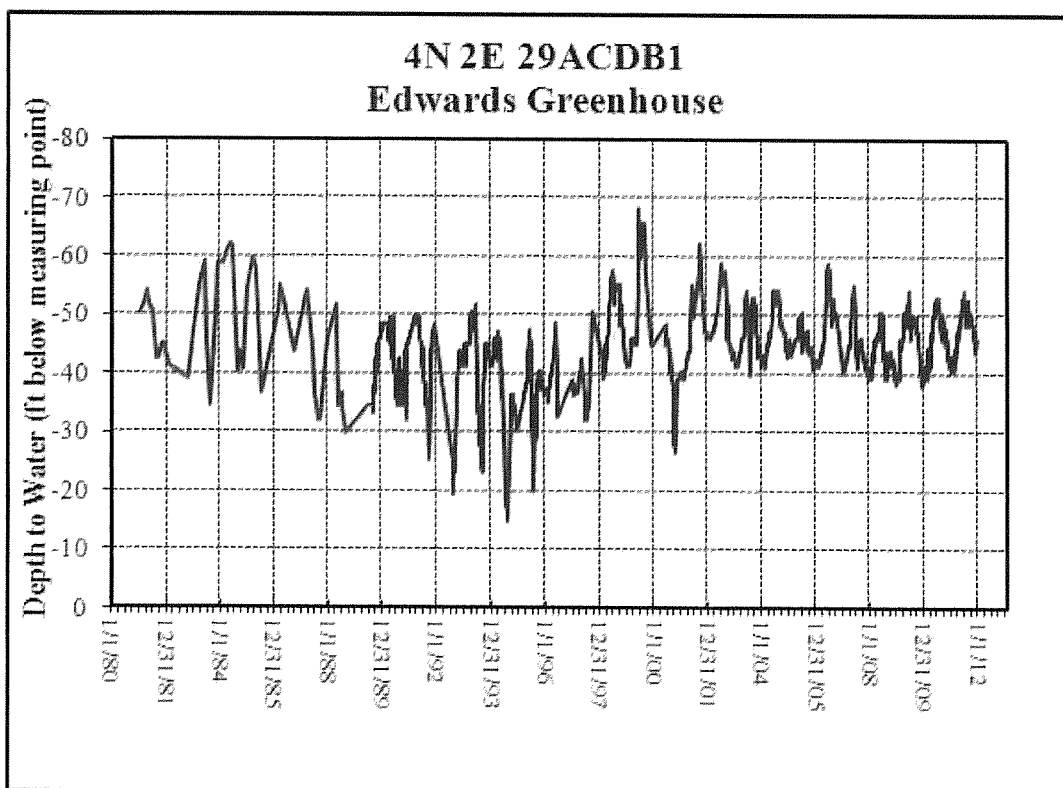


Figure 2. Water level hydrograph for the Edwards Greenhouse well.

