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Environmental and Cultural Context

PALEOENVIRONMENT

From an ecological perspective, the assessment of changes through time in the character and distribution of prehistoric sites in the region requires a consideration of the changing characteristics of the environment during the roughly 12,000 years of human occupation of the Delmarva Peninsula. For the earlier half of this period of occupation, two general trends—both related to the retreat of the continental glaciers—are pertinent to Native American lifeways. Gaudreau (1988) has characterized these trends as: 1) gradual warming and 2) the replacement of an open boreal forest dominated by conifers with temperate, mixed deciduous floral communities.

By the end of the Pleistocene, the majority of northeastern North America was considerably colder and wetter than present conditions, and covered by open tundra and boreal forest environments. Extrapolating from published sea-level rise curves for the Delaware Bay, Belknap and Kraft (1977) have demonstrated that terminal Pleistocene sea levels were up to 30 meters lower than at present. Other estimates (e.g., Milliman and Emery 1968) postulate that modern sea levels are more than 100 meters higher than their Late Pleistocene counterparts. Whichever estimate is employed, major estuary systems such as the Chesapeake and Delaware Bays at that time would have consisted of rivers and outwash channels. In concert with the retreat of the Pleistocene ice sheets, the greater Middle Atlantic region witnessed a gradual warming trend, a rise in sea level, the flooding of coastal zones, and the appearance of new estuary environments extending up through the channels of coastal riverine systems. Additionally, northern forests and their associated faunal populations were increasingly replaced with varieties more typical of southern temperate ecotones. By approximately 5000 B.C., an essentially modern climate and environment were in place throughout the region.

Climatic Episodes

No method exists for directly measuring ancient climates; climate is not fossilized in rocks or sediments. Reconstruction of past climatic patterns can, however, be accomplished through the analysis of a variety of proxy data sources, including fossil pollen, paleofaunal remains, landform sedimentology, and stable isotopes. Collection, analysis, and interpretation of these data allow for gross summarization of climatic regimes, as well as the floral and faunal communities that accompanied them.

Late Glacial (circa 13,000–11,000 B.C.). The Late Glacial was a cold and wet period with tundra-like vegetation present, especially near the maximum glacial extent in the northern portion of the Middle Atlantic region. To the south, open parkland comprised of grass and sedge interspersed with stands consisting of a variety of conifers. Pollen records from Marsh Creek in Chester County, Pennsylvania, indicate a changing mixture of grasses, sedges, and boreal species by approximately 11,500 B.C. (Martin 1958), which indicates the transitional nature of climate and vegetation regimes during the period. Whitehead (1973) has suggested a 1,000-kilometer zone of displacement between the northern glacial front and the boreal forests to the south within

which faunal (including mega-faunal) species roamed freely. Several studies (e.g., Guilday 1982) have noted increased diversity of fauna, particularly megafauna, for the Pleistocene Late Glacial in comparison to latter Holocene-era assemblages. This variety is suggestive of at least moderate diversity in habitat coverage and possibly the presence of more open forests and grasslands capable of supporting large grazing animals. Conversely, Custer (1990) has argued that a more homogeneous boreal forest was in place in the Middle Atlantic and that the first inhabitants of the region did not likely encounter herds of large game species.

Pre-Boreal (11,000–8700 B.C.). The Pre-Boreal episode was primarily cold and wet, although the retreat of the Wisconsin ice sheet allowed for a general increase in mean global and regional temperatures. The existing landscape mosaic of boreal forest, tundra, and open grassland may have continued to exist in some areas, but forests of spruce and pine became more prevalent. Custer (1984) has noted that swamps and lakes, forming in the wake of the retreating glaciers, were common throughout the region. Despite these new microenvironments, Raber (1985) has postulated less variety in plant food availability, and Guilday (1982) has reported a similar decline in both small and large faunal species for this time period. Alternatively, Carbone (1976) has suggested a relatively geographically compressed mix of both boreal and austral species, including moose, elk, deer, horse, bison, and smaller fauna.

Boreal (8700–7200 B.C.). The onset of this period was marked by an increase in warm air masses, leading to a gradual warming trend. The extent of open grasslands diminished in breadth and the spruce/pine forests of the previous episode were replaced by increased densities of pine, along with the appearance of northern hardwoods, especially oak (Sirkin 1977). A pollen core extracted from an extinct stream channel in Prince George's County, Maryland, yielded evidence suggesting that birch may also have been present during this episode (LeeDecker and Holt 1991). For the Coastal Plain areas, Watson and Custer (1989) have reported the replacement of spruce by hemlock. Guilday (1982) has indicated that modern faunal species were in place in western Pennsylvania by 7000 B.C., existing in a mixed, oak/chestnut-dominated forest. In conjunction, he notes an overall decrease in species diversity among browsing and grazing herbivores from 75 species during the Late Pleistocene to 51 for the Holocene period. Webb et al. (1994) note an extended period of desiccation in central Delmarva beginning around 9000 B.C. and continuing through the Boreal into the ensuing Atlantic phase. This evidence is derived from pond sediment data, which indicate depressed water levels throughout the period.

