

# **Raft River Critical Ground Water Area**

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The Raft River Critical Ground Water Area (CGWA) is located primarily in Cassia County of south-central Idaho, with extensions to the east into Oneida and Power Counties (Figure 1). The area was originally designated a CGWA on July 23, 1963. Subsequent orders modified the boundaries by eliminating four areas: 1) an area on the extreme northern boundary, 2) the Albion basin, 3) the area north of the Yale-Cottler Road, and 4) the upper Raft River Valley, Elba and Yost-Almo subbasins.

There are 17 active IDWR monitoring wells within the Raft River CGWA and 3 IDWR wells just outside the area (Figures 2 – 22). Seven wells have well driller's reports; four wells have possible well driller's reports; and nine wells do not have well driller's reports. The range of well depths is from 43 feet to 900 feet. Eight wells have depths between 0 and 250 ft; six wells have depths from 251 to 500 feet; two wells have depths between 500 and 1000 feet; and four wells have unknown depths. Thirteen wells are completed in alluvium based on the actual well driller's report, or on a nearby well driller's report. Two wells appear to be completed in the Raft River Formation. There is not enough information for five wells to determine the aquifer.

Seventeen wells had declining trends with all of the trends being significant at the 95 percent confidence level (Table 1). The average annual declines for these 17 wells ranged from 0.01 to 3.14 ft/yr, with an overall average of 1.74 ft/yr. Wells #15 and #16 had slight increasing trends that were not significant at the 95 percent confidence level. Well #8 had an indeterminate trend.

The average annual decline rates in the northern part of the CGWA were higher than the rates in the southern part of the CGWA (Figure 2). Six of the 11 wells in the northern part of the CGWA had declines in the 2 to 3 feet per year range, and one well had a decrease greater than 3 feet per year. Three wells had average declines in the 1 to 2 feet per year range. The southern part of the CGWA has two wells with average annual declines of less than 2 feet per year, two wells with declines of less than 1 foot per year, and two wells with increases of less than 1 foot per year.

Fifteen of the wells have water level data that are earlier than 1980. Five wells were added to the network relatively recently with measurements that started in 1999 for four wells and 2007 for one well. All 15 wells with data earlier than 1980 had definitive changes in their trends in the mid 1980's (Figure 2). For example, Well #1 had an average annual rate of decline equal to 0.6 feet per year from 1964 to 1987, and a rate of 2.4 feet per year from 1987 to 2013, with an overall rate of 1.6 ft/yr from 1964 to 2013. Well #12 actually had a very slight increasing trend of 0.02 feet per year from 1955 to 1984, and then a declining trend of 2.0 feet per year from 1984 to 2013, with an overall rate of decline of 1 foot per year from 1955 to 2013. Well #16 is unique in that it had a mix of increases and declines in the measurement record from 1974 to 2013, with a slight overall increase. The longest trend in Well #16 is a decline in water levels from 1985 to 2005, which was preceded by an increase in water levels.

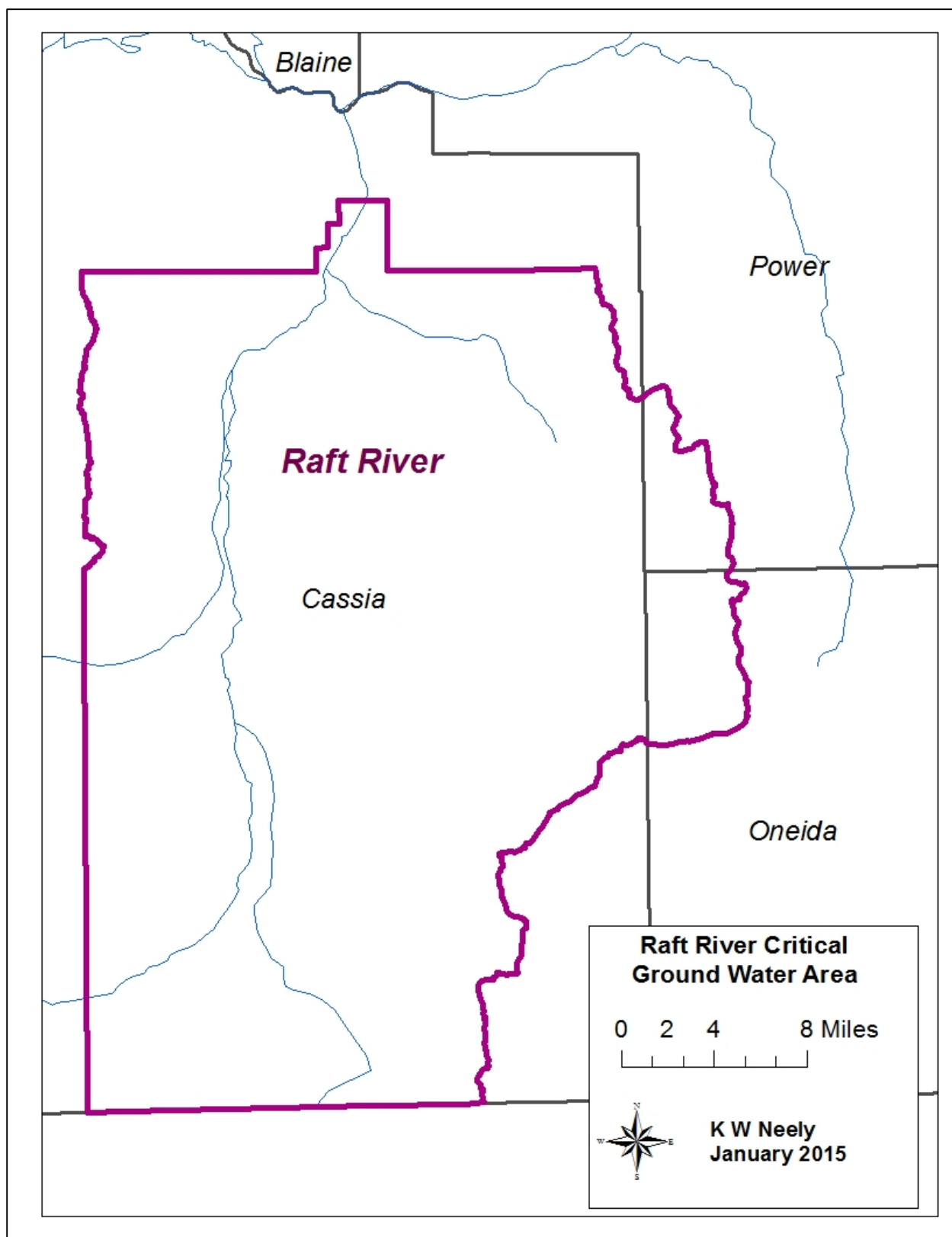


Figure 1. Location of Raft River Critical Ground Water Area.

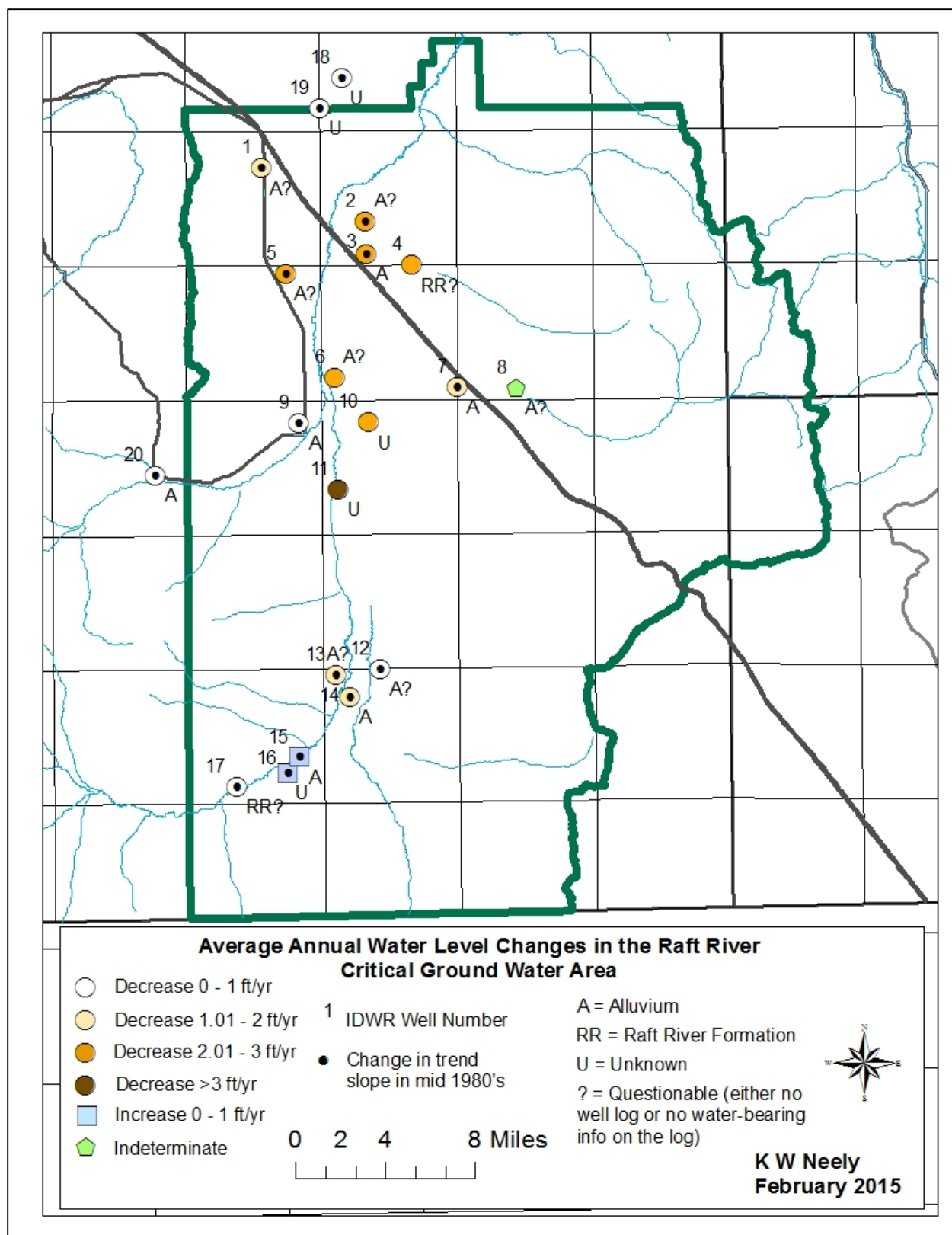


Figure 2. Average annual water level changes in the Raft River Critical Ground Water Area.

