INTRODUCTION

The purpose of this report is to describe the Phase I and II archaeological investigations of the proposed Newport-Gap Pike (Route 41) corridor. The project area is located in northern New Castle County, Delaware (Figure 1) and includes approximately 0.3 miles of right-of-way (ROW) extending from the Wilmington and Western Railroad to Washington Avenue (Figure 2). Field work and report preparation were conducted between May 1986 and January 1987 by the University of Delaware Center for Archaeological Research for the Delaware Department of Transportation and the Federal Highway Administration under Section 106 of the National Historic Preservation Act. The purpose of the survey and testing was to identify and evaluate any archaeological resources which may be affected by the proposed relocation of Route 41.

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FIGURE 1

Study Area Location

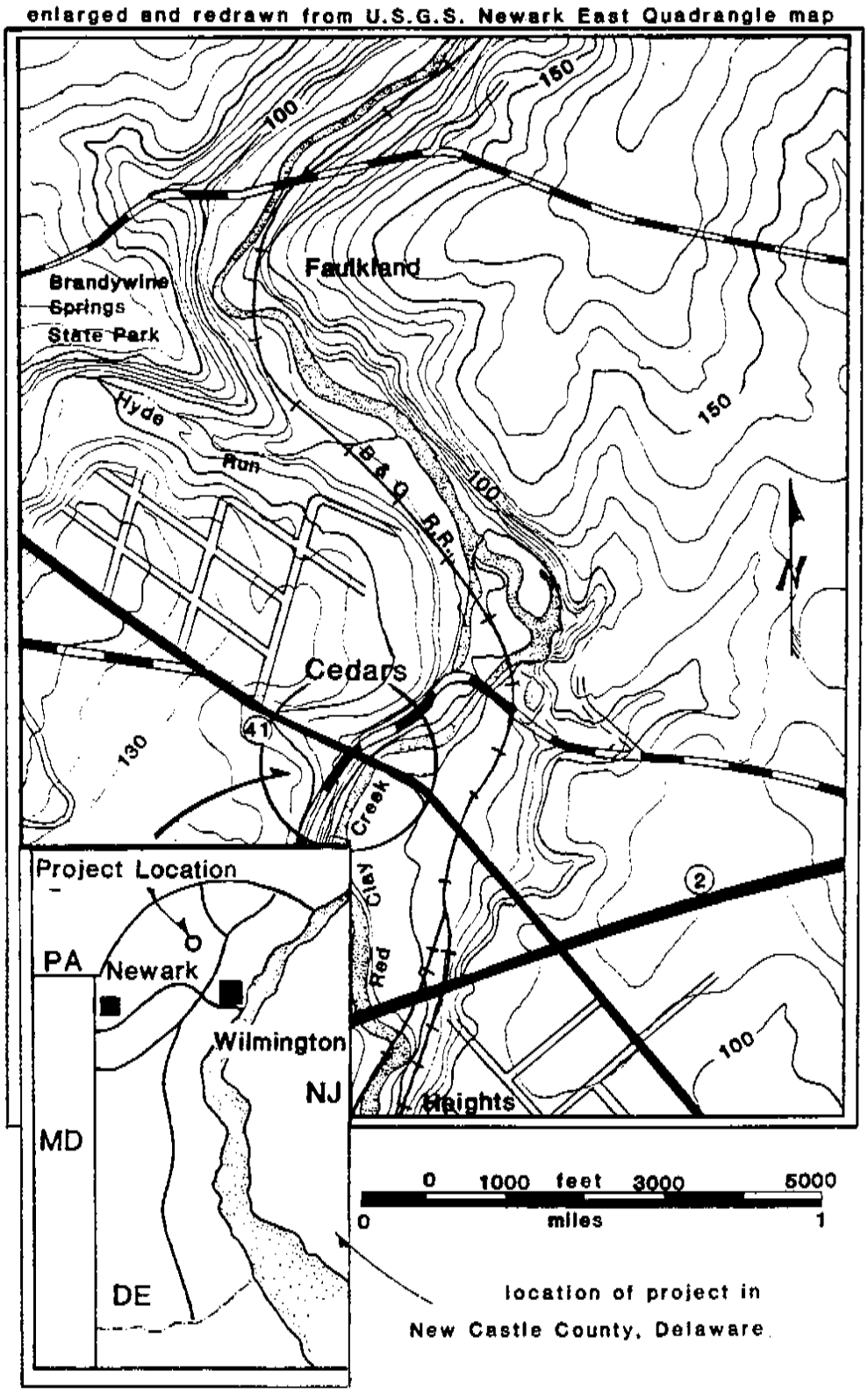
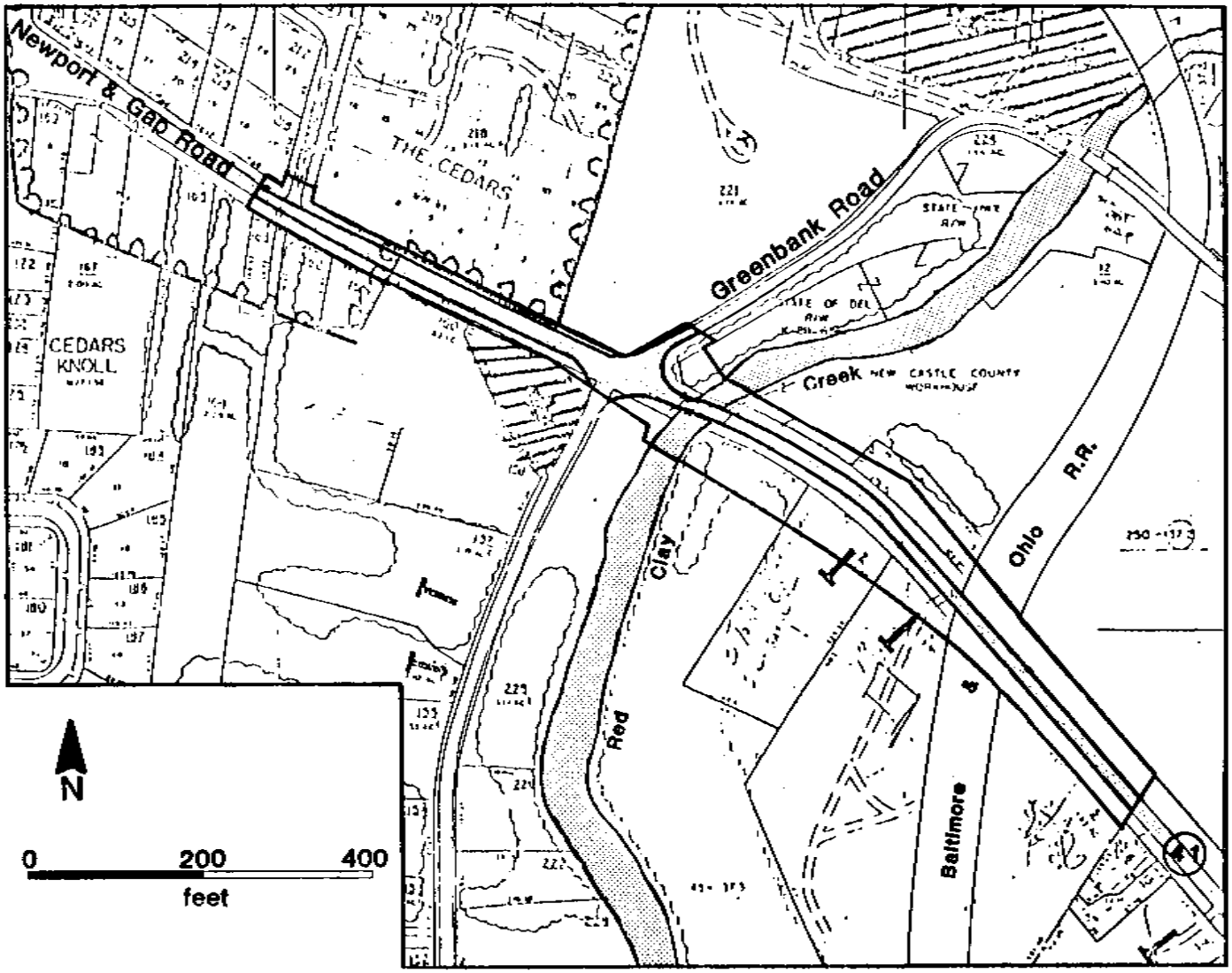


FIGURE 2

Project Area Map



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ENVIRONMENTAL SETTING

The Route 41 project area is located in the Piedmont Uplands of Delaware near the Fall Line, which marks the transition from the Piedmont to the Coastal Plain. The following summary of the local environmental setting is abstracted from the work of Custer (1984:23-25) and Custer and DeSantis (1986).