Atlantic (7200–4600 B.C.). The early portion of the Atlantic phase was typified by warm and increasingly wet conditions, which can be taken to signal the onset of a fully modern climatic regime with associated floral and faunal communities. Oak-hemlock forests expanded in geographic distribution and Carbone (1976) has noted that mesic forests were present throughout most physiographic provinces in the region. In Delaware, the prevalence of oak-hemlock complexes is evidenced at the Mitchell Farm Site (7NC-A-2) by approximately 5900 B.C. (Custer and DeSantis 1985); Bernabo and Webb (1977) have noted oak dominance over hemlock by 5000 B.C. Wetland areas may have expanded as a result of wet conditions, but Carbone (1976) notes that a drying trend had onset by the latter portion of this phase. By 4000 B.C., generalized deciduous forests, producing large volumes of mast foods, were in place and faunal populations such as deer, a variety of small mammals, and turkey were on the increase (Custer 1989).

Sub-Boreal (4600 B.C.–A.D. 0). This climatic phase consisted of a warm and dry period resulting in the re-expansion of grasslands and dominance of oak-hickory forests. In central Delaware, Newby et al. (1994) recovered pollen evidence suggesting the presence of an oak-dominated forest by 3870 B.C. Evidence for the stabilization of environmental conditions near the end of this phase was recovered from a pollen core in southern Maryland, which demonstrates a lack of change on forest components (Kraft and Brush 1981). Palynological data from this core indicates a general dominance of oak, hickory, and pine by approximately 3400 B.C. Additional pollen profiles from Delmarva suggest that hickory was the dominant species in the northern portion of the peninsula, while pine was more prevalent in the southern region (Bernabo and Webb 1977). Increasingly moist and cool conditions prevailed toward the end of this climatic phase.

Sub-Atlantic (A.D. 0–present). A general, progressive cooling trend is noted throughout the region for this phase. A rise in the incidence of organic debris in sediments along the St. Jones River, in central Delaware, suggests an increase in precipitation levels (Daniels 1993). Custer (1978, 1989) has noted that stratigraphic unconformities associated with both alluvial and aeolian depositional events suggest abrupt shifts in precipitation regimes. This pattern appears to have stabilized by approximately A.D. 500. Modern oak-chestnut forests were established in the Piedmont and Fall Line Zones, while chestnut-pine communities were more common in the High Coastal Plain, particularly in areas with greater slope (Braun 1950). Since 1895, the Middle Atlantic region has witnessed a slight increase in mean annual temperature, on the order of 0.5 degrees Celsius (Polsky et al. 2000).

MODERN ENVIRONMENT

Site Location and Setting

Site 7NC-E-152 is located near the town of Duross Heights, New Castle County, Delaware, approximately 8 kilometers (5 miles) southwest of the city of Wilmington. The site is situated within a low, broad, gently rolling valley and lies immediately to the southeast of the Christina River and Churchman's Marsh. Elevation at the site is approximately 6 to 7.5 meters (20 to 25 feet) above mean sea level. The site occupies portions of a remnant high terrace overlooking a small, unnamed tributary to the Christina River and associated wetlands. Its position along the Christina River is approximately 12 kilometers (7.5 miles) upstream of its confluence with the Brandywine River at the city of Wilmington, where both streams join the tidal Delaware River. Locally, the site is positioned along the south side of New Churchman's Road (DE 58), some 300 meters (984 feet) west of its intersection with Airport Road (DE 37). The area surrounding the site is forested by a variety of hardwood species, coupled with an understory of saplings, briars, and varieties of low-growth vegetation.

Physiographic Setting

Site 7NC-E-152 lies within the Mid-Drainage Zone of Delmarva's High Coastal Plain physiographic province and is located approximately 5 to 6.5 kilometers (3 to 4 miles) southeast of the Fall Line Zone, which separates the Coastal Plain from the Piedmont Uplands physiographic province. The High Coastal Plain, located between the Fall Line to the north and the Smyrna and Chester Rivers to the south, represents the southeastern depositional extension of

the Columbia Formation gravels. The resistance of these coarse deposits to erosion creates the upper substrate for a rolling topography, with maximum vertical differences of up to 15 meters (50 feet) between the upper terraces of large streams and the adjacent estuarine marshes (Custer 1989:28). Although modest, this variation in elevation is sufficient to influence seasonal differences in plant communities (Braun 1950). Kraft et al. (1976) have noted that water courses within the High Coastal Plain tend to be deeply incised and lined by a veneer of relatively recent sediments that is thin along the upper portions of drainages and becomes thicker toward their outlets. Most streams are tidal and the mixing of salt and freshwater enables for the co-occurrence of a wide variety of floral and faunal resources. In the vicinity of the project area, tidal marshes extend at least 4 kilometers (2.5 miles) upstream of the location of 7NC-E-152. Other hydrologic characteristics of this province include a mosaic pattern of both well-drained and swampy areas.

