Background Research III

III. BACKGROUND RESEARCH

Geographic Setting

Delaware is the second smallest state, 96 miles long and from 9 to 35 miles wide with a total area of 1,982 square miles. It borders the Atlantic Ocean, Delaware Bay and New Jersey to the east, Pennsylvania to the north, Maryland to the west, and Virginia to the south. As part of the Atlantic coastal plain, it is almost entirely flat with shallow and slow-moving rivers. One exception is the Piedmont Plateau. Located in the northwest corner, there the coastal plain meets the foothills of the Appalachians, creating a fall line. Delaware's highest point on the Piedmont Plateau is near Ebright Road in New Castle County, 447.85 ft. above sea level.[1]

New Castle is Delaware's northernmost county, with Pennsylvania to the north, New Jersey to the east, Kent County to the south and Maryland to the west. It is also the smallest with a total area of 438 square miles. The county symbol is the Ship, a tribute to New Castle's ship building industry and the extensive coastal commerce centered at New Castle City and Wilmington. Wilmington is the county seat, located on Delaware's northern coast 40 miles southeast from Philadelphia. Historically, almost 50% of Delaware's population lived in New Castle County, the greatest percentage in Wilmington.

The APE is just north of Hare's Corner, originally called Clarke's Corner. Hare's Corner was once a stage stop and cattle market.[2] It had the oldest continuously operating tavern stop in New Castle into the early 1900s, and was the location of the county Almshouse and Insane Hospital in the 1800s. The Frenchtown and New Castle turnpike reached Hare's Corner in 1813 and its railroad station opened on May 15, 1886.[3] The area now borders the New Castle County Airport.

At 1,250 acres, New Castle County Airport is the Delaware River and Bay Authority's (DRBA) largest air facility. It has three major runways, ten taxiways and several aircraft parking ramps. Approximately 50 business jets and 220 propeller aircraft are based there.[4] Built in 1942, it was controlled by the Army Air Corps during World War II and returned to the county in 1946. DRBA assumed operation of the facility in 1995.

Airport Road, originally Hog Swamp Road, was paved by the State Highway Department in the 1930s and renamed in the 1940s.[5] The portion of Churchmans Road within the PA was built in 1953, parallel to Old Churchman's Road one-half mile to the northwest.[6] Old Churchmans Road was subsumed by the airport, and is now a service road. Old and New Churchmans merge north of Don Avenue.

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[1] Dr. Carol E. Hoeffecker. *Delaware: the First State* (Wilmington, DE: Middle Atlantic Press, 1988), 2-1.
[2] Federal Writer's Project of the Works Project Administration. *Delaware: A Guide to the First State* (New York: The Viking Press, 1936), 324.
[3] J. Thomas Scharf. *History of Delaware 1690-1888* (Philadelphia: L.J. Richards and Co., 1888), 100.
[4] Delaware River and Bay Authority (http://www.newcastleairportilg.com)
[5] State of Delaware Highway Department. *Plan for Construction of Contract 411* (1930s).
[6] State of Delaware Highway Department. *Plan for Construction of Contract 1187* (February 1953).

Environmental Setting

The Project Area lies within the Interior Swamps Zone of the Atlantic Coastal Plain Physiographic Province, and is located approximately 3-4 miles southeast of the Fall Line Zone of the Piedmont Uplands Physiographic Province. Sections of the Coastal Plain in this portion of the State are underlain by coarse gravel and cobble deposits of the Columbia Formation (Pleistocene) and are characterized by a level to gently rolling topography, with elevations generally varying between 0-100 feet (0-30 meters) above mean average sea level (masl). Elevations within the Project Area average between 35 and 75 feet masl. The Interior Swamps portion of this section of the Coastal Plain encompasses the estuarine environs of Churchman's Marsh and its surroundings and represents a unique and extensively exploited resource setting within the larger region[7].

The Project Area is situated within a low, broad, gently rolling valley and lies immediately to the southeast of the Christina River and Churchman's Marsh. The Christina River represents the primary drainage in this region and meanders from southwest to northeast just beyond the western margins of the Project Area. To the north of the Project Area the river flows through the broad expanses of Churchmans Marsh and eventually intersects the Delaware Bay at Wilmington. Fresh water sources within the Project Area are all but absent and limited to a single ephemeral/intermittent stream originating within the Greater Wilmington/New Castle County Airport that runs to the northwest across Airport Road some 60-80 meters (200-260 feet) northeast of the Churchmans Road intersection.

Topographically, the Project Area straddles portions of the middle elevation side slopes along the eastern section of the valley. Situated between somewhat more pronounced uplands landforms a short distance to the east, in the vicinity of the Greater Wilmington/New Castle County Airport, and the low-lying, estuarine marsh environs adjacent to the Christina River and Churchmans Marsh this area slopes down very gently to the northwest. Characterized by a relatively uniform and consistently subtle relief more noticeable landform development is limited to the northern portion of the Airport Road segment. The central and southern section of the Project Area constitute an gently sloping plain with wetland/marshy environments extending into the extreme western part of the Churchmans Road segment. The nearby Churchman's Marsh represents a very large interior estuarine swamp situated between the confluence of White Clay Creek and the Christina River. Formed at the end of the Pleistocene (ca. 10,000 - 8,000 B.C.) as a fresh water swamp it is believed to have turned brackish sometime after 2, 500 B.C. as rising sea levels drowned the lower Delaware River valley.[8]

