

III. Research Design

A. Research Objectives

The research goals and objectives for the Phase I Identification Survey were to identify all archaeological resources within the APE and, if any resources were identified, to evaluate whether the resources are eligible for listing in the National Register of Historic Places. All archaeological resources, even those that are not eligible for listing in the National Register of Historic Places, should be identified, as the recordation of all sites contributes to our knowledge of settlement patterns throughout pre-contact and historic periods.

The background research identified the specific locations of previously recorded sites within and in the near vicinity of the APE (see previous section). The potential for locating pre-contact sites within the APE was evaluated using information on site locations provided in *A Management Plan for Delaware's Prehistoric Cultural Resources* (Custer 1986) and from background research undertaken for the project.

Known sites dating to the Paleoindian period in northern Delaware are most heavily concentrated near primary sources of high quality cryptocrystalline lithic material (e.g. the Delaware Chalcedony Complex) located to the west of the project area. The APE is subsumed under "Paleo-Study Unit II," which is hypothesized to contain non-quarry sites related to the Delaware Chalcedony Complex (Custer 1986: Figure 8). Due to its distance from these lithic sources, base camp settlements are not predicted for the APE, although hunting sites are a possible resource type, particularly if the undisturbed wetland areas within the APE were in place during the Glacial/Early Holocene transition.

For the Archaic period, the project APE falls within the "Archaic Study Unit I, Piedmont Uplands" (Custer 1986: Figure 14). Resource procurement sites are predicted in proximity to the swampy floodplains of low order streams during this period, while micro-and-macro band camps appear to be associated with terrace positions near high-order streams or extensive swamps. The former setting more closely approximates the APE for this project due to the presence of low order streams and their associated tributaries and the lack of high order streams; therefore the probability of locating an Archaic period camp during the survey would be considered moderate to high. It is important to note, however, that functional site types for both the Paleoindian and Archaic periods are based on surface collections; there are no intact, excavated examples of "macro-band", "micro-band", or "procurement" sites or any of the hypothesized Paleoindian site types in the Delmarva Peninsula (Custer 1986: 127-128). The proposed settlement patterns are based on those developed elsewhere in the Middle Atlantic region and the likely locations of any given site type are predicted primarily inferred pre-contact resource potentials. This caveat is necessary because our understanding of pre-contact resource distributions, particularly of the Late Glacial and Early Holocene, are imperfect and subject to change.

For both the Woodland I and Woodland II periods, the APE is located within Custer's "Piedmont Uplands" study unit (1986: Figures 26 and 31). Within this physiographic zone, Custer notes that macro-band base camps for both cultural periods are usually located on well-drained terraces in proximity to higher order streams and at stream confluences near sinkholes and/or springs in

limestone lowlands (Custer 1986: Tables 12 and 15). Procurement sites are most likely located on upland slopes adjacent to ephemeral or low order streams, swampy floodplains, and lithic sources. The APE lacks floodplains associated with high order streams, as a result, it exhibits a relatively low probability for containing Woodland I and/or Woodland II macro-band base camps. Conversely, the APE does contain several well-drained uplands near ephemeral drainages; therefore the probability for locating Woodland I and/or Woodland II procurement sites within the APE should be considered high. The preciously identified 7NC-B-54 is located within the project APE on a similar topographic setting. Based on site location predictions contained in Custer's *A Management Plan for Delaware's Prehistoric Cultural Resources* (1986), small resource procurement sites from all pre-contact periods are likely to be present on these types of settings within the APE, with higher potential for more functionally diverse site types during the Woodland I and II periods.

The potential for locating historic archaeological sites within the APE was evaluated using information provided in *A Management Plan for Delaware's Prehistoric Cultural Resources* (De Cunzo and Catts: 1990) and from the background research undertaken for the project.

During the early part of the Exploration and Frontier Settlement Period (1630 to 1730), the majority of settlements in Delaware consisted of Dutch and Swedish trading stations concentrated near the Delaware River. As the population of European settlers increased, small commercial centers, such as Newport and Christiana, grew as shipping centers for moving goods to Philadelphia. Throughout this period, waterways provided the primary mode of transportation. As a result, settlement patterns consisted of scattered family farmsteads along major drainages. At this time, the Blue Ball area was largely unpopulated, although archival investigations indicate that the "Chestnut Hill" tract that lay between Alopocas and Matson Runs was acquired through a deed in 1680, and likely represents one of the earliest properties to be developed within the APE during this period. The potential for locating additional undiscovered historic sites dating to the Exploration and Frontier Settlement Period was considered low due to the unpopulated nature of the area in the late seventeenth and early eighteenth centuries, in addition to the disturbances associated with modern development within the archaeological APE.

