

6 Conclusions

Information from the archaeological investigations at Site 7NC-E-152 was used to address the research issues identified prior to data-recovery fieldwork. Research issues include culture chronology, lithic material use, lithic technology, site formation and intrasite patterning, and site function and regional settlement patterns.

CULTURE CHRONOLOGY

The artifact assemblage recovered from the Phase II and III investigations provides information to reconstruct the occupational history of Site 7NC-E-152 (Figure 6.1). However, no chronologically diagnostic artifacts were found in Cluster 2, which was outside the data-recovery project area. Therefore, its age of occupation is unknown. Diagnostic artifacts from the remaining clusters indicate occupation primarily in the Woodland I and II periods. One point diagnostic of the Archaic period was also present. Unfortunately, features with charcoal for radiocarbon dating were nearly absent at the site. Had such features been present, radiocarbon dates would have provided more specific information on the age and boundaries of the site occupations. The distribution of dated features would have provided information to supplement the spatial analysis of chronologically diagnostic artifacts.

Historic artifacts and historic maps indicate the presence of a residence at or near the site, occupied during the late eighteenth to nineteenth century. One Contact period artifact was also found.

Archaic

The only chronologically diagnostic artifact indicating Archaic period occupation of the site is a St. Albans point found in Cluster 3. Along with the absence of ceramics and of points datable to other periods, Cluster 3 may represent a single-component occupation. Lithic manufacturing in Cluster 3 was skewed to the late stages of reduction and included the use of bipolar technology. The proportion of quartz in the assemblage was the highest here of the five clusters. Microwear analysis indicated that butchering and woodworking took place, and a metate indicated that seeds or nuts were also processed. Although no features were found, FCR was recovered, possibly representing shallow features destroyed via plowing. The Archaic period occupations were likely short-term base camps with relatively infrequent occupations.

Woodland I

The Woodland I period witnessed the most intensive occupation of the site, likely consisting of repeated occupations over the 4,000-year period. The most frequent point types in the assemblage are narrow stemmed points ($n=11$), classified as Poplar Island or Rossville, that were in use throughout most of the period. Side-, corner-, and eared-notched points classifiable as Brewerton were also in use throughout Woodland I, although they are generally attributable to the early (Late Archaic) part of the period. A Susquehanna broadspear and three steatite

Cluster	1	2	3	4	5
Temporal period*	Woodland I, Woodland II	Unknown	Archaic	Woodland I, ?Woodland II	Woodland II, ?Woodland I
Point types	Stemmed, triangular, Brewerton, Fox Creek	None	St. Albans	Brewerton, Poplar Island, Rossville, Jack's Reef, Susquehanna Broadspear, Triangular	None
Ceramics	Present (N=7)	Absent	Absent	Present (N=2)	Present (N=8)
Features/FCR	None	None	FCR, no features	Two features, FCR	None
Other tools	Scrapers, spokeshave, knife, flake tools	None	Scrapers, flake tools	Knife, scrapers, flake tools, abraders, anvils, mortar, pitted stone	Scraper, flake tools, unifacial tool, anvil
Activities	Butchering, woodworking, early stage tool manufacturing	Unknown	Butchering, woodworking, food preparation	Butchery, antler, wood, and bone working, hideworking	
Activity areas	None identifiable	No analysis	Tool and manufacturing clusters	None identifiable	No analysis
Site function	Short-term camps	Unknown	Short-term base camps	Short-term base camps	Lithic processing

Figure 6.1 Chart showing cluster characteristics.

fragments were found, suggesting one or more occupations between 1000–1800 B.C. Points classified as Fox Creek and Jack's Reef are indicative of the later portion of the Woodland I period. One net-impressed ceramic sherd is likely also associated with the late Woodland I occupation of the site.

Woodland I occupations were identified on the basis of diagnostic points in Clusters 1 and 4. Both clusters included the full range of Woodland I point types. The three steatite fragments were found in Cluster 5, indicating the possibility of occupation there during at least part of the Woodland I period. The Susquehanna broadspear was found in Cluster 4.

Cluster 1 included both Woodland I and II occupations, and had the highest artifact density of the five clusters. Given the low number of ceramics and the high number of stemmed points, the Woodland I occupation likely consisted of more frequent and/or more intensive occupation than Woodland II. Since no features were found, the cluster likely represents multiple short-term occupations occurring throughout the period. Cluster 1 yielded the highest proportion of tested cobbles and the second highest proportion of decortication flakes, indicating that manufacturing activities focused on the early stages of lithic reduction.

