

2.0 RESEARCH DESIGN

Archaeological studies at the Frederick Lodge Site Complex contributed significantly to understanding the American Indian experience in Delaware. The three sites (7NC-J-97, 7NC-J-98, and 7NC-J-99) included in this complex were determined eligible for inclusion in the NRHP under Criterion D for this reason; their inclusion was based on the sites' potential collectively to contribute information on Archaic and Woodland chronology, intra-site patterns, and paleoenvironmental studies.. The sites retained integrity of location and setting, based on the presence of unplowed deposits, intact features, and, in those parts of the sites that had been plowed, artifact-bearing strata below the plow zone. Furthermore, the sites had the potential to address research topics defined in the DESHPO Management Plan for Prehistoric Resources. The sites further satisfied the contributing aspect of uniqueness, because few small upland campsites of this nature and time period had to this point been investigated in the state.

David Hurst Thomas, a well-known archaeologist, is credited with stating that “It’s not what you find, it’s what you find out,” referring to what differentiates archaeological endeavors from casual collectors (Davis 2005:74). Thus, archaeology is not simply about careful and painstaking recovery of the material traces of past human activities. Rather, archaeologists ask questions about their findings and strive to reconstruct the lifeways of a social group from their physical remnants. Some questions are fairly straightforward and resemble those that a newspaper columnist might ask:

- What was found?
- Where were things found? and,
- How old are the items that were found?

Other questions are more challenging:

- How did American Indians create and use the items that were recovered by archaeologists?
- What motivated people to come to Frederick Lodge year after year, decade after decade, century after century? and,
- Did their reasons for being at this specific location change over time?

Here, we present the research questions we asked that guided our field efforts, and influenced our interpretations of what we found. This research design is placed in a prominent position at the forefront of this report—rather than being presented in a later section—as it acts as a thread flowing through and uniting analysis of our findings from the Frederick Lodge Site Complex.

This research design fosters a dynamic interpretation of the people who once lived at the Frederick Lodge Site Complex. Traditional archaeological research priorities are certainly considered, notably chronology, intra-site patterning, lithic technology, and paleoenvironmental reconstruction. We expand these priorities to include theoretical and methodological directions that embrace a more humanistic approach to the past—one that moves beyond rote application of economic or environmentally deterministic models. Our

approach is marked by its flexibility in both methods and theoretical perspectives and avoids rigidly adhering to extraneous analyses or generic interpretive frameworks that all too commonly characterize many technical cultural resource management reports. This research design evolved during the analysis and interpretation stage but consisted at the onset of four broad and overlapping topics: creating a chronological framework; technology, materiality, and social processes; scales of social organization; and a landscape approach.

2.1 Creating a Chronological Framework

Our explorations of the American Indians who once called the Frederick Lodge Site Complex their home necessarily rests on determining more specifically when they lived, worked, and worshipped on this landscape. Creating a chronological framework was a critical step for organizing and understanding the cultural remains generated by past human activities represented here. A chronological framework allowed us to reconstruct the occupational history of this landscape (as discussed below) and also to relate our archaeological findings from the Frederick Lodge Site Complex to changing cultural patterns and broader regional trends. A chronological framework enabled us to examine issues such as regional exchange networks, continuity in population, settlement mobility, community patterns, and the nature of local social organizations. The primary tools for creating a chronological framework employed by archaeologists include: modeling cultural and natural stratigraphic associations; analyzing morphological or stylistic attributes of artifacts that are presumed to have been temporally diagnostic and are reflected in established regional typologies; and, radiocarbon dating of organic remains—in this case, through the accelerator mass spectrometry (AMS) dating technique. Here, we present the major techniques that we used to date cultural remains encountered at the Frederick Lodge Site Complex. The Frederick Lodge Site Complex provided an opportunity to collect information on Middle Archaic, Late Archaic, and Early/Middle Woodland American Indian occupations in central Delaware.

2.1.1 Stratigraphy and Site Formation Processes

The deposition of soils, sediments, and cultural materials creates layers at an archaeological site that can be uncovered through careful and meticulous excavation. The examination of spatial and temporal relationships between soils, sediments, and cultural materials is referred to as stratigraphy. As Waters (1992:60) noted, “Stratigraphic sequences are created because depositional environments are dynamic and constantly changing.” When archaeologists and geoarchaeologists evaluate the stratigraphy at an archaeological site, their ultimate goal is to reconstruct how the landscape existed in a natural, sometimes fluid, state, and how the landscape was modified by humans at the various times they occupied a site during its history. This evaluation is not a straightforward process, because the stratigraphic sequences present in the archaeological record result from various processes that affect cultural remains left behind by past human occupations beginning when they are first deposited. It is imperative that these processes be understood. Knowing the age of a temporally diagnostic artifact or of carbonized material subject to radiocarbon dating only has utility if an archaeologist can demonstrate a direct association to the specific context being dated. Because of formation processes, a temporally diagnostic artifact, for example, could be found in a context that dates before or after the specific time an item was manufactured or used.

