

**ARCHEOLOGICAL INVESTIGATIONS
FOR THE NEW JERSEY ARMY NATIONAL GUARD
PHASE I ARCHEOLOGICAL SURVEYS:
SEA GIRT AND MORRISTOWN ARMORIES
PHASE IA SENSITIVITY ASSESSMENTS: FORT DIX, PICATINNY,
LAWRENCEVILLE, VINELAND, AND WEST ORANGE
INSTALLATIONS**

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Office of Environmental Compliance
Department of Military and Veterans Affairs
101 Eggert Crossing Road
P.O. Box 340
Trenton, New Jersey 08625-0340

by

Peter E. Siegel, Ph.D., RPA
Douglas C. McVarish
Mark A. Tobias

John Milner Associates, Inc.
535 North Church Street
West Chester, Pennsylvania 19380

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ABSTRACT

John Milner Associates, Inc. (JMA) performed two Phase I archeological surveys and five Phase IA archeological sensitivity assessments in seven New Jersey Army National Guard (NJANG) installations: Picatinny, Morristown, West Orange, Lawrenceville, Fort Dix, Sea Girt, and Vineland. These investigations were performed for the U.S. Army Corps of Engineers (COE), St. Louis District on behalf of the New Jersey Army National Guard. The purpose of the studies is to assist in the preparation of an updated Integrated Cultural Resources Management Plan (ICRMP) for the NJANG. The seven installations are located along much of the length of New Jersey, from Morris County in the north to Cumberland County in the south. The project was conducted in compliance with federal statutes and regulations, including Section 106 of the National Historic Preservation Act as amended through 2000, Executive Order 11593, and the Advisory Council on Historic Preservation Guidelines for the Protection of Cultural and Historic Properties (36 CFR Part 800). Fieldwork, analysis, and reporting were performed according to the guidelines of the *Secretary of the Interior's Standards and Guidelines for Archeological Documentation* (48 CFR 44734-37), the *Treatment of Archeological Properties* (Advisory Council on Historic Preservation 1980), the *New Jersey Historic Preservation Office Guidelines for Phase I Archeological Investigations* (NJ HPO 2002), and the *NJ HPO Guidelines for Preparing Cultural Resources Management Archeological Reports* (NJ HPO 2000).

The Phase I surveys, conducted within the Morristown and Sea Girt armories, were designed to identify the presence or absence of archeological sites that are potentially eligible for listing in the National Register of Historic Places (NRHP). Goals of the Phase IA sensitivity assessments were to evaluate the potential for archeological resources within the five remaining installations.

The Picatinny installation (Army Aviation Support Facility #2) covers about 29 acres in Rockaway Township, Morris County. The facility is positioned atop a hill overlooking Green Pond Brook. Approximately 18 acres of the facility have been severely disturbed from previous construction activities. As such, there is no potential for archeological resources to be present in these severely disturbed locations. Undisturbed portions of the terrain account for 10 acres. These 10 acres are considered to be highly sensitive for prehistoric archeological resources and, in the opinion of JMA, should be subjected to a Phase I archeological survey in order to identify the presence or absence of archeological resources.

The West Orange Armory is situated on approximately 65 acres in West Orange Township, Essex County. About 32 acres of the property are covered by undeveloped, wooded, steeply sloped terrain, and are considered to possess low potential for archeological resources. Approximately 13 acres of the armory consist of flat undeveloped terrain, and are considered to be highly sensitive for prehistoric archeological resources. A moderately sloped portion of a grassy field, about 1 acre in area, has medium sensitivity for archeological resources. The remaining 18 acres of the armory have been severely disturbed from construction and there is no potential for extant archeological resources in these areas. In the opinion of JMA, the armory should be divided into three sampling zones based on the sensitivity ranks and subjected to a Phase I archeological survey in order to identify the presence or absence of archeological resources.

The Lawrenceville Armory is located on 78 acres in Lawrence Township, Mercer County. Approximately 50 acres of the armory are covered by undeveloped wooded tracts or grassy fields and are highly sensitive for prehistoric archeological resources. The remaining 27 acres have been heavily developed and there is no potential for archeological resources in these areas. In the

opinion of JMA, the undeveloped sections of the armory should be subjected to a Phase I archeological survey in order to identify the presence or absence of archeological resources.

The Fort Dix Armory covers 44 acres in New Hanover Township, Burlington County. Twenty-eight acres of the armory property have been heavily developed, precluding any potential for extant archeological resources. An 8-acre wooded tract of undisturbed terrain is highly sensitive for prehistoric archeological resources. An 8-acre grassy area was lightly developed in the past and is considered to possess moderate potential for archeological resources. In the opinion of JMA, the undeveloped sections of the armory should be divided into two sampling intensities based on the sensitivity ranks and subjected to a Phase I archeological survey to identify the presence or absence of archeological resources.

The Vineland Armory covers about 46 acres in Vineland Township, Cumberland County. Approximately three acres of the armory are heavily developed and represent no potential for archeological resources. The surface vegetation from another three acres has been removed, although the degree of landscape disturbance appears to be minimal in this area; it was assigned a moderately sensitive rank for archeological site potential. The remaining 39 acres are considered to be highly sensitive for prehistoric archeological resources. In addition, a small one to two-acre undeveloped area in the northeastern portion of the property possesses high potential for a historic archeological resource because on the 1876 map a structure is shown to be present in this location. In the opinion of JMA, the undeveloped sections of the property should be divided into two sampling intensities based on the sensitivity ranks and subjected to a Phase I archeological survey to identify the presence or absence of archeological resources.

The Morristown Armory covers 41 acres in Morris Township, Morris County. Wetlands are located in three portions of the armory property, totaling about 4 acres. Approximately 20 acres of the property have been severely disturbed from development activities. Surficial ruins of a small structure were documented southeast of the armory's fenced enclosure. Modern trash and fill deposits were noted within the structure. Approximately 18 acres consist of undeveloped wooded terrain. This latter area was shovel tested at a 15-m interval. In total, 287 shovel tests were excavated. No archeological sites were identified. In the opinion of JMA, no further archeological investigations are warranted for the Morristown Armory.

The Sea Girt Armory covers 171 acres in Manasquan Township, Monmouth County. In developing the scope of work, it was estimated that 48 shovel tests would adequately cover the undisturbed portions of the armory, at a 15-m interval. Further, it was thought that these shovel tests would be sufficient to re-locate and investigate Site 28MO283, a previously recorded archeological site believed to be on the armory property. Shovel testing confirmed that most of the large grassy fields, covering about 82 acres of the armory property, consist of intact soils. The beach and dunes encompass approximately 15 acres of the eastern section of the armory and were subjected to a pedestrian survey. A small wetland, about 2 acres in area, is located in the southeastern portion of the property. Severely disturbed areas within the armory account for approximately 68 acres. Surveying the undisturbed portions of the armory at a 15-m interval would require more than 1,300 shovel tests. The shovel-test interval was widened to 100 to obtain broad coverage of the large fields. Fifty-one shovel tests were excavated. No prehistoric artifacts were recovered and no archeological sites were identified. In the opinion of JMA, additional Phase I archeological field investigations should be conducted in the undisturbed portions of the armory in order to refine our understanding of the presence or absence of archeological resources.

Copies of this report are on file in the repositories of the U.S. Army Corps of Engineers, St. Louis District; Office of Environmental Compliance, Department of Military and Veterans Affairs in Trenton, New Jersey; and the New Jersey Historic Preservation Office.

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1.0 INTRODUCTION

1.1 PURPOSE AND GOALS OF THE INVESTIGATION

John Milner Associates, Inc. (JMA) performed two Phase I archeological surveys and five Phase IA archeological sensitivity assessments in seven New Jersey Army National Guard (NJANG) installations. The purpose of these studies is to assist in the preparation of an updated Integrated Cultural Resources Management Plan (ICRMP) for the NJANG. The seven installations are located along much of the length of New Jersey, from Morris County in the north to Cumberland County in the south (Figure 1). The project was conducted in compliance with federal statutes and regulations, including Section 106 of the National Historic Preservation Act as amended through 2000, Executive Order 11593, and the Advisory Council on Historic Preservation Guidelines for the Protection of Cultural and Historic Properties (36 CFR Part 800). Fieldwork, analysis, and reporting were performed according to the guidelines of the *Secretary of the Interior's Standards and Guidelines for Archeological Documentation* (48 CFR 44734-37), the *Treatment of Archeological Properties* (Advisory Council on Historic Preservation 1980), the *New Jersey Historic Preservation Office Guidelines for Phase I Archaeological Investigations* (NJ HPO 2002), and the *NJ HPO Guidelines for Preparing Cultural Resources Management Archaeological Reports* (NJ HPO 2000). Artifacts were cataloged according to the standards of the New Jersey State Museum, on behalf of the National Guard Militia Museum of New Jersey located in the Sea Girt Armory where they will be permanently curated.

The current archeological investigations were performed for the U.S. Army Corps of Engineers (COE), St. Louis District on behalf of the New Jersey Army National Guard. The Phase I surveys, conducted within two of the armories, were designed to identify the presence or absence of archeological sites that are potentially eligible for listing in the National Register of Historic Places (NRHP). Goals of the Phase IA sensitivity assessments were to evaluate the potential for archeological resources within five of the NJANG installations.

