

Groundwater Conditions in the Upper San Pedro Basin

Major aquifers, well yields, estimated natural recharge, estimated water in storage, number of index wells and date of last water-level sweep are shown in Table 3.13-5. Figure 3.13-7 shows aquifer flow direction and water-level change between 1990-1991 and 2003-2004. Figure 3.13-8 contains hydrographs for selected wells shown on Figure 3.13-7. Figure 3.13-9 shows well yields in five yield categories. A description of aquifer data sources and methods as well as well data sources and methods, including water-level changes and well yields are found in Volume 1, Appendix A. For more information on groundwater in the basin see [Upper San Pedro Basin Hydrology](#).

Major Aquifers

- Refer to [Table 3.13-5](#) and [Figure 3.13-7](#).
- The major aquifers in the basin are basin fill, consisting of younger basin fill, older basin fill and basal conglomerate, and recent stream alluvium.
- The basin fill is the principal aquifer although the stream alluvium is also utilized.
- Artesian conditions exist primarily in the vicinity of Benson.
- Flow direction is generally from south to north.
- The basin contains two sub-basins, the Allen Flat Sub-basin in the northern portion and the Sierra Vista Sub-basin.

Well Yields

- Refer to [Table 3.13-5](#) and [Figure 3.13-9](#).
- As shown on Figure 3.13-9 well yields in this basin range from less than 100 gallons per minute (gpm) to more than 2,000 gpm.
- One source of well yield information, based on 353 reported wells, indicates that the median well yield in this basin is 600 gpm.

Natural Recharge

- Refer to [Table 3.13-5](#).
- The principal sources of recharge for this basin are mountain-front recharge and streambed infiltration.
- The estimate of natural recharge in this basin is 35,750 acre-feet per year (AFA).

Recharge Sites

- Refer [Figure 3.13-7](#).
- There are two facilities in this basin that recharge effluent to the aquifer.
- The City of Sierra Vista Storage Facility is a permitted Underground Storage Facility (USF) by the Department (permit no. 73-583024). Under the permit the facility's maximum annual storage is 4,149 acre-feet.

Table 3.13-4 Groundwater Data for the Upper San Pedro Basin

Basin Area, in square miles (1:50)	Name and/or Geologic Units	
Major Aquifer(s)	Recent Stream Alluvium	
	Basin Fill	
	Range 14 - 981 Median 335 (33 wells measured)	Measured by ADWR and USGS
	Range 7 - 3,653 Median 600 (353 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
Well Yields, in gallons	Range 100 - 2,800	ADWR (1994)
	Range 0 - 2,500	Arning and Ouel, USGS (1964)
Estimated Natural Recharge, in acre-feet/year	35,750	ADWR (2005)
Estimated Water Currently in Storage, in acre-feet	21,000,000 - 59,000,000 (to 1,200 ft) (not given)	ADWR (1990 and 1994)
	35,000,000' (to 1,200 ft)	Freedley and Anderson (1980)
	48,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
	19,800,000 - 26,100,000 (to 1,200 ft)	ADWR, Upper San Pedro report (2005)
Current Number of Index Wells	100	
Date of Last Water-Level Sweep	2003 (7197 wells measured)	

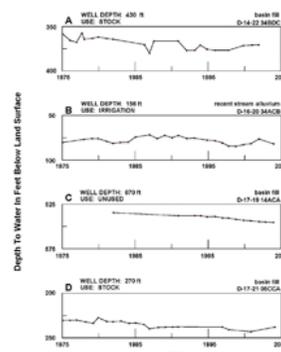
Notes:
*Predevelopment Estimate

Click to view [Table 3.13-5 Groundwater Data for the Upper San Pedro Basin](#)



Click to view [Figure 3.13-7 Upper San Pedro Basin Groundwater Conditions](#)

Figure 3.13-8
Upper San Pedro Basin
Hydrographs Showing Depth to Water in Selected Wells



Click to view [Figure 3.13-8 Upper San Pedro Basin Hydrographs Showing Depth to Water in Selected Wells](#)

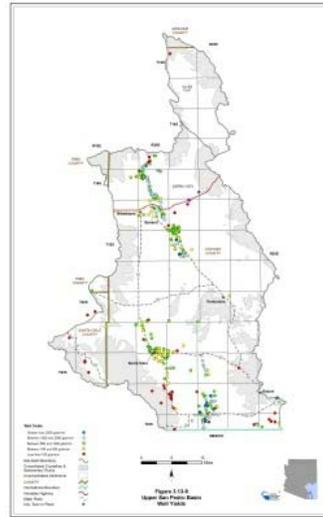
- The Fort Huachuca Recharge Facility is not a permitted facility.
- In 2005, a total of 2,380 acre-feet of effluent was recharged by both facilities.

Water in Storage

- Refer to **Table 3.13-5**.
- Storage estimates for this basin range from 19.8 million acre-feet (maf) to 59 maf to a depth of 1,200 feet.

Water Level

- Refer to **Figure 3.13-7**. Water levels are shown for wells measured in 2003-2004.
- The Department annually measures 59 index wells in this basin. Hydrographs for 15 index wells and five other wells are shown in **Figure 3.13-8**. Index well hydrographs are: A-C, E-I, K-M,P,Q, S and T. More recent hydrographs of the index wells may be available through the **Department's GWSI webpage**.
- The Department measures water levels daily at four automated groundwater monitoring site in the basin.
- Deep water levels are found in the vicinity of Sierra Vista with water levels as deep as 585 feet measured in 2003-2004. Shallow water levels are found near the Mexico border in the vicinity of Highway 92 with levels as shallow as 10 feet in 2003-2004.



Click to view Figure 3.13-9 Upper San Pedro Basin Well Yields

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