Archaeological sites are clearly very dynamic entities, as reflected in decades of research into site formation processes. This research, particularly since the late 1960s, shows that the archaeological record is not a pristine and direct reflection of human activities, but rather is influenced by subsequent human behaviors and various natural processes (Ascher 1968). Archaeological site formation processes are usually divided into two broad categories: cultural formation processes and natural formation processes (Schiffer 1983, 1987). Geoarchaeologists and geomorphologists are actively studying site formation processes today, building on the framework created by earlier archaeological studies (Butzer 2008). Site formation analyses help archaeologists determine the extent to which a site exhibits stratigraphic disturbances or movement of cultural and natural objects from the original locations they had been deposited. Mending fragments of artifacts, e.g. cross-mending, within and between stratigraphic layers can help address this goal (Enloe and Hofman 1992; Rowlett and Robbins 1982; Villa 1982). Cross-mending of thermally altered stones was critical to understanding the site formation processes that affected the preserved remains of the human occupations at the Frederick Lodge Site Complex.

2.1.2 Temporally Diagnostic Artifacts

Temporally diagnostic chipped stone tools (hereafter referred to as points) were identified according to established local typologies when possible. Points and sherds recovered during evaluative testing indicated that the Frederick Lodge Site Complex was occupied by American Indians as early as the Middle Archaic period and continuing through Late Woodland period (Table 2-1). A challenge archaeologists in Delaware have encountered relative to chronology building efforts has been the apparent profusion of point styles at the end of the Late Archaic period and continuing into Early Woodland. Earlier researchers were unable to associate many of these point styles with discrete time ranges (Custer 1994). The recovery of temporally diagnostic points from the Frederick Lodge Site complex—when combined with AMS dates—has the potential to clarify particular issues in this debate.

The Frederick Lodge Site Complex can especially contribute to an understanding of the Archaic Period in Delaware. In major synthetic works for the Delmarva and Chesapeake region, Custer (1989) and Dent (1995) remark that knowledge of the Middle Archaic is poor in comparison with other periods, and that existing cultural summaries are largely dependent on information from sites outside the area. The Middle Archaic occupation at the Frederick Lodge Site Complex is one of the more substantial archaeological components of this time period recorded in Delaware. Therefore, the analysis of data from intact Middle Archaic sites in Delmarva has the potential to provide novel information about American Indian adaptations in this period.

At the Frederick Lodge Site Complex, Middle Archaic bifurcate points, together with associated non-diagnostic artifact assemblages, were recovered from intact, subsurface contexts in two distinct locations. Stylistic differences between various bifurcate types have been noted in the literature on point typology (e.g., Broyles 1971; Chapman 1975; Hranicky 1991), including variations in size (length, width, thickness, blade dimensions), raw materials (quartz vs. cryptocrystalline stone), morphology (notching position, size of basal concavity, serration, edge reworking), and grinding characteristics.

Table 2-1. Temporally Diagnostic Artifacts Encountered at the Frederick Lodge Site Complex

Diagnostic type	Period
<i>Projectile Points</i>	
Bifurcate	Middle Archaic
Morrow Mountain II	Middle Archaic
Bare Island	Late Archaic
Broadspear	Late Archaic
Fishtail	Late Archaic
Untyped	Late Archaic
Lackawaxen	Late Archaic/Early Woodland
Piscataway	Early/Middle Woodland
Woodland I	Early/Middle Woodland
Triangle	Late Woodland
<i>Ceramic Vessels</i>	
Wolfe Neck	Early Woodland

Excavations at Frederick Lodge also yielded a range of contracting stemmed points. Morphologically, these points mirrored regional types such as the Middle Archaic Morrow Mountain II, as well as Woodland types, such as Piscataway and other contracting-stemmed types generally ascribed to the first half of the Woodland period. Points classified as Morrow Mountain II were recovered from buried and surface contexts and provide evidence of site use in a part of the Middle Archaic period later than was represented by the bifurcate points. Site use near the latter end of the Late Archaic was typified by Fishtail points and several contracting-stemmed points made from argillite, similar in form to the Lackawaxen type.

And finally, evidence of Woodland period occupation consisted of numerous small, contracting-stemmed and straight-stemmed points that are presumed to date to the first half of the period. The points were recovered in discrete areas, as well as from intact sub-surface contexts in association with thermally altered stone features. Referred to as Woodland I Stemmed, these points are common in Delaware and were typically manufactured on material available locally in exposed gravel deposits. The Early Woodland period is further represented by Piscataway-like points. The Late Woodland period is minimally represented by two triangle points.

Each of these point types is assessed within the framework of broader regional typologies, through analyses that examined morphology, material, flaking characteristics, and the occurrence of grinding. Implications for the temporal placement these points in Delaware are explored here as well.

Ceramic ware attributes considered to be temporally diagnostic include vessel form, surface treatment, decoration, and temper. A single ceramic sherd was assigned to the Wolfe Neck type, which dates to the late Early Woodland period (Table 2-1). Wolfe Neck ceramics had cord-marked or net-impressed exteriors and were tempered with crushed quartz (Griffin 1982). The unique nature of this find limits its interpretative value.

2.1.3 Accelerator Mass Spectrometry (AMS) dating

Radiocarbon assays provide a way to obtain dates from archaeological sites that are independent of diagnostic artifacts whose temporal parameters may be imprecisely delineated. Sites located near and far apart can be related chronologically through radiocarbon dating (Gowlett 1987:128). AMS dating is a form of radiocarbon dating that requires a much smaller sample size than needed for conventional radiocarbon analysis (Gowlett 1987:127; Taylor 1991:42; Tuniz 2001:321). Using AMS enables radiocarbon dating at sites that have minimal organic remains preserved—as was the case at Frederick Lodge.

