AN OVERVIEW OF PREHISTORIC ARCHAEOLOGICAL RESOURCES OF THE PROPOSED EAST-WEST CORRIDOR

The purpose of this overview is to provide a brief description of the types of prehistoric archaeological resources that have been identified within, or are expected to be located within, the two proposed East-West Corridor alignments alternatives. Expected prehistoric site locations are based on probability distributions that were developed during the initial planning study of the East-West Corridor (Catts, Custer and Hoseth 1991). These models were originally utilized in the planning of the State Route 1 Corridor (Custer, Jehle, Klatka, and Eveleigh 1984) and were subsequently tested and refined in later studies (Custer and Bachman 1985; Custer, Bachman, and Grettler 1986). All known sites and projected probability zones are noted in Attachment I and listed in Appendix I to this report.

In general, this overview will first describe the environmental setting of the study area as it relates to the regional prehistoric archaeology. Then each of the major archaeological periods will be reviewed and relevant sites within the proposed alignment alternatives will be discussed. Finally, potentially significant sites, and classes of sites, that are likely to be eligible for listing on the National Register of Historic Places will be noted.

ENVIRONMENTAL SETTING

All of proposed alignment alternatives of the study area fall within the Low Coastal Plain physiographic zone that

includes most of Kent and Sussex Counties. The Low Coastal Plain is underlain by the sands of the Columbia Formation (Jordan 1964; Delaware Geological Survey 1976) and these sands have been extensively reworked by various geological processes. The result is a very flat and relatively featureless landscape with elevation differences that range up to 10 meters (30 feet). These small differences in elevation are further moderated by long and gradual slopes. Surface water settings have been severely affected by rising sea level and most river systems, including much of the Nanticoke, Marshyhope, Broadkill, their tributaries and lower order tributaries of Indian River and Rehoboth Bay in the study area, are tidal in their middle and lower reaches. In general, the watercourses of the study area, particularly the main course of the Nanticoke River, some of its larger tributaries, such as Deep Creek, Broad Creek, and Clear Brook, and the Marshyhope provide a richer range of resources than the less well watered interior. Therefore, for the purposes of this report two basic environmental zones, the riverine settings and the interior, will be delimited for the survey area.

Most of the riverine areas of the proposed Sussex East-West Corridor have an associated fringing tidal marsh characterized as the Arrow-Arum - Pickerel Weed Marsh Type (Zone VI - Daiber et al. 1976:86-87, Figure 25). These marshes occur within tidal mud flats where the water salinity ranges between fresh and slightly brackish. The prominent plants are Arrow-arum and pickerel weed; and reed grass, marsh mallow, and wild rice are also common. Many species of duck and muskrat are found in the area and various species of fish, including anadramous species, use these

marshes as spawning areas. In general, these marshes provide a plethora of faunal and floral food sources not seen in other parts of the study area. Adjacent to the fringing marsh there is usually a steep bluff which is undergoing continual erosion. Cultivation often extends right up to the bluff, but in some cases a fringing woodland of hydrophytic species such as loblolly pine, sweet gum, mixed oaks, and Virginia pine (Ireland and Matthews 1974), is present. In a few places along the Nanticoke there are some developed floodplain settings, but these geomorphological settings are rare. For the most part, movement of the main channel of the major drainages has been constrained between the present river-edge bluffs over the course of the last 10,000 years.

Cypress swamps along some of the higher order tributaries of the Nanticoke, such as in the vicinity of James Branch, Hitch Pond, and Trussum Pond provide a unique environmental setting within the riverine area. In the study area, as is the case throughout the Delmarva Peninsula, cypress swamps are located just upstream of the tidal marshes. Bald cypress, swamp black gum, and red maple are the dominant tree species (Braun 1967:93; Brush et al. 1980:83) and there are many associated edible aquatic plants. Deer, and many other game animals frequent these swamps and they are highly productive environmental settings for hunters and gatherers. Unfortunately, the antiquity of these swamps and their vegetation history is not well known.

