2.0 ENVIRONMENTAL CONTEXT

2.1 Geomorphological Context

The project area is within the Middle Section of the Atlantic Coastal Plain physiographic province, on a hillside immediately south of the drainage valley created by the Sowbridge Branch of Primehook Creek. Elevations in the APE range from 4.6 to 7.6 m (15.0 to 25.0 ft) above mean sea level, and general relief of the area is low.

Soils of the area are forming in fluvial marine sediments deposited under past coastline and estuary conditions (Ireland and Matthews 1974; James Brewer, personal communication 2005). Deposition of these sediments occurred primarily throughout the late Pliocene and Pleistocene, as a result of sea level rise and fall and a high sediment supply from glacial and inter-glacial climate fluctuations (Ramsey 2001). Although the majority of the sediment within soil profiles of the area is sand, profiles can also contain gravels, silt, and/or clay, dependent upon the environmental conditions of deposition. Variations in sediment type can occur across the landscape surface and also within profile depths. Depositional conditions affecting the particle size of sediments include the sediment sources; the velocity, volume, and flow direction of water; the landscape setting (slope of area and watershed gradient); and environmental changes after deposition.

During the late Pleistocene and early Holocene, the surface sand particles of exposed sediments in some river and bay basins were dislodged by wind and deposited higher on the landscape as aeolian dunes and landscape caps. This aeolian deposition occurred over broad areas of some portions of Delaware, and also across short distances within local contexts. Within the general area of the APE, aeolian influences are localized and intermittent. The majority of the soils within this portion of Delaware are forming in sandy Coastal Plain sediments, with some aeolian influences over the surface (James Brewer, personal communication 2005; Diane Shields, personal communication 2005).

According to the *Soil Survey of Sussex County, Delaware* (Ireland and Matthews 1974:Sheet 13), the soil type across the entire APE is the Evesboro loamy sand, loamy substratum, 2 to 5 percent slopes. This is a moderately well developed soil found on slightly elevated ridges and sideslopes of coastal plain sediments. The surface of this soil is a layer of medium-textured sand, underlain by sediment with a higher clay, silt, and/or gravel content. The parent material of this soil type is fluvial marine sediments (the subsoil with a higher clay,

silt, and/or gravel content) overlain by aeolian sands (James Brewer, personal communication 2005; James Brown, personal communication 2005).

2.2 Hydrology

The APE drains directly into Sowbridge Branch. Sowbridge Branch is a tributary of Primehook Creek, and Primehook Creek empties into the Delaware Bay approximately 10.0 km (6.2 mi) east of the APE. The catchment area for Sowbridge Branch begins approximately 5.0 km (3.1 mi) west of the APE on the central divide of Delaware.

Historic damming has changed the nature of Sowbridge Branch near the APE. It is likely that during the Woodland I and II periods Sowbridge Branch was a shallow stream with wide associated wetlands.

2.3 Climate

Sussex County has a continental climate with four well-defined seasons. High temperatures peak in July at an average of 30.6° C (87.0° F). Lowest temperatures occur in late January and February, with an average low of 3.9° C (25.0° F). The growing season is typically 189 days in the project area (Ireland and Matthews 1974:2).

Sussex County receives 114.3 cm (45.0 in) of rain in a typical year, generally well distributed throughout the year. There is typically 40.6 cm (16.0 in) of snow each year (Ireland and Matthews 1974:2).

2.4 Regional Lithic Materials

Large portions of the Delmarva Peninsula are composed of a thick mantle of Pleistocene sediments, virtually excluding surficial exposures of bedrock lithic materials. There are no primary sources of lithic raw material in the general vicinity of the project area. Though primary sources tend to be absent, a wealth of secondarily deposited stone occurs in deposits throughout the Coastal Plain. Native American knappers had a variety of raw materials to choose from in stream terraces, lag deposits, and gravel bars, including chalcedony, chert, jasper, quartz, and quartzite (Petraglia *et al.* 2002:13.6-13.8). Quartz, a tenacious stone of variable flaking quality, is especially common in Delaware lithic assemblages. While quartz is suitable for the manufacture of flaked stone tools, its ubiquity in the region and its propensity to

shatter when struck during plowing or other earthmoving activities makes the attribution of some quartz specimens as artifacts problematic.

Occasionally, artifacts from primary bedrock sources are found on sites in the region (Petraglia *et al.* 2002:13.6-13.8). Sources of Iron Hill jasper are located to the northeast of the project area near Newark, Delaware. This distinctive material varies in color from yellow to dark brown and ranges in quality from excellent to poor. When good to excellent quality jasper is located, a wide variety of lithic tool forms are easily made (Petraglia and Knepper 1995). In addition to primary outcrop sources, jasper cobbles can also be found in secondary deposits in the area. Occasionally identified in the region is ironstone, an iron cemented sandstone. Primary sources of this stone are located along the Elk River and Herring Island at the upper end of Chesapeake Bay, to the north of the project area (Ward 1988:7).

Exotic raw materials occasionally encountered on sites in the region include argillite and rhyolite. Argillite outcrops are found in the Delaware River Valley, while primary rhyolite sources are identified in the Adams/Franklin County area of Pennsylvania, as well as in adjacent areas in Maryland.