Table 1. Summary statistics for 20 wells in the Raft River CGWA.

| Map Well Number | Station Name   | Probability <sup>1</sup> | Mann Kendall Statistic | Trend                       |
|-----------------|----------------|--------------------------|------------------------|-----------------------------|
| 1               | 11S 26E 10CAD1 | 0                        | 0.684                  | Declining, Sign@95% CL      |
| 2               | 11S 27E 29AAA1 | 0                        | 0.852                  | Declining, Sign@95% CL      |
| 3               | 11S 27E 32ADD1 | 0                        | 0.749                  | Declining, Sign@95% CL      |
| 4               | 11S 27E 34DDD1 | 0.001                    | 0.778                  | Declining, Sign@95% CL      |
| 5               | 12S 26E 02ACC1 | 0                        | 0.689                  | Declining, Sign@95% CL      |
| 6               | 12S 27E 30DCC1 | 0.004                    | 0.368                  | Declining, Sign@95% CL      |
| 7               | 12S 27E 36ADD1 | 0                        | 0.81                   | Declining, Sign@95% CL      |
| 8               | 12S 28E 33BDD1 | 0.059                    | -0.227                 | Indeterminate               |
| 9               | 13S 26E 01CCC1 | 0                        | 0.469                  | Declining, Sign@95% CL      |
| 10              | 13S 27E 05DDD1 | 0                        | 0.501                  | Declining, Sign@95% CL      |
| 11              | 13S 27E 19DCC1 | 0.001                    | 0.419                  | Declining, Sign@95% CL      |
| 12              | 14S 27E 33CDD1 | 0                        | 0.422                  | Declining, Sign@95% CL      |
| 13              | 15S 27E 06ABC1 | 0                        | 0.714                  | Declining, Sign@95% CL      |
| 14              | 15S 27E 08BBC1 | 0                        | 0.635                  | Declining, Sign@95% CL      |
| 15              | 15S 26E 23DDC5 | 0.261                    | 0.048                  | Increasing, Not Sign@95% CL |
| 16              | 15S 26E 26CAB1 | 0.198                    | -0.068                 | Increasing, Not Sign@95% CL |
| 17              | 15S 26E 33BBC1 | 0                        | 0.455                  | Declining, Sign@95% CL      |
| 18              | 10S 27E 19DAA1 | 0                        | 0.571                  | Declining, Sign@95% CL      |
| 19              | 10S 27E 30CCC1 | 0                        | 0.723                  | Declining, Sign@95% CL      |
| 20              | 13S 25E 23ACB1 | 0.012                    | 0.177                  | Declining, Sign@95% CL      |

<sup>1</sup>Probability values less than 0.05 indicate that the trend is significant at the 95 percent confidence level.

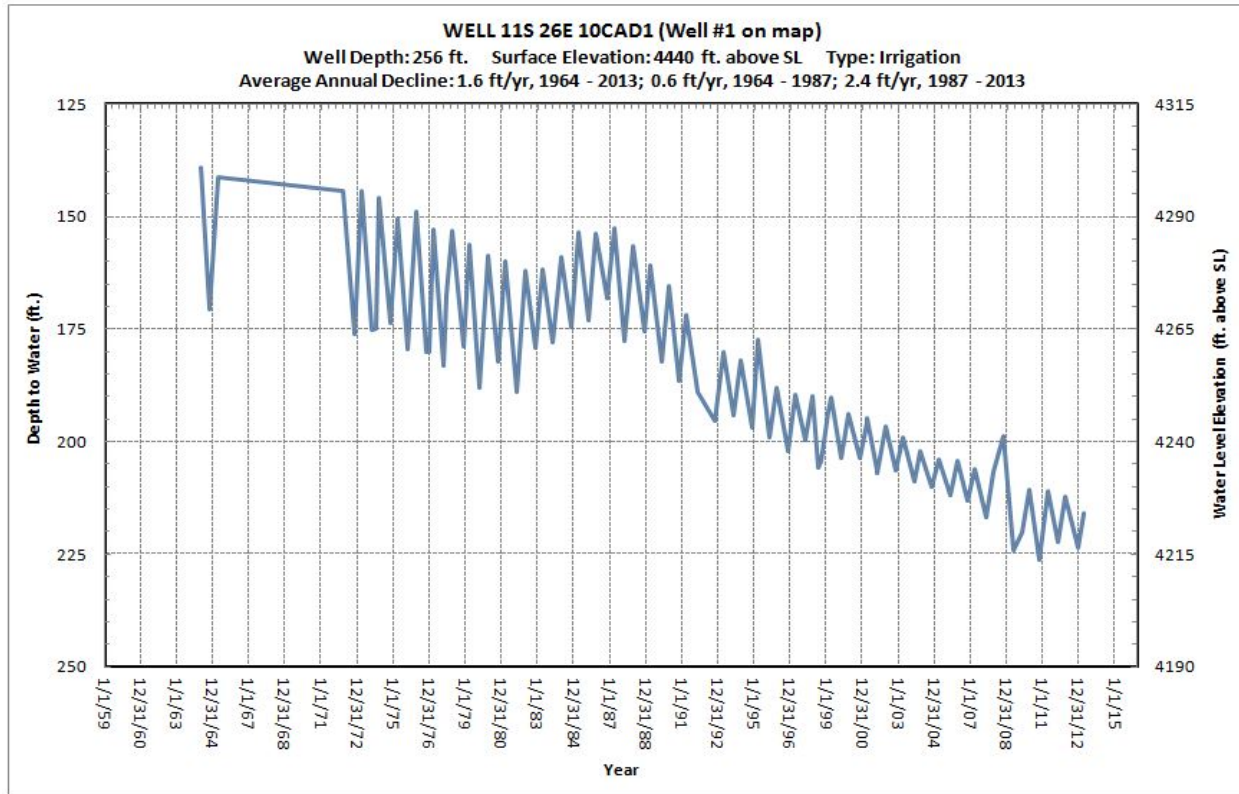


Figure 3. Ground water level hydrograph for 11S 26E 10CAD1, 1964 – 2013.

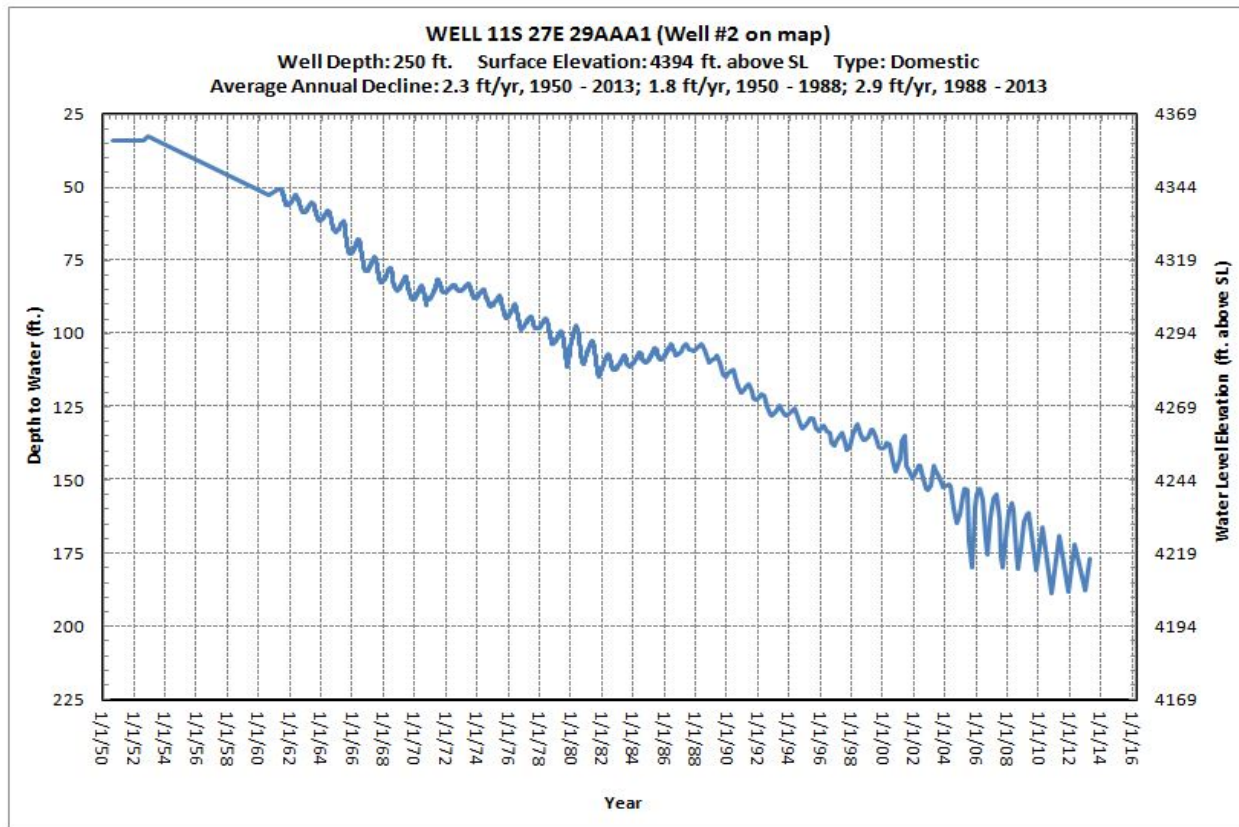


Figure 4. Ground water level hydrograph for 11S 27E 29AAA1, 1950 – 2013.

