

GROUNDWATER LEVEL TRENDS

Groundwater levels fluctuate seasonally in response to extraction, recharge from precipitation, stream percolation, infiltration of applied irrigation water and subsurface inflow and outflow. Levels are usually highest in the spring and lowest during the irrigation season in the summer months.

Longer term fluctuations occur when there is a long-term imbalance between aquifer recharge and discharge. If long-term recharge exceeds the long-term discharge then groundwater levels will increase. On the other hand, if long term discharge exceeds long term recharge groundwater levels will decline. These long-term changes are linked to increased or decreased groundwater extraction, or variations in recharge associated with wet or dry climatic conditions.

The seasonal and long-term changes in groundwater levels are detected from water level measurements in wells. This data is typically depicted on hydrographs, which are graphical plots of the well measurement time-history that illustrates both the seasonal and long-term changes.

Precipitation, applied irrigation water, local creeks and rivers, and Thermalito Afterbay all recharge groundwater in Butte County. Groundwater generally flows from northeast to southwest. Prior to 1997, data points for each of the hydrographs generally consisted of two annual measurements. Since 1997, four measurements are recorded each year and show greater seasonal fluctuation.

Listed below are groundwater level assessments for key wells in each sub-area. These wells were chosen as being representative of changes in groundwater level within each sub-area. It should be noted that the sub-areas are consistent with the sub-inventory units used in Butte County's Water Inventory Analysis.

When reviewing these hydrographs, note that the solid circles (dots) indicate a static groundwater level measurement while a small open circle indicates a measurement that has been qualified as questionable. The Department of Water Resources assigns a numerical code to all questionable groundwater level measurements in an effort to help increase the accuracy of data analysis. Questionable measurement codes are used to differentiate between static versus pumping groundwater level measurements, and/or identify if nearby wells are in operation during the measurement. A questionable measurement code key is show on each hydrograph.

The accuracy of the groundwater levels shown on these graphs is 0.1 feet on the depth scale and within 1 USGS topographic map contour interval on the elevation scale. Typically in Butte Basin the contour interval is 5 feet.

When interpreting short-term changes in groundwater levels, care should be used to compare only those measurements taken during similar times of the year. When using a hydrograph to evaluate long-term groundwater level data, comparison of the spring

measurements is usually recommended. Discontinuities or breaks in a hydrograph represent missing measurements. Following is the list of selected index wells presented in this report:

- North Yuba Sub-Area (Well Number 17N/03E-03D01M)
- Thermalito Sub-Area (Well Number 18N/03E-21G01M)
- Western Canal Sub-Area (Well Number 20N/01E-35C01M)
- Richvale Sub-Area (Well Numbers 19N/01E-28R01M & 19N/01E-35B01M)
- Pentz Sub-Area (Well Number 21N/02E-26F01M)
- Esquon Sub-Area (Well Number 20N/02E-09L01M)
- Butte Sink Sub-Area (Well Number 17N/01E-17F01M)
- Butte Sub-Area (Well Number 17N/03E-16N01M)
- Biggs-West Gridley Sub-Area (Well Number 18N/02E-16F01M)
- M & T Sub-Area (Well Number 22N/01E-29R01M)
- Durham-Dayton Sub-Area (Well Number 20N/02E-06Q01M)
- Vina Sub-Area (Well Number 23N/01W-09E01M)
- Cherokee Sub-Area (Well Numbers 20N/02E-13E02M & 20N/02E-24C02M)
- Llano Seco Sub-Area (Well Numbers 20N/01W-26H02 & 20N/01E-18L02M)
- California Water Service (Chico) Sub-Area (Well Numbers 1-04 and 33-01)