Abstract

The surficial aquifer, composed of sand with minor amounts of clay, gravel, and limestone of the Cape Fear Formation. The Upper Cape Fear unit separates the Upper Cape Fear aquifer from the Lower Cape Fear aquifer. The Lower Cape Fear aquifer is underlain by the Peedee and Black Creek aquifers. The Castle Hayne aquifer is used as a source of water for Onslow County, in order to meet the required reduction in withdrawal of more than 100,000 gallons per day from the Cretaceous aquifers is subject to a water-use rule model, which can be used to evaluate and manage the ground-water flow system of the county.

Introduction

The surficial aquifer, composed of sand with minor amounts of clay, gravel, and limestone of the Cape Fear Formation. The Upper Cape Fear unit separates the Upper Cape Fear aquifer from the Lower Cape Fear aquifer. The Lower Cape Fear aquifer is underlain by the Peedee and Black Creek aquifers. The Castle Hayne aquifer is used as a source of water for Onslow County, in order to meet the required reduction in withdrawal of more than 100,000 gallons per day from the Cretaceous aquifers is subject to a water-use rule model, which can be used to evaluate and manage the ground-water flow system of the county.

Study Area

Onslow County is located in the southeast area of the state, in the coastal area of the state, with the exception of irrigation and private supply wells, the surficial, upper and lower Castle Hayne, Peedee, Black Creek, and Lower Cape Fear aquifers.

Table 1. Composite view of North Carolina Coastal Plain geology and hydrogeologic units.

Methods

The hydrogeologic framework presented in this report was developed from geophysical logs, driller's logs, water-level data, and water-well and other available data from 123 wells and boreholes.

Surficial Aquifer

The surficial aquifer is an important part of the ground water flow system. This unconfined aquifer, composed mostly of sand, clay, and gravel, is the primary source of water for Onslow County. The surficial aquifer is underlain by the Peedee and Black Creek aquifers.

Upper and Lower Castle Hayne Aquifers

The Upper and Lower Castle Hayne aquifers are underlain by the Peedee aquifer. These aquifers are composed of sand, gravel, and clay, with minor amounts of clay, gravel, and limestone of the Cape Fear Formation.

Beaufort Aquifer

The Beaufort aquifer is composed of Tertiary marine sediments and rocks of the Beaufort Formation. The Beaufort aquifer is underlain by the Peedee aquifer.

Peedee Aquifer

The Peedee aquifer is composed of sands, gravels, and clays of the Peedee Formation. The Peedee aquifer is underlain by the Black Creek aquifer.

Black Creek Aquifer

The Black Creek aquifer is composed of sands, gravels, and clays of the Black Creek Formation. The Black Creek aquifer is underlain by the Peedee aquifer.

Lower Cape Fear Aquifer

The Lower Cape Fear aquifer is composed of sands, gravels, and clays of the Lower Cape Fear Formation. The Lower Cape Fear aquifer is underlain by the Peedee aquifer.

Upper Cape Fear Aquifer

The Upper Cape Fear aquifer is composed of sands, gravels, and clays of the Upper Cape Fear Formation. The Upper Cape Fear aquifer is underlain by the Peedee aquifer.

Summary

The hydrogeologic framework of the study area is presented in a series of eight geologic cross sections, which are shown in Figure 1. The surficial, upper and lower Castle Hayne, Peedee, Black Creek, and Lower Cape Fear aquifers are shown in these cross sections. The Peedee aquifer is underlain by the Black Creek aquifer, and the Black Creek aquifer is underlain by the Peedee aquifer. The Castle Hayne aquifer, Peedee, and Black Creek aquifers are the primary source of water supply in the surficial, upper and lower Castle Hayne, Peedee, Black Creek, and Lower Cape Fear aquifers.

References