The Mid-Drainage Zone is a somewhat linear strip of land situated between the River Shore/Coastal Bay Zones and the Mid-Peninsular Drainage Divide Zone, and includes the central sections of all the Coastal Plain tributaries of the Delaware River and Delaware and Chesapeake Bays. The modern tidal limit along the drainages marks the middle of this zone, while the western edge of the Mid-Peninsular Drainage Divide indicates the interior limit. The combination of brackish and freshwater resources makes this zone among the richest on the peninsula (Custer 1989:31).

Soils

Soils within the general project area are comprised of a mosaic pattern, including components of the Sassafras, Matapeake, and Keyport series. Soils mapped for the specific location of Site 7NC-E-152 are primarily related to the Sassafras series (SaB2), a moderately to severely eroded, fine, loamy mixed, mesic Typric Hapludult (a gray-brown Podsol) (USDA-SCS 1970). Gravels are also mapped for this soil unit and occur in abundance within site deposits. More detailed information on specific soil characteristics and site depositional properties are provided in later sections of this report.

Hydrology

Portions of Site 7NC-E-152 investigated for this project lay approximately 300 meters (985 feet) southeast of a marked bend in the Christina River. The Christina River is typical of local drainage systems within the Coastal Plain and has a broad, drowned mouth and associated fine-grained, organic-rich tidal marsh. Although the river channel exhibits a meandering sinuous channel, where tidal conditions dominate lateral channel migration has likely diminished or ceased. With increased elevation, the extent of tidal influences diminish upstream, and associated tidal marshes become thinner and narrower. Tidal marshes extend at least 4 kilometers (2.5 miles) upstream of Site 7NC-E-152 (USDA-SCS 1970). Approximately 60 meters (196.9 feet) south of the site, a small and unnamed tributary flows toward the northwest. Additionally, another—now apparently extinct—tributary flowed in the same direction some 50 meters (164 feet) north of the site, on the other side of Churchman's Road (USDA-SCS 1970). Both of these are first-order, perennial streams with low flow and probably seasonally induced volume fluctuations. As such, the site is situated between two small freshwater drainages in very

close proximity to the brackish waters of the Christina River. Churchman's Marsh, the extensive marsh at the confluence of the Christina River and White Clay Creek, was likely a freshwater non-tidal swamp until circa 3000 B.C. (Custer 1982). Saltwater and tidal conditions appeared sometime after that date.

Modern Climate

Climate on the Delmarva is best characterized as humid and temperate. Average annual temperatures range from 10 to 14 C, with slightly higher average temperatures in the southern portion of the peninsula. The mean monthly temperature for the site area is approximately 12.5 C (Polsky et al. 2000). Mean monthly precipitation ranges from 88 to 94 millimeters (3.5 to 3.7 inches) (Kittel et al. 1995). Annually, precipitation amounts average between 900 and 1,400 millimeters (35.4 and 55.1 inches) and are heavier during the late spring and summer. Although frost-free periods can be as long as 280 days, snowfall in the northern and central portions of the state averages 370 millimeters (14.6 inches) per year. Generally, the frost-free periods increase from inland areas toward coastal and bay areas (USDA-SCS 1970).

Flora and Fauna

The Delaware Coastal Plain is a rich and fertile environment that supports a wide variety of plant and animal species. The temperate and mild climate noted above provides for relatively short winters. The fertile soils and long growing season are important for both modern agriculture and the productivity of the wild plant species on which prehistoric populations relied. According to Brush (1982), the northern half of the Coastal Plain is situated within the oak-hickory climax forest, and Kellogg and Custer (1994) note that these species have been an important part of the local forest cover for the last 6,000 years. Soils within the project area are well suited for grasses and legumes, wild herbaceous upland plants, hardwood woody plants, openland wildlife, and woodland wildlife (USDA-SCS 1970). Churchman's Marsh, the extensive wetlands to the northwest of 7NC-E-152, coupled with the two first-order streams to the north and south are important in considering plant and animal populations. These rather expansive wetlands are important ecological zones that would have supported varieties of cattail, ferns, and other emergent wetland vegetation. A number of mammalian species—such as beaver, muskrat, mink, otter, and weasel—would likely have lived along or frequented the wetland fringes. Common terrestrial fauna, such as whitetail deer, turkey, fox, and rabbit, were likely drawn to the local freshwater drainages.

