



The hydrograph shows water-level fluctuations from May 1975 to November 1976 in two wells located in different parts of the valley. Comparison of the two curves indicates that the water table is closest to land surface in different parts of the valley at different times of the year. After the flood of June 1975 water levels declined continuously in both wells until April 1976. Following this, the water level in well 2 rose to a high in June. Well 2 is located close to Tenmile Creek and the water level generally reflects streamflow in the creek, which normally peaks in late spring or early summer. The water level in well 1 rose to a high in late September—probably the result of irrigation in that part of the valley.

The amount of fluctuation of the water table at any one place in the valley may vary annually depending on many factors, such as whether the year is wet or dry, how much land is irrigated, and how much ground water is withdrawn. However, the highs and lows of the water table at any location will probably occur at approximately the same season each year unless water use in the area is changed. The lack of a peak in well 1 for September 1975 was caused by an abnormally high water level resulting from flooding of June 1975.

- EXPLANATION
- Well
 - 2 Observation well. Number corresponds to that on hydrograph
 - 6 — Approximate line of equal depth to water table, September 1976. Interval is 6 feet. Datum is land surface. Depth to water table was mapped using water-level measurements from existing shallow test holes and selected domestic wells and from field reconnaissance of topography
 - [Hatched Area] Area where most wells are completed in bedrock. Water levels measured in these wells generally differ from water levels measured in shallower wells completed in the valley-fill deposits of the Helena valley. Because of the lack of shallow wells and because of the wide range in hydrologic conditions within the bedrock area, definition of the water table generally is not feasible
 - [Shaded Area] Approximate area inundated by June 1975 flood. (The 1975 flood was an approximate 100-year flood.) Flooding along Prickly Pear and Tenmile Creeks and northward to the middle of secs. 31 and 32, T. 11 N., R. 3 W., was mapped from aerial photos. Flooding along Silver Creek was mapped by field reconnaissance. Some isolated areas of flooding are not shown
 - — — Main irrigation canal
 - + — Open drainage ditch

REFERENCES

Lorenz, H. W., and Swenson, F. A., 1951, Geology and ground-water resources of the Helena Valley, Mont., with a section on the chemical quality of the water, by H. A. Swenson: U.S. Geol. Survey Circ. 83, 68 p.

Schmidt, R. G., and others, 1977, Maps of Helena and East Helena quadrangles, Montana, showing areal distribution of surficial deposits and bedrock and location of geological faults: U.S. Geol. Survey Open-File Map 77-129, 2 sheets.



MAP SHOWING DEPTH TO WATER TABLE, SEPTEMBER 1976, AND AREA INUNDATED BY THE JUNE 1975 FLOOD, HELENA VALLEY, LEWIS AND CLARK COUNTY, MONTANA

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