In contrast to the well watered and environmentally diverse riverine areas of southwestern Delaware, the interior is not as

well watered. Certainly, the diversity of the tidal wetlands is not found in the interior. However, studies of environmental diversity in the Middle Atlantic Coastal Plain (Brush, Lenk, and Smith 1980; Braun 1967) note the importance of soil drainage in determining environmental composition and there are many large patches of poorly drained soil settings in the interior (Ireland and Matthews 1974). These poorly drained areas are now characterized by woodlands of either deciduous or coniferous species, with the later developmentally older. Common species include willow oak, white oak, sweet gum, red maple, water oak, cow oak, black gum, sweet oak, holly, and dogwood (Braun 1967:268). Thus, the interior, prior to the artificial draining of agricultural fields, was probably at one time a rich mosaic of poorly drained, fresh water swamps and bogs, and well drained sand ridges. The poorly drained woodlands would have been productive settings for hunters and gatherers and would have been attractive settlement locations even though they were not as productive as the riverine areas. In sum, the area that the proposed East-West Corridor Alignment alternatives pass through can be generally characterized as a contrast between the very rich and productive riverine settings which included the oligohaline ecotone and a less rich, but still very productive, interior zone.

Numerous sources of data indicate that there were marked climatic and environmental changes over the past 12,000 years in both riverine and interior areas. Detailed discussions have been presented elsewhere (Custer 1983a:17-24; 1984a:30-37, 44-48, 62-64, 89-93, 154) and only a summary will be presented here. It

TABLE 1

PALEOENVIRONMENTS IN THE STUDY AREA

Episode	Interior Well-Drained	Poorly Drained	Riverine
Late Glacial (12,000 BC - 6500 BC)	Boreal forest, limited grasslands	Bogs and swamps with deciduous gallery forest	Deciduous gallery forest with some floodplain grasslands
Pre-Boreal/ Boreal (8000 BC - 6500 BC)	Boreal forest	Bogs and swamps with deciduous gallery forest	Deciduous gallery forest and boreal forest
Atlantic (6500 BC - 3000 BC)	Oak-hemlock mesic deciduous forest	Extensive bogs and swamps with deciduous gallery forest	Mesic deciduous forests
Sub-Boreal (3000 BC - 800 BC)	Oak-hickory-pine xeric forests and grasslands	Few bogs and swamps	Deciduous gallery forests with fringing wetlands
Sub-Atlantic /Recent (800 BC - recent)	Oak-pine forest with mixed mesophytic communities	Bogs and swamps with deciduous gallery forests	Deciduous gallery forests with fringing wetlands

should be noted that there are numerous relevant sources of paleoenvironmental data for Delaware's Low Coastal Plain including the Dill Farm Site (Custer and Griffith 1984), a series of cores from the Nanticoke drainage (Brush 1986), cores from a bay/basin feature near 7NC-H-20 (Custer and Bachman 1986b) and other bay/basin sites (Webb, Newby, and Webb 1988), and a series of cores from the mouth of the Chesapeake Bay (Harrison et al. 1965). Table 1 summarizes the changing environments through time and notes their distributions in the riverine and interior portions of the study area. It should also be noted that the

productivity of the riverine zone has changed through time as post-Pleistocene sea level rise (Belknap and Kraft 1977) inundated the drainage and pushed tidal and brackish water settings further into the interior along the major drainages. The basic dichotomy between the riverine and interior areas probably was present for much of the Holocene and was an important factor in historic and prehistoric settlement decisions.

REGIONAL PREHISTORY AND ARCHAEOLOGICAL SITES

The prehistoric archaeological record of the proposed alignments within the East-West Corridor, and of the Delmarva Peninsula in general, can be divided into four major periods: the Paleo-Indian Period (ca. 12,000 B.C. - 6500 B.C.), the Archaic Period (6500 B.C. - 3000 B.C.), the Woodland I Period (3000 B.C. - A.D. 1000), and the Woodland II Period (A.D. 1000 - A.D. 1650). A fifth period, the Contact Period, may also be considered and includes the period from A.D. 1650 to A.D. 1750, the approximate date of the final Native American habitation of southern Delaware in anything resembling their pre-European Contact form. The following descriptions of these periods are derived from Custer (1983a; 1983b; 1984a; 1988).

Presently there are a total of fifteen separate prehistoric archaeological sites in the two alignment alternatives; five of these are unknown as to their temporal associations (Table 2). Several of the sites are multi-component sites (ie., having more than one period of occupation); consequently there are twenty components represented among the fifteen sites.

