

## SECTION 17.0 CHRONOLOGY

### INTRODUCTION

Data from the investigations at Hickory Bluff suggested that site occupation spanned a lengthy period of time, potentially ranging from the Early Archaic to the Late Woodland. Site use appeared intermittent throughout much of that span and certain periods were better represented in terms of artifact frequency compared to others. Resolving site chronology was considered critical in providing a basic framework for comparative studies of activity at the site; the data recovery excavations were geared towards refining the chronology of the site occupations. Two main dating methods were employed in assessing site chronology: 1) absolute; charred organic material, such as wood charcoal, burned nutshell and ceramic residue, was collected and submitted for radiocarbon dating; and 2) relative; artifact styles, and in particular, the styles of projectile points and ceramics, were examined.

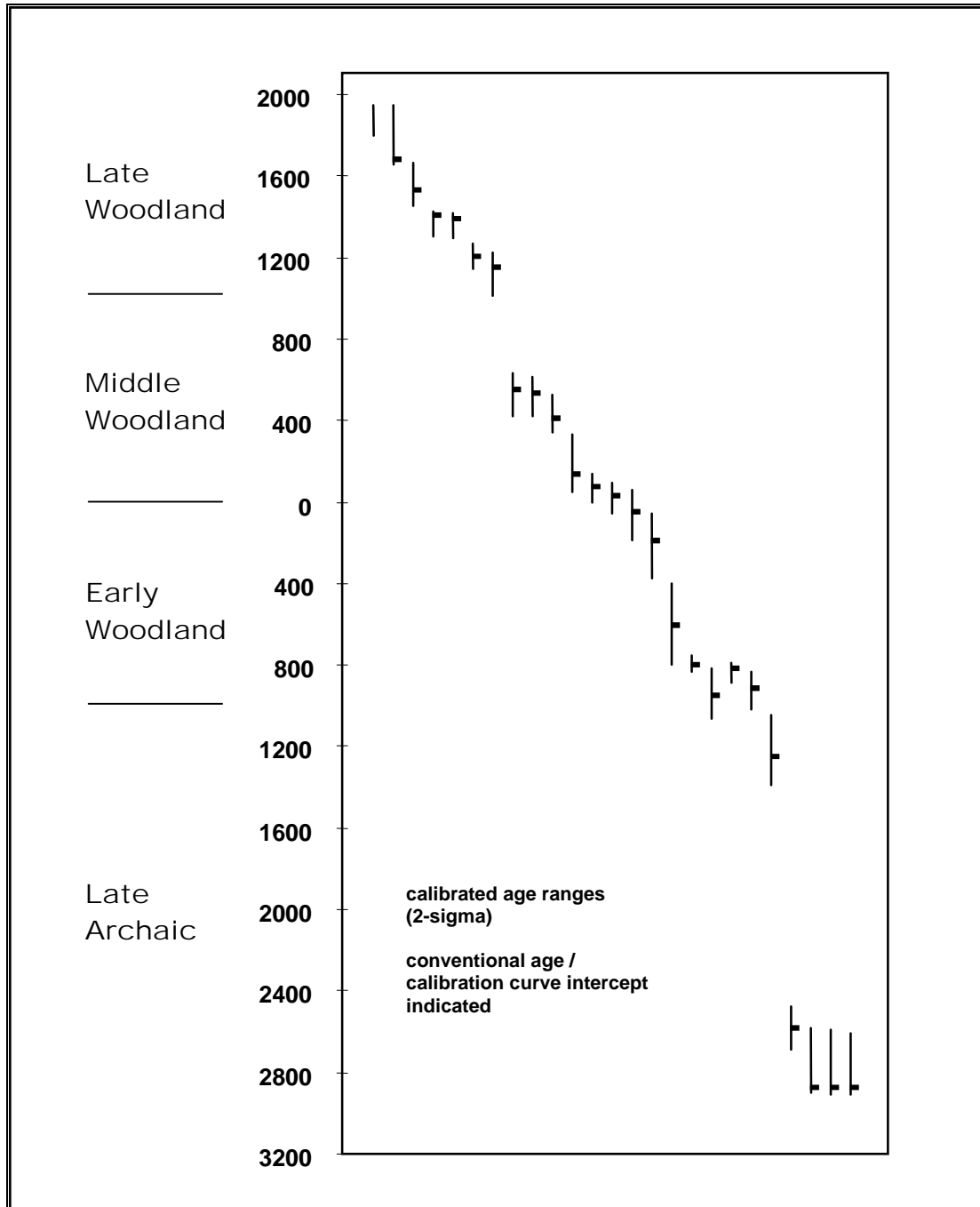
### RADIOCARBON DATES

Radiocarbon dating conducted for Hickory Bluff provided a series of absolute dates determined through laboratory analysis of charred organic remains from the site. These dates helped define depositional sequences for the specific contexts from which they were recovered. All of the dates were obtained using Accelerator Mass Spectrometry (AMS) due to the small sample size. Figure 17.1 shows the results as calibrated dates with two-sigma ranges.

Despite the apparent intensity of occupation at Hickory Bluff suggested by the volume of artifactual debris present, organic material suitable for radiocarbon dating was not abundant. Nonetheless, efforts were made to collect samples from a range of secure contexts. In total, 25 samples obtained from several sources located across the site were dated. The assayed material consisted of aggregate samples of wood charcoal from features and from level proveniences, charred nutshell fragments, and residues from ceramic vessels. The dates span most of the interval from the latter portion of the Late Archaic period, around 3000 B.C. to the late historic period. Sampling of the types of material and proveniences was not systematic; however, the locations from which the samples were taken were varied enough to suggest that the overall date range is an accurate representation of the later periods of site occupation, if not the consistency or intensity of site use during any given interval. Older carbon, which is less likely to be preserved, may be underrepresented in the sample. Nonetheless, the radiometric data tend to corroborate the chronology implied by the artifacts from the site. The cluster of early dates—two from aggregate charcoal samples from a single feature and two from separate hickory nutshell fragments—is notable in that the dates are essentially identical statistically, averaging about 2800 B.C.

### Artifacts

Archaeologists working in the Mid-Atlantic region commonly place emphasis on changes observed in artifact styles and traits as a means of dating prehistoric sites. This process continues to have utility and was of use in estimating the age of the Hickory Bluff habitations.