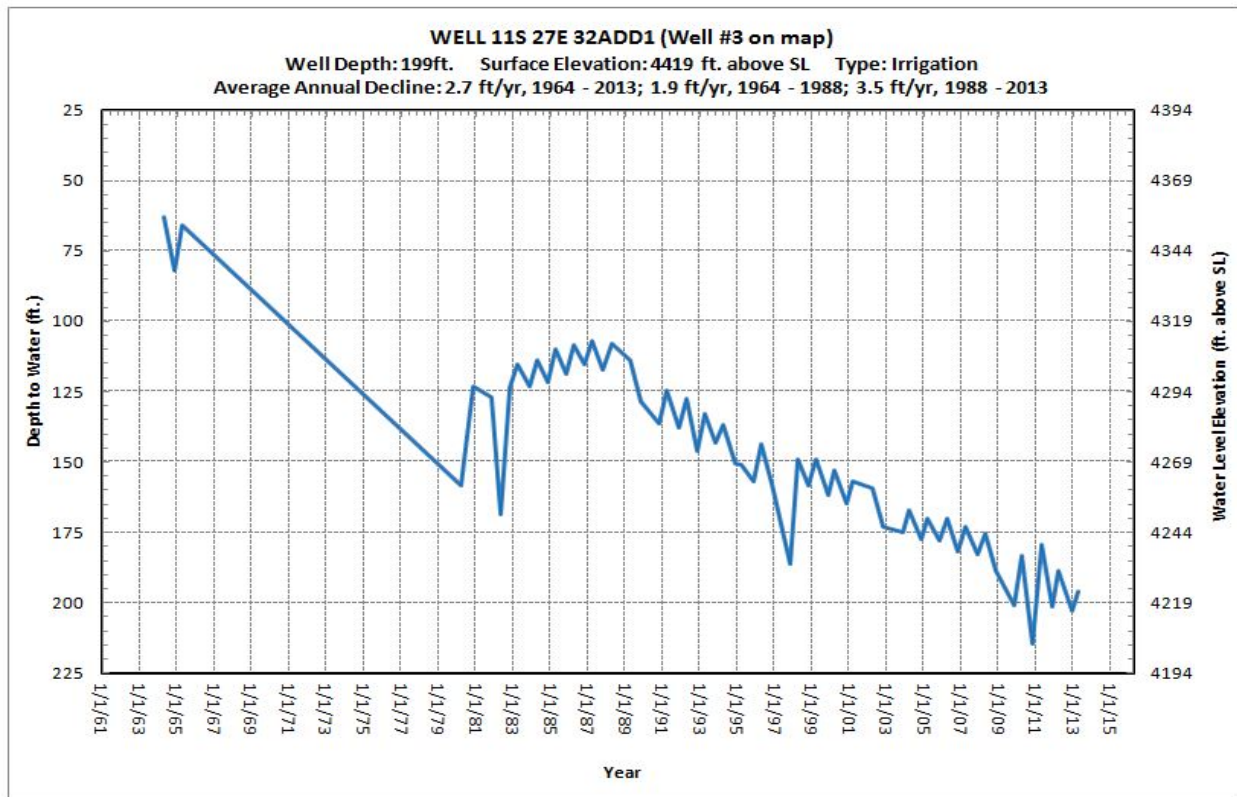


Figure 5. Ground water level hydrograph for 11S 27E 32ADD1, 1964 – 2013.

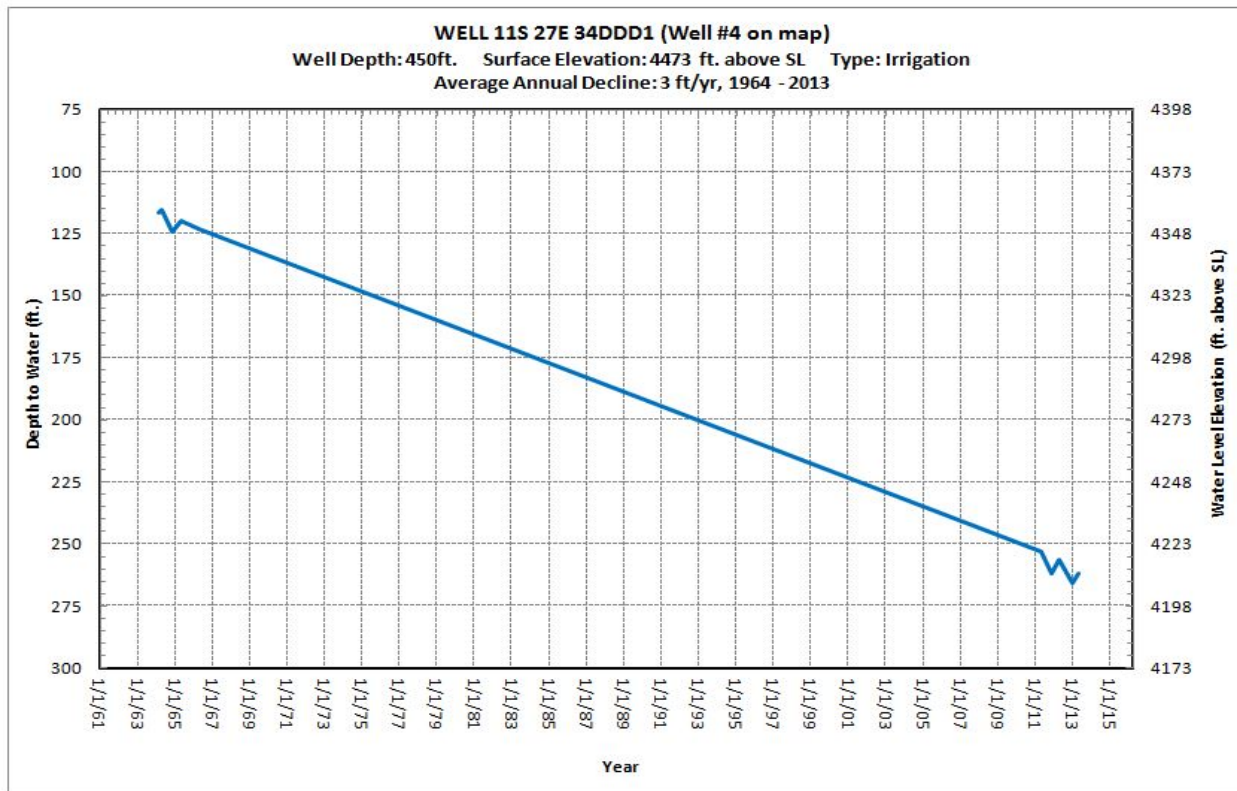


Figure 6. Ground water level hydrograph for 11S 27E 34DDD1, 1964 – 2013.

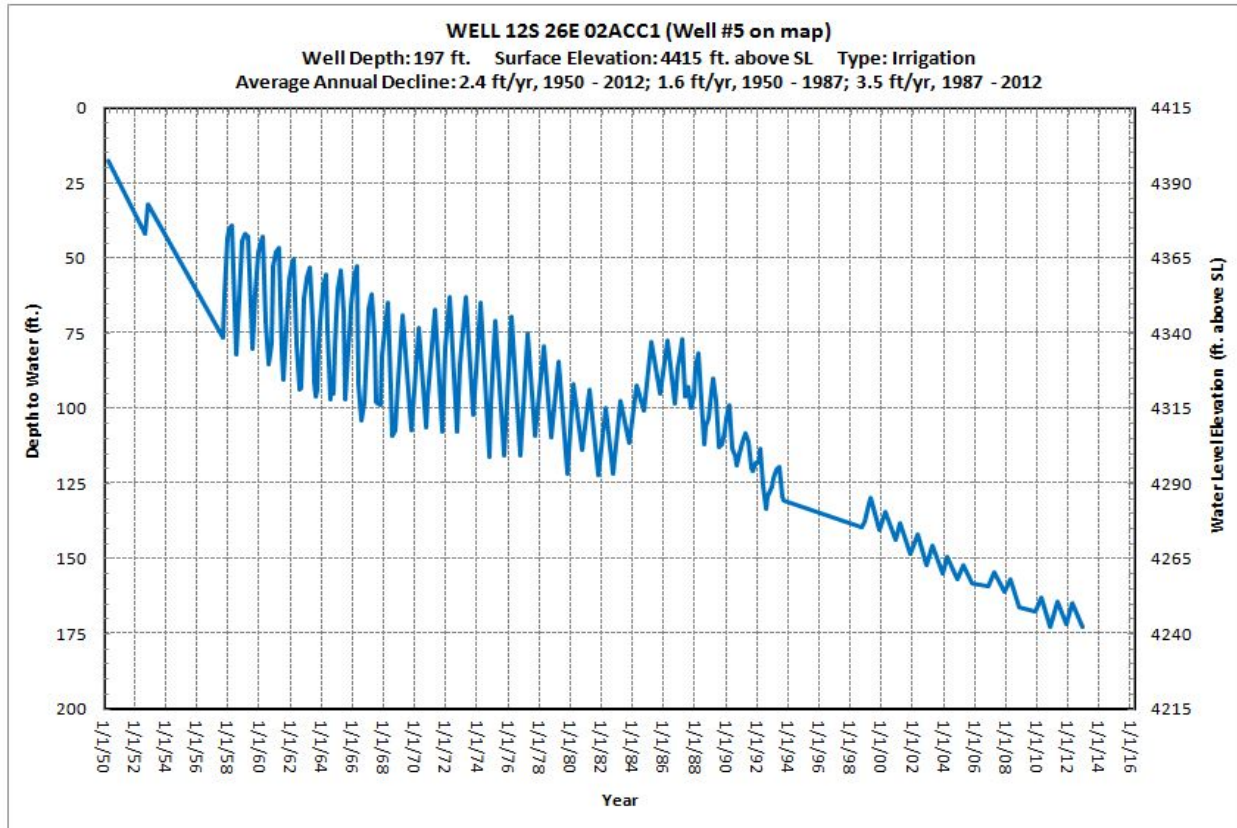


Figure 7. Ground water level hydrograph for 12S 26E 02ACC1, 1950 – 2013.