The Piedmont Uplands of Delaware represent the northernmost portion of the Delmarva Peninsula and are characterized by a diversified relief dissected by narrow and deep stream valleys with isolated knolls rising above the general upland level (Spoljaric 1967:3). Thornbury (1965:88) notes that within the Piedmont Uplands there are no large tributaries of the older incised river systems, the Susquehanna and the Delaware. Rather, there are a number of smaller, lower order drainage systems. Some large floodplains can be found along the higher order

streams such as the White Clay Creek and the Brandywine, Elk, and Northeast Rivers; however, these settings are uncommon. Elevation differences of up to 82 meters (270 feet) can be found between small floodplains of the numerous drainages and the tops of the adjacent knolls, and these elevation differences are sufficient to cause changes in tree community distribution (Braun 1967:192-194). Soils of the Piedmont Uplands can generally be characterized as well-drained with some poorly-drained areas in floodplains and upland flats.

At present, the project area is primarily residential, although the historic Wilmington and Western Railroad and the Cedars Church of Christ also lie within, or adjacent to, the proposed ROW. In addition, the Prices Corner shopping area lies only a quarter of a mile to the east and encroaching commercial development has significantly altered the character of the project area.

The southeastern terminus of the project area lies at an elevation of about 70 feet above sea level. From there the ROW traverses the Conrail tracks, which were formerly the Baltimore and Ohio, the Delaware and Western, and the Wilmington and Western Railroads, and drops to 50 feet in elevation at the Red Clay Creek floodplain. The ROW then ascends to an elevation of 110 feet at its northwestern terminus. A 550 foot wide floodplain occupies the central portion of the project area on the southeast side of Red Clay Creek. Several springs drain to the creek from steep slopes on the northwest side of Red Clay Creek. This stream does not flow swiftly through the project area; however, its gradient is sufficient in nearby sections to allow for the

development of substantial milling operations (Scharf 1888, Pursell 1958). Prominent soil types in the project area are the Glenelg-Chester-Manor and Aldino-Keyport-Mattapex-Urban Land associations which are highly micaceous loams and silt loams (Matthews and Lavoie 1970:2-3, 7-8). Of further note is the high number of red cedars which formerly stood in the project area and are now represented by only a few remaining specimens.

REGIONAL PREHISTORY

In order to understand the prehistoric sites which may be found in the study area, it is necessary to consider an overview of the regional prehistory. The prehistoric archaeological record of northern New Castle County area can be divided into four blocks of time: 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 time period, the Contact Period, may also be considered and includes the time period from A.D. 1650 to A.D. 1750, the approximate date of the final Indian habitation of northern Delaware in anything resembling their pre-European Contact form. Each of these periods is described below and the descriptions are summarized from the work of Custer (1984) and Custer and DeSantis (1986).

Paleo-Indian Period (12,000 B.C. - 6500 B.C.) - The Paleo-Indian Period encompasses the time period 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 northern Delaware, and watering areas, such as the Mill Creek floodplain and the Hockessin Valley swamps in the study area, would have been particularly good hunting settings.

Tool kits of Paleo-Indian groups were oriented toward the procurement and processing of hunted animal resources. A preference for high quality lithic materials has been noted and careful resharpening and maintenance of tools was common. 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.

Numerous Paleo-Indian sites are noted for northern Delaware including hunting and processing sites adjacent to the study area near Hockessin (Custer and DeSantis 1986) and adjacent to the Wilmington Medical Center (Custer, Catts and Bachman 1982), possible quarry sites near Iron Hill, and isolated point finds.

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 oak and hemlock. 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. Sea level rise was also associated with the beginning of the Holocene Period in northern Delaware. The major effect of the sea level rise was to raise the local water table, which helped to create a number of large swamps, such as Churchmans Marsh, which is located approximately 5km south of the study area. 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. Large swamp settings such as Churchmans Marsh supported large base camps as indicated by the remains at the Clyde Farm Site. A number of small procurement sites at favorable hunting and gathering locales are also known in northern Delaware.

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 waxing and waning of group size in relation to resource availability is evident.

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 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 also made many areas of the Delaware River and Bay shore the sites of large brackish water marshes which were especially high in productivity. 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 swamp/marsh areas. Large base camps with fairly large numbers of people are evident in many areas of northern New Castle County such as the Delaware Park Site, the Clyde Farm Site, the Crane Hook Site, and the Naamans Creek Site. These sites supported many more people than previous base camp sites and may have been occupied on nearly a year-round basis. The overall tendency was toward a more sedentary lifestyle.

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 and seem to indicate 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. 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 for surplus food resources. Storage pits and house features during this period are also known from the Delaware Park Site and the Clyde Farm Site. 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 may have begun to develop, as indicated by the presence of extensive trade and exchange and some caching of special artifact forms. By the end of the Woodland I Period a relatively sedentary lifestyle existed in northern Delaware.