TABLE 2

SUMMAR OF PREHISTORIC SITES
LOCATED WITHIN THE LIMITS OF THE PROPOSED EAST-WEST CORRIDOR ALIGNMENTS

DelDOT Design Map #	Both						Northern						Southern					
	P	A	WI	W2	U	TOT	P	A	WI	W2	U	TOT	P	A	WI	W2	U	TOT
1			2		2	4												
2			2			2												
3																		
4																		
5															[1]			1
6																		
7																		
8																		
9																		
10									[1]			1						
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12															[1]			1
14															1			1
15								[1]				1						
17											1	1						
19																		
20											2	2						
24		[1]				1												
26																		
29																		
30																		
31																		

KEY:
P = Paleo-indian
A = Archaic
WI = Woodland I
W2 = Woodland II
U = Unknown
[ ] = Multicomponent

Paleo-Indian Period (12,000 B.C. - 6500 B.C.). The Paleo-Indian Period encompasses the time of the final disappearance of Pleistocene glacial conditions from Eastern North America and the establishment of more modern Holocene environments. The distinctive feature of the Paleo-Indian Period is an adaptation to the cold, and alternately wet and dry, conditions at the end of the Pleistocene and the beginning of the Holocene. This adaptation was primarily based on hunting and gathering, with hunting providing a large portion of the diet. Hunted animals may have included now extinct megafauna and moose. A mosaic of deciduous, boreal, and grassland environments would have provided a large number of productive habitats for these game animals throughout southern Delaware, and watering areas would have been particularly good hunting settings.

Tool kits of the people who lived at this time are oriented toward the procurement and processing of hunted animal resources. A preference for high quality lithic materials has been noted in the stone tool kits and careful resharpening and maintenance of tools was common. A recent analysis of fluted points from the Delmarva Peninsula, including some from the study area, shows this preference (Custer 1984b). A lifestyle of movement among the game-attractive environments has been hypothesized with the social organizations being based upon single and multiple family bands. Throughout the 5500 year time span of the period, the basic settlement structure remained relatively constant with some modifications being seen as Holocene environments appeared at the end of the Paleo-Indian Period.

There are at present no known Paleo-Indian sites located within the limits of the proposed alignment alternatives. Any Paleo-Indian sites that might be discovered would be eligible for listing on the National Register of Historic Places. The reconnaissance level survey of the East-West Corridor (Catts, Custer and Hoseth 1991) indicates that in the region the main types of Paleo-Indian sites known are base camps, base camp maintenance stations, and hunting sites. The riverine settings of the Nanticoke and its major tributaries would be the expected locations for base camps while poorly drained interior swamps and bogs would be the foci of maintenance and hunting sites. According to Catts, Custer and Hoseth (1991:73) the entire project area falls within a region with low data quality and a low probability for all types of Paleo-Indian sites.

Archaic Period (6500 B.C. - 3000 B.C.). The Archaic Period is characterized by a series of adaptations to the newly emerged full Holocene environments. These environments differed from earlier ones and were dominated by mesic forests of hemlock and oak. A reduction in open grasslands in the face of warm and wet conditions caused the extinction of many of the grazing animals hunted during Paleo-Indian times; however, browsing species such as deer flourished. Adaptations changed from the hunting focus of the Paleo-Indians to a more generalized foraging pattern in which plant food resources would have played a more important role.

Tool kits were more generalized than earlier Paleo-Indian tool kits and showed a wider array of plant processing tools such as grinding stones, mortars, and pestles. A mobile lifestyle was

probably common with a wide range of resources and settings utilized on a seasonal basis. A shifting band-level organization which saw the seasonal waxing and waning of group size in relation to resource availability is evident. A recent study of Archaic site distributions on the Delmarva Peninsula (Custer 1986a) indicates that although there were changes in adaptations between the Paleo-Indian and Archaic periods, the basic site location patterns remained the same. As with the Paleo-Indian period, site types would include base camps (habitation sites) and hunting and maintenance sites where various natural resources were procured. Generally, Archaic sites should occur in the drainage divide area of the proposed alignment alternatives, and to a lesser frequency throughout the rest of the alignments.

Two sites containing Archaic components or occupations are presently known to exist within the proposed alignment alternatives. One is potentially a base camp or maintenance station located within the Northern Alignment along the western edge of a tributary to Gravelly Branch, and the other is possibly a base camp or hunting site located in the drainage divide, in the area used by both alignments, north of Georgetown and immediately to the east of State Road 243. Though both sites have been field-checked, their National Register eligibility at present is not known. There are generally so few Archaic sites reported for the state of Delaware that any sites from this Period that would be discovered in the alignments would be eligible for listing on the National Register of Historic Places, as long as they had contextual integrity.