Historic Land-Use Impact Conditions

The woodlot surrounding Site 7NC-E-152 appears to have been only minimally disturbed via historical development and landscape modification. Several types of disturbance are, however, present. First, the berm supporting the roadbed for Churchman's Road was emplaced during construction of this roadway in 1953, and likely caps adjacent portions of the site. Whether portions of the site underlying this berm were impacted during those construction activities is not known. Second, a small earthen access ramp intrudes into the southern portion of the project area. Areas to the south of this berm indicate the kind of clear A-to-B-horizon transition typical of mechanical agricultural plowing, while areas to the north exhibit impacts to a less extensive

degree. Despite also containing an upper plowzone, these portions of the site may have only been plowed using non-mechanical means. Trees within the woodlot appear to have a maximum of approximately 60 years of growth, suggesting that forestry or other land-clearing measures were enacted at some point in the historic/modern era. Although archaeological investigations recovered quantities of historical artifacts, no evidence of subsurface historical structural or occupation features was identified within the boundaries of the project area.

PREHISTORIC OVERVIEW

The study of the physical environment of the Delmarva region—as well as the changes it has witnessed throughout the time of human occupation—provides insights into the nature and distribution of habitats that would have been attractive to Native American groups in the region. These broad environmental changes provide a background, or natural context, for the variety of cultural changes manifested in diachronic variability of artifact types, subsistence economies, and settlement patterns. The major changes observed in the archaeological record of Delaware are designated in periods, which encompass hundreds and sometimes thousands of years.

While many archaeological studies in the greater Middle Atlantic region refer to the cultural chronology developed by James Griffin (1952, 1967, 1978), a different and more generalized chronology has been proposed for use in Delmarva. Because much of the existing literature and settlement pattern models for Delmarva, as well as existing state management plans (e.g., Custer and DeSantis 1986), employ this latter temporal designation system, the regional Delmarva chronology has been utilized for the current study.

The prehistoric archaeological record of the upper Delmarva Peninsula is divided into four chronological units, defined on the basis of sets of shared cultural characteristics and common adaptations to similar environmental conditions. The units include the Paleo-Indian period (circa 12,000–6500 B.C.), the Archaic period (6500–3000 B.C.), the Woodland I period (3000 B.C.–A.D. 1000), and the Woodland II period (A.D. 1000–1650). Definitive evidence of the Paleo-Indian was not present, although one point base suggested the possibility. Evidence of the other three periods of occupation was identified at 7NC-E-152. The following paragraphs describe the defining characteristics of these cultural periods.

The **Paleo-Indian period** (12,000–6500 B.C.) encompasses the block of time that witnessed the final retreat of the Pleistocene glacial conditions from eastern North America and the onset of more modern Holocene environments. The distinctive feature of this culture period is an adaptation to the cold, and alternately wet and dry, conditions characterizing the times and manifested in the form of a lifestyle based primarily on the hunting and gathering of foods, with hunted foods possibly comprising a large portion of the diet. Hunted animals may have included now-extinct megafaunal species, including mammoth, mastodon, Eastern Bison, camels, and horses. A mosaic patterning of deciduous, boreal, and grassland environments would have provided a large number of productive habitats for these game animals in Northern Delaware; permanent watering habitats, such as those in the vicinity of Churchman's Marsh, would have been particularly productive hunting settings.

Paleo-Indian populations are believed to have exhibited a highly mobile lifestyle, incorporating a fairly fluid social organization based on relatively small bands of single and multiple family units. Toolkits of these peoples reflect a reliance on hunted animal resources and are characterized by a preference for high-quality lithic materials and the long-term curation and maintenance of finished tools. Throughout the 5,500-year time span of this period, the basic adaptation remains relatively constant, though with some modifications appearing as Holocene environmental conditions begin to emerge.

Reflecting their preference for high-quality lithic materials, the most commonly known Paleo-Indian sites are quarry-related base camps, reduction workshops, and temporary hunting camps situated near surficial raw material outcrops. Within Northern Delaware, such outcrops are represented by the so-called Delaware Chalcedony Complex, located in the extreme northwestern portion of New Castle County, and in the vicinity of modern-day Newark. A secondary location for Paleo-Indian sites is adjacent to poorly drained swamps, springheads, and sinkholes, within environments similar to those surrounding Churchman's Marsh.

In New Castle County, Custer (1984) identified the presence of 16 sites dating to the Paleo-Indian period, including six that yielded Clovis-style projectiles and likely date to the earlier portion of this time period. The sites include 7NC-D-70, located on a small rise overlooking a poorly drained stream to the west of the project area, where a fluted point of chert was found along with stemmed and side-notched points (Custer et al. 1982). More recently, a survey yielded data from the Thomas Paleo-Indian Site (7NC-D-4), a quarry-related site located near the Iron Hill jasper source (Stanzeski 2006). Overall, despite some variations through time in projectile point morphology, the low population density and highly mobile lifestyle of these earliest inhabitants of the Delmarva Peninsula prevents the recognition of any more locally discrete complexes.

