EXPLANATION

1400 — LINE OF EQUAL WATER-TABLE ALTITUDE, 1985—Interval 50 feet

• WELL MEASURED IN 1985

ZONE OF SUSPECTED PERCHED GROUND WATER—Indicates shallow water table or cascading water in well

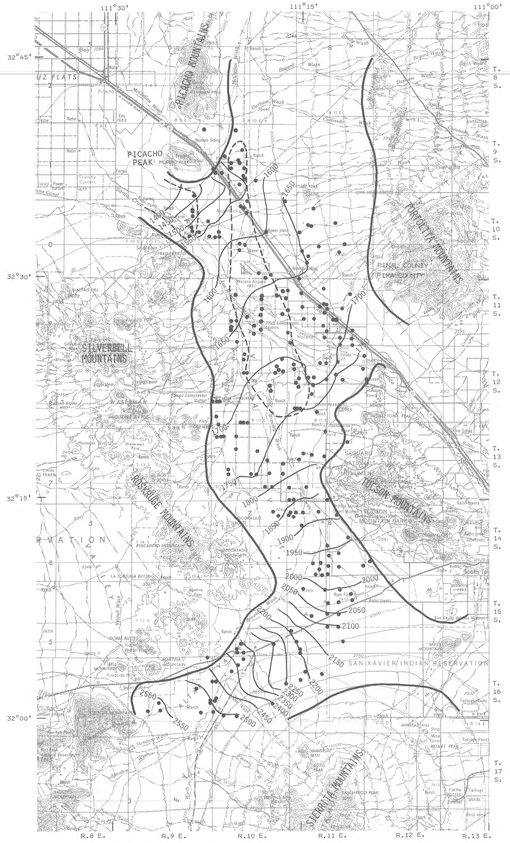
BOUNDARY OF AQUIFER

GROUND-WATER CONDITIONS, 1985

Water-level measurements were made throughout the valley to determine the altitude of the water table and the depth to water below the land surface in 1985 (figs. 6 and 7). In 1985, the altitude of the water table ranged from more than 2,500 ft south of Three Points to less than 1,400 ft south of Picacho Peak. Average gradient is about 20 ft/mi in a north- to northwest-trending direction along the central axis of the basin. On the basis of water-level measurements, the depth to water in 1985 ranged from 146 ft to 726 ft below the land surface. Greatest depth to water measured in 1985 was in the southeastern part of the valley adjacent to the Sierrita Mountains where water levels have remained generally unchanged since 1940.

Depths to water that were measured in 1985 were generally 50 to 100 ft less than those predicted during an earlier geohydrologic study of the valley. Predicted depths to water (fig. 7) are based on an electrical-analog model that was programmed to simulate water-level change from 1965 to 1985 (Moosburner, 1972). Several factors, such as pumpage, recharge, storage, and transmissivity, affect the nature of water-level decline in the aquifer. Moosburner (1972) assumed that pumpage would continue at 1955-65 rates until 1985. In addition, ground-water recharge was considered negligible for model simulations (Moosburner, 1972). Figure 5 indicates, however, that pumpage rates have changed considerably since 1965. Also, subsequent study of the ground-water system strongly suggests that irrigation return flow may percolate to the water table in parts of the valley (Reeter and Cady, 1982; Whallon, 1983; Anderson, 1983). These or other factors may account for the differences between measured and predicted depths to water (fig. 7).

Water-level data collected in 1985 indicate a need for continued study of the ground-water system in Avra Valley. Interpretation of water-level data is becoming increasingly difficult because ground-water pumpage and water-level declines have greatly altered the ground-water system. In some places, the water-level data on which these maps are based may be affected by well construction, irrigation return flow, streamflow recharge, localized confining beds, aquifer compaction, and (or) delayed drainage due to the decline of the regional water table.

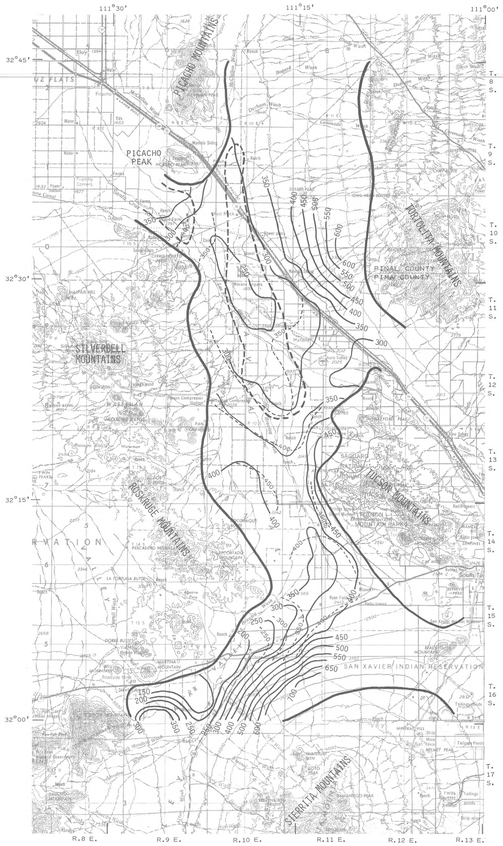


BASE FROM U.S. GEOLOGICAL SURVEY 1:250,000
NOGALES, 1956-69 AND TUCSON, 1956-77

5 0 5 10 MILES
5 0 5 10 KILOMETERS

TOPOGRAPHIC CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Figure 6.--Altitude of the water table in Avra Valley, 1985.



BASE FROM U.S. GEOLOGICAL SURVEY 1:250,000
NOGALES, 1956-69 AND TUCSON, 1956-77

Figure 7.--Measured and predicted depths to water in Avra Valley, 1985.

EXPLANATION

300 — LINE OF EQUAL MEASURED DEPTH TO WATER, 1985—Interval 50 feet

250 - - - - - LINE OF EQUAL PREDICTED DEPTH TO WATER, 1985—Based on model simulation (Moosburner, 1972). Interval 50 feet

ZONE OF SUSPECTED PERCHED GROUND WATER—Indicates shallow water table or cascading water in well

BOUNDARY OF AQUIFER

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GROUND-WATER CONDITIONS IN AVRA VALLEY, PIMA AND PINAL COUNTIES, ARIZONA — 1985

BY

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1987