Although Cluster 4 did not have the highest artifact density, it does appear to have had the most intensive occupations. In contrast to general artifact density, the FCR density was significantly higher (8.37 per EU) here than in the other clusters, likely indicating more intensive food preparation. Two features were found, including a possible earth oven (Feature 4) and a cache of groundstone tools (Feature 3). Feature 4 was interpreted as an earth oven because of its depth and small diameter. However, it could have been used for other activities, such as heat-treating lithic material. The proportion of quartz in the assemblage is high and the use of material from the Delaware Chalcedony Complex is very low. The cluster also contained the widest range of tool types and the widest range of activities in the microwear. Bipolar technology is represented by four anvil stones, three bipolar cores, and three bipolar flakes. The proportion of thermally altered flakes is relatively high (8.2%), indicating that heat treatment of lithic materials was practiced here. The Cluster 4 occupations appear to have been short-term base camps rather than special-purpose camps. Feature 4 radiocarbon dated to A.D. 780 to 990; a Jacks Reef point and two of the three Fox Creek points were all found in Cluster 4, indicating that late Woodland I occupation was centered in this area of the site.

Woodland II

Cluster 5 differed from other clusters in a number of characteristics. Although three steatite fragments and a net-impressed ceramic sherd were found there, the cluster appears to date primarily to the Woodland II period based on the recovery of thin, cordmarked ceramics. Cluster 1 produced an incised ceramic, classifiable as Minguannan, indicating the presence of a Woodland II occupation in that location, as well. Similarities in the paste of ceramics from Clusters 1 and 5 suggest they could represent a single occupation.

Cluster 5 had significant differences in lithic material use and manufacturing technology relative to other clusters. The proportion of quartz in the assemblage is very low (28.8%) compared to other clusters, and the use of cryptocrystalline quartz is very high (62.2%). Although this

material came partly from an increased use in the Delaware Chalcedony Complex, the Cluster 5 occupants also preferentially selected cherts and jaspers from the Columbia Formation cobbles. No non-local rhyolite or argillite was found in Cluster 5, although this may have been due to the small sample size. The proportion of thermally altered artifacts is unusually high (19.0%), indicating that heat treatment was an important practice. The only tools in Cluster 5 are utilized flakes, an unidentifiable unifacial tool, and a point reworked as a scraper. An anvil stone was also recovered. In general, activities in Cluster 5 were limited and consisted primarily of lithic manufacturing. The Woodland II occupation of this portion of the site appears to represent a lithic-processing site, focusing on the late stages of lithic reduction.

The Woodland II component in Cluster 1 is more difficult to interpret, since there is also substantial Woodland I occupation in this area. The cluster exhibited the second highest use of cryptocrystalline quartz (40.7%) and the second lowest use of quartz (41.5%), which may reflect the admixture of Woodland II occupation. The proportion of thermally altered artifacts is relatively low, however. Unfortunately, because of the mixed plowzone context, the tools found in Cluster 1 cannot be individually attributed to either the Woodland I or II occupation. Therefore, activities related to each of the two periods of occupation cannot be determined.

Contact Period

The only artifact of European manufacture definitely attributable to the Contact period is a silver brooch, a trade item dating to the sixteenth century. Thus, it is unlikely that the artifact indicates a Contact period occupation of the site. Historic inhabitants of the site may have found and left the brooch behind.

Historic Period

The substantial assemblage of historic artifacts recovered during data-recovery excavations at the site was not anticipated based on the Phase II survey. Historic maps and aerial photographs show the presence of a residence or farmstead in the vicinity of Site 7NC-E-152 between 1868 and 1923. However, no foundations or other physical evidence of structures was identified during the fieldwork. In addition, because the site was located along an active roadway where dumping could occur, the artifacts could not be definitely attributed to a specific historic property. Without the exact location of the residence, research issues related to intrasite patterning could not be addressed. For these reasons, any modification of field methods to further address the historic component would not have been warranted.

The historic artifact assemblage recovered during Phase II and III investigations includes a significant proportion of ceramics dating to the early nineteenth century, including pearlware, stoneware, creamware, and red-bodied slipware. These types strongly outnumber later ceramics, such as whiteware. Architectural items include a substantial amount of brick and square nails, representing demolition debris from a historic structure that was likely nearby. The structure was likely destroyed during construction of Airport Road, but, given the low proportion of late-nineteenth- and early-twentieth-century artifacts, it may have been abandoned well before that. Historic artifact densities were highest in Clusters 4 and 5. Cluster 4 had the highest ceramic

density and Cluster 5 had the highest density of architectural material. However, because of the lack of evidence regarding the house, spatial analysis of yard areas is not possible.

LITHIC MATERIAL USE

Most of the lithic material identified at Site 7NC-E-152 was available from gravel deposits underlying the site and exposed along nearby stream banks. A study of Columbia Formation gravel was conducted as part of the Hickory Bluff project (Petraglia et al. 2002). The analyzed sample of gravel consisted of quartz (45.74%), quartzite (18.56%), sandstone (18.37%), and jasper (13.73%), with small amounts of ironstone, ironstone conglomerate, and siltstone. Only eight pieces of chert were recovered. No rhyolite or argillite was present in the gravel sample. Similar proportions of lithic materials were identified in a study of 100 pebbles Jordan (1964) conducted. A study was performed along Sandom Branch and Blackbird Creek, producing a gravel sample with quartz (63.1%), quartzite (20.1%), cryptocrystalline quartz (12.1%), and sandstone (3.7%) (Bowen and Knepper 2003). Ironstone, siltstone, diabase, and limestone each made up less than 1% of the sample.

