INTRODUCTION

This report presents the results of a Phase I and II cultural resource survey of the right-of-way (ROW) for proposed widening and dualization of Old Baltimore Pike, also known as State Road 336 (Figure 1). The project area extends from State Route 896 at the Four Seasons Parkway eastward to the Christiana Bypass (State Route 273), a distance of approximately 5.7 miles, and lies within both White Clay Creek and Pencader Hundreds, New Castle County. Field work and report preparation were conducted between March and November of 1987. The survey work was undertaken by the University of Delaware Center for Archaeological Research for the Department of Transportation and the Federal Highway Administration under section 106 of the National Historic Preservation Act to evaluate the effects of the proposed proposed relocation of Old Baltimore Pike on significant, or potentially significant, cultural resources as defined by the National Register of Historic Places (36 CFR 60). The survey and evaluation of standing structures was undertaken by Killinger, Kise, Franks, and Straw as a contract separate from the archaeological contract. The results of the standing structure survey are included here as Appendix VI.

The proposed dualization of Old Baltimore Pike is intended to provide a safer, upgraded facility where it serves as a major east-west connector from the town of Christiana and State Route 7, to State Route 896 and the Maryland State Line. The proposed ROW will utilize much of the existing roadbed of Old Baltimore Pike, and the dualization will increase the width of the road by an average of 100 feet throughout the length of the project area.

In addition, two new alignments, the relocation of Salem Church Road (State Road 348) and the construction of a new connector between State Route 72 and State Route 896 (Newtown Road) are proposed and were surveyed. These changes are proposed to relieve chronic traffic congestion and safety deficiencies of the existing facility, and to accommodate anticipated future increases in traffic volumes (Blendy and Wheeler 1987).

In the present study, the entire proposed right-of-way is considered subject to impact (Figure 1). Initial sections of this report describe the project's environmental setting, and the local prehistory and history. Phase I field reconnaissance survey and Phase II site examination are then discussed with reference to field methodologies, testing design, background research, and results of investigations. Finally, recommendations are provided for cultural resources encountered within the project area.

ENVIRONMENTAL SETTING

The Old Baltimore Pike project area lies in the central portion of northern New Castle County (Figure 1). The entire 5.7 mile project area is located within the High Coastal Plain (Figure 2) adjacent to the Fall Line Zone, which is an area of transition between the Coastal Plain and the Piedmont Uplands. The Piedmont Uplands is a region of diversified relief cut by narrow, deeply incised stream valleys with elevations ranging from 100 to 400 feet above mean sea level. The Upper Coastal Plain, by contrast, exhibits much smaller elevational ranges over flat terrain drained by generally shallow stream valleys. The juncture between these two zones, the Fall Line, marks a shift in

the role of streams in the Piedmont as erosive agents to a depositional role on the Coastal Plain (Spoljaric 1967). Streams with characteristically steep gradients in the Piedmont drop most of their sediment loads upon entering the Coastal Plain.

The Piedmont in northern Delaware is composed of an assortment of crystalline rocks of igneous and sedimentary origin which were heavily metamorphosed during late Precambrian or early Paleozoic orogenies. In the western part of the Delaware Piedmont, micaceous schists, gneisses, and migmatites of the Wissahickon formation predominate (Spoljaric 1972:3). These crystalline rocks slope to the south and southeast, forming a basement over which the wedge-shaped mass of sediments of the

Coastal Plain lie. Resting on this basement complex and surrounded by Coastal Plain sediments to the north and west of the project area are Iron Hill and Chestnut Hill. These upland prominences are composed of primarily igneous materials, including gabbro, norite, and pyroxenite (Spoljaric 1972:11). In addition, siliceous jasperoids are also present within these formations, probably derived through the formation of laterites. In prehistory, these jasperoids constituted an important source of raw material for the manufacture of stone tools.

Sediments of the Coastal Plain in northern Delaware are composed of two major formations: the Potomac and the Columbia. The former consists of fluvial silts and clays deposited during the Early Cretaceous period. These sediments were later subjected to major erosional forces resulting in an unconformity which separates them from the overlying sediments of the Columbia Formation. Watercourses from the north and northeast deposited the sediments of this formation sometime in the Quaternary. Sands, which form the primary component of these sediments, consist mostly of quartz and feldspar, while gravels are dominated by sandstone, vein quartz, and chert (Jordan 1964). Precise timing of this deposition is a matter of some debate with Jordan (1964) favoring a Sangamon/Early Wisconsin age and Spoljaric and Woodruf suggesting a more recent, possibly late Wisconsin, time (1970). There is general agreement, however, that these sediments derive from episodes of glacial outwash in which streams under conditions of high discharge emerged from the Piedmont onto the Coastal Plain and dropped their bed loads. Decreased particle size and increased sorting of these sediments

is noted moving southward on the Delmarva Peninsula (Jordan 1964:14). Studies by Spoljaric (1967:10) suggest that under conditions of peak discharge, most of the Delaware Coastal Plain was submerged under glacial floodwaters. Recent studies in the Newark area have revealed younger sediments in the form of alluvial fans, which unconformably overlie the Columbia Formation. The sandy, coarse sediments of these fans may be derived from terminal Pleistocene (17,000 B.C.) outwash or more recent episodes of deposition (Spoljaric 1972:2-4).

Custer (1986) distinguishes between upper and lower portions of Delaware's Coastal Plain, based primarily on textural differences in the Columbia sediments of these two areas and the resulting topographic differences. Generally coarser deposits in the Upper Coastal Plain have been more resistant to erosion, thus creating a more variable topography with greater relief and a corresponding higher diversity of plant communities than in the Lower Coastal Plain. Major watercourses of the Upper Coastal Plain, such as the White Clay Creek and the Christina River, are tidally influenced for substantial distances inland.

Except for its crossing of Christina Creek, Old Baltimore Pike for the most part crosses only low-order, south-flowing tributaries of the Christina, such as Barratt's Run, Leatherman's Run, Muddy Run, and several smaller, unnamed streams. The range of relief over most of the project area is, therefore, less than more dissected portions of the Upper Coastal Plain further to the east and west. Elevations range between 40 and 80 feet above sea level and the highest point of the project area occurs in the vicinity of Salem Church Road. Swamps in low-lying and poorly

drained areas primarily are found south of the project area along the Christina Creek. The proposed Salem Church Road realignment, located north of the existing Old Baltimore Pike, transects one of these low lying areas. Sunset Lake and Beck's Pond, the only large bodies of water near the project area, are not naturally occurring lakes, but were created in the nineteenth century as mill ponds.

A variety of soils are present in the project area. The eight individual soil series in the project area (Matthews and Lavoie 1970) are listed and described in Table 1. Most of the soil types are moderately to well-drained and their distribution through the project area forms a complex mosaic of well-drained and poorly-drained settings. The locations at the interface of well-drained and poorly drained soils are favorable locations for prehistoric sites and there are many such locations in the project area.