The **Archaic period** (6500–3000 B.C.) is characterized by a series of adaptations to the newly emerged full Holocene environments. These environments differed from earlier ones and were dominated by mesic forests of oak and hemlock. A reduction in open grasslands associated with the onset of warm and wet conditions caused the extinction of many of the grazing megafaunal species hunted in earlier times, and saw them replaced by browsing species, such as deer. Sea-level rise accompanied the melting of glacial ice and resulted in the elevation of the local water table, as well as the creation of a number of large interior swamps, including Churchman's Marsh. Warmer and wetter climatic conditions resulted in the rise of a greater variety of edible plant resources and aquatic environs—such as rivers, lakes, and marshes, along with their immediate surroundings—became substantially more productive. In the face of this proliferation of resources, Native American subsistence strategies changed from the hunting focus of the Paleo-Indian period to a more generalized foraging pattern in which plants and aquatic resources played a more important role.

Reflecting this more diversified environment, Archaic period toolkits were more generalized than those of the preceding Paleo-Indian period. The Archaic was also witness to the increased use of, and reliance on, a wider array of pecked/groundstone plant-processing tools, such as grinding stones, mortars, and pestles. The presence of other tool forms, such as net sinkers, indicates an increased exploitation of, and reliance on, aquatic resources. Archaic period

populations evidently continued to lead a fairly mobile lifestyle with a wide range of resources and settings utilized on a seasonal basis. Social structure continued to be typified by band-level organization, with group membership potentially shifting on a seasonal basis in relation to resource availability. During this time, favored site locations became more diversified and included upland settings near both ephemeral and perennial streams and elevated landforms adjacent to swampy floodplains.

Custer (1989) notes a cluster of sites with bifurcate base points along the Fall Line and associated with freshwater swamps, as Churchman's Marsh was at that time. Bifurcate points are found at sites such as Clyde Farm, which show much more intensive occupation during the Woodland I and II periods. Custer (1989) notes that Archaic period points are generally made of local cobble materials and therefore the sites likely represent the serial use of both lithic and marsh resources. Sites are located on high terraces adjacent to the marsh, as is 7NC-E-152. Custer's Archaic period model consists of macroband base camps in resource-rich habitats, microband camps consisting of small family groups in settings where resources are less abundant, and procurement sites. Based on the site location, Archaic period occupations at 7NC-E-152 would be expected to be microband camps represented by relatively low artifact densities reflecting small group size and relatively short-term occupations. Tools should reflect a broad range of general maintenance activities.

The **Woodland I period** (3000 B.C.–A.D. 1000) can be correlated with a dramatic change in local climates and environments that seem to be associated with events occurring throughout the Middle Atlantic region. Following the onset of a pronounced warm and dry period (3000–1000 B.C.), oak/hickory-dominated forests replaced oak/hemlock-dominated forests. Extensive grasslands again became common, and some interior streams dried up, the overall effect of which was an alteration of the environment, not a degradation. Continued sea-level rise and a reduction in its rate also made many areas of the Delaware River and Bay the sites of large brackish water marshes that were especially productive. These changes in environment and resource distribution resulted in significant shifts in subsistence and sociocultural adaptations for prehistoric populations. Settlement systems were now focused on the rich and varied environments represented in the floodplains of major rivers and the margins of estuarine swamps, which became the sites of large base camps. These sites appear to have supported larger aggregate populations than earlier base camp sites and were inhabited for longer periods of time, possibly on a year-round basis. The overall tendency witnessed during this period is toward the development of a more sedentary lifestyle and a general increase in overall Native American population densities.

Woodland I toolkits show some minor variations over Archaic period ones, as well as a few major additions. Plant-processing tools became even more common, indicating an intensive harvesting of wild plant foods. Chipped stone tools changed little over previous types, although broad-blade, knife-like processing tools became more prevalent. The addition of stone and, later, ceramic containers is also seen. These items allowed the more efficient cooking of certain types of foods and may have also functioned for storage of certain surplus plant foods. Long-term stockpiling of food surpluses is indicated in the presence of large storage pits of various configurations, and evidence for more sedentary habitation sites is supported in the appearance of semi-subterranean house structures.

The general trend toward increased sedentism also wrought changes in the sociopolitical organization of Native American populations. Less reliance on high-mobility subsistence strategies resulted in a reduction of effective group territory and, in conjunction with increases in overall population densities, led to the development of highly sophisticated regional trade networks. These factors, in turn, resulted in the creation of the first identifiable cultural groups, delineated on the basis of named site complexes. While farther to the south, in the middle Delmarva Peninsula, the above changes accompanied the appearance of populations exhibiting incipient ranked social structure, native groups in the northern peninsula continued to exhibit an egalitarian social structure.

Early Woodland I (Late Archaic–Early Woodland) archaeological complexes noted for the Delmarva Peninsula include Clyde Farm and Barker's Landing. The Clyde Farm Complex is best represented in the northern peninsula, particularly in the area of Churchman's Marsh, where the type site is located. Salient characteristics of the Clyde Farm Complex include complex settlement systems comprised of a wide variety of site types, including large macroband base camps, early ceramics such as Dames Quarter, and stemmed, broadspear, and fishtail projectile points. The Clyde Farm archaeological complex is normally associated with the Piedmont and Fall Line physiographic zones. Its near-equivalent, the Barker's Landing Complex, is characterized by similar sites occurring in the Upper and Lower Coastal Plain physiographic zones. A key characteristic that distinguishes the Barker's Landing and Clyde Farm Complexes is the high proportion of artifacts manufactured from non-local materials, particularly argillite.