The proportions of chipped stone lithics in the 7NC-E-152 assemblage are generally consistent with the gravel samples. However, chert was overrepresented in the chipped stone assemblage, and quartzite was underrepresented, suggesting a preference for cryptocrystalline quartz. Of the 70 tested cobbles recovered at 7NC-E-152, quartz comprised 57.1%, quartzite 32.9%, chert 7.1%, jasper 1.4%, and ironstone 1.4%. These material proportions are also generally similar to those of the gravel samples, although sandstone was not selected for chipped stone tool manufacture, and chert had a higher proportion than did the gravel samples. Quartzite was overrepresented in the tested cobbles and underrepresented in the debitage, again suggesting that it may not have been a preferred material.

While Columbia Formation cobbles were the primary source of lithic material, the Delaware Chalcedony Complex also provided resources throughout the occupation of the site. The highest proportion of Delaware Chalcedony Complex materials came from Cluster 5 (13.5%), which appears to date predominantly to the Woodland II period. In the other four clusters, proportions were less than 4%. Notably, only two points are fashioned of Delaware Chalcedony Complex materials, a Poplar Island point and a triangular point. However, the points reveal a preference for cryptocrystalline quartz, which comprise 50% of the point assemblage, a much higher percentage than available in the gravel deposits.

Only small amounts of rhyolite and argillite were identified at Site 7NC-E-152. These materials are not local, but rather were a focus of a trade/exchange network between A.D. 0 and 600 (Custer 1989). The materials were also traded during the earlier portion of Woodland I, which Custer defined as the Clyde Farm Complex. Although some occupants of the site appear to have participated in this network, the small amount of the material suggests limited involvement.

Proportions of decortication flakes are highest for materials from the Columbia Formation, consistent with their local availability. Proportions are lower for the more distant materials of the Delaware Chalcedony Complex. An exception to this pattern is rhyolite, a distant source

represented in a relatively high proportion of decortication flakes, a result possibly affected by the small sample size.

Studies of gravel samples from Sandom Branch and Blackbird Creek indicated that most of the clasts fall into the size class of 35–40 millimeters (1.4–1.6 inches) (Egghart et al. 2003). Approximately two-thirds of the Hickory Bluff sample fell within the 30–45-millimeter size class (Petraglia et al. 2002). There was no apparent difference in size relating to material type. The Hickory Bluff analysis indicated that smaller points were fashioned of cryptocrystalline quartz, such as chert or jasper, possibly in part because chert was not available in the local gravel. Jasper was available in the Columbia Formation gravels, but could also have been procured from the Iron Hill jasper quarries.

Lengths of whole points from 7NC-E-152 fashioned of material available in the Columbia Formation gravels range from 26–41 millimeters (1–1.6 inches), except for one ironstone point measuring 55 millimeters (2.2 inches). However, the size range for other materials is similar, from 28–43 millimeters (1.1–1.7 inches). There is also no relationship between cryptocrystalline/non-cryptocrystalline materials and point size. Thus, the size of the gravel clast deposits does not appear to have constrained the point-manufacturing techniques at 7NC-E-152. Custer (1989) concludes that the highest proportions of exotic materials such as argillite, rhyolite, and steatite occur along the drainages of the central Delmarva Peninsula in the area he defines as the Barker's Landing Complex. Much lower densities are found in the Churchman's Marsh area. The Site 7NC-E-152 assemblage supports this conclusion, in that all three materials are present in very low proportions. Only five argillite artifacts were recovered, including a flake, a late-stage biface, and three points. Given the near absence of chipping debris, it is likely that argillite came to the site in finished or near-finished form as a result of trade. All of the argillite was found in Cluster 4 and may be associated with a single occupation. Based on the identification of two of the points as Fox Creek types, the occupation would likely date to the late Woodland I period.

In contrast, the 24 rhyolite artifacts consist of a single late-stage biface and debitage, primarily from the later stages of reduction. While most of the rhyolite was found in Cluster 4, small amounts were also recovered from Clusters 1 and 3. The Cluster 3 artifacts include the biface and three pieces of debitage. Since this cluster dates primarily to the Archaic period, during which populations were highly mobile, the rhyolite in this cluster could have been procured directly.

Three small chips of steatite were identified in Cluster 4. The only site in the vicinity of Churchman's Marsh reporting steatite is the Newport Site. The material was likely acquired through exchange, since steatite was widely traded during the Woodland I period. More and larger pieces may be present in unexcavated portions of the site.