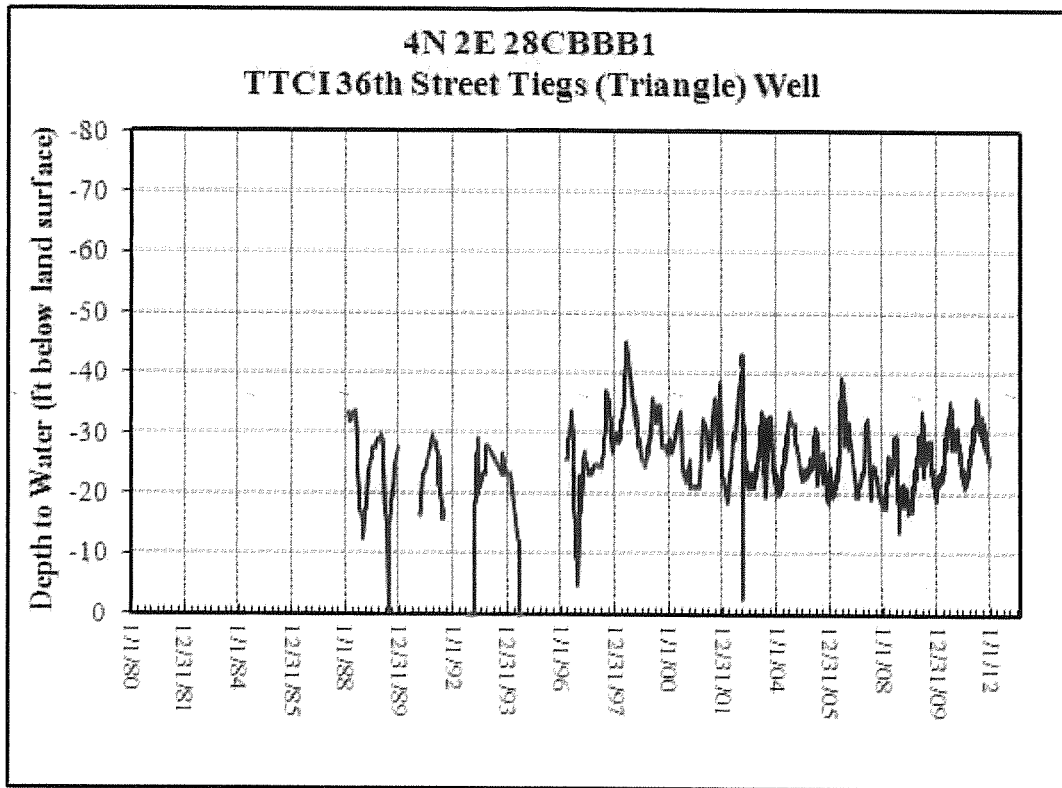


Figure 3. Water level hydrograph for the TTCI 36th Street Tiegs (Triangle) well.

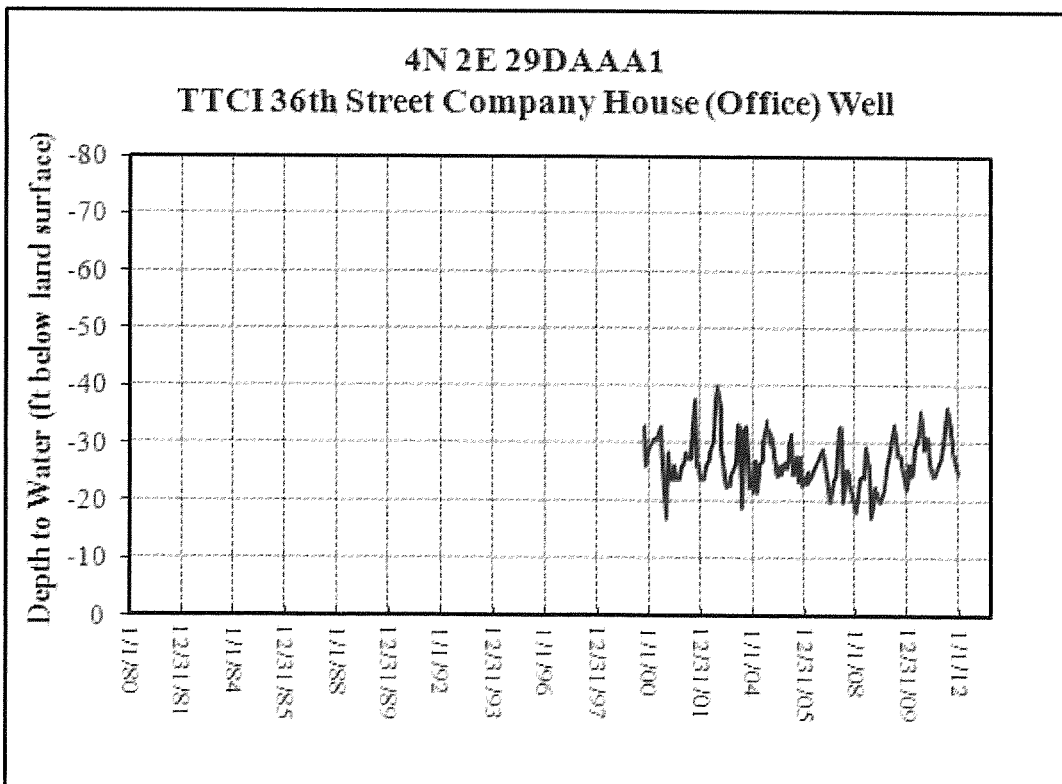


Figure 4. Water level hydrograph for the TTCI 36th Street House (Office) well.