1.2 DESCRIPTIONS OF THE INSTALLATION SETTINGS

The seven NJANG installations are dispersed across the state in a variety of settings and as a group are present in three out of the four major physiographic provinces that occur in New Jersey (Figure 1). Settings for the each of the installations will be reviewed by physiographic province in the discussion of the environmental context.

1.3 PERSONNEL

Dr. Peter E. Siegel was the project Principal Investigator and primary author of the report. He also conducted the archeological background research. Mr. Douglas C. McVarish conducted the research for the historic overviews and he contributed to the report. Mr. Mark A. Tobias served as the project Field Director and he contributed to the report. Ms. Nikki Tobias, Mr. Keith Jacobs, and Ms. Jennifer Palmer were the project Field Assistants. Ms. Tobias and Mr. Alexander Bartlett processed the artifacts. Ms. Juliette Gerhardt directed laboratory processing. Ms. Sarah Jane Ruch, Ms. Mary Paradise, and Mr. Robert Schultz produced the graphics. Ms. Margy S. Schoettle assembled the report.

2.0 ENVIRONMENTAL AND CULTURAL CONTEXT

2.1 ENVIRONMENTAL SETTING

Topography in New Jersey is diverse, ranging from rugged mountains in the north to the flat coastal plain in the south. This topographic variability is associated with a broad range of soil and vegetation types (Robichaud and Buell 1973). The environmental settings for the installations will be reviewed by physiographic province.

2.1.1 HIGHLANDS PHYSIOGRAPHIC PROVINCE

The Highlands province in New Jersey is part of the larger New England Uplands province. In New Jersey, the Highlands comprise about 12 percent of the state (Robichaud and Buell 1973:41). Like the Ridge and Valley province, the Highlands consist of a series of southwest to northeast trending ridges. However, the ridges of the Highlands are more massive and broad at the top than in the Ridge and Valley province. The underlying geology of the Highlands consists primarily of gneiss and granite dating to the Precambrian era (more than 570 million years ago). Soils in the area consist of deep, gently sloping to very steep well drained and moderately well drained soils.

The Picatinny and Morristown installations are located in the Highlands physiographic province (Figures 2 and 3). Picatinny Army Aviation Support Facility #2 is situated on a hill at about 900 ft. elevation within a valley between two ridges. A number of small upland streams and lakes are in the vicinity of the installation. Lake Denmark is located immediately to the north and Picatinny Lake to the southwest of the installation (Figure 2). Climate in the area is characterized as cool and moist, with 48 in. of average annual precipitation and about 150 frost-free days per year (Eby 1976:108; Robichaud and Buell 1973:Figures 3-4 and 3-5). Soils within the facility consist of Rockaway very stony sandy loam, 3 to 15 percent slopes (Eby 1976:50, Sheet No. 9) (Figure 4). The most recent glacial advance, the Wisconsinan, covered the area of the Picatinny Army Aviation Support Facility #2 as did the preceding Illinoian and Kansan ice sheets.

The Morristown Armory is located in the southern portion of the Highlands, near its border with the Piedmont province (Figure 1). The armory is situated on an upland flat, at an elevation of about 640 ft., surrounded by hills and mountains (Figures 5 and 6). Climate in the area is similar to that of Picatinny, although with approximately 10 more frost-free days. The area of the Morristown Armory was covered by the Illinoian and Kansan ice sheets and is located about 10 km south of the terminal moraine of the Wisconsin glaciation. Glacial Lake Passaic, formed by the damming of the Passaic River as the Wisconsinan ice sheet receded near the end of the Pleistocene Epoch, was located a short distance to the east of the Morristown area. Glacial Lake Hackensack was located further east of Glacial Lake Passaic. These large glacial lakes subsequently drained as clastic materials blocking their stream channels eroded, although remnants of their positions are still recognizable by such marsh or swamp land as the Great Swamp in Morris County (Robichaud and Buell 1973:37-38).

Soils within the developed portion of the armory are called Urban land-Edneyville complex (Eby 1976:53-54, Sheet No. 34) (Figure 7). These are well-drained gravelly and loamy soils with 3 to 25 percent slopes. Elsewhere within the armory property soils include Edneyville gravelly loam, 3 to 8 percent slopes; Califon loam, friable subsoil variant, 3 to 8 percent slopes; and Parker

gravelly sandy loam, 3 to 15 percent slopes. In general, the Parker-Edneyville soils association is characterized as deep, excessively drained and well drained, steep to very steep, very gravelly sandy loams, gravelly loams, and extremely stony sandy loams overlying granitic gneiss (Eby 1976:General Soil Map). The area surrounding the armory is wooded and lightly developed with residences on relatively large lots of land.

Today, vegetation in and around the Picatinny and Morristown installations, areas generally called mesic upland habitats, consists of some combination of Mixed Oak forest, Hemlock-Mixed Hardwoods forest, and Sugar Maple-Mixed Hardwoods forest (Robichaud and Buell 1973:164, 168). Prior to recent and historic forest clearing and successional re-growth these areas were described as uniformly forested with American chestnuts.

2.1.2 PIEDMONT PHYSIOGRAPHIC PROVINCE

The Piedmont province, also called the Triassic Lowlands, borders the Highlands to the south (Figure 1). The province is characterized by a predominance of gently rolling slopes punctuated with steep-sided stream valleys. The underlying bedrock is composed mainly of red shale, sandstone, and argillite beds that are less resistant to erosion than the gneissic rock found in the Highlands. Consequently, the Piedmont region is comparatively lower-lying (Robichaud and Buell 1973:41, 44).

The West Orange and Lawrenceville armories are located in the Piedmont province (Figure 1). West Orange is situated along the east side of former Glacial Lake Passaic and west of Glacial Lake Hackensack, on landforms ranging from 400 ft. to over 500 ft. (Figures 8 and 9). This area was covered by the Wisconsin, Illinoian, and Kansan glacial advances. Underlying bedrock consists of bands of Jurassic basalt, siltstone, shale, sandstone, and conglomerate. A soil survey is not available for West Orange (Essex County). Although not as useful as a county soil survey, a general soil map was obtained from the Hudson-Essex-Passaic Soil Conservation District. The West Orange Armory is located in an area that includes Urban land, Boonton, and Wethersfield soils (Figure 10). Outside of the developed portions of the armory (Urban land), the soils are described as “gently sloping to moderately steep, well-drained and moderately well-drained, very deep and deep gravelly loams formed in acid, reddish sandstone, shale, basalt and conglomerate glacial till over shale and basalt bedrock” (Soil Conservation Service 1993). Climate in the area is similar to that described for the installations in the Highlands province, with somewhat less average annual precipitation and approximately 180 frost-free days per year (Robichaud and Buell 1973:Figures 3-4 and 3-5). Vegetation in the Piedmont is included with the Mesic Uplands (Robichaud and Buell 1973:Table 10-1). The West Orange Armory is situated along the border of a heavily urbanized area and a wooded undeveloped zone.

The Lawrenceville Armory is located near the southern boundary of the Piedmont and well south of the terminal moraines of all the ice sheets that entered New Jersey. The armory is situated on a large upland flat adjacent to Little Shabakunk Creek, at about the 100-ft. elevation (Figures 11 and 12). Underlying bedrock in the area consists of Devonian conglomerate, sandstone, shale, and limestone (Figure 1). The predominant soil of the armory is Matapeake loam, 2 to 5 percent slopes (Jablonski 1972:33, Sheet No. 18) (Figure 13). The Matapeake series consists of deep, well-drained soils that formed in a silty mantle underlain by sand and gravel. The climate is humid and temperate, with average annual precipitation of about 44 in. and 180 frost-free days per year (Jablonski 1972:103; Robichaud and Buell 1973:Figures 3-4 and 3-5). The armory is located in a heavily developed suburban portion of Lawrence Township.

2.1.3 COASTAL PLAIN PHYSIOGRAPHIC PROVINCE

Three of the installations are located in the large Coastal Plain physiographic province. The Coastal Plain comprises about 60 percent of the State of New Jersey and is part of the physiographic province that extends from Cape Cod and Long Island in the north along the eastern seaboard of the United States to Mexico (Robichaud and Buell 1973:44). This province has sometimes been divided into two smaller provinces: Inner Coastal Plain and Outer Coastal Plain (see especially Robichaud and Buell 1973:Figure 2-1a). This distinction is based on soils and underlying geology (Figure 1).

Inner Coastal Plain. The Inner Coastal Plain is a band approximately 10-20 km wide, extending from Salem Cove in the southwest to Atlantic Highlands in the northeast. This province is underlain by Cretaceous sand, clay, and glauconitic marl. Fort Dix Armory is located along the border of the Inner and Outer Coastal Plain, within the northern portion of the Pinelands, at about 160 ft. elevation (Figures 14 and 15). The climate of this area is characterized as continental, with approximately 46 in. of average annual precipitation and 180 frost-free days per year (Markley 1971:116-117; Robichaud and Buell 1973: Figures 3-4 and 3-5). Most of Fort Dix Armory is classified as Urban land, sandy, followed by a small area defined as Freehold loamy sand, 5 to 10 percent slopes (Markley 1971:23, 48, Sheet No. 25) (Figure 16). The land within and surrounding the armory is heavily developed for residential, commercial, industrial, and military uses.