LITHIC TECHNOLOGY

Tools in Clusters 1, 3, 4, and 5 had a relatively even mix of expedient flake tools and formal bifacial and unifacial tools, excluding points.¹ Clusters 3 and 4 had similar flake tool:form tool

1. Since flake tools have no functional equivalent for projectile points, including points would skew the analysis in favor of formal tools.

ratios (1.3:1 and 1.7:1, respectively; Table A.19). Cluster 5 had two tools of each type and Cluster 1 had six flake tools and seven form tools; i.e. a relatively even division. The similarity in tool technology between Clusters 3 and 4 is unexpected, given their apparent differences in age and type of occupation. However, the two clusters were generally similar in the distribution of lithic reduction flakes, lithic material use, and the use of bipolar techniques. Clusters 1 and 5 were distinct from each other in characteristics of lithic technology other than flake tool:form tool ratio.

Stemmed points are the most frequent hafting type in the assemblage, comprising 45.7% of the points, excluding unidentifiable fragments (Table A.20). Most of the stemmed points are contracting, including Poplar Island and Rossville types. Unstemmed types—such as teardrop and lanceolate, triangular points, and side-notched points—are well represented. Stemmed points are overrepresented in cryptocrystalline quartz materials. Unstemmed and eared-notched points are the only types with no specimens fashioned of cryptocrystalline quartz. Argillite was used only for unstemmed points, two of which are Fox Creek lanceolate and one a teardrop point.

Four triangular points were found. As discussed in Chapter 4, triangular points have been firmly documented in Archaic and Woodland I contexts, as well as in Woodland II contexts. Since no ceramics were identified in the Phase II survey, it appeared that triangular points at Site 7NC-E-152 were associated with a Woodland I occupation, providing support for the early use of this point in the Churchman's Marsh area. However, because ceramics were recovered during the data-recovery investigations, that conclusion is not supported. The triangular points were found in Clusters 1 and 4, both of which had ceramics, as well as Woodland I diagnostics. In general, because of the overlap of occupations within the clusters, conclusions regarding projectile point chronology in Delaware cannot be made.

Bipolar technology generally increased at the Early Archaic–Middle Archaic transition, in association with bifurcate points (Fiedel 2004). Evidence of bipolar techniques was rare at 7NC-E-152, represented only by two bipolar cores, five bipolar flakes, and 13 anvils. Evidence from Clusters 1 and 5 consists only of anvils. Cluster 3 dated primarily to the Archaic, based on a single bifurcate base point, and produced two bipolar flakes and an anvil. Cluster 4, which dated primarily to the Woodland I period, produced five anvils, three bipolar cores, and three bipolar flakes.

Heat treatment was utilized in chipped stone tool manufacture in all five clusters and for all materials except chalcedony and argillite, both of which are represented by less than 15 artifacts each (Table A.21). Materials with the highest proportion of thermal alteration are chert, red jasper, quartzite, and rhyolite. The high proportion of red jasper likely results at least in part from the fact that heat treatment of yellow/brown jasper imparts a red hue. Quartzite and rhyolite are materials with generally poor conchoidal fracture, so heat treatment would likely have been beneficial in improving their knapping characteristics. Materials from the Delaware Chalcedony Complex have relatively low proportions of thermally altered artifacts. Differences by cluster suggest more intensive use of heat treatment during the Woodland I and II periods than during the Archaic.

SITE FORMATION AND INTRASITE PATTERNING

As discussed in spatial analysis section of Chapter 5, the vertical distribution of artifacts supports the conclusion that occupation of the site was at or near the present ground surface, with multiple occupations intermixed in the plowzone. Artifacts in the subsoil were deposited there as a result of bioturbation or frost heaving. This finding is consistent with the location of the site on an upland terrace that would not receive Holocene alluvial sediments. Although the site was plowed, five high-density artifact clusters were preserved.

Spatial analysis of artifact clusters revealed evidence of horizontal temporal patterning consisting of five clusters with different assemblage characteristics (see Table A.19). Clusters 1 and 4 yielded a wide range of points and small numbers of ceramics, suggesting Woodland I and II occupations. Cluster 5 differed from other clusters in a number of characteristics and may have dated primarily to the Woodland II period. The only diagnostic point from Cluster 3 indicates an Archaic period occupation. No chronologically diagnostic artifacts were found in Cluster 2, so its age of occupation is unknown.

Spatial analysis within clusters generally revealed no distinct activity areas. Some patterning may have been preserved in Cluster 3, which appears to have been the shortest occupation and dated to the Archaic period. One area of intensive lithic reduction was found in the center of Cluster 3. Three clusters of biface-thinning flakes with late-stage bifaces were found, apparently representing late-stage tool manufacturing loci. Four tool clusters were present, two for butchering, one for woodworking, and one unknown. Custer et al. (1981:25) observed that tool production at two Green Valley Complex sites was located in areas separate from habitation areas. However, butchering and woodworking tools showed no negative correlation with debitage distributions that would suggest segregation of tool production from general base camp activities. O'Connell (1987) argues that camps of foragers (*sensu* Binford 1980) should be functionally undifferentiated, since they are short-term occupations. Thus, Cluster 3 supports the proposition that the Archaic inhabitants of the site practiced a foraging strategy.