After 500 B.C., the Woodland I period is characterized by a variety of complexes, including the Delmarva Adena Complex in the Upper Coastal Plain. Archaeological correlates of this complex include Adena notched projectile points and a variety of ceramic wares, including such formal types as Coulbourn, Wilgus, and Nassawango. Many Adena Complex sites contain numerous burials, biface caches inclusive of non-local lithic materials, and a variety of mortuary goods such as beads and pipes. The Black Rock Complex is essentially contemporary with Adena, but is associated with the Piedmont/Fall Line and Lower Coastal Plain physiographic zones. This complex is typified by the presence of Wolfe Neck ceramics and a series of small, stemmed points commonly made from locally available pebble and cobble materials.

After the onset of the Common Era (A.D. 0), the elaborate mortuary and exchange systems of the Adena Complex disappeared from the Delmarva and the ensuing 600 years were a time of cultural homogeneity within the Woodland I period (Thomas 1977). This time segment is referred to as the Carey Complex in Delmarva, with diagnostic artifacts including shell-tempered Mockley ceramics, Rossville stemmed, and Fox Creek projectile points. Custer (1989:283) has suggested that a focus on rhyolite and argillite characterized lithic technologies and low-level trade networks during this complex. Although the major and minor mortuary centers of the Adena no longer occur, the basic settlement patterns and subsistence practices of the Carey Complex exhibit marked continuity to earlier periods.

By the middle of the first century A.D., the appearance of greater social complexity and a slight increase in cultural diversity within Delmarva superceded the geographically broad homogeneity of the Carey Complex. In the northern peninsula, the Delaware Park Complex is exemplified by the introduction of a grit-tempered ceramic ware known as Hell Island. In the central portion of

the state, the Webb Complex is present. Material culture of this complex is also typified in Hell Island ceramics, and site deposits commonly contain Jack's Reef projectile points. A more pronounced hallmark of the Webb Complex is the practice of somewhat elaborate mortuary ceremonialism, as evidenced at the Island Field Site in Kent County. Overall, the Webb Complex has been taken to indicate that some level of increased social complexity reemerged in Delmarva during terminal Woodland I times.

Custer's (1989) Woodland I model is similar to that of the Archaic period, but with larger macroband base camps having a greater range of activities and a larger number of associated microband camps. Based on its location overlooking, but at a distance from, the marsh and wetlands bordering the Christina River, the Woodland I occupation at Site 7NC-E-152 would be expected to be a microband camp within the Custer model. Artifact and feature densities would be lower than those at macroband sites such as Clyde Farm, but would reflect a range of base camp maintenance activities.

In many portions of the Middle Atlantic region, the **Woodland II period** (A.D. 1000–1650) is marked by the appearance of agricultural food production systems. Within northern Delaware, however, the addition of agricultural practices seems not to have appreciably altered earlier lifeways or cultural adaptations, and direct evidence of plant cultivation is rare or non-existent on Delaware's Coastal Plain. In general, Woodland II populations in northern Delaware exhibited many of the same characteristics as their Woodland I predecessors. Hunted and gathered foods continued to influence the largest portion of the diet and toolkits, and lifestyles remained essentially unchanged. The absence of tools made from non-local stone and the disappearance of non-local influences on mortuary practices imply a breakdown of the extensive trade and exchange networks in operation during the early portions of the preceding Woodland I period. Settlement patterns during this time closely followed those of earlier periods, with many of the same sites continuing to be revisited; however, the absence of evidence for dwellings or other signs of settled village life may signify a slight reversal of the cultural evolution trajectory, in favor of a somewhat less sedentary existence. Looking forward, it can be said that Woodland II peoples in this region exhibited many of the same cultural characteristics and adaptations as those Delaware Native Americans practiced when Europeans encountered them in early historic times.

Woodland I and II components are associated at many of the sites around Churchman's Marsh, suggesting continuity in settlement strategy. Agricultural villages, such as those found in the Piedmont, are not present in the Churchman's Marsh region. Identified macroband camps are present adjacent to Churchman's Marsh. Site 7NC-E0152 likely functioned as a microband camp or processing station.

