Lower Elkhorn Natural Resources District
Spring 2013 Groundwater Level Report

Spring measurements provide us with an idea of groundwater levels for estimating the groundwater's stable, non-pumping level. The geology in northeastern Nebraska is complex, making a district-wide assessment of groundwater conditions difficult, but the following statistics can give us a general feel for what was found in the irrigation wells measured.

- 18% (45 of 244) of the wells measured recorded their lowest ever spring levels.
- 2/3 (161 of 244) of the wells measured showed their greatest one-year drop from spring to spring.

Of the 245 wells, 242 wells showed a decline in groundwater levels from spring 2012 to spring 2013. Of the 242 wells that declined:

- 49 wells declined from 0.00' to 2.00'.
- 74 wells declined 2.01' to 4.00'.
- 65 wells declined 4.01' to 6.00'.
- 29 wells declined 6.01' to 8.00'.
- 13 wells declined 8.01' to 10.00'.
- 12 wells declined more than 10.00'.

The 12 wells with more than a 10.00' decline were located in 5 counties, those being Colfax with 6, Platte with 3, and Stanton, Cuming and Wayne with 1. The largest decline was -21.58 in Colfax County, which had 5 of the 6 largest declines.

Of the 245 wells, 3 wells showed higher groundwater levels from spring 2012 to spring 2013. These wells were located in Burt County (+1.72, +2.30) and Cuming County (+.37').

It is important to note that these 3 wells are located in close proximity to rivers or streams, and that these wells were measured immediately following one of the rain, snow, and sleet events that we had. The depth to water in these wells is very shallow, so surface water runoff can have a brief effect on these wells.

Median Water Levels

Generally, the LENRD has also compared spring water levels to predevelopment levels. This year, the LENRD has decided to instead show a comparison of the spring water levels compared to the long term median water level for each well. The staff feels that by using the median, we can get a more accurate representation of the water levels over the long term. The measurements that the staff takes should be reliable as all staff members follow the same SOP when measuring wells, however, information on the procedures for how predevelopment levels were taken is lacking.

Of the 245 wells, 182 wells showed a lower water level from their median. Of those 182 wells:

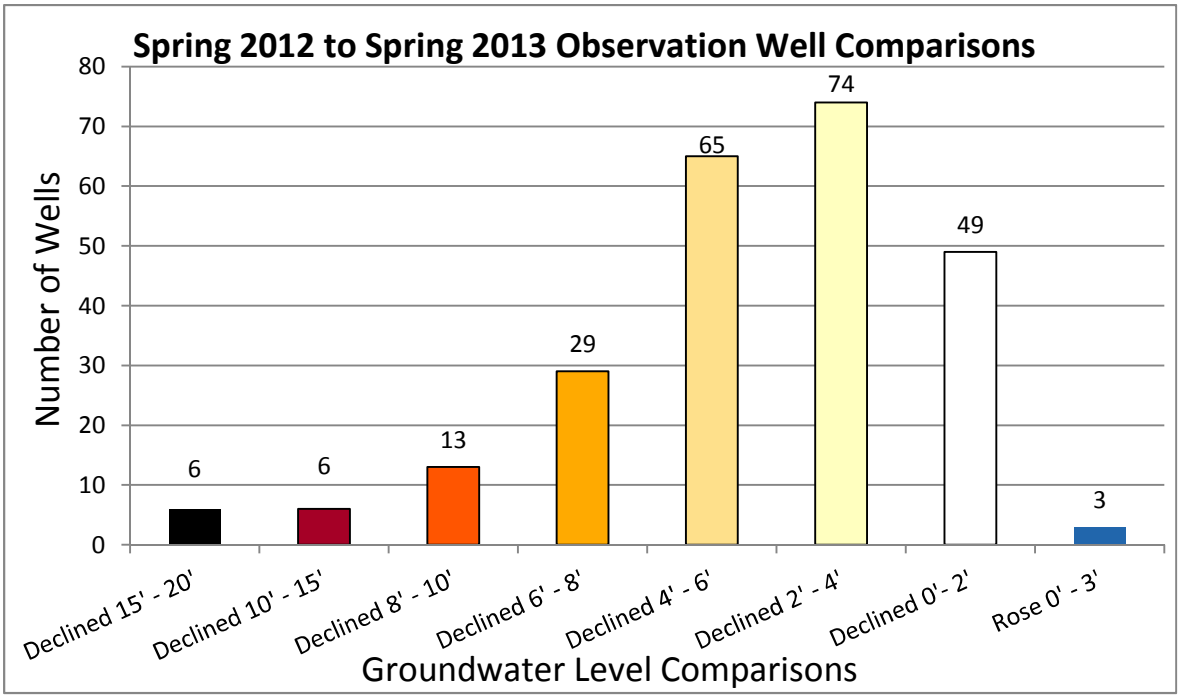
- 52 wells were 0.00' to 2.00' lower.
- 76 wells were 2.01' to 4.00' lower.
- 28 wells were 4.01' to 6.00' lower.
- 10 wells were 6.01' to 8.00' lower.
- 16 wells were more than 8.00' lower.

