

II. ENVIRONMENTAL AND CULTURAL CONTEXTS AND ARCHEOLOGICAL RESOURCE POTENTIAL

GAI conducted background research to develop appropriate environmental and cultural contexts for the survey area. In addition, the background research served to identify previously recorded cultural resources within or near the project. Finally, this work provided a basis for evaluating archeological resource potential and developing survey expectations. This stage of investigations entailed a review of pertinent primary and secondary sources of information as well as cultural resource inventory files at the Delaware Historic Preservation Office in Dover. GAI also reviewed survey reports and studies of prehistoric and historic settlement in Delaware to assess the sensitivity of the survey area for archeological resources. GAI's historian visited the following repositories to obtain background information for these surveys: the Hall of Records (Delaware State Archives), DelDOT, and State Historic Preservation Office, Dover; the Library of Congress, Washington, D.C.; and other local and regional historical society and libraries. Remaining sections of this chapter present the results of the background research.

ENVIRONMENTAL CONTEXT

The Bridge 4A project area lies in the Low Coastal Plain physiographic province of Delaware. This region, comprised of Columbia Formation sands, consists of terrain with little relief (Custer 1984:25). Streams are tidal in their middle and lower reaches and are flanked by tidal marshes. The underlying geologic units in this region consist of unconsolidated materials derived from alluvial and marine processes.

The project area consists of a corridor on the eastern shore of Derby Pond, an artificial impoundment. The 290-meter long APE traverses terraces flanking Tidbury Creek. The banks of this watercourse exhibit moderate slopes. Adjacent areas are generally level to gently rolling. Elevations range from 8 meters (26 feet) amsl along Tidbury Creek to a maximum of 15 meters (50 feet) in the uplands west of the project area. The survey corridor lies at 9 meters amsl.

The project area lies in the Delaware Bay drainage basin. Tidbury Creek constitutes the chief drainage in the project vicinity. This mid-order stream is a tributary of the St. Jones River, which empties into Delaware Bay at Bowers Beach, 13 km (8 miles) southeast of the project area. The former confluence of Tidbury Creek and Red House Branch lay approximately 1,000 feet west of Bridge 4A at the present site of Derby Pond; both stream valleys are poorly drained and marshy. Historical records and maps indicate that Derby Pond was created in the late nineteenth or early twentieth century as an impoundment for a mill.

Soils along Tidbury Creek, comprising over 90 percent of the project area are classified as mixed alluvial—a soil type that occurs on floodplains, and consists of undifferentiated alluvium. Most settings mapped as mixed alluvial are flooded at least annually, sometimes for long periods; most are poorly drained. Soils in the extreme northern and southern portions of the project area are mapped as the Sassafras series, which consists of deep, well-drained soils that formed in very old, predominantly sandy sediments (Matthews and Ireland 1971:17, 21) (Figure 3).

In historic times, natural vegetation in the project vicinity consisted of hardwood forests; these have largely been cleared for agricultural purposes. Modern land use in the immediate project vicinity is rural residential and agricultural. The area on the east side of Route 13 in the project area is residential, with an agricultural field at the extreme southeastern margin of the survey corridor. The west side of the ROW is developed for recreational use (parking and boat landing) associated with Derby Pond.

CULTURE HISTORY

The following section present brief overviews of the prehistory and history of Delaware. This outline provides a basis to identify and interpret archeological resources identified in the four survey areas. Following this review is a discussion of the survey expectations for the project area.

Prehistoric Context

Custer (1984, 1989) and Dent (1995) have presented recent general prehistoric overviews of Delaware and the Delmarva region. The prehistoric period of Delaware has been divided into four principal periods by Custer (1984; 1989) that correspond to specific environmental and sociocultural developments: Paleoindian (12,000-6500 BC), Archaic (6500-3000 BC), Woodland I (3000 BC-AD 1000), and Woodland II (AD 1000-1600). The Woodland I and Woodland II periods are further subdivided into particular temporal/spatial complexes characterized by specific adaptations (Custer 1984:28).