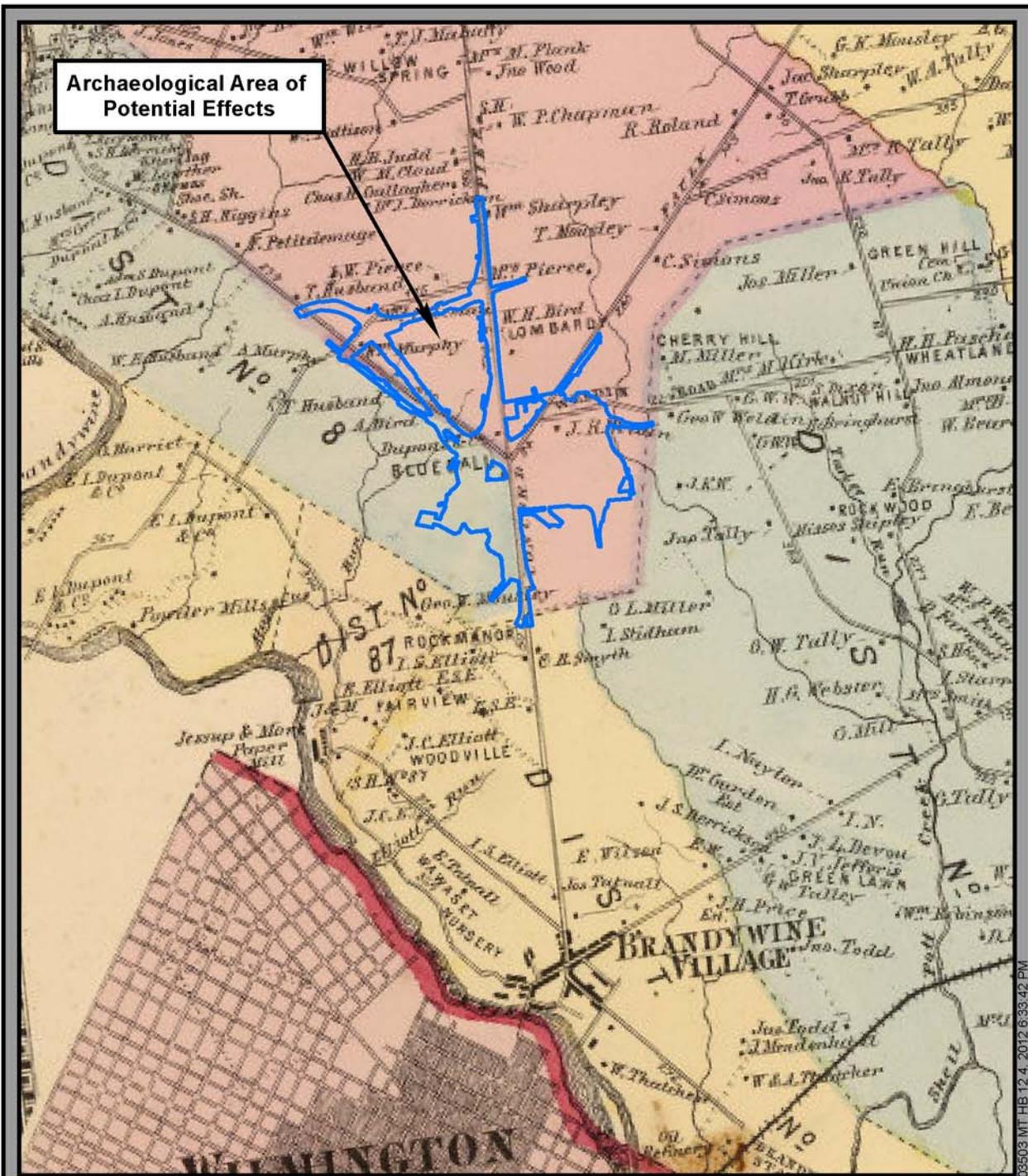
During the Intensified and Durable Occupation Period (1730 to 1770), New Castle County witnessed a population increase as the number of farm-related inland settlements multiplied. As the network of roads improved transportation, hamlets began to emerge at transportation junctures. For example, Land surveys from 1745 demarcate the "Road to Brandywine Ferry" within the Chestnut Hill tract. This early road followed the approximate alignment of present day Concord Pike (Wholey et al. 2000: 15). Although this area's population was increasing and transportation networks were improving, the area containing the APE was still mostly undeveloped or was used as farmland during the third quarter of the eighteenth century; therefore discovering addition archaeological sites dating to the Intensified and Durable Occupation Period was considered low.

Northern New Castle County retained its agricultural character through the Early Industrial Period (1770 to 1830), although the extensive farming undertaken during the previous period drastically cut agricultural productivity due to the eroded and exhausted fields. Due to the hard times, many farmers were forced west to clear new areas or went to work in the emerging

industrial economy in and around Wilmington. Population stagnated in New Castle County, and the area containing the project APE remained largely undeveloped. Notably, the Wilmington and Great Valley Turnpike, which follows the same general alignment of modern S.R.202, was finished during this period in 1811. New businesses emerged in association with this new roadway during the Early Industrial Period. One of these businesses, the Blue Ball Inn, (known archaeologically as the Blue Ball Tavern Site) was located within the project APE (*Figure 5*). Archival research revealed that the Blue Ball Inn originally functioned as a tavern from 1787 to 1849 and subsequently functioned as a tenant farm through the following Industrial and Capitalization Period until 1909, when the Blue Ball Dairy took occupancy of the site (Wholey and Walker 2002). Due to the modern land altering disturbances within the project area, the probability of finding additional sites dating to the Early Industrial Period within the APE was considered low.

The Industrial and Capitalization Period (1830 to 1880) ushered in a new era of growth in northern Delaware. Factors such as improvements in transportation networks, a large immigrant labor pool, and an abundance of raw materials led to the growth of industry and shifts in agricultural practices. In the vicinity of the Brandywine, industrial enclaves evolved into company towns. The farm economy restructured itself around a diversified and locally consumed product base. Progressive farming practices, such as the use of modern machinery and improvements in fertilization and drainage, increased productivity while relying less on human labor. During this agricultural revolution, roughly half of the farms in New Castle County were worked by tenant labor families. This includes the Chestnut Hill tract, which, according to archival research, was owned by heirs of the Logan family of Philadelphia during the early to mid nineteenth century. The farmhouse associated with the Chestnut Hill tract, located to the east of the Concord Pike, is labeled “D. Logan” as depicted on *Figure 5*. During the period of the Logan’s ownership, this tract appeared to be in the tenure of Joshua Hutton and Hielt Hutton, based on the will of Maria D. Logan (Wholey et al. 2000: 16). In addition, several other structures that originated during the Industrial and Capitalization Period are depicted on the 1849 map in the vicinity of the project APE; these include the Blue Ball Inn on the west side of Concord Pike and the Smithy House (archaeologically known as the Smithy site) located on the original Chestnut Hill tract on the east side of Concord Pike just south of its intersection with Foulk Road (*Figure 5*). The archaeological sites associated with these structures were investigated prior to McCormick Taylor’s Phase I survey (see previous Section).