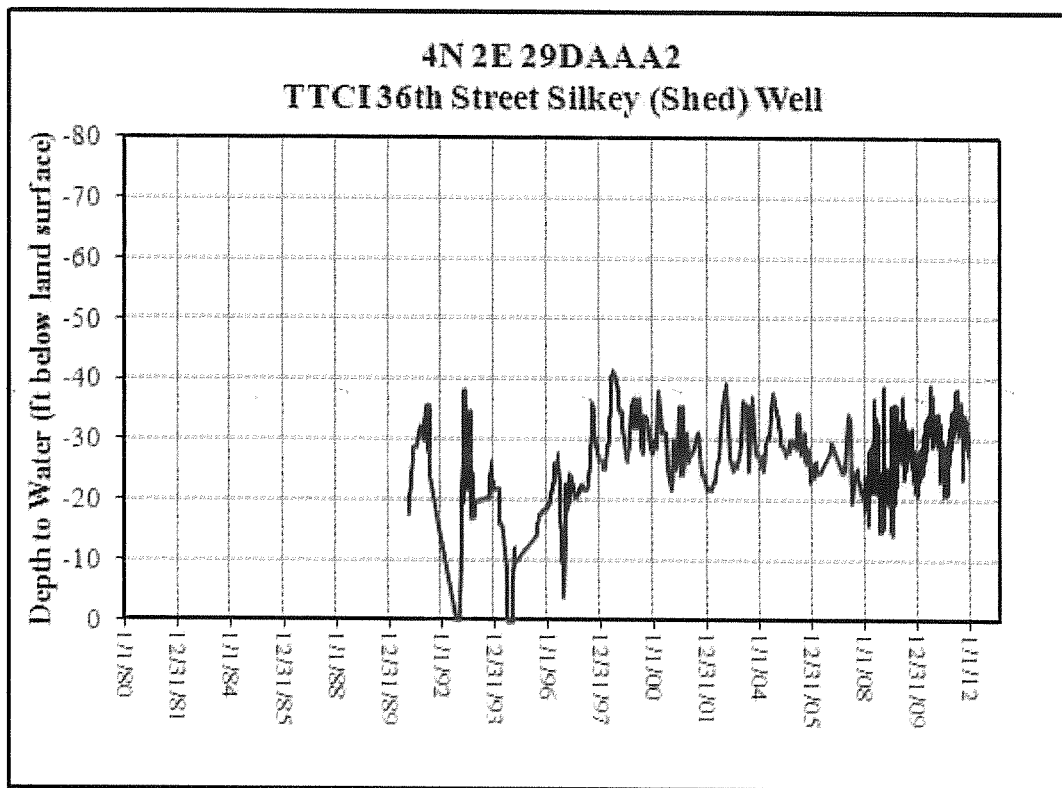


Figure 5. Water level hydrograph for the TTCI 36th Street Silkey (Shed) well.