The Paleoindian period (12,000-6500 BC) refers to the earliest recognized human populations in Delaware. Custer (1984, 1989) correlates this period with late Glacial pre-Boreal, and Boreal climatic episodes, and asserts that early cultures in the region reflected adaptations to the distinct circumstances associated with these environments. In the Delmarva region, these societies have been characterized as mobile hunter-collectors organized into band-level social groups. Paleoindian sites are distinguished by the presence of distinctive fluted and lanceolate projectile point types associated with lithic tool kits that appear to be oriented around the acquisition and processing of large game animals. Recent evidence (Dent 1991, 1995; Kauffman and Dent 1982; Lee Decker et al. 1996) indicates the use of plant foods by Paleoindians as well, although the relative proportions of the Paleoindian diet made up by hunted versus collected foods is not clear. Researchers in the Middle Atlantic region have suggested that the Paleoindian settlement system was focused on sources of high-quality lithic materials to exploit for stone tool manufacture (Custer 1984; Custer et al. 1983; Gardner 1974; Lowery 1989:161). This focus would have been less likely in Coastal Plain zones where sources of high quality materials do not occur in discrete locations, but as secondary deposits along with materials of lesser quality (Custer et al. 1983). It is probable, as well, that there has been an overemphasis on lithic source quality as a principal determinant of Paleoindian settlement in the region (Childress and Vogt 1994; Dent 1995). Instead, Paleoindian settlement in Delaware will more likely evidence a "serial" settlement model in which sites are located near a variety of food resources, such as interior wetlands, swamps, and bogs (Custer 1984, 1990; Custer et al. 1983). In this model, procurement of tool stone from dispersed lithic sources was embedded in the seasonal travels of Paleoindian groups that were in turn dictated by the availability of food resources. Expected site types include large and small base camps, situated in locations of maximum resource overlap, hunting sites, and isolated point sites (Custer 1984:52-53; 1989:99-100).

The succeeding Archaic period (6500-3000 BC) corresponds to the Atlantic climatic episode, characterized by warmer average temperatures and essentially modern floral and faunal communities (Custer 1984, 1989). Social groups of this period have been characterized as mobile and adapted an emerging and diverse resource base. Subsistence strategies were unspecialized and emphasized the use of a wide range of food resources (Custer 1984, 1989, 1990). Settlement patterns reflect this postulated subsistence strategy: sites occur in association with newly appearing environmental zones, such as developing swamps and marshes (Custer 1984). Three site types are suggested for the Archaic period. The largest type is the macroband base camp, occupied seasonally by multiple families in settings at the juncture of environmental zones that maximized resource overlap. Found in similar settings, microband base camps are somewhat smaller, and are also occupied seasonally by an individual family or by a small number of families. Finally, procurement sites that were occupied to obtain and process resources occur as brief forays from one of the other site types (Custer 1984:67, 1989:129-130). Sites of this period are distinguished principally by particular bifurcated projectile points as well as a wider array of tool types, compared to the preceding period. In addition, Stewart (1989) has noted increased use of extra local lithic raw materials, particularly rhyolite, during this period.

The Woodland I period (3000 BC-AD 1000) encompasses an era of increasing social complexity and a greater degree of sedentary settlement. Custer (1984:77) asserts that the Woodland I period is marked by intensified use of estuarine and riverine environments that permitted the establishment of large macroband base camps; the appearance of foraging and collecting subsistence strategies in zones away from estuarine and riverine environments; broad exchange networks; and population growth. Also characteristic of this period is the recognition of distinctive culture complexes that have temporal and regional affinities. Diagnostic artifacts of the period, as defined by Custer (1984), include narrow-bladed stemmed points, broad-bladed points, triangular points, and others. In addition, container technologies appear during the Woodland I period. The earliest of these are carved steatite bowls, which may appear as early as 1900 BC and which last until about 1200 BC when they are superseded by ceramic vessels. Settlement systems of the Woodland I era, according to Custer (1984:96) reflect less mobility and higher numbers of large macroband base camps. Such sites were used more intensively and for longer periods than those of the Archaic period. During the Woodland I period, macroband base camps were situated to take advantage of specific and predictable resources, such as annual fish runs. Microband base camps of this period also occur, along with procurement sites. Greater social complexity is suggested by the need to coordinate the procurement, processing, and distribution of the food resources obtained at the macroband camps. The exchange networks evident during this period also suggest that some form of social hierarchy had begun to develop.