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; however, settlements of the Woodland I Period, especially the large base camps, were also occupied during the Woodland II Period and very few changes in basic lifestyles and artifact assemblages are evident (Stewart, Hummer, and Custer 1986). Intensive plant utilization and hunting remained the major subsistence activities up to European Contact. Similarly, no major changes are seen in social organization for the Woodland II Period of northern Delaware.

Contact Period (A.D. 1650 - A.D. 1750) - The Contact Period is an enigmatic period of the archaeological record of northern Delaware which began with the arrival of the first substantial numbers of Europeans in Delaware. The time period is enigmatic because few Native American archaeological sites that clearly date to this period have yet been discovered in Delaware, although numerous Contact Period sites are evident in southeastern Pennsylvania. It seems clear that Native American groups of Delaware did not paricipate in much interaction with Europeans and were under the virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. The Contact Period ended with the virtual extinction of Native American lifeways in the Middle Atlantic area except for a few remnant groups.

REGIONAL HISTORY

Just as it is important to consider the regional prehistory, it is necessary to consider the regional history. The following regional history is abstracted from two previous DelDOT reports (Coleman et al. 1984, 1985) and a special history of the project area (Thompson 1986).

The first historic settlement in what is now Delaware was a whaling station established by the Dutch West India Company in 1630 near the present town of Lewes. However, this post was destroyed by Indians in 1631 and no settlement in that area was attempted again until 1659. A Swedish colony was established in 1638 at Fort Christina near the present site of Wilmington by the New Sweden Company. Although the land was claimed by the Dutch,

it was little used and was unsettled when the Swedes arrived. By 1654 a small village, Christinahamm, existed behind the fort, and approximately 400 Swedish, Finnish, and Dutch settlers resided in the area.

In 1655, the uneasy coexistence between the Swedes and Dutch abruptly ended when the Dutch seized control of New Sweden. Dutch Fort Casimir, established in 1651, and the town of New Amstel (modern New Castle) became the economic and commercial centers for the lower Delaware Valley. Ownership of the Delaware region changed hands again in 1664, when the English took control of all Dutch possessions in the New World. In 1682, the granting of proprietary rights to William Penn and his representatives gave economic and political control of the Delaware region to Philadelphia, the new seat of government (Munroe 1978).

The settlement pattern for this early period was one of dispersed farmsteads located along the Delaware and its tributaries, such as the Christina, Appoquinimink, Brandywine, Mill Creek, White Clay and Red Clay Creeks, where the land possessed good agricultural qualities. The Swedish and Dutch settlers had pushed their settlement far up the valley of the Christina toward the Elk River. The town of Christina Bridge (modern Christiana), so named because it was the crossing place of that river, was established by about 1660 at the head of navigation on the Christina.

With the arrival of Penn in the 1680's, settlers pursued an individualistic system of land settlement, with the proprietors granting tracts or parcels of land. The earliest European

settlement of the study area occurred at this time period when Thomas Wollaston was granted land by the Penns (Reed 1947:479). Penn usually granted land to families, the standard size being about 500 acres. By 1683 the cultivated areas of the region consisted of the three lower counties, New Castle, Kent, and Sussex, and three Pennsylvania counties, Philadelphia, Buckingham (Bucks), and Chester. The total population of all six of these counties in 1683 has been estimated to have been about four thousand people. In New Castle County five tax districts, called Hundreds, had already been established by 1687. Christiana was one of these, and with the growth of the population, four more hundreds, including Mill Creek, were created in 1710 (Conrad 1908:287). With the exception of the port towns of Philadelphia and New Castle, there were no other major commercial or social centers in the area during the seventeenth century. The small hamlets that were established were situated on the major transportation routes of the period, almost always on a navigable watercourse. Few were located inland, for the road network was almost nonexistent. An exception to this was "Ogle's Town", which was located along the road to the Elk River as early as 1679. The villages of Christina Bridge and Cantwell's Bridge (present-day Odessa) were the only hamlets of any size in the area and both were located on major rivers and roads.

In the New Castle County region, water transportation was the major mode of travel and commerce in the late seventeenth century. Most of the farmstead tracts and land grants had frontage on a water course to ensure that communication and the moving of produce to local markets could be accomplished

(Hoffecker 1977). In a country that was heavily wooded with a mixture of oaks, walnut, hickory, chestnut, and maple, water travel was the easiest, safest, and most effective means of transport. Overland travel was extremely difficult, because roads were few in number and very poor. Even the road from New Castle to Christina Bridge, probably the area's major overland transportation route, was in horrible condition. Generally, the roads in the area were simply intra-regional connectors to the coastal towns.

