

(Figure 12) the project area still retained much of its rural character; however, in the last two decades, residential, industrial, and commercial development have been rapidly encroaching. During this period of suburban growth (1940s to present) the project area has seen the construction of single family homes and residential developments in areas that were previously agricultural fields.

RESEARCH DESIGNS

Background research for the project area revealed that although no previous systematic archaeological investigations

have been conducted within the Old Baltimore Pike project area currently under investigation, a great deal of information is known about prehistoric and historic cultural resources in the area. A number of cultural resource management studies (Thomas 1980, 1981; Custer, Catts, and Bachman 1982; Bachman and Custer 1983; O'Connor, Cunningham, Custer, Bachman, and Rappleye 1983; Catts, Shaffer, and Custer 1986; Custer, Coleman, Shaffer, and DeSantis 1985; Coleman et al. 1984, 1985, 1987; Basilik 1986; Catts, Cunningham, and Custer 1983; Bowers 1986; Shaffer, Custer, Grettler, Watson, and DeSantis 1988; Custer and Bachman 1984, 1986; Delmarva Clearinghouse for Archaeology 1975; Custer and Cunningham 1986) and other archaeological projects (Custer 1980, 1981, 1982; Custer and Watson 1985, 1987; Custer, Watson, and DeSantis 1987; Custer, DeSantis and Watson n.d.; Custer, Sprinkle, Flora, and Stiner 1981; Custer, Ward, and Watson 1986) have provided excavation and survey data on sites in the nearby region. The Delaware Cultural Resource Survey site files, which are maintained by the Delaware Bureau of Archaeology and Historic Preservation and which are the repository for records of all known prehistoric and historic sites in Delaware also contain information about numerous sites in the vicinity of the Old Baltimore Pike project area. Figure 13 shows the location of archaeological surveys in the nearby area which produce a sample completely surrounding the project area.

In developing predictive models for the Old Baltimore Pike project area, it was assumed that archaeological site distributions could be modeled primarily on the basis of environmental factors during the prehistoric period although

social factors could play a role. For the historic period, environmental factors and socioeconomic and political factors could be used. Several studies have illustrated the use of environmental factors in predictive models for prehistoric sites in both the High and Low Coastal Plain (eg. - Custer, Eveleigh, Klemas, and Wells 1986; Eveleigh 1984; Galasso 1983; Custer and Galasso 1983; Custer, Jehle, Klatka, and Eveleigh 1984; Gardner 1982, 1987; Custer n.d.a) and these models have been shown to be both accurate and precise (Custer and Bachman 1986; Custer, Bachman and Grettler 1986; Custer n.d.a, n.d.b). For the most part, these models focus on the availability of surface water and productive swamp, marsh, and bog settings. In fact, a predictive model based solely on surface water availability was successfully applied to the Route 896 Corridor, which is located in the High Coastal Plain west of the Old Baltimore Pike project area (Lothrop, Custer, and DeSantis 1987). Social factors in prehistoric site locations have also been considered (Custer, Jehle, Klatka, and Eveleigh 1984), but their applicability is limited to Woodland I specialized base camps and their accuracy and precision has not been evaluated. For historic sites, explicit predictive models have not been regularly applied due to the effectiveness of archival research as a predictive tool. However, recent analyses of historic site locations (Custer, Bachman, and Grettler 1986; Custer and Grettler n.d.) have indicated that the factors of soil productivity and access to transportation facilities and markets had important influences on historic site locations. The accuracy of these factors as predictors of site locations has not yet been evaluated. For the

Old Baltimore Pike project area, all of these models will be applied, where appropriate, to generate testable predictive models.

The site records of the Bureau of Archaeology and Historic Preservation (BAHP) indicate that three prehistoric and eight historic sites are located within or immediately adjacent to the current project area (Figure 14 and Table 2).