Woodland I Period (3000 B.C. - A.D. 1000). The Woodland I Period can be correlated with a dramatic change in local climates and environments that seems to have been a part of events occurring throughout the Middle Atlantic region. A pronounced warm and dry period set in and lasted from ca. 3000 B.C. to 1000 B.C. Mesic hemlock-oak forests were replaced by xeric forests of oak and hickory, and grasslands again became common. Some interior streams dried up, but the overall effect of the environmental changes was an alteration of the environment, not a degradation. Continued sea level rise created extensive brackish water marshes which were especially high in productivity throughout much of southern Delaware.

The major changes in environment and resource distributions caused a radical shift in adaptations for prehistoric groups. Important areas for settlements included the major river floodplains and estuarine areas. Many large base camps with fairly large numbers of people are evident in many parts of the Delmarva Peninsula. These sites supported many more people than earlier base camp sites and may have been occupied nearly throughout the year. The overall tendency was toward a more sedentary lifestyle with increases in local population densities.

Woodland I tool kits show some minor variations as well as some major additions from previous Archaic tool kits. Plant processing tools became increasingly common as would be expected in the face of an intensive harvesting of wild plant foods that may have approached the efficiency of horticulture by the end of the Woodland I Period. Chipped stone tools changed little from the preceding Archaic Period; however, more broad-bladed knife-

like processing tools became prevalent. Also, the presence of a number of non-local lithic raw materials indicates that trade and exchange systems with other groups were beginning to develop (Custer 1984c). The addition of stone, and then ceramic, containers is also seen. These items allowed more efficient cooking of certain types of food and may also have functioned as storage containers for surplus food resources.

Social organizations also seem to have undergone radical changes during this period. With the onset of relatively sedentary lifestyles and intensified food production, which might have produced occasional surpluses, incipient ranked societies began to develop (Custer 1982). One indication of these early ranked societies is the presence of extensive trade and exchange and some caching of special artifact forms.

Woodland I settlement in the East-West Corridor, especially along the Nanticoke drainage, is significantly more intensive than that of earlier time periods. The presence of ceramics also allows the identification of individual cultural complexes at sites.

There are numerous Clyde Farm Complex sites (3000 B.C. - 500 B.C.) in the study area. The base camp distribution is the same as that of the general Woodland I time period. It may be that Clyde Farm settlement systems in this area involved a seasonal shift between base camps in riverine and drainage divide areas. However, this hypothesis needs to be tested with future fieldwork. Some non-local lithic materials, including argillite, rhyolite, and steatite are present at these sites (Custer 1984c) indicating the existence of trade and exchange networks.

However, the extent of non-local materials is not as great as that seen for Barker's Landing Complex sites further to the north in Kent County.

Between 500 B.C. and 0 A.D., two roughly contemporaneous culture complexes, Wolfe Neck and Delmarva Adena are recognized for southern Delaware. The two complexes are generally thought to be mutually exclusive with Delmarva Adena Complex groups differentiated from Wolfe Neck groups by the presence of mortuary ceremonialism, non-local artifacts from Ohio, and more complex social systems (Custer 1984a:113). It is also known that the Wolfe Neck complex slightly predates the Delmarva Adena complex (Custer 1984a:87; Griffith 1982). Whatever the relationship between the complexes, sites with occupations of both complexes are present to the east of the project area in the Atlantic Coast region (Custer 1987) where several individual sites have occupations by both complexes.

Moving from Clyde Farm to Wolfe Neck Complex times (ca. 500 B.C. - A.D. 0), the number of base camps increased dramatically in the riverine area. There is a definite shift from the use of lower Broad Creek as a procurement site area to a base camp area. This kind of shift and the dramatic increase in the number of base camp sites indicates increasing population densities in the riverine area. Similar settlement pattern trends are seen throughout the Delmarva Peninsula during Clyde Farm and Wolfe Neck times (Custer 1984a:94-130, 1988) and are thought to be related to environmental changes that occurred at this time (Custer 1984a:89-91). In general, these environmental changes exacerbated the well-watered/poorly-watered dichotomy of the

environment and made riverine settings even more attractive than they were during earlier time periods.

With the onset of the Carey Complex (ca. A.D. 0 - 500), the basic settlement pattern of the Wolfe Neck Complex remained with little or no change in intensity. Presumably, population densities did not increase at this time. However, Carey Complex base camps tended to be located even further up the drainage than Wolfe Neck Complex base camps. Similar settlement shifts are noted for other Coastal Plain drainages (Custer 1984a:144) and are thought to be related to the upstream movement of the brackish/freshwater transition zone due to sea level rise.