Swedish settlers in the region grew rye and barley on their farms, but later immigrants quickly replaced these grains with wheat when it was found that it could be grown more easily. More importantly, it was realized that wheat was a marketable commodity, and the farmers and settlers in the area soon shifted from a subsistence-oriented to market-oriented agriculture. Wheat, and to a lesser extent corn, were grown and then shipped by water to local milling sites. The transportation of grains to milling sites supported an extensive coastwide trade employing shallops or other similar boats. Milling sites were among the earliest manufacturing complexes in the region. There was a mill in New Castle by 1658, and one on Red Clay Creek, upstream from the study area, by 1679 (Pursell 1958). Saw mills were also present on the Red Clay Creek at Stanton and Greenbank in the 1670s (Pursell 1958). Villages such as Christiana Bridge, Newport, and Appoquinimink grew larger as a result of this shipping trade, and became market places for the surrounding country. By the start of the eighteenth century, the region was beginning to be recognized as a wheat and grain producing area.

Unsuccessful attempts at the mining and smelting of iron ore were tried in the Delaware region during the seventeenth century. In Delaware, the Iron Hill area in western Pencader Hundred was an area known to contain iron deposits by 1673, the date of publication of Augustine Hermann's map which labels the spot "Yron hill". The manufacture of iron became more widespread with the start of the eighteenth century. By 1716, iron production was well established in Pennsylvania. In Delaware, Sir William Keith had started a blast furnace on the slopes of Iron Hill by 1725, and a bloomary furnace was known to be in operation near St. James Church in Mill Creek Hundred, operated by John Ball (Swank 1884:142, 179).

The Red Clay Creek Valley and New Castle County were part of a broader regional economy that was centered in Philadelphia. This city, in the last quarter of the seventeenth century, quickly began to dominate the economic scene in the lower Delaware Valley. New Castle County was part of Philadelphia's agricultural and commercial hinterland, along with western New Jersey, northeastern Maryland, southeastern and northeastern Pennsylvania, and Kent and Sussex counties in Delaware. Farmers in the region sent their grains to the local milling centers, where the wheat flour was then shipped to Philadelphia for export to the West Indies, other North American colonies, and southern European countries. The farmers in New Castle County quickly adapted to this market system of agriculture and it is estimated that over one-half of the farmers in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163).

Settlement in New Castle County during the 18th century continued much as it had in the previous century. In the Philadelphia region, there was a large influx of immigrants between 1725 and 1755, particularly Scotch-Irish, most of whom were indentured servants. As the transportation network improved, colonists began to move inland away from the navigable rivers and streams. Good, productive land was settled first, but as the population began to grow, marginal property was also occupied. The size of farms in New Castle County ranged between 100 and 200 acres, indicating a decline in size from the seventeenth century. This was due to a tendency for the large grants and tracts to be divided and subdivided by sale and inheritance (Munroe 1954:19).

In regards to urbanization, Lemon (1967, 1972) has divided the eighteenth century in the Philadelphia region into three periods of growth. The first period (1700 to 1729) was one of urban stagnation after the initial rapid growth of the seventeenth century. However hamlets - unplanned towns that sprang up at crossroads and around taverns, ferries, churches, and mills - did begin to appear at this time. Ogletown, in White Clay Creek Hundred, and the Mermaid - Stoney Batter Road intersection on Limestone Road, are examples of eighteenth century hamlets in New Castle County. Both were located at crossroads on major transportation routes. The second period of urbanization that Lemon recognizes (1730 to 1765) saw a renewal of town growth based on internal trade. Towns such as Newport, Cuckoldstown (modern Stanton), Milltown, Hockessin (then known

as "Ockesson") and Newark were established and prospered during this period. Christina Bridge, which had stagnated since the 1680's, saw growth and prosperity as a major grain transshipment port for produce coming from the Upper Chesapeake Bay area.

The town of Stanton, known as Cuckoldstown as early as 1746, became an important milling and grain center in the late eighteenth century. A grist mill is known to have been in the vicinity of Stanton by 1679, and by 1800 the town rivaled Newport as a local grain processing center. Ships of moderate draft were able to navigate up the Red Clay Creek and take on local as well as southeastern Pennsylvania farm produce, most of which had been transported overland down the Limestone Road. Located at the confluence of Red and White Clay Creeks, Stanton was never a large town. A map of the New Castle County region, drawn in 1777, did not include the location of Stanton, and a travelers' guide, published in 1789, showed only a mill and ten houses in the vicinity of the town (Colles 1961:170). Hockessin, or Ockesson, grew around the location of the Hockessin Friends Meeting House, constructed in 1738. Nearby was a school and a blacksmith shop, the only structures in the hamlet until the 1820's.

