The High Plains aquifer is the most extensively pumped aquifer in the United States. During 1980, about 12 million gallons per day, or about 17 million acre-feet per year, of water was withdrawn from the aquifer. An acre-foot is the volume of water that will cover one acre of land to a depth of one foot, or 333,000 cubic feet of water. Part of this water (6.6 million acre-feet) was applied for irrigation. Water in the High Plains aquifer generally is recharged locally. Water tables rise locally in the aquifer, particularly in Nebraska, in response to increased recharge where surface water that was applied to irrigation seeped into the aquifer.

Most of the water withdrawn from the High Plains aquifer is from wells. Irrigation withdrawals have been largest in Texas and Oklahoma; other blanket sand and gravel aquifers include the Mississippi River Valley alluvial aquifer, which consists of sand and gravel, and the Appalachian basin sandstone aquifer, which consists of sand and gravel. Ground-water development has been connected to regional increases in pumping costs because the pumps must lift the water from greater depths.

Figure 9. \(\text{*Increased recharge conditions in 1980}^2\) water levels in the High Plains aquifer. The water-table contours show the eastward slope of the water table from greater depths.