By Late Carey Complex times (ca. A.D. 500 - 1000), there is a pronounced decrease in the number of sites in the Nanticoke drainage. It is possible that some of this decrease in settlement intensity is due to problems with identifying some ceramics from this time period. For example, the shell tempered refined-Mockley, or Claggett, ceramics (Custer 1984a:88-89) easily grade into earlier Mockley and late Townsend wares (Griffith 1982). However, there are other easily recognizable diagnostic artifacts from this time period such as Hell Island ceramics and Jacks Reef projectile points. Also, the reduction in numbers of sites is so dramatic that it is unlikely that it is exclusively an artifact of archaeological visibility. Therefore, there seems to be a real population reduction, or settlement disruption, in the Nanticoke drainage during terminal Woodland I times. Table 3 lists the potential site location descriptions for both riverine and interior portions of the proposed alignment alternatives.

TABLE 3

WOODLAND I STUDY UNITS AND SITE LOCATIONS

Study Units	Data Quality	Site Types	Location
Riverine Zone	fair	macro-band base camp	low terraces of major drainages at stream confluences and at saltwater/fresh water interface of the marsh
		micro-band base camp	confluences of low order streams and tidal marshes
		procurement sites	along minor and ephemeral drainages adjacent to poorly drained woodlands and on small sand ridges and knolls
Interior Zone	poor	micro-band base camp	well-drained knolls at springs and stream confluences
		procurement sites	well-drained knolls at swamps and springs

Woodland I sites are the most common sites in the proposed alignment alternatives, and for the most part the locational characteristics of these sites are not that different from those of earlier sites. There are five single component Woodland I sites, and an additional five sites with Woodland I components located in the proposed alignments, for a total of ten Woodland I sites. Five of these are located in the areas containing both alignments alternative, and there are three and two in the Southern and Northern alignments, respectively. Three of these sites (B-23, E-61, and F-27) were recorded previous to the

limited field checking conducted by UDCAR (Watson, Catts, et al. n.d); the remainder were identified during this survey.

Not all classes of Woodland I sites are eligible for the National Register. The larger base camp sites would all be considered eligible irregardless of plowing. The large size of this site type and the high potential for preserved, complicated features makes data recovery excavations at these sites an expensive proposition. These classes of sites would be primarily found within the high probability zones of the major drainages, such as the Nanticoke, Gravelly Branch, Deep Creek, and Marshyhope. Smaller Woodland I procurement sites, if unplowed, are eligible for the National Register and are also numerous in all probability zones.

Woodland II Period (A.D. 1000 - A.D. 1650). In many areas of the Middle Atlantic, the Woodland II Period is marked by the appearance of agricultural food production systems and large-scale village life (Custer 1986b). In southern Delaware, however, the change in lifeways is not as marked. There have been some finds of cultivated plants in southern Delaware (Custer 1984a:165; Doms et al. 1985), but cultivated food remains are far less common than wild, gathered plant foods (Custer and Griffith 1986:44-49). In general, the Woodland II subsistence patterns in southern Delaware are similar to those of the Woodland I Period with the likely addition of minor amounts of cultivated plant food resources.

Changes in ceramic technologies and projectile point styles can be used to recognize archaeological sites from the Woodland II Period. Triangular projectile points appeared in stone tool

kits immediately before the beginning of the Woodland II Period and by A.D. 1000, triangular projectile points are the only styles seen in prehistoric tool kits. Woodland II ceramics of southern Delaware are classified within the Townsend series (Griffith 1982) and show certain technological similarities with the preceding Woodland I ceramics. However, the appearance of more complex decorations including incised lines and cord-wrapped stick impressions distinguish the Townsend ceramic styles.

Woodland II sites of the study area and adjacent areas of southwestern Delaware are included within the Slaughter Creek Complex and the adaptations of the Slaughter Creek Complex have been subjected to intensive study (Thomas et al. 1975). Building from a careful analysis of the potential food sources found in the different environmental zones of southern Delaware, Thomas et al. (1975) developed a series of models of archaeological site distributions for the groups of people that would be exploiting these food resources. Two basic site types were noted including seasonal camps and base camps (Thomas et al. 1975:62). Base camps would correspond to macro-band base camps and seasonal camps would correspond to micro-band base camps. No projections are made concerning individual procurement sites. Five basic models of the settlement patterns were generated from the analyses of potential food sources and each model projected different combinations of micro-band base camps in different environments during different seasons (Table 4). Each settlement model assumes a different degree of residential stability ranging from groups of transient micro-band base camps to single sedentary macro-band base camps of villages.