Wilmington was by far the largest urban center in New Castle County that developed in this period. Chartered in 1739, Wilmington soon became a port of entry and a post town, and was an important link in the Philadelphia trading network. Of special significance to the city's location was its proximity to the Brandywine Mills. Wilmington was thus a receiving center for local and regional farm produce, brought by water from Christina,

Stanton, and Newport, and shipped up the Delaware to Philadelphia (Lindstrom 1978; Walzer 1972).

Lemon's third period of urban development (1766-1800) was marked by less noticeable town growth which paralleled more erratic economic patterns. Little growth in the towns of New Castle County took place during this period. However, increases in population and land tenancy were noted (Lemon 1972:216).

The conditions of roads in New Castle County improved considerably over the course of the eighteenth century, but in some locations they were unsatisfactory even by contemporary standards. Most improvement was due to both population growth and interregional trade. By 1750, the roadbeds of many of the area's present-day state roads (Routes 4, 7,and 273; portions of Pennsylvania's Route 896) were already established.

Farming in the eighteenth century in New Castle County continued to be a system of mixed husbandry, combining the cultivation of grains with the raising of livestock. Farming was the most important occupation for between 80 and 90 percent of the area's population (Egnal 1975). Wheat remained as the primary grain produced, followed by rye, corn, barley, oats, and garden vegetables. In many areas, generations of repeated tillage had begun to exhaust the soil. Agricultural practices in New Castle County followed an extensive, rather than an intensive, use of the land (Lemon 1972:179).

Delaware's manufacturing capacity in this century began to become realized. During the 18th century the iron industry, lumber products, and grain milling enterprises continued to grow

and prosper. New industries were started that engaged in the preparation of snuff from tobacco, the production of salt from brines in lower Delaware, and the rudimentary beginnings of the textile industry. By the end of the century Delaware was one of the leading manufacturing states and Wilmington and its environs constituted one of America's leading industrial areas.

In the vicinity of the study area, numerous mills developed during the 18th century. By the mid-18th century, the milling operations of the Red Clay Creek area rivaled those of the Brandywine (Thompson 1986:8). Of special interest was a gristmill operated by the Evans family just to the north of the project area. At this site, Oliver Evans developed a series of important technological innovations which were adopted by many other millers throughout the United States. Indeed, Evans' innovations became the industry standard for more than a century (Thompson 1986:8). Saw mills also operated on the Red Clay Creek during the 18th century along with carding and fulling mills, one of which operated at the Greenbank Mills adjacent to the study area (Pursell 1958:21).

In the northern Delaware area, the nineteenth century was marked by rapid industrial and urban growth and population expansion, and was accompanied by a noticeable decline in the number of people engaged in agriculture. The rapid growth of the population during the early decades of the century forced many new farmers in the Middle Atlantic area to clear and farm lands of poor or marginal quality. Many of these farmers were hard pressed to turn a profit from their farmsteads, and this resulted in an outmigration of a large portion of the population during

the 1820s and 1830s to better lands to the west particularly in the Ohio River Valley (Hancock 1947). The loss of jobs related to agriculture was partly offset by the development of new sources of income and employment, particularly in urban and industrial contexts. Thus, much of the surplus population that had in previous centuries been farm laborers, tenants, or unemployed, moved into urban and industrial centers where jobs were more plentiful. These trends occurred over the first half of the nineteenth century, and by 1860 were well established (Lindstrom 1979).

Urbanization in New Castle County during the first quarter of the century was closely tied to transportation routes and agricultural and industrial production. However, most of the towns of importance in the eighteenth century, which were settled because of their location on major transportation arteries, remained major marketing, milling and shipping centers for only a brief period into the nineteenth century.