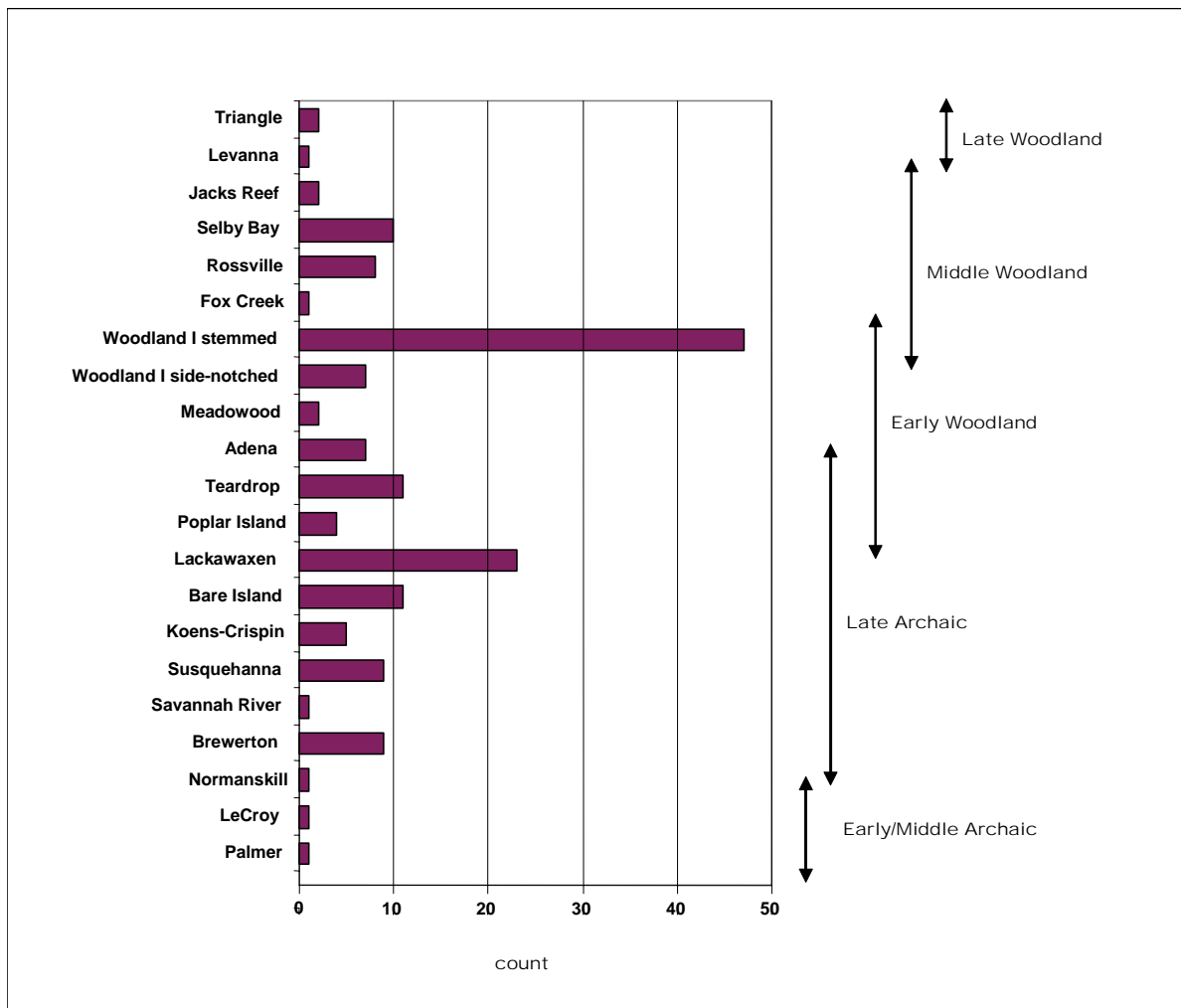


**Figure 17.1 Compilation of Radiocarbon Dates from the Hickory Bluff Site**

The most useful indicators of the potential age of the prehistoric deposits at Hickory Bluff were projectile points and ceramics. Over 7,600 ceramic sherds and 298 projectile points or point fragments were recovered from excavations at the site. The points and ceramics indicated major phases of occupation dating to the Late Archaic, Early Woodland, and Middle Woodland periods. Additionally, there were small numbers of artifacts representing the Early and Middle Archaic periods.

### Projectile Points

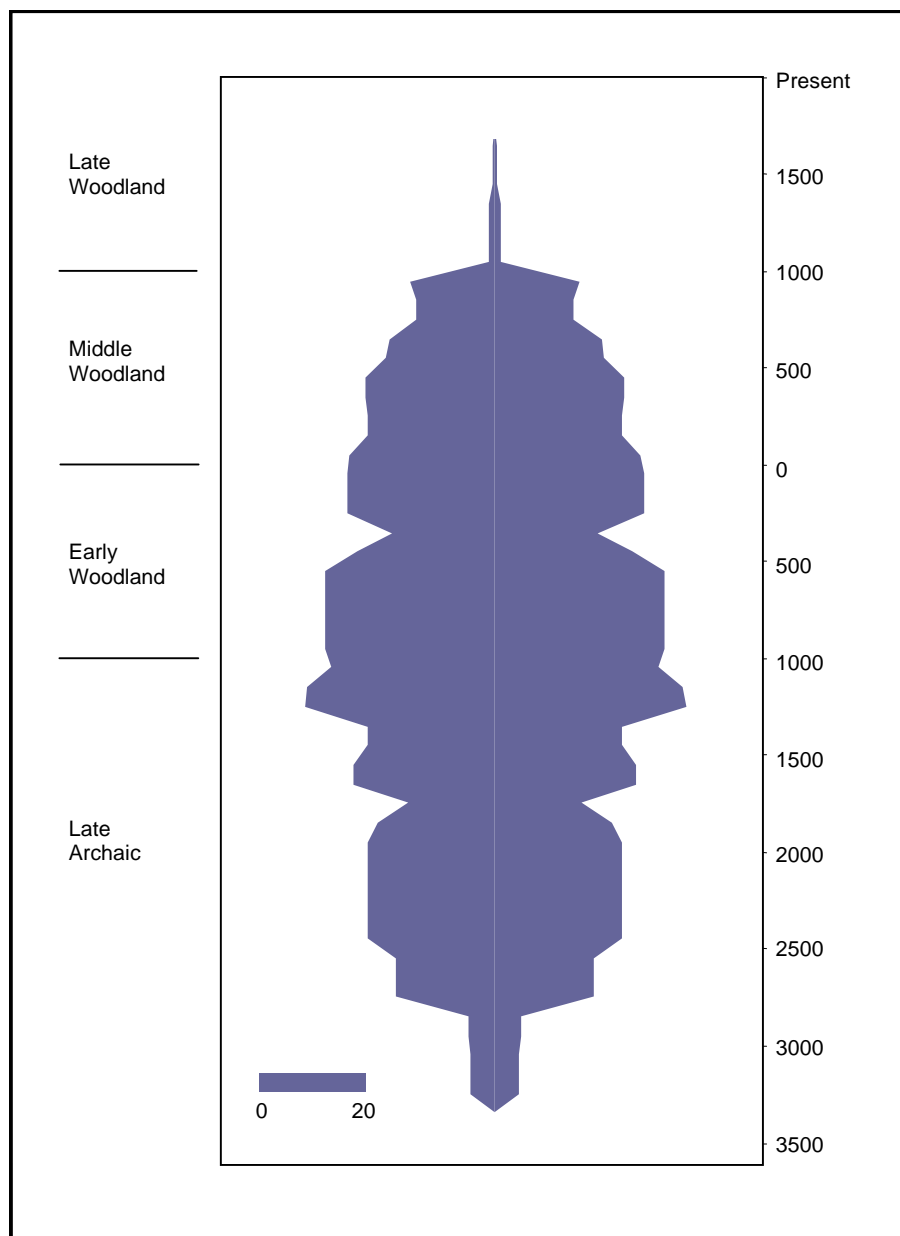
Of the 298 projectile points or point fragments recovered from Hickory Bluff, 163 were assigned to temporally diagnostic types. Based on comparison with collections from other archaeological sites in Delaware, the Mid-Atlantic, and the Northeast, the projectile points were representative of the Early Archaic through Late Woodland periods (Figure 17.2). The most common category of points in the Hickory Bluff assemblage were stemmed points, both large and broad-bladed forms from the end of the Archaic period (Koens-Crispin, Lackawaxen) and smaller, stemmed points manufactured from the local gravels. These small, stemmed, and occasionally side-notched, points do not have good contextual or chronological data associated with them, but they are widely presumed to date to the early sub-periods of the Woodland. In this study, they have been assigned the broadest acceptable range, including most of the Early and Middle Woodland sub-periods. There are data from the site to support and possibly refine this supposition.



