

# 3. WATER IN THE TUCSON BASIN

Most of the water used in the city of Tucson comes from ground water. Currently, only a third of this water is replaced each year by natural recharge. That means we are depleting our aquifer at unsustainable rates. If this trend continues, the regional aquifer will become increasingly compacted, land surface in certain areas will continue subsiding, and plant and animal life will continue to decline. The City of Tucson Water Department (Tucson Water) is currently reducing the withdrawal of ground water in Tucson by artificially recharging the aquifer with renewable Colorado River water. (CAP, Central Arizona Project). All available water resources (ground water, CAP water, reclaimed water) and further conservation measures will be needed to meet rising demands in the near future. Long-term rapid population growth in the Tucson Basin will result in even more pressure on both the quantity and quality of available water resources and it will be increasingly difficult to balance our water budget!



Figure 1. Aerial View of the Northern Section of the Tucson Basin Reflected in the Sand Tank Model.

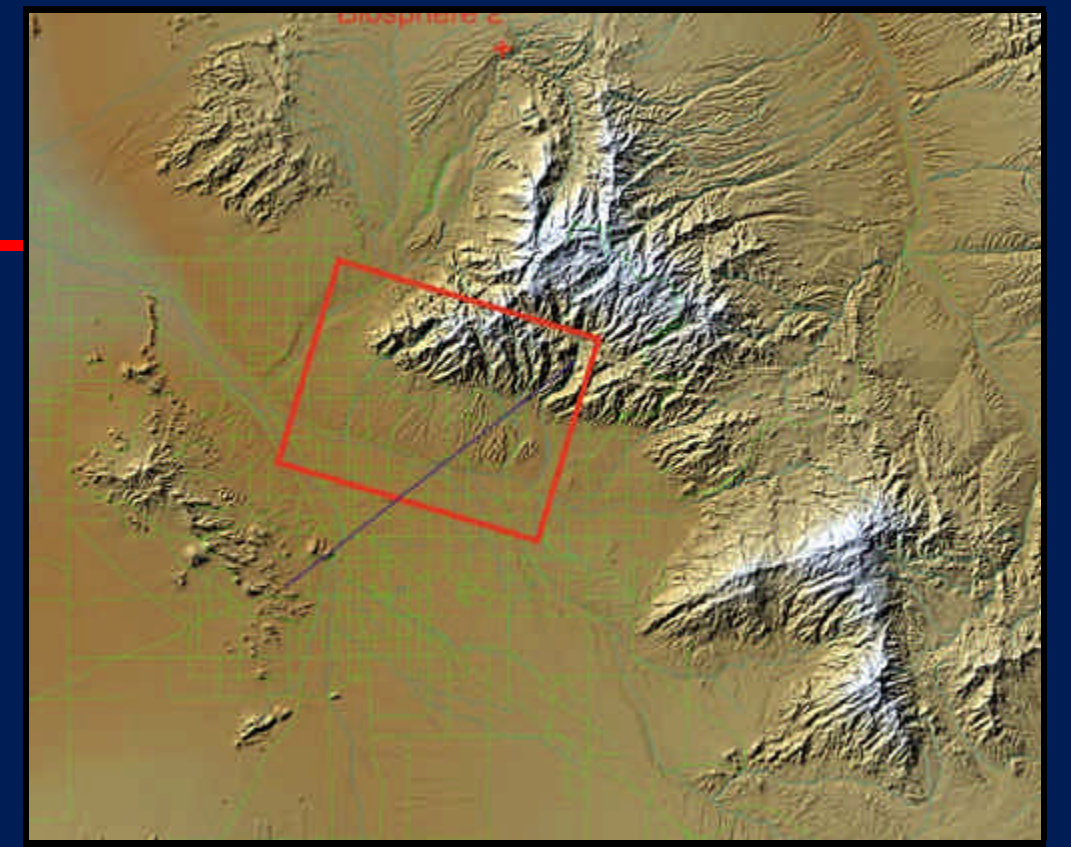


Figure 2. The Tucson Basin from Above. The red box shows the location of the sand tank model, the blue line the location of the geological cross section in Figure 3.

Source: R. Butler and M. Wallace, The Saguaro Project, University of Arizona, 2002

