

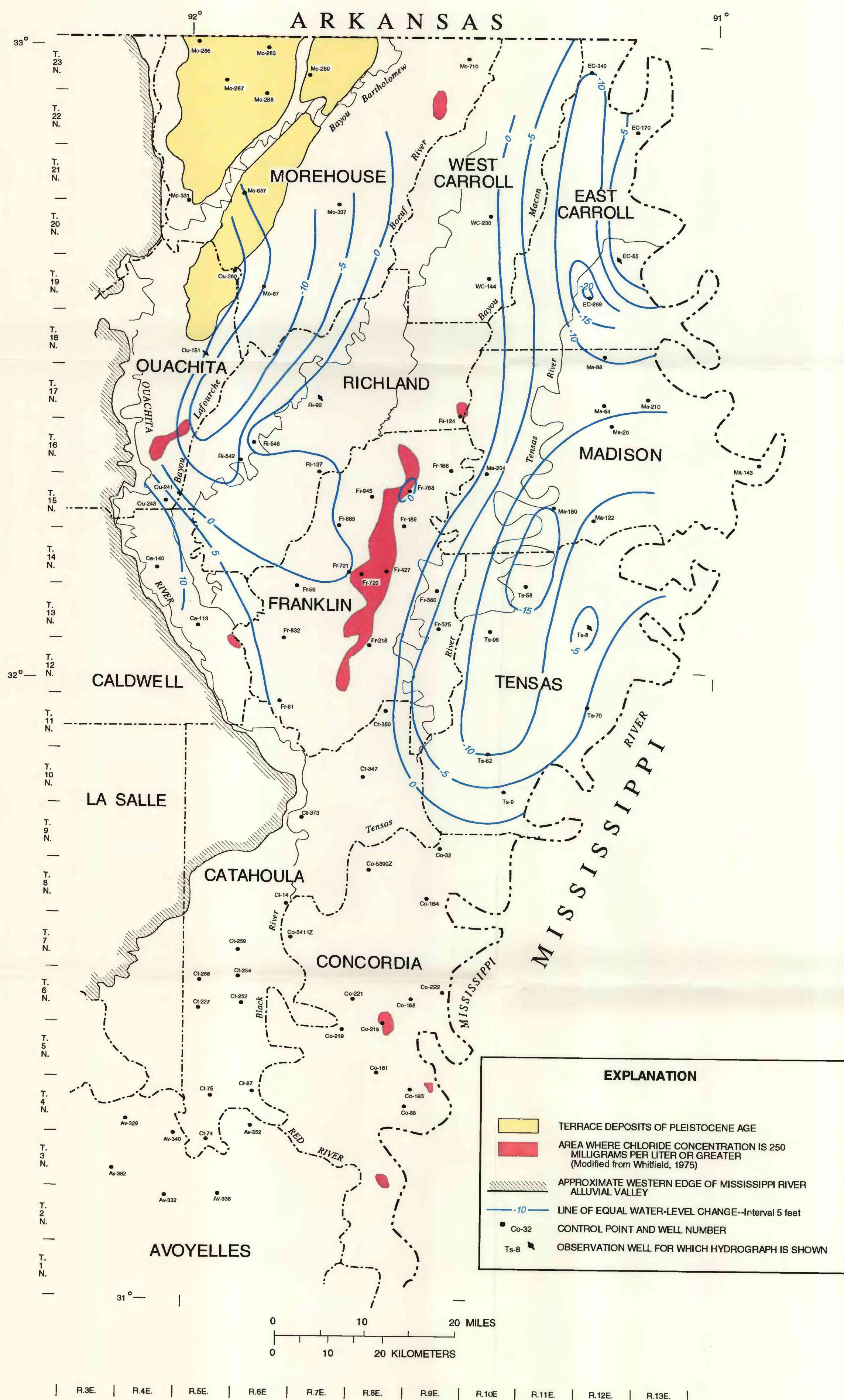


Figure 2. Water-level changes, 1974-90, of the Mississippi River alluvial aquifer in northeastern Louisiana.