Radiocarbon dating, especially AMS dating, is a powerful technique but also is too often applied or interpreted incorrectly. Multiple radiocarbon assays should be taken from discrete components at a site, with three samples representing a minimal number—this ensures that the dates obtained are not anomalous (Thomas 1986:244-250). Archaeologists have not always been careful with ensuring that they select samples from discrete contexts, but have sometimes emphasized dating material simply because sufficient quantities exist for this purpose. The primary goal of radiocarbon dating is usually to date the context from which organic material was obtained, and not simply to date the organic material itself. Archaeologists are also often careless with the associations they make between radiocarbon assays and diagnostic artifacts. Researchers must make clear whether radiocarbon assays and diagnostic artifacts co-occur in the same context, or are simply from the same component or even merely from the same site (Means and McKnight 2010). Finally, care also must be exercised when using small organic items for obtaining AMS dates, as these can sometimes migrate through the soil matrix or otherwise be displaced from their original context.

The radiocarbon assays obtained from the Frederick Lodge Site Complex were recalibrated using the Calib Radiocarbon Calibration Program version 6.0.1 (Calib) (Stuiver and Reimer 1993, 2005) and graphical displays were produced of the assays using the OxCal Radiocarbon Calibration Program version 4.0.5 (OxCal) (Bronk 2007). Previously available radiocarbon dates from sites examined as part of this study were also recalibrated with the Calib program to ease comparison with the new AMS assays. The Calib program was also used to examine new and previously available radiocarbon dates from each site to determine whether any of the dates were statistically identical at a 95 percent confidence interval. A pooled radiocarbon assay was then generated for statistically identical radiocarbon assays using the Calib program.

2.2 Technology, Materiality, and Social Processes

Analyses of cultural remains from archaeological sites—especially stone and ceramic objects—are often dominated by typological considerations, because of their aforementioned use in generating chronological frameworks. The technological stages involved in creating ceramic (additive technologies) or lithic (subtractive technologies) items can often be readily deciphered either from finished products or the debris generated during manufacture. However, a focus on identifying artifact types can overlook variation and disregard details present in the finished object—or in the steps used to create the finished object—that represent decisions and choices made within a localized cultural context, and that provide a clearer picture of the individuals who created and used these objects. For example, some

choices made during the manufacture of an object may not be strictly related to technological factors but could reflect individual preferences or have symbolic meaning, such as the selection of raw materials based on color (DeBoer 2005; Mounier 2007:9). The manufacture and use of artifacts may also reflect divisions in terms of gendered activities (McBrinn2010; Warren 2010).

2.2.1 Anthropological Perspectives on Technology

The literature on anthropological perspectives on technology is quite broad, encompassing behavioral archaeology as well as evolutionary archaeology, among other perspectives (Bleed 2001; Hart and Terrell 2002; O'Brien and Lyman 2000; Schiffer et al. 2001). The *chaîne opératoire* approach, for example, can be an effective way of demonstrating links between the technological stages used to create an artifact with historical and social processes. As summarized recently by Mounier (2006:59):

chaîne opératoire may be defined loosely as a culturally constrained sequence of actions and decisions that regulates the transformation of materials into artifacts, from raw materials through finished products and on to entry in the archaeological record.

People may adhere closely to and validate cultural constraints or modify them during the manufacturing process (Mounier 2006:59), leading to idiosyncratic changes that might be visible on the micro-social level. Changes in artifact types—notably North American projectile points—have also been examined from an evolutionary archaeological perspective (Lyman et al. 2009) that may prove useful for understanding technological processes at the Frederick Lodge Site Complex. Even something as basic as obtaining raw materials may highlight wide-ranging and complex social networks (Mounier 2007).

2.2.2 Thermally Altered Stones

When studying material remains from archaeological sites, scholars have traditionally focused their efforts on examining formal chipped stone tools and ceramic vessels—in part because these are considered useful in building regional chronological frameworks. Artifacts that are not temporally diagnostic, that are minimally modified by human action, and that are considered to represent mundane activities may receive less attention in the analysis and interpretation of the human presence at an archaeological site—other than basic enumeration by amount, weight, and raw material. Yet, these types of material remains may create the greatest insight into the daily lives and spiritual activities of the people who once occupied a landscape. More researchers are beginning to recognize that thermally altered stones fall into this category of “mundane” objects with tremendous potential for truly understanding the past.

Considerable research has shown that thermally altered stones (TAS)—also called heated stones or fire-cracked rock—can serve a variety of purposes in both daily life and in special purpose activities. The main effect is the storage and control of heat, allowing the heat generated by fires to be managed and released over extended periods. Stone has been used to physically contain fire, as a perimeter border to keep burning material from scattering, and in a range of cooking and food preparation activities, such as roasting, baking, steaming, or

smoking. A specialized use for heated stone is a form of indirect cooking often referred to as stone-boiling, a method of cooking or processing raw materials commonly used in cultures without fire-resistant containers (Densmore 1929). Stones of appropriate size are heated directly in a fire and then placed in a liquid-filled vessel—a lined basket, a stone or ceramic pot, or a lined pit feature. The heat is thus transferred to the liquid from within the container, rather than from an external source. In other uses, heated stones may provide radiant heat, either to warm an enclosure or placed beneath bedding to provide personal warmth. Medicinal uses of heated stone may include the direct application of heat, or the steaming or smoking of medicinal herbs (Densmore 1928).