**Figure 17.2 Projectile Point Types Identified at Hickory Bluff, Listed in Chronological Order**

An analysis based on the concept of artifact seriation was conducted to provide a general description of point type frequency at Hickory Bluff (Figure 17.3). Using the conventional date

ranges for point and ceramic types occurring at the site, values were assigned to each 100-year interval in each range based on the frequency with which the types were represented in the collection. The totals for each 100-year interval were then calculated and the aggregate frequencies graphed. The resulting charts depict the periods during which the artifacts were likely to have been most frequent at the site. The chart thus provides an indication of potential occupation intensity. The maximum date ranges for the artifacts were used and the procedure unevenly weights artifact styles that persist over long periods; not included on the graph are two early points, Palmer and LeCroy, both of which were single representatives of their types.



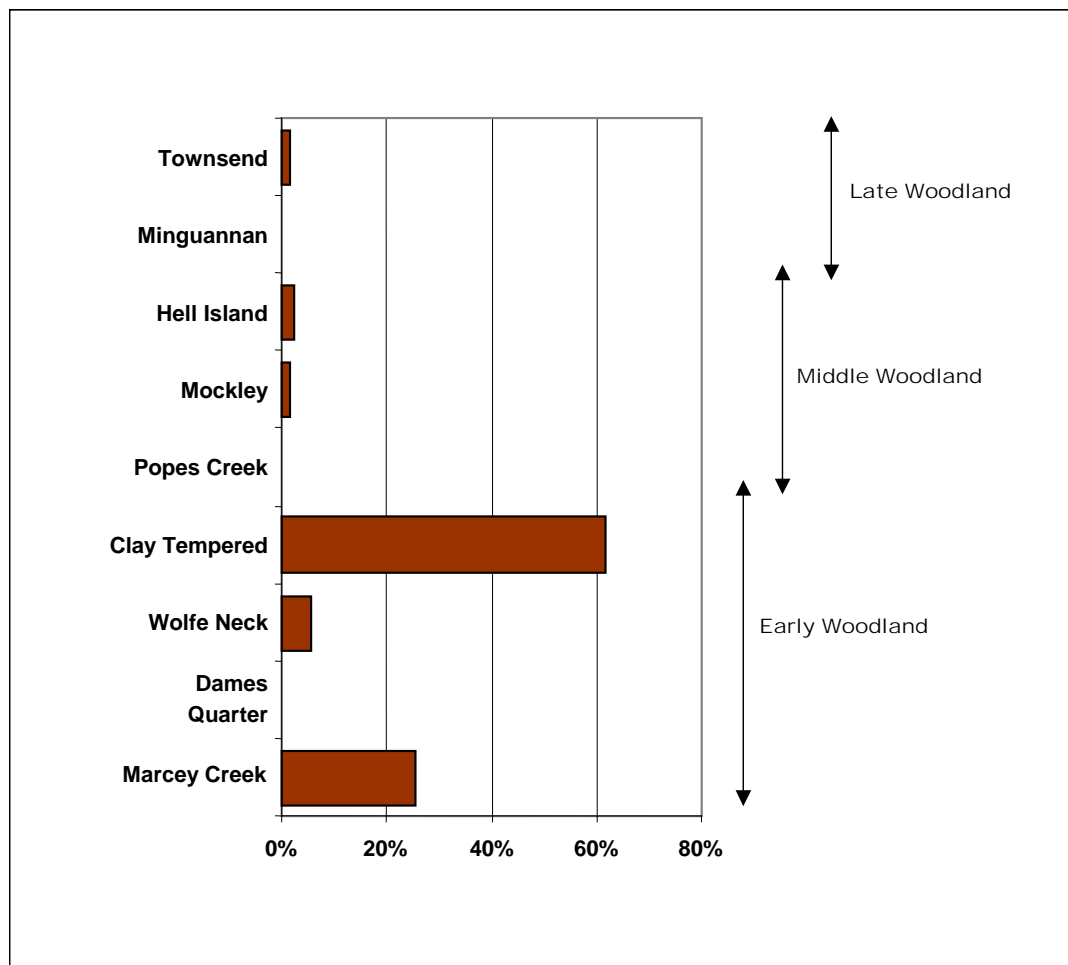
**Figure 17.3 Schematic Representation of Projectile Point Type Frequency**

As the chart indicates, point frequencies increased near the end of the Archaic period, reached a maximum during the Early Woodland, and decreased during the Middle Woodland.

The dramatic fall-off in the Late Woodland reflects both the small number of acknowledged point types from the subperiod (consisting largely of several triangular forms), and the low frequency of occurrence of those points at the site.