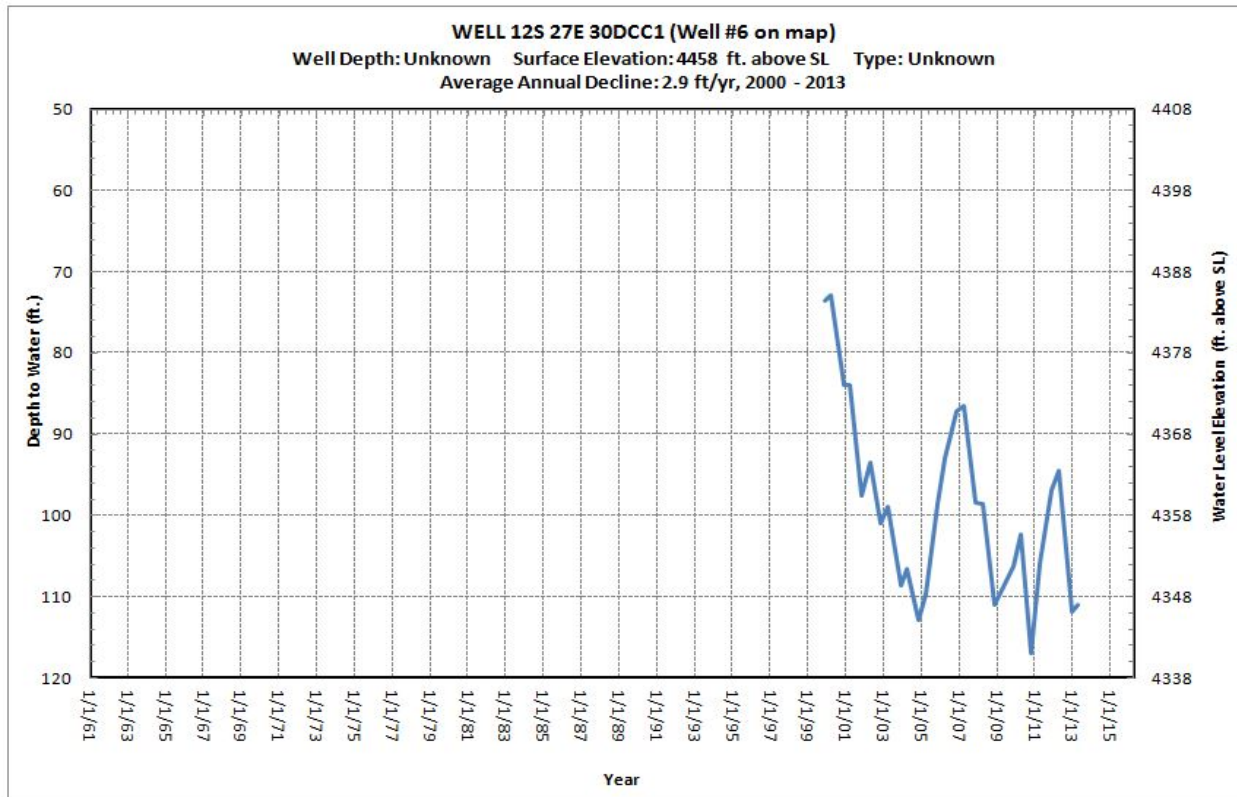


Figure 8. Ground water level hydrograph for 12S 27E 30DCC1, 2000 – 2013.

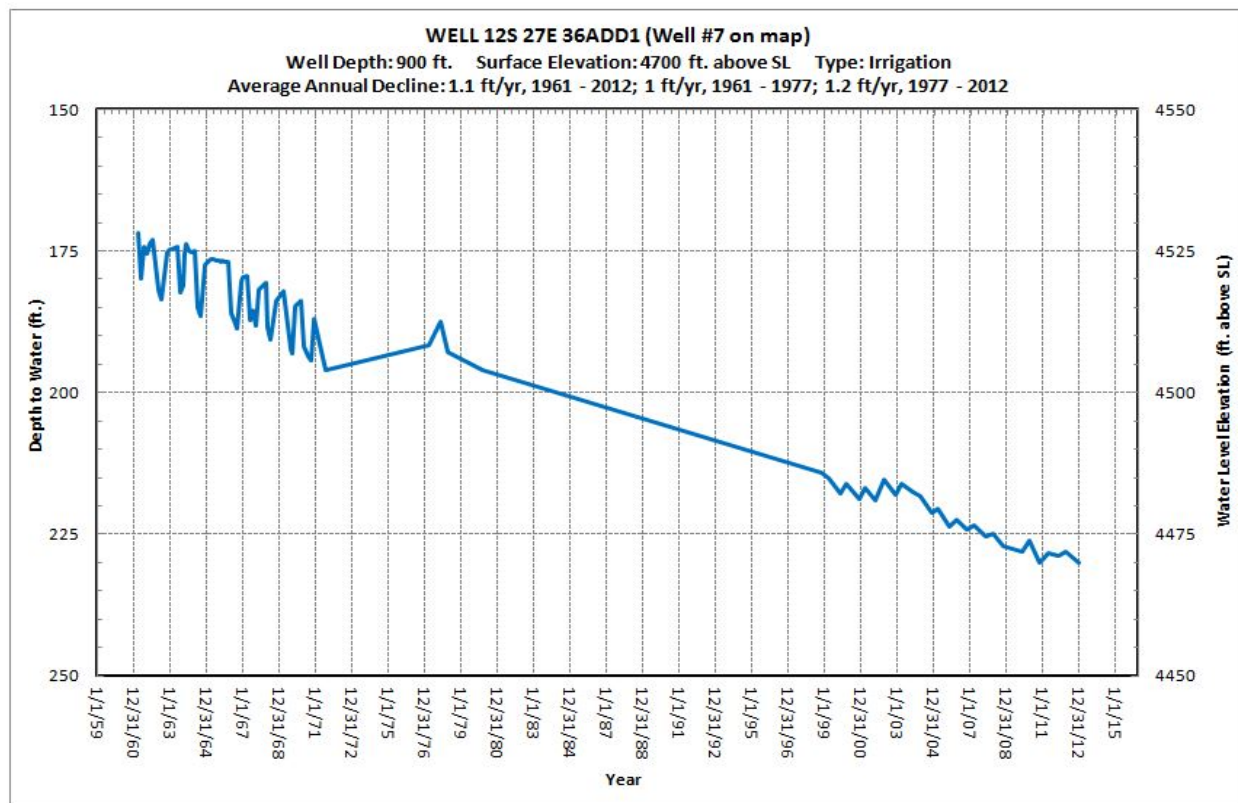


Figure 9. Ground water level hydrograph for 12S 27E 36ADD1, 1961 – 2012.

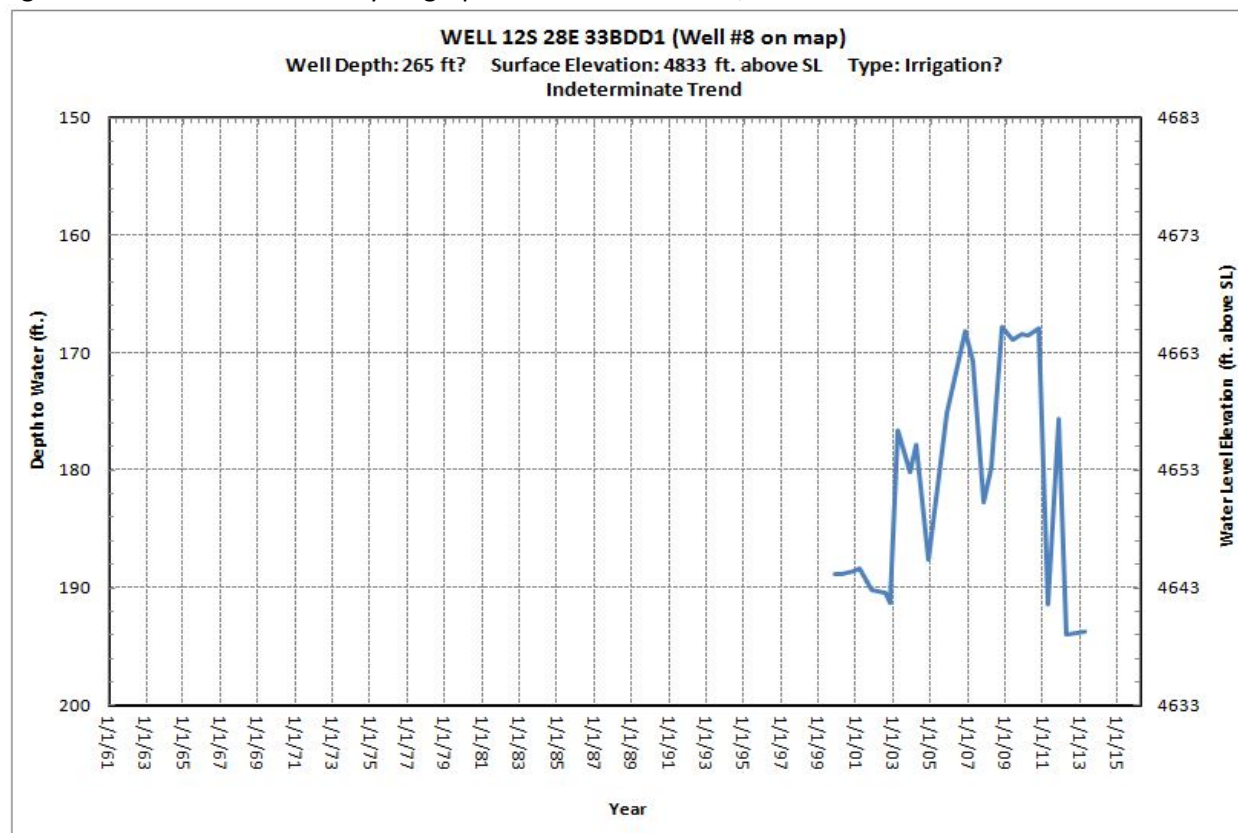


Figure 10. Ground water level hydrograph for 12S 28E 33BDD1, 1999 – 2013.