Some of the ceremonial use of heated stone revolved around feasting, differentiated largely by scale from more utilitarian food preparation activities, at least in terms of archaeological visibility. In addition, sweat lodges were facilities using heated stone as a major component in ceremonies of purification and healing. These features were commonly reported among ethnographically and ethnohistorically documented American Indian groups. Rountree (1989), for example, noted that a sweat lodge could be found in each village in the Powhatan federation of southeastern Virginia. The construction and use of sweat lodges appear to have been so widespread in North and Central America, as were variations throughout the world (Bruchac 1997:11ff), that it seems likely that some form of ritual cleansing involving heated rock was commonplace throughout much of North American prehistory.

2.2.3 Lithic Technology

The study of the organization of lithic technology at the Frederick Lodge Site Complex is a significant avenue available for determining the range of activities represented by the occupation debris. Technological analysis of the lithic artifacts recovered is expected to provide information regarding lithic procurement and selection, lithic reduction and tool manufacture, tool function and use, and artifact discard.

Most chipped stone artifacts at the site, including debitage and bifacial tools, were produced from chert and jasper that appeared to have been derived mainly from Columbia Formation gravels available in exposures in the immediate area. Similarities in lithic material types and size ranges between these gravels and artifacts from Frederick Lodge are examined. Systematic comparison of the lithic artifact assemblage with locally available lithic raw materials could, for example, lend insights into the decisions made regarding the selection of stone for tool manufacture.

Analysis of lithic use by the inhabitants of Frederick Lodge contributes to broader research questions concerning regional settlement patterns. While local gravels were heavily relied on as a source of lithic raw material, tools made from non-local or exotic stone also occurred in various component assemblages. Examination of non-local raw material use may provide information on territorial distances and population movements. Among the distant primary geological sources under consideration are those of various materials such as rhyolite and argillite available in quarries outside Delaware. Lithic raw material sources are evaluated here for information on the relative degree of mobility and cultural interaction implied by their use.

Statistical analyses were completed on a variety of tools and chipping debris attributes that could reflect specific manufacturing processes, which enable inferences regarding cycles of tool use and discard behaviors. This includes looking for evidence for bipolar percussion, a knapping technique that is typical when tools are manufactured from pebbles and small cobbles. Attribute analyses are tailored where appropriate for comparison with existing databases from the region (e.g., Riley et al. 1994a; Petraglia et al. 1998; Watson and Riley 1994). For a large sample of Middle Archaic debitage, a detailed analysis of technological characteristics was conducted that included cataloguing a series of platform attributes. The detailed analyses allowed a methodological comparison between aggregate analytical methods, using size-intervals, and formal methods, that examine individual artifacts.

2.2.4 Ceramic Technology

The organization of ceramic technology at Frederick Lodge provides minimal information concerning the range of activities represented among the various occupations, because only a single sherd was recovered. Cordage twist impressions can contribute to an exploration of ethnic group identity. Cordage-twist patterns represent the impressions of two-ply cords on vessel exteriors (and sometimes interiors as well). These patterns are potentially one of the strongest tools for elucidating distinct social organizations (Carr and Maslowski 1995; Maslowski 1984). The cordage impressed on the sherd from Frederick Lodge was produced from cords manufactured by spinning filaments in one of two directions, final Z twist—the other possible direction was final S twist (Carr and Maslowski 1995:299).

Examination of spatial and temporal patterning in the percentage and distribution of cordage-twist impressions can potentially allow one to study enculturation, social interaction within learning pools, patterns of recruitment between societies, population migration or stability, population replacement, spatial overlap of settlement systems, and the ceremonial aggregation between societies (Carr and Maslowski 1995:315). Carr and Maslowski (1995) provide archaeological examples demonstrating how the analysis of cordage-twist patterns can lead to the identification of these cultural processes. Even though only a single ceramic was recovered from Frederick Lodge, the basic attributes of this sherd can be used to contribute to a broader regional understanding of ceramic technology and social networks in Delmarva.

2.2.5 Analyzing Subsistence Practices

Other significant aspects of American Indian lifeways are clearly represented in the archaeological record at the Frederick Lodge Site Complex, including evidence regarding subsistence practices. The archaeobotanical record can indicate cultural preferences in what social groups chose to eat—or not eat—from what was available to them at varying times, and at a given level of technology. Technology and social processes are critical to interpreting past subsistence practices. For example, Braun (1983:107) pointed out quite some time ago that the attributes recorded on pottery by archaeologists to create their culture-historical classifications are actually related to how specific pots were intended to be used, e.g. pots are containers are tools. Mounier (2007) more recently summarized the various ways that lithic objects can reflect aspects of past lifeways, including subsistence practices, as well as trade, social relations, and “symbolic life.” Subsistence strategies were both influenced by the available technology at a given time and led to technological changes in

order to maximize exploitation of resources. It is expected that the prehistoric inhabitants did not practice a single strategy for achieving short- and long-term subsistence goals, and that these different strategies may be reflected in the archaeological record of the Frederick Lodge Site Complex. Changes in subsistence practices likely affected and were restricted by the local environment, and these changes would have taken place within flexible social contexts.

