Louisiana Ground-Water Map No. 3: Potentiometric Surface, 1989, and Water-Level Changes, 1980-89, of the Sparta Aquifer in North Central Louisiana

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A regional water-level change map of the Sparta aquifer shows several regional water-level changes from May 1980 to May 1989 (fig. 11). To construct the map, differences of water levels in wells measured in 1980 and 1989 were plotted, and lines of equal water-level change were drawn. A water-level change interval of 2 ft was used for most of the map. In areas where the water-level change was large, an interval of 10 ft was used.

Water levels have declined throughout most of the Sparta aquifer. The largest decrease occurred in Ouachita, Union, and Lincoln Parishes. The average decrease was about 10 ft over the 10-yr period.

However, in St. Union Parish water levels in wells near the parishes have risen as a result of recent pumping (fig. 12). The maximum recovery was about 30 ft in 1981. In parts of Caddo and Webster Parishes, the water level was recovered by 1980. These observations suggest that the water level in these areas may have been affected by reduced local pumping. Precipitation has a minimal effect on water levels in the Sparta aquifer, except within the recharge area.

Water-level changes in some wells such as 81-121, 81-195, 81-28, 81-77, 81-83, 81-16, and 81-15 were due to withdrawal from nearby wells and were not used to prepare the change map.

The general trend of water levels in wells in the Sparta aquifer is indicated by three hydrographs of wells in Monroe (Well No. 1, Well No. 9, and Well No. 10) and two hydrographs of wells in Ouachita (Well No. 77, Well No. 78, and Well No. 79) and Union Parishes (Well No. 12, Well No. 13, and Well No. 14). The hydrograph of Well No. 1 in Monroe shows that the water level in this well declined 100 ft from 1962 to 1981. For the period 1962-81 the water level in this well remained fairly stable, and changes in trend were caused by a reduction in ground-water production after a period of development. The water level was reduced approximately 40 ft after another ground-water use ceased operation.

The hydrograph of Well No. 77 in West Monroe shows that from 1946 to 1989 the water level at this site declined at an average rate of approximately 1.5 ft/yr (fig. 4). Since December 1988, the water level has remained about 20 ft below the level of the reduction of about 40 ft because of the reduction of a nearby production well.

The hydrograph of Well No. 148 shows an average water-level decline of 1.5 ft/yr during 1970-89 (fig. 5). The well is about 15 mi west-northwest of Sulphur.