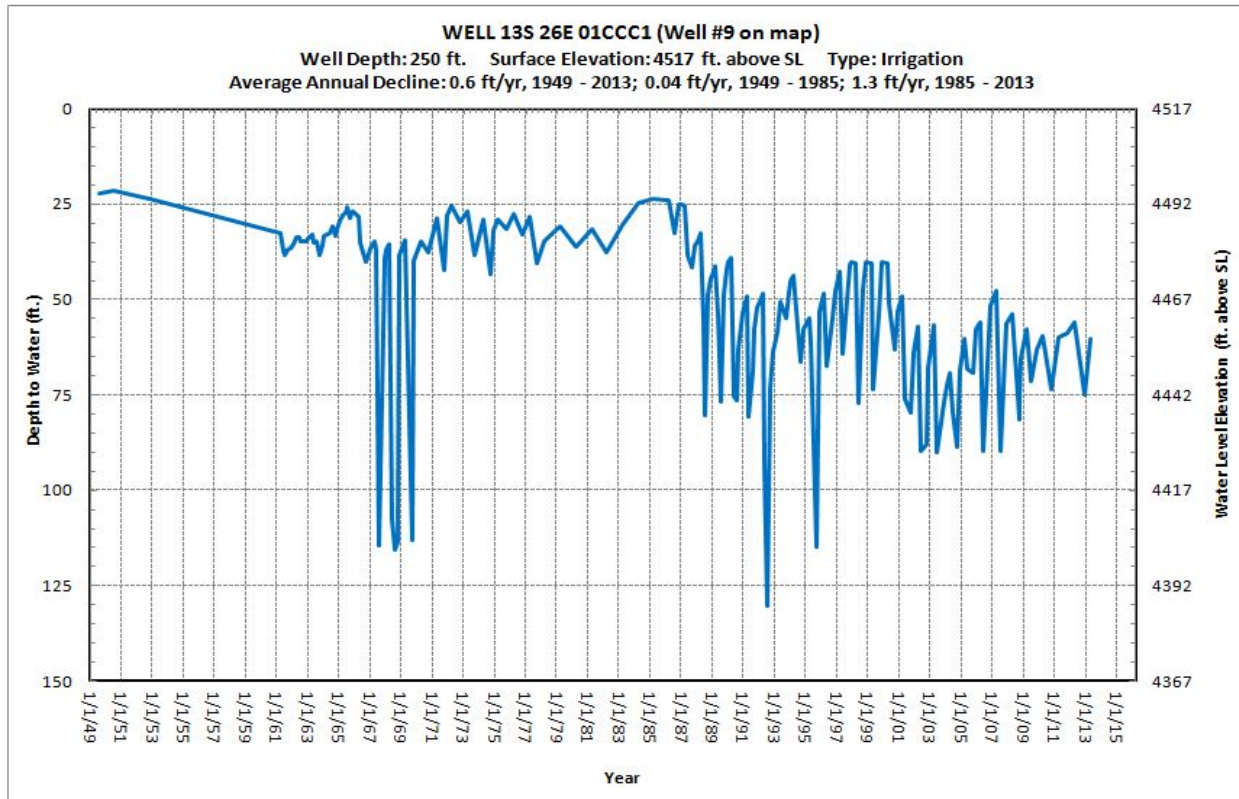


Figure 11. Ground water level hydrograph for 13S 26E 01CCC1, 1949 – 2013.

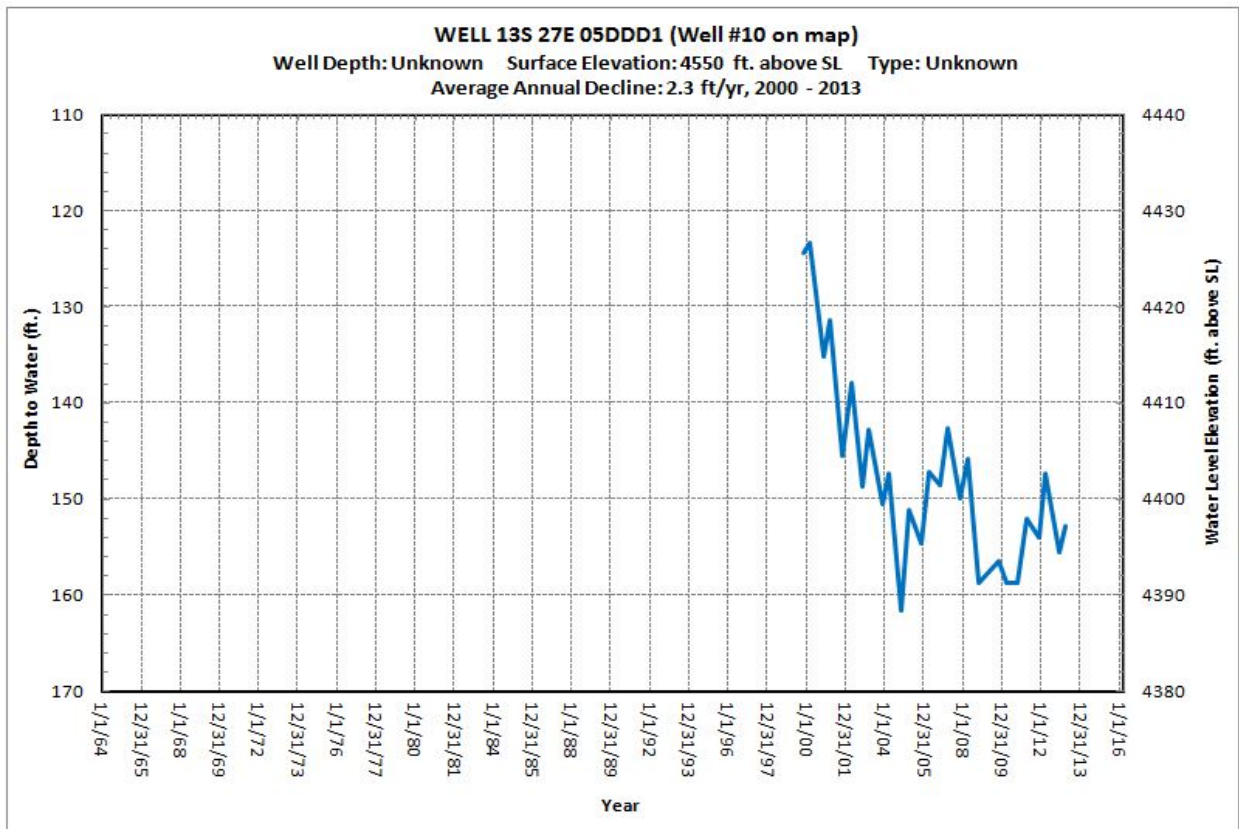


Figure 12. Ground water level hydrograph for 13S 27E 05DDD1, 1999 – 2013.

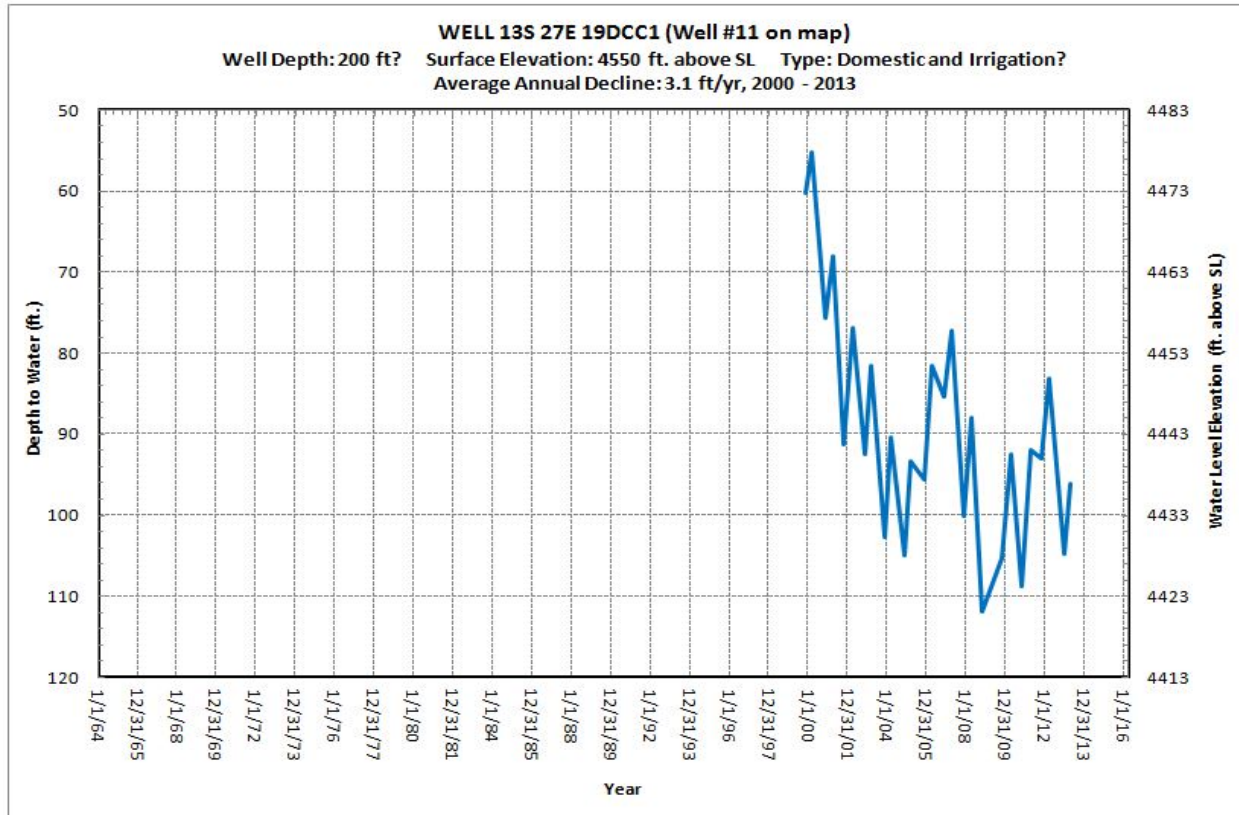


Figure 13. Ground water level hydrograph for 13S 27E 19DCC1, 1999 – 2013.