Near surface soils within the Project Area fall into the Sassafras-Fallsington-Matapeake group and are represented by a total of twelve individual type classifications that, taken together, support a rich and varied assortment of plant and animal resources. Individual soils present include those of the Bayboro, Elkton, Fallsington, Keyport, Matapeake, Sassafras, and Woodstown series (Figure 4). Of the types represented Bayboro silt loam (Ba), Elkton sandy loam (EIA), and Fallsington sandy loam (Fa) are formed in upland depressions and flats within the Coastal Plain (0-2% slopes) and are poorly drained. The Keyport (KeA), Matapeake

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[7] E. D. Matthews and A. L. Lavoie. *Soil Survey of New Castle County, Delaware*. Washington, D.C.: United States Department of Agriculture, Soil Conservation Service and the Delaware Agricultural Experiment Station, 1970. J. F. Custer. *Prehistoric Cultures of the Delmarva Peninsula: An Archaeological Study*. Cranbury, NJ: Associated University Presses, 1989.
[8] Ibid.

MeA, MeB2 MeC3), Sassafras (SaB2, SaC2, SaC3), and Woodstown (WoB2, WsB2) Series soils are found in gently to steeply sloped (0-10%) upland landforms and consist of deep sandy-silty loam packages that are moderately well to well drained. Soils within this latter group that are present in more steeply sloped areas vary between being moderately and severely eroded.[9]

Lithic resources within the vicinity of the Project Area include both primary outcrop formations and secondary cobble deposits. Primary lithic sources are represented by jasper, chert, and chalcedony materials associated with the Delaware Chalcedony Complex, the nearest outcrops of which are found further up White Clay Creek (ca. 5-10 miles), in the vicinity of Newark, Delaware. Secondary lithic resources derive from the course sediments of the Columbia Formation and consist of alluvial cobble deposits of quartz and quartzite, along with lesser amounts of jasper, chert, and chalcedony, that have been eroded out of the Piedmont Uplands, to the west.[10] Surficial exposures of these materials are found within both the White Clay and Christina River valleys, along the shores of Churchman's Marsh.[11]

Prehistoric Overview

The prehistoric archaeological record of the Delaware Piedmont Uplands / Coastal Plain can be divided into four chronological units, defined on the basis of sets of shared cultural characteristics and common adaptations to similar environmental conditions: The Paleo-Indian Period (ca. 12,000 B.C. - 6,500 B.C.), the Archaic Period (6,500 B.C. - 3,000 B.C.), the Woodland I Period (3,000 B.C. - A.D. 1,000), and the Woodland II Period (A.D. 1,000 - A.D. 1650). A fifth time segment, the Contact Period may also be considered and lasts from approximately A.D. 1650-1750. While Native American groups may have still existed in this region after the latter date, their culture, by that time, had been irreversibly altered by contact with European peoples. The following paragraphs describe the defining characteristics of each of these Culture Periods.[12]

The **Paleo-Indian Period** (ca. 12,000 - 6,500 B.C.) encompasses the block of time witnessed by the final retreat of the Pleistocene glacial conditions from eastern North America and the onset of more modern Holocene environments. The distinctive feature of this Culture Period is an adaptation to the cold, and alternately wet and dry, conditions characterizing the times and manifested in the form of a lifestyle based primarily on hunting and gathering of foods, with hunted foods possibly comprising a large portion of the diet. Hunted animals may have included now-extinct megafaunal species, including mammoth, mastodon, Eastern Bison, camels, and horses. A mosaic patterning of deciduous, boreal, and grassland environments would have provided a large number of productive habitats for these game animals in Northern Delaware and permanent watering habitats, such as those in the vicinity of Churchman's Marsh, would have been particularly good hunting settings.

Paleo-Indian populations are believed to have exhibited a highly mobile lifestyle incorporating a fairly fluid social organization based on relatively small bands of single and multiple family units. Tool kits of these peoples reflect their reliance on hunted animal resources and is characterized by a preference for high quality lithic materials and the long-term curation and maintenance of finished tools. Throughout the 5500 year time span of this period, the basic adaptation remains

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[9] Matthews and Lavoie. *Soil Survey of New Castle County, Delaware.*
[10] Custer, 1989. J. F. Custer. *Prehistoric Cultures of Eastern Pennsylvania.* Harrisburg: Pennsylvania Historical and Museum Commission, 1996.
[11] J. F. Custer and C.A. DeSantis. *A Management Plan for Prehistoric Archaeological Resources of Northern Delaware.* Newark, DE: University of Delaware Center for Archaeological Research, 1986.
[12] Custer, 1989. Custer, 1986.

relatively constant, though with some modifications appearing as Holocene environmental conditions begin to emerge.

Reflecting their preference for high quality lithics, the most common known Paleo-Indian sites are quarry-related base camps, reduction workshops, and temporary hunting camps situated near surficial raw material outcrops. Within Northern Delaware such outcrops are represented by the so-called Delaware Chalcedony Complex, located in the extreme northwest portion of New Castle County, in the vicinity of modern-day Newark. A secondary location for Paleo-Indian sites is adjacent to poorly drained swamps, springheads, and sinkholes, within environments similar to those surrounding Churchman's Marsh. While no Paleo-Indian sites are known to exist within the immediate vicinity of the current Project Area site 7NC-D-70, which does contain a small Paleo-Indian component, is located approximately two to three miles to the east.

The **Archaic Period** (6,500 B.C. - 3,000 B.C.) 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 associated with the onset of warm and wet conditions caused the extinction of many of the grazing megafaunal species hunted in earlier times, and saw them replaced by browsing species such as deer. Sea level rise accompanied the melting of glacial ice and resulted in the elevation of the local water table and the creation of a number of large interior swamps, including Churchmans Marsh. Warmer, wetter climatic conditions resulted in the rise of a greater variety of edible plant resources and aquatic environs such as rivers, lakes, and marshes, along with their immediate surroundings, became substantially more productive. In the face of this proliferation of resources Native subsistence strategies changed from the hunting focus of the Paleo-Indian Period to a more generalized foraging pattern in which plants and aquatic foods played a more important role.