Present Day/Modern Environmental Setting

Since the arrival of Europeans and the colonization of the region, land use in the project area has been primarily agricultural. Dispersed farmsteads ranging in size from 100 to 800 acres were initially established in the early eighteenth century; however, over the years local farms have been slowly decreasing in size. Historically, the population of the project area was involved in agriculture and its supporting occupations, such as milling and blacksmithing. Since the early 1960s the environmental setting of the project area has been drastically altered at an increasingly rapid rate through commercial,

TABLE 1

SOILS SERIES TYPES FOR THE
OLD BALTIMORE PIKE PROJECT AREA
(from Matthews and Lavoie 1970)

Soil Series	Drainage/Textural Characteristics	Distributional Emphasis
Bayboro	Poorly-drained silt loam	Upland depressions
Codorus	Moderately well-drained silt loam	Adjacent to the Christina Creek
Elkton	Poorly-drained silt loam	Upland flats with slopes 0-2%
Fallsington	Poorly-drained loam	Upland flats with slopes 0-2%
Keyport	Deep, moderately well-drained silt loam	Upland flats
Matapeake	Deep, well-drained silt loam	Upland flats
Sassafras	Deep, well-drained sandy loam	Upland flats
Silty and Clayey Land	Old deposits of Clay	Vicinity of Leatherman's Run
Woodstown	Deep, moderately well-drained loam	Uplands

industrial, and, especially, residential development. Development has adversely affected the cultural resources of the project area and large sections of the proposed ROW have been significantly disturbed by new or recent construction.

REGIONAL PREHISTORY

This summary of the regional prehistory is abstracted from Custer (1984). The prehistoric archaeological record of the Delaware Coastal Plain can be divided into four large blocks of time: The Paleo-Indian Period (c.a. 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, from A.D. 1650 to A.D. 1750, marks the final phase of occupation by Native American groups of Delaware in anything resembling their pre-European Contact form. Each of these periods is described below.

Paleo-Indian Period (12,000 B.C. - 6500 B.C.) - The Paleo-Indian Period encompasses both the final retreat of Pleistocene glacial conditions from Eastern North America and the subsequent 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. Paleo Indians relied on a hunting and gathering adaptation, in which animal food resources comprised a major 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 in northern Delaware and watering areas 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 is apparent in the flaked stone tool kits and careful resharpening and maintenance of tools was common. A mobile lifestyle in which groups focused on game-attractive environments is hypothesized with a social organization consisting of single and multiple family bands. Throughout the 5500 year time span of the period, this basic

adaptation remains essentially uniform, although some adjustments occur with the appearance of Holocene conditions in the latter part of the Paleo-Indian Period.

Numerous Paleo-Indian sites are noted for Northern Delaware, including hunting and processing sites near Hockessin (Custer and DeSantis 1985) and near the Wilmington Medical Center (Custer, Catts and Bachman 1982), possible quarry sites near Iron Hill, and isolated point finds. Although no clear associations have yet been found, it is also hypothesized that bay/basin features may have also attracted Paleo-Indian sites (Custer et al. 1983).

Archaic Period (6500 B.C. - 3000 B.C.) - The Archaic Period is characterized by an adaptation to the fully-emerged Holocene environments of Delaware. Mesic forests of oak and hemlock were predominant, while the accompanying reduction of grasslands in the face of warm and wet conditions caused the extinction of many of the grazing animals hunted during Paleo-Indian times, although browsing species such as deer flourished. Sea level rise is also associated with the beginning of the Holocene in Northern Delaware, whose major effect would have been to raise the local water table, thereby creating a number of large interior swamps. Adapations shifted from the hunting focus of the Paleo-Indian Period to a generalized foraging pattern in which plant food resources played a more prominent role. Swamp settings, such as at Churchman's Marsh, supported large base camps, as indicated by remains at the Clyde Farm Site. A number of small procurement sites in favorable hunting and gathering locales are known from northern Delaware.

With the addition of plant processing tools such as grinding stones, mortars, and pestles, Archaic tool kits were more generalized than those of Paleo-Indian groups. A mobile lifestyle was still common, with a wide range of resources and environmental settings utilized on a seasonal basis. A shifting band level of organization which saw the waxing and waning of group size in response to seasonal resource availability is evident.

Woodland I Period (3000 B.C. - A.D. 1000) - The Woodland I Period coincides with dramatic local climatic and environmental shifts that seem to be part of larger scale changes occurring throughout the Middle Atlantic region at this time. Pronounced warm and dry conditions set in, lasting from 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 these changes was an alteration of the environment, not a degradation. Continued sea level rise at a reduced rate made many areas of the Delaware River and Bay shore the locations of large brackish water marshes which were especially high in productivity.

These changes in environment and resource distributions brought about a radical shift in adaptations for prehistoric groups. Important areas for settlements include the major river floodplains and estuarine swamp/marsh areas. Large base camps are evident at several settings in Northern Delaware, such as at the Delaware Park Site, the Clyde Farm Site, the Crane Hook Site, and the Naaman's Creek Site. These sites seem to have been

occupied by larger groups than Archaic base camp sites and may have been the loci of year-round habitations. The overall tendency in this Period is 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 become increasingly common, indicating intensive harvesting of wild plant foods that may have approached the efficiency of agriculture by the end of the Woodland I Period. Chipped stone tool assemblages changed little from the preceding Archaic Period, save for the introduction of broad-blade, knife-like processing tools. The addition of stone, and then ceramic, vessels is also seen. These items enabled more efficient cooking of certain foods and may also have functioned as storage containers for surplus plant foods. Storage pits and house features are also known for Northern Delaware during this period from sites such as Clyde Farm and Delaware Park.

Social organizations also seem to have undergone radical changes during this period. With the onset of relatively sedentary lifestyles and intensified plant harvesting which might have yielded occasional surpluses, incipient ranked societies may have developed. Potential indicators of this include extensive trade and exchange in lithic materials for tools as well as non-utilitarian artifacts, and caching of special artifact forms.

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, Woodland I settlements, especially the large base camps, were in

many instances also occupied during Woodland II Period, with very few changes in basic lifestyles and overall artifact assemblages indicated (Stewart, Hummer and Custer 1986). Intensive plant utilization and hunting remained the basic subsistence activities up to European Contact. Similarly, no major changes are seen in social organization for the Period in Northern Delaware.

Contact Period (A.D. 1650 - A.D. 1750) - The Contact Period begins with the arrival of the first substantial number of Europeans in Delaware. The Period remains enigmatic for Delaware due to the paucity of known archaeological sites that clearly date to this time. Site 7NC-E-42 in northern New Castle County is the only Contact component yet investigated in the State (Custer and Watson 1985). Its small size, impoverished assemblage of European goods, and the persistence of aboriginal lithic technology indicated at the site contrasts with the much larger Contact manifestations known from neighboring southeastern Pennsylvania and elsewhere. These findings support the belief that Native American groups in Delaware interacted little with European groups at this time, and were under virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. The Contact Period ends with the virtual extinction of Native American lifeways throughout the Middle Atlantic region, save for a few remnant groups.

REGIONAL HISTORY

The following local historical summary is presented to provide a background on the important regional and local historical events that affected the inhabitants of northern

Delaware. Descriptions of regional historical events are based on the work of Munroe (1978a, 1979), Hoffecker (1974, 1977) and Scharf (1888). Periodization of the regional history has been adapted from the chronology used in the state plan (Herman and Siders 1986), and from the work of Guerrant (1983) and Goodwin (1986).

1630-1730: Exploration and Intial Settlement

The earliest colonial settlement in Delaware known as Swanendael ("valley of swans") was made at present Lewes in 1631 under the sponsorship of patroons of the Dutch West India Company for the purpose of whaling and raising grain and tobacco. This venture was privately financed, but it ended in tragedy because the all-male population was wiped out by the local Indians in a massacre in 1632. Farther north a group of Swedes in the employ of the New Sweden Company built Fort Christina in 1638 in what is now part of the present city of Wilmington establishing the first permanent European settlement in Delaware. The Swedish government supported the venture, and Fort Christina became the nucleus of a scattered settlement of Swedish and Finnish farmers known as New Sweden.