Clusters 1 and 4 revealed no meaningful artifact patterning, likely because each cluster represented multiple occupations over a period of 5,000 years. As discussed in the research design section of Chapter 4, repeated reoccupations have an adverse effect on intrasite patterning as a result of overlapping of artifact patterns, as well as trampling and scuffage from subsequent occupations (M. Stevenson 1991). Thus, research issues related to the patterning activities cannot be addressed using data from within these two clusters.

Intrasite patterning is represented to some degree in differences between clusters. Although Clusters 1 and 4 were similar in age, as evidenced by point types, they differed in a number of other characteristics. Debitage and biface types suggest that lithic manufacturing in Cluster 4 had a somewhat greater emphasis on the later stages of biface reduction than did Cluster 1. The conclusion is supported by the high proportion of tested cobbles and decortication flakes in Cluster 1.² Cluster 4 yielded bipolar cores and flakes, whereas the only evidence of bipolar technology in Cluster 1 was the presence of three anvil stones. Cluster 4 also had a relatively

2. Difference in decortication flake percentage between Clusters 1 and 4 is statistically significant (Chi square=39.006, $p < .0001$). Difference in tested cobbles is also significant (Chi square=24.966, $p = .0001$).

high proportion of heat-treated artifacts.³ Cluster 4 had a wider variety of tool types, possibly as a result of the larger assemblage recovered. However, the artifact density of lithics other than debitage was somewhat higher in Cluster 1 than in Cluster 4.⁴

Three features were found at the site—two in Cluster 4 (Features 3 and 4) and one in Cluster 1 (Feature 1). Feature 1 was a shallow basin of unknown function. Feature 4 was interpreted as an earth oven and produced a radiocarbon date from the late Woodland I period. Feature 3 was a cluster of cobbles and cobble tools.

Cluster 3, which included an Archaic period occupation, produced two points, a much lower proportion than Clusters 1 and 4.⁵ The types of debitage and bifaces indicate an emphasis on the late stages of biface reduction, although fewer finishing flakes were present than in Cluster 4. Bipolar flakes and anvils indicate the use of bipolar manufacturing techniques. The proportion of heat treatment was relatively low. Quartz appears to have been a preferred material and was used for most of the form tools.

Cluster 5 differed in a number of characteristics from the other clusters. The proportion of ceramics was much higher, suggesting a predominantly Woodland II occupation⁶. However, three pieces of steatite and a net-impressed ceramic sherd were also recovered. Late-stage reduction and tool finishing were the predominant manufacturing activities, with finishing flakes comprising 27.4% of the identifiable debitage. Heat treatment was an important part of the manufacturing process in this cluster. The lithic assemblage reveals a clear preference for cryptocrystalline quartz, including Delaware Chalcedony Complex material, over quartz and quartzite. The only lithic artifacts from Cluster 5 not related to lithic manufacturing are two utilized flakes, an unidentifiable unifacial tool, and the triangular point, along with 22 pieces of FCR.

Cluster 2 is undated and because it is outside the data-recovery APE, no Phase III excavations were undertaken there. The Phase II testing produced artifacts entirely related to lithic manufacturing. Very little evidence of heat treatment was present and no evidence of bipolar technology was identified. Quartz and quartzite predominates in the assemblage, with little use of cryptocrystalline quartz. Although the only biface is late stage, the debitage classification suggests the early stages of lithic reduction.

Overall, the results of spatial analysis indicate a series of Woodland I and II occupations in Clusters 1, 4, and 5, and a more isolated Archaic occupation in Cluster 3. Clusters 1 and 4 may each represent a different series of occupations or may be different activity areas of the same occupations. In addition to temporal differences, the clusters revealed differences in lithic

3. Difference in heat-treated artifacts between Clusters 1 and 4 is statistically significant (Chi square=32.966, p=.0001).

4. Differences in numbers of lithics other than debitage between Clusters 1 and 4 is not statistically significant at the p=.05 level (Chi square=2.783, p=.0953).

5. Difference in proportions of points in Clusters 1 and 3 is statistically significant (Chi square=4.05, p=.0442), as are differences in proportions of points in Clusters 3 and 4 (Chi square=5.625, p=.0177).

6. Difference in proportions of ceramics in Clusters 1 and 5 is statistically significant (Chi square=10.417, p=.0012). Difference in proportions between Clusters 4 and 5 could not be calculated since the expected value for Cluster 5 is zero.

manufacturing, lithic material use, and other activities. Features were present only in Clusters 1 and 4.

SITE FUNCTION AND REGIONAL SETTLEMENT PATTERNS

Site Function, Comparison of Cluster Data

Several factors can be examined to provide insights on the length of site occupations. Petraglia et al. (1998:158) argue that the ratio of tools to late-stage debitage can be used as an indicator of the duration of site use. The hypothesis is based on the assumption that although late-stage debitage increases with length of occupation, its proportion in the total assemblage decreases with the increased use and discard of tools. Calculating this ratio using assemblages from the Site 7NC-E-152 clusters reveals that Clusters 3 and 4 have similar ratios, which indicate relatively short-term site use (see Table A.19). Clusters 1 and 5 differ, showing a higher ratio of tools to late-stage debitage, suggesting longer periods of occupation.