Reflecting this more diversified environment Archaic Period tool kits were more generalized than those of the Paleo-Indian Period and witnessed the increased use of, and reliance on, a wider array of pecked/ground plant processing tools such as grinding stones, mortars, and pestles. The presence of other tool forms, such as net sinkers, indicate an increased exploitation of, and reliance on, aquatic resources. Native populations evidently continued to lead a fairly mobile lifestyle with a wide range of resources and settings utilized on a seasonal basis. Social structure continued to be typified by band-level organization, with group membership evidently shifting on a seasonal basis in relation to resource availability. During this time favored site locations became more diversified and included upland settings near both ephemeral and perennial streams and elevated landforms adjacent to swampy floodplains. During this period the first Native American sites appear in the Churchman's Marsh vicinity, including a number of seasonally occupied, macro-band base camps such as the Newport and Clyde Farm sites (7NC-E-1 and 6). Less intensively utilized procurement sites and temporary camps are recorded scattered throughout the surrounding uplands.

The **Woodland I Period** (3,000 B.C. - A.D. 1,000) can be correlated with a dramatic change in local climates and environments that seem to be associated with events occurring throughout the Middle Atlantic region. Following the onset of a pronounced warm and dry period (3,000 B.C. - 1,000 B.C.) oak/hemlock forests were replaced by ones dominated by oak/hickory, extensive grasslands again became common, and some interior streams dried up; the overall effect of which was an alteration of the environment, but not a degradation. Continued sea level rise and a reduction in its rate also made many areas of the Delaware River and Bay Shore the sites of large brackish water marshes that were especially productive. These changes in environment and resource distribution resulted in significant, concomitant shifts in subsistence and socio-cultural adaptations for prehistoric populations. Settlement systems were now centered around the rich

and varied environments represented by the floodplains of major rivers and the margins of estuarine swamps, which become the sites of large base camps. Sites typical of this kind established in the vicinity of Churchman's Marsh include the Clyde Farm (7NC-E-6) and Delaware Park Sites (7NC-E-41). These sites and ones like them appear to have supported larger aggregate populations than earlier base camp sites and were inhabited for longer periods of time, possibly on a year-round basis. The overall tendency witnessed during this period is toward the development of a more sedentary lifestyle and a general increase in overall Native American population densities.

Woodland I tool kits show some minor variations over Archaic Period ones as well as a few major additions. Plant processing tools become even more common and seem to indicate an intensive harvesting of wild plant foods that, by the end of the period, may have approached the efficiency of agriculture. Chipped stone tools changed little over previous types, although broad-blade, knife-like processing tools became more prevalent. The addition of stone, and later ceramic containers is also seen. These items allowed the more efficient cooking of certain types of food and may also have functioned for storage of certain surplus plant foods. Long-term stockpiling of food surpluses is indicated by the presence of large storage pits of various configurations and evidence for more sedentary habitation sites is supported by the appearance of semi-subterranean house structures.

This general trend toward increased sedentism additionally wrought changes in the socio-political organization of Native populations. Less reliance on high-mobility subsistence strategies resulted in a reduction in effective group territory and, in conjunction with increases in overall population densities, led to the development of highly sophisticated regional trade networks. These factors, in turn, resulted in the creation of the first identifiable cultural groups, delineated on the basis of named site complexes (e.g., Clyde Farm and Delaware Park Complexes, within the vicinity of the current Project Area). While further to the south, in the middle Delaware peninsula, the above changes accompanied the appearance of populations exhibiting incipient ranked social structure Native groups in the northern peninsula continued to exhibit an egalitarian social structure.

In many portions of Middle Atlantic Region the **Woodland II Period** (A.D. 1,000 - ca. A.D. 1650) is marked by the appearance of agricultural food production systems. Within northern Delaware, however, the addition of agricultural practices seems not to have appreciably altered earlier lifeways and cultural adaptations. In general, Woodland II populations in the Project Area vicinity exhibited many of the same characteristics as their Woodland I predecessors. Hunted and gathered foods continued to comprise the largest portion of the diet, and tool kits and basic lifestyles remain essentially unchanged, though the extensive trading networks of the previous period did not continue. Settlement patterns during this time also followed closely those of earlier periods, with many of the same sites continuing to be revisited; however, the absence of evidence for dwellings or other signs of settled village life may signify a slight reversal of the cultural evolution trajectory, in favor of a somewhat less sedentary existence. Looking ahead, it can be said that Woodland II peoples in this region exhibited many of the same cultural characteristics and adaptations as the Delaware Indian groups that populated the area during early historical times.

The **Contact Period** (ca. A.D. 1650 - A.D. 1750) represents a poorly understood segment of the archaeological record in northern Delaware, and begins with the arrival of the first substantial numbers of Europeans to the region. In the Mid-Atlantic region, the first settlers were primarily Dutch and Swedish, with large numbers of British peoples arriving after the mid-seventeenth century. Based on ethnographic accounts, three main Native American groups occupied the Middle Atlantic region at time of contact: the Munsee in the Upper Delaware Valley, the North

Unami in the Middle Delaware Valley and central New Jersey, and the South Unami or Unalachtigo in the Lower Delaware Valley and southern New Jersey. These indigenous peoples referred to themselves as the Lenape (the People); due to their association with the Delaware River Europeans called them the Delawares.

