

Drainage

The Alapaha River surface-water basin is interesting in that it is somewhat asymmetrical (Figure 14). On the east, the Hawthorn Group, which underlies the Northern Highlands Province and Okefenokee Plains, prevents significant groundwater recharge and a dendritic pattern of tributary streams has developed. Note, however, that many of the streams that are considered tributaries of the Alapaha go underground through swallets before reaching the Alapaha River. The Little Alapaha River, for example, enters the Floridan aquifer approximately 1.2 mi. east of the Alapaha through a large, complex swallet (Figure 15).

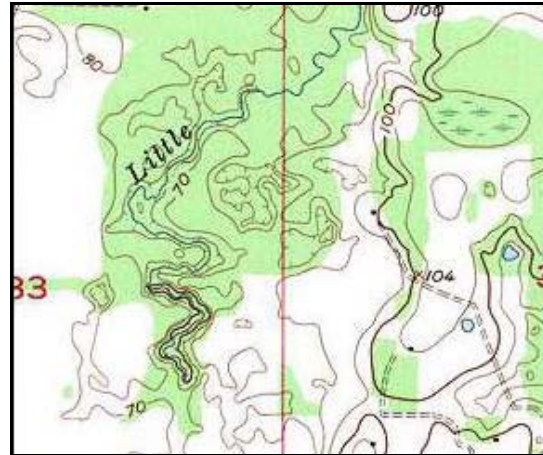


Figure 15. Topographic map of the lower reaches of the Little Alapaha River and swallet.

On the west, the Hawthorn Group has been penetrated by numerous sinkholes, and surface-water drainage is almost entirely internal. Only the Alapahoochee River, which lies in part in a collapsed cavern system, enter the Alapaha River from the west. As such, the Alapaha River surface-water drainage basin identified by Florida agencies includes a true surface-water system on the east and little direct drainage to the river on the west.

The groundwater basin is characterized by flow toward the river (Figure 14) from the east and west. In Florida, the basin abuts the Suwannee River groundwater basin on the east and the Withlacoochee River groundwater basin on the west (Figure 14).

Recharge

The abundance of sinkholes and closed depressions (Figure 16) along the southern margin of the Northern Highlands (i.e., the Cody Scarp of Puri and Vernon, 1964) has created a landscape that favors large internally drained basins, which greatly increase the relative amount of recharge to the Floridan aquifer system. The internally drained basins that lie along the western side of the Alapaha River watershed (Figure 16), therefore, contribute very little, if any, surface-water runoff to the Alapaha River.

Other factors affecting recharge rates include the development of surface-water drainage, variations in water-level gradients between surface water, the surficial aquifer and the Floridan aquifer, and aquifer permeability. Low recharge rates occur where confining materials overlying the aquifer retard downward vertical movement of water, or where an upward gradient exists between the Floridan and surficial aquifers. Recharge to the Floridan aquifer is directly related to the confinement of the Floridan aquifer system and karst. The highest recharge rates occur where the Floridan is unconfined or poorly confined as in those areas where the aquifer is at or near land surface. Recharge may also be high in areas where the confining layers are breached by karst features, such as sinkholes in the Cody Scarp (Figure 15) and the sinkhole swallets within the Alapaha River near Dead River.