LOUISIANA GROUND-WATER MAP NO. 6: WATER-LEVEL CHANGES, 1974-90, OF THE MISSISSIPPI RIVER ALLUVIAL AQUIFER IN NORTHEASTERN LOUISIANA

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WATER-LEVEL CHANGES

The general trend of water-level changes in the Mississippi River alluvial aquifer is shown in figures 2-6. Water-level changes during 1974-90 are mapped in figure 2. Lines showing equal water-level changes were drawn based on the differences of water levels interpolated from a potentiometric-surface map of the alluvial aquifer drawn in September 1974 (Whitfield, 1975, p. 2) and water levels measured in September 1990. Water levels in the Mississippi River alluvial aquifer are influenced by rainfall and river stages; therefore, this comparison of potentiometric surfaces of the Mississippi River alluvial aquifer represents changes between two periods in time and not a long-term trend for the aquifer.

The water-level change map (fig. 2) shows the influence of seasonal variations on the aquifer. The period in September 1974 was preceded by above average rainfall in 1973-74 and higher than normal river stages (Whitfield, 1975, p. 8), whereas 1990 was a period of average rainfall and river stages. Little or no change occurred in the middle of the Mississippi River valley from north to south. Along the eastern part of the valley, closer to the Mississippi River, water levels were as much as 20 ft lower in 1990 than in 1974; along the northwestern part of the valley, the water levels were as much as 10 ft lower. The lower water levels occurred because the stages in the Mississippi and Ouachita Rivers were lower in 1990 than in 1974.

No substantial trend in water levels is indicated by hydrographs of wells screened in the Mississippi River alluvial aquifer (figs. 3-6). Water-level fluctuations in the aquifer are seasonal. These fluctuations are greatest near major streams and smaller near drainage divides (Whitfield, 1975, p. 6-8). Seasonal water-level fluctuations range from 5 to 20 ft/yr at well EC-55, located 1.5 mi west of the Mississippi River (fig. 3). Similarly, seasonal fluctuations ranged from 4 to 12 ft/yr at well Ou-151 near the western edge of the valley (fig. 4). Seasonal water-level fluctuations are less than 3 ft/yr at well RI-92, located about midway between the Mississippi and Ouachita Rivers (fig. 5), and range from 3 to 7 ft/yr at well Ts-8, located 9.5 mi west of the Mississippi River (fig. 6).



Index map

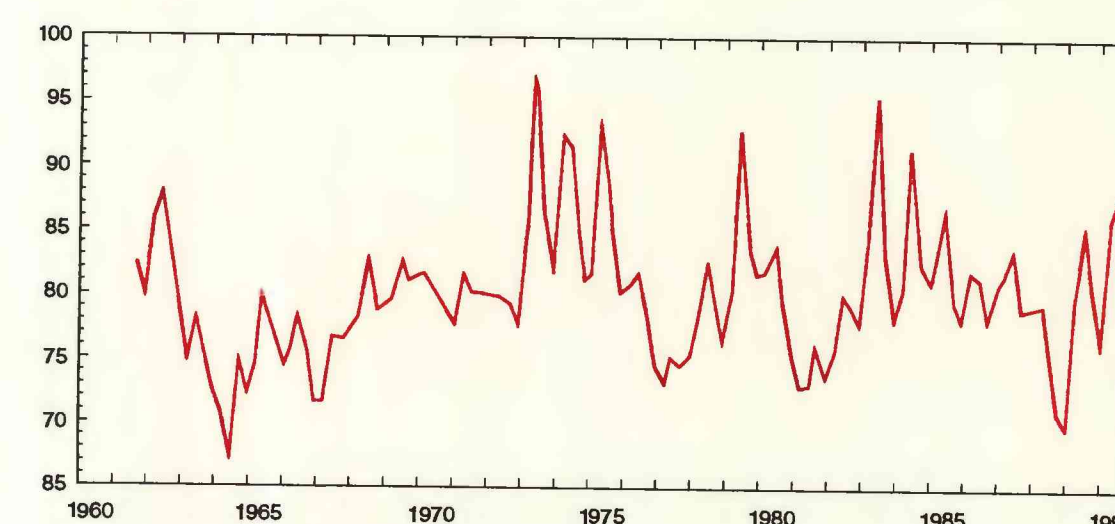


Figure 3. Water level in well EC-55, East Carroll Parish, Louisiana.