### Ceramics

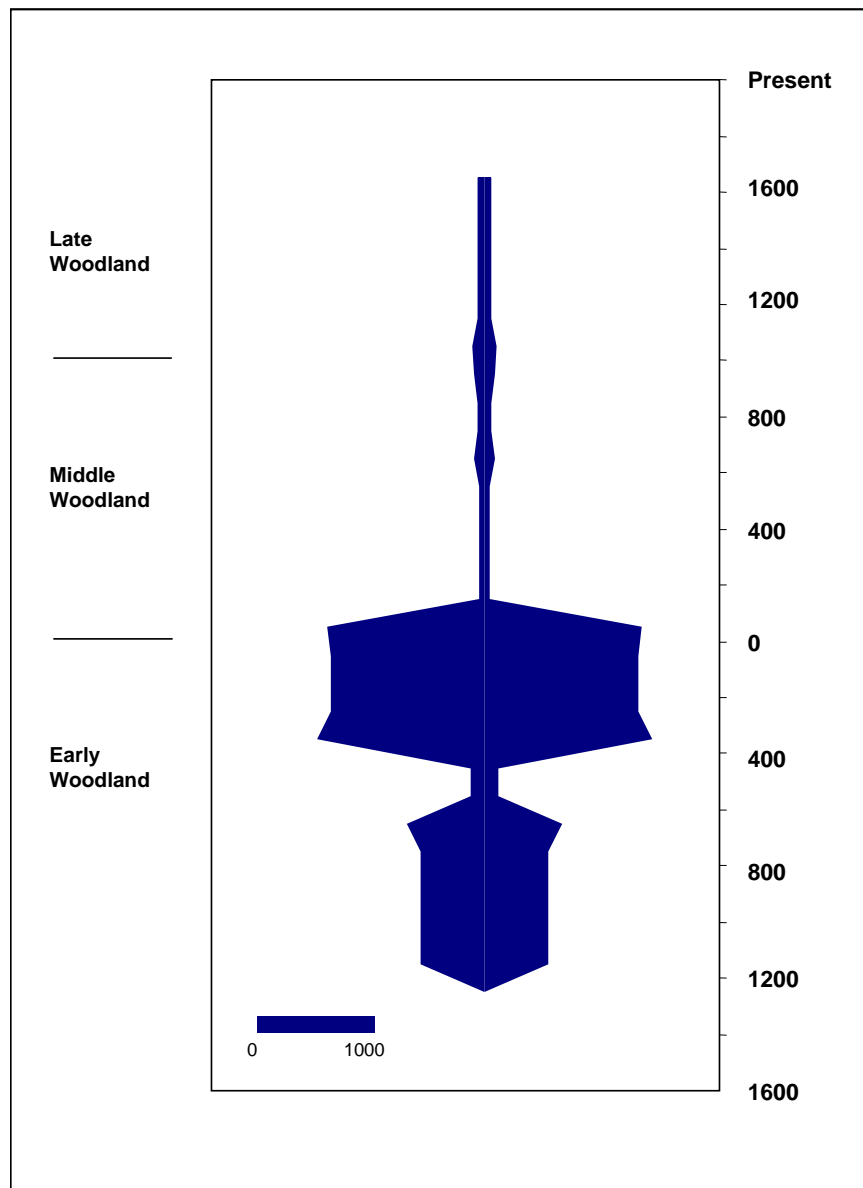
Over 7,600 ceramic sherds were recovered from the excavations at Hickory Bluff, of which approximately 4,200 were large enough and displayed sufficient attributes to be typed. Over 60 percent of the typed sherds were identified as Early Woodland, Clay Tempered wares, while an additional 25 percent consisted of Early Woodland steatite tempered Marcey Creek (Figure 17.4). The remaining types—Early Woodland Dames Quarter and Wolfe Neck; Middle Woodland Mockley, Popes Creek, and Hell Island; and Late Woodland Townsend and Minguannan—were minor elements.



**Figure 17.4 Frequency of Occurrence of Ceramic Types Identified at Hickory Bluff, Listed in Chronological Order**

A seriation chart was constructed for ceramics at the site employing a procedure similar to that described above for projectile point types (Figure 17.5). Using the conventionally accepted date range of each ceramic type, the aggregated frequencies of the types within 100 year intervals were calculated and graphed. The frequencies were based on sherd counts, not

vessel lots. The earliest wares, Marcey Creek and, to a minor extent Dames Quarter, account for the high frequencies early in the Early Woodland, while Clay Tempered ceramics combine with Wolfe Neck at the end of the period. There were relatively few sherds representing late Middle Woodland or Late Woodland wares, as indicated by the thin line at the top of the chart. The fall-off in the middle part of the Early Woodland is not necessarily an indication of a decrease in site occupation. Rather, it results from the lack of overlap in the accepted date ranges of the ceramic wares, and thus suggests that our understanding of these ranges may be incomplete.



**Figure 17.5 Schematic Representation of Ceramic Type Frequency**

**RESIDUE DATES**

Residues from the interiors of four ceramic sherds were submitted for AMS dates. The results of the assays (Table 17.1) generally corroborated the accepted ranges of the ceramic

types, although several overlapped the late end of the specific range. A Mockley sherd (1207-1) recovered from general stratigraphic levels in Locus H, Block 2 returned a date of 1850±60 years B.P., which falls early in the Mockley range. A Clay Tempered sherd (4268-1) from general stratigraphic levels in the central part of the Northwest Main Block returned a date of 1930±40 years B.P., slightly late for the currently accepted range of Clay Tempered ceramics. A second Clay Tempered sherd (CX107/S) from Vessel Lot HCC4 in Feature 415 returned a date of 1980±40 years B.P., which also overlaps the late end of the Clay Tempered range. And finally, a Wolfe Neck sherd (1437-1) from general stratigraphic levels in the western part of the Northwest Quadrant returned a date of 2160±50 years B.P. Like the two Clay Tempered residue dates, this date was slightly late for Wolfe Neck.

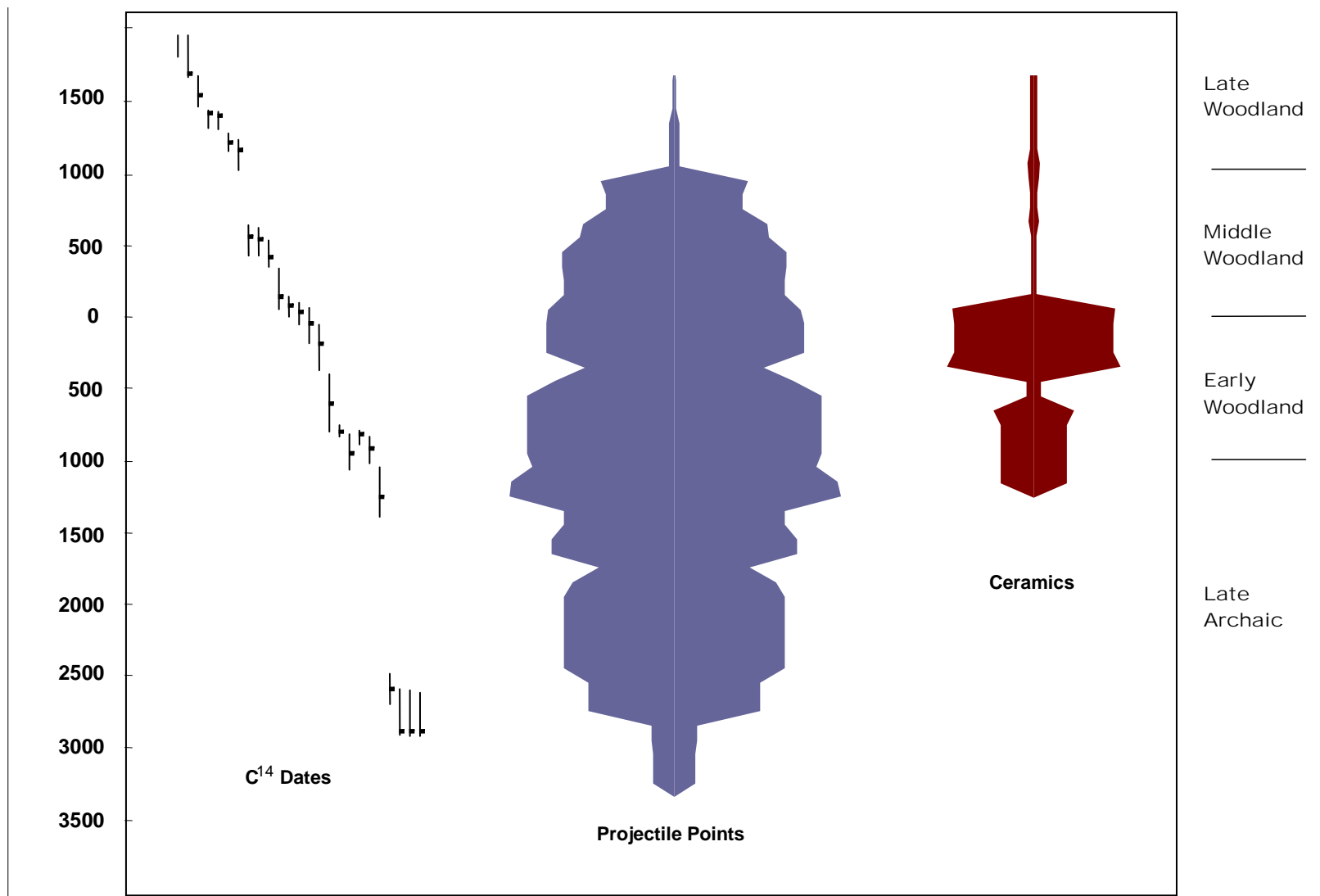
**Table 17.1 Dates from Organic Residues on Ceramic Sherd Interiors**

