

INTRODUCTION

The continued availability of ground water for irrigation and other uses is important to the predominantly agricultural economy of southwestern Kansas. The Ogallala aquifer in the Ogallala Formation of late Tertiary age is the principal source of water in the region. As ground-water reserves stored in the Ogallala decline, additional sources of water will need to be developed.

Sandstone aquifers occur at various depths beneath the Ogallala aquifer in the region. A study of Upper Permian, Upper Jurassic, and Lower Cretaceous rocks was made to investigate the occurrence, extent, and potential of aquifers in these rock units in southwestern Kansas. The study was done during 1976-79 by the U.S. Geological Survey in cooperation with the Kansas Geological Survey and the Kansas Department of Health and Environment.

The maps in this report present geologic data collected during a reconnaissance investigation of the geology and hydrology of sandstone aquifers in a 17,400-square-mile area in 26 counties of southwestern Kansas. The maps are intended to supplement both a data report (Kume and Spinazola, 1982) and an interpretive report (Kume and Spinazola, 1984), which also present results of the reconnaissance investigation.

In some parts of the study area no distinction could be made among Lower Cretaceous formations from the data used to produce the maps (sheets 4-7). Although Lower Cretaceous rocks occur in these areas, no attempt was made to trace individual formations through them. In these cases, the particular area was enclosed by a line and labeled "undifferentiated."

Inch-pound units of measurement used in this report may be converted to International System of Units (SI) using the factors listed below:

To convert from	To	Multiply by
inch-pound unit	SI unit	
foot	meter	0.3048
square mile	square kilometer	2.590

Upper Permian rocks occur throughout the study area. They crop out in the southeastern corner of the study area in Meade County. The Upper Permian rock surface is deepest in Wallace County where it is more than 2,100 feet below land surface.

SELECTED REFERENCES

Gutentag, E. D., Lobmeyer, D. H., and Slagle, S. E., 1981, Geohydrology of southwestern Kansas: Kansas Geological Survey Irrigation Series 7, 73 p.

Keene, K. M., and Bayne, C. K., 1977, Ground water from Lower Cretaceous rocks in Kansas: Kansas Geological Survey Chemical Quality Series 5, 18 p.

