

*Castle Hayne formation.*—Limited outcrops of this formation occur in southeastern Pender, New Hanover, and eastern Brunswick counties, with possibly a few isolated areas to the westward which are unimportant as water bearers. (See geological map, Plate XVII, in pocket at back of Pt. I.)

The materials of the Castle Hayne formation consist of calcareous marls and fossiliferous limestones, with intercalated porous sand layers. Where exposed, the base consists of a phosphatic conglomerate several feet in thickness. The probable maximum thickness of the formation is given as 50 feet.

The formation in its area of outcrop rests with a marked unconformity upon the Peedee formation of the Upper Cretaceous; but coastward it is thought that the Trent formation of the Eocene is intercalated between the Peedee and Castle Hayne formations. The formation is overlain unconformably by thin remnants of Miocene beds and by surficial Pleistocene deposits. The Castle Hayne strata dip slightly to the southeast.

The porous sandy strata intercalated within the harder limestone beds in places furnish large supplies of potable water. It is probable, also, that solution channels in the limestone furnish reservoirs of some importance. These horizons have been utilized in the eastern part of New Hanover County.

Owing to the calcareous nature of the containing beds, the waters from this source all carry greater or lesser amounts of calcium carbonate in solution and are consequently hard. The degree of hardness varies, being as a rule not excessive. In some places, however, the hardness is sufficient to render the water undesirable for laundry and boiler purposes.

On account of the lithologic similarity of this formation to the older Eocene formation, the Trent, and also on account of the fact that the two formations have not been differentiated with any degree of accuracy either geographically or stratigraphically, and also from the further consideration that the quality of the water furnished by each is practically the same, it has seemed best to indicate on the map the area over which potable waters may be obtained from Eocene strata including both of the formations in question. The map shows not only the area of outcrop of Eocene strata, but the additional area to the east and north in which potable waters may be obtained from this source by drilling through superimposed Miocene or Pliocene beds. (Plate XXXV.)

A detailed account of water conditions in New Hanover County will be found on pp. 436-445 of this report.