The Woodland II period (AD 1000-1600) is distinguished primarily by increased sedentism and the introduction of horticulture. In addition, the exchange networks that flourished during the Woodland I break down. The period is also marked by triangular projectile point varieties in combination with distinct pottery types (Minguannan and Townsend ceramics). In the southern Delmarva region, semi-sedentary villages that exhibit evidence of increased food storage facilities (Custer 1984, 1988; Thomas et al. 1975) mark settlement systems. The macroband base camps are larger than in preceding eras, and are more often situated along the floodplains of major rivers, which provided suitable soils for horticulture (Custer 1984:148; Custer and Griffith 1986:36; Rountree and Davidson 1997:23). In the northern Delmarva Peninsula, sites identified as macroband base camps do not typically exhibit evidence for structures, storage features, or middens. Locations of these sites often relate to environmental settings that are rich in subsistence resources, such as brackish water marshes, floodplains, and sinkhole complexes (Stewart et al. 1986:59, 63). Seasonal base camps and procurement sites also occur within the Woodland II settlement system, indicating, first, that seasonal fissioning of larger social units persisted, and, second, that horticulture only formed a part of the subsistence base (Custer and Griffith 1986:45-46). Based chiefly on historical data, by the late Woodland II period societies on the Delmarva peninsula may have been organized hierarchically (Rountree and Davidson 1997).

The Contact period (AD 1600-1750) encompasses the transition from the Woodland II period to the historic era. Europeans explored the region during the sixteenth century, and by the 1620s, began to trade on a regular basis with the aboriginal societies of the Eastern Shore. The Swedish and Dutch established settlements on Delaware Bay by the 1630s (Davidson et al. 1985:43; Hoffecker 1977; Munroe 1978, 1993; Weslager 1988). This period is marked archeologically by the addition of European trade goods to otherwise characteristic Woodland II assemblages. Eventually, interaction with Europeans and their colonization of the region led to the disruption of native societies, and ultimately to the depopulation of the Delmarva peninsula by aboriginal inhabitants (Custer 1984, 1989; Rountree and Davidson 1997).

Historic Context

The following overview of Delaware history is abstracted largely from the histories prepared by Hoffecker (1977) and Munroe (1954, 1978, 1993) and the summary in De Cunzo and Catts (1990). In their management plan for Delaware historic archeological resources, De Cunzo and Catts (1990) divide Delaware's history into five chronological periods: (1) 1630-1730; (2) 1730-1770; (3) 1770-1830; (4) 1830-1880; and (5) 1880-1940.

European settlement of Delaware began in the 1630s and involved Swedish and Dutch efforts to colonize locations along the Delaware River. Fort Christina, at the Brandywine and Christiana Creek junction, became the focus of a small population of farmers and traders. Early Dutch activity in this area consisted of military settlements established in response to claims by the Swedish and English: Fort Casimir (at present New Castle) was an attempt to blockade Fort Christina and a fort near Lewes served to protect against English incursions. When the English obtained control of the entire region in the 1660s, it contained a small population of Swedish, Finnish, Dutch, English, and African descent (De Cunzo and Catts 1990:9-10; Munroe 1978, 1993; Weslager 1988). Settlement consisted of dispersed farmstead distributed along the Delaware River and its tributaries. The economy of the region focused on agriculture for home consumption. Later, as the area became part of Philadelphia's hinterland, it shifted to market crops, such as wheat, for export to Philadelphia and the West Indies. Other activities included husbandry and forest products. Small hamlets provided services such as mills, smiths, taverns, and stores (De Cunzo and Catts 1990:10).

De Cunzo and Catts (1990:11) characterize the period of 1730 to 1770 as one of population growth and agricultural and commercial expansion. Towns, regional transportation systems and industry also developed over this period. Increased immigration from England and Ireland before the middle of the eighteenth century affected the ethnographic character of the region as well. Towns continued to grow as central places for local economic and social activities. Such communities, which provided diverse services for regional inhabitants, lay along major waterways that served as the principal routes of transportation and communication. Roads comprised secondary and poor means of transport during this period. The economy was dominated by agriculture, with northern farms involved in market production while the southern region focused chiefly on subsistence farming and the exploitation of local forest products. Shell and fin fisheries also existed, particularly in the south (De Cunzo and Catts 1990:11; Munroe 1978:198, 200)