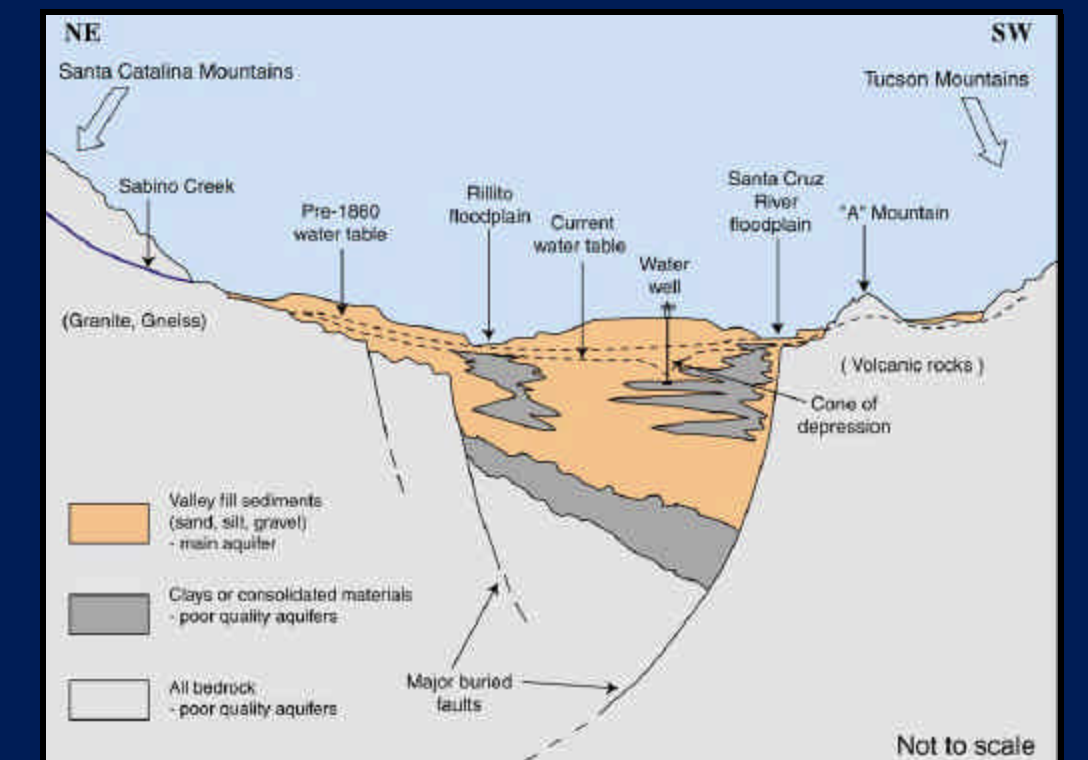


Figure 3. Schematic Vertical Cross Section Through the Tucson Basin. The Tucson Basin is like a large bathtub filled with sediments surrounded by mountains. The basin aquifers are recharged mostly by water coming from the mountains, where it rains more than in the valley. In general, water quality decreases in the older and deeper sediments.

Source: B. Scarborough, Desert Museum, 2002

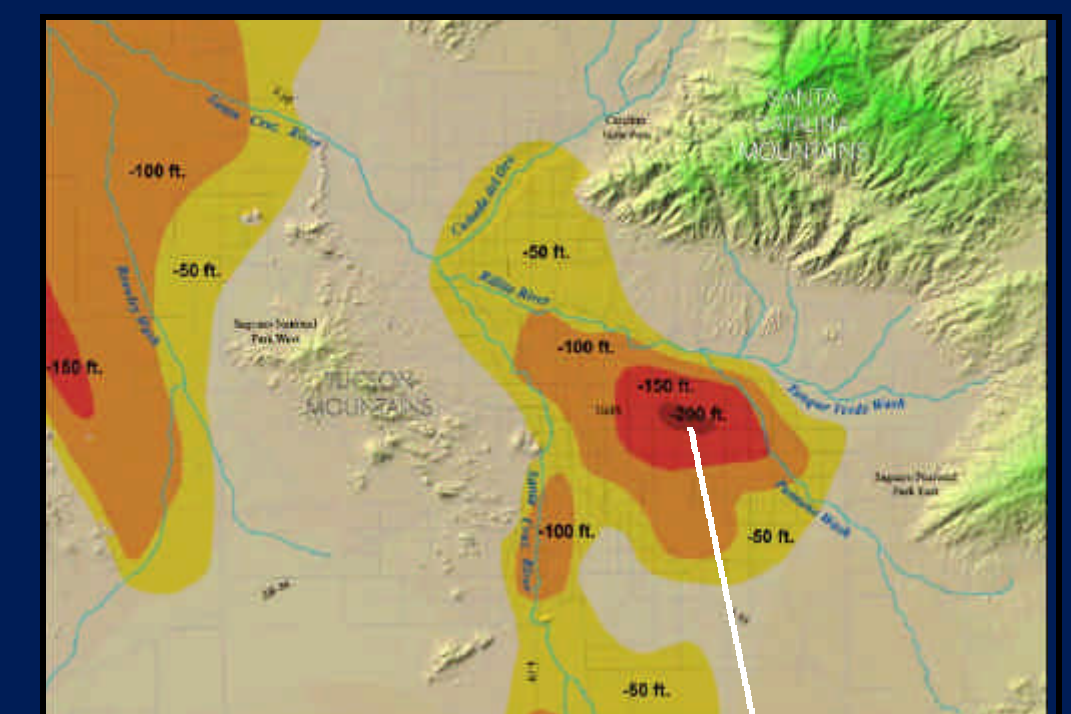


Figure 4. Approximate Decline in Ground Water Levels, 1940-1995. The water table in Tucson has steadily declined over the last 50 years as shown here for one Tucson Water well.

In some places the water table has fallen by more than 60 m (200 feet). As the aquifer loses water, it becomes compacted and the land surface subsides. Stream beds run dry and cannot support plant and animal life.

Source: Water Resources Research Center, University of Arizona, 1999; Tucson Water, 2002