In the first half of the nineteenth century, methods and routes of transportation underwent substantial changes in New Castle County as first turnpikes, then canals, and finally railroads were introduced. Throughout the century, improved transportation was the key to urban, agricultural, and industrial development. The first successful turnpike in Delaware was the Newport-Gap Turnpike, begun in 1808. Although the pike was a toll road and had numerous grades, it crossed several watercourses and was a more direct route to the wharves of Newport, which made the Turnpike an important and well-traveled

transportation route for teamsters throughout most the nineteenth century. The most significant canal built in Delaware was the Chesapeake and Delaware Canal, completed in 1829. Originally planned to connect the Elk and Christina Rivers, it was later constructed across the peninsula below New Castle, just north of Reedy Island. The canal was expected to bring wealth and prosperity to the communities of northern Delaware, and in fact, two new towns were constructed, Delaware City and Chesapeake City, at the termini of the Canal. Instead of widespread prosperity, however, the canal contributed to the economic decline of Christina, Newport, Stanton, and New Castle, as goods previously shipped overland across the peninsula could now be sent more cheaply by water. Even Chesapeake City and Delaware City were disappointed in their expected economic boom, and growth in these towns was slow. Only Wilmington, fast becoming an important regional industrial town, benefited from the Canal. Although not the original purpose of its construction, the Canal also came to serve as a border between two distinct socio-cultural sections of Delaware: the industrial/commercial area of northern New Castle County, and the agrarian communities of southern New Castle, Kent, and Sussex counties. The Canal would continue to function as a borderline throughout the remainder of the century, and does so today.

Railroads came to New Castle County in the 1830s. The first line, the New Castle and French Town Railroad, was constructed in 1832 as a direct result of the opening of the Chesapeake and Delaware Canal, and was an effort to compete with that transportation route (Hoffecker 1977:43). In 1838, the

Philadelphia, Wilmington, and Baltimore Railroad was completed, and quickly became the major transportation route across the peninsula. Throughout the remainder of the century, rail lines continued to be built in northern New Castle County, such as the Baltimore and Ohio, the Wilmington and New Castle, and the Wilmington and Western railroads.

New Castle County continued to be predominantly rural throughout the nineteenth century, as was the study area (Thompson 1986:5,7). At the start of the 1800s however, agriculture in New Castle County was in a dismal situation. Farming practices continued much as they had during the previous century with the use of the four field system of cropping. Wheat was the dominant crop and the use of fertilizers was infrequent. A large number of tenant farmers worked the land. Production was, on the whole, quite low during the first quarter of the century. The revival of the New Castle County Agricultural Society in 1818, one of the first such organizations in the nation, encouraged farmers in the use of improved drainage techniques, fertilizers, and machinery. With these developments, New Castle County was on its way to becoming one of the finest agricultural counties in the United States by 1860. Fertilization, farm machinery, and improved drainage were helpful in this agricultural success, but the county's rich natural resources, its fine transportation network, and the proximity of cities were advantages with which other areas, particularly Kent and Sussex Counties, found it difficult to compete.

Tenant farming, which had been quite common in the eighteenth century, became even more prevalent during the

nineteenth century. Large land owners, having acquired much of their holdings during the hard times of the 1820s and 1830s, leased their lands to tenants. Most landowners were white farmers, while some tenants and farm laborers, particularly in Kent and Sussex Counties, were black. In other cases, the tenant was a member of the land owner's family, as was the situation with the Robert Ferguson farm (Coleman et al. 1983). By 1900 over 50% of all the farmers in Delaware were tenants or share croppers. Tenancy remained a dominant farming practice into the twentieth century (Bausman 1933:165).

Regional development during the nineteenth century was much more complex than in the previous decades, primarily due to the great strides in industrialization, urbanization, and transportation that were part of the Industrial Revolution. The first half of the century witnessed a noticeable decline in Philadelphia's economic influence over the region, caused by the rise of Baltimore's economic importance, the competition for markets between the two cities, and a drop in the consumption by foreign markets of Philadelphia's agricultural produce. The area responded by diversifying its agricultural production and devoting increasingly more of its resources to manufacturing (Lindstrom 1978:122).

Much of the reemergence and success of both industry and agriculture in Delaware can be attributed to improved transportation facilities beginning in the 1830's. The linking of Wilmington by railroad with Baltimore and Philadelphia in 1837 provided not only Wilmington, but also its hinterland, with

excellent markets both for the purchase of raw materials and the sale of finished products. Also contained within this hinterland was a sizable population of skilled mechanics and machinists who were able to perform the skilled labor required by the new technologies. This combination of good transportation, a large trained labor pool, and a ready supply of raw materials allowed industry in northern New Castle County to grow and diversify very rapidly into the 20th century (Hoffecker 1977).