The **Contact Period** (A.D. 1600–1750) is marked by the initial contact between the Native American inhabitants of Delaware and European explorers and colonists, as well as the ultimate collapse of traditional native lifeways and sociopolitical organization. Complicating our perception of this period is the dearth of sites with Contact components within the state. However, based on existing historic accounts, it appears as though the Native American groups in the northern part of Delaware did not maintain intensive interactions with European settlers, while at the same time remaining under the virtual domination of the Susquehannock Indians of

southern Lancaster County, Pennsylvania. By 1750, only a few remnant groups of Native Americans remained in Delaware. Several hundred descendants of the original native inhabitants still reside in the state today

HISTORIC CONTEXT

Exploration and Frontier Settlement (1630 – 1730)

In 1638, Swedish settlers established Fort Christina at the confluence of Brandywine Creek and the Christina River in what is now Wilmington, Delaware. As the first permanent European settlement in Delaware (the Dutch made several earlier attempts, none successfully), Fort Christina quickly became the nucleus of the scattered Swedish and Finnish settlements in what became known as New Sweden. By the 1650s, the Dutch had begun to encroach on this lightly populated Swedish colony. They established Fort Casimir near present-day New Castle in 1651, part of an effort to block Sweden's attempts to control commerce on the Delaware River and as a move to reassert their own claims to the region. Within three years, however, the Swedes, under Governor Johan Rising, seized the fort and renamed it Fort Trinity (Fort Trefaldighet). This success was short-lived, for in the autumn of 1655, Pieter Stuyvesant sailed from Nieuw Amsterdam, recaptured Fort Casimir, and took control of the colony of New Sweden. With their headquarters at New Amstel (New Castle), near Fort Casimir, the Dutch then began a program of development for this portion of New Netherland. However, before they could accomplish much, the English captured the whole of New Netherland in 1664, lost it to the Dutch in 1673, and retook it the following year (Meinig 1986:129–130).

In spite of the maneuvering of colonial powers, settlers continued to trickle into the lower Delaware Valley throughout the seventeenth century. Farmers mostly, they came from Sweden, Finland, the Netherlands, and England. They established themselves in widely scattered farmsteads along the Delaware and inland along its tributaries, where they grew wheat, rye, maize, and tobacco, and raised livestock. Lumber was also an important industry. Grist and lumber mills were established upriver form the town of Christiana by 1705 (Scharf 1888:937).

Intensified Occupation (1730–1770)

Large numbers of immigrants moved into the area during the middle of the eighteenth century, resulting in the growth of towns and the development of transportation and industry. Wilmington, New Castle, and Lewes were major settlements, with smaller towns including Christiana, Cuckoldstown (modern Stanton), Newark, and Cantwell's Bridge (modern Odessa). Wilmington, chartered in 1739, developed as Delaware's major commercial center and port of entry. Although flour remained as the major export, agricultural production diversified to include vegetables. Lumbering and milling were important. Although waterways remained the major means of transportation, wagon roads were constructed, radiating out from Wilmington and New Castle. The iron industry was introduced.

Early Industrialization (1770–1830)

During the American Revolution, British blockades and military skirmishes affected life in the region. The war also adversely affected agriculture. Overuse of the land led many farmers to move out of the region. Manufacturing and industry began during this period and included

textile mills, fulling mills, and distilleries. An important impetus to the state's economy after the war was the invention of a belt system to automate mill machinery. Designed by Oliver Evans in 1785, it transformed milling by decreasing production time and requiring fewer men (Weigley 1982).

Transportation networks improved to meet the needs of the new industries. Turnpikes and canals were constructed. Turnpikes were paved toll roads built—usually by non-local investors—for the transportation of goods along overland routes where these routes were competitive in price or travel time with waterborne transportation. The Newport and Gap, Delaware's first turnpike and first road to be improved with crushed stone, was completed in 1808. Built over an old Indian trail, it connected southern Delaware with the market town Christiana (Weslager 1968:144). The New Castle Turnpike was built from New Castle to Clark's (Hare's) Corner in 1813. It was eventually extended out to Frenchtown, Maryland, and Christiana, Pennsylvania, in 1817 (Scharf 1888: 417). By the mid-nineteenth century, many of Delaware's northern ports had turnpikes radiating out into the farmland of Delaware and Pennsylvania, with the Wilmington and Kennett Turnpike (now Route 52) emerging as the best access to the tidewater (Beers 1868). Turnpikes, however, continued to remain ancillary to shipping until the invention of the automobile.

Contemporary with the construction of turnpikes, canals were introduced to augment and improve Delaware's water traffic. Relatively flat topography and abundant water sources made Delaware ideal for canals. The highly successful Chesapeake and Delaware Canal was built in 1824–1829. It connected the Delaware River with Back Creek on the Chesapeake Bay. A tidal canal 13.6 miles in length and deepened over time to 27 feet deep, it shortened the route from Baltimore to Philadelphia by 316 miles, New York by 179 miles, and Europe by 100 miles (Hoffecker 1988:120). Owned and operated by the federal government, toll-free since 1919, it is one of the few canals still in active service.