This period continues to be poorly understood simply because so few sites have been documented in this portion of the State with deposits, well preserved or otherwise, dating to this time. While sites from this time have been identified in the general vicinity of the Project Area (7NC-E-6, 7NC-E-42) deposits associated with these occupations have not been extensively studied. Based on existing historical accounts it appears as though the Native groups in the northern portion of the State did not maintain intensive interactions with their European counterparts, remaining instead under the virtual domination of the Susquehannock Indians of southern Lancaster County, Pennsylvania. It is likely that Woodland II lifestyles continued through the late-seventeenth and early eighteenth centuries in this area, with gradual erosion of Native traditions and finally the complete acculturation of local populations by the middle of the eighteenth century.

Previously Recorded Prehistoric Sites

Data relating to sites previously recorded in the vicinity of the Project Area can be used to develop more specific expectations regarding the density, types, distribution, stratigraphic disposition, and age-range of prehistoric archaeological deposits that may be located within the footprint of the proposed Airport and Churchmans Road improvements. Background research conducted in the Cultural Resource Survey (CRS) files and cultural resources report library maintained at the Delaware State Historic Preservation Office (DESHPO), in Dover, revealed that an estimated 200 + prehistoric sites have been identified and/or professionally investigated within the general vicinity of the current Project Area (i.e., within a 5-10 mile radius). Within a one-mile radius, CRS files list a total of fifteen previously recorded Native American occupations (Table 1), although none were reported within the current Project Area. Of this total all prior documented sites were found by avocational archaeologists. The only professional archaeological investigations conducted within the vicinity of the present Project Area are represented by the Phase I and II excavations of portions of the adjacent Greater Wilmington/New Castle County Airport by Heite Consulting, Inc, (in preparation). While these investigations are known to have identified a number of previously unrecorded Native American occupations the precise details of these studies are not well known at this time. Information pertaining to the fifteen avocationally recorded sites is summarized below.

Of the above fifteen previously recorded prehistoric sites three fall within the Woodland I culture period, three within the Woodland II period, and the remaining nine are of an indeterminate age due to lack of diagnostic artifacts. The Woodland I sites (7NC-E-35, 7NC-E-36, and 7NC-E-37) are located along the west side of the Christiana River south of Churchmans Road and are characterized by a variety of stone tools, projectile points, and Hell Island fabric impressed pottery. The Woodland II sites (7NC-E-75, 7NC-E-76, and 7NC-E-77) are primarily located within areas of marshland associated with the Christiana River. These sites are characterized by quantities of debitage, projectile points, and Minguannan pottery. The Long Site, 7NC-E-76, also has an historic component consisting of a Late 17th/early 18th century coffin burial. The remaining nine sites (7NC-E-4, 7NC-E-26, 7NC-E-38, 7NC-E-112, 7NC-E-114, 7NC-E-115, 7NC-E-116, 7NC-E-117, and 7NC-E-118) are concentrated in areas associated with the Christiana River and are represented by surface scatters of lithic debitage, fire-cracked rock and non-diagnostic stone tools.

Table 1. Previously recorded prehistoric archaeological sites located within one mile of the proposed Project Area.

SITE NUMBER	SITE NAME	CULTURAL PERIOD	DATES	SITE TYPE/FUNCTION
7NC-E-35	The Woods #1	Woodland I	3000 BC – AD 1000	Unknown
7NC-E-36	The Woods #2	Woodland I	3,00 BC - AD 1000	Unknown
7NC-E-37	The Woods #3	Woodland I	3,00 BC - AD 1000	Unknown
7NC-E-75	Donofrio	Woodland II	1000 AD – AD 1650	Specialized activity of limited duration
7NC-E-76	The Long Site	Woodland II/Contact	1000 AD – AD 1750	Macro-band base camp Late 17th/early 18th century burial
7NC-E-77	Allegretto Site	Woodland II	1000 AD – AD 1650	Unknown
7NC-E-4	---	Unknown Prehistoric	Unknown	Unknown
7NC-E-26	---	Unknown Prehistoric	Unknown	Unknown
7NC-E-38	The Woods #4	Unknown Prehistoric	Unknown	Unknown
7NC-E-112	#34-Churchman's Road Prop.	Unknown Prehistoric/Historic	Unknown	Unknown
7NC-E-114	#36-Churchman's Road Prop.	Unknown Prehistoric	Unknown	Unknown
7NC-E-115	#37-Churchman's Road Prop.	Unknown Prehistoric	Unknown	Unknown
7NC-E-116	#38-Churchman's Road Prop.	Unknown Prehistoric	Unknown	Unknown
7NC-E-117	#39-Churchman's Road Prop.	Unknown Prehistoric	Unknown	Unknown
7NC-E-118	#40-Churchman's Road prop.	Unknown Prehistoric	Unknown	Unknown

Historic Overview

Early Settlement

Henry Hudson is often credited as discovering the Mid Atlantic region in 1609. Recent scholarship, however, shows that Spanish sailors frequently sailed by Delaware Bay throughout the 1500s. Called St. Christopher's Bay, it was a landmark for ships traveling back to Europe. It was also noted in the logs of Italian explorer, Giovanni Verrazano. Henry Hudson, however, was the first to claim it for a European nation.[13]

An Englishman, Hudson was hired by the Dutch East India Company to find a Northwest Passage to Asia. He briefly ventured into what he called the *Zuidt* or South River (now the Delaware) before shoals and hostile Indians sent him on to the more promising, *Noord* or North River (now the Hudson).[14] As the result of Hudson's explorations, and in event one of these rivers was indeed the Northwest Passage, the Dutch laid claim to the land from the Delaware to New York and called it New Netherlands.

