



**PREDICTED WATER-LEVEL DECLINES FOR 1965-85**

The electrical-analog model of Avra Valley was programmed to predict water-level declines for 1965-85 using (1) the 1955-65 pumping data, (2) the 1955-65 pumping data and the future amount of pumping planned by the city of Tucson northeast of the Three Points area, and (3) the 1940-65 transmissivity values and storage coefficient. Ground water in Avra Valley has been used mainly for agriculture, and the amount of water pumped annually from 1955 to 1965 was relatively constant and probably will not change appreciably in the future. Beginning in 1969, the city of Tucson has estimated that 8 mgd (million gallons per day) will be pumped from seven wells in the valley for 80 percent of the year. All the wells are in T. 15 S., R. 11 E.

Based on the 1955-65 pumping data, the predicted water-level declines will range from less than 20 feet in the southern part of the valley near Three Points to more than 120 feet in the northwestern part of the valley. In most of the central and northern parts of the valley water-level declines will range from 60 to 100 feet. The city of Tucson pumping will increase water-level declines by as much as 40 feet near the well field in T. 15 S., R. 11 E., but no measurable additional declines will occur north of the east-west line between Tps. 13 and 14 S.

The accuracy of the predicted water-level declines for the 20-year period depends on how nearly the hypothesized pumping conforms to actual pumping in magnitude and distribution and on the validity of the model as water levels continue to decline. Any changes in the assumed transmissivity or storage coefficient of the aquifer as water levels continue to decline also will affect the accuracy of the predicted declines, even if the pumping follows the predicted pattern. In addition, any significant changes in pumping in areas adjacent to the model area—such as the Tucson basin, the Eley area, or Altar Valley—would affect the rates of water-level change in the valley along the boundaries.

**PREDICTED DEPTH TO WATER IN 1985**

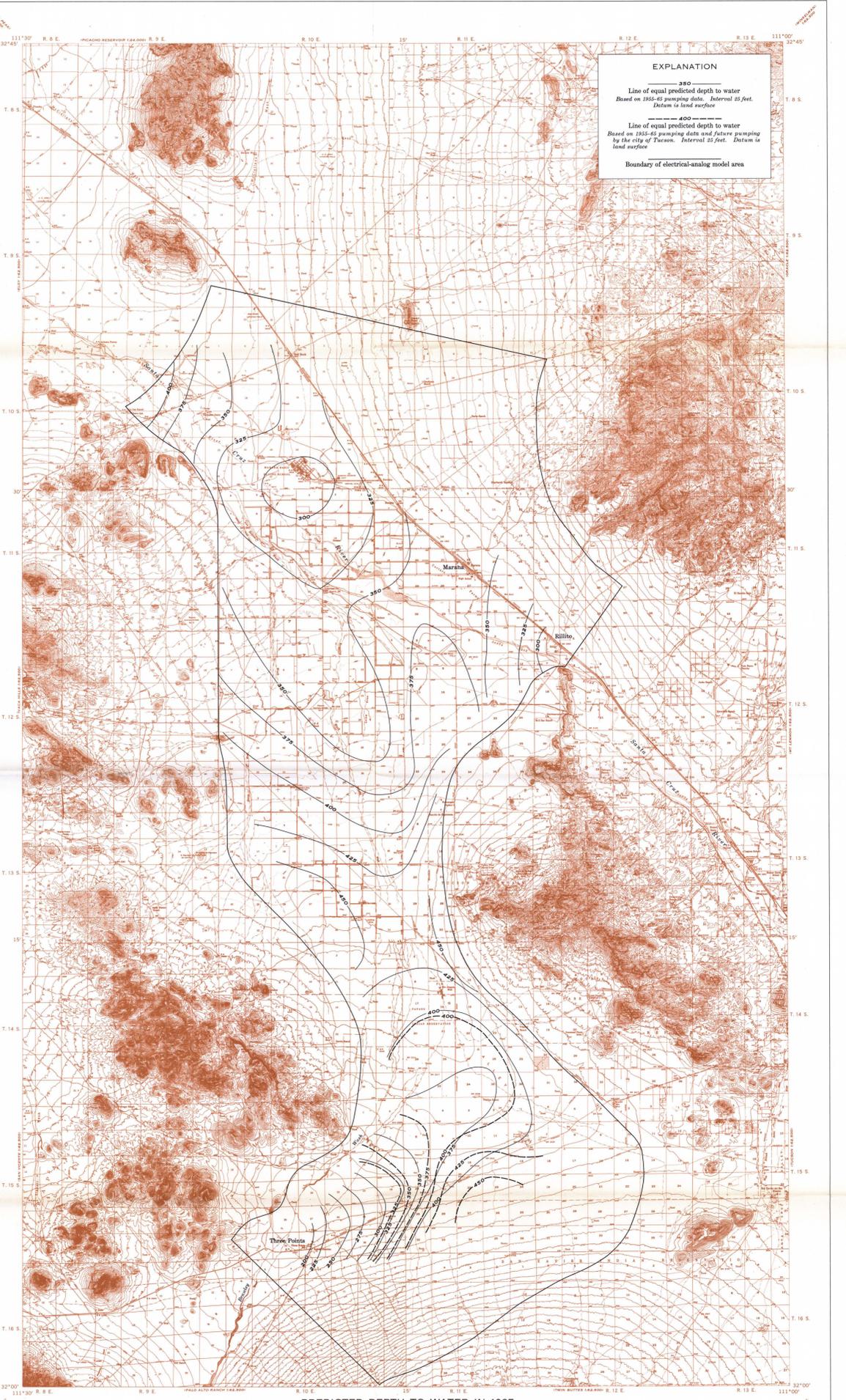
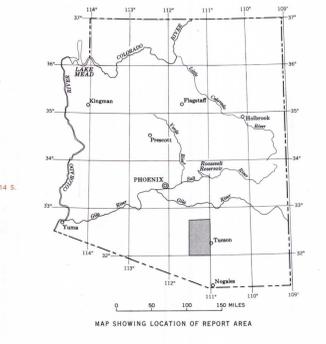
The predicted depth to water in Avra Valley in 1985 will range from 200 to more than 450 feet below the land surface; in most of the valley, however, the depth to water will range from 300 to 450 feet. The greatest depths to water will be in the central and southeastern parts of the valley. Near Three Points and Rillito, the depth to water will be less than 300 feet below the land surface. The depth-to-water data are for static water levels. When a well is pumped, the water level is lowered sufficiently in the well to allow water to flow into the well from the surrounding aquifer material. The pumping lift, therefore, will be greater than the predicted depth to water by the amount of drawdown in the individual well.

**LITERATURE CITED**

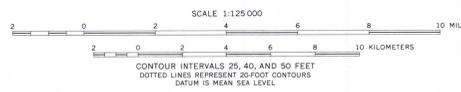
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Base from U.S. Geological Survey, 1:62,500  
Cocoraque Butte, 1941; Cortaro, 1946-57; Red Rock,  
1946; Silver Bell Peak, 1959; Tortoise Mountains,  
1959; and San Xavier Mission, 1940-57



**ANALYSIS OF THE GROUND-WATER SYSTEM BY ELECTRICAL-ANALOG MODEL, AVRA VALLEY, PIMA AND PINAL COUNTIES, ARIZONA**

By  
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1972