Outer Coastal Plain. The Outer Coastal Plain is the largest physiographic province in New Jersey. The barrier islands and shore locations consist of Holocene beach and estuarine deposits. The interior locations of the Outer Coastal Plain are underlain by sand, glauconitic sand, marl, and clay dating to the Tertiary. Two armories are located in the Outer Coastal Plain: Sea Girt and Vineland.

Sea Girt is situated in the coastal community of Manasquan, at elevations ranging from sea level to 25 feet (Figures 17 and 18). Average annual precipitation is approximately 46 in. and the area receives about 200 frost-free days per year (Humanetrics 1993; Jablonski and Baumley 1989:2; Robichaud and Buell 1973:Figures 3-4 and 3-5). Soils within the western two-thirds of the armory are classified as Downer sandy loam-Urban land complex, 0 to 10 percent slopes. Most of the remainder of the armory land consists of Udorthents-Urban land complex, 0 to 3 percent slopes. The portion of the armory along the shore is classified as Hooksan sand, 0 to 5 percent slopes. This area consists of dunes and coastal beach (Jablonski and Baumley 1989: 21, 35, 36, 55, 56, Sheet Nos. 24 and 30) (Figure 19). The area surrounding the armory is developed as urban residential and commercial.

Vineland is located in the southwestern part of New Jersey at an elevation of approximately 80-90 ft. above mean sea level (AMSL) (Figures 20 and 21), within 25 km of the Delaware Bay. Climate in the area is characterized as humid temperate. Average annual precipitation is between 42 and 44 in. and the area experiences approximately 180 frost-free days per year (Powley 1978:66; Robichaud and Buell 1973:Figures 3-4 and 3-5). Soils within the armory are divided between Downer sandy loam, 2 to 5 percent slopes and Berryland sand (Powley 1978:12, 14, 15, Sheet No. 13) (Figure 22). The area surrounding the armory is lightly developed with suburban and commercial tracts.

2.2 CULTURAL OVERVIEW

2.2.1 PREHISTORIC CONTEXT

New Jersey was inhabited by Native American populations for approximately 12,000 years prior to European contact. The prehistoric era has been divided into Paleo-Indian, Early through Late Archaic, Terminal Archaic, and Early through Late Woodland periods, differentiated on the basis of artifact technology and style, subsistence and settlement patterns, and social organization.

The Paleo-Indian/Early Archaic period (ca. 12,000-8,500 BP) is characterized by highly mobile hunters of Late Pleistocene megafauna such as mastodon, mammoth, horse, camel, and bison. These peoples also made use of riverine floral and faunal resources (Custer 1985:33; Kauffman and Dent 1982). Habitation sites are extremely rare, though hunting sites and perhaps small base camps or maintenance stations are known. Fluted points (earliest recognized projectile point associated with the Paleo-Indian period) have been found in numerous settings across the state. In her survey, Marshall (1982:Table I) documented 208 fluted points, with 92 from the Ridge and Valley, 15 from the Highlands, 19 from the Piedmont, 32 from the Inner Coastal Plain, and 49 from the Outer Coastal Plain. A wide range of raw materials was used in the production of these points, dominated by good-quality jasper (58%), followed by gray chert (16%), black chert (14%), and small amounts of other chert, chalcedony, quartz, quartzite, argillite, and other (Marshall 1982:Table III).

The Turkey Swamp site, located near Freehold, contains a possible late Paleo-Indian/Early Archaic assemblage. A suite of radiocarbon dates was obtained, ranging in age from 8739 \pm 165 BP to 7660 \pm 325 BP (Cavallo 1981:8). Based on assemblage characteristics and the radiocarbon dates, Cavallo concluded, in agreement with Gardner (1974), that the Paleo-Indian and Early Archaic periods represent a “single developing tradition” of settlement and subsistence strategies (Cavallo 1981:16). Custer, too, adopted this perspective in his review of Middle Atlantic prehistory (Custer 1984, 1989).

Early Archaic sites are poorly documented for the region. Fewer than 12 such sites in New Jersey and neighboring states have been systematically excavated. The majority of these sites are located in the northern part of New Jersey, near Pennsylvania and New York (Dumont and Dumont 1979; Kraft 1972, 1976a). Projectile point types characteristic of the period, such as bifurcate-based and several side and corner-notched varieties, have been recovered (Kraft and Mounier 1982a:64-66).

The Middle Archaic period (8500 to 5000 BP) coincides with the establishment and spread of mesic oak-hemlock forests throughout the region. Warm and wet conditions prevailed and rising sea levels resulted in higher inland water tables. Deer became the major game species and many plant food resources were intensively exploited. Very few Middle Archaic assemblages have been documented in stratified excavated contexts in New Jersey. Most Middle Archaic artifacts recovered from northern New Jersey have been found in surface or plow-disturbed contexts (Kraft and Mounier 1982a:66-67). Notable exceptions include the Rockelein site in Sussex County (Dumont and Dumont 1979); the Harry’s Farm site in Warren County (Kraft 1975a); the Abature site in Monmouth County (Mounier 1990); Site 28ME1-D (Area D) in Mercer County; possibly the Faucett site in Pike County, Pennsylvania (Kinsey 1975:60-62; Stewart and Cavallo 1991:31); and possibly the Shawnee Minisink site in Monroe County, Pennsylvania (McNett 1985:111-113). In Bethlehem, Pennsylvania, which is near Phillipsburg, New Jersey, the Oberly

Island site contains a Middle Archaic horizon dating to 6340 \pm 70 BP (5425-5095 BC cal, 2 sigmas) (Siegel et al. 1999:41, 2001:Table 1).

The Late Archaic through Middle Woodland periods (5000 to 1000 BP) were characterized initially by a warm and dry interval, referred to as the mid-postglacial xerothermic. Oak-hickory forests became dominant, with some grasslands present in low-lying areas. The number of interior streams may have decreased, although estuarine complexes were probably similar to their modern configurations (Kraft 1977). Adaptive responses to these environmental changes included the development of relatively restricted territorial ranges and more sedentary lifeways, which focused on floodplains of major rivers and other areas of predictable resources (Custer 1985:36). The number of known sites for these periods in northern New Jersey increased dramatically compared to sites recorded for the Paleo-Indian through Middle Archaic periods. The range of documented projectile point types and other artifact classes is considerably more diverse during the later prehistoric periods.

The Piedmont Archaic Tradition (Late Archaic period) probably originated to the south and spread northward along the coast. Characteristic projectile point types of the tradition are overwhelmingly lanceolate in shape, and include Bare Island, Poplar Island, Lackawaxen Stemmed, Taconic Stemmed, Wading River, Sylvan Lake Side-notched, Lamoka, and Normanskill. All of these point types are common to northern New Jersey. Chipped and groundstone tools typical of the Piedmont Archaic Tradition include scrapers, knives, drills, pestles, grooved axes, celts, adzes, and hammerstones. The other defined cultural manifestation that occurs during Late Archaic times in the region is termed the Laurentian Tradition, which is derived from the north. Common projectile point types include Brewerton, Vosburg, and Beekman Triangles, with Genesee and Otter Creek types encountered less frequently. Accessory tools are comparable to that of the Piedmont Tradition (Kraft and Mounier 1982a:67-69).

Following the Late Archaic is the Terminal Archaic period, which lasted from ca. 3500 to 3000 BP. The primary distinguishing artifact of this period is the broadspear projectile point; the various types are called Koens-Crispin, Snook Kill, Perkiomen, and Susquehanna. During the latter portion of the period and into the Early Woodland, Orient and Dry Brook “fishtail” points came into prominence. In addition, near the end of the Late Archaic or shortly into the Terminal Archaic, the manufacture of stone bowls was begun, with steatite (soapstone) used as the raw material (Kraft and Mounier 1982a:69-70). Terminal Archaic sites are typically situated along the banks of major and minor streams (Anthony and Roberts 1987; Ritchie and Funk 1973; Snow 1980).

At the Terminal Archaic/Early Woodland interface (ca. 2800 BP), true ceramic vessels first appeared in the region. These pots were made from clay using slab and coiling methods, and initially consisted of coarse, thick walled, and undecorated forms tempered with crushed steatite. Sherds of this type, called Marcey Creek Plain, were recovered at the Miller Field site in Warren County, situated about ten miles north the Delaware Water Gap along the Delaware River (Kraft 1972; Kraft and Mounier 1982a:70-71). Various Early Woodland and Middle Woodland phases have been recognized for the region that includes northern New Jersey, each with characteristic assemblages of lithic and ceramic artifacts. Chronologically from earliest to latest, these are the Meadowood Phase, Middlesex Phase, Bushkill Complex, Abbott Phase, and Point Peninsula Phase (Stewart 1998; Williams and Thomas 1982:112-117).