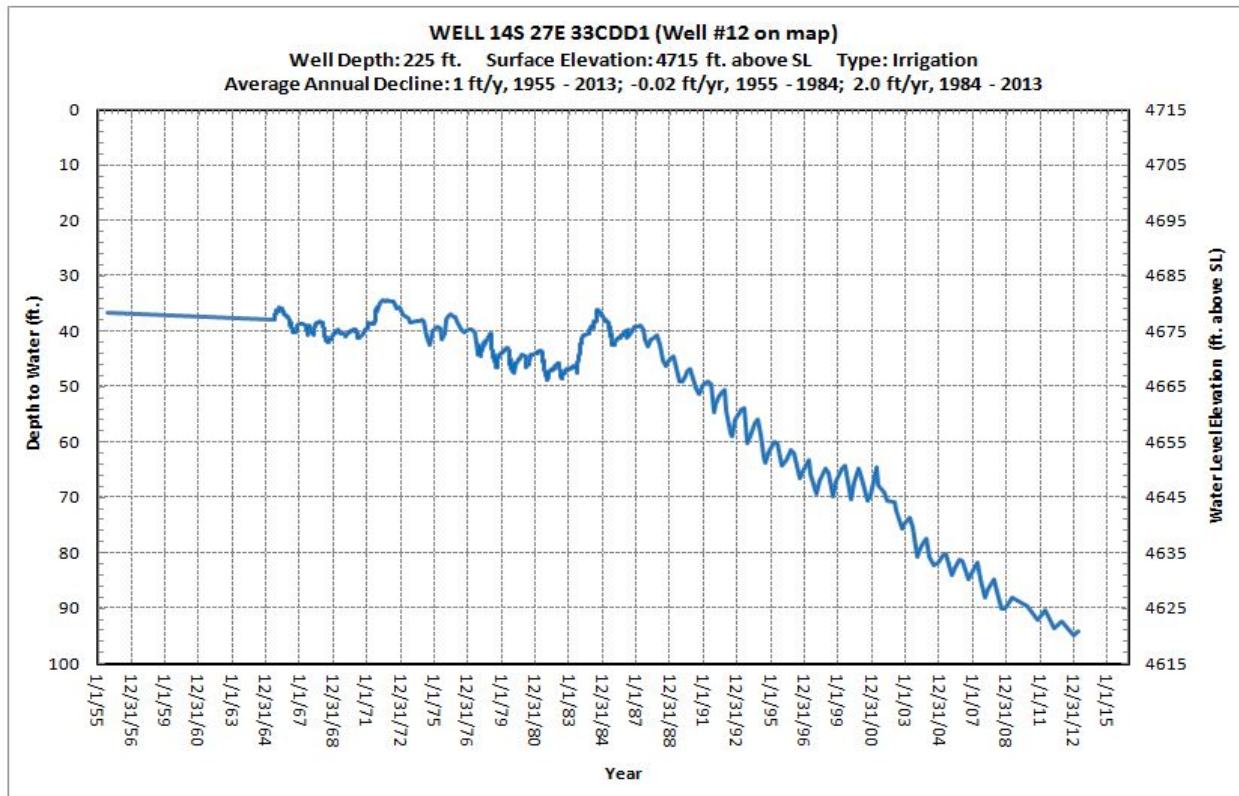


Figure 14. Ground water level hydrograph for 14S 27E 33CDD1, 1955 – 2013.

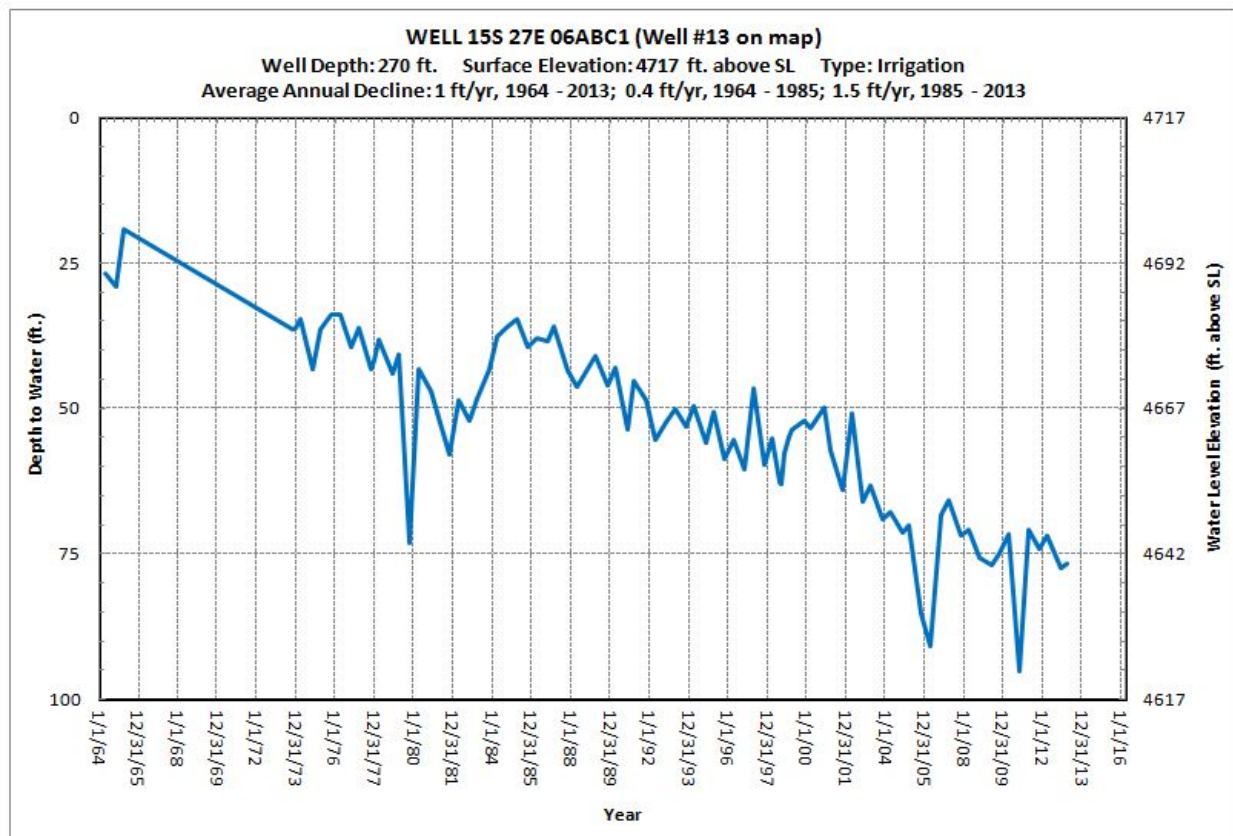


Figure 15. Ground water level hydrograph for 15S 27E 06ABC1, 1964 – 2013.

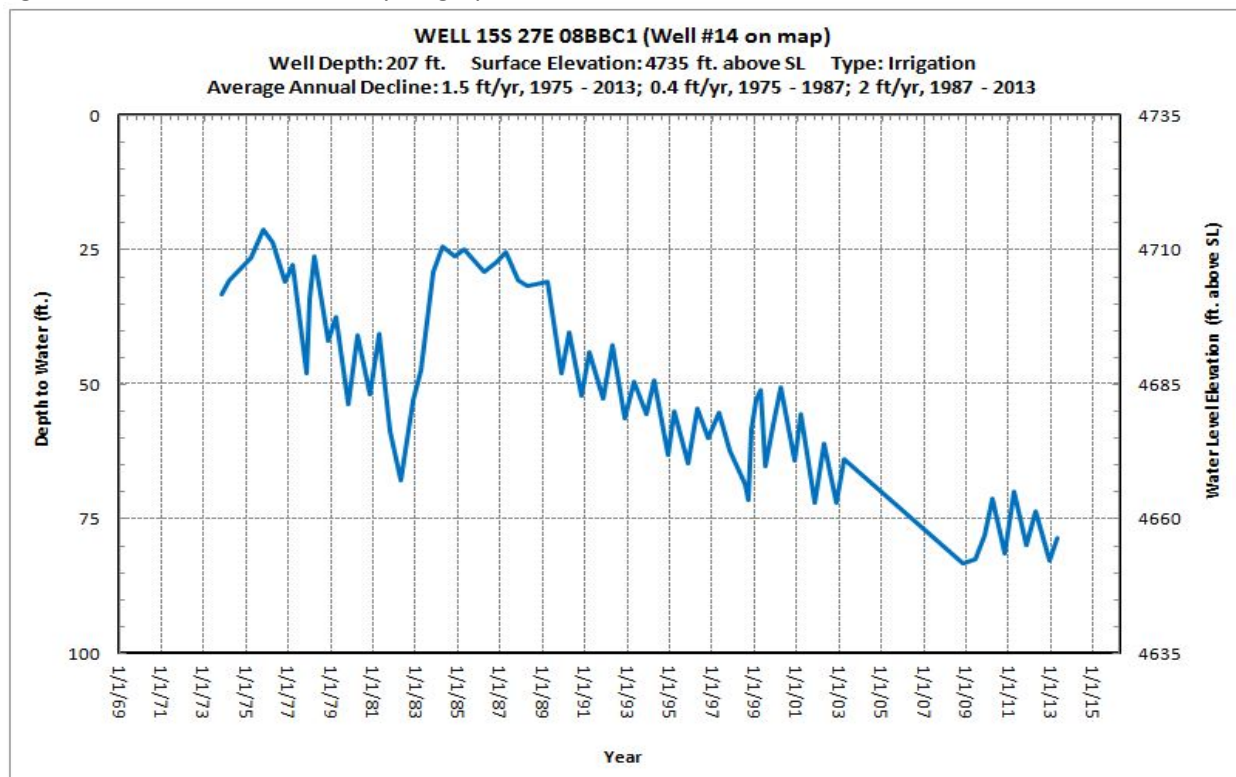


Figure 16. Ground water level hydrograph for 15S 27E 08BBC1, 1973 – 2013.