Based on the assumption that FCR is reused during site occupation and becomes smaller with higher frequency of reuse, Cluster 3, with the highest average FCR weight, appears to represent the shortest length of occupation (see Table A.19). The other four clusters had generally similar average FCR weights. Clusters 4 had the highest FCR density, even though its density of lithics other than FCR was similar to or lower than the other clusters. This factor suggests more frequent food preparation activities may have taken place there relative to tool manufacturing.

Cluster 4 also had the greatest number of tool types. Greater diversity of tool types indicates a wider variety of activities, and may suggest longer-term base camps rather than short-term procurement sites.

The ratio of total debitage to tools indicates the importance of tool manufacturing compared to other activities. Cluster 5, which dates primarily to the Woodland II period, had the lowest ratio, indicating that tool manufacturing was least important during this occupation. Cluster 3, the relatively short-term Archaic period occupation, had the highest ratio and therefore the greatest emphasis on tool manufacturing. Cluster 4 also had a relatively high ratio.

Archaic Period

As discussed in the prehistoric overview, sites such as Clyde Farm show much less intensive occupation during the Archaic period as compared with the Woodland I and II periods. Custer (1989) describes a mobility pattern involving the serial use of both lithic and marsh resources. The 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.

The Archaic period occupation at 7NC-E-152 appears to be centered in Cluster 3, where the St. Albans point was found and diagnostic artifacts from other periods were absent. A number of characteristics indicate that the Archaic occupation was relatively short-term. Average FCR size in Cluster 3 was relatively high, and the tool:debitage (late-stage) ratio was low. Although

shallow basins with FCR may have been present and destroyed by plowing, no features suggesting long-term occupation were found. Lithic production was clearly an important activity, focusing on the late stages of manufacturing and including the use of bipolar techniques. Early stages of lithic reduction may have taken place at the cobble source location. Quartz may have been a preferred lithic material, since its proportion in the lithic assemblage is higher than expected based on cobble studies and higher than in other clusters. Activities associated with base camps were also recognized in Cluster 3, including butchering and food preparation, as well as woodworking.

Thus, the Archaic period occupation corresponds to a microband camp in Custer's (1989) model. However, since Archaic and Woodland period artifacts are intermixed at most sites in the Churchman's Marsh area, Archaic period assemblages cannot be isolated and analyzed. It is unclear, therefore, whether Archaic period macroband camps actually exist in the vicinity of the marsh. Interpretation of group size and social composition is also complicated by the fact that multiple small-group occupations can be similar archaeologically to a single large-group occupation. Based on the 7NC-E-152 data, it appears that Churchman's Marsh was visited periodically for short periods during the Archaic, both to renew toolkits and to make use of the abundant wetland resources. Ethnographic data from hunter-gatherer groups where population density is low suggest that the occupants of the site were small family groups practicing a foraging-type strategy (Binford 1980). The absence of hearths limits inferences regarding the number of families and social composition of the group. However, the absence of any redundant patterning of activities suggests a single extended family.

Ethnographic studies suggest that camps have household, communal, and special activity areas (O'Connell et al. 1991). Hearths appear to be a focus around which many activities were organized. No hearths were preserved in Cluster 3, but the type and variety of activities suggest that this location was a household area. The tools consist primarily of expedient flake tools, which are more likely to be discarded at their location of use. Therefore, the four tool clusters may represent locations where butchering and other activities were performed, either sequentially or concurrently. The metate, the woodworking tool, and artifacts related to tool manufacturing represent other activities (see Figure 5.32). Based on current assumptions regarding gender roles, both male and female activities were present. Most of the activities were likely conducted by males; i.e. butchering and tool manufacturing. The metate indicates grinding nuts or seeds, likely by females.

The Archaic period foragers established this camp in a location where they could utilize highest quality resources and then move on as those resources were diminished and became more costly to procure. Although Archaic period populations are generally believed to have moved over large territories, there is a very low percentage of non-local lithics in the Cluster 3 assemblage. The abundant resources of the Churchman's Marsh wetlands may have allowed the Archaic foragers to spend a greater portion of their foraging cycle in this locality.

Woodland I

Custer (1989) proposes a Woodland I model 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. Three macroband camps have been identified in the Churchman's Marsh

area—Clyde Farm, Newport, and Delaware Park. A number of other sites in the region have been interpreted as microband or procurement sites. However, as noted above, interpretation of group size and composition is inconclusive based on archaeological evidence. The inferred macroband base camps may simply have been occupied more often because of their highly suitable habitats.

Diagnostic points indicate that the Woodland I occupation of Site 7NC-E-152 consisted of repeated occupations extending across the entire 4,000-year period. Evidence of Woodland I occupation is found primarily in Clusters 1 and 4, with limited evidence present in Cluster 5. A number of factors indicate that the Woodland I occupations were similar to the Archaic occupations, but of longer duration. FCR weight averages are low and tool:debitage (late-stage) ratios are relatively high, except from Cluster 4. However, Cluster 4 produced the largest number of tool classes, suggesting a longer-term occupation involving a wider variety of activities.