Except for culturally induced changes, Late Woodland period (1000 to 400 BP) environments were similar to those of the present. Although the development of agriculture at this time coincided with major changes elsewhere, Late Woodland people in this region probably continued the lifestyle of their predecessors (Custer 1985:38). Increased population densities may be reflected in defined group territories and greater sedentism. Few Late Woodland period sites have been excavated systematically within the Raritan, Musconetcong, Hudson, Passaic, or Hackensack River drainages. The major concentration of effort for sites of the period has been in the Delaware Valley above the Water Gap, and on the Inner Coastal Plain and Maurice River (the latter two being in the southern portion of the state). Recognized northern New Jersey cultural groups of the period include the Pahaquarra (ca. 1000 to 650 BP) and Proto-Munsee (ca. 650 to 400 BP), each with distinctive material culture traits (Kraft and Mounier 1982b:141, 146-158, 171).

During the Contact period (AD 1600 to 1740), Native American groups faced the onrush of European immigrants. The Lenapes, indigenous to New Jersey and eastern Pennsylvania, are assumed to have occupied major drainages. The settlement system included concentrations of habitations near major stream confluences during the summer months and dispersion into nuclear family groups for hunting and gathering of non-riparian resources during the winter (Becker 1985:41-45).

The region was inhabited by Northern Unami speakers (Delaware) during the seventeenth century. Rock shelters that were occupied by Native Americans, and which also contain European artifacts, have been found in northern New Jersey, though these are sparse. By the mid-1700s, relatively few aboriginal sites were occupied in the state (Kraft and Mounier 1982b:187, 192-194).

2.2.2 HISTORIC CONTEXT

The historic context review will be directed to the settings of the seven installations.

2.2.2.1 Picatinny Arsenal

Picatinny Arsenal, located in Rockaway Township, western Morris County, covers a total of 6,500 acres including two lakes and 2.7 million square feet of indoor area. It presently has approximately 3,000 employees (Picatinny 2003).

The name Picatinny is taken from two Native American words meaning “peaks of rocks and cliffs.” Initial European settlement of the area began in the mid-eighteenth century when Jonathan Osborne established a forge, known as Middle Forge, at the foot of Picatinny Peak. The forge reached its greatest production during the Revolutionary War when 250 Hessian prisoners were impressed to serve as workers (Anonymous 1973:3).

The area of present Picatinny Arsenal was sparsely settled in the mid-nineteenth century. Lightfoot and Geil’s 1853 Morris County map depicts a small hamlet at the southwest end of Lake Denmark centered around E.R. Biddle’s forge and sawmill (Figure 23). The hamlet included several houses, including those owned by S.B. Marsh and G.W. Brakels and a school house. A road extended southwest from the hamlet of Denmark on the south side of Greenpond Brook. The residence of G. Tebo is shown on the north side of the road. The main arsenal area was then occupied by scattered farms.

Little further development of the area is shown on the 1868 Beers's atlas map of Rockaway Township. The small hamlet of Denmark remains at the southwest end of the pond with its forge and scattered houses (Figure 24).

As early as the Civil War, United States military leaders expressed the need for a depot where powder and explosives could be stored in large quantities and where powder mills might be erected. A Board of Officers first convened in New York in 1865 to consider the establishment of two such depots and to determine their locations. After land acquisition on the Hudson River ran into unexpected delays, acquisition of a tract at Picatinny, New Jersey was approved in 1880. The Chief of Ordnance, in approving the land acquisition, wrote:

The geographical location near Dover is sufficiently well protected, being behind the fortifications of N.Y. Harbor, nestling high among the mountains, 45 miles distant, with a closely built and highly cultivated country, and very large population intervening (Picatinny 1931:10).

The initial land purchases included approximately 1,866 acres of land at a purchase price of \$62,750. The first land purchase executed on June 26, 1880 transferred 1,195.8 acres centered on Lake Picatinny from George E. Righter in exchange for \$35,874. This tract, known as the Middle Forge Tract, because it was the site of the Revolutionary War forge, became the central area of the arsenal. Additional purchases through the early 1900s included approximately 400 more acres (Picatinny 1931:11; Anonymous 1973:3).

On September 6, 1880, the War Department officially established the Dover Powder Depot. Four days later, its name was changed to the Picatinny Powder Depot. The first building erected at the arsenal was a magazine, 200 by 60 feet with a six foot basement. Work on the building was completed in 1881. It was designed to hold 10,000 barrels of black powder. The piers and foundation of the building were made of stone quarried on-site, the walls of brick and the roof of galvanized iron. Four similar magazines were subsequently erected (Picatinny 1931:57-58).

Robinson's 1887 map of Rockaway Township indicates that the Army Aviation Support Facility #2 site was northeast of the area of initial arsenal development. Its site was near the hamlet of Denmark, a community of scattered houses and a railroad line (Figure 25).

In 1891, the Arsenal transferred 317 acres to the U.S. Navy. This land later became the core of the Lake Denmark Powder Depot. In 1897, the making of cartridge bags and the loading of charges for separate loading ammunition was begun.

In about 1900, the need for a storage place for armor piercing projectiles and high explosives began receiving attention. In 1902, six projectile sheds were erected. The following year, the installation of a plant for filling projectiles with Explosive "D" was begun. A temporary plant, consisting of a boiler plant and loading house, was erected in 1902 for filling projectiles with Maximite. The plant for loading projectiles with Explosive "D" was put into operation in 1904 and continued in operation for several years.

A power house and shop building were erected in 1906, and machinery was installed for the capping, grooving, tapping, and banding of projectiles. The same year, the fortifications bill was

passed containing authorization for the erection and equipment of a powder factory at a cost of \$165,000. In 1911, appropriations were made for installation of a high explosives plant.

In 1907, the Army changed the name of the facility to Picatinny Arsenal and established its first powder factory on the site. While it continued to produce munitions, the arsenal also began a program of research and development work and established a school to instruct officers in weaponry science (Picatinny 1931:54-56).

In 1917, it became apparent that storage space would be required by the Ordnance Department for storage of powder, explosives, and metal components. Fifty-four buildings were constructed, as well as railroad tracks and associated facilities. By the beginning of World War I, the factories at the arsenal were manufacturing between 5,000 and 7,000 pounds of propellant powder daily. In 1919, the development and manufacture of pyrotechnic signals was started at the arsenal. The research and development work grew after World War I. Major accomplishments during this period included improved methods of storing smokeless powder, improved processing of cyclonite, and discovery of a new explosive, haleite (Anonymous 1973:4; Picatinny 1931:56).

On July 10, 1926, the arsenal was devastated by the Navy Hill (Lake Denmark) explosion. Lightning struck on Navy Hill and set off fires in adjacent powder magazines. The fires set off three major explosions. By the time the smoke cleared, the arsenal has suffered more than \$1.2 million in damage and 19 people were dead. Shells tossed by explosions set off by the fire landed as far as a mile away, and homes and businesses in the general vicinity were damaged (Owens 2002:3).

The modern depot dates from post-explosion rebuilding. In September 1927, Congress appropriated \$2.3 million for the rehabilitation of the depot. Facilities were substantially improved when WPA funds became available.

The Board organized to investigate the accident advocated the rearrangement of facilities with an eye to greater safety and economy of operation. The general principle was that facilities not involving explosives or unusual hazards should be separated from facilities involving such hazards by as great distance as practicable. The new arsenal was separated into three major divisions: 1) the manufacturing activities in which powders and explosives were handled; 2) the storage areas in which powders and explosives were housed; and 3) the manufacturing activities where non-hazardous materials are handled, and where the administrative and engineering functions took place.

The central section of the arsenal was used for powder and explosive manufacturing. A new loading plant was erected on the west shore of the lake and a new bag-loading plant located along the south shore of the lake. The administrative and non-hazardous manufacturing area was created in a belt extending across the reservation from east to west near its southern end (Picatinny 1931:95-96).

A major physical expansion of the Arsenal took place on the eve of U.S. entry into the Second World War. At that time, the Army purchased the land between the Cannon Gates and the present main entrance near NJ Route 15 including Spicertown, an unincorporated village in Rockaway Township (Owens 2002:2).

During World War II, R&D took a backseat to munitions production. Three shifts totaling 18,000 people produced bombs and artillery shells. At the beginning of the war, Picatinny was the only plant in the United States capable of manufacturing anything larger than small arms ammunition. Later in the war, some of this manufacturing was contracted to private industry using expertise developed at Picatinny (Anonymous 1973:4).

After World War II, efforts resumed to develop new weapons and munitions. Developments included an improved bazooka, capable of stopping Russian made T34 tanks, and an illuminating rifle grenade. Other contributions included radar improvements, pyrotechnics, missiles, time fuzes, and nuclear munitions. The latter included the world's first nuclear artillery round, a 280-mm shell capable of being fired from an artillery weapon (Anonymous 1973:4).

In the latter part of the twentieth century, the Arsenal continued its role in munitions research and development. In 1973, it was Morris County's largest employer with a payroll of 5,900 civilians and 100 military personnel (Anonymous 1973:2).

2.2.2.2 Morristown

Though its postal address is the town of Morristown, the armory is actually located in Morris Township, a municipality of 15.45 square miles that surrounds Morristown in an irregular circle.