The Dutch claimed the identical land -- from the Schuylkill River south -- by right of prior discovery, and in 1651 the West India Company retaliated by building Fort Casimir at New Castle in an attempt to block Swedish efforts to control commerce in the Delaware River. The Swedes captured this fort in 1654 and renamed it Fort Trinity. Rivalry between Swedes and Dutch continued, and the Dutch recaptured Fort Trinity in 1655, and

also seized Fort Christina. As a result New Sweden went out of existence as a political entity due to lack of support from the homeland although the Swedish families continued to observe their own customs and religion.

In 1657 as a result of peaceful negotiations the City of Amsterdam acquired Fort Casimir from the West India Company, and founded a town in the environs of the fort called New Amstel. This was a unique situation in American colonial history -- a European city became responsible for the governance of an American colony. A small fort was also erected at Lewes in 1659 for the purpose of Blocking English intrusion, and a few settlers built homes there including 41 Dutch Mennonites who established a semi-socialistic community in July of 1663. They, too, were under the supervision of local officials appointed by the burgomasters of Amsterdam.

English hegemony of the region began in 1664 when Sir Robert Carr attacked the Dutch settlement at New Amstel on behalf of James Stuart, Duke of York, brother to Charles II. This was an important move on England's part to secure her economic position in the New World. New Amstel, renamed New Castle, was besieged and sacked by English soldiers and sailors resulting in the deaths of three Dutch soldiers and the wounding of ten others. English troops plundered the town, and English officers confiscated property, livestock, and supplies belonging to the City of Amsterdam, as well as the personal property and real estate owned by the local Dutch officials. The homes of the Mennonites and other settlers at Lewes were also pillaged.

A transfer of political authority from Dutch to English then followed, and the Dutch settlers who swore allegiance to the English were allowed to retain their lands and personal properties with all the rights of Englishmen. Former Dutch magistrates continued in office under English authority, and Swedes, Finns, and Dutch alike peacefully accepted the rule of the Duke of York through his appointed governors.

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, White Clay, and Red Clay, where the land possessed good agricultural qualities (Hoffecker 1977). The Swedish and Dutch settlers also pushed their settlement far up the valley of the Christina toward the Elk River. The town of Christiana Bridge, 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 1680s, an individualistic system of land settlement developed. Grants of tracts of land were made by the Penn's proprietors. Penn usually granted land to families and the standard size tract was about 500 acres (Myers 1912:263). However, a study of the land warrants granted in New Castle County between 1679 and 1700 indicates that about 80% of the grants issued were for properties of 300 acres or less, and only 13% of the warrants were for properties 500 acres or larger (Eastburn 1891). These larger grants usually went to land speculation companies, such as the London Company, who by 1687 possessed a tract of over 1300 acres north of White Clay Creek.

Land was inexpensive, and in Pennsylvania 100 acres sold for 5 to 15 pounds, or about one to three shillings per acre. Unlike the colonies to the south, such as Maryland, Virginia, and the Carolinas, the quality and cheapness of the land in Delaware discouraged the establishment of large estates and land tenancy (Bidwell and Falconer 1941).

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 (Myers 1912:239). In New Castle County five tax districts, called Hundreds, had already been established by 1687. With the growth of the population, four more hundreds were created in 1710, including Pencader Hundred, within which the project area is located.

With the exception of the port towns of Philadelphia and New Castle, there were no other major commercial or social centers in the area. The small hamlets that were established were almost always situated on a navigable river or stream, the major transportation routes of the period. Few were located inland because the road network was almost nonexistent. An exception was "Ogle's Town", which was established by 1679 along the road to the Elk River. The villages of Christiana Bridge and Cantwell's Bridge were the only hamlets of any size in the area and both were located on major navigable rivers and roads. Christiana was located on the road from New Castle to Upland, and

Cantwell's Bridge was on the Bohemia Manor cart road to the Chesapeake. The village of Christinahamm, at the mouth of the Christina was slowly eclipsed by the rise of New Castle, and as early as 1690 was a village of only minor importance (Klein and Garrow 1984).

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 stream or water course to ensure that communication and 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 the roads were few and very poor. Even the road from New Castle to Christiana 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 to the region grew rye and barley on their farms, but these grains were quickly replaced by wheat when it was found that wheat could be grown more easily. More importantly, it was realized that it 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. These 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 by 1679 (Pursell 1958). Villages such as Christiana Bridge, Newport, and Appoquinimink (Cantwell's Bridge) grew because of this shipping trade, and became market places for the surrounding country. The amount of this flour that was exported in the seventeenth century is not known, but it is expected that much was consumed locally. By the start of the eighteenth century, regional specialization was discernible with northern Delaware beginning to be recognized as a wheat and grain producing region (Hanna 1917; Loehr 1952: Pursell 1958; Hoffecker 1977).

Another seventeenth century export from the region was lumber. The English settlers, faced with rapidly diminishing timber resources in England, were the primary exploiters of the forests. A sawmill was located on Bread and Cheese Island in New Castle County by 1679. However, lumber was a more important export from Sussex County, and the lumber from mills in New Castle County was probably used for building materials by the steadily growing urban population. In order to lessen a chronic shortage of building materials and the necessity of importation from abroad, brickyards were another seventeenth century industry. The first commercial brickyard in Delaware was established as early as 1657 by the Dutch at New Amstel (Heite 1976).

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 west 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". However, no information is available on these early mining activities. If the assumption of seventeenth century mining activities in the colony is correct, then Delaware would rank as one of the earliest iron producers in the Middle Atlantic. It is evident that there was sufficient trust and interest in the deposits to draw a group of Welsh miner/settlers to the area early in the eighteenth century. From this event was established a longtime ironmaking and forging tradition in northern New Castle County, specifically in the Iron Hill area.

Northern New Castle County was part of a broader regional economy that was centered in Philadelphia, which in the last quarter of the seventeenth century, quickly began to dominate the economic scene in the lower Delaware Valley. New Castle County was a part of Philadelphia's agricultural and commercial hinterland, along with western New Jersey, northeast Maryland, southeastern and northeastern Pennsylvania, and Kent and Sussex Counties in Delaware (Lindstrom 1978; Walzer 1972). Farmers in the region sent their grains to the local milling centers, where the wheat flour and bread were 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. It is estimated that over one-half of the farmsteads in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163).

1730-1830: Development from Colony to State

At the beginning of this period, settlement in New Castle County continued in much the same fashion as it had in the previous 100 years. In the Philadelphia region, there was a large influx of immigrants between 1725 and 1755, particularly English and Scotch-Irish, most of whom were indentured servants (Munroe 1978a:160; Galeson 1984; Bailyn 1986). 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. Land was still inexpensive, in 1795 selling for 3 to 4 pounds per acre near Christiana Bridge, or about $300 an acre (Strickland 1801:19; La Rouchefoucault 1800). A study of the land warrants granted by the Penn government in New Castle County between 1701 and 1725 shows that 85% of the farm properties granted to settlers in the area were of 300 acres or less in size, a percentage similar to that in the seventeenth century. There was a tendency for the large grants and tracts of the seventeenth century to be divided and subdivided by sale and inheritance (Munroe 1954:19), and farms of 100 acres or less increased in frequency from only 10% of the total between 1679 and 1700 to 27% by the first quarter of the eighteenth century (Eastburn 1891). Using nearby Chester County, Pennsylvania, as a comparison, farm sizes dropped from about 500 acres in 1693 to less than 130 acres by 1791 (Ball and Walton 1976:105). By 1750 it appears that the density of rural settlement in southeast Pennsylvania and New Castle County was approximately five households per square mile (Ball 1976:628;

Lemon 1972). At the close of the century, Delaware ranked third in population density behind Rhode Island and Connecticut (Seybert 1818).