2.3 Scales of Social Organization

Human social groups consist of complex webs of inter-personal and inter-group relationships that shift and overlap, changing to meet the requirements of specific circumstances, and that operate at different scales. Although writing of village social organizations, Gearing's (1958) notion of *structural poses* can be potentially extended to human social organizations at varying scales. According to Gearing (1958:1148), a community does not consist of a single set of roles and organizational groups, but rather several sets that appear and disappear depending on the tasks at hand. He referred to these sets of roles and groups as structural poses, and noted that the social structure of a given society is the sum of several structural poses assumed throughout a given year (Gearing 1958:1149). The presence of features and associated activity areas can represent physical manifestations of structural poses that occurred either regularly or infrequently. The concept of heterarchy shares some similarities with the Gearing's notion of structural poses. As defined by one of its major proponents within archaeology, heterarchy refers to "the relation of elements to one another when they are unranked, or when they possess the potential for being ranked in a number of different ways, depending on systemic requirements" (Crumley 2005:39). Certainly, there is a growing recognition that complex social networks can characterize social groups once perceived by archaeologists to have a very basic social and technological organization, such as Archaic gatherer-hunters (Robinson 2008; Sassaman 2008).

In essence, following these twin concepts, we avoid rigid site types or settlement models in this study of the Frederick Lodge Site Complex—such as the micro-band/macro-band model—that impose an interpretive and somewhat dogmatic framework that consequently obscures social processes. We do recognize that the manifestation of human social groups in the archaeological record can consist of structural elements of varying complexity, ranging from ephemeral artifact scatters to dispersed communities spread across a landscape. The key to our approach is that we will not force the archaeological remains from the Frederick Lodge Site Complex into predefined categories, but rather interpret the archaeological record as independently as possible from preconceived site and settlement typologies. Site typologies cannot be fully ignored, however, as these are used as organizational categories in much of the regional literature and existing state site file databases.

2.3.1 Intra- and Inter-Site Settlement Data

Settlement data were present at the Frederick Lodge sites on both intra-site and inter-site scales. Findings from the Frederick Lodge Site Complex are examined in terms of both the prehistoric use of bay/basins settings in the Delaware Coastal Plain, as well as the role these interior occupations played within broader settlement systems during the Archaic and Woodland periods. This effort contributes to a better understanding of the regional system itself. As part of this effort, a broad-ranging review of bay/basin settlement data for the

Middle Atlantic and the Southeast regions are presented. Initial corridor surveys along the proposed SR1 route in New Castle County resulted in the identification of 86 prehistoric sites broadly associated with bay/basin settings (Custer and Bachman 1986a, 1986b). This dataset suggests that American Indian use of the bay/basins began by 6500 BC (Custer and Bachman 1986a, 1986b; Custer 1989; Kellogg and Custer 1994).

Woodland period occupations at the Frederick Lodge Site Complex inspired the generation of additional research considerations related to regional settlement patterns. Custer (1989) cited a pronounced change in lifeways on the Delmarva Peninsula at the end of the Middle Archaic. This change was marked by: increasing sedentism; the use of less portable storage technologies; larger population aggregates; the rise of elaborate exchange systems; and, the development of complex burial patterns. The Frederick Lodge Site Complex offered the opportunity to assess the so-called base-camp model through a study smaller, seemingly shorter-duration occupations located in interior upland areas. Settlement issues addressed by data from the Frederick Lodge Site Complex include site function, group size, seasonality, and length of occupation. In contrast to earlier occupations, as we shall show, Late Woodland site use at the Frederick Lodge Site Complex appeared to have been very brief, possibly even transitory in nature, and so, less specific information about the period is anticipated in our analysis.

2.3.2 Settlement Models

Environmental adaptation has been an important theme in the development of settlement models in Delaware. Griffith (1974), Thomas et al. (1975), and Custer (1989, 1994) have proposed various settlement models that emphasize the movement of people between different environmental zones, which in the Delaware Coastal Plain occur in close proximity. These environmental zones roughly correspond to: 1) bay shore/tidal marshlands; 2) the mid-drainage zones of larger streams and rivers; 3) interior swamps and poorly drained woodlands; and 4) well-drained woodlands. Thomas et al. (1975) proposed five alternate settlement scenarios in which base camps and smaller camps were occupied in various permutations of setting and season. More recently, Custer (1989) reiterated the three-tiered settlement system represented by macro-band base camps, micro-band base camps, and procurement sites, with these sites predicted to occur in different combinations within the various the physiographic regions of the state.

Most settlement models present the middle reaches of the main drainages, or mid-drainage zone, as areas in which base camp locations would be likely to occur. However, clear evidence for large base camps is lacking in these areas. Custer (1994) has come to question whether macro-band base camps existed at all during the early portions of the Woodland period, citing evidence that large sites such as Snapp, Leipsic, and Pollack may actually represent numerous repeat occupations by small groups. LeeDecker et al. (2001) maintain that the investigations at the Puncheon Run Site, as well as other major excavations along the mid-drainage zone of the St. Jones River, failed to yield clear evidence for Woodland period base camp settlements. To account for these observations, LeeDecker et al. (2001) endorsed the concept of a “Diffuse Forager Settlement Pattern with Frequent Residential Moves.” As the name implies, this model presents Woodland settlement in terms of high residential

mobility, which would have allowed populations to move across the landscape exploiting a range of natural resources on a relatively unscheduled, opportunistic basis.