Agriculture continued to dominate the economy during the span between 1770 and 1830 although the depletion of soils led to the out migration of large numbers of people during the 1820s and 1830s. Unproductive and vacated properties became incorporated into larger holdings, contributing to an increase in average farm size. In the north, wheat and dairy emerged as the chief farming pursuits. In the south, corn dominated, while cattle and swine were important subsidiary products. Commerce and manufacturing grew in the state as well. In the north, textile, snuff, and fulling mills were added to the existing grist and saw milling industries. In the south, distilleries operated along with forges and home manufacturing of linen and wool. Forest products remained significant in the south as well. Towns continued to serve important economic and social functions, and water remained the principal means of transportation, although the development of turnpikes and canals revolutionized transportation in the north and impacted the landscape and settlement distribution (De Cunzo and Catts 1990:17-18; Hoffecker 1977:42-43; Munroe 1954).

For the period of 1830 to 1880, De Cunzo and Catts (1990:21) note that industrialization, urbanization, and transportation had significant impacts on the region. Agriculture in the north underwent a revival with the application of soil conservation practices, new farming techniques, and crop diversification. In the south, corn persisted as the main crop with livestock an important second product. Water and roads continued to serve as transportation routes, but the development of railroad lines had important consequences for the region as it improved transportation and contributed to changes in agriculture and industry as well as to settlement. Industry grew and diversified during this period, taking advantage of improved transportation, a large labor supply, and available sources of raw materials (De Cunzo and Catts 1990:21-22).

Manufacturing and agriculture remained important economic activities through the period of 1880 to 1940. Manufacturing increased in importance relative to agriculture, and the latter was marked by shifts in the types of produce cultivated. More diverse and perishable crops for urban markets became important as did poultry and dairy. Forest products continued to provide important sources of income in the southern part of the state. Industry was tied more closely to northern Delaware, with an emphasis on light

manufacturing and foodstuff processing (e.g., canning). Urbanization proceeded in the north, and transportation continued to improve, enhancing links within the region and to areas beyond it (De Cunzo and Catts 1990:27-28).

ARCHEOLOGICAL RESOURCE POTENTIAL

A review of the archeological inventory files at the Delaware SHPO indicated that five prehistoric archeological sites had been previously identified within a 1.6-kilometer radius of the Bridge 4A project area. Table 2 summarizes the site file data for these resources. The most significant information in the site forms relates to the physical setting of these sites; there is little detailed data on the nature of these sites, handicapping any interpretations of site function. Thus, the identification of Sites 7K-C-103 and 7K-C-104 on the site forms as microband camps is tentative. The locations of these sites, however, suggest variables that may be important in assessing archeological resource potential in the project area. The five sites exhibit a preference for level or gently sloping positions that overlook the larger drainages in the immediate vicinity. This pattern generally conforms to patterns noted by Custer (1984) for central Delaware during the Woodland I and Woodland II periods. Custer (1984) suggests that prehistoric populations in this region used mid-drainage zones for base camps and upper drainage areas for resource procurement activities.

Except for its extreme northern and southern termini, the majority of the Bridge 4A project corridor lies within the Tidbury Creek valley floor, which is poorly drained. Owing to this condition, GAI characterized much of the survey area as having a low potential for prehistoric archeological resources, except for those that represented transient activities. The extreme northern and southern portions of the project area lie on the broad, better-drained slopes overlooking Tidbury Creek. These small project area segments were judged to have a high potential for prehistoric archeological resources. Any sites in these areas would probably represent procurement stations or, possibly, microband camps.

Table 2
Previously Recorded Archeological Sites
Within 1.6 Kilometers of the Bridge 4A Project Area

SITE	CHRONOLOGICAL PERIOD (AND REPORTED ARTIFACTS)	SETTING	INTERPRETATION
7K-E-105	Undated Prehistoric	upland slope adjacent to Tidbury Creek	no information
7K-E-109	Undated Prehistoric	upland slope adjacent to Tidbury Creek	no information
7K-C-103	Middle Archaic (bifurcate and straight-stemmed projectile points)	upland flat adjacent to intermittent stream and wetland area	microband base camp
7K-C-104	Woodland I (Wolf Neck pottery)	low, level upland overlooking Derby Pond	microband base camp
7K-C-105	Woodland I (side-notched projectile point)	level upland adjacent to Tidbury Creek	procurement camp