Artifact Number	Ceramic Type	Provenience	Radiocarbon Age	Calibrated Results (2 sigma)	Lab Sample Number
1207-1	Mockley	N389 E624 Stratum B, Lvl. 2	1850±60 years B.P.	A.D. 45 to 330	Beta 128592
4268-1	Clay Tempered	N366 E648 Stratum B, Lvl. 2	1930±40 years B.P.	5 B.C. to A.D. 140	Beta-141000
CX107/S	Clay Tempered	N314 E673 Feature 415	1980±40 years B.P.	55 B.C. to A.D. 95	Beta-141001
1437-1	Wolfe Neck	N370 E633 Stratum A, Lvl. 2	2160±50 years B.P.	375 to 55 B.C.	Beta-141542

The residue dates from Hickory Bluff ceramics are significant in that they either corroborate or expand the date ranges of three of the ceramic types identified at the site. They are secure dates with little question of context, since the residues were identified as charred organic matter that had adhered to the interior of each sherd. The dates can thus be assumed to be characteristic of the period during which the artifacts were used. The analyses demonstrate that there were Clay Tempered components at Hickory Bluff that continued late in the known range of the ware, and appear to have extended beyond the end of that range as it is presently understood. A similar situation was documented for Wolfe Neck ceramics. The residue date from the Wolfe Neck sherd was several hundred years later than the acknowledged range of the ware, and implies that current assessments of the date range of Wolfe Neck are somewhat conservative.

## COMBINED DATA

Comparing the three data sets (Figure 17.6), it is apparent that the frequency peaks for points and ceramics tend to correspond in the Early and Middle Woodland sub-periods. There were slightly fewer points typical of the Late Archaic period at Hickory Bluff than there were from the early portions of the Woodland period, even though there were more Archaic types present. In addition, radiometric data were less frequent from early periods. There were no absolute dates to correspond with the Early and Middle Archaic points, which could be an



**Figure 17.6 Comparative Analysis of Chronological Data from Hickory Bluff:  
Radiocarbon Dates, Projectile Point Styles and Ceramic Types**



indication that these artifacts were heirlooms or scavenged pieces, and do not represent episodes of occupation. Another major factor in the lack of radiocarbon data from the Archaic periods was sampling bias resulting from differential preservation. That is, carbonized organic material dissipates over time through normal processes of weathering and decomposition, processes that can be accelerated in sandy soil environments. The result is a bias against older dates. Preservation may be better in the case of charred hickory nutshell, since it is a denser material than carbonized wood, and in fact, some of the earliest dates from the site were from nutshell fragments.

The reverse of this is also true—organic preservation creates a bias toward younger dates. And thus, the Late Woodland was disproportionately well represented by radiometric data, compared with the few contemporary artifacts that were present, such as triangular projectile points or thin-bodied, shell or sand-tempered ceramics.

### **Specific Chronological Contexts**

Several contexts at the site provided artifact associations of potential interest to regional chronology. They are described in detail in the following paragraphs.

#### ***Locus A, Block 1***

A widespread distribution of Marcey Creek sherds occurred in the northern part of this block. A total of 252 sherds occurred over an area measuring approximately 4 by 5 meters. The collection included 36 sherds from Vessel Lot MA03 (Appendix I), found both in level proveniences and in four separate feature contexts. One sherd from this vessel lot occurred in Feature 98, a small basin lined with thermally altered stone (TAS), that also contained charcoal dated to 2660±40 years B.P.; 23 sherds (6 from the Vessel Lot) were recovered from Feature 137, a small basin; 4 (2 from the Vessel Lot) were recovered from Feature 145, a TAS cluster; and 2 (both from the Vessel Lot) from Feature 67, a medium basin. Two Lackawaxen points, one an expanding stem variety (961-1) and the other, a straight stemmed variety (970-24) (Appendix H), were found in levels with Marcey Creek sherds in units near the center of the distribution. The radiocarbon date from Feature 98 occurs at the end of the accepted ranges for both Marcey Creek ceramics and Lackawaxen points.

A localized distribution of 30 Clay Tempered ceramic sherds occurred in the central part of the block, including four that were part of Vessel Lot CN16 and four that were part of Vessel Lot CN17 (Appendix I). Another of the Clay Tempered sherds was found in an undated feature context (Feature 146, a TAS cluster). A Selby Bay projectile was found adjacent to the feature (Appendix H). Selby Bay and Clay Tempered ceramics have roughly contemporary date ranges and although the evidence is not clear cut, they may have been part of a single artifact subassemblage.

In the southern part of the block, 81 Hell Island sherds occurred in an area covering approximately 5 by 5 meters. All of the sherds were included in Vessel Lot H13 (Appendix I). Three were recovered from Feature 120, a small basin feature containing charcoal that yielded a radiocarbon date of 920±50 years B.P. The date occurs at the late end of the currently accepted range of Hell Island. Fifteen Wolfe Neck sherds were also found in the units: five were

recovered from Feature 120. These earlier sherds may represent incidental inclusions into the feature fill.