While the Woodland I occupations appear to be longer term than the Archaic occupations, there is an important factor that argues against long-term or multi-seasonal base camps. Storage features—such as those at Delaware Park, which dated to circa A.D. 600—were not found at 7NC-E-152. Elaborate cooking features like earth ovens and roasting pits require labor input for food-preparation facilities, possibly for larger groups. Such labor inputs would likely not be invested or needed for short-term occupations by small groups. Only one such feature, Feature 4, was found at 7NC-E-152. It was interpreted as an earth oven, although it could have been used for other fire-related activities, such as heat-treating lithic materials. The feature represented an occupation that was radiocarbon dated to near the end of the period. Although Hell Island ceramics have been associated with the late Woodland I period in the Churchman's Marsh area, none were found at 7NC-E-152, further arguing against a multi-season camp.

There appears to be little difference between the Archaic and Woodland I periods in lithic material use and tool manufacturing. Except for the Fox Creek points of argillite, tools are generally made of locally available materials. Expedient and bipolar technologies, as well as heat treatment, are more important in Cluster 4. The use of cryptocrystalline quartz was relatively high in Clusters 1 and 5.

Thus, it appears that Woodland I occupations at 7NC-E-152 were base camps, occupied for longer periods of time than during the Archaic period and exhibiting a wider range of activities. The near absence of features, however, suggests that the Woodland I occupations were shorter than those of Clyde Farm and other sites interpreted as macroband base camps located in closer proximity to the wetland resources of Churchman's Marsh. Cluster 1 activities consisted primarily of lithic manufacturing and butchering, suggesting that it may have been a special activity area for one or more of the Woodland I occupations. Cluster 4 likely represented a household area during one or more of the occupations, given the presence of an earth oven and a wide variety of activities. Unfortunately, the presence of multiple occupations precludes firm conclusions regarding the occupation-specific organization of activities. Tools in the vicinity of the features were primarily flake tools or unifaces, which, given their expedient nature, are more likely to be dropped at the location of use. Debitage density in the vicinity of the earth oven is relatively low, suggesting that the occupants may have cleaned debris from this area of the site.

A dense area of tools to the north of the feature may represent a displacement zone, where tools used around the feature were cleared away from the feature area. However, such conclusions are problematic given the presence of multiple occupations in Cluster 4.

Based on the archaeological evidence, the Woodland I occupants of 7NC-E-152 were likely extended family groups, or microbands, that during resource-productive seasons joined other groups at Clyde Farm or one of the other sites interpreted as macroband camps. Alternatively, group size and composition may not have changed seasonally, but instead the larger, archaeologically denser sites such as Clyde Farm may have been simply occupied more frequently and for longer periods.

Woodland II

Woodland II components are associated with Woodland I occupations at many of the sites around Churchman's Marsh. The period is characterized by the distribution of trade and exchange networks, as well as the appearance of more sedentary lifestyles. Ceramics provided the basis for classification of Woodland II sites in the Churchman's Marsh area as part of the Minguannan Complex (Custer 1989). Custer (1989) identifies the Delaware Park and Clyde Farms Sites as Woodland II macroband base camps largely on the basis of abundant Minguannan ceramics. However, features at those sites were datable to the Woodland I period. Fewer Woodland II microband camps have been identified compared to the Woodland I period. Procurement camps tend to be associated with poorly drained woodlands and the heads of small streams. Overall, site distributions indicate a general continuity in adaptation from the Woodland I to II periods. Agricultural villages, such as those found in the Piedmont, are not present.

The Woodland II occupation of Site 7NC-E-152 appears to have been centered in Cluster 5, but diagnostics of the period were also found in Cluster 1 and to a more limited extent in Cluster 4. Cluster 5 had the lowest average weight of FCR, suggesting greater reuse of the material. Lithic technology is distinctive, characterized by the highest proportion of heat-treated artifacts, a lower proportion of decortication flakes, and the greatest focus on cryptocrystalline quartz. Included is a high proportion of material from the Delaware Chalcedony Complex. Along with the low debitage:tool ratio, procurement of cobble resources and tool manufacturing seems to be of lesser importance than in other periods. Although the tool:debitage (late-stage) ratio indicates longer-term occupation than those of Clusters 3 and 4, only 17 ceramic sherds were found, arguing against a long-term habitation site. The conclusion is supported by the relatively low artifact density in the cluster. No microwear evidence is available, but only three tool classes were found, indicating a limited range of activities. It should be noted that these statistics are likely affected to some degree by the small sample size from Cluster 5. However, despite the small artifact sample, the artifact density in Cluster 5 was similar to that of Clusters 3 and 4.