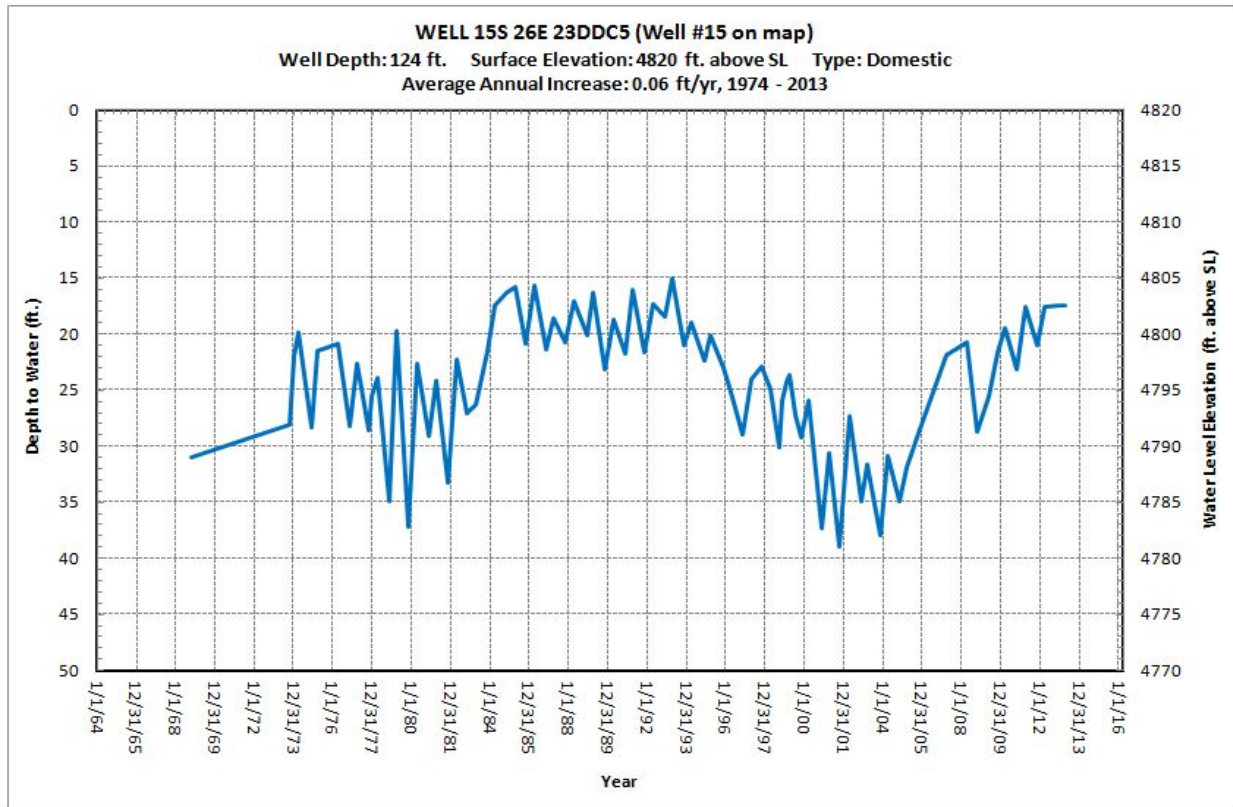


Figure 17. Ground water level hydrograph for 15S 26E 23DDC5, 1968 – 2013.

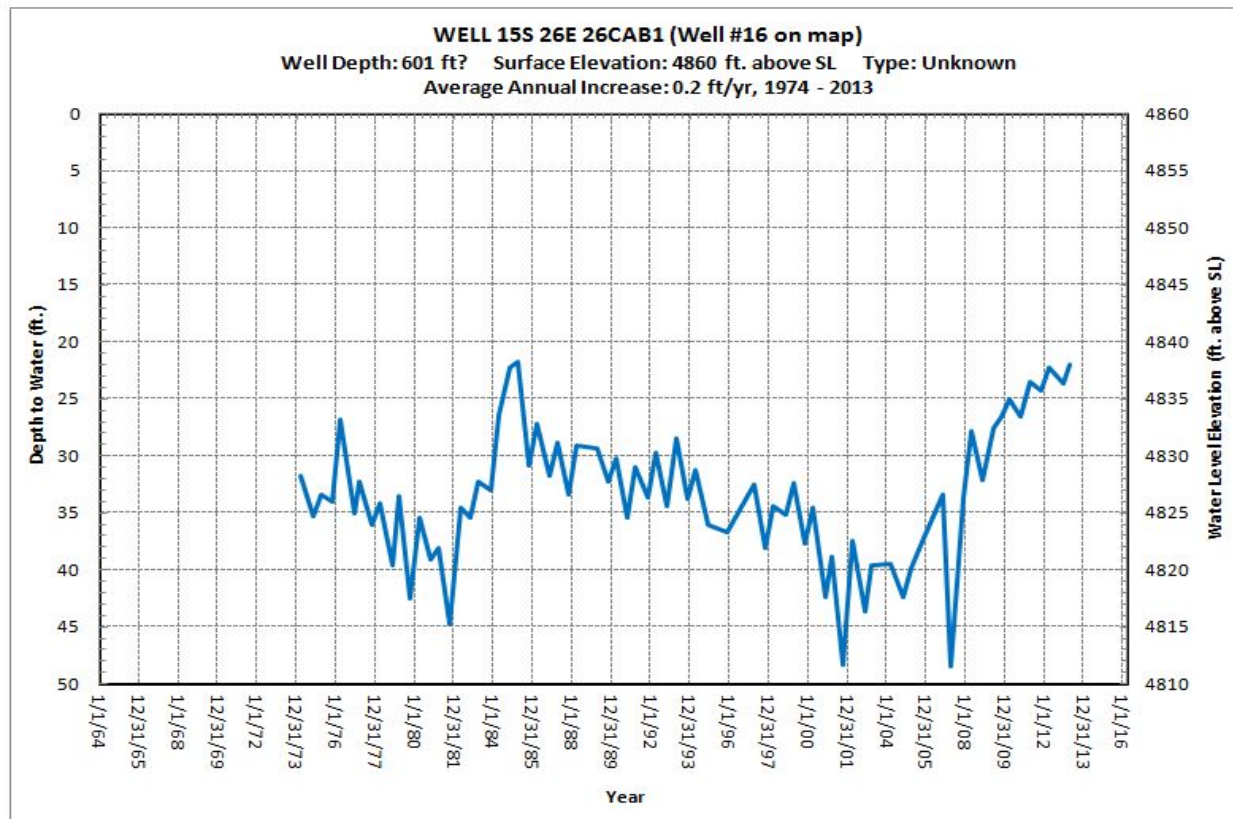


Figure 18. Ground water level hydrograph for 15S 26E 26CAB1, 1974 – 2013.

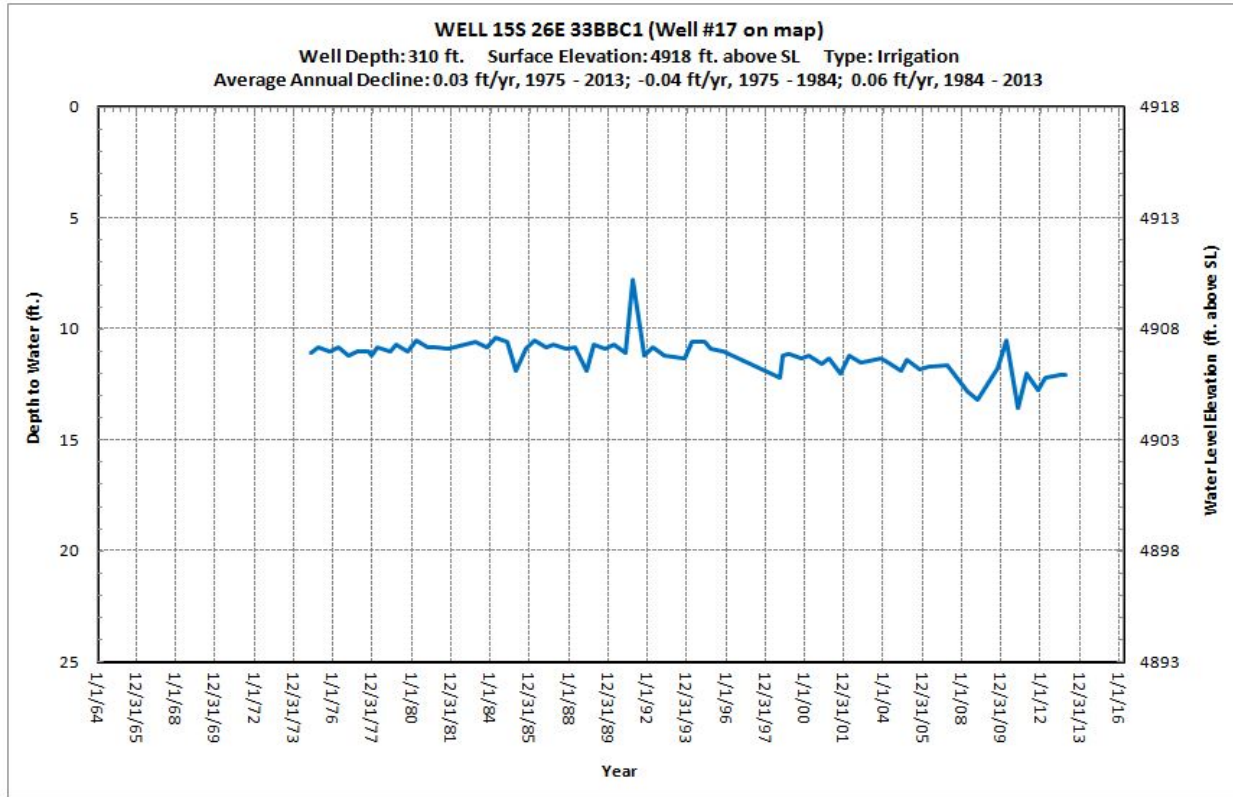


Figure 19. Ground water level hydrograph for 15S 26E 33BBC1, 1974 – 2013.