Lemon (1967) has divided the eighteenth century in the Philadelphia region into three periods of urban growth. The first period, from 1700 to 1729, was one of urban stagnancy after the initial rapid growth of the seventeenth century. However, hamlets - unplanned towns that sprang up at crossroads and around taverns, ferries and mills - did begin to appear at this time. Ogletown is a fine example of the eighteenth century hamlet in New Castle County. It certainly did not deserve the appellation of town "...There being but one Brickhouse & a Few Wooden ones all the property of Thomas Ogle, no tavern in the place..." (Paltsits 1935:7). However, Ogletown was located at a crossroads on major overland transportation route (Coleman et al. 1987).

The second period of urbanization noted by Lemon saw a renewal of town growth based on internal trade between 1730 to 1765. In the Pennsylvania region, Lancaster, York, Carlisle, Reading, and Wilmington were examples of this period of urban growth. On a more local scale, towns such as Christiana Bridge, Newport, Cuckoldstown (modern Stanton), and Newark were chartered and prospered during this period.

Christiana Bridge, located at the head of sloop navigation on the Christina River, had stagnated since the 1680s, but saw growth and prosperity as a major grain transshipment port for produce coming from the upper Chesapeake Bay area. Over the next half-century, but particularly after the American Revolution,

Christiana blossomed under the trading and shipping industries into a burgeoning town. By the end of the century, the town could boast a population of 289 inhabitants, ranking fourth in New Castle County in size behind Wilmington, New Castle and Newport. Located there were several large mills, between thirty and fifty houses, several taverns, and a Presbyterian Church (Rogers and Easter 1960; Acomb 1958:124; Padelford 1939:11; Conrad 1908 2:495). Christiana Bridge was also an important transshipment town in Philadelphia's economic hinterland. A bridge at the town was reputedly built by the Swedes by 1660; a second or replacement structure was contracted out in the 1750s, according to the Pennsylvania Gazette. Newspaper advertisements for real estate in northern New Castle County in the eighteenth century suggest the importance of the town for economic considerations, often informing potential buyers of a tract as to the distance from the property to Christiana Bridge.

Newport, established about 1735, rivaled Wilmington and Christiana Bridge as a grain-shipping and flour-milling center during the eighteenth century. Because it was cheaper to ship flour by water to Philadelphia from Newport than it was to transport the grain overland directly from Lancaster to Philadelphia, grain was transported to Newport overland from the Lancaster and York areas of Pennsylvania. Contemporary travel maps of Newport show it to have been laid out in a regular town plan, consisting of parallel streets extending from the Christina River, and intersected by others at right angles (Colles 1961:170; Moore and Jones 1804:170; Scott 1807:180). Newport was described by travelers as being the size of New Castle, with

about forty well-built houses, three or four stores and as many taverns (Padelford 1939:11, Scudder 1877:264; Penn 1879:295).

The crossroads town of Newark, chartered in 1758, represented a shift from a water-oriented shipping town to an inland market town. It was located on the two major overland transportation routes, the road from Dover to southeast Pennsylvania and the road from Christiana to Nottingham. Eighteenth century maps show it to have been at the center of no fewer than six roads (Cooch 1946). Newark was established as a market town that supplied the local population with commodities brought from Philadelphia and the surrounding region. While not quite as large as Newport, it was "...the most considerable collection of houses... since Lancaster" (Penn 1879:295). Several mills for local produce were found along White Clay Creek in the town's vicinity, and the Newark Academy was established in the town by the early 1760s.

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 was known to be in the vicinity of Stanton as early as 1679, and by 1800 Cuckoldstown rivaled Newport as a local grain processing center. Ships of moderate draft were able to navigate up Red Clay Creek and take on local as well as southeastern Pennsylvania farm produce. Located at the confluence of Red Clay Creek with White Clay Creek, Stanton was never a large town. A map of the New Castle County region, drawn in 1777, did not even include the location of Stanton (Cooch 1946), and a traveller's guide, published in 1789 (Colles 1961:170) shows only a mill and ten dwellings in the vicinity of

the town. It was described at the end of the eighteenth century as a "...place of little note...in its vicinity were some good flour mills" (Moore and Jones 1804:6).

Wilmington was by far the largest urban center in New Castle County that developed in this period. Chartered in 1739, the city's location was considered by one visitor to be "one of the pleasantest and most favorable on the whole continent" (Acomb 1958:123). 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. Located one-half mile north of Wilmington, Brandywine Village was a small town "...chiefly consisting in mills and taverns, eight or ten being within 100 yards of each other" (Chilton 1931:288). Wilmington thus was a receiving center for local and regional farm produce, brought by water from Christiana, 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 a more erratic economic pattern. Little growth in the towns of New Castle County took place during this period. However, an increase in population and land tenancy occurred (Lemon 1972:216).

The condition 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 (Munroe 1954:137; Gray 1961:309). In 1755 the road from Middletown to 'Christeen' was considered good, but from

Christiana north "the roads are, in many places, extremely bad and the appearance of the country the same" (Padelford 1939:12). The road from Christiana to Philadelphia, by way of Newport, Wilmington, and Chester, was the post road, but it was described as a "hilly and rocky road; a better and more pleasant is by New Castle" (Schoepf 1911:376).

The road network in north-central New Castle County also improved due to both population growth and interregional trade. A road known as the "New Munster Road" passed through Newark on its way to Lancaster and was laid out in 1765. The "Limekiln Road" (present-day Limestone Road) was evidently established as early as 1726, and extended from the rich grain producing country of southeastern Pennsylvania to the mills in the vicinity of Stanton. A road from Ogletown to the Elk River was resurveyed in 1774 (Conrad 1908:2:490). From Wilmington, a nexus of roads radiated west, south, and north, connecting the Delaware River with the head of the Chesapeake Bay (Head of Elk), Kent and Sussex counties, and southeastern Pennsylvania. Christiana was a major crossroads town on the road to Head of Elk, and also on the route from Red Lion to New Castle. Newport was the terminus of the Lancaster Road, and a route from Newport westward to Newark was laid out in 1750. By mid-century, the roadbeds of many of the area's present-day state roads (Route 4, 7, and 273; Old Baltimore Pike; 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 (Bidwell and

Falconer 1941:84). Farming was the most important occupation for between 80 and 90 percent of the area's population (Egnal 1975:201). 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, and in general, even judged by contemporary standards, "...the business of the inland farmers at the end of the eighteenth century was ineffectively and even carelessly managed. Only in a few particulars had any noticeable improvements been made over the primitive methods employed by the earliest settlers" (Bidwell and Falconer 1941:84). A French traveler in Delaware at the end of the eighteenth century, reflecting European views of American agriculture, wrote "the farms are in general small and ill-cultivated; they receive little or no manure and are in every respect badly managed. Some English farmers have recently settled in this neighborhood ... they will doubtless make considerable improvements in agriculture" (La Rouchefoucault 1800:511).