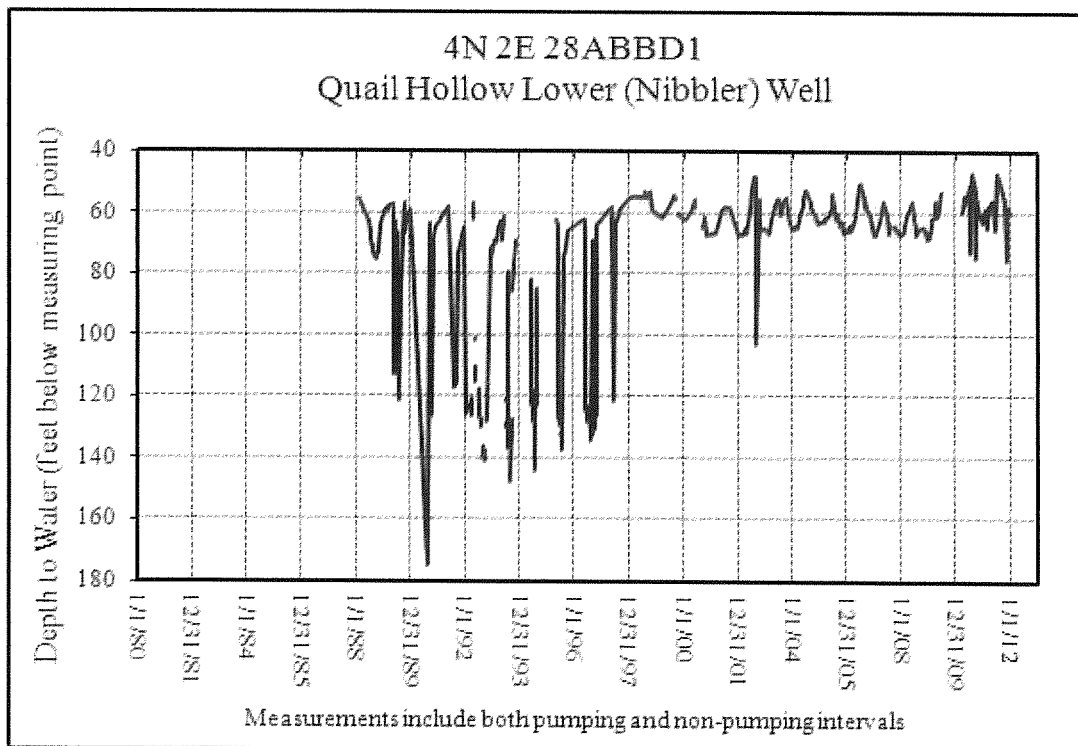


Figure 6. Water level hydrograph for the Quail Hollow Nibbler (Lower) well.