The township was initially established in 1740 and has steadily decreased in size since that time. Originally, it included almost the entire county. With the partition of Roxbury, Chatham, and Passaic townships, it obtained its present size.

An article in the September 22, 1860 *Jerseyman* described the township at that time:

The total population of Morris Township is 6,024, being an increase of 1,032 since 1850 and 348 since 1855. Number of families 1,147; Dwellings 1,124; Farms 256....Raised last year 9,191 bushels of Wheat, 5,649 of Rye, 64,808 of Oats, 118,245 of Corn, 7,262 tons of Hay and 8,730 lbs. of Tobacco (as cited in Hoskins 1976:1).

Western Avenue, the site of the armory, was historically called "the road to Jockey Hollow" and was the route of thousands of Colonial soldiers during the harsh winter of 1779-1780. During the nineteenth century, the land along the road belonged primarily to the Russell, Phoenix and Guerin families.

Lightfoot and Geil's 1853 map of Morris County shows the armory site atop the ridge of the Washington Mountains southwest of downtown Morristown (Figure 26). No residences are shown on the site itself although several residences are shown across Jockey Hollow Road/Western Avenue on the present Villa Walsh property. A similar development pattern is shown on the Beers (1868) map of Morris Township (Figure 27). The residence of "A. Johnson" is shown on the southeast side of present Western Avenue east of the armory site. On Robinson's 1887 map, the armory site was a portion of a tract owned by A. Pierson (Figure 28).

In the early twentieth century, the site of the armory was part of an 83-acre tract owned by the C.M. Phillips estate. A wood-framed house and associated outbuildings were located in the general vicinity of the present armory (Mueller 1910, cited in Hoskins 1987). The land on the

opposite side of Western Avenue was the site of the Louis Charles Gillespie summer home, Tower Hill, one of the grand estates of the Morristown area. Gillespie (1835-1911) was an importer of Chinawood Oil. In 1890, Gillespie moved permanently to Tower Hill. The estate is dominated by a 70 foot high stone tower erected over a well and a rambling three story Colonial Revival residence. In 1929, the Gillespie family sold the property to the Catholic church. It is now operated as a girls' secondary school, Villa Walsh (Hoskins 1976:15-17).

The armory was built beginning in 1938 on a 36-acre tract belonging to Lloyd W. Smith. Smith, a Florham Park resident, had donated much of the land for the nearby National Historical Park. Built for the 112th Field Artillery, the armory included an enclosed riding hall and stabling for 70 horses, as well as offices and equipment rooms.

The character of Morris Township in the 1970s was described by Robert P. Guter:

[It] is among the most typically suburban municipalities in Morris County. Its houses are almost entirely single-family detached dwellings attractive to middle-class and upper-middle-class buyers. Although the mansions of its Gilded Age are mostly gone, several large estates survive, contributing to a feeling of openness that is one of the Township's greatest assets. Its industrial/office development is confined to several areas along major roads. There is substantial parkland or undeveloped acreage (Guter 1987:iii).

2.2.2.3 West Orange

The first European owners of the land that is now West Orange were Robert Treat and John Gregory who purchased land from the Lenni Lenape in 1666. Located about six and one-half miles west of the northern boundary of Newark, the mountainous terrain separated the rich farmlands of western Morris County from the growing eastern communities bordering the Passaic and Hackensack rivers and New York Bay. The first settler in present West Orange was Anthony Oliff (Olive), who established a farm near the present site of Llewellyn Park. He settled on 60 acres of land on First Mountain in 1678 (Zakrzewski and Kallen 1976:n.p.)

Several years later, Matthew Williams and Nathaniel Wheeler moved from Newark to First Mountain. Another early settler at First Mountain was Samuel Condit, who also came from Newark. Condit bought all of present Pleasant Valley from beyond Eagle Rock Avenue south to the end of the valley from Native Americans. Condit died in 1777 at age 80 (Zakrzewski and Zakrzewski and Kallen 1976:n.p.).

The area's first roads paralleled the mountain ridges and also followed the streams where settlers located houses. Early settlers supported themselves by agriculture, raising grains, fruits, vegetables and livestock. Wool, grains and vegetables were sold in the markets of Newark and New York City. Transport to and from the area was made easier by the establishment of the Orange Turnpike from Newark to Morristown in the early nineteenth century (Williams 1937:8).

The first major industry in the community was sandstone and trap rock quarrying. In the early nineteenth century, the Orange Quarry Company was founded with its quarry on the top of First Mountain between Eagle Rock Avenue and Prospect Street. Later five other quarries were established in the vicinity. By the early 1900s all but the Orange Quarry had closed due to depletion of the traprock supply (Zakrzewski and Kallen 1976:n.p.).

In the early 1800s, farmers from present West Orange became dissatisfied with the responses of leaders of the Town of Orange to their concerns. A group of residents petitioned the New Jersey State Legislature to form the Township of Fairmont. On March 11, 1862, the State Legislature created the Township from portions of Caldwell, Livingston and the section of Orange lying west of present Prospect Avenue on the top of the First Mountain. A year later, the entire eastern slope of First Mountain was carved out of the western part of Orange at the instigation of residents dissatisfied with the conduct of the public school (Williams 1937:5).

In 1862, access to and from the municipality was improved when the Morris and Essex Railroad was extended to Hoboken by means of the Bergen Tunnel. At that time the only highways in the section of the township west of Second Mountain were the east-west roads presently known as Eagle Rock, Northfield and Mount Pleasant avenues (Williams 1937:9). In 1874, additional rail access was provided by the Watchung, or Orange Branch of the Greenwood Lake Division of the Erie Railroad with service from North Newark to Park Avenue in West Orange (Williams 1937:15). During the last decade of the nineteenth century, interurban traction (trolley) service was introduced to West Orange (Williams 1937:16).

On maps produced from 1850 to 1879 the armory site was depicted as undeveloped. Pleasant Valley Road had yet to be extended south of Mountain Avenue (Figures 29-32). West Orange is the site of one of the earliest picturesque suburbs in the country, Llewellyn Park, now a National Register district. Established by Llewellyn Haskell, a successful drug importer, the basic design was set in 1857 on a 350 acre tract. The land contour consisted of a mile-long slope marked by rows of natural terraces. The slope was cut diagonally by a plunging mountain brook whose deep ravines were the major feature of a park. Villa sites, reached by winding roads, bordered the brook (Zakrzewski and Kallen 1976:n.p.).

A major nineteenth-century industry was the manufacturing of hats, belts, and shoes. Because of competition in shoe manufacturing, the West Orange industry died. The hatting trade continued to prosper due to cheap rail transportation to New York (Zakrzewski and Kallen 1976:n.p.).

With improved transit access to western portions of the municipality, a real estate boom began in the area as well. In 1887, the Orange Mountain Land Company was incorporated to acquire land on the mountain top from Northfield Avenue to Walker Road. The same enterprise also purchased extensive tracts on the east slope of the mountain between Walker Road, Gregory Avenue, and Forest Hill Road. Initial transportation to this portion of the community was provided by cable car (Williams 1937:18).

The Orange Mountain Land Company may have laid out the portion of Pleasant Valley Road south of Mountain Avenue. In Robinson's 1890 atlas, this portion of the road is shown, and the present armory tract is indicated as the property of the land company. By the time A.H. Mueller's atlas was published in 1911, the armory tract of 44.03 acres was indicated as the property of William B. Pierson.

The leading early twentieth century industry in West Orange was production of phonographs, records, storage batteries, and vehicle batteries by the Edison Company founded by local resident Thomas Alva Edison. As the twentieth century progressed, West Orange increasingly changed from a self-sufficient community with sizeable manufacturing base to a New York bedroom community with a retail district to serve local residents (Zakrzewski and Kallen 1976:n.p.).

In 1865, West Orange had a population of 1,255. West Orange operated as a township until February 1900 when it was designated a town. Its population had increased to an estimate 29,321 by 1936. The town contained 22 industries employing about 5,750, many of the workers living in surrounding communities. The town was then primarily residential with the bulk of the wage earners commuters employed in Newark or New York (Williams 1937:29).

Although the development of the motor bus contributed to the opening of the mountain territory of West Orange to development, the growth of interest in the private automobile stimulated the development of the western portion of the town (Williams 1937:27).

2.2.2.4 Lawrenceville

The Township of Lawrence was originally comprised of proprietary tracts owned by Dr. Daniel Coxe, Thomas Hutchinson, and Mahlon Stacy. Coxe had the largest holding, 45,000 acres including part of present township of Lawrence, all of present Ewing and Hopewell, as well as a sizeable portion of the City of Trenton. Through his land agents, he sold off most of the tract. A portion of present Lawrence Township was acquired in 1694 by Long Island natives Ralph Hunt and Theophilus Phillips who bought adjoining tracts of land on the King's Highway, now Lawrenceville Road (Gemmell and Havens 1964:83; Nash 1977:4-5).

The Township of Lawrence was formed in 1697. Originally called Maidenhead, its eastern boundary, the Province Line, was the dividing line between East and West Jersey. Its name was changed to Lawrence on January 24, 1816 in honor of Captain James Lawrence, a naval hero of the War of 1812.