### ***Locus A, Block 2***

Marcey Creek ceramics were recovered in association with Late Archaic projectile points in two locations in this excavation block. In the northern part of the block, 49 Marcey Creek sherds were distributed across an area measuring approximately 3 by 4 meters. A small argillite Susquehanna point was recovered in association with the sherds. While there is not an extensive overlap in the accepted date ranges of these two artifact types, the co-occurrence of Susquehanna points and pottery has been noted (e.g., in New York with Vinette I [Ritchie 1965:156]). Also occurring in the area were an earlier Bare Island point and later Clay Tempered ceramic sherds. In a second area, in the southwestern part of the block, a smaller concentration of Marcey Creek sherds was recovered in association with both Susquehanna and Lackawaxen points.

A widely scattered distribution of Clay Tempered sherds occurred in the northeastern part of the block, with one to six sherds recovered per unit in an area measuring approximately 3 by 3 meters. A single, small Adena-like point was recovered in the same area. While the association was weak, due to the low frequency of occurrence of the ceramics, the date ranges of the two artifact types do correspond closely.

A dense concentration of Clay Tempered sherds occurred in the southern part of the block. The ceramics included the artifacts comprising Feature 415, a cache of 34 sherds that mended to form part of a single large vessel (Vessel Lot HCC4), and five sherds that mended to form part of another vessel (Vessel Lot HCN2) (Appendix I). Residue from the interior of one of the sherds from Vessel Lot HCC4 returned an AMS date of 1980±40 years B.P., at the late end of the accepted range for Clay Tempered ceramics. Wood charcoal was collected from Feature 38, a large basin feature that cut into the ceramic bearing deposits. An assay on the material provided a date of 1650±40 years B.P., later than the date range of the ceramics, as would be expected from an intrusive feature.

### ***Northwest Main Block***

Marcey Creek sherds were distributed unevenly across most of this large excavation block with several main concentrations noted. The sherds included two spatially discrete Vessel Lots (MA01 and MA02) and two overlapping Vessel Lots (MA05 and MA07). The distribution of diagnostic projectile points did not provide a distinctive pattern of co-occurrence: Late Archaic broadspears, for example, occurred in all areas of the ceramic distribution, with Lackawaxen, Poplar Island and Susquehanna intermixed throughout. Woodland I stemmed points had a similar distribution, occurring among each of the Marcey Creek concentrations. Thus, no exclusive association between the ceramics and any one point type could be demonstrated. The Marcey Creek sherds were recovered from basins and TAS features containing a variety of other diagnostic material, including Koens-Crispin, Lackawaxen, Susquehanna, Adena, and Woodland I stemmed points, as well as Clay Tempered, Wolfe Neck, Mockley, and Hell Island ceramics.

Wolfe Neck sherds were concentrated in the western part of the main block. The sherds occurred in basins and TAS features in association with Lackawaxen, Susquehanna, Teardrop, and Woodland I stemmed points, and with ceramics from most of the Woodland subperiods.

Clay Tempered ceramics were recovered in almost every unit in the Northwest Main Block. Because the distribution was so widespread, little specific patterning could be established between the ceramics and other sources of chronological information—points or radiocarbon data. Nonetheless, an association was documented between Clay Tempered sherds and Adena and Rossville points. A concentration of 304 Clay Tempered sherds lay in an area measuring approximately 3 by 5 meters centered at N370 E643. Over 30 percent of the sherds were from Feature 1, a large shallow basin; the remainder were from level proveniences above and around the basin. Included in the concentration were Adena and Rossville points, each recovered from the root-disturbed stratum above the feature along with other Clay Tempered sherds. The base of Feature 1 truncated a smaller pit feature, Feature 313, that contained flaking debris, fire-cracked rock, a Marcey Creek sherd and two Clay Tempered sherds. Two radiocarbon dates were returned on charcoal from Feature 313. The dates, 2480±60 years B.P. (from Level 3) and 3000±50 years B.P. (from Level 5), either predated the presumed appearance of Adena or Rossville in Delmarva or lay at the early end of the local Adena range. Other projectile points present in the ceramic cluster were two Woodland I stemmed types, which are related to the Adena morphologically and may have been part of the artifact subassemblage, and a number of Late Archaic period points that appeared to be remnants of earlier site use.

Mockley ceramics occurred in three main areas. They were thinly distributed in the northern and central parts of the main block, where they occurred at a frequency of one-to-two sherds per meter-square unit, and in somewhat higher frequencies in the southern portion, where counts were two-to-six sherds per unit. Vessel Lots MO2 and MO4 were identified in parts of both the northern and southern areas. Selby Bay points, considered to accompany Mockley as part of an artifact complex in the Chesapeake Bay region (Wright 1973; Dent 1995), were recovered in association with the ceramics in the southern and central areas.

One final artifact group consisted of 18 Townsend sherds recovered in the south central part of the main block in association with a jasper Levanna point. These artifacts represent some of the only Late Woodland material from the site.

While the general distribution of diagnostic artifacts in the Northwest Main Block provided few clear patterns of association, co-occurrences of artifact types in feature proveniences suggested further chronological relationships. Eight features—six basins and two TAS clusters—contained diagnostic ceramics and points (Table 17.2). There were occurrences of individual Adena, Meadowood, and Selby Bay points in association with several ceramic types, but as single instances, conclusions of direct association are difficult to support. In contrast, small Woodland I stemmed or side-notched points were present in each of the six feature contexts, consistently associated with Marcey Creek or Clay Tempered sherds. This repeated pattern of ceramic association implies that these points were manufactured and used in the Early-to-early-Middle Woodland periods.

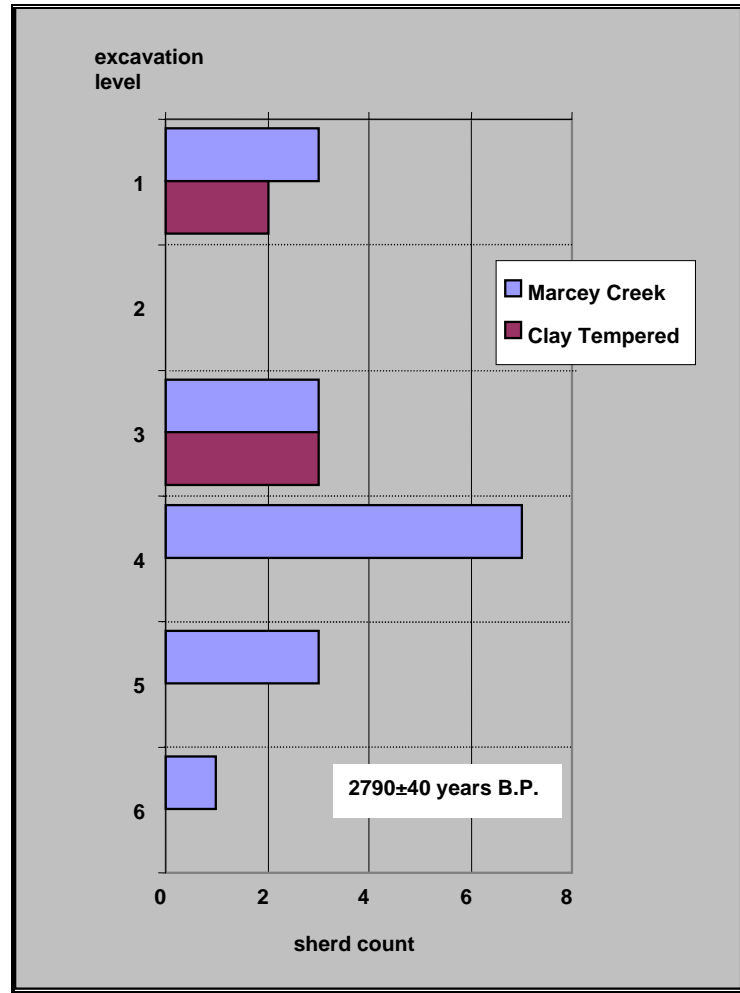
**Table 17.2 Feature Proveniences Containing Diagnostic Artifact Associations in the Northwest Main Block**