The settlement models presented above appear less than satisfying in the context of the Frederick Lodge Site Complex findings. Longer-term or even intermediate-term occupation by a limited number of people, such as may be indicated at Frederick Lodge, does not comfortably fit within any of these models. In addition, an important aspect lacking from the settlement models, and the Diffuse Forager model of LeeDecker et al. (2001) in particular, is the concept of group territoriality.

Territoriality is a key element in a model that presents Woodland settlement oriented to specific stream drainages. In this model, the traditional hierarchical site classification, with macro-band base camps, micro-band base camps, and support camps, is replaced with a series of “horizontally linked occupation locales,” each of which would have been weighted roughly equally in terms of importance. This settlement model, herein referred to as the Watershed Range Model, is considered to have been specific to the Delaware Coastal Plain. This model articulates a set of proposed adaptive settlement strategies geared to the local physiographic/environmental conditions. Specifically, the Delaware Coastal Plain is seen as unusual in the spatial proximity of ecologically diverse and productive environmental zones. The various settlement scenarios that have been developed for the region based on these zones do acknowledge the compressed resource base that they represent. But these models assume the free and unrestricted mobility of people across the landscape. The ecologically determined movement of people described in the models could only occur in a cultural vacuum, in which social and political interactions are essentially missing. The Watershed Range Model introduces the notion of territoriality into Woodland period settlement of the region. Territoriality has admittedly restrictive overtones. A territorial settlement pattern oriented to specific watersheds—rather than representing a limiting system—would have minimized inter-group competition and conflict while providing populations with free access to the rich and divergent ecological zones cross-cut by their respective drainages.

2.3.3 Site Structure

The clustering of artifacts and the frequency of well-defined and prominent features observed during site evaluation investigations indicated that discrete activity areas were potentially identifiable, which would aid in the identification of separate components and present an opportunity to examine site structure and use of space within the sites. In terms of specific settlement models for the region, the general pattern recorded for larger Late Archaic-to-Early Woodland sites suggests that occupations were relatively long-term. Storage features were typically present at these sites, sheet middens had developed, and, in some cases, burials were present. Late Woodland period occupations tend to overlap earlier Woodland occupations geographically, but appear to be less permanent or sedentary, lacking storage features or well-developed middens (Custer 1989:314-315).

An important first step is examining site structure, which includes the size of a site and the presence and arrangement of activity areas and features (Kent 1991:35). Activities not associated directly with feature remains can be determined by the location of refuse disposal

areas and the contents of these areas (Ashmore and Wilk 1988:13; Hayden and Cannon 1983; Wilson 1994). At the Frederick Lodge Site Complex, an understanding of TAS features is critical to interpreting site structure. Partly because of their ubiquity, archaeologists are actively exploring the creation, functions, and use lives of TAS features, as well as issues related to site formation processes and the integrity of these features (Nelson 2010; Petraglia 2002; Sander 2009; Stewart 2005; Sullivan et al. 2001; Thoms 2007, 2008, 2009).

Discrete artifact assemblages were recovered from several locations at the Frederick Lodge Site Complex and these are expected to aid in interpreting potentially mixed deposits. In one area (Block I), for example, the archaeological investigations succeeded in fully encapsulating a distribution of lithic debris associated with what appeared to have been a single component occupation from the early part of the Middle Archaic. Concentrations of thermally altered stone and chipped stone debitage from two other locations (Blocks B and D) represented occupations associated with Woodland period site use. Analyses of artifact assemblages such as these can be used to define and interpret the internal organization of specific activities recovered at the Frederick Lodge Site Complex, as well as to provide data for the comparison of activity areas between components.

Distinctive intra-site residential patterning involving large pit features has been reported at several sites attributed to the Woodland I period in the Delmarva chronology, particularly along major streams in the north-central part of the state (Custer 1994). Some have argued that large basin features are best interpreted as the signature remains of pit houses, and collectively numbering in the thousands, have been identified at sites such as Snapp Farm on the St. Georges River (Custer and Silber 1995), Pollack (Custer et al. 1995a) and Leipsic, on the Leipsic River (Custer et al. 1996a), and at Carey Farm and Island Farm, on the St. Jones River (Custer et al. 1995b). Other researchers have rejected the pithouse interpretation, favoring the notion that these features represent natural phenomena, such as the remains of tree-throws (Mueller and Cavallo 1995; Petraglia et al. 2005). Two large basin features were intensively investigated at the Frederick Lodge Site Complex: analysis of artifact contents and geochemical assays contributes to an understanding of the formation of these landscape elements, and their place within the cultural realm.

An analysis of site structure can lead to an understanding of social organization on a community level. It is important to recognize that individual archaeological sites may represent parts of a single dispersed community. The degree of spatial distance between sites does not necessarily correlate directly to social distance (Adler 2002:29). Beardsley et al. (1956) developed a definition of a community that shifted the focus from a place or site to a human group (Chang 1962:33; Nelson 1994:1). They defined the community:

as the largest grouping of persons in any particular culture whose normal activities bind them together into a self-conscious corporate unit, which is economically self-sufficient and politically independent (Beardsley et al. 1956:133).