The site of the present armory was a portion of the Mahlon Stacy Proprietary Tract. In 1707, it was acquired by Timothy Baker (Nash 1977). Among the early residents of the township were members of the John Bainbridge, John Brearley, Johannes Lawrenson Opdyke, Henry Mershon, Elnathan Davis, and Joseph Sackett families. (Gemmell and Havens 1964:83).

The village of Lawrenceville was established straddling the main road between New York City and Philadelphia, the King's Highway or Great Road, present Route 206. It is situated at the midpoint between Trenton and Princeton. Among the earliest village buildings was a church, present Lawrenceville Presbyterian Church, established in 1698. Two taverns and houses soon followed (Lawrence Township 1992:8).

During the Revolutionary War, when the British held Trenton and Princeton, the village sat on the common military thoroughfare between the two places. The Academy of Maidenhead, later known as the Lawrenceville School, was founded in 1810 and remains in operation. The first store in the village was opened in 1821 or 1822. On Otley and Keily's 1849 map of Mercer County, the approximate present armory site is depicted as Polkland Farm (Figure 33).

The present armory site is shown on Everts and Stewart's 1875 map of the township. Eggerts Crossing Road is depicted in its approximate present alignment extending off the northwest side of Lawrence Road. The P. Keeley farmhouse is shown at the end of a farm lane in the approximate location of the armory property (Figure 34). In 1883, the village contained a general store, a temperance hotel, a wheelwright shop, the Presbyterian church, a school house, the

Lawrenceville Classical and Commercial High School, and residences (Hageman 1883:853). It was surrounded by farmland including the present site of the armory.

The population of the township grew steadily in the late nineteenth and twentieth centuries and the rate of growth increased with post-World War II suburban development. In 1880, its population was 3,174. By 1940, it was 6,522, a total that increased to 13,665 by 1960 (Gemmell and Havens 1964:83). The site of the Lawrenceville Armory was a tract of 46.5 acres acquired for \$20,000 by the State Military Board from the Lawrence Realty Company in a deed dated May 25, 1926.

2.2.2.5 Fort Dix

The Years Before World War II

Prior to the establishment of Camp Dix (later Fort Dix), most of central Burlington County consisted of farms and woodland with small hamlets located at crossroads. The armory site was no exception.

In 1849, the armory site was apparently part of the J. Budd farm whose farmhouse was located north of the present Pemberton-Wrightstown Road (Figure 35). In 1876, the armory site was apparently part of the 135-acre Thomas Newbold farm in western New Hanover Township (Figure 36).

In the spring of 1917, the United States entered the Great War in Europe, but quickly recognized that its military forces were insufficient. At the time war was declared, U.S. Army personnel numbered only 200,000. A giant mobilization effort was soon underway, with the goal of increasing these numbers to one million soldiers. Part of this mobilization was the planning of sixteen “great cantonments” to house and train thousands of new soldiers. In May of 1917, the War Department ordered the selection of sixteen camp sites throughout the U.S., and an Army engineering unit, Company “C” of Trenton, arrived in the village of Wrightstown, New Jersey on May 31st to survey a promising potential cantonment location nearby. The Burlington County location was chosen for its proximity to a Pennsylvania Railroad spur, its short distance from both New York and Philadelphia, its level terrain, and its abundant supply of fresh water.

Camp Dix was officially founded on June 17th, 1917, three months after the United States declared war on Germany and its allies. On that day, the governor of New Jersey was informed by telegram that the large tract of farmland near Wrightstown had been formally chosen by the federal government as the future site of one of the largest Army training camps in the country. The new camp at Wrightstown was initially intended to house 40,000 men, a low estimate given the actual numbers that would eventually arrive there (U.S. Army 1943: 1-3). On July 17th, word arrived that a name had been chosen for the new camp. It was to be called Camp Dix, in honor of General John Adams Dix, a veteran of the War of 1812. Dix was later a senator and secretary of the State of New York, as well as Secretary of the Treasury for a brief period in 1861, before returning to the Army to command various departments. He is perhaps most famous for ordering any man who lowered the American flag shot “on the spot.” Following his return to civilian status after the Civil War, he was the Governor of New York from 1872-1874, and died in 1879.

The land for the camp was leased from local farmers, who had already planted that year’s corn crops on their acreage. The government reimbursed the farmers for the lost crops as well as for

the use of their land. The first one-year lease on 6,500 acres was signed June 17th, a second tract of nearly 2,000 acres was added, and construction began immediately.

The new camp's linear design featured barracks divisions arrayed on either side of a wide parade ground. A bend in the parade ground was necessitated by drainage concerns, and the camp headquarters was situated at the bend. North of the cantonment, a receiving and commissary warehouse area was planned along the railroad line, which ran west from Wrightstown toward Philadelphia. Over eight miles of railroad track were laid into the camp to facilitate movement of troops and supplies, but horses and mules were also important transportation providers; over 7,000 animals were eventually housed at a remount station built just west of the rail station. A narrow-gauge railroad was built from the main rails south along the parade ground to move supplies within the camp. Wells provided some water, but a dam and pump house were soon built on Rancocas Creek at New Lisbon, and the water was piped a few miles north to serve the cantonment.

By early September, the camp had progressed enough to receive its first major installment of draftees. Seventeen thousand men arrived for processing at Camp Dix in that month alone. A year later, in August 1918, the camp's population peaked at 55,000, with hundreds housed in tents on the parade grounds. Soldiers of the 78th Division were the first Camp Dix trainees, followed by the 87th and 34th divisions. As each division headed overseas, a new one replaced it. The 34th Division lost at least 900 men during the fall of 1918, when an influenza epidemic raged along the East Coast.

Following the Armistice declaration in November 1918, Camp Dix became the primary separation center for returning American soldiers. After a delousing and brief processing, soldiers were given their discharge and full train fare, and sent home. By October of 1919, arrivals had slowed dramatically, but the camp remained active, with the 1st Division stationed there until early 1922. With the dispersing of the 1st Division and its animals by June 1922, and a sharp decrease in troops stationed permanently at the site, the camp became largely deserted. From time to time, the War Department expressed a desire to abandon the camp and turn the land back to its original owners. However, this was opposed by Major General Hugh Scott, who had commanded the camp during the war and into the postwar demobilization. Scott argued that the camp should not be given up, as the location had considerable potential as an airfield site. The matter was settled in favor of retaining Camp Dix in 1925, when President Calvin Coolidge designated most of the tract a forest preserve (U. S. Army 1967: 33-36).

Between 1922 and 1933, the camp was nearly empty in winter and used in the summers for training personnel in the National Guard, the Reserves, and the Citizens Military Training Corps (CMTC), called "the working man's ROTC" (Berger 1985: 4-74). The few year-round residents were members of the Quartermaster's unit, whose main responsibility was trying to maintain the sprawling camp. Most of the flimsy wartime buildings were either sold off or fell victim to rot, vandalism, and fire, and the summer residents were housed in tents, eating in a few reclaimed mess halls (U.S. Army 1943: 12-14). The heavy use of target range facilities at the camp in summer did prompt the construction of several buildings in the Magazine 1 area for munitions storage in 1927, but for the most part, there was no new construction during the 1920s, and little upkeep of what already stood. By 1934, only 159 of the over 1,600 wartime buildings were left (Berger 1985: 4-74).

The Great Depression, though devastating to citizens nationwide, proved to be the catalyst for the rebirth of Camp Dix. With the widespread loss of employment opportunities, unprecedented numbers of civilians turned to the CMTC and the Reserves. In 1931, spurred by the popularity of these programs, the First Infantry Division began construction on a row of five permanent concrete-block buildings west of the Parade Ground at Camp Dix. Three, one-story U-shaped mess halls alternated with two oblong latrine buildings in a linear arrangement, running north from 8th Street along Maryland Avenue. Trainees still lived in rows of tents on the Parade Ground, but now had modern sanitation and dining facilities.

Construction of additional one-story concrete-block buildings took place from 1933 to 1935. These new facilities were needed for the arrival of the Civilian Conservation Corps, formed under President Franklin D. Roosevelt's New Deal. Men who served in the CCC had to be processed into the Corps in much the way soldiers were processed into the Army, and early in 1933, Camp Dix was evaluated and selected as a CCC conditioning site. Major improvements were needed to support the influx of trainees, and repairs to the roads and water system were quickly undertaken that spring. Although the Corps, CMTC, and Reservists were still housed in tents, the series of concrete mess halls and latrines was extended further up Maryland Avenue, stretching to 1st Street when completed in 1935. A cluster of similar buildings, now demolished, was built west of Maryland Avenue. This series was the first group of permanent structures built on the installation, and many of the buildings still stand, albeit in altered form.

Camp Dix remained an active CCC site through the remainder of the decade, processing 115,000 men by 1936 and becoming CCC headquarters for southern New Jersey. It also served as a discharge center beginning in 1937 for those who resigned to take employment or were dismissed for various reasons. Eventually, the total of men processed at Camp Dix rose over 200,000 (Berger 1985: 4-82). The CCC moved its processing center to Sea Girt in 1940.