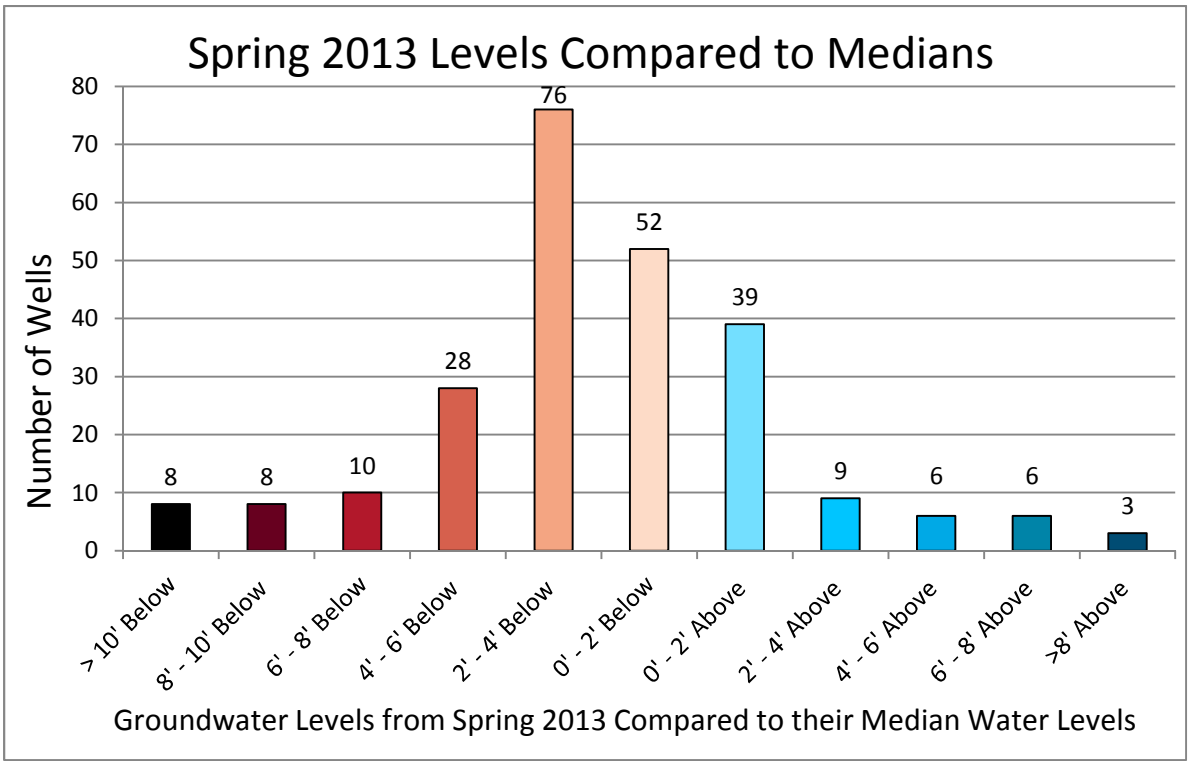
Eight wells recorded depths of lower than 10.00' from the median. Those wells were located in 3 counties, those being Colfax with 6 (-16.35', -16.41', -17.56', -18.69', -23.79', and -24.90'), Stanton with 1 (-14.93'), and Wayne with 1 (-11.93'), with the largest decline from the median in Colfax Co. with -24.90'.

Of the 245 wells, 63 wells showed a higher water level from their median. Of those 63 wells:

- 39 wells were 0.00' to 2.00'higher.
- 9 wells were 2.01' to 4.00' higher.
- 6 wells were 4.01' to 6.00' higher.
- 6 wells were 6.01' to 8.00' higher.
- 3 wells were more than 8.00' higher.

The 3 wells that were more than 8.00' higher than their medians were located in 3 counties, those being Dodge (8.17'), Madison (8.68'), and Cuming with the largest increase at 35.40'.


Spring 2012 to Spring 2013 Observation Well Comparisons
Number of Wells
80
70
60
50
40
30
20
10
0
6
6
13
29
65
74
49
3
Declined 15' - 20'
Declined 10' - 15'
Declined 8' - 10'
Declined 6' - 8'
Declined 4' - 6'
Declined 2' - 4'
Declined 0' - 2'
Rose 0' - 3'
Groundwater Level Comparisons


Spring 2013 Levels Compared to Medians
Number of Wells
80
70
60
50
40
30
20
10
0
8
8
10
28
76
52
39
9
6
6
3
> 10' Below
8' - 10' Below
6' - 8' Below
4' - 6' Below
2' - 4' Below
0' - 2' Below
0' - 2' Above
2' - 4' Above
4' - 6' Above
6' - 8' Above
>8' Above
Groundwater Levels from Spring 2013 Compared to their Median Water Levels