The Black Creek aquifer in the western part of the Coastal Plain crops out in the eastern Coastal Plain along a narrow band extending from Lexington County to Sumter County, or overlying formations. The aquifer comprises thin- to thick-bedded sand and clay deposited in marginal marine or delta plain environments. The coarsest sand and least clay content are found in the western part of the Coastal Plain. The aquifer crops out in the eastern Coastal Plain along a narrow band extending from Lexington County to Sumter County, and along a wider area from Sumter County to Darlington County. It dips southward toward the coast. The top of the aquifer is approximately at elevation 100 ft. (30 m), and 2-4 ft (0.6-1.2 m) ft red (referred to mean sea level) at Aiken, Myrtle Beach, and Charleston, respectively. Thickness ranges from about 100 ft near Aiken to more than 400 ft at the coast.

The hydrogeologic framework of South Carolina developed by Aucott and others (1987) was revised, first by Aucott and others (1995) for the area near the Savannah River Site, and then by Gellici and Lautier (2010) for the entire South Carolina Coastal Plain. The Black Creek aquifer of Aucott and others (1987) is generally equivalent to the Coastal Branch aquifer of the newer hydrogeologic framework.

The potentiometric map presented here was constructed by using water levels measured in 100 wells in late 2015 (see table). Data were collected by the South Carolina Department of Natural Resources, the Savannah River National Laboratory, the South Carolina Department of Health and Environmental Control, and the U.S. Geological Survey. (Water level data were collected and provided by the Savannah River National Laboratory under Contract No. DE-AC09-08SR22470 with the U.S. Department of Energy.) The authors are grateful for the assistance of these agencies and the cooperation of well owners in obtaining the water-level measurements necessary to produce this map.

Similar maps have been produced for the Black Creek aquifer describing the potentiometric surfaces in 2012 (Hickokem, and others, 2013), 2009 (Hickokem, 2012, 2004 (Hickokem, 2008), 2001 (Hickokem, 2003), and 1995 (Hickokem, 1997).

The potentiometric surface of the Black Creek aquifer for November 2015 shows that the generally southerly groundwater flow is affected by potentiometric lows in the eastern half of the state. Compared to previous potentiometric maps, the 2015 map shows little change in water levels in the western half of the Coastal Plain and in the upland regions of the eastern part of the state. The large gaps of depression common to Kershaw County continue to expand and deepen, and significant water-level declines are also occurring in the Myrtle Beach area of Horry County, probably as a result of increased groundwater pumping associated with golf course irrigation. The potentiometric lows in Georgetown and Horry Counties may lead to surface wetlands in the aquifer in these areas.

References


Cooperating agencies

DHEC

USGS

Savannah River National Laboratory

South Carolina Department of Natural Resources

Land, Water and Conservation Division

Water Resources Report 59

South Carolina Department of Natural Resources

Land, Water and Conservation Division

Water Resources Report 59

2016