Agricultural practices in New Castle County followed an extensive, rather than an intensive, use of the land (Lemon 1967, 1972:169). Not until the 1750s did three-field or four-field rotational patterns of planting, and only occasionally six-field rotation, become prevalent and widespread. Contemporaries reported that, through the use of these rotational patterns, a yield ranging between six and twenty bushels of wheat per acre could be harvested (Tilton 1946; Strickland 1801). The extensive use of the land was based on this wheat production, the most valuable and important trading commodity that the region could

export. It has been suggested that this pattern of land use was the result of a lack of adequate labor supply, the availability of inexpensive land, household consumption, the market, and the attitudes of the people of the region (Lemon 1972:179). Research in southeast Pennsylvania for this time period indicates that on an average farm of 125 acres, twenty-six acres would be in grain; thirteen in meadow for hay; twenty for pasture; eight or nine in flax or hemp, roots, other vegetables, fruits, and tobacco; three for the farmstead; and the remaining sixty acres would be fallow and woodland (Lemon 1972:167; Ball 1976:628).

Studies of the economic development of the region through the eighteenth century (Sachs 1953; Lemon and Nash 1968; Egnal 1975; Ball 1976; Ball and Walton 1976) have found the period to be one of modest changes in agricultural productivity. These changes, based on population growth and the rise in per capita income, can be seen in two distinct periods; 1720 to 1745, and 1745 to 1760. Minor fluctuations throughout the century were caused by King George's War, the French and Indian War, and the nonimportation agreements of 1766 and 1769-1770. In addition, colonists were affected by alternating periods of prosperity and depression. Philadelphia continued to be the major urban center in the region, and from about 1750 until the end of the century was the dominant commercial and social center of the eastern seaboard, with a population that was second only to London.

Main (1973) categorizes the New Castle County area as a commercial farm community, or a community that sold a high proportion of its agricultural produce. For this type of

community to exist, good farmland and accessibility to markets were necessary. Main's research found that these communities were characterized by high percentages of wealth, rich men, artisans, professionals and merchants, and a high proportion of large versus small farmers.

Delaware's manufacturing capacity in this century began to be realized. During the eighteenth 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 was one of America's leading industrial cities. It is evident from research that much of the century was characterized by the stagnated growth of industry due to the effects of first English trade policies, then the Revolutionary War, and finally by the economic uncertainties that followed the War. However, "Locally from 1790 to 1810, commerce prospered as it never had nor would again" (Welsh 1956). This period of increased growth corresponds with the implementation of more sophisticated record-keeping by the federal government and thus, much more substantial research is possible.

A report on the industries of the City of Wilmington in 1791 noted the presence of 12 flour mills, 6 saw mills, 1 paper mill, 1 slitting mill, 1 barley mill, and 1 snuff mill. A turn of the century observer commented: "No less than 265,000 barrels of flour, 300,000 barrels of wheat, 170,000 bushels of Indian corn,

besides barley, oats, flaxseed, paper, slit iron, snuff, salted provisions and etc. are annually sent from the waters of the Delaware state; of which the Christiana is by far the most productive and probably many times as much so as any other creek or river of like magnitude in the union" (Hancock 1947). Another observer in 1799 recorded the presence of additional mills devoted to the manufacture of linseed oil, a calico printing house, a manufactury of silk bolting-cloth, a hat-making factory, and numerous ship building facilities.

Manufactories that processed iron products also developed. 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 by John Ball near St. James Church in Mill Creek Hundred soon after 1706. The construction of a forge by Samuel James within the Welsh Tract in 1723 was the earliest successful forge in the Middle Atlantic. The Abington Iron Works, located on Iron Hill, were in production by the 1730s, as property advertisements in the Pennsylvania Gazette indicate. In Maryland, the Principio Furnace Company, which was to become the largest iron producing company in the Middle Atlantic did not begin production until 1734 (Whitely 1887). In a largely agricultural area such as New Castle County there was a close connection between ironmaking and agriculture during the eighteenth and part of the nineteenth centuries. The combination of a readily available raw product and a constant market for their products created the need for a large population of blacksmiths and machinists. Thus, northern New Castle County was

in the forefront of economic development during the first three quarters of the nineteenth century.

1830-Present: Industrialization, Urban Growth, and Suburbanization

In northern Delaware, the first half of the nineteenth century was marked by rapid industrial and urban growth. Population expansion 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 there was 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. It has been noted by one author that between 1810 and 1820 the population of Delaware remained stationary and only increased after 1840 (Hancock 1947:374). 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 (Taylor 1964a:441; Lindstrom 1979:300). 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 in the first half of the nineteenth century, and by 1860 were well established.

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 - Christiana Bridge, Newport, Stanton, Cantwell's Bridge, and Newark - originally 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. As early as 1808, it was reported that Christiana Bridge "was formerly the greatest of all the waters across the peninsula," and that its decline was caused by the numerous mills on the Elk River and its tributaries, the rise of Baltimore and the inexpensive cost of shipping produce to that city, and the development of other water and overland transportation routes more convenient than the one through the town (American State Papers 1808, Misc. 1:758). In a more favorable review in 1815, however, it was recorded that Christiana Bridge "is an important place as a depot for goods transporting east or south, as it offers the shortest land carriage between the bays" (Niles' Weekly Register IV 1822). Clearly, Christiana remained a major crossroads town, but by the late 1820's was no longer the commercial center it had been in the eighteenth century (Cooch 1976).

In an effort to compete with the then under-construction Chesapeake and Delaware Canal to the south and the turnpike boom taking place in New Castle County, Christiana Bridge in 1822 petitioned the State Legislature for some minor channelization of the Christiana River. The petition was approved and the Christiana Canal Company formed, constructing in the next decade two small canals that removed the "Great Loop" in the river just below the town, and another smaller loop further to the east.

The fate of Newport in the early nineteenth century was similar to Christiana's. Transportation costs from southeast Pennsylvania to Philadelphia and even Baltimore (by way of the Susquehanna River), became less expensive, reducing the amount of traffic through the town. By 1809 the village was described as "a small village falling into decay. It once contained five taverns and seven stores, which are now reduced to two of each kind" (Scudder 1877:265).

By mid-century, spurred first by the construction of the Chesapeake and Delaware Canal, and then by railroad construction, several of the local towns were experiencing a rebirth as transportation and manufacturing centers. Newport retained some of its importance as a transshipment and milling center because of the construction of the Philadelphia, Wilmington, and Baltimore Railroad, which was completed in 1837 (Strickland 1835:225-234; Dare 1856:80). By the end of the century, Newport was a "thriving village of 750 inhabitants ... now as prosperous and progressive as ever" and was fast becoming industrialized as a textile milling center (Delaware State and Peninsula Directory [DSPD] 1898:169). Stanton, like Newport, was saved from total decline by the railroad, and by 1900 was also a manufacturing center of woolen mills, flour mills, and fertilizer works. Its population at this time was 279 people (DSPD 1898:198). By 1898, "Ogletown" was a tiny village of only eighty inhabitants, and was strictly an agricultural town. Railroads, canals, and turnpikes had passed it by, and Ogletown did not even possess a bank (DSPD 1898:174). Newark was fortunate to be the home of Delaware State

College, later the University of Delaware, and to have two railroads constructed nearby. The town was a manufacturing center like Newport and Stanton, and was located on major transportation routes.

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 and Gap turnpike, which was begun in 1808. It was noted in 1809 that the economic situation of Newport was failing and that "the inhabitants hope something from a turnpike road now progressing" (Scudder 1877:264). The Newport and Gap Turnpike did slow this process of decay, but it could not halt it.