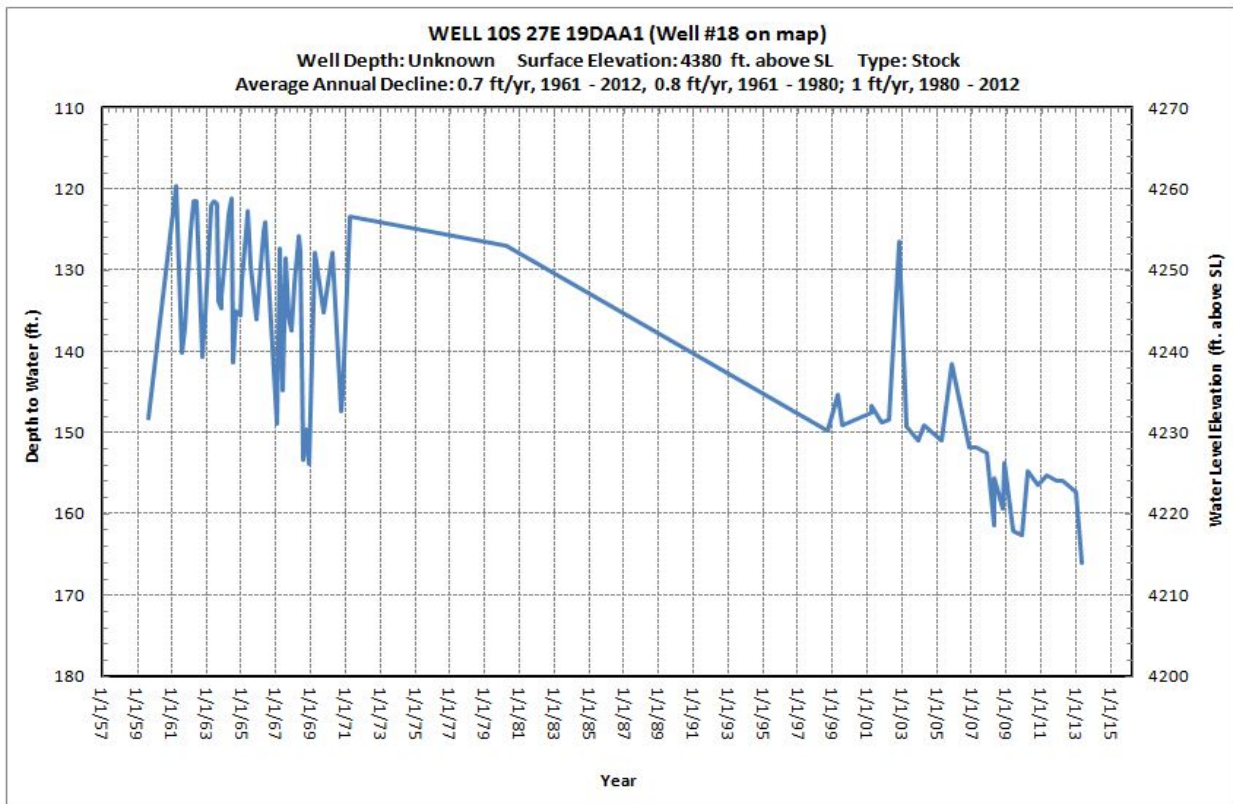


Figure 20. Ground water level hydrograph for 10S 27E 19DAA1, 1959 – 2013.

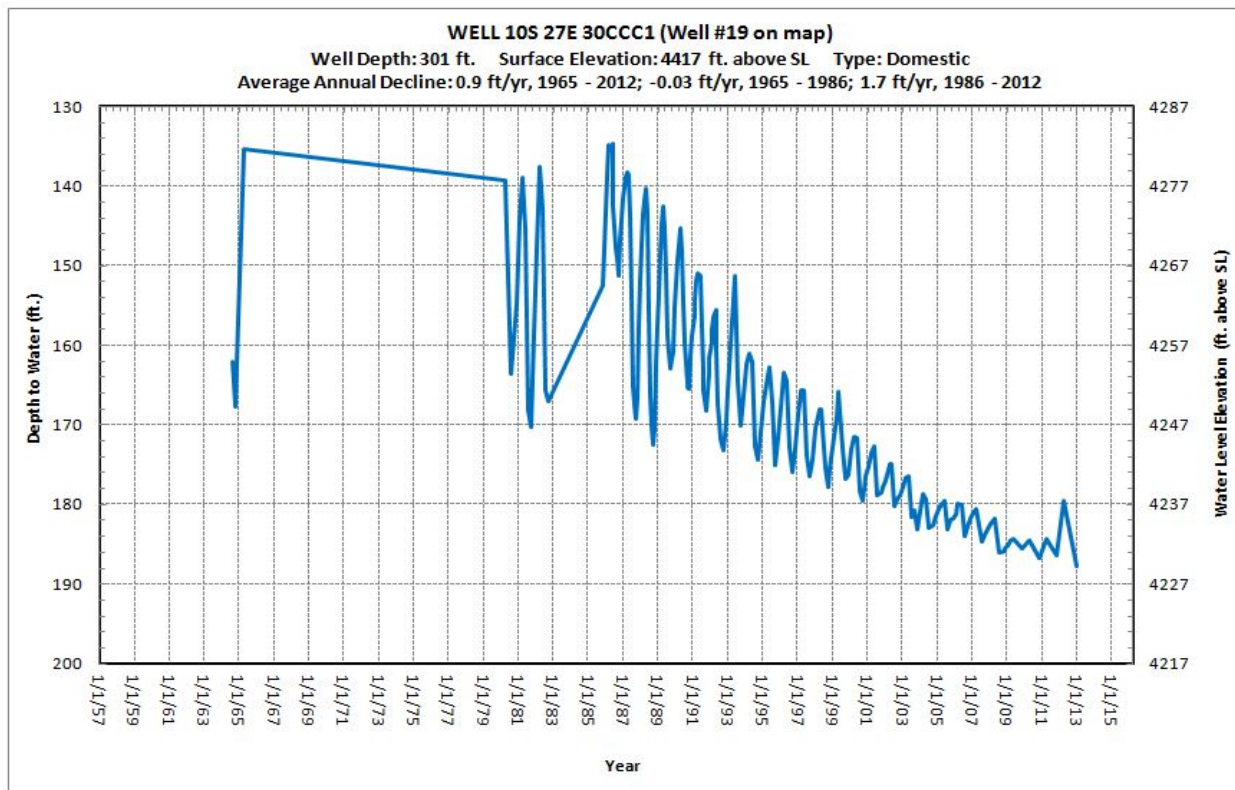


Figure 21. Ground water level hydrograph for 10S 27E 30CCC1, 1964 – 2012.

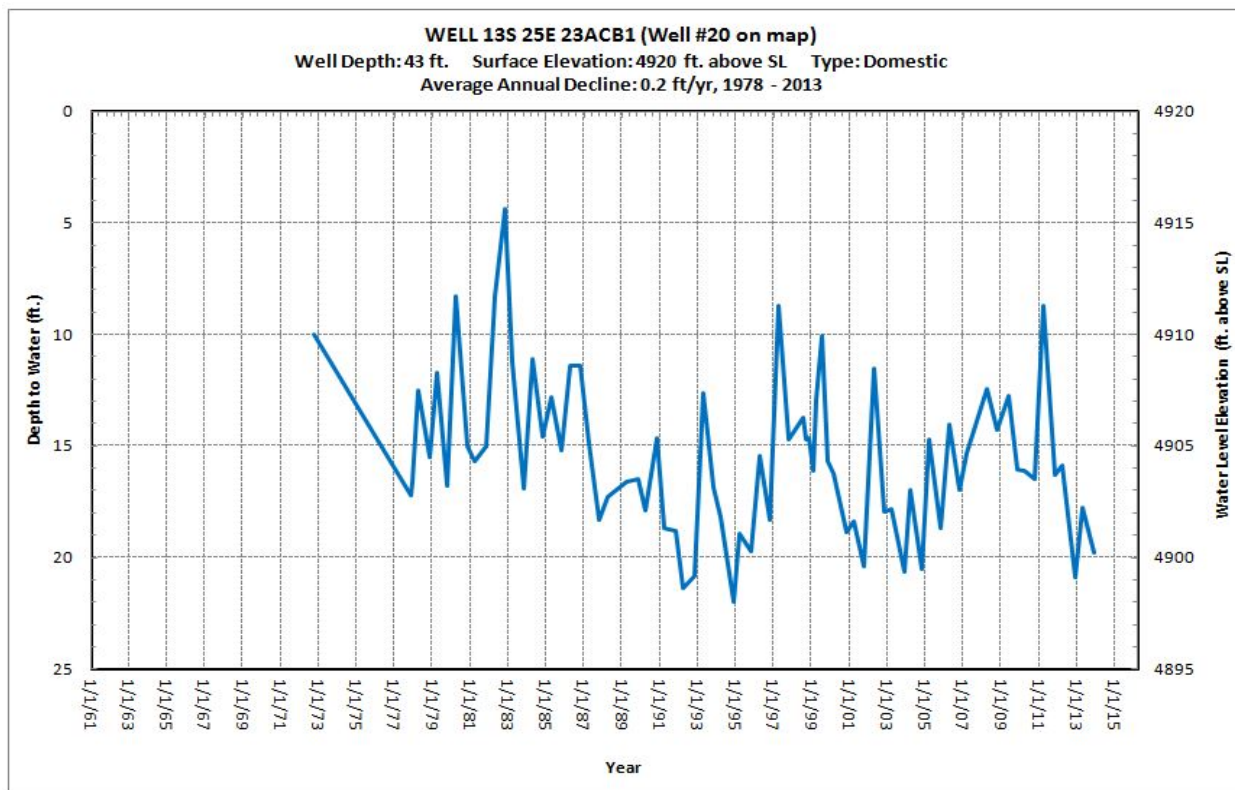


Figure 22. Ground water level hydrograph for 13S 25E 23ACB1, 1972 – 2013.