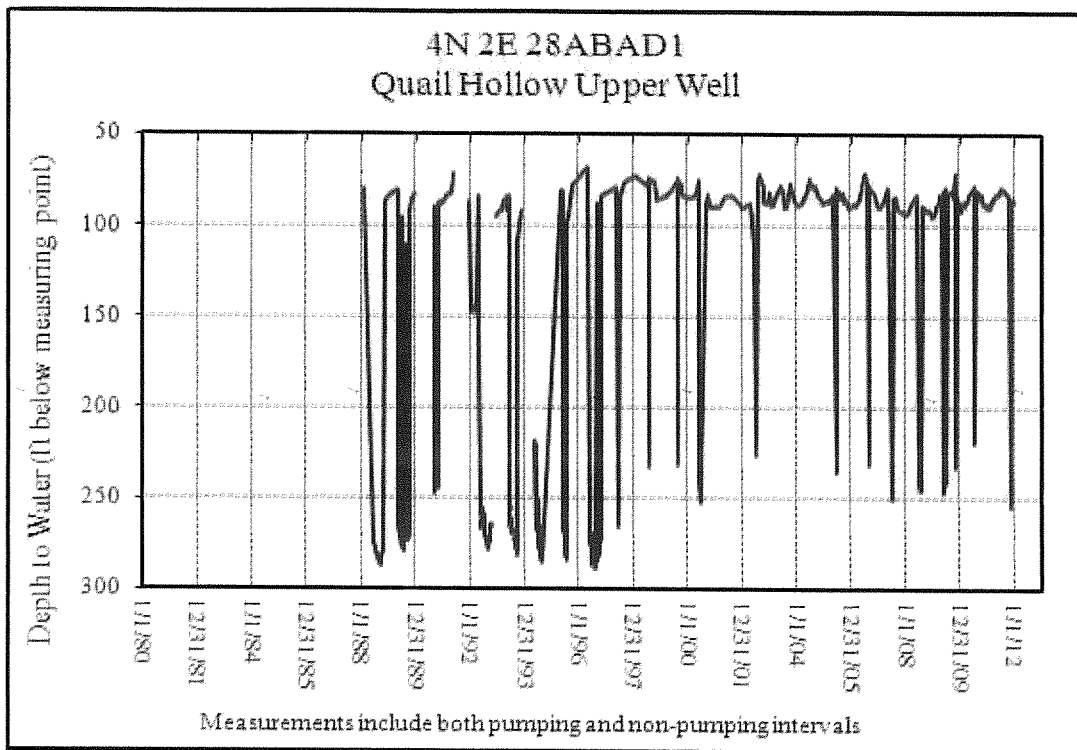


Figure 7. Water level hydrograph for the Quail Hollow Tee Ltd (Upper) well.

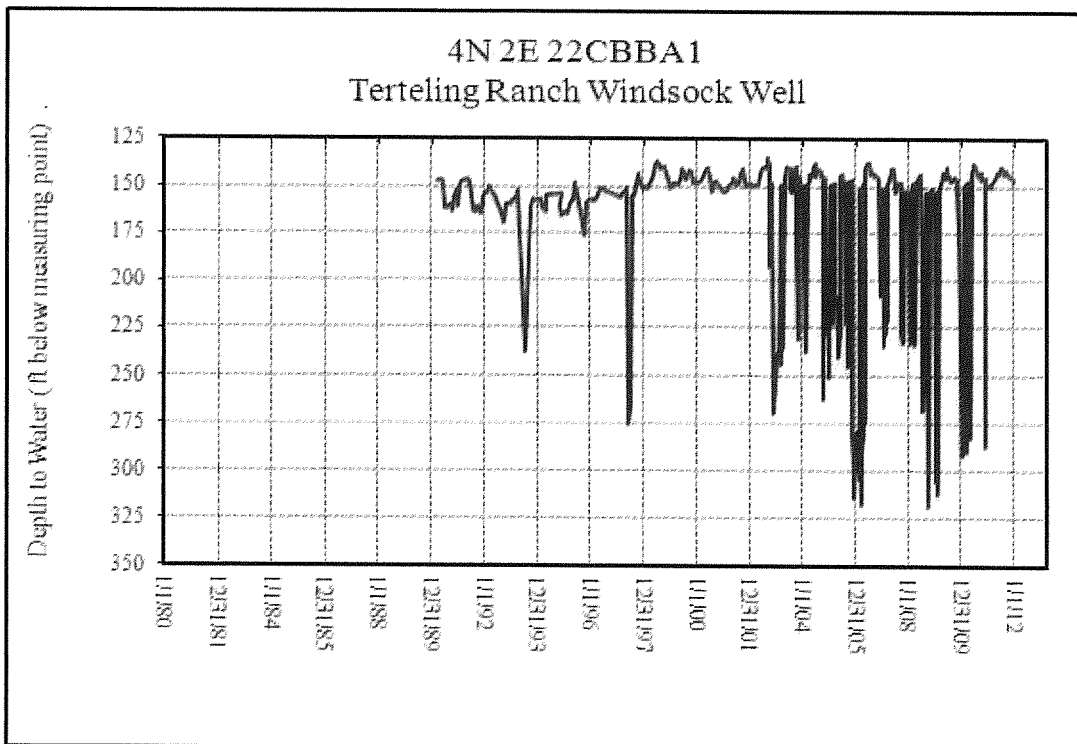


Figure 8. Water level hydrograph for the Terteling Ranch Windsock well.