A few months later, the river was rediscovered again by the English. In the spring of 1610, Captain Samuel Argall was blown off course sailing from Jamestown to Bermuda for supplies. Finally reoriented off Cape Cod, he followed the coast back to Jamestown, exploring, renaming, and claiming the land for England. It was Argall who gave the Delaware River and Bay its English name, after Lord Del la Ware, the proprietor of Jamestown.[15]

The second Dutch explorer to arrive on the Delaware was Henry Hendrickson in 1615. Using a shallower boat than Hudson's 80 ton *De Halve Maen*, he was able to thoroughly explore the river, mapping the coastline and water hazards up to the mouth of the Schuylkill. There he traded with the Minquas tribe and ransomed three white settlers captured from New Amsterdam. He also made detailed descriptions of Mid Atlantic flora and fauna, which became the guidebook for outfitting future trading posts.

Unlike the English, the Dutch rarely colonized the areas they controlled. With a high employment rate and tolerant culture, they did not have the internal pressure necessary to populate colonies. Instead, they use colonization to develop an extensive sea trade, building seasonal trading posts in profitable locations around the globe. Their first settlements in the Mid Atlantic were temporary trading posts established by Dutch corporations. Exclusive rights were granted for four successive voyages and jurisdictions were established by filing a claim within two weeks of returning from a scouting mission.[16]

The largest trader in New Netherlands was the West India Company (WIC), formed by Samuel Blommaert, Kiliaen van Rensselaer and Samuel Godyn. Godyn already controlled the Dutch trade with Muscovy (Moscow) and whaling operations in the Arctic and Greenland. Initially using the Mid Atlantic as a base to attack Spanish galleons, the WIC turned to the lucrative fur trade only after Holland opened peace negotiations with Spain. They built trading posts at Fort Nassau near

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[13] Dan Terrell, *Eight Flags over Delaware 1609-1715* (Lewes Beach: Duck Press, 1975), i.
[14] Warren Boeschenstein. *Historic American Towns along the Atlantic Coast* (Baltimore: John Hopkins University Press, 1991),143.
[15] Terrell, ii.
[16] Pennock Pusey, *History of Lewes, DE* (Wilmington: Historical Society of Delaware, 1903), 5-8.

present-day Gloucester, NJ in 1623, New Amsterdam (now New York) in 1626, and an experimental whaling colony, Zwaanendael (now Lewes, DE), in 1629.

In 1629, the WIC sent Gillis Hessitt and Jacob Jansz to locate a port for a whaling station on Zuidt Bay. Hessitt and Jansz purchased 8 dutch miles of land along the west bank of what they called Blommaert's Kill (Lewes Creek, today the Lewes and Rehoboth Canal) from the Lenni Lenape. The bay was renamed Godyn Bay and the site called Zwaanendael, or "valley of swans". An odd name for neither a valley nor a habitat for swans, Zwaanendael was the first settlement in Delaware.[17]

In 1631, twenty-eight men, primarily Belgians, were sent to Zwaanendael from Hroom. Arriving after the close of the whaling season, they built a small fort, planted tobacco and wheat, and waited for the whales to return. They were joined by five additional settlers from New Amsterdam. Shortly afterwards, a dispute broke out with the local Indians over a stolen of a coat of arms. The next year when David Pietersen de Vries visited Zwaanendael with reinforcements he found the settlers killed and their buildings burned, the first and only Indian massacre in Delaware.[18] Two boys and one adult are thought to have survived and slowly made their way back to New Amsterdam on foot. The area was not resettled until 1659.[19]

The next colonization attempt in Delaware was made by Sweden, under the leadership of Peter Minuit. In the 1630s Sweden petitioned its ally Holland to allow them to deport their surplus immigrant population to the New World. In 1638 two ships, the *Kalmar Nyckel* (Key of Kalmar) and the *Vogel Grip* (Griffin), landed at present-day Wilmington carrying mostly Finns. There they built Fort Christina, named after their queen, near what is now the foot of Seventh Street. Reinforcements arrived in 1640 and 1643 and New Sweden slowly expanded along the west side of the Delaware River.[20] Johann Printz became governor of the area in 1643, establishing headquarters on Tincium Island off the coast of *Aplandt* (now Delaware County) and a garrison at Fort Christiana.[21] Unlike their Dutch predecessors, the Swedes coexisted relatively peacefully with the Lenni Lenape, and often purchased meat and corn from neighboring tribes.[22]

The Dutch resented what they saw as a Swedish incursion on their territory and the Finn's relationship with the Lenape undermined Holland's autocratic rule. In 1651, the Dutch reasserted their authority, building Fort Casimir on the site of the present town of New Castle. Eventually the Swedes responded. Unaware of the Dutch garrison in New Amsterdam, Governor Johan Rising seized Casimir upon his arrival in 1654. He only held it for a year. In the autumn of 1655, Peter Stuyvesant sent troops down from New Amsterdam, capturing the Swedish forts and extending New Netherlands again to the mouth of the Delaware. Fort Christina was renamed Fort Altena, and Fort Casmir became the principal southern Dutch settlement with John Paul Jacquet as its governor.[23]

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[17] C.A. Weslager. "First Settlement." Lewes Delaware: 350 Years. (Lewes, DE: Lewes Historical Society, 1981), 24-25.
[18] State of Delaware Website (http://www.state.de.us).
[19] Jeanette Eckman, ed. *New Castle on the Delaware* (Newark, DE: New Castle Historical Society, 1936), 19.
[20] State of Delaware Webpage, http://www.state.de.us.
[21] Charles W. Heathcote and Lucille Shenk, associate ed. *A History of Chester County, Pennsylvania* (Harrisburg: National Historical Association, 1932), 10.
[22] State of Delaware Website.
[23] Eckman, 21-23.