Feature	Feature type	Ceramics	Points / AMS Date
1	large shallow basin	Marcey Creek Wolfe Neck Clay Tempered Mockley	2 Woodland I stemmed
2	large basin	Marcey Creek Clay Tempered	2790±40 years B.P.
46	large TAS cluster	Marcey Creek	Woodland I stemmed
94	large basin	Clay Tempered	Meadowood Selby Bay 2 Woodland I stemmed
169	large basin	Marcey Creek Wolfe Neck	Woodland I stemmed
265	large basin	Marcey Creek Clay Tempered Mockley	Selby Bay
284	small TAS cluster	Wolfe Neck Clay Tempered	Woodland I side-notched
297	large basin	Marcey Creek Wolfe Neck Popes Creek Clay Tempered	Woodland I stemmed

Feature 1 was a large basin in the northern part of the main block. It contained 34 Marcey Creek sherds, 5 Wolfe Neck sherds, 108 Clay Tempered sherds, and 1 Mockley sherd. The ceramics were distributed throughout the 40 cm depth of the basin, although most occurred in the upper two 10-cm levels. Two Woodland I stemmed points were recovered from the lowest two levels of the feature, along with the Early Woodland sherds (Marcey Creek, Clay Tempered, and Wolfe Neck).

Feature 2 was a large basin lying in the eastern part of the main block. It contained 17 Marcey Creek and five Clay Tempered sherds, along with charcoal from which an AMS date of 2790±40 years B.P. was returned. Clay Tempered and Marcey Creek sherds were mixed in the upper three levels of feature fill (Figure 17.7), while the lower three levels contained only Marcey Creek sherds, in descending order of frequency. The AMS date was from charcoal in the lowest level of the feature. The date corresponds with the late end of the currently accepted range of Marcey Creek, and is about 400 years early for the start of the Clay Tempered ware range.

Feature 46 was as a TAS feature that, along with two Marcey Creek ceramics and a Woodland I stemmed point, contained a large piece of unworked steatite and wood charcoal, from which a date of 850±40 years B.P. was obtained. The date was considerably later than the accepted date ranges of any of the diagnostic artifacts from the feature. Since the feature was a surface manifestation, as opposed to a basin or pit feature with sealed fill deposits, the charcoal is considered to represent either evidence of later reuse of the feature or an intrusion from overlying deposits.



**Figure 17.7 Vertical Distribution of Chronological Data in Feature 2**

Feature 94, in the northern part of the main block, was a large basin with a Clay Tempered sherd in the third 10-cm level of feature fill, and two Woodland I stemmed points and a Selby Bay point and a Meadowood point in the overlying levels. There was potential overlap in the accepted date ranges of the ceramic and the Selby Bay and Woodland I stemmed types.

Feature 169 lay in the western part of the main block. It contained four Marcey Creek and one Wolfe Neck sherds, along with a Woodland I stemmed point that may overlap chronologically with either ceramic type, in the first 10-cm level of feature fill.

Feature 257, a shallow, basin-like feature in the northern part of the site, contained two Marcey Creek and five Clay Tempered sherds, along with a Lackawaxen point. Sherd frequencies were low, yet there was an overlap in the date ranges of the point and the steatite tempered ceramics.

Feature 265 was a large basin near the center of the main block. The fill contained 2 Marcey Creek, 27 Clay Tempered, and 1 Mockley ceramic sherds distributed through three 10-cm levels of feature fill, and a Selby Bay projectile point that occurred in the fourth level. The

point and one or both the Clay Tempered or Mockley ceramics could represent part of an artifact assemblage. There were proportionate frequencies of Clay Tempered and Mockley sherds in the Ao horizon above the feature, which would be expected had the upper portion of the basin been disturbed by tree roots or cultivation. There were no Woodland I stemmed or side-notched points in the immediate area.

Feature 284, in the central part of the main block, contained one Clay Tempered and one Wolfe Neck sherd in the first 10-cm level, and two Clay Tempered sherds and a Woodland I stemmed point in the second level. There was potential overlap in the date ranges of both ceramic types and the Woodland I stemmed point, as the ranges are currently understood.

Feature 297 also lay in the central part of the main block. It contained one Marcey Creek, four Wolfe Neck, two Popes Creek, and four Clay Tempered ceramic sherds distributed in the uppermost 10-cm level, a Woodland I stemmed point in the second level, and a Clay Tempered sherd in the lowest level.

### ***Locus H, Block 2***

In contrast to other parts of the site, there was little temporal overlap among the diagnostic artifacts from this excavation block. Clay Tempered ceramic sherds were thinly distributed across the central part of the block within an area measuring approximately 2 by 3 meters. Most sherds occurred in frequencies of one to two per meter-square unit. Eleven Clay Tempered sherds were present in one unit (N388 E623), along with a single Wolfe Neck sherd. Individual Marcey Creek sherds were also present in nearby units, while a Lackawaxen straight stemmed point was recovered from Feature 78, a large, oval-shaped basin. No temporally diagnostic ceramics were recovered from the feature. An assay on residue from a Mockley sherd found adjacent to the pit returned a date of 1850±60 years B.P., well within the accepted range of that ware. The date range of the diagnostic artifacts from Locus H Block 2 was widespread, spanning approximately 3,800 years from the latter end of the Late Archaic to the end of the Middle Woodland. The only potential overlap was between the Lackawaxen point and Marcey Creek sherds.

### ***Locus I***

Excavations in Locus I recovered a wide variety of diagnostic artifact types representing almost all of the time periods documented at the site, making the assessment of depositional associations more difficult.

A thin scatter of Marcey Creek sherds occurred across eight contiguous units in the southern part of the block. Four of the sherds were part of Vessel Lot MA08, which also contained sherds recovered from Feature 90, the large basin feature in the block. Two other Marcey Creek sherds were from Vessel Lot MA06 (the majority of the sherds from that Vessel Lot were located in the central part of the Northwest Quadrant, at least 30 meters to the south). There was a similar distribution of Clay Tempered sherds in the same part of the block, although the Clay Tempered sherds were more numerous and extended farther to the north and west. Also recovered from the units containing these ceramics were five Woodland I stemmed points, five Rossville points, and one small Adena point. Based on our current understanding of the

temporal ranges of these artifact types, the Marcey Creek ceramics and Woodland I stemmed points could have been contemporary. In addition, the Clay Tempered ceramics could have been contemporary with any of the three point types.