By 1815, eight more turnpikes, all with roads in New Castle County, had been chartered: the Wilmington Turnpike Company, incorporated 1808; the New Castle and Frenchtown Turnpike Company, 1809; the New Castle Turnpike Company, 1811; the Kennett Turnpike Company, 1811; the Wilmington and Great Valley Turnpike Company, 1813; the Wilmington and Philadelphia Turnpike Company, 1813; the Elk and Christiana Turnpike Company, 1813; and the Wilmington and Christiana Turnpike Company, 1815. It should be noted that economic decline like that suffered by Christiana was often an impetus for the construction of a turnpike. For example, the two turnpikes that were built through Christiana in 1813 and 1815 were attempts to get Christiana 'back on the map', and to provide a viable Baltimore-Philadelphia overland

connection, and a third turnpike, called the New Castle and White Clay Creek Hundred, was planned to pass through Christiana, was incorporated in 1813, but got little local support and was not constructed (Delaware Laws General Assembly 1813). Despite the improved transportation routes listed above, it was found that water travel was still the cheapest, fastest, safest, and most dependable means of transport available (Gray 1961:311).

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 Delmarva 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 Christiana, 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. Although not an 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 serve in this borderline function 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 Frenchtown 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 Delmarva Peninsula (Dare 1856). 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. As noted previously, the towns of Newark, Stanton, and Newport benefited from their proximity to these railroads, staving off the economic stagnation and decline that were experienced by Christiana, Ogletown, and Glasgow.

New Castle County continued to be predominantly agricultural throughout much of the nineteenth century. In 1815 it was reported that "the greater part of the inhabitants of this state are devoted to agricultural pursuits, and they have rendered it very productive. The principal produce is wheat, rye, indian corn, barley, oats, and flax. Grasses are abundant, and thrive very luxuriantly, furnishing food for many cattle - and every sort of vegetable ... thrives well here. The staple produce is wheat, of which a great quantity of flour is made for export" (Melish 1815:181). At the start of the nineteenth century, however, agriculture in New Castle County was in a dismal situation. Farming practices continued as much they had

during the previous century with the use of the four field system of cropping. Wheat was still the dominant crop, the use of fertilizers was infrequent, and a large number of tenant farmers worked the land. Production was, on the whole, quite low during the first quarter of the century. It was estimated that the average return of crops for all of Delaware was five bushels of wheat per acre, ten of corn, and fifteen of oats, despite the knowledge that the use of fertilizers could increase crop yields to forty bushels of wheat per acre and eighty of corn (Allmond 1958:57).

Demand for American agricultural products was high until about 1815. The outmigration of the population that took place at this time can be seen in the tax assessment data for the nineteenth century for White Clay Creek Hundred (Coleman et al. 1984). A steady rise in the number of taxables was observed from 1800 to 1818, with a sudden drop in 1819. The assessments also list many of the taxables as no longer being in the Hundred, and often there is a notation of "gone to Ohio" or "Moved to Indiana". Contributing to these difficulties were the problems presented by the Hessian Fly and Black stem-rust, both of which did severe damage to wheat crops. However, it has been suggested that indirectly the Hessian Fly was helpful to wheat cultivation, because it caused increased attention to be given to fertilization and crop tillage, which increased agricultural productivity (Bidwell and Falconer 1941:96).

The revival of the New Castle County Agricultural Society, one of the first such organizations in the nation, in 1818, encouraged farmers in the use of improved drainage techniques,

fertilizers, and machinery. New Castle County was on its way to becoming one of the finest agricultural counties in the United States by 1860. Indeed, between 1830 and 1860, when judged by contemporary agriculturalists, the county was considered to be "far superior to other sections of the state" (Hancock 1947:375), and one newspaper observed that "it will satisfactorily compare, in every respect, with the crack counties in the large neighboring states" (Delaware State Journal, June 12, 1846). Fertilization, farm machinery, and improved drainage were helpful in the 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 difficult to compete. A traveler through the region summed this up well when he wrote "the northern portion of this little state is generally a fine tract of country, being highly and skillfully cultivated, and well adapted to the growth of wheat and other grains of superior quality. In a word, this portion of the state presents all that is delightful in agriculture" (Myers 1849:39).

Average farm size remained much as it had been during the eighteenth century, about 200 acres. However, farms of 300 to 400 acres were not uncommon (Bausman 1933:64). Prior to 1900, real estate values for agricultural property ranged from $50 to $125 an acre in the Christiana-Ogletown-Stanton area (DSPD 1898). The system of farming employed in northern Delaware was similar to that used in neighboring Chester County, and was either a cropping system, a mixed system, or a grazing system (Bidwell and

Falconer 1941:261). Documentary evidence for the W. M. Hawthorn farmstead (Coleman et al. 1984) indicates that the mixed system of farming was used by the occupants of the farm. In this method, a well-watered portion of the farm was kept as permanent pasture and was frequently manured, with the remainder of the farm cropped in a rotation of corn, oats, barley, wheat, and clover. The Chester County system of farming was widely held in high esteem, and a typical farm, following this pattern, probably was clean and well arranged, with well-built fences dividing the farmstead into seven to twelve enclosures, and with neatly-constructed farm buildings located near a spring (Bidwell and Falconer 1941:262).

Livestock production in New Castle County continued to be a major farm occupation in the first half of the nineteenth century (Bidwell and Falconer 1941:394). Prior to 1850, the area of eastern Pennsylvania, New Jersey, and northern Delaware had been known for its cattle-feeding industry. However, it was dairy-farming that began to predominate in New Castle County, particularly because of the need for fresh butter and milk in the urban centers of Philadelphia and Wilmington. By 1847, dairies ranging from 15 to 100 cows were common in northern New Castle County (Bidwell and Falconer 1941:427).

Between approximately 1840 and 1860, southern New Castle County and Kent and Sussex Counties were large producers of peaches, which were shipped by rail and water to Philadelphia, Wilmington, and Baltimore. This "peach boom" was short-lived, however, when a disease called "the Yellows" devastated the orchards. Some northern New Castle County farmers did grow

peaches, but the area did not base its agricultural production on this fruit. Thus, farmers in this area were less affected by the peach blight than areas further south. Other fruits, particularly apples, were grown for profit in the northern New Castle County area (U.S. Agricultural Censuses, 1850-1880; Myers 1849:39; Hoffecker 1977).

From 1860 until the end of the century, truck or market gardening and the orchard industry began to predominate in much of Delaware. This trend saw its largest percentage increase in the state between 1889 and 1899, with an increase of 457.2% (Shannon 1945:260). Northern New Castle County did join this agricultural trend, but still grew a large amount of cereal crops. These grains were no longer for export or widespread consumption, but were for local use in the urban centers, and for cattle-feeding.

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 1820's leased their lands to tenants. One author had likened the farm situation in Delaware in the second half of the nineteenth century to that of the antebellum southern aristocracy: there developed a class of farm owners who not only did little labor themselves, but required that the hired labor render personal services. "They lived on their farms and personally directed their farm businesses. Some of them owned additional farms which they either 'carried on' or rented to tenants" (Bausman 1933:165). By

1900 over 50% of all the farmers in Delaware were tenants or share croppers. Over the period between 1880 and 1900 this figure represents almost an 8% increase in farm tenancy (Shannon 1945:418). Tenancy remained a dominant farming practice into the twentieth century.