Holland now faced a new enemy, England. Fighting a losing battle in Europe and weakened by the plague, Holland was unable to withstand an invasion of New Netherlands. On March 14, 1664, Charles II granted his brother, the Duke of York, a patent for land from the St. Croix River to the east side of Delaware Bay and the Duke sent his army to enforce it. New Amsterdam surrendered to the British on September 8 and New Amstel on September 30, extending British dominion over the entire Eastern Seaboard. The Dutch briefly regained portions of New Netherlands in 1673 but were defeated by Lord Baltimore, governor of Maryland, within a year. English sovereignty endured for the next 100 years.

In 1681, Charles II granted the Province of Pennsylvania to William Penn as repayment for a £16,000 loan. Penn's agents arrived on the Delaware River shortly thereafter. Realizing the province did not have a right of way to the Atlantic, and therefore might become landlocked over time, Penn petitioned the Crown to extend his patent to include the west side of the Delaware. The Duke of York, having little long-term interest in the New World, conveyed what is now the State of Delaware to him in March of 1682.[24]

On October 27 of the same year, William Penn landed at New Castle to take possession of the Lower Counties - New Castle, St. Jones and Deale - from the Duke of York's agents. The colonists swore an oath of allegiance to their new proprietor, and the first General Assembly was held in the colony. The following year the Lower Counties were annexed to Pennsylvania as territories with full privileges. St. Jones and Deale were renamed Kent and Sussex Counties, respectively.

Deale County, however, had already been claimed by Lord Baltimore as part of the Province of Maryland. Under Queen Elizabeth, Baltimore was granted land between Virginia and New Amsterdam not cultivated by or sold to Europeans. Either not acknowledging, or not aware of Holland's brief occupation at Zwaanendael, Baltimore had laid claim to most of Sussex county, asserting his claim by defeating the Dutch at Lewes in 1673. A long boundary dispute ensued between Penn and Baltimore that continued between their heirs for over seventy-five years. The border was officially surveyed by Charles Mason and Jeremiah Dixon in 1763-68, and the Mason-Dixon Line between the provinces of Pennsylvania, the Lower Counties, and Maryland established.[25]

The Lower Counties became the State of Delaware on June 15, 1776, using the Declaration of Independence to secede from both England and Pennsylvania. The capital was moved from New Castle the more central Dover.[26] Remaining a strong supporter of the new nation, nearly 4,000 men from Delaware enlisted during the War for Independence, though only one Revolutionary engagement was fought on Delaware soil - the battle of Cooch's Bridge, near Newark, on September 3, 1777. Delaware went on to become the first of state to ratify the U.S. constitution on December 7, 1787, earning it the moniker "The First State".[27]

An important impetus to the state's economy after the war was the invention of a belt system to automate mill machinery. Designed by Oliver Evans in 1785, it transformed milling by

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[24] Russell F Weigley, ed. *Philadelphia, A 300 Year History* (New York: W.W. Norton & Company, 1982), 3.
[25] Pusey, 14-15.
[26] Hoffecker, 86.
[27] Hoffecker, 98.

decreasing production time and requiring fewer men.[28] Delaware's primary agricultural product into the mid-1800s was wheat.

Nineteenth Century

Delaware's economy was stimulated by the Embargo Acts preceding the War of 1812, which greatly diminished the supply of European manufactured goods to America. By 1810, Delaware had four paper mills, five forges, three cotton and two woolen mills, and several iron rolling and slitting mills. A notable innovator, Eleuthère Irénée du Pont, founded a gunpowder mill, and the du Pont dynasty, at Hengley in 1803. The Eleutherian Mills produced greatly superior and more reliable powder than ever before manufactured in America, revolutionizing American warfare.

The manufacturing economy in Delaware was short-lived, however. Du Pont was one of the few to survive after 1815, when British goods again flooded the domestic market. Delaware's main industry reverted to wheat production, with most of its other business activities ancillary to farming. Into the 1900s, most of its roads, landings, canneries, rail spurs, warehouses, and mills were constructed to support an economy and culture predicated on agriculture.[29]

Farmland was most valuable in New Castle County. Each acre was valued at approximately seventy dollars, with the percentage of improved acreage approximately eighty-two percent. Kent County farms were significantly lower in value, at twenty-eight dollars per acre. The percentage of improved land on each farm was also significantly lower, thirty-three percent. In Sussex County, almost one-half of the land of each farm was unimproved, and each acre valued at approximately thirteen dollars.