## SUMMARY

A wide range of chronological data was recovered from the Hickory Bluff site, including AMS determinations and an assortment of temporally diagnostic artifacts (Figure 17.6). In general, the radiometric data from the site, which was collected from several sources, corroborated the chronology of site use implied by the artifact assemblages. Together, the data present strong evidence that the heaviest periods of occupation were from the latter parts of the Late Archaic through much of the Middle Woodland. The variety of ceramic and projectile point types that was recovered from the site implied that the occupations were repeated or cyclical, and did not represent long-term residence by one population group.

Analyses of the artifact data suggested clarification of the accepted chronological position of several artifact types (Table 17.3). The quality of the temporal data varied from high, for ceramic residue dates and artifact associations in secure feature contexts, to moderate, for spatial associations between artifacts in general stratigraphic proveniences that contained other potentially related artifacts.

Residue dates from ceramic sherds provided corroborating evidence for the currently accepted date range of Mockley, and suggested that Wolfe Neck and Clay Tempered ceramics may have continued later than their currently accepted date ranges. Absolute dates were also recovered from secure feature proveniences for Marcey Creek ( $2660\pm 40$  years B.P.,  $2790\pm 40$  years B.P.) and Hell Island ( $920\pm 50$  years B.P.) ceramics—in each case the date fell near the late end of the accepted range.

In addition, spatial associations that bear chronological implications were documented between certain ceramic and point types. Marcey Creek ceramics, for example, were found in several locations in association with Late Archaic Lackawaxen and Susquehanna points. Marcey Creek sherds also co-occurred with Woodland I stemmed points in many proveniences, although the associations were less clear. That is, the exact chronological position of these points has not been established and there were later, Wolfe Neck, Clay Tempered, and Mockley ceramics in the proveniences that could also have been associated with the points.

Clay Tempered ceramics were also found in association with Woodland I stemmed points. As with the Marcey Creek data, the relationship between the points and the Clay Tempered sherds was not clear, since other ceramic types were present in the same proveniences. Co-occurrences of Clay Tempered ceramics and more precisely dated point types—Adena, Rossville, and Selby Bay—were also recorded. These associations were from general stratigraphic proveniences, and thus the level of confidence in the relationships was considered moderate.

**Table 17.3 Summary of Chronological Associations from Hickory Bluff**

<b>Ceramic Type</b>	<b>Associated Chronological Data</b>	<b>Location</b>	<b>Data Quality</b>	<b>Comments</b>
<b>Marcey Creek</b>	AMS 2660±40 years B.P.	Locus A Block 1 & Feature 98	good	ceramics and charcoal from basin feature
	AMS 2790±40 years B.P.	Feature 2	good	ceramics and charcoal from basin feature in stratified context
	Lackawaxen (961-1, 970-24*)	Locus A Block 1	moderate	general stratigraphic provenience, two points within a broad distribution of ceramics
	Lackawaxen (3436-2)	Feature 257	moderate	low sherd count
	Lackawaxen (124-115) Susquehanna (118-100)	Locus A Block 2	moderate	general stratigraphic provenience, two points within a broad distribution of ceramics
	Susquehanna (112-2)	Locus A Block 2	moderate	general stratigraphic provenience within a broad distribution of ceramics
<b>Wolfe Neck</b>	AMS 2160±50 years B.P.	NW Main Block	good	ceramic residue date
<b>Clay Tempered</b>	AMS 1930±40 years B.P.	NW Main Block	good	ceramic residue date
	AMS 1980±40 years B.P.	Locus A Block 2	good	ceramic residue date
	Selby Bay (1635-1)	Locus A Block 1	moderate	general stratigraphic provenience, no other diagnostic artifacts present
	Adena (68-1)	Locus A Block 2	moderate	general stratigraphic provenience within a broad distribution of ceramics
	Selby Bay (4378-1)	Feature 265	moderate	other ceramic types, including Mockley, present
	Rossville (651-1) Adena (793-2) Woodland I stemmed (2418-1, 9-1)	NW Main Block & Feature 1	moderate	feature and general stratigraphic provenience
	Woodland I stemmed (3358-3, 3359-1) Selby Bay (3358-1)	Feature 94	moderate	low sherd count
<b>Clay Tempered</b>	Rossville (1087-1, 1110-1, 1295-1, 2350-2, 3170-1) Adena (3195-1)	Locus I	moderate	general stratigraphic provenience, Marcey Creek ceramics present



**Table 17.3 Summary of Chronological Associations from Hickory Bluff (Continued)**

<b>Ceramic Type</b>	<b>Associated Chronological Data</b>	<b>Location</b>	<b>Data Quality</b>	<b>Comments</b>
<b>Mockley</b>	AMS 1850±60 years B.P.	Locus H Block 2	good	ceramic residue date
	Selby Bay	NW Main Block	moderate	general stratigraphic provenience within a broad distribution of ceramics
	Selby Bay	Feature 265	moderate	Clay Tempered sherds present
<b>Hell Island</b>	AMS 920±50 years B.P.	Feature 120	good	ceramics and charcoal from basin feature
<b>Townsend</b>	Levanna	NW Main Block	good	general stratigraphic provenience, no other diagnostic artifacts nearby
<b>Other Point Associations</b>	Woodland I stemmed (1078-1, 2295-1, 2369-5, 2369-6, 3165-1)	Locus I	moderate	general stratigraphic provenience, with Marcey Creek and Clay Tempered
	Woodland I stemmed (2412-1, 2418-1)	Feature 1	moderate	with Marcey Creek, Wolfe Neck, Clay Tempered, and Mockley
	Woodland I stemmed (3638-2)	Feature 169	moderate	with Marcey Creek and Wolfe Neck
	Woodland I stemmed (4031-2)	Feature 297	moderate	with Marcey Creek, Wolfe Neck, Popes Creek, and Clay Tempered

\* photographs of the projectile points are included in Appendix H

The chronological position of Woodland I stemmed points has been assumed to be the early portion of the Woodland period and evidence from Hickory Bluff provided a degree of confirmation for that time range. The points were found consistently in association with Marcey Creek and Clay Tempered ceramics, in both feature and broad stratigraphic contexts. While a pattern of exclusive correlation between the points and either of these ceramic types could not be demonstrated, it was clear that the points were part of an Early-to-Middle Woodland tool kit at the site. It seems likely that the points were not associated with one ceramic type in particular, but represent a span of time extending from the Early Woodland into the early portions of the Middle Woodland.

Several associations between later ceramic and projectile point types were also documented in good contexts. Mockley ceramics were recovered in association with Selby Bay points in two locations in the Northwest Main Block. Already mentioned was a date for Hell Island sherds from a secure feature context, Feature 120. And finally, a group of Townsend sherds was recovered in association with a Levanna point in an area in the Northwest Main Block in which few other diagnostic artifacts were present.