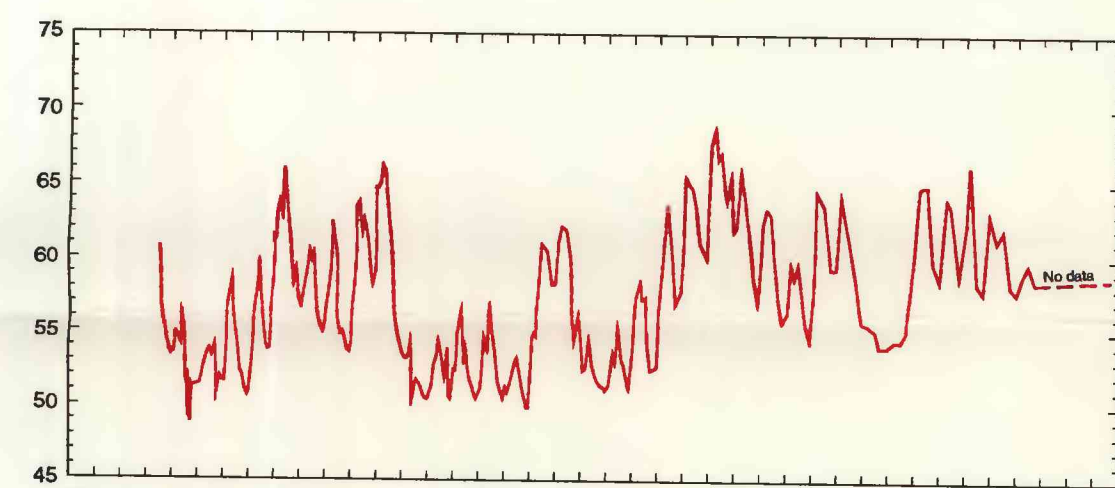


Figure 4. Water level in well Ou-151, Ouachita Parish, Louisiana.

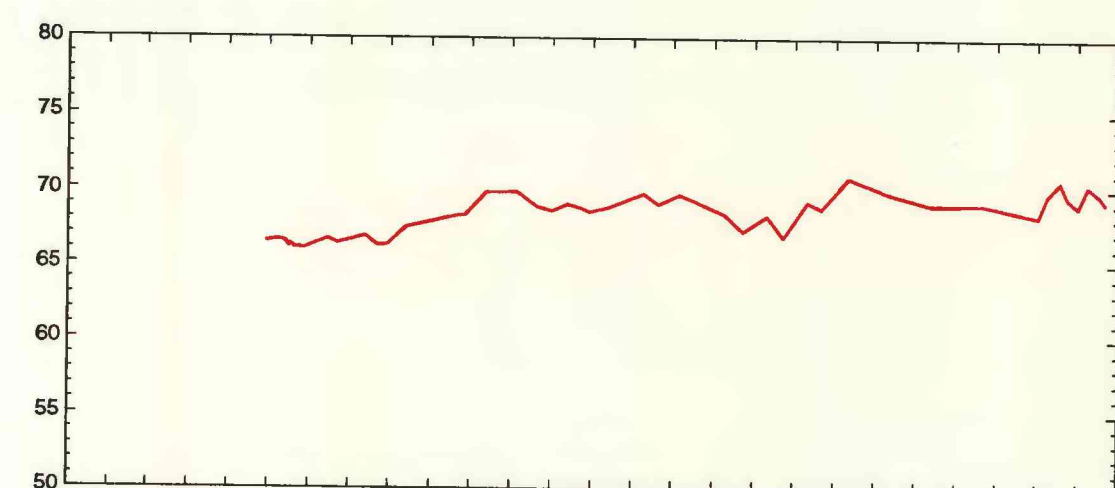


Figure 5. Water level in well RI-92, Richland Parish, Louisiana.