Delaware's economy was stimulated by the Embargo Acts preceding the War of 1812, which greatly diminished the supply of European manufactured goods to America. By 1810, Delaware had four paper mills, five forges, three cotton and two woolen mills, and several iron rolling and slitting mills. A notable innovator, Eleuthère Irénée du Pont, founded a gunpowder mill and the du Pont dynasty at Hengley in 1803. The Eleutherian Mills produced greatly superior and more reliable powder than ever before manufactured in America, revolutionizing American warfare.

The early manufacturing boom in Delaware was short-lived, however. Du Pont was one of the few to survive after 1815, when British goods again flooded the domestic market. Delaware's main industry reverted to wheat production, with most of its other business activities ancillary to farming. Into the 1900s, most of its roads, landings, canneries, rail spurs, warehouses, and mills were constructed to support an economy and culture predicated on agriculture (Monroe 1993:103–107).

Industrialization and Early Urbanization (1830–1880)

Diversified agriculture, including corn and vegetable production, dairy farming, and livestock production, continued during this period. Railroads such as the Philadelphia, Wilmington and Baltimore Railroad improved the transport of produce and other goods to urban markets. Towns

grew up along the rail lines. Industries included canneries, as well as the development of manufactured gas for lighting.

While the Civil War did not have a great economic impact, the population was divided between slaveholders who supported the Confederacy and manufacturers who largely supported the Union. There were geographical differences in allegiance, as well. Delaware became a border state, with New Castle County pro-Union and Sussex County pro-slavery. Approximately 12,000 men joined the Union Army and only 500 joined the Confederacy. The Union had a field hospital in Wilmington and a prisoner of war camp at Fort Delaware on Pea Patch Island. Wilmington was the center of Delaware's war effort, manufacturing steam ships, wagons, shoes, ammunition containers, and holsters for the north (Hoffecker 1988:104–147).

Unlike most states, the introduction of railroads in Delaware in the mid-1800s did not replace canals. Instead, it decreased shipping along Delaware's rivers. Shipbuilding and water transport had peaked during the Civil War and Reconstruction, but by 1887 began to cease altogether (Harter 1911:13). As railroads replaced river traffic, trade was withdrawn from the tidewater landings and new villages created inland.

Delaware had many railroad lines, both passenger and freight, beginning in 1831 with the New Castle and Frenchtown (NC&F) line between New Castle, Delaware, and Frenchtown, Maryland. Extending a distance of 161.9 miles, it followed the New Castle and Frenchtown Turnpike and comprised the rail link in a water-rail-water route from Philadelphia to Baltimore. Local lines were built connecting the NC&F to smaller ports on the Atlantic Ocean and Chesapeake Bay, such as the Junction and Breakwater Railroad from Harrington to the port of Lewes via Milford and Georgetown, completed in 1868 (Hancock 1976:64). By the late 1880s, the Philadelphia, Wilmington & Baltimore Railroad had linked together a through line from Newark, Delaware, to Cape Charles, Virginia (Hoffecker 1988:160).

Urbanization and Early Suburbanization (1880–1940)

In the late nineteenth century, the number of people employed in industry and manufacturing increased relative to those employed in agriculture. The population shifted from rural areas to cities. Agriculture continued to be important, however, with poultry production and dairy farming increasing during this period. Tenant farmers and sharecroppers did much of the farming. Commercial agriculture and light industry were in place by the turn of the century. Toward the end of the period, suburban communities developed outside of urban centers.

The development of a paved road network through Delaware faltered from 1903 through 1917. A state aid law appropriating funds for road improvement passed in 1903, but was repealed in 1905 (Reed 1947:538). Even the efforts of T. Coleman du Pont, who offered to fund construction of this same alignment, were stymied from 1911 to 1915 in court. After reaching the United States Supreme Court to resolve eminent domain powers, construction of this road proceeded, and, in 1917, a 20-mile section in Sussex County was dedicated.

Encouraged by the success of the Coleman du Pont Boulevard, the Delaware State Highway Department was created, and almost immediately assumed responsibility for construction of the

remaining length of the road, from Milford north to Wilmington (Reed 1947:545–546). The du Pont was a 16-foot-wide concrete road within a 65-foot right of way that overlaid previously existing roads. For the first time, rural Delaware was connected with the major urban markets that had previously been accessible only via rail or water.

The automobile and improved road technology finally eclipsed waterways as an efficient means of transport, revitalizing Delaware agriculture and in time making railroads obsolete. Farmers had always faced the difficulty of getting their goods to a distribution point. Continued neglect of local infrastructure had by the early twentieth century silted up tidewater creeks and ruined already marginal roads. The use of trucks provided the first rapid, direct access from farm to market, and agriculture production rose again. New "truck crops" were created, including broiler chickens, which have become a staple cash crop in Delaware today (Hoffecker 1988: 158–172).

The emergence of the automobile also led to early and mid-twentieth century residential roadside subdivisions. Historically, land bordering the corridors between population nodes, such as state and country highways, consisted of large-acre agricultural parcels or country estates. With the widespread use of automobiles, they became available for the first time for suburban development, causing developers to heavily pursue these parcels.