By 1937, with tensions rapidly escalating in Europe, the War Department began preparations to mobilize forces once again. Military installations nationwide began evaluating themselves and determining what they would need in the event of another massive mobilization. A new airfield was built at Camp Dix that year, and the following spring, the War Department approved a \$150,000 request from Congress to upgrade the camp, indicating renewed federal interest in its potential. That summer, a second permanent construction phase began at Camp Dix, which would seal its future as a key Army training center. A series of permanent red-brick buildings was planned, most in a Georgian Colonial Revival style. These included two distinct complexes of buildings east of the parade ground, where the rows of World War I barracks had long since disintegrated. The project funding came from the Works Progress Administration (WPA) and Public Works Administration (PWA), both part of Roosevelt's New Deal. WPA laborers and a few skilled masons were hired, temporary frame field quarters were built, and construction began in the summer of 1938, with numerous buildings being raised simultaneously.

The new buildings shifted the heart of the camp away from the former headquarters location at the bend in the Parade Ground, moving it well to the east and setting up a perpendicular axis from the Maryland Avenue mess halls east to the stately officers' quarters. Their permanence, coupled with the expansion potential and superb geographical location of the camp, led to the renaming of Camp Dix as Fort Dix in March 1939 (U. S. Army 1967: 43).

World War II officially broke out in early September 1939, when Germany invaded Poland and France and England declared war on Hitler's Third Reich. It was believed that Hitler planned an

invasion of Russia in June 1941, and U.S. preparations for war accelerated dramatically. The U.S. Army in 1939 constituted only 227,000 men, and a goal was set to increase the numbers to 1.2 million. The Army needed to build six new forts and expand existing installments in order to be ready for the November 1940 draft.

Fort Dix was to serve once again as a great training ground, and the enormity of preparing it for countless thousands of troops was soon realized. This led to a frenetic scramble to acquire as much surrounding land as possible to expand the Dix facilities. Although Dix was already the largest Army base in the Northeast, it was still inadequate to handle the numbers of troops planned for it. Negotiations with local farmers and landowners began in the fall of 1940, and were marked by frequent difficulties, as many were reluctant to leave ancestral property. 16,000 acres was acquired by November 1940, bringing the total to 25,000. By the following March, the Federal government had acquired nearly \$5 million worth of additional property, including 17,000 acres for artillery maneuvers and trespass rights to 70,000 acres. The land along the water pipeline to the dam at New Lisbon was condemned as well. Much of this land included farms, businesses, and houses, most of which were ultimately destroyed. The small village of Pointville, located at the southeast corner of the main Fort Dix cantonment, was entirely wiped out with the exception of its cemetery, and the village of New Hanover was overtaken by the Army as well (U. S. Army 1967: 48-58).

Even before the land acquisition process had begun, an appropriation of \$6 million was made to construct new buildings for the 44th Division, which was scheduled to arrive in September 1940. Road and utility improvements were made, and expanded water and sewer systems were built as well. The water and sewer infrastructure was paid for with WPA funding and mostly completed in 1941. Overall, between 1940 and 1943, a total of more than 1,600 buildings of all kinds were constructed at Fort Dix, with work proceeding at a breakneck pace (U. S. Army 1967: 53). The three runways at the Army Air Field were paved and expanded, and temporary buildings put up for two National Guard Observation Squadrons. The growth continued through 1943.

In the meantime, troops of National Guardsmen were mobilizing to enter the 44th Division at Fort Dix. Detachments began arriving shortly after their activation in mid-September, 1940, and the full division of 11,000 men was in place by September 25th. Construction of buildings to house the division had begun early that month but was not yet complete; the new arrivals lived in tents while their barracks were finished. Volunteers for a year's service arrived as well and were processed at a new recruit station near the Wrightstown entrance to the fort. All new arrivals were quarantined separately for two weeks, followed by basic training. The 1940 Selective Service Act resulted in over 6,100 draftees arriving at Fort Dix in November; these men too were added to the 44th Division. The 44th included over 16,000 men when it left Fort Dix for additional combat training in December 1941; it reached Europe in 1944 and worked to drive the Germans out of Alsace-Lorraine and Austria (U.S. Army 1967:51-62). It was followed by the 34th Division, which arrived at Fort Dix in January 1942 for staging and moved to Northern Ireland in three increments, the last departing in May 1942. It eventually moved to North Africa and then helped liberate Italy. The First Armored Division arrived early in 1942 as well, and followed the 34th to Ireland and then North Africa that spring. Numerous other regiments and battalions passed through Dix quickly that year, most of which had received basic training elsewhere. Quartermaster, tank, air warning, and engineer battalions were included in this group. In 1943, Dix hosted the 4th Infantry Division, which, after receiving extensive amphibious combat training in Florida, would play a major role on the beaches of Normandy in June 1944. The 80th, 85th, and 90th divisions followed, along with a number of varied, smaller battalions, and the camp was kept

busy until the end of the war, hosting both men heading overseas and injured veterans returning from battle.

The increased activity at Fort Dix had a major impact on the surrounding towns, beyond the taking of land and displacement of entire towns. Massive road construction and improvement projects were soon needed to handle the added vehicle traffic, and a WPA-funded effort began in 1941, which resulted in the state and county road system visible today. The telephone exchange in Mount Holly was forced to expand its facility to handle the high volume of calls to and from Fort Dix. Local citizens feared a repeat of the influx of crime and vice that had invaded the area during World War I, and county authorities sprang into action, working successfully with the Army to counteract such an event. An existing shortage of housing in nearby towns was exacerbated by the fort's expansion, resulting in high rents and eventually, the FWA construction of the Hanover Homes development on the Wrightstown-Jobstown road in 1941.

As the Allies forged ahead in Europe during 1944, the Army began to consider the task of dismantling its forces once hostilities had ended. By this time, the number of men and women in Army uniform was over 5 million, and most would need to be discharged upon their return (Garner 1993: 16, U.S. Army 1967: 71). Small separation facilities were established at Fort Dix and elsewhere in April 1944 as an experiment in speeding up the discharge process. A goal was set to process and discharge returning soldiers within 48 hours of their arrival, a considerable improvement over previous times. The separation process included a physical examination, occupational classification, orientation and counseling to ease the transition to civilian life, and finally, discharge papers and a train ticket home. It was planned that all returning East Coast personnel eligible for discharge would be separated at Fort Dix. A school was set up at Fort Dix in July 1944 to train the personnel needed to operate the separation centers both at Dix and at other sites across the nation. 746 officers and enlisted men and women graduated from the four-week program before it was transferred to Fort Sam Houston six months later.

Fort Dix Separation Center processed 323 men in its first month of operation, but the number served increased rapidly, with over 38,000 personnel processed by the end of the year. In 1945, with thousands of troops arriving daily, it discharged 508,069, and in 1946, 556,697 were processed. In total, nearly 1.2 million personnel were separated at Fort Dix.

The first hospital at Fort Dix, a 80-building complex, was built in 1940. A year later, a second medical facility, the Tilton General Hospital, was built on Florida Avenue. Completed in 1941, it represented a prototype of the Army's World War II hospitals. Initially composed of 79 buildings including wards, mess halls, warehouses and quarters, it grew to 178 buildings by 1944 (Fort Dix 1967:53). The flood of veterans kept Tilton Hospital filled to capacity, and the fort was as busy in the first few postwar years as it had been during mobilization.

The Postwar Years to 1960

In September 1945, the Office of the Chief of Engineers conducted a postwar utilization study of Fort Dix and found it "satisfactory for post-war retention" (U.S. Army 1967:85). However, considerable capital improvements would be needed to retain Fort Dix, as 90 percent of its buildings were temporary and not intended to last much longer. Estimates of the cost of the upgrades were in the neighborhood of \$16 million. However, the report recommendations were largely ignored for the next few years as Fort Dix returned to peacetime status. As separation activities dwindled, Fort Dix initiated new service activities and the post was not abandoned as it

had been following World War I. A leadership school for enlisted men was established in the fall of 1946, intended to train potential NCOs for top posts. A basic training program had already been instituted in March 1946, which would become the primary function of Fort Dix for decades to come. The 9th Infantry was reactivated in 1947 to assume responsibility for Fort Dix and all of its activities, and took over the leadership of the 14-week basic training program. The constant movement of trainees through Dix, and the refinement of the training program kept Fort Dix busy through the postwar years (U.S. Army 1967: 73-77).