Historic archeological potential is suggested by historic architectural resources recorded in the project vicinity, and by historic maps. Three historic properties (K-2032, K-3816, and K-3817) are located within 300 meters (985 feet) of the survey corridor. All of these resources are historic dwellings. Located 75 meters (250 feet) south of Bridge 4A, K-2032, the R. Lewis House, is a two-story frame dwelling built during the eighteenth century. The architectural resource site form for this dwelling notes that it appears

on historic maps (Beers 1868, Rea and Price 1849) as the "R. Lewis" house. Resource K-3816 and K-3817 are located 100 meters southeast and 120 meters southwest of Bridge 4A, respectively. Possibly dating to the early or mid-nineteenth century, K-3816 consists of a two-story frame dwelling on a concrete block foundation. The site form indicates that this structure represents the dwelling associated with the no longer extant Derby Mill. Finally, K-3817 is a twentieth-century (circa 1935) house.

Historic maps (Beers 1868, Rea and Price 1849) indicate that the project vicinity was sparsely settled in the mid-nineteenth century. The only structure shown in, or adjacent to, the project area is a dwelling labeled "R. Lewis" which lies on the south bank of Tidbury Creek and east of the road alignment (now Route 13A) (Figures 4 and 5). No mill or impoundment appears on either the Rea and Price (1849) or Beers (1868) maps. However, a recent historical survey (North Murderkill History Committee 1984: 38) reports that Derby Pond originally provided the source of power for Woodside Mills, operated as a grain and feed mill by Marshall Derby between 1905 and 1946. Prior to this period, the mill was reportedly owned by Ezekiel Dawson and, during the nineteenth century, by Evan Lewis and his son Robert. Before 1838, Joseph and Mary Caldwell reportedly operated the facility as a sawmill.

Other sources do not corroborate this reported history (North Murderkill History Committee 1984: 38) of a mill at Derby Pond, at least not for the early to mid nineteenth century. A search of Kent County insurance records found no entries for Evan or Robert Lewis or Marshall Derby; and Ezekiel Dawson had apparently insured only his residence. Furthermore, the absence of a mill and associated impoundment on the Rea and Price (1849) and Beers (1868) maps suggests that the Derby Pond impoundment was created at the present location of Bridge 4A sometime *after* 1868 (the date of the Beers map), either in the late-nineteenth or early-twentieth century. A mill associated with this impoundment would presumably have been built at the same time. It should also be noted that there is no discussion of a Derby Pond in Scharf (1888), suggesting that this site was not developed as a mill until after the last decade of the nineteenth century.

The earliest clear evidence for a mill in this location consists of an undated DelDOT design map for existing Bridge 4A (Figure 6). This map, which probably dates to immediately prior to the 1922 construction date for Bridge 4A (HAER Record n.d), shows an impoundment labeled "Derby's Mill Pond" located west of Route 13A. East of the road, the map shows a probable mill and millrace along with the R. Lewis house (CRS K-2032). It should also be noted that this map depicts a planned upgrade to the previous alignment of Route 13A. This earlier alignment lay roughly 2 meters (6 feet) east of the present alignment at Bridge 4A over Tidbury Creek. The design plans shown on this map call for the construction of a new bridge to the west and a realigned curve of the road. It is important to note that the ROW shown on this map equates to the ROW for the present bridge replacement project.

This review highlights discrepancies between different historical accounts of a mill at Derby Pond. Collectively, the background research indicates the creation of the mill impoundment at Derby Pond and an associated mill after 1868 (the date of the Beers map) and prior to the 1922 construction date for Bridge 4A (when the pond and millhouse with race are documented). No unequivocal information was found during this study to suggest an earlier use of this location for a mill seat prior to 1868.

The data on recorded historical architectural resources in the project vicinity and from historic maps provide a basis for gauging the historic archeological resource sensitivity of the project area. The reported presence of an historic mill and the recorded location of the extant R. Lewis house (CRS K-38K), a nineteenth-century dwelling east of Route 13A, indicate a moderate potential for historic archeological resources in the project area. It is anticipated that any archaeological resources associated with a mill will date to the late nineteenth century at the earliest. Resources recovered in the vicinity of the R. Lewis house may date as early as the eighteenth century.