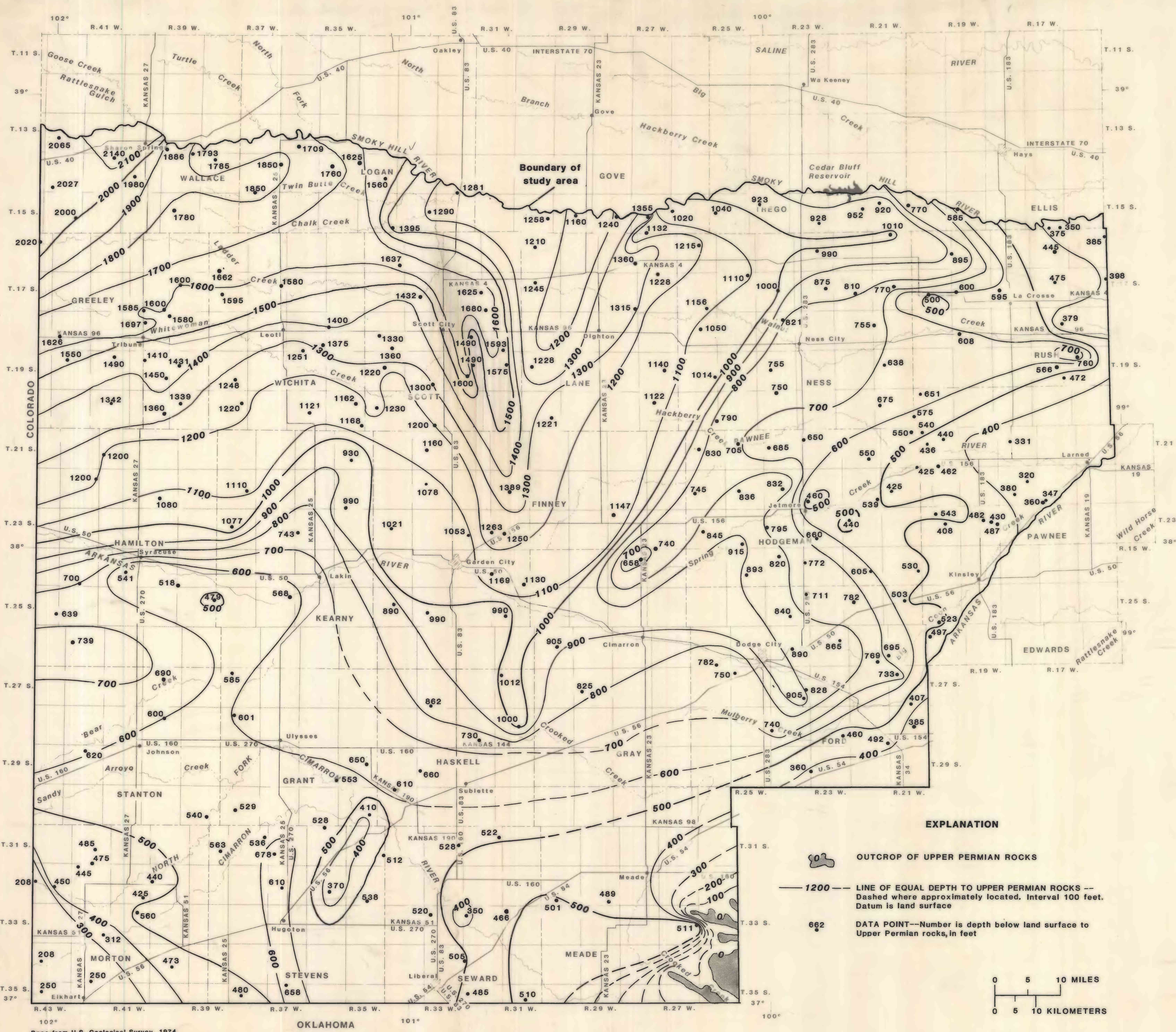
Kume, Jack, and Spinazola, J. M., 1982, Geohydrologic data from sandstone aquifers in southwestern Kansas: U.S. Geological Survey Open-File Report 82-868, 112 p.

1984, Geohydrology of sandstone aquifers in southwestern Kansas: Kansas Geological Survey Irrigation Series (in press).

Lobmeyer, D. H., and Weakly, E. C., 1979, Water in the Dakota Formation, Hodgeman and northern Ford Counties, southwestern Kansas: Kansas Geological Survey Irrigation Series 5, 41 p.

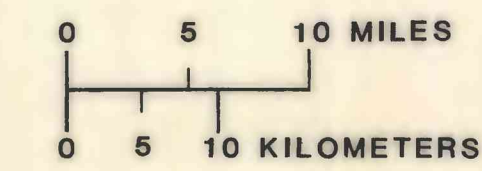
Merriam, D. F., 1963, The geologic history of Kansas: Kansas Geological Survey Bulletin 162, 317 p.

Zeller, D. E., 1968, The stratigraphic succession in Kansas: Kansas Geological Survey Bulletin 189, 81 p.



EXPLANATION

- OUTCROP OF UPPER PERMIAN ROCKS
- 1200 — LINE OF EQUAL DEPTH TO UPPER PERMIAN ROCKS —
Dashed where approximately located. Interval 100 feet. Datum is land surface
- 662 — DATA POINT—Number is depth below land surface to Upper Permian rocks, in feet



Base from U.S. Geological Survey, 1974

MAP SHOWING DEPTH BELOW LAND SURFACE TO UPPER PERMIAN ROCKS, SOUTHWESTERN KANSAS

BY
Jack Kume and Joseph M. Spinazola
1983