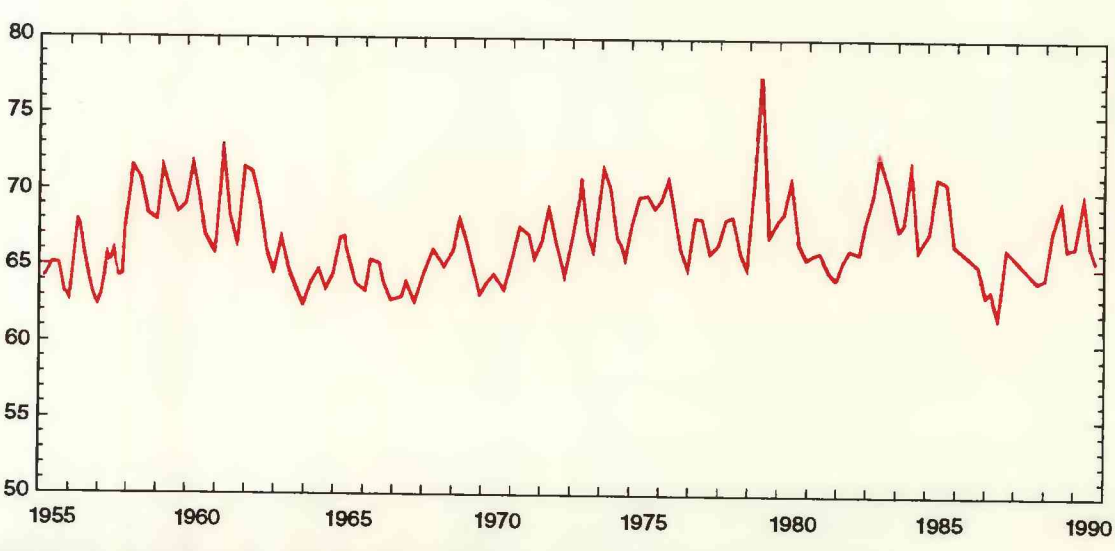


Figure 6. Water level in well Ts-8, Tensas Parish, Louisiana.

SELECTED REFERENCES

- Covay, K.J., 1985, Ground-water resources of the Rayville-Delhi area, northeastern Louisiana: Louisiana Department of Transportation and Development, Office of Public Works Water Resources Technical Report no. 37, 22 p.
- Fendick, R.B., Jr., 1989, Louisiana ground-water map no. 2: Potentiometric surface, 1987, of the Gonzales-New Orleans aquifer in southeastern Louisiana: U.S. Geological Survey Water-Resources Investigations Report 89-4016, 1 sheet.
- Fendick, R.B., Jr., and Nyman, D.J., 1987, Louisiana ground-water map no. 1: Potentiometric surface, 1985, and water-level changes, 1983-85, of the Chicot aquifer in southwestern Louisiana: U.S. Geological Survey Water-Resources Investigations Report 86-4348, 2 sheets.
- Loveland, J.K., 1991, Water use in Louisiana, 1990: Louisiana Department of Transportation and Development Water Resources Special Report no. 6, 131 p.
- Poole, J., 1961, Ground-water resources of East Carroll and West Carroll Parishes, Louisiana: Louisiana Department of Public Works, 174 p.
- Rogers, J.E., Calandro, A.J., and Gaydos, M.W., 1972, Water resources of Ouachita Parish, Louisiana: Department of Conservation, Louisiana Geological Survey, Louisiana Department of Public Works Water Resources Bulletin no. 14, 118 p.
- Sanford, T.H., Jr., 1973, Ground-water resources of Morehouse Parish, Louisiana: Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works Water Resources Bulletin no. 19, 90 p.
- Smoot, C.W., and Seanor, R.C., 1991, Louisiana ground-water map no. 3: Potentiometric surface, 1989, and water-level changes, 1980-89, of the Sparta aquifer in north-central Louisiana: U.S. Geological Survey Water-Resources Investigations Report 90-4183, 2 sheets.
- 1992, Louisiana ground-water map no. 4: Potentiometric surface, 1989, and water-level changes, 1984-89, of the Jasper aquifer system in west-central Louisiana: U.S. Geological Survey Water-Resources Investigations Report 91-4137, 2 sheets.
- U.S. Environmental Protection Agency, 1977, National secondary drinking water regulations: Federal Register, March 31, 1977, v. 42, no. 62, p. 17143-17147.
- 1992, Drinking water regulations and health advisories: Washington, D.C., U.S. Environmental protection Agency, Office of Water, 11 p.
- Walters, D.J., 1992, Louisiana ground-water map no. 5: Potentiometric surface, 1990, and water-level changes, 1974-90, of the Evangeline equivalent/southeast Louisiana aquifer system: U.S. Geological Survey Water-Resources Investigations Report 92-4112, 2 sheets.
- Whitfield, M.S., Jr., 1973, Availability of ground water in the Winnsboro area, Louisiana: Louisiana Department of Public Works Water Resources Special Report no. 1, 9 p.
- 1975, Geohydrology and water quality of the Mississippi River alluvial aquifer, north-eastern Louisiana: Louisiana Department of Public Works Water Resources Technical Report no. 10, 29 p.