The growth of non-agricultural businesses coincided with the decline in agricultural pursuits, which was caused by population expansion and outmigration, poor agricultural production in the early years of the nineteenth century, and urban and industrial expansion (Taylor 1964a; Lindstrom 1978, 1979). Lindstrom (1978: 123) found that in 1820 over 76% of the population in the Philadelphia hinterland were farmers by occupation, and by 1840 this number had declined to about 70%. In addition, the income per agricultural worker fell well below that of the non-agricultural worker. At the same time the income of farmers in the region who were able to remain productive was higher when compared with other areas of the nation. Thus, while many farmers were forced to migrate west or into the cities, or become tenants, many farmers who were successful enjoyed a substantial income and prosperity.

In New Castle County, these changes had brought an end to export crop production, and a real specialization began to occur. New Castle County became an area that specialized in the production of corn, dairy products, fruits and vegetables, and lumber, while producing much less wheat and livestock (Lindstrom 1978:125). By the middle of the century, the county produced goods that were desired by the nearby urban communities supplying perishables such as milk, butter, fruits, and vegetables. This

shift from cereal farming to market gardening would continue into the next century.

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 caused by the Industrial Revolution (Taylor 1964b; Walzer 1972; Lindstrom 1978, 1979). The first half of the century witnessed a noticeable decline in Philadelphia's economic influence over the region, caused by Baltimore's rise, 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, but primarily it devoted increasingly more of its resources to manufacturing (Lindstrom 1978:122).

While milling continued to be an important occupation in New Castle County, manufacturing of all sorts became common as the century wore on. The variety of manufacturing and milling establishments in northern New Castle County was astounding. In 1815, Niles' Weekly Register observed that the White Clay Creek, Red Clay Creek, and Christiana River drainages within Delaware were the power sources for forty-six different mills or manufactories: twenty-four grist mills, ten saw mills, five cotton mills, two woolen manufactories, one paper mill, one slitting mill, one snuff mill, one glazing mill, and one oil and saw mill. Less than thirty-five years later, the number of woolen and cotton manufactories had doubled to fourteen, all steam or

water powered, and it was recorded that "the manufactures of Delaware are more extensive than its commerce" (Myers 1849:40). Although Beers' Atlas of the State of Delaware (1868) shows only a slight increase since 1815 in the total number of mills and factories in the hundreds of White Clay Creek, Mill Creek, Christiana, and Pencader, the diversification of mill types in 1868 reveals a decline in the number of agriculturally-oriented establishments and a rise in the number of manufactories based on an industrially-oriented economy. As noted above, in 1815 there were twenty-four grist mills and, excluding saw mills, only half as many mills of other types. By 1868, there were nineteen grist mills and, again excluding saw mills, fifteen mills of all other types - iron, cotton, woolen, paper, snuff, spice, bark, and phosphate.

The first official report on the state of manufacturing in the United States was compiled by Tench Coxe for the Year 1810 (Coxe 1814). The report not only provides the first statewide census for manufacturers, but also a breakdown by county for this data. New Castle County was dominant in most aspects of manufacturing and of the twenty-seven categories of manufacturers, sixteen were unique to New Castle County. Manufacturers present statewide included woolen and flaxen goods made at home, fulling mills and looms, tanneries, and distilleries. At this time grist mills produced the greatest value of goods with iron manufacturers second in rank.

The War of 1812 and the Embargo Acts that preceeded it proved a great stimulus to manufacturing in Delaware, especially in textiles (Munroe 1979). 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. Contained within this hinterland was also a sizable population of skilled mechanics and machinists who were able to perform the skilled technologies. This combination of good transportation, a large labor pool, and a ready supply of raw materials allowed industry in northern New Castle County to grow and diversify very rapidly. It has been pointed out that, "a notable aspect of the industrial pattern in Wilmington was the interrelationship among the local industries" (Hoffecker 1974:27). This pattern benefited greatly not only manufacturers in Wilmington, but also the small businesses that were established surrounding the city. With good railroad facilities, requested goods could be delivered within the same day, even from Philadelphia. The carriage manufacturing business represents the process well with leather tanners, foundaries, and wheel shops providing the necessary parts that then only needed assembly. Subsequent sale was usually via railroad to Southern markets or to the government during the Civil War when lucrative contracts for wagons and gun carriages were received (Hoffecker 1974). Other successful businesses also followed this pattern of the shipping of their products for out of state sale. Favorable conditions allowed Wilmington to become a leading manufacturer of transportation related equipment such as carriages, railroad

cars, and iron ships. In 1853 the majority of workers in Wilmington were employed in cotton manufacturing, iron-casting, wheel making, railroad-car manufacture, shipbuilding, carriage making, leather tanning, and coopery.

At the turn of the twentieth century, America's industrial economy had become truly national in scope; however, Delaware was falling behind the rest of the nation (Hoffecker 1977). Many of the successful firms in Wilmington were bought by large, national companies and the others went bankrupt due to competition from the Midwest. Nonetheless, in 1907, Wilmington stood seventh in manufacturing in the United States according to population, and had a greater diversity of industries than any other city in the United States. In sum, the historical record of the study area shows that the two dominant trends are a developing commercial agriculture and an increasing urbanism.

The historic development of the project area began in earnest during the second decade of the eighteenth century, part of the period of Colonial development (Herman and Siders 1986). Prior to that time, the region had been sparsely settled, with most of the population clustered around Christiana Bridge to the east of the project area, or to the west in the Welsh Tract, a 30,000 acre parcel which had been granted by William Penn to Welsh settlers in 1701. Scharf (1888:415) indicates that in 1723 the settlers of the Welsh tract petitioned the courts of Cecil and New Castle Counties to open a road from the Head of Elk (near modern Elkton, Maryland) to Christiana Bridge. Due to the presence of iron ore deposits on Iron Hill, several iron furnaces were established in the Welsh Tract at the same time. These

included Sir William Keith's blast furnace on Iron Hill (1725), Samuel James' forge in the Welsh Tract (1723), and the Abington Iron Works on Iron Hill by the 1730s (Owen and Owen 1973; Heite 1983). By 1739, there were about a dozen "plantations" established in the project area, ranging in size from 20 to well over 600 acres. Figure 3, which was compiled from land plats contained in the Penn Warrants and Surveys, shows that several of these land tracts were named, including "Gooding's Chance" to the west of Christiana Bridge, "Benjamin's Hope", and "Read's Adventure", and there were at least eight structures or dwellings present in the project area around 1740.

It was the creation of the road from Head of Elk to Christiana that had provided the catalyst for the "opening" and settling of this country. By the 1760s this road was well-established as one of the most important in the region; it extended from the milling and grain producing areas of Cecil County and the Lower Susquehanna Valley to the major transportation and shipping center of Christiana Bridge (Walzer 1972; Basalik et al. 1987; Catts et al. 1988). In 1763, the road was "straightened" by the New Castle County Levy Court; the plat map they prepared is illustrated in Figure 4. Christiana Bridge and the village of Newark are marked by the presence of churches, and the most prominent houses along the project area are shown as "Francis Mears' house", "Mr. Ogle's dwelling house", and the house of "Thomas Cooch Esq." at Cooch's Bridge. Other structures indicated in the project area include a smith shop on the east side of Allan's Run (also known as Barratt's Run), and the houses

of Alexander, Samuel and Robert McAntier. The major stream crossings at Latham's Run (or Leatherman's Run), Allan's Run, and the Christina, are also pictured.