Cluster 1 was similar to Cluster 5, and different from Clusters 3 and 4, in characteristics such as preference for cryptocrystalline quartz, ratio of flake tools to form tools, ratio of tools to late-stage debitage, ratio of all debitage to tools, and average FCR weight. Clusters 1 and 5 were in close spatial proximity and it is likely that the Woodland II occupation encompassed both artifact clusters.

The Woodland II occupations at Site 7NC-E-152 appear to have been short-term encampments with activities involving late-stage tool production focused primarily on cryptocrystalline quartz from both local cobbles and the Delaware Chalcedony Complex. The use of non-local lithics from the Delaware Chalcedony Complex contrasts with regional trends, indicating a Woodland II decline in trade and increased focus on local materials (Stewart et al. 1986). However, the Delaware Chalcedony source material is near enough to the site that it could have been procured directly. It should also be noted that given the admixture of Woodland I and earlier artifacts, the Delaware Chalcedony Complex lithics could be associated with occupations other than those of the Woodland II period. Artifact admixture also inhibits comparisons of Woodland II lithic material use with other Woodland II occupations in the Churchman's Marsh area, such as Clyde Farm and the Newport Site.

Heat treatment was utilized during the Woodland II occupation, primarily in the Cluster 5 locality. The low proportion of decortication flakes and the preference for higher quality materials indicates that the occupants had sufficient mobility and access to lithic resources that they could be somewhat selective in their lithic material use. The occupants had visited the Iron Hill region as well, given the relatively high proportion of lithics from the Delaware Chalcedony Complex. While they brought ceramics to the site, they were not resident long enough to break and discard more than a few pots. Nor do they appear to have invested in elaborate cooking features. The Churchman's Marsh vicinity appears to have been less intensively occupied during the Woodland II period. The marsh resources were likely utilized on a seasonal basis by groups who established longer-term base camps elsewhere, perhaps at sites on the nearby Piedmont.

SUMMARY

Site 7NC-E-152 would be classified as a microband camp for all prehistoric periods of occupation based on Custer's (1989) model. However, the preservation of temporal patterning at the site facilitated the identification of differences in site use and activities over time. The Archaic occupation was likely the briefest occupation, composed of small groups utilizing local cobble resources with a possible preference for quartz. Activities including butchering and seed or nut processing suggest that a family group was present. The Woodland I occupations were somewhat longer term and spread across a larger area of the site. They exhibited a wider range of tools and activities than did the Archaic period occupations. A late Woodland I occupation included investment in at least one cooking feature. However, the Woodland I occupations lacked storage features and other evidence of long term (i.e., multi-seasonal) occupation, such as those in evidence at Clyde Farm, Delaware Park, and Newport. The Woodland II inhabitants of the site may have visited the region from multi-season base camps on the Piedmont or elsewhere in the region to acquire high-quality lithic material and utilize resources of the marsh.

The Delaware state plan (Custer 1986) noted the low number of Archaic period sites and the difficulty in separating Archaic components on multi-component sites. These limits on the Archaic period database are still present more than 20 years later. Investigations at Site 7NC-E-152 indicate that on some multi-component plowzone sites Archaic occupations can be identified and evaluated. Although conclusions are tempered somewhat by the admixture of artifacts from

later occupations, it is likely that Cluster 3 is dominated by an Archaic period occupation defined through block excavation and spatial analysis of artifacts.

The state plan does not identify the Archaic and Woodland I use of triangular points and the implications for settlement pattern data as a research issue because, at that time, the pre-Woodland II use of triangular points had not been widely confirmed. Although data-recovery investigations indicated that the triangular points at Site 7NC-E-152 were likely related to the Woodland II occupation, the research issue is valid for future studies.

The Woodland I period was identified in the state plan as the best known period of prehistory (Custer 1986). The plan identifies micro-base camps as important, especially those in the vicinity of macroband camps. Site 7NC-E-152 represents one of a few such sites that have been systematically excavated and where Woodland I components can be distinguished to some degree from earlier and later occupations. The site has provided important data for comparison in future investigations of microband camps in the Churchman's Marsh area.

The state plan also notes that, given the size of the Woodland I site database, it may be possible to study smaller units of time. Notably, Site 7NC-E-152 produced Fox Creek and Jacks Reef points, as well as a radiocarbon date, associated with what has been termed traditionally the Middle Woodland period. However, artifacts from this occupation could not be isolated at the site. Had the component contained more datable features, it may have been possible to define related artifact subassemblages.

For the Woodland II period, key priorities identified in the state plan are the generation of data related to site distributions, site sizes, and community settlement patterns. Comparisons with similar data for the Woodland I period are also defined as important for understanding culture change. The Woodland II occupation of Site 7NC-E-152 appears to have been less intensive and/or less frequent than the Woodland I and with a somewhat narrower range of activities. This difference may indicate a more focused settlement strategy with more limited use of satellite camps. Alternatively, it could indicate a decrease in population. Overall, data on the Woodland II occupation of the Churchman's Marsh area are limited by the lack of components that can be reliably distinguished from Woodland I and earlier occupations.