PREHISTORIC RESEARCH TESTING DESIGN

Across the length of the Old Baltimore Pike project area, proximity to water resources is viewed as a major determinant of prehistoric site location potential. Poorly drained swamps, bogs, and springheads are productive hunting and gathering locales; however, their poor drainage precludes settlement within these settings. Nonetheless, well-drained knolls adjacent to poorly drained settings are likely site locations because they represent a suitable living area from which the resources of poorly drained swamps and bogs can be exploited. The existing ROW of Old Baltimore Pike and the proposed ROW transect several of these environmental settings, including the vicinities of Leatherman's Run, Barratt's Run, and the proposed new alignment of Old Salem Church Road. Figure 15 shows the distribution of likely site locations based on these criteria.

Because human adaptations and settlement patterns changed through time in northern Delaware, site location predictions are most accurate when they are made for individual time periods noted in the earlier discussion of the regional prehistory. The prehistoric site location predictions noted below are based on

TABLE 2

OLD BALTIMORE PIKE SITE INVENTORY -
CURRENT STATUS OF CULTURAL RESOURCES IN PROJECT VICINITY

		A	B	C	D	E	F	G	H	I	J
1	N-3745; 7NC-D-25	X						X		X	X
2	N-10288		X		X	X	X			X	X
3	N-109.1		X		X	X	X			X	X
4	N-3758; 7NC-D-4	X						X		X	X
5	N-3744; 7NC-D-16	X						X		X	X
6	N-3741; 7NC-D-39	X						X		X	X
7	N-3742; 7NC-D-1	X						X		X	X
8	N-3996			X						X	X
9	N-190 Cooch's Bridge Historic District								X	X	X
10	N-11172 McAntier House			X					X	X	X
11	7NC-D-139 Cooch Tenancy		X		X					X	
12	7NC-D-141 Leach Site		X		X	X				X	
13	7NC-D-138 Comly Site	X			X					X	X
14	N-11712; 7NC-D-124 Dehorty Site		X		X					X	
15	N-11720; 7NC-D-143 Lee Site		X		X	X				X	
16	N-11719; 7NC-D-142 Young Site	X			X					X	
17	N-11714; 7NC-D-136 Anna Lloyd House Site		X		X	X				X	
18	N-11715; 7NC-D-137 Stuart Forest Site	X			X					X	
*19	N-3991 W. Brooks House			X	X					X	X
20	N-3993			X						X	X
21	N-3994			X						X	X
*22	N-4001			X						X	X
23	N-11718; 7NC-D-140 Barrat's Run East	X			X	X				X	
24	N-11713; 7NC-D-135 Nellie Thorp Field	X			X					X	
*25	7NC-D-100 Whitten Road Site		X		X	X	X			X	X
*26	N-4002 A. P. Shannon House		X							X	
*27	N-3997		X							X	X
28	7NC-D-52 Nowakowski Site	X	X		X	X	X			X	X
29	Hersey Site										
30	N-12053; 7NC-D-154 Muddy Run Site	X			X						X

A. Prehistoric Archaeological Site

B. Historic Archaeological Site

C. Standing Structure

D. Phase I Testing Completed

E. Phase II Testing Completed

F. Tested by previous DelDOT survey

G. Tested by other survey

H. National Register District or Site

I. Listed in BAHF Files

J. Out of ROW

* No longer extant

the northern Delaware management plan (Custer and DeSantis 1986) as well as the more general studies noted previously. Management plans for prehistoric cultural resources in Delaware (Custer 1986; Custer and DeSantis 1986) indicate the potential for specific archaeological resources for each prehistoric time period within the project area. For the Paleo-Indian Period, an important locational factor is the Delaware Chalcedony Complex, including Iron and Chestnut Hills, located to the north and west of the project area. The Delaware Chalcedony Complex in northern Delaware and adjoining areas of Maryland was an important lithic source for prehistoric groups from all time periods (Custer, Ward, and Watson 1986). The project area is partially included within a major study unit of quarry sites related to the Delaware Chalcedony Complex (Figure 16). Expected site types include a range of quarry related sites and supporting hunting/gathering sites. Possible examples of such sites near the project area include 7NC-D-12 and 7NC-D-72 which have yielded Paleo-Indian as well as later materials. Both of these lie to the northeast of the project area.