The bulk of Delaware's agricultural laborers were originally slaves. The Dutch West India Company, the largest European slave dealer, introduced the first slaves to Delaware in 1639. By 1664, slaves comprised 20% of the population, continuing to rise as English colonists emigrated from Maryland and brought slaves with them. Not until the 1800s did the percentage of slave to free black population began to shift, a trend attributed to the growth of Methodism. In 1790, 95% of the African population in Delaware were enslaved. By 1860 there were 90,000 whites, 20,000 free blacks, and only 1,800 slaves.[30]

Delaware became a border state during the Civil War, with New Castle County pro-Union and Sussex County pro-slavery. Approximately 12,000 men joined the Union Army and only 500 joined the Confederacy. The Union had a field hospital in Wilmington and a POW cap at Fort Delaware on Pea Patch Island. Wilmington was the center of Delaware's war effort, manufacturing steam ships, wagons, shoes, ammunition containers and holsters for the north.[31]

Historically most of Delaware's manufacturers, and farmers, transported their products by water. Many Delaware rivers have access to the Atlantic Ocean, including the Christiana, Mispillion, Broadkill, Saint Jones and Murderkill. Towns along these rivers became shipbuilders and transportation hubs. Milford and Milton each had three shipyards and Seaford one.[32] Frederica retained its shipbuilding industry into the 1890s, and regular steamer service served the town until

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[28] Hoffecker, 111-13.
[29] John A. Monroe. *History of Delaware* (Newark. DE: The University of Delaware Press, 1993), 103-107.
[30] Hoffecker, 135.
[31] Hoffecker, 140-47.
[32] Harold B. Hancock. *The History of Sussex County, DE* (Georgetown, DE: Sussex County Bicentennial Committee, 1976), 90.

1929. Most ports specialized in local produce. Drawbridge, for example, shipped grain, timber and muskrats to Philadelphia, and Nassau was a port for milk and fruit.[33]

With such an abundance of navigable rivers, most of Delaware's roads were poor-quality and provided only local access. Capital, labor, and engineering skills were limited in rural communities, and bad roads along short distances did not greatly impinge on the movement of goods to market.[34] One of the few through routes was the King's Highway connecting New Castle and Lewes, the two most important Delaware cities in the early nineteenth century. Originally a crooked and sandy succession of country roads, it was eventually lengthened and straightened into the continuous State Road from Wilmington into Maryland, with branches to Lewes and Seaford.[35]

Overland travel was slightly improved with the invention of turnpikes. Turnpikes were paved toll roads built, usually by non-local investors, for the transportation of goods along overland routes where these routes were competitive in price or travel time with waterborne transportation. The Newport and Gap, Delaware's first turnpike and first road to be improved with crushed stone, was completed in 1808.[36] Built over an old Indian trail, it connected southern Delaware with the market town Christiana.[37] The New Castle Turnpike was built from New Castle to Clark's (Hare's) Corner in 1813. It was eventually extended out to Frenchtown, MD and Christiana, PA in 1817.[38] By the mid-nineteenth century, many of Delaware's northern ports had turnpikes radiating out into the farmland of Delaware and Pennsylvania, with the Wilmington and Kennett Turnpike (now Route 52) emerging as the best access to the tidewater.[39] Turnpikes, however, continued to remain ancillary to shipping until the invention of the automobile.

Contemporary with the construction of turnpikes, canals were introduced to augment and improve Delaware's water traffic. Relatively flat topography and abundant water sources made Delaware ideal for canals. The highly successful Chesapeake and Delaware Canal was built in 1824-29. It connected the Delaware River with Back Creek on the Chesapeake Bay. A tidal canal 13.6 miles in length and deepened over time to 27 feet deep, it shortens the route from Baltimore to Philadelphia by 316 miles, New York by 179 miles and Europe by 100 miles.[40] Owned and operated by the federal government, toll-free, since 1919, it is one of the few canals still in active service.[41]

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[33] WPA, 375, 407.
[34] Taylor, George Rogers. "The Transportation Revolution: 1815-60." *The Economic History of the United States, Vol. IV* (White Plains, NY: M. E. Sharpe, Inc., 1951), 16.
[35] WPA, 73, 403.
[36] WPA, 445-6.
[37] C.A. Weslager. *Delaware's Buried Past* (New Brunswick, NJ: Rutgers University Press, 1968), 144.
[38] Scharf, 417.
[39] Beers, D. G. *Atlas of the State of Delaware* (Philadelphia: Pomeroy & Beers, 1868).
[40] Hoffecker, 120.
[41] WPA, 335.

Unlike most states, the introduction of railroads in Delaware in the mid-1800s did not replace canals. Instead, it decreased shipping along Delaware's rivers. Shipbuilding and water transport had peaked during the Civil War and Reconstruction, but by 1887 began to cease altogether.[43] As marine railroads replaced river traffic, trade was withdrawn from the tidewater landings, and new villages created inland, including Harrington, Ellendale, Viola, and Houston.[44]

Delaware had many railroad lines, both passenger and freight, beginning in 1831 with the New Castle and Frenchtown (NC&F) line between New Castle, DE and Frenchtown, MD. 161.9 miles long, it followed the New Castle and Frenchtown Turnpike and comprised the rail link in a water-rail-water route from Philadelphia to Baltimore (Figure 5). [45] Local lines were built connecting the NC&F to smaller ports on the Atlantic Ocean and Chesapeake Bay, such as the Junction and Breakwater Railroad from Harrington to the port of Lewes via Milford and Georgetown, completed in 1868.[46] By the late 1880s the Philadelphia, Wilmington & Baltimore RR had linked together a through line from Newark DE to Cape Charles, VA.[47]

Railroads with their refrigerated cars and rapid speeds introduced new crops to Delaware, including blackberries, apples, tomatoes, and strawberries. They particularly helped farmers capitalize on the Peach Boom of 1840-80, when scientists discovered that grafting young trees produced superior and more abundant fruit. It was during this period that Major Philip Reybold, the Peach King of Delaware, became the richest farmer in Delaware history.[48]

Twentieth Century

The development of a paved road network through Delaware faltered from 1903 through 1917.[49] A State Aid Law appropriating funds for road improvement passed in 1903, but was repealed in 1905.[50] In 1909, the legislature nearly passed a bill to pave the road from Wilmington to Georgetown, but did not.[51] Even the efforts of T. Coleman du Pont, who offered to fund construction of this same alignment, were stymied from 1911 to 1915 in court. After reaching the United States Supreme Court to resolve eminent domain powers, construction of this road proceeded, and, in 1917, a twenty-mile section in Sussex County was dedicated.

