

3.0 ENVIRONMENTAL BACKGROUND

3.1 Location and Nature of the Project Area

The Barratts Chapel Road Improvements project area is situated within the Northern Atlantic Coastal Plain physiographic province (Delaware Geological Survey 2008; Matthews and Ireland 1971) on a broad upland area with low relief. Elevations in the project area range from approximately 1.5 m (5.0 ft) to 9.8 m (32.0 ft) above mean sea level. The ground surface within the project area displays slope values well below 15 percent, which is generally recognized as the threshold for the location and preservation of pre-contact period archaeological sites; therefore, with the exception of portions of the project area which exhibited standing water throughout the year, all of the project area would have been suitable for pre-contact period use and occupation. The combination of brackish and freshwater resources makes this physiographic province one of the most intensively occupied areas in Delaware during the pre-contact period (Custer 1984:27; Custer and De Santis 1986:16).

Most of the state of Delaware is comprised of Coastal Plain. This physiographic province is a flat area underlain by a series of younger layers of sediments than the Piedmont. The rock and sediment layers underlying the project area include Holocene-aged spit (Qspt), shoreline (Qsh), marsh (Qm), swamp (Qsw), and alluvial (Qal) deposits, as well as Holocene/Pleistocene-aged Carolina Bay (Qcb), dune (Qd), upland (Qud), Cypress Swamp formation (Qcs), and upland bog (Qub) deposits along both sides of the length of Barratts Chapel Road (Delaware Geological Survey 2008). Eocene/Paleocene Survey aged Deal Formation (Td) deposits are present along both sides of S.R. 1 in the project area (Delaware Geological Survey 2008). "These bodies of rock are identified by distinctive geological characteristics and are sufficiently thick and areally extensive to be mapped at the earth's surface and/or in the subsurface" (Delaware Geological Survey 2008).

The project area is drained by one larger stream, Double Run, several smaller unnamed tributaries to Hudson Branch, and Spring Creek. Double Run appears to be the only stream in the project area with a stream channel, albeit minimal. All of the streams currently support peripheral wetland areas, and most likely would have in the past. There are no established floodplains with the potential to contain archaeological resources associated with any of the streams located in the project area.

The majority of the project area is comprised of agricultural lands with occasional farm building complexes and suburban development. With the exception of the construction and maintenance of buildings, roadways, utilities, and drainage ditches, no extensive disturbances to the



soils/sediments located in the project area are present. All of the agricultural fields have been plowed in the past.

3.2 Geology and Lithic Resources

In general, primary (i.e., bedrock) sources of lithic raw materials are uncommon in the vicinity of the project area, as the majority of the Coastal Plain physiographic province is covered by a thick mantle of Pleistocene sediments. While this situation virtually excludes surficial bedrock exposures of raw material, the same processes that resulted in the deposition of these sediments also transported a variety of knappable stone from primary outcrops located to the north. Thus, Native American knappers could have selected from a variety of lithic raw materials, including chalcedony, chert, quartz, and quartzite from secondary deposits (e.g., stream terraces, lag deposits, gravel bars) for stoneworking (Catts *et al.* 1988:14). Common in Delaware lithic assemblages is quartz, a tenacious stone of variable flaking quality. 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 earth moving activities makes the attribution of some quartz specimens as pre-contact period artifacts problematic.

In many areas of the eastern United States, the precise definition of chert or other raw material types can be used to pinpoint the procurement location (outcrop) and allow for a rough approximation of territorial range of a group to be determined. In Delaware, however, most artifacts of chert, quartzite, and chalcedony consist of materials derived from secondary deposits; thus, many regional specialists do not assign the raw material to a specific named type (e.g., Jacoby *et al.* 1997; Petraglia *et al.* 1998).

Occasionally, artifacts from primary bedrock sources are found on sites. Sources of Iron Hill Jasper are located near Newark and were the focus of Paleoindian/Earl Archaic settlement patterns (Custer and Galasso 1980). 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 found, a wide variety of lithic tool forms are easily made (Petraglia and Knepper 1996). In addition to being found in primary outcrops, jasper cobbles can be found as secondary sources in certain streams on the Delmarva Peninsula.

Primary sources of ironstone, an iron cemented sandstone, are located along the Elk River and Herring Island at the upper end of the Chesapeake Bay (Ward 1988:7). This material is noted with some frequency from Delaware site assemblages, especially those in the vicinity of

Churchman's Marsh in the northeastern portion of the state. Exotic raw materials occasionally encountered on archaeological sites in Delaware include argillite and rhyolite, both with primary outcrops located in northern Delaware and the Blue Ridge physiographic province in Maryland and Pennsylvania, respectively (Custer 1984:108). Steatite from the Piedmont in Pennsylvania is also present in central Delaware archaeological sites such as Barkers Landing, Coverdale, and other sites located in the Murderkill drainage (Custer 1984:110).

3.3 Climate, Flora, and Fauna

"Kent County has a continental type of climate with well-defined seasons" (Matthews and Ireland 1971:2). Three large bodies of water, including the Atlantic Ocean, the Delaware Bay, and the Chesapeake Bay, exert modifying influences on the climate of the state. The average annual precipitation at Dover is 116.8 cm (46.0 in), which is distributed fairly evenly throughout the year (Matthews and Ireland 1971:2). The warmest part of the year in Delaware is late July, while the coldest is late January into February. The frost-free growing period for the Dover area is approximately 199 days and would have been sufficient for late pre-contact period peoples to grow corn and other crops.

The floral and faunal distributions across Delmarva can be described as a mosaic with a high variety of species present in a small area (Custer 1986:46-47). "Except for the coastal marshlands, Kent County was once covered by hardwoods" (Matthews and Ireland 1971:2). This original vegetation was a major influence on the soil development. "Hardwoods use large amounts of calcium and other bases, if these are available and return some to the soils each year when the leaves fall" (Matthews and Ireland 1971:62). The soils in the county were never high in bases, confirming the original hardwood vegetative cover. Oak trees and some wetland tree species are now dominant in the county, with few conifers. Kent County has traditionally been rural and agricultural; however, the growing and processing of woodland products has been important in some parts of the county.

The greatest variety of animals would have been found in the grass/woodlands settings and in perennial and seasonal water sources. Principal mammal species, which served as potential resources for the aboriginal inhabitants of the area, were mastodon, mammoth, musk ox, vole, lemming, mouse, white-tailed deer, caribou, elk, giant beaver, river otter, porcupine, cottontail rabbit, gray squirrel, and opossum. Important fur-bearing mammals included beaver, muskrat, raccoon, and red and gray foxes. Avian fauna of aboriginal importance would have included wild turkey and



ruffed grouse, as well as various species of waterfowl. Numerous species of fish and shellfish were available in freshwater streams, the brackish waters of the Chesapeake Bay, and the salt waters of the Atlantic Ocean. Wetland areas specific to the Barratts Chapel Road Improvements project area would have been the home of diverse fauna.