Early in the 19th century, Mill Creek Hundred and the study area retained its rural character. Nonetheless, milling operations continued to diversify. At Greenbank Mill, adjacent to the project area, woolen mills and a related factory floorished early in the 19th century (Thompson 1986:9). Also, snuff mills, paper mills, mills for grinding fertilizer, and iron rolling mills developed throughout the 19th century. The Greenbank Mills diversified into a woodworking operation in the mid-19th century and a spice mill was operated at the old Evans Mill north of Brandywine Springs from 1828 until the 1870s (Thompson 1986:10). The development of mills in the area also fostered growth in transportation facilities. The Newport-Gap Pike (Route 41) was built and improved upon throughout the 19th century.

The study area and its environs also witnessed numerous other kinds of development which made it somewhat unique in northern Delaware. In 1827, the Brandywine Chalybeate Springs Company bought an old tavern north of the project area with hopes of building a hotel and summer resort (Weslager 1949:3-8). The focus of the resort were "chalybeate" springs, which are springs

impregnated with iron and sulphur salts. Thompson (1986:13) notes that spas were popular vacation spots and mineral springwater was thought to have important medicinal properties. The spa flourished for a short time, but by 1855 there were plans to convert it into a school. During the Civil War, the hotel was used as a camp for various Delaware regiments. After the Civil War, the hotel was still in operation, but was not particularly profitable.

By the early 1870s, the Wilmington and Western Railroad was completed through the study area and a station was built near the study area at the juncture of the railroad and the Newport-Gap Pike. Although not financially successful, the railroad drew more commerce and travelers to the area. Thompson (1986:4) notes that rail excursions to the area were popular for Wilmington residents and a traveller's account noted that the Red Clay Valley scenery was comparable to that of Pennsylvania's Lehigh River Valley near the town of Mauch Chunk.

It was hoped that the completion of the rail line would benefit the hotel, but it did not (Thompson 1986:22). However, in 1886, Richard W. Crook bought the hotel and developed an amusement park including a toboggan slide, a carousel, and an outdoor theater (Weslager 1949). The amusement park was popular with people from Wilmington and by 1895 there was an electric trolley line, operated by the Wilmington and Elsmere Electric Railway Company, which carried passengers between the amusement park and the Wilmington City Railway (Thompson 1986:25). In 1901, a new direct trolley line to Wilmington was opened and the

amusement park expanded. The Brandywine Springs amusement park continued to operate under various managers until well into the 20th century.

In addition to the amusement park, Richard W. Crook also developed a cottage area known as the "Cedars" and lots were sold through the first two decades of the 20th century (Thompson 1986:30). A 1910 census notes that the majority of the residents were painters, carpenters, laborers, and tradesmen (Thompson 1986:30). What apparently began as a resort cottage community became a year round residential area. Crook's trolley line, which brought people to the amusement park, also provided "transportation for people who lived in the Cedars and worked elsewhere" (Thompson 1986:33). Thus, the Cedars and the adjacent project area became a "streetcar suburb" of Wilmington and the general area retains this characteristic to the present day, although without the streetcars.

RESEARCH METHODS

The initial research in the Phase I and II survey consisted of the examination of documentary evidence from a variety of sources. Historic maps, photographic collections, tax records, probate records, deed records, secondary local histories, the Bureau of Archaeology and Historic Preservation (BAHP) standing structure files, and the BAHP staff were all consulted for information on the culture history of the project area.

Pedestrian surface survey in the study area revealed that excavation of test pits was necessary to identify archaeological sites because of vegetation. Standard excavation techniques were

employed including screening of all soils through 1/4" mesh screens, and the recording of all artifacts and stratigraphic profiles. All test units were excavated by natural or cultural strata to sterile soils.

PHASE I AND II SURVEY RESULTS

GENERAL BACKGROUND RESEARCH RESULTS

In order to facilitate the discussion of the results of background and field research, the project area was divided into six segments (Figure 3). Historic background research revealed that several locations within the ROW had the potential for yielding historic archaeological remains. These locations are noted in Figure 3 and include the Baum House (Segment 1), the DiSabatino House (Segment 2), the Hollingsworth House (Segment 3), the Wilmington and Western Railroad Station (Segment 3), the Conner House (Segment 4), and the Bower House (Segment 4). More detailed descriptions of the historical background research on each of these potential sites are included in the individual discussions of results for each segment.

Background research for prehistoric sites revealed that the BAHP site files do not include any sites within the project area ROW or in adjacent sections of the Red Clay Creek floodplain from Ashland, located four miles to the north, to Bread and Cheese Island, located two miles to the south of the project area.

In order to consider the potential of the study area for containing archaeological sites, regional (Custer 1986) and local (Custer and DeSantis 1986) archaeological resource management plans and other studies (Custer 1984; Custer and Wallace 1982)