TABLE 4

SLAUGHTER CREEK COMPLEX SETTLEMENT MODELS
(Thomas et al. 1975:60-65)

Model	Winter	Spring	Summer	Fall
1	micro-band basecamp; interior	micro-band base camp; mid-drainage	micro-band base camp; coastal	micro-band base camp; mid-drainage
2 ->	macro-band base camp; interior	micro-band base camp; mid-drainage	macro-band base camp; coastal	macro-band base camp;-> interior
3	macro-band base camp; interior	macro-band base camp; coastal	---------->	macro-band base camp; interior
4 ->	macro-band base camp; mid-drainage	---------->	micro-band base camp; coastal	macro-band base camp;-> mid-drainage
5 ->	macro-band base camp; mid-drainage	---------->		

Because there are few excavated sites in the Nanticoke drainage, it is difficult to say which of the models noted in Table 11 is the most accurate. It can be noted that by Woodland II times (A.D. 1000 - 1600), settlement intensity and population levels returned to levels comparable to those of the Woodland I period after their reduction during Late Carey Complex times. If anything, the settlement focus on the main stem of the Nanticoke and its major tributaries was even greater during Woodland II times. Temperature and moisture perturbations noted in the paleoenvironmental record for late prehistoric times (Brush 1986; Custer and Watson 1987) may be related to the settlement focus on the higher order streams. If the Woodland II sites from the lower Marshyhope (Flegel 1975a, 1975b, 1976, 1978; Callaway, Hutchinson, and Marine 1960; Corkran and Flegel 1953; Hutchinson,

Callaway, and Bryant 1964; McNamara 1985) are considered, it can be noted that most of the sites seem to be microband base camps. Therefore, Models III and IV (see Table 4) are probably the most accurate. These models have a moderate degree of residential stability and intensification of food production, use of storage, and group size could be maintained at low levels comparable to those seen in Woodland I times. Continuity in settlement patterns from Woodland I into Woodland II times seems to be present.

Because of the continuity in settlement patterns and basic adaptations between Woodland I and Woodland II times, the study units listed for the Woodland I Period (Table 3) would also apply to the Woodland II Period.

Presently, there are three sites in the proposed alignments known to contain Woodland II components. Two of these are located in the Southern Alignment alternative, and one is located in the Northern Alignment alternative. The range of Woodland II sites eligible for listing on the National Register would be similar to those of the Woodland I Period.

Contact Period (A.D. 1650 - A.D. 1750). The Contact Period is an enigmatic portion of the archaeological record of southern Delaware which began with the arrival of the first substantial numbers of Europeans in Delaware. The period is enigmatic because only one Native American archaeological site clearly dating from this time has yet been discovered in Delaware (7NC-E-42; see Custer and Watson 1985). In southern Delaware, Contact occupations have been reported for the Townsend Site (Omwake and Stewart 1963); however, the associations of European and Native

American artifacts are problematic (Custer 1984a:177). Nevertheless, numerous Contact Period sites are evident in southeastern Pennsylvania and on the Maryland Eastern Shore (Davidson 1982; McNamara 1985; Davidson, Hughes, and McNamara 1985). It seems clear that the Native American groups of Delaware did not participate in much interaction with Europeans and were under the virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania, who lived during the same time period (Kent 1984). The Contact Period ended with the virtual extinction of Native American lifeways in the Middle Atlantic area except for a few remnant groups.

There are no known Contact Period sites in the proposed alignment alternatives. The settlement patterns and site distributions of Woodland II Period sites would apply during this period, but because the major effect of European contact was the reduction of native American populations, the number of sites would be expected to decrease. Data quality for all areas within the study area would be poor, and site frequencies would decrease over time. Though no Contact Period sites are known, if any were found to be present, they would clearly be eligible for listing on the National Register of Historic Places.

MANAGEMENT CONSIDERATIONS

Detailed statements of cultural resource management considerations are provided in a separate overview (Catts, Custer and Hoseth 1991), but a few comments can be made here. The listing of known sites provided in Table 2 and the other planning studies should not be viewed as a comprehensive statement of all

of the prehistoric sites in the alignment alternatives, but should instead be seen as a sample of the sites. For management purposes, it is more useful to use the projected probability zones that are marked on the enclosed maps (Attachment I). The marked probability zones are based on the initial models reported in Catts, Custer and Hoseth (1991:Attachment VI), and have been adjusted based on field testing (Watson, Catts, et al. n.d.).