Social groups living in dispersed settlements may only aggregate periodically throughout the year, possibly integrated through common rituals. To understand the Frederick Lodge Site

Complex within its local community—which likely shifted in membership and spatial extent over time—a broader understanding of the regional subsistence-settlement system and how that changed during the occupational history of the Frederick Lodge Site Complex is needed.

2.3.4 Social Mobility

One issue to be considered is the mobility of the inhabitants of the region that encompassed the Frederick Lodge Site Complex through time. The importance of the relationship between the mobility of a group or its members and the types of settlements they inhabited has long been recognized by archaeologists (Beardsley et al. 1956). Mobility strategies are related in part to the structure of food resources in a particular environment (Kelly 1983:277), underscoring the importance of paleoenvironmental studies. Gatherer-hunters are often characterized as relying on residential mobility—moving an entire group from one resource to another—or logistical mobility—moving resources back to a main camp from small, temporary camps (Kelly 1992:44). A question to address with the Frederick Lodge Site Complex data is whether this is an appropriate model, whether varying strategies were employed during different temporal periods, or even if a mix of mobility strategies was employed contemporaneously by the past inhabitants of the Frederick Lodge Site Complex.

Archaeologists have long noted that an understanding of Middle Archaic settlement mobility has been seriously influenced by the small sizes of sites and the uneven effects of long-term site preservation. Inter-site studies must take into account the fact that many sites lack depositional integrity or are simply no longer present, having been lost to marine transgression, fluvial channel migration, or other natural destructive processes. Custer (1989) indicates that Middle Archaic sites in the Delmarva are found in a variety of settings: near quarries; in interior locales within the Mid-Peninsular Drainage Divide; near coastal and Fall-line swamps; and, adjacent to bay/basins. Synthetic studies have noted that Middle Archaic sites were located near productive ecological areas, with sites occupied by people using bifurcate points often situated adjacent to wetlands (e.g., Gardner 1978; Custer 1989). The extent to which the Middle Archaic occupations of the Frederick Lodge Site Complex conformed to these patterns is examined, along with the issues related to site preservation and the recognition of small, short-term occupations.

2.3.5 Agency and the Individual

The smallest social scale to consider—and the most difficult to elucidate—is the individual. Some archaeologists have adopted a theoretical approach referred to as “agency” that emphasizes the power of individuals to act knowledgeably and reflexively in their interactions with one another and with respect to the material world (Barrett 2001; Gardner 2008; Hodder and Hutson 2003). Agency theory emphasizes that human action can be habitual and routine—thus maintaining the status quo—or intentional and meaningful, but can still produce unintended consequences. Archaeologists can examine human agency because “[m]aterial culture... is a vital element in human action, which is always *embodied* action—performed by and through the human body” (Gardner 2008:96). The challenge with agency theory is that “[f]ew concepts are so widely considered to making sense of the past while still remaining woefully under-theorized...” (Dobres and Robb 2005:159-160). If we recognize how people use the material world to help them learn their place in the social

world, drawing from Pierre Bourdieu's theory of practice, then we can use the archaeological record to help us understand aspects of human agency (Hodder and Hutson 2003:93-94).

2.4 Paleoenvironmental Studies

Paleoenvironmental data generated through geoarchaeological and ethnobotanical studies are used to explore specific issues of depositional integrity and environmental context. These data are integral to considering not only the natural environment and natural landscapes, as discussed here, but also cultural landscapes (see Section 2.5 below). Research priorities identified for paleoenvironmental studies in Delaware include reconstructing local settings, examining environmental change through time, and investigating of the role of aeolian erosion and deposition in site formation and in their impacts on site visibility (Custer 1994). A primary objective of the paleoenvironmental study conducted at the Frederick Lodge Site Complex was thus to describe the environmental setting within which American Indian occupations occurred. The first step in the analysis was a general review of bays/basin topographies in terms of the geomorphology of their formation and the changing ecological character of the features through time. A reconstruction of prehistoric vegetative communities associated with the features was proposed through an assessment of present day ecology, aided by the recovery of preserved botanical remains at the Frederick Lodge Site Complex and by data from regional paleoenvironmental studies (Kellogg and Custer 1994) and the local archaeological record (Custer 1989, 1994).

2.4.1 Geoarchaeology

Identification of site formation and preservation processes is an integral step in the implementation of an accurate and convincing site interpretation. The landscape encompassing the Frederick Lodge sites resulted from a combination of human activities and geomorphological processes, the latter including alluvial, colluvial, and aeolian deposition and erosion. The forces that shaped this physical landscape not only played a role in the formation and preservation of the site complex, but also had direct behavioral implications in terms of site selection and function. Evidence of Holocene alluvial activity is also pertinent to whether cultural remains were found in their original depositional context.

A portion of this research design is oriented toward geoarchaeological investigations at the Frederick Lodge Site Complex. Further details on the geoarchaeological investigations are integrated into Sections 3, 6, and 7 and are also presented in Appendix H, prepared by Joseph Schuldenrein of Geoarchaeology Research Associates. Here, we present the goals of the geoarchaeological investigations, which consisted of:

- Development of a comprehensive stratigraphic framework for the site complex;
- Reconstruction of environmental trends preserved in the depositional sequences;
- Modeling site formation histories for the loci investigated;
- Presentation of a comprehensive perspective on human/environmental interactions at the site complex

The geoarchaeological investigations of site stratigraphy and analysis of archaeological assemblages provided results useful for testing hypotheses about Holocene landscape

evolution and regional environmental change, as well as the specific history of natural and cultural formation processes at the Frederick Lodge Site Complex. Specific research topics addressed included the origin and nature of the aeolian soils capping portions of the site, and the potential role of prehistoric human activity in facilitating or promoting aeolian and colluvial soil movement.