With the advent of the Urbanization and Early Suburbanization (1880 to 1940), agriculture ceased to be the predominant occupation in the state for the first time in its history, although agriculture continued to play an important role in the regional economy. The trend towards non-staple crops, perishables, and truck farming initiated in the second quarter of the nineteenth century continued in much of New Castle County, as new transportation routes connected the region to emerging urban areas throughout the northeast. Wilmington’s continued growth insured continued demand for dairy products from the Piedmont, allowing this form of agriculture to thrive well into the twentieth century. Historic maps dating to this period reveal little additional development in the vicinity of the APE during this time (*Figures 6, 7, and 8*), although previous archaeological investigations located the remains of the Augustine Cutoff Site (*Figure 4*). Additional review of early twentieth century photographs, aerial photographs and historic maps indicated that there were two structures on this property. An early sketch map of



Archaeological Area of Potential Effects

Figure 6
 Area of Potential Effects in 1868
 Blue Ball Area Properties Transportation Improvement Project
 Brandywine Hundred, New Castle County, Delaware

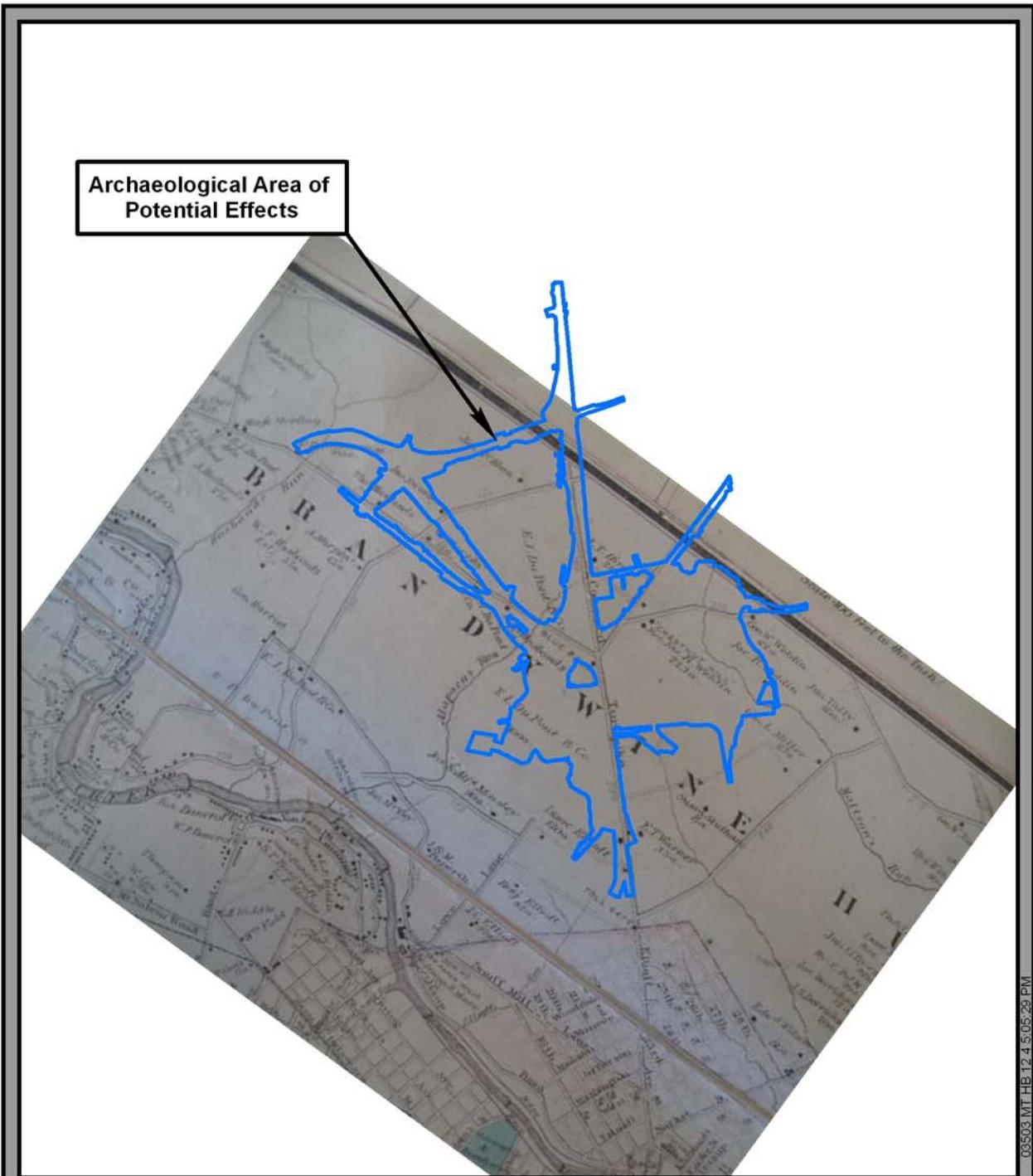
(From Beers, 1868)



Not to scale

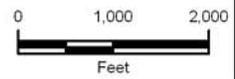
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Archaeological Area of Potential Effects

Figure 7
Archaeological Area of Potential Effects in 1881
Blue Ball Area Properties Transportation Improvement Project
Brandywine Hundred, New Castle County, Delaware
 (From G. M. Hopkins, Map of New Castle County, 1881)