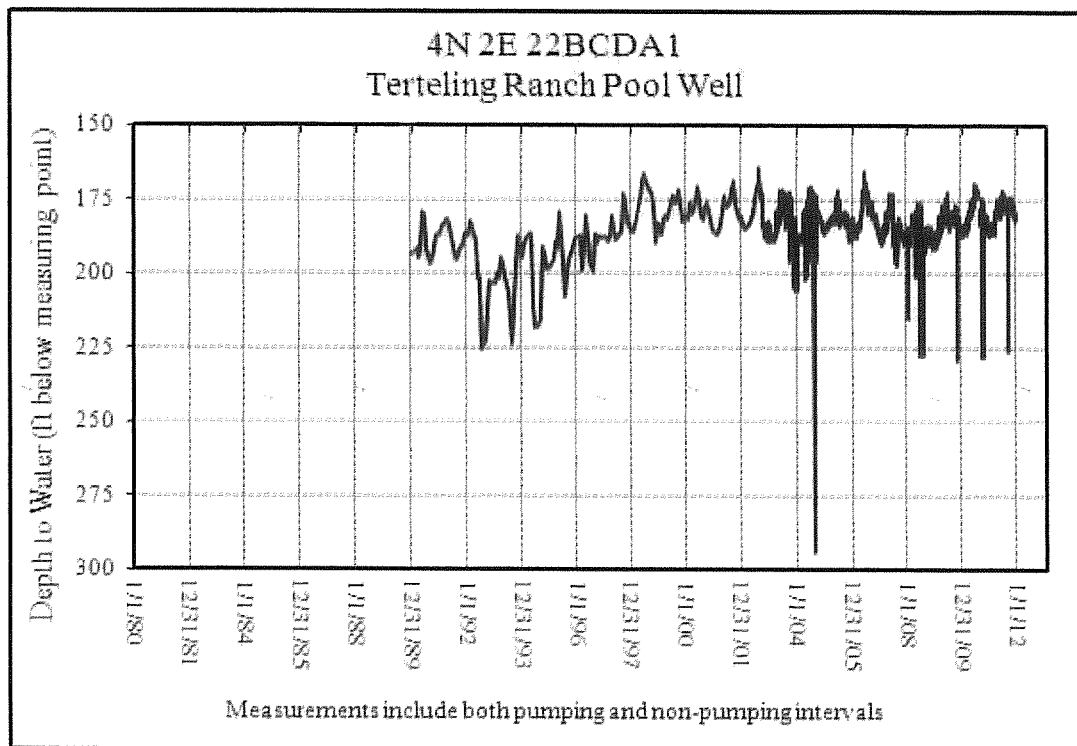


Figure 9. Water level hydrograph for the Terteling Ranch Pool well.

Watermaster Expenses

The Watermaster worked 27.0 hours in the time period from March 1, 2011 to February 29, 2012. The billing for these services is as follows:

Salary	\$ 744.66
Fringe	\$ 252.47
Supplies	\$ 0.00
Indirect	\$ 418.79

Total \$1,415.92

Table 3 is the assessment for the Watermaster's expenses for Ground Water District 63-S for March 1, 2011 through February 29, 2012

Table 3. Assessment for Watermaster's expenses for Water District 63S for March 1, 2011 through February 29, 2012.

Owner	Name	Percentage¹	Assessment²
Terteling Company	Flora Tiegs	0.000	\$0.00
Terteling Company	Flora Silkey	20.723	\$293.42
Terteling Company	Flora House	1.566	\$22.17
Edwards Greenhouses	Edwards	22.864	\$323.74
Terteling Company	Terteling Windsock	36.147	\$511.81
Terteling Company	Terteling Pool	9.714	\$137.54
Quail Hollow Golf Course	Quail Hollow Upper	6.562	\$92.91
Quail Hollow Golf Course	Quail Hollow Lower	2.444	\$34.61
Rose and Mary Ryan	Ryan	-	\$10.00
David Niznik	Whitehead	-	-
	Total	100	\$1415.92

¹ Percentages as determined at the 2004 Annual Meeting.

² Based on percentages in Column 3 times the Watermaster's Fees for this time period (\$1,415.92).

Respectfully submitted,

Kenneth Neely

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Watermaster for Ground Water District 63-S