

Groundwater Use in the Arbuckle-Simpson Aquifer

The Arbuckle-Simpson aquifer is located in south-central Oklahoma and underlies more than 500 square miles near the towns of Ada and Sulphur. Water from the aquifer is withdrawn for public water supply, domestic, irrigation, mining, and other uses. This fact sheet describes historical (1964-2008) and recent (2004-2008) groundwater use from the aquifer. The focus of the Arbuckle-Simpson Hydrology Study was the eastern Arbuckle-Simpson aquifer, where most permitted groundwater withdrawals occur.

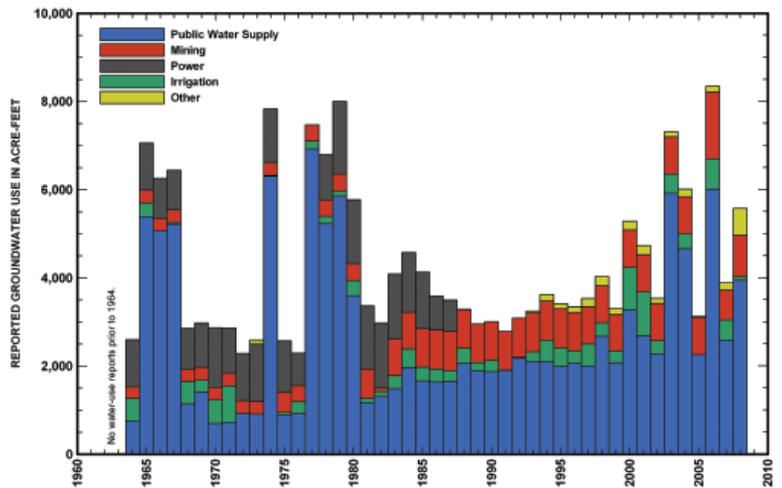
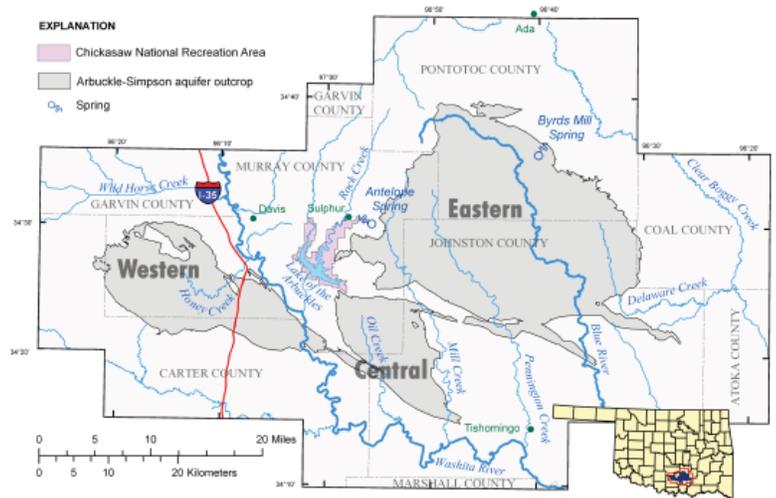
Reported Water Use

Permitted users of groundwater in Oklahoma are required by statute to report annual water use to the Oklahoma Water Resources Board (OWRB). From 1964 through 2008, average annual reported groundwater use from the eastern Arbuckle-Simpson aquifer was 4,299 acre-feet with a median annual use of 3,532 acre-feet.

Historically, most of the water withdrawn from the aquifer serves public water supply systems, including the towns of Ada, Mill Creek, Roff, and Sulphur; Murray Co. RWD #1; and Johnston Co. RWD #3. On average, from 1964-2008, 63% of the total annual use of groundwater was for public water supply. The two largest consumers during this period were the cities of Ada (annual average 1,140 acre-feet) and Sulphur (annual average 939 acre-feet). Combined, Sulphur and Ada accounted for 77% of the average annual public water supply use and 48% of the total use.

Ada's minimum and maximum annual use ranged from 0 acre-feet (in 1964, 1970, 1975, and 1976) to 5,889 acre-feet (in 2003) with a median of 78 acre-feet (in 1989). The large range in Ada's groundwater use is directly related to discharge from Ada's primary water source, Byrds Mill Spring. When discharge from the spring falls below a certain threshold, Ada withdraws groundwater from wells to preserve streamflow for downstream landowners. (Water withdrawals from springs are reported as surface water use).

During this same period, mining accounted for 15% of groundwater use (averaging 648 acre-feet annually) and irrigation for 7% (averaging 301 acre-feet annually). Power accounted for 14% (averaging 586 acre-feet annually), but power use from the aquifer discontinued in 1988 when the Oklahoma Gas and Electric (OG&E) power plant north of Sulphur ceased operation. Other uses accounted for approximately 1%.



Reported annual groundwater use from 1964-2008 of the eastern Arbuckle-Simpson aquifer.