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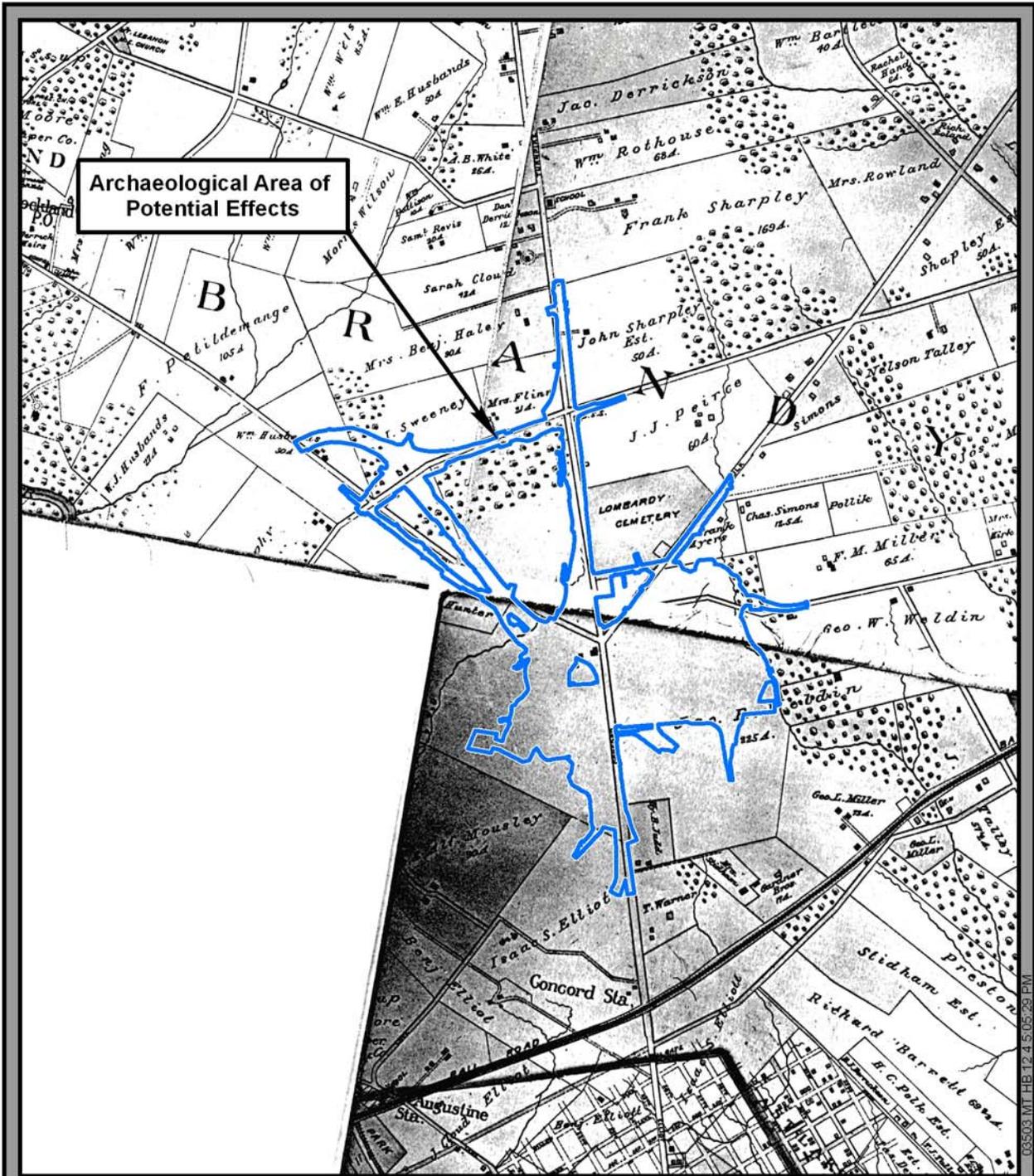
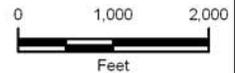


Figure 8
Archaeological Area of Potential Effects in 1892

Blue Ball Area Properties Transportation Improvement Project
Brandywine Hundred, New Castle County, Delaware

(From G. W. Baist, Atlas of the New Castle County, DE, 1892)



early twentieth landmarks along Concord Pike (Mariane 1992) includes two houses in the location of the Augustine Cutoff Site. The maps consist of the recollections of a woman who lived in the area in the twentieth century who referred to the land across from the Porter Reservoir as “Alfred I DuPont Farmland” and the buildings are described as “duPont Employee Homes. These houses do not appear on the 1892 Atlas of New Castle County (*Figure 8*), the 1904 West Chester, Pennsylvania USGS 15 Minute Series Quadrangle (*Figure 9*), nor a circa 1927 aerial photograph from the Regional Planning Federation of the Philadelphia Tri-State District, although a circa 1918-1935 property ownership map of the project area depicts the property’s association with A.I. Dupont (*Figure 10*). Aerial photographs taken by Dallin Aerial Surveys in 1935 also failed to provide evidence of the structures. However, the houses do appear in the distance in a photograph taken of the Porter Reservoir during its final stages of construction (*Photograph 1*). The construction of the Porter Reservoir was completed in 1909. Therefore, the houses were likely constructed between 1904 and 1909, and were demolished before 1927.