Coleman du Pont donated $4,000,000 to the Boulevard, one of many state projects the du Pont family would sponsor. In 1930, Henry Francis du Pont established the Winterthur Corporation, a non-profit, educational organization and museum on his estate in Wilmington. Throughout the 1920s, Pierre S. du Pont replaced more than eighty one-room schoolhouses statewide with modern buildings equipped with auditoriums, gymnasiums, cafeterias and libraries.[52]

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[43] George A. Harter. *Dodge's Geography of Delaware* (Rand McNally & Co. 1911), 13.
[44] WPA, 77.
[45] Hank Mummert, ed. *Hobo's Guide to the Delmarva Branch*. http://kc.pennsyrr.com/guide/delmarva.html.
[46] Hancock, 64.
[47] Hoffecker, 160.
[48] WPA, 468.
[49] The bicycling enthusiast's "Good Roads" efforts, often attributed with the initial impetus for road improvement, appears to have made no headway in southern Delaware. H. Clay Reed. *Delaware: A History of the First State* (New York: Lewis Historical Publishing Co., 1947), 537. Seely, 11.
[50] Reed, 538.
[51] WPA, 79.
[52] Hoffecker, 174.

Encouraged by the success of the Coleman du Pont Boulevard, the Delaware State Highway Department was created, and almost immediately assumed responsibility for construction of the remaining length of the road, from Milford north to Wilmington.[53] The du Pont was a sixteen-foot wide concrete road, within a sixty-five foot right-of-way, that overlaid previously existing roads. For the first time, rural Delaware was connected with the major urban markets that had previously been accessible only by rail or water.[54]

The automobile and improved road technology finally eclipsed waterways as an efficient means of transport, revitalizing Delaware agriculture and in time making railroads obsolete. Farmers had always faced the difficulty of getting their goods to a distribution point. Continued neglect of local infrastructure had by the early twentieth century silted up tidewater creeks and ruined already marginal roads. According to the Works Project Administration, "The problem of hauling had so completely baffled many owners and tenants" that production began to drop to subsistence farming.[55] The use of trucks provided the first rapid, direct access from farm to market, and agriculture production rose again. New "truck crops" were created, including broiler chickens, which have become a staple cash crop in Delaware today.[56]

The emergence of the automobile also led to early and mid-twentieth century residential roadside subdivisions. Historically, land bordering the corridors between population nodes, such as state and country highways, consisted of large-acre agricultural parcels or country estates. With the widespread use of automobiles, they became available for the first time for suburban development, and were heavily pursued by developers.

Speculative subdivisions occupied only the frontage along a road, instead of the whole parcel. These developments share common physical characteristics. The dwellings are usually built at the same time, and generally exhibit uniformity in size, height, massing, and architectural style. They are built close to the road and share a similar setback. The parcels are also similar in size or property width, and are part of a roadside strip not associated with a larger property. This conformity of building type, size and siting differentiates speculative developments from agricultural properties subdivided to accommodate successive generations.[57]

A predominate house type has developed along these roads, as identified by Herman and Siders in *Historic Context Master Reference and Summary*. The two-story, hall and parlor and center-passage farmhouse of the nineteenth century has given way to one and one-half story, single pile, three- or five-bay bungalows. Both types, however, are built without cellars or full foundations and are therefore easily, and frequently, moved as commercial and transportation developments encroach on right-of-ways.[58]

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[53] Reed 545-6.
[54] WPA, 403.
[55] WPA, 79.
[56] Hoffecker, 158-172.
[57] Kenneth T. Jackson. *Crabgrass Frontier* (New York: Oxford University Press, 1985), 157-189.
[58] Bernard Herman and Rebecca J. Siders, et al. *Historic Context Master Reference and Summary*. (Newark, DE: University of Delaware Center for Historic Architecture and Engineering, 1989), 93-96.

Local Development

While surrounding areas weathered the ebb and flow of early industrialization the region in and around the Project Area remained relatively sparsely settled and exhibited a predominantly agriculture-based economy until well into the nineteenth century. As reflected in historic maps of the time the region of present-day Duross Heights contained few major roadways and was populated by a small number of expansive farmsteads until the second quarter of the twentieth century (Figures 6-8). Earlier farms in the area tended to be clustered nearer the Christina River, adjacent to what is now Airport and Christiana roads. The Duross Heights vicinity witnessed some gradual growth throughout the last decades of the nineteenth century as more and improved highways were constructed across the region. Churchmans Road (then Hog Swamp Road) was among these later additions and was built in 1873 to connect the towns of Newport and Christiana.

Historic atlases and State Highway Department as-built roadway plans indicate that development of the present Project Area did not take place until the years immediately before and after World War II, when the New Castle County Airport (NCCA) was constructed on lands adjacent to the intersection of Airport and Churchmans Roads. Houses were grouped along the northwest and southwest perimeter of the NCCA along Airport and Old Churchmans Road, respectively (Figures 9-10).

In 1953, the portion of Old Churchmans Road fronting the NCCA was condemned by the airport and the buildings along it either demolished or moved to accommodate the runways. Through traffic was rerouted to the new Churchmans Road, built parallel to Old Churchmans along 102 Christiana's property lines. The land between Old and New Churchmans was subsumed by the airport.

In more recent decades the development of the Duross Heights area has continued with the addition of new planned housing developments, strip malls, and commercial/light industrial complexes.