

## 2.0 ENVIRONMENTAL SETTING

The study area for the U.S. 301 Project Development falls for the most part within the Midpeninsular Drainage Divide Zone of the Upper Coastal Plain Physiographic Province, with the easternmost areas along S.R. 1 extending into the Mid-drainage Zone of the province. The Midpeninsular Drainage Divide Zone is characterized as an area of low rolling topography that forms the divide between the headwaters of streams that flow into the Delaware River and those that flow into the Chesapeake Bay. Variations in topography are relatively slight, except perhaps along the banks of some of the streams in the area, which can evidence steeply sloped sides. Water sources include the low-order streams characteristic of the zone, swamps formed in areas of locally poorly drained soils, and bay/basin features, which appear to date to the Late Pleistocene. The Mid-drainage Zone includes within it the central sections of the tributaries that flow into the Delaware (Custer 1984: 24-27).

The surficial geology within the study area is comprised almost entirely of the yellow and reddish brown sands and gravels of the Columbia Formation, material deposited during the Pleistocene, a period marked by dramatic changes in sea levels and drainage patterns occasioned by the advance and retreat of continental glaciers. Along several of the streams at the northern end of the study area, drainage channels have down cut into the underlying Mount Laurel Formation, exposing its gray, green and reddish brown quartz sands and silts that date to Upper Cretaceous Period. Underlying both of these formations is a series of bedded sediments overlying crystalline basement rocks. The oldest and deepest of these sediments, the Potomac Formation, dates to the Early Cretaceous Period (Delaware Geological Survey <http://www.udel.edu/dgs/geo.html>).

Soils within the study area are of the Matapeake-Sassafras association, characterized as “(n)early level to steep, well-drained, medium-textured to moderately coarse textured soils on uplands” (Matthews and Lavoie 1970: General Soil Map). For the most part, the soils mapped within the study area are of the Matapeake, Sassafras, Woodstown, and Mattapex series, all characterized as moderately well-drained to well-drained soils. However, in and along drainageways, and around

headwaters and upland marshes, less well-drained soils of the Othello, Falsington, and Johnston series are indicated (Matthews and Lavoie 1970).

The modern climate in New Castle County can be characterized as a humid continental one, modified as a consequence of its near vicinity to the Atlantic Ocean. Easterly winds blowing in from the Atlantic moderate temperatures in the summer (cooler) and winter (warmer) and are responsible for bringing most of the county's precipitation. For most of the year the prevailing wind is from the west and northwest, except in the summer, when it is more southerly. Rainfall is relatively evenly distributed throughout the year; monthly averages range between just under three inches to just over four inches, except in August, which has an average above five inches. Total average rainfall for the entire year is about 44 inches. The coldest part of the year is generally in late January and early February, and the warmest is in late July (Moyer 1970).