B. Archaeological Survey Methodology

1. Phase I Archaeological Identification Survey

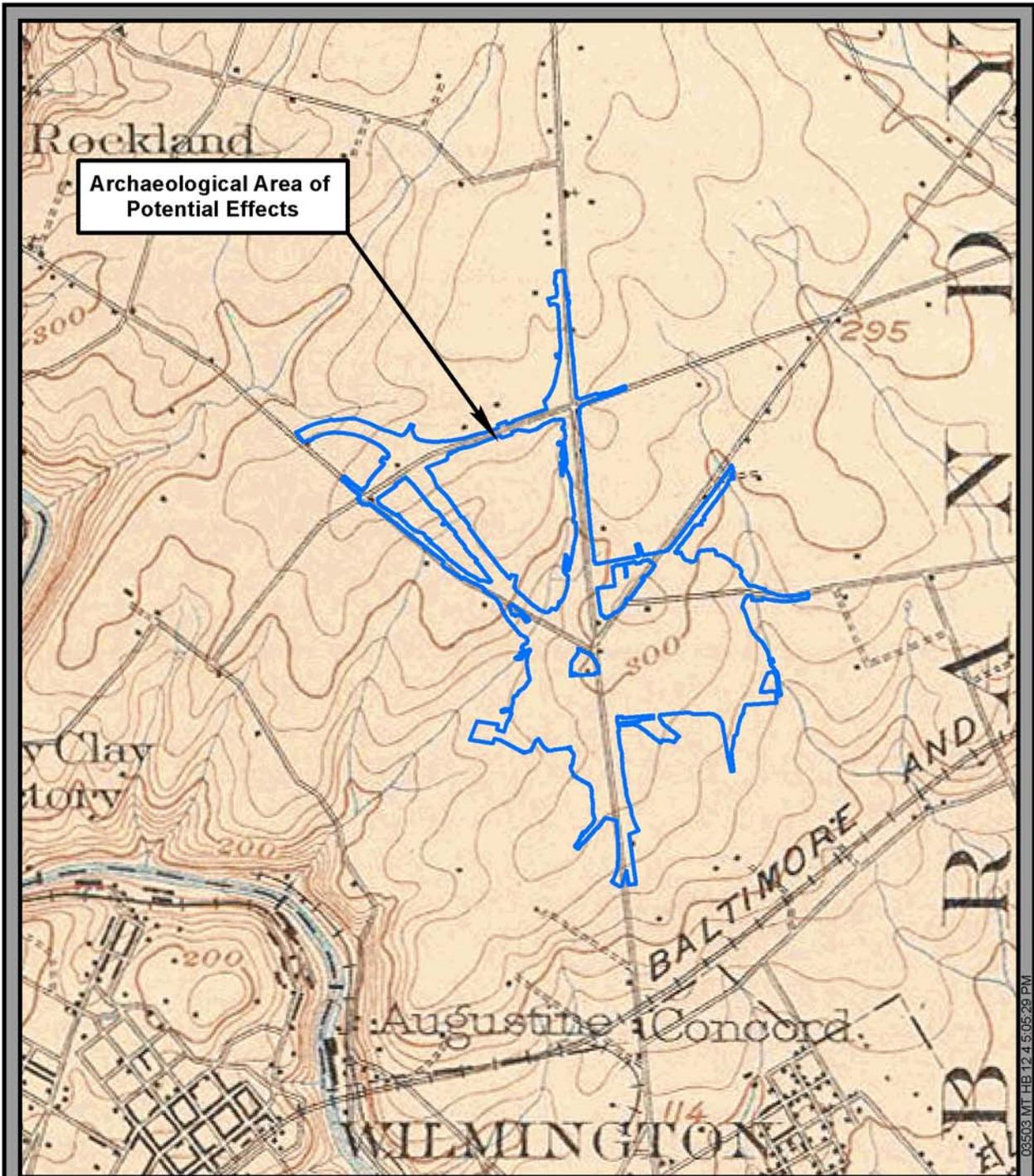
Due to the extensive previous archaeological investigations and the amount of modern disturbance within the APE, representatives from DelDOT, the Delaware SHPO, and McCormick Taylor, Inc. met during a field view held on November 27, 2000 that established the portions of the APE that required Phase I testing. These areas, designated Areas A-M, are graphically depicted on *Figure 11*. Subsequent to the completion of the Phase I testing, consultation between DelDOT archaeologist Kevin Cunningham and the SHPO determined that due to the extensive identification testing that had been conducted in the area by McCormick Taylor as well as other consultants, certain portions of the APE (designated Areas 1-4) did not be sampled (*Figure 11*) (*Appendix C*). Therefore, no archaeological testing was conducted in these areas.

The portions of the APE where archaeological testing was determined to be necessary were tested with shovel test pits (STPs) measuring 0.57 meter in diameter placed at 15 meter intervals. The STPs were dug by natural strata and were excavated 0.10 meter (~0.33 foot) into the sterile subsoil. The excavated soils were screened through ¼ inch mesh hardware cloth. Profile maps of each STP were recorded in the field on standardized forms.

All artifacts recovered during the Phase I Survey were processed, inventoried, catalogued and analyzed as per *Curation Guidelines and Standards for Archaeological Collections*, Delaware State Museums, 1997.

2. Archaeological Evaluation Surveys

Archaeological Evaluation Surveys were conducted for the the Weldin Plantation Site (7NC-B-11), the Augustine Cutoff Site (7NC-B-49), and the Ronald McDonald House Site (7NC-B-54). All three of the sites were tested with a similar general methodology. Initially, the portion of the APE containing the site was investigated through the excavation of an arbitrary grid of STPs in



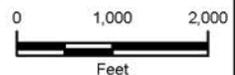
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Figure 9
Archaeological Area of Potential Effects in 1904

Blue Ball Area Properties Transportation Improvement Project
Brandywine Hundred, New Castle County, Delaware

(West Chester, PA and Wilmington, DE 15' USGS Quadrangle, 1904)