With the outbreak of the Korean War, Fort Dix was again used as a staging location, but experimented with a new concept: sending trained companies overseas as an intact entity, rather than dispersing the troops. This concept was believed to increase morale among the soldiers. Basic training continued to expand its reach following the war, as Fort Dix trained men who were set to attend one of several specialized schools. These programs included the food service school at Fort Dix, as well as transportation, quartermaster, chemical, adjutant general. The closing of several other Army installations in 1954 increased the numbers of trainees assigned to Fort Dix, and more personnel completed Basic Training at Dix that year than ever before (U. S. Army 1967: 78-79). The Fort Dix Non-Commissioned Officers Academy opened in the spring of 1955. Fort Dix was an active participant in refining the training process, initiating new academies and educational opportunities for personnel with limited formal education. Experimental programs ranging from deployment methods to Dr. Jonas Salk's influenza study were continually being initiated at Dix, and the numbers of troops at the post climbed through the first half of the decade. There were continual reorganizations of Army installations in general following the Korean War, which impacted both the numbers and the organizational structure at Fort Dix. However, the post's Basic Training mission remained constant. In March 1956, Fort Dix was renamed "The United States Army Training Center, Infantry, Fort Dix, New Jersey". The decrease of the draft numbers in 1956 created an initial reduction in trainees at Dix, but other reorganizations and the implementation of the Reserve Forces Act of 1956 brought numbers back up again. The Reserve Forces Act created a six-month basic training program for Army Reserve and National Guard personnel. This popular program soon multiplied the numbers of basic trainees at Dix (U. S. Army 1967: 82).

At the same time as its mission was successfully expanding and refining itself, the temporary World War II buildings comprising most of Fort Dix were proving inadequate, and the numbers of married personnel seeking housing at Fort Dix reached a crisis point. The inadequacies of the Fort Dix physical plant could no longer be ignored.

Housing for families was not the only priority of those responsible for modernizing Fort Dix. As the 1940s ended, unmarried officers and service troops were still living and working in crowded temporary buildings and hutments. Now nearly ten years old, the buildings had already outlasted their expected term of service and were clearly inadequate for the needs of a modern permanent training center. Beginning in 1948, a long-range plan was developed for housing most of the troops and officers in permanent barracks, and providing modern buildings for training and other services. The new troop barracks were planned to be self-contained company-size units, housing 225 troops in eight-man bays. Mess halls, lounges, latrines, and other amenities would be provided, eliminating the need to house these functions in separate buildings. The 27 identical T-shaped barracks were completed in 1954, and the intentional flexibility of their interiors has proven to be a major benefit of their design. The buildings were arranged in two separate blocks of the post, each of which also included a new dispensary, branch PX with snack bar, regimental classroom, and four battalion headquarters buildings. One hundred and eighty-one remaining

temporary barracks were soon modernized as well. Large new classrooms were built for each of the older barracks complexes.

The changing social climate at Fort Dix, where hundreds of military families were now posted, as well as the large numbers of peacetime trainees, resulted in increased attention to the quality of life on post. Recreational opportunities and the availability of personal services took on unprecedented importance. Construction of permanent recreation facilities began in 1952, when a large Officers Mess and club was built to replace the old one, which had burned the previous year. The club was expanded in 1954 and again in 1957 to accommodate a restaurant, patio, and swimming pool. A second swimming pool was built and opened near the Athletic Center. A bowling alley was constructed within an older building on Pennsylvania Avenue, and an 18-hole golf course was built west of the commissary area. A car repair center and an arts and crafts school were begun to serve weekend hobbyists. A modern service club opened in the 5500 block in 1957. Opportunities for shopping expanded in 1956 and 1957, as a new quartermaster uniform store and a combined PX store, restaurant, and mini-shopping center opened. A modern 1,004-seat theater was completed a few years later. Health care was also a priority, as groundbreaking took place for the new high-rise Walson Army Hospital in 1957, and a spacious dental clinic opened a year later.

A final area of modernization was the Fort Dix Range. During World War II, troops had trained at pistol ranges both within the cantonment and along the nearer reaches of Range Road. By 1953, Army officials were concerned about the poor marksmanship demonstrated by American troops in both World War II and Korea, and began investigating how rifle training could be improved. Current training methods involved firing at stationary targets from set distances, which had little relevance in actual combat. In the mid-1950s, the new Trainfire system was developed, which used electronic silhouette targets that popped up unpredictably at varying ranges. At Fort Dix, this system was implemented in 1958, when more than a dozen new Trainfire ranges were built along Range Road. Trainfire was a success, saving over eight hours of training time, and later evolved into the Army's Basic Rifle Marksmanship Course used today (U. S. Army 1967: 84-85).

The 1960s to the Present

Fort Dix was pressed into service yet again during the Vietnam years, handling an influx of draftees as well as continuing basic training operations. The range area increased in usage as a vast network of tank roads was developed for maneuver practice. Another large-scale cantonment construction project in 1966 resulted in replacing most of the old temporary buildings with modern brick-faced barracks, and rearranging some old streets to form new divisions. The old POW stockade in the 6700 block was used to house Army deserters and the former black troops area in the 8000 block was used as a holding area for men awaiting processing. In both locations, the men were reportedly held in substandard conditions. Riots broke out in 1969 among 250 prisoners in the stockade, and a second riot took place in 1970 in the 8000 block, resulting in 10 men being sent to the stockade under dubious charges. Though these events were generally not covered by the mainstream press, news of the riots eventually leaked out within a few years, resulting in Congressional investigations. Both complexes were subsequently razed and replaced with a modern new stockade in the 8000 block, which today is a state prison. These events were documented by journalist Joan Crowell in a 1974 book, *Fort Dix Stockade: Our Prison Camp Next Door*.

The post-Vietnam 1970s was a period of little construction activity at Fort Dix, which was by now the last large Army base in the northeastern U.S. In the early 1970s, the Pentagon conceived a new concept for training known as One Station Unit Training (OSUT). OSUT would entail consolidating Army training centers nationwide into just a few cost-efficient installations, where more soldiers could be trained at one time. In order to accommodate large numbers of soldiers training in state-of-the-art weaponry, OSUT bases would be huge in land area and equipped with new modern buildings. However, Fort Dix was not seen as suitable for such a site, and in 1976, the Pentagon requested funds from Congress to improve Fort Benning, Georgia and close Fort Dix. The request was denied, but the threat remained real (Michaels 1976: 5).

Fort Dix remained in a holding pattern, albeit with dwindling numbers, as the 1980s began. A number of major building renovations took place throughout the decade, affecting most of the pre-1960 buildings extant today. Surviving temporary buildings, many of which had been renovated before, were updated to prolong their survival with new windows, roofs, and vinyl or stucco siding. A few of the remaining 1940s temporary buildings in the 6500-6600 blocks were moved out to the ranges for reuse.

In 1988, Congress decided to phase out the basic training mission at Fort Dix over the next five years. Fort Dix officials began scrambling for new potential uses, which eventually included Army Reserve and National Guard training, processing troops returning from overseas, housing refugees, and renting facilities to a number of organizations. One large tenant is a Federal prison, which took over much of the southern part of the main cantonment. McGuire Air Force Base, meanwhile, began housing personnel in family housing no longer needed by Fort Dix. As part of the general paring down of Fort Dix to essentials, the 1950s apartment complexes were torn down, along with much of the commissary area and scattered unused buildings elsewhere.

2.2.2.6 Sea Girt

The area of present Sea Girt was, until its incorporation as a borough in 1917, part of Wall Township, Monmouth County. Settlement of the area, formerly known as Squan Village, began in the Colonial period. Its economy revolved around the Manasquan River, a waterway that empties into the Atlantic Ocean south of the present borough.

An 1861 Monmouth County map shows the present National Guard training center in the vicinity of the road from Blankinburgh to the ocean. Several residences were shown near the oceanfront including those of T. Sherman and J. Merritt (Figure 37). Beers's Monmouth County atlas shows the area of the present National Guard facility in 1873. At that time, the area is indicated as Sea Girt. Several buildings are shown on the road from Squan Village but ownership is not indicated (Figure 38).

The village was named for Commodore Robert Field Stockton's plantation Seagirt, built on land he purchased in 1853. Stockton, a grandson of Richard Stockton, a signer of the Declaration of Independence, resided at Morven in Princeton and also maintained a winter residence in Philadelphia. He served as U.S. Senator from New Jersey in 1851 and 1852.

At the time of his acquisition of the Monmouth County property, it was already improved with a large farmhouse and outbuildings. Stockton replaced the farmhouse with a new, more elaborate Victorian dwelling, known as the "beach house." In 1866, Stockton sold the property

development, and by the 1870s, it had been acquired by the Sea Girt Land Improvement Company (Anonymous 1915; Venino 1967:2-5).

The company commissioned engineer Charles F. Ingham to lay out building lots on the tract. The initial subdivision plat employed a radial plan with Crescent Park as the hub of the wheel. The radial plan proved impractical as a great many of the lots were of irregular shape. In 1877, the company commissioned another engineer, Frederick J. Anspach, to revise the original 1875 map (Venino 1967:14). In this new plan, the bulk of the community was laid out with streets in a north-south and east-west orientation, while the streets from Sea Girt Avenue and south were skewed to follow the north shoreline of Stockton Lake (Figure 39). Though platted, the area south of Sea Girt Avenue was never developed for private residential use. Instead, it became the site of the New Jersey State Camp, later the New Jersey National Guard Training Center.

Military training in the Sea Girt vicinity began in 1884 when rifle practice was held on the south side of the Manasquan Inlet. The following summer, a state military encampment was established on the opposite side of the inlet. The encampment officially began on August 15th with the First Brigade in camp for a week. Organizations participating in the initial encampment included the First and Fifth Regiments of Newark, Ninth of Hoboken, Fourth of Jersey City, First Battalion of Paterson, Second