For the Archaic Period, the project area lies within a general study unit of areas located outside of the Hockessin Lowlands/Churchman's Marsh area (Figure 17). In general, cryptocrystalline lithic sources no longer constitute a major focus because of the less restricted raw material preferences of Archaic hunter-gatherers. There is instead an expected focus on resource-rich settings such as bay basin features and poorly-drained swamp settings (Custer 1986:64). Within the project area, not only procurement sites should be expected, but base

camp sites may be present adjacent to some of the larger poorly drained swamps, and bay/basin features. 7NC-D-11, located to the north of the project area, is an example of such a site.

The Woodland I Period is characterized by a shift to site locations along major river floodplains and estuarine swamps in conjunction with warmer, dry environments and continued sea level rise. Sites in these settings appear to represent protracted occupations by larger groups. The project area is included in northern Delaware Study Unit No. II, along major drainage floodplains and No. III, the Interior/Uplands study unit (Figure

18). In the former study unit, base camps or procurement sites are expected adjacent to major tributaries of the Christina. Within the second study unit smaller, more ephemeral sites such as procurement and micro-band base camp occupations are expected at well-drained locations adjoining swamps and streams. Several small streams, such as Muddy Run, Barratt's Run, and Leatherman's Run, and other unnamed small watercourses cross the proposed right-of-way and the numerous swampy settings could be the setting for these smaller, Woodland I sites. Examples in the project area or its vicinity include 7NC-D-52, the Paradise Lane site (7NC-D-125), and the Dairy Queen site (7NC-D-129), located

north of the project area near Ogletown (Coleman et al. 1987, Custer et al. 1988).

Study units for the Woodland II Period remain the same as those of the Woodland I, reflecting the observation that many of the Woodland I base camp locations continued to be occupied in the subsequent period with little change in artifact assemblages (Figure 18). In the project area vicinity, 7NC-D-52 has yielded material from both periods.

Based on the 1986 preservation plan for the prehistoric resources of Northern Delaware (Custer and DeSantis 1986) both the research potential and the site significance of any site

located in the area can be determined. Within the project area, the research possibilities include a medium to low significant probability for site location and a medium site data quality (Custer and DeSantis 1986:Figure 25). When development pressures are considered (Custer and DeSantis 1986:Figure 26), the project area lies on the boundary of Zones I and II and with a medium to high significant site probability and high development pressure.

HISTORIC RESEARCH TESTING DESIGN

The prediction of the location of historic cultural resources within the Old Baltimore Pike project area was based on intensive archival research, both project-specific and regional in scope, and on the research results of previous archaeological investigations in the region which were cited above. The research design governing this project hinged primarily on the development of transportation networks (Henry 1981), and to a lesser extent on environmental, economic and social considerations within northern Delaware. Archival research indicated that the initial period of colonial development for the project area (circa 1730 to 1770) occurred as a direct result of the establishment of the road from Christiana Bridge to the Head of Elk -- also known as present-day Old Baltimore Pike -- and provided a catalyst for the "opening" of the rural backcountry of New Castle County. Based on an examination of early land plats and deeds, eighteenth century domestic sites were expected to be located in close proximity to the road network (Figure 3). Over time, the distribution and placement of historic sites was expected to shift to greater

distances from the transportation arteries. This phenomenon was predicted to occur as a result of land clearing and cultivation, which would allow for other, hitherto unused, potential house sites to be identified, changes in cultural values concerning housing and landscape, and the population growth of White Clay and Pencader Hundreds during the nineteenth century. Thus, initial historic site distribution is seen to be primarily a reflection of the development of the transportation network, which is gradually superceded, but not totally replaced, by a more dispersed pattern due to population growth, intensity of cultivation and landscape alteration. Since the middle of the eighteenth century, the location of the major roadway affecting the project area (Old Baltimore Pike) has remained virtually unaltered, even when the Elkton and Christiana Turnpike was built in the second decade of the nineteenth century. There have been several limited road widening or bridge construction projects, but these have had a minor effect on the original roadbed. In addition, only in recent years has there been any appreciable residential or industrial development in the project area; thus, remains of eighteenth, nineteenth, and twentieth century occupations should exist along the present roadway. Background research suggested that, due to the rural nature of the project area, few site types other than those resulting from domestic agricultural occupations would be identified. Exceptions to this assumption would most likely occur in the vicinity of the major drainages crossed by the project area, as these locations were favorable for milling and related industrial occupations. Unlike