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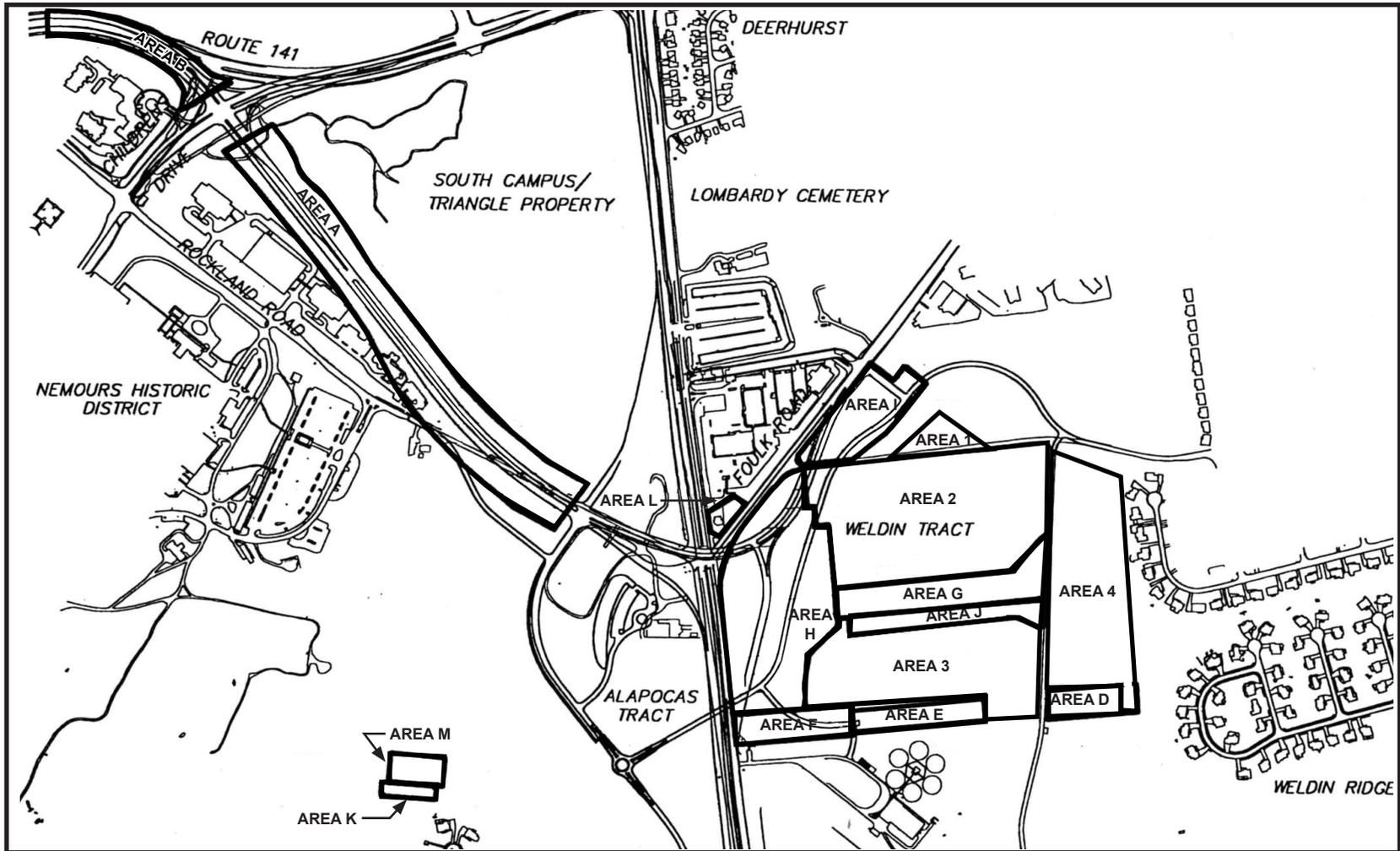


Figure 11
Phase I Archaeological Identification Survey Areas
 Blue Ball Area Properties Transportation Improvement Project
 Brandywine Hundred, New Castle County, Delaware

order to establish site boundaries and to identify areas within the site that contained high artifact densities and/or cultural features. The STPs were 0.57 meter in diameter and were excavated by natural strata. Subsequent to the excavation of the shovel tests, test units of various sizes were excavated in areas of interest to further examine features and provide additional data regarding site integrity and artifact distribution.

All soils removed from the STPs and TUs excavated for the three Archaeological Evaluation Surveys were screened through ¼ inch, mesh hardware cloth. The STPs and TUs were excavated by natural strata (designated Levels). Notes regarding excavations were recorded on standardized forms and plan view and profile maps were drawn in the field. Black and white and color photographs were taken where appropriate.

All recovered artifacts were processed, inventoried, catalogued and analyzed as per *Curation Guidelines and Standards for Archaeological Collections*, Delaware State Museums, 1997. Further detailed information regarding the field methodology for each individual site is provided below.

a. The Weldin Plantation Site (7NC-B-11)

At the initiation of the archaeological testing, the area in the vicinity of the farmstead was covered by thick brush as well as old and young trees. A vegetation survey was conducted (*Appendix D*) which inventoried the plant species that would have been naturally occurring, deliberately planted, or invasive due to human activities. Subsequent to the vegetation survey the site was cleared of brush and trees less than 1 foot in diameter in order to relocate foundations, previous excavation units, and to improve overall site visibility.

After the site was cleared, a systematic grid of STPs was placed at 20 foot (~6 meter) intervals in known domestic areas or those yielding relatively high artifact densities. The STP interval was lengthened to forty feet (~12 meters) as artifact densities fell in the portion of the site surrounding the barnyard. The westernmost transect of STPs was placed just to the east of ground disturbance associated underground utilities and a parking area while the northernmost transect was placed 10 feet (~3 meters) south of Weldin Road. One hundred and seventy (170) STPs were excavated during the Evaluation Survey.

Subsequent to the excavation of the STPs, twenty 3x3 foot test units (TUs) were excavated. Twelve 3x3 foot TUs were placed adjacent to or inside of Structure A (these units excavated as 3x6s in order to facilitate deep excavations). Two TUs were placed within Structure B and one was excavated on the exterior. The remaining TU locations were selected based on the recovery of early nineteenth century artifacts or the identification of possible features during the excavation of the STPs.

b. The Augustine Cutoff Site (7NC-B-49)

Prior to the initiation of the Evaluation Survey, an arbitrary grid was established. The site's baseline was laid out perpendicular to the straight line between the two telephone polls 48735/44412 and 48739/44392 which are adjacent to the southbound lane of Concord Pike. A

datum with the coordinates N500 E800 was placed 25 feet (~7.5 meters) north of the southernmost pole, 4.7 feet (~1.4 meters) west of the Concord Pike curb.

The site was initially tested with shovel test pits (STPs) placed at 20 foot intervals. (Because of a staked utility line that lies approximately 30 feet (~9 meters) from Concord Pike, the first transect of STPs was placed 50 feet (~15 meters) from the edge the road. The STP interval was increased to 40 feet (~12 meters) as artifact densities decreased toward the western edge of the APE. Shovel tests that contained unusual artifacts or fill horizons were further investigated with four radial shovel tests. Each STP was numbered according to their grid coordinates.

One hundred and seventy-five (175) STPs and five 3x3 foot test units (TUs) were excavated during the Evaluation Survey. The location of the TUs were placed in association with features identified during the shovel test excavations and was concurred upon by DelDOT and the SHPO during a field view held November 27, 2000.

c. The Ronald McDonald House Site (7NC-B-54)

Subsequent to establishing an arbitrary grid based on JMA's Phase I excavation units, the APE was tested with STPs excavated at 5 meter intervals in order to establish the boundaries of the site, identify artifact concentrations, and/or potential cultural features. Phase II testing began in the vicinity of the tests in which pre-contact artifacts were recovered by JMA and proceeded in all cardinal directions. As excavations proceeded, alternating STP transects were offset 2.5 meters (~8 feet) to facilitate better coverage. The boundaries of the site were delineated when two consecutive non-artifact bearing STPs surrounded all the tests containing pre-contact artifacts. The northern portion of the site was disturbed while the Evaluation Survey was in progress. This area was surface collected subsequent to the disturbance. The recovered artifacts were bagged by the 5 meter block (identified by the southwest corner) in which they were found.

One hundred and sixty-three STPs were excavated during the Evaluation Survey. The excavation of nine 1x1 meter test units (TUs) followed the shovel testing. Test Units 1-7 were placed in areas yielding relatively high densities of pre-contact artifacts and/or lithic tools. Test Unit #8 was excavated in a relatively low density area to sample the northeastern portion of the site. Due to the limited information provided in TU 1 (bedrock was exposed near ground surface), TU 9 was placed nearby to provide a better sample of that area. The SHPO concurred with the selected TU locations during a field view on September 25, 2000.

C. Artifact Analysis Methodology

Artifacts were processed in the lab at McCormick Taylor, Inc-Harrisburg according to the current *Guidelines and Standards for the Curation of Archaeological Collections* published by the Delaware Division of Historical and Cultural Affairs. Artifact inventory was performed in MS Access 2003. The artifacts and associated field records, forms, photographs, and maps are currently stored at McCormick Taylor's Archaeology Laboratory located at 5 Capital Drive, Harrisburg, Pennsylvania. The artifacts are currently being prepared for transfer to the Delaware State Museums for permanent curation.

1. Pre-Contact Assemblage

The pre-contact artifact assemblage from the Ronald McDonald House Site (7NC-B-54) is comprised entirely of stone tools and debitage. The analysis that follows is both typological and quantitative. Each specimen was assigned to a category that reflects formal properties, stage of reduction, or use based on the presence of one or more key attributes. Several of these attributes were measured and recorded in order to examine variability within the assemblage. The categories used for this analysis were developed by Taylor (1991); however, in some cases the attributes used to assign specimens to categories have been modified.

a. Debitage

For this analysis, all by-products of lithic reduction are initially categorized either as cores, flakes, flake fragments, or blocky shatter. Cores, as defined here, are lithic specimens from which flakes have been detached, but do not display other uses aside from a source of usable flakes. Cores are classified as unidirectional if flake scars originate from a single striking platform, multidirectional if flake scars originate from multiple platforms, or bipolar. Bipolar cores are the source of usable flakes that are detached by the application of force at opposed ends of the core (hammer and anvil). Bipolar cores should display crushing at both points of applied force and/or compression rings originating from opposite ends of the specimen (Andrefsky 1998:120). Maximum length and thickness are measured and recorded for all cores and core fragments. Flakes display an intact or partially intact striking platform and recognizable dorsal and ventral surfaces. Striking platform morphology is widely thought to be an important attribute for identifying the form of the objective piece and is recorded as cortical, flat, bifacial, bifacial and abraded, partially removed/crushed, irregular, or transverse. Flake terminations are recorded as feathered, flat, hinged, overshot, damaged through use, or retouched. Maximum length, width and thickness at midpoint are measured and recorded for all complete flakes. Flake fragments possess identifiable ventral and dorsal surfaces, but lack platforms. Blocky shatter are detached pieces with no clearly identifiable platforms, ventral or dorsal surfaces. All debitage specimens are weighed individually and their raw material is recorded. Flakes are further classified into the following categories.

Decortication Flakes have cortex material covering 50% or more of their dorsal surface.

Early Reduction Flakes display cortical, flat, or transverse platforms. They may possess cortex on less than 50% of their dorsal surface and/or exhibit less than four dorsal flake scars, but platform morphology is the key attribute for inclusion in this category.

Biface Reduction Flakes display faceted platforms that represent the edge of a biface.

Bipolar Flakes display the same features as bipolar cores: crushing at both points of applied force and/or compression rings originating from opposite ends of the specimen (Andrefsky 1998:120). For the purposes of this analysis, bipolar flakes and cores will be distinguished solely by size.

Indeterminate Flakes are flakes which cannot be assigned to any of the categories listed above.

b. Tools

i. Bifaces

Early Stage Bifaces are cobbles, blocks, or large flakes with bifacially trimmed edges, equivalent to Callahan's Stage 2 bifaces (1979).

Middle Stage Bifaces have been initially thinned and shaped. A lenticular cross-section is developing, but edges are sinuous and patches of cortex may still remain on one or both faces. These bifaces are roughly equivalent to Callahan's (1979) Stage 3 bifaces. Biface reduction is a continuum; therefore middle stage bifaces are often difficult to distinguish from early- and late-stage bifaces, depending on the point at which their reduction was halted.