2.4.2 Archaeobotanical Studies

Plant remains were expected to be recovered from the Frederick Lodge Site Complex, particularly from feature contexts. These archaeobotanical data can provide important information about the availability of particular resources in upland stream-side settings and whether these resources were exploited on a seasonal basis. For example, amaranth and chenopodium seeds were identified as important food sources at the Delaware Park site (7NC-E-41), south of the fall line in northern New Castle County (Thomas 1981). Similar identifications at the Frederick Lodge sites would provide data on past subsistence practices and for comparative analyses. Plant remains associated with the bay/basin features at the Frederick Lodge Site Complex are integral to reconstructing the nature of changing past environments and offer a contrast to other sites in the region, including those associated with the Sandom Branch Site Complex, located less than a kilometer to the north. In addition to identifying plant remains, the basic goals of the archaeobotanical studies were to:

- Examine the intensity of and changes in subsistence practices through time, and how these practices affected and were influenced by the local environment.
- Determine how changes in subsistence practices influenced social organization.

As considered in Sections 3, 6, and 7, and detailed in Appendix I, archaeobotanist Justine McKnight identified plant remains recovered from the Frederick Lodge Site Complex and considered the implication of these results for interpreting past natural and cultural environmental settings.

2.5 Landscape Approach

The overall theoretical framework for understanding the Frederick Lodge Site Complex draws upon archaeological landscape studies (Anschuetz et al. 2001; Knapp and Ashmore 1999; Rossignol 1992; Wandsnider 1992) that build on more traditional settlement pattern approaches (Ammerman 1981; Anschuetz et al. 2001; Knapp and Ashmore 1999:2; Parsons 1972). While the Frederick Lodge Site Complex excavations necessarily focused on tangible concentrations of past human activities, it is recognized that the landscape—and not simply specific locations on the landscape manifesting cultural remains (Wandsnider 1992:286)—“is the arena for all of a group’s economic, social and ideological activities” (Anschuetz et al. 2001:170-171). As Knapp and Ashmore (1999:2) noted “a holistic landscape perspective compels us to stress the interrelationships among people and such traces, places and features, in space and through time.” How American Indians interacted with the unique bay/basin features at the Frederick Lodge Site Complex can best be explored through a landscape approach.

Archaeological landscape studies today have moved beyond basic examinations of how the physical aspects of the landscape (topography, resources, soil types, etc.) aided or constrained people in the past (Knapp and Ashmore 1999:7). Landscapes are now recognized as dynamic, culturally constructed worlds that do not necessarily correspond directly to natural environments (Anschuetz et al. 2001:160-162). Landscapes have socio-symbolic as well as physical dimensions and are “an entity that exists by virtue of its being perceived, experienced, and contextualized by people” (Knapp and Ashmore 1999:1). People map their social relations onto their landscapes, and these maps may be more cognitive than physical. Because of the dynamic interaction between people and the physical environment, the archaeological landscape approach must incorporate archaeological formation processes, e.g. the formation history of natural and cultural deposits across the landscape (Wandsnider 1992:286), and paleoenvironmental studies that reconstruct the availability of natural resources as well as changes to the physical landscape through time.

Mobile human groups live in culturally constructed landscapes that incorporate trails, views, campsites, or other special places (Knapp and Ashmore 1999:10). Some aspects of past constructed landscapes can leave behind material traces that the archaeologist can interpret, including not only the places where people were, but also where they were not. We can understand why people chose to use a specific landform by contrasting the selected landform from the range of potential places with minimal or no traces of past activities.

Archaeological landscape studies are not antithetical to settlement pattern approaches. Settlement pattern approaches necessarily focus on sites and view the archaeological record from the perspective of individual sites. Archaeological landscape studies consider the areas between sites as well, leading to a better understanding of how certain portions of the landscape “differentially attracted human use” (Wandsnider 1992:286). When settlement pattern approaches are integrated with archaeological landscape studies, a cultural landscape can be generated for the people who left behind the archaeological remains recovered by the archaeologist.

The interaction of past peoples with the physical environment and with their manufactured remains, including artifacts and features, creates the physical and social environment that structures both daily life and long-term concerns, including intra- and inter-group social interactions. In other words, “Landscapes are not synonymous with natural environments. Landscapes are synthetic, with cultural systems structuring and organizing peoples’ interactions with their natural environments... Through their daily activities, beliefs, and values, communities transform physical spaces into meaningful places” (Anschuetz et al. 2001:160-161).

Small, upland sites have received increasing attention over the last decade as an important and oft neglected component of large, complex subsistence-settlement systems. An expanding body of research has highlighted the critical need to understand the human use of upland locations in the Middle Atlantic region and throughout northeastern North America (Barber 2001; Duncan 2001; Klein 2002; Means 1999; also, see papers in Rieth 2008).