other parts of northern Delaware, where intersections created conducive environments for commercial development, the construction of secondary roadway intersections during the nineteenth century, such as Salem Church Road, Smalley's Dam Road, and Purgatory Swamp Road (present-day Route 72), seem to have created only a limited focus for historic settlement and development. Thus, site types encountered at other intersections and cross-roads in the region, such as taverns, shops, and stores, were expected to occur with less frequency at these locations along the Old Baltimore Pike corridor (Catts et al. 1986; Coleman et al. 1987; Thompson 1987). Background historic research provides support for this assumption of limited settlement and commercial development within the project area. Using Beers' Atlas (1868) as a data base, several of the main transportation routes in New Castle County were examined to determine the number, type, and density of distribution of structures along those roads. All of the routes chosen were examined for 8 square miles, using the road as the mid-point of the square mile, and the structures present within the square mile counted. Routes examined included present day Route 4, (from Christiana to Ogletown to the Maryland Line), Old Baltimore Pike (from Christiana to Cooch's Bridge to the Maryland Line), Route 40 (from Bear to Glasgow to the Maryland Line), Route 7 North (from Stanton to Milltown to the Pennsylvania Line), and Route 7 South (from Christiana to Red Lion to St. Georges). Table 3 presents the results of this examination. Old Baltimore Pike had the fewest commercial structures per square mile of all of the routes studied, and showed the least

TABLE 3

DENSITY AND DISTRIBUTION OF STRUCTURES
ALONG NEW CASTLE COUNTY TRANSPORTATION ROUTES, 1868*

Road	Mill	Store	Hotel	BSS	WWS	Domestic	** Other	Total
OBP	3	1	-	-	-	69	3	76
Rt. 40	1	2	1	2	2	73	5	86
Rt. 4	2		1	1	1	81	3	89
Rt. 7 N	3	1	2	4	3	82	5	100
Rt. 7 S	-	4	2	2	3	110	9	130

Road	Avg./ Sq. Mile	Avg. Com./ Sq. Mile	Avg. Dom./ Sq. Mile	Avg. Other/ Sq. Mile
OBP	9.5	.5	8.6	.4
Rt. 40	10.7	1	9.1	.6
Rt. 4	11.1	.6	10.1	.4
Rt. 7 N	12.5	1.6	10.2	.6
Rt. 7 S	16.2	1.4	13.8	1.1

** Other structures include school houses, churches, railroad stations, tobacco factory.

* Source: Beers' Atlas of the State of Delaware, White Clay Creek, New Castle, Pencader, Mill Creek, Red Lion Hundreds.

BSS Black Smith Shop
WWS Wheel Wright Shop
OBP Old Baltimore Pike
COM. Commercial
DOM. Domestic
AVG. Average

variety of site types as well. The Pike also had the lowest number of domestic dwellings (8.6) per square mile, while Route 7 South had the largest number (13.8) per mile. Overall, Old Baltimore Pike exhibited the lowest density of structures present, at 9.5 per square mile, while the other routes ranged from 10.7 to 16.2 structures/square mile.

RESEARCH AND TESTING METHODS

Phase I background research conducted for the Old Baltimore Pike Project Corridor included consultation with the staff of the Delaware Bureau of Archaeology and Historic Preservation (BAHP), a review of the site files and records maintained by the BAHP pertaining to known prehistoric and historic cultural resources within the vicinity of the project area, a review of historic atlases and maps, interviews with local landowners and informed persons about the project area, examination of archival and manuscript sources such as deed records, tax assessments, road papers, other court records and published sources, examination of the DelDOT archives and photographic collections at Dover and Bear, and the review of relevant prehistoric archaeological literature (Custer 1984, 1986). Research designs governing the testing plan were created for both the prehistoric and historic cultural resources based on previous archaeological investigations in the immediate vicinity of the project area.

Pedestrian surveys and surface collections were conducted wherever surface visibility was adequate within the project area. Where surface visibility was obscured by vegetation, shovel test pits (STPs) were employed as the standard Phase I test unit