Late-Stage Bifaces are basically finished bifaces. They are well thinned, symmetrical in outline, their edges are centered. Areas of cortex may still be present. They are analogous to Callahan's Stage 4 bifaces (1979).

Projectile Points are bifaces that display hafting elements. Although "hafted bifaces" is a less functionally loaded term, "projectile points" is retained here for comparability with the work of most North American archaeologists, with the understanding that they could have been used as cutting tools as well as projectile tips.

Indeterminate Biface Fragments are too small or damaged to assign to a specific type.

ii. Flake Tools

Utilized Flakes are expedient tools that exhibit traces of use-related damage on one or more edges.

Retouched Flakes are tools that have had one or more edges retouched, either to sharpen the working edge, to create a dulled edge for grasping, or to form a specific angle or shape. These flakes are detached from all types of cores.

iii. Other Tools

Pebble Tools are those which have some portion of the pebble surface flaked off to fashion a cutting edge.

c. Lithic Raw Materials

The archaeological investigations yielded a variety of lithic raw material types. They are described in order of their decreasing representation in the assemblage.

Quartz: This material ranges in color from an opaque white to transparent. Within the site's assemblage, there is evidence for the reduction of quartz pebbles, which are present in the site's soil and for the utilization of quartz from bedded sources, possibly from the Wissahickon

Formation to the immediate west of the site (PA Bureau of Topographic and Geologic Survey 1981: Map 61).

Jasper: Within the assemblage, this material is yellow-brown to red in color and generally fine-grained. The nearest primary and secondary jasper sources available to the site's inhabitants would have been ca. 30 km to the west, in the environs around the Iron Hill, Heath Farm, and Cooch quarries (Custer et al 1986), although trade for or direct procurement of Hardyston formation jaspers from eastern Pennsylvania cannot be ruled out. There is good evidence that the occupants of this site used both primary and secondary sources of this raw material.

Chert: Cherts in the assemblage are fine-grained and black in color. Black cherts are known to co-occur with jasper at the locations mentioned above as well as in secondary contexts of the Columbia sediments (Custer et al 1986).

Chalcedony: Chalcedony occurs in the assemblage as a fine-grained white to light grey, translucent material. Although the chalcedony artifacts are small there is no evidence for the orange mottling common in Broad Run chalcedony described by Custer et al (1986), therefore the source of this material is unknown.

Quartzite: Metamorphosed quartzite is represented by only six artifacts which range in color from a light brown to dark blue-grey and are medium- to coarse textured. Quartzite is present in Delaware's coastal plain in cobble and pebble form (Custer 1989:59). Primary sources of quartzite are located in Pennsylvania's piedmont within 40 km of the site (PA Bureau of Topographic and Geologic Survey 1981: Map 61).

Argillite: Only four artifacts of this material are present in the site's assemblage. Although extensive outcrops of argillite are present in the Lockatong Formation of Pennsylvania and New Jersey, their occurrence in Delaware is restricted to areas adjacent to smaller-scale volcanic dikes and sills in the Piedmont Uplands (Custer 1989:57).

2. Historic Artifact Assemblage

Artifact processing was carried out in accordance with the Delaware State Museums *Guidelines and Standards for the Curation of Archaeological Collections* (1997), which were current when excavations were completed and artifact processing began. All metal artifacts and organic textiles were dry-brushed and all remaining artifacts were cleaned with tap water and soft toothbrushes. Artifacts were placed in 4 ml thick polyethylene bags, with sorts made by raw material type and artifact type. The assemblage was then sorted by provenience and stored in acid-free storage boxes. Inventory of the assemblage included identification of basic traits, like raw material and artifact type, as well as identification of traits useful for dating the artifact, determining artifact function or providing more detailed description for assemblage review by future researchers.

Artifact inventory was performed utilizing a system similar to that advocated by the Society for Historical Archaeology (www.sha.org/research_resources/artifact_cataloging_system/SHARD_how_to_manual), and was aided by various printed and on-line references. Data entry and

analysis was performed in MS Access v. 2003. Traits recorded for each artifact were artifact class (e.g. Domestic, Architectural), raw material, artifact type (e.g. plate, nail), segment of artifact (e.g. rim, shank), manufacturing method, manufacturer including company name and location, beginning production date, end production date, additional traits (color, decoration, form/style), maker's marks, and any additional information unique to that artifact.

Artifact classes were assigned based upon the function of the artifact type. Domestic class was assigned to artifacts generally utilized within the household, but also was assigned to personal items, such as toys, smoking pipes and bottle glass, which could have been utilized inside or outside of the household. Dietary remains were also recorded as domestic class, and were determined to be dietary based upon the presence of butchery marks or burning, or identification as a domesticated species, probable domesticated species (e.g. large mammal that was likely cow), or species that would have been deposited as a result of dietary activities (e.g. fish remains, oyster shell). Artifact type associated with building construction were designated as architectural class, and included basic structural artifacts such as brick and mortar, as well as nails and electrical insulators, which were commonly associated with structures. The heating by-product class included material, such as coal and slag, used for or produced during fuel/fire activities. Farming-related artifacts included items such as livestock equipment, tools used specifically for agriculture, and fencing. The arms/ammunition class was assigned to armament and ammunition artifacts, which consisted solely of ammunition and gunflints in this assemblage. Ecological class artifacts were faunal remains that would not have been dietary-related, and botanical remains such as acorn and walnut shells that may or may not have been dietary. Gardening-related included artifacts utilized for gardening/landscaping activities, such as flowerpots and seed bags. Indeterminate class was used for any artifact type for which the specific function or artifact class could not be determined, and included bone that did not exhibit any cultural modification but was neither identifiable as a domesticated species or as a species that would not have been consumed.