The country through which this main road passed was, in many respects, the "backcountry" of New Castle County, and was evidently of marginal agricultural quality. In 1775, nearly fifty years after the project area was first settled, contemporary accounts described it as "barren and poor, and consequently little cleared" (Padelford 1939:72). It was generally observed by all the travellers in the area that the project area was sparsely settled, "with few dwellings, on the right and left, as far as the Bridge called Cooch's Bridge", and that there was "no inn to be found between Christiana Bridge and Elkton" (Berthier 1972(2):81; Becker 1977:15). Along with the poor quality of the countryside, the roads leading from Christiana Bridge were considered to be in bad condition, particularly in the winter time (Padelford 1939:12; Clermont-Crevecoeur 1972(1):51). A petition to the New Castle County Levy Court in August of 1780 clearly described the abysmal state of the road, which was in large measure due to the American Revolution, and it inferred the road's extreme importance as a major overland transportation route:

> [The road] leading from the Head of Elk ... to Christiana Bridge by reason of a large number of waggons constantly plying between sd. Head of Elk and Christiana Bridge is very much out of repair, in many places is rendered nearly impassable for Teams, no repairs having been made thereon since last Winter, the supervisors not being furnished with Money for the same, And as the Winter is approaching if said Roads are not repaired the Transportation of Public Stores will be precarious and attended with a great expense, as Teams will not be able to take Near there (sic)

> proper loads, And the practice of the supervisors of late, Working on the Roads in Winter or late in the Season is a labor and expense lost .... (New Castle County Levy Court, Road Petitions and Returns, 1780).

The American Revolution was a period of excitement and activity within the project area. During the late summer of 1777, the British Army, under the command of Sir William Howe, landed on the upper reaches of the Elk River in Maryland, intent on the capture of Philadelphia. A recently organized, ad hoc American light infantry corps under the command of Brigadier General William Maxwell was placed in an advanced position at Cooch's Bridge, near the western end of the project area. This corps was to annoy and harass the British advance. On the morning of September 3rd, 1777, the British column had advanced from the Head of Elk to Aiken's tavern (present-day Glasgow). The army's vanguard, consistng of Hessian and Anspach jaegers, proceeded north along modern Route 896 for about a half-mile, when it was fired upon by Maxwell's troops, concealed in the woods along the road. British reinforcements and artillery forced the Americans to retreat in some disorder, and causualties numbered about 50 for both sides. The whole affair lasted several hours, and the British army encamped at Cooch's Bridge for the next five days. On September 8th, the army moved through Newark on its way to Kennett Square; three days later the much larger and more decisive battle of Brandywine was fought (Cooch 1940; Munroe 1978b). Throughout the War, the project area was an important overland transportation route for the shipment of military supplies between the Delaware River and the Chesapeake Bay. When Rochambeau's French army passed down this road on its

way to Yorktown in the fall of 1781, the column's cartographers sketched the countryside through which they travelled; the map they prepared of the project area is shown in Figure 5. Of particular interest is the wooded nature of the area; with the exception of the few fenced clearings shown along the road, most of the country appears to have been forested in 1781. The cartographers also showed the locations and numbers of structures present along the road. There are eighteen buildings illustrated, and based on the way they are clustered, these probably represent about eight plantations or farmsteads, including houses, barns and outbuildings. The largest of the clearings, representing cultivated lands, is located to the east of Cooch's Bridge, and contains eight of the buildings (Rice and Brown 1972). Less than a decade later, Christopher Colles prepared a travel guide illustrating the road from Philadelphia to Annapolis (Colles 1961) (Figure 6). In this map, seven structures are shown along the road, and their placement closely coincides with those seen on the French Army map of 1781. Two of the dwellings are labelled, and water courses and woods are shown: The area directly east of Cooch's Bridge is evidently undeveloped and wooded on both maps due to the presence of an area locally known as Purgatory Swamp (Catts et al. 1988).

At the start of the nineteenth century the project area was beginning to take on the appearance of a cultivated landscape, with a patchwork of fields and woodlands spread across the area. The project area was still largely an isolated backcountry of the county, with no north-south connections present between Christiana Bridge and Cooch's Bridge. By 1804 (Figure 7) the

intersection at present-day Walther Road was established, but this was the only secondary road coming into the Christiana-Elkton Road, and did not cross the Christina into New Castle Hundred. By the turn of the century, the project area had undergone several changes, the most important of which was the creation of the Elkton and Christina Turnpike in 1813, and the establishment of Salem Methodist Meeting in 1807 just to the south of the turnpike (Figure 8).

The Elk and Christiana Turnpike had been incorporated in 1813 and was completed four years later in April of 1817. At that time, George Russel, Hugh Gemmell (or Gimmell), and Jeremiah Lewden, three freeholders appointed by the Governor to view the turnpike reported that the whole road, "...from Christiana to the Maryland line a distance of seven miles and one hundred and forty-two perches by actual measurement was executed in a complete workmanlike manner ...." (Delaware Public Archives Commission 1926:143). Tolls were collected at Cooch's Bridge and at a toll house constructed near the intersection of Smalley's Dam Road, and the by-laws governing the road's use closely followed the area's first turnpike, the New Castle and Frenchtown (Young 1940; New Castle County Levy Court, Road Petitions and Returns, 1836). The creation of the New Castle and Frenchtown Railroad made the Elk and Christiana Turnpike a less attractive overland transportation route for grain and heavy freight. Twenty-five years after the establishment of the turnpike it was abandoned by the company, and in 1841 the state legislature revoked the Company's charter (Young 1940).

The presence of the Salem Meeting gave this portion of the project area a community center, although the community that the chapel served was quite extensive, extending form Newark to Christiana (Fickett 1978; Scharf 1888). School house Number 43 was located closeby the church. By this time several of the north-south connector roads had been established as well; Smalley's Dam Road, Eggerts Road (located between modern Route 72 and Cooch's Bridge Road), the northern branch of Salem Church Road, and both branches of South Chapel Street (present-day Route 72) (New Castle Court of General Sessions 1815, 1827, 1836; New Castle County Levy Court, Road Petitions and Returns, 1816, 1828). Absent from the immediate project area were industrial or craftsmen sites. There were no blacksmith shops or wheelwright

shops along the road, and this is unusual in light of the importance of this route as a regional connector. Taverns and merchant shops were also lacking. Several milling operations were present by mid-century, including McNamee's Mill (earlier Eccles' Mill) on the large mill-pond of Sunset Lake, Cooch's Mill at Cooch's Bridge, and Smalley's Mill to the west of Christiana.

By 1868 (Figure 9) all of the intersections present today in the project area were in place. The last of these to be completed was the southern portion of Salem Church Road, and this was laid out in 1856 (New Castle Court of General Sessions, 1856). Unlike the initial development period of the project area (circa 1730 to 1770), farmsteads and house locations were no longer restricted by the road network or environmental factors for their placement. With the continued clearing of land and the increasing amount of land brought under cultivation throughout the nineteenth century, farm complexes and houses in the project area were placed more according to individual preference, social, and economic factors. The project area continued to grow as an agricultural region throughout the rest of the nineteenth century, and site locations and occupations remained consistent with a rural society (Figures 10 and 11).

Beginning in the 1920s, the newly created State Highway Department undertook some limited road projects, such as paving and bridge replacement, in the project area. These projects indicate the continuing importance of the Christiana-Elkton Road. With the construction of U.S. Route 40 in 1930s and 40s, the project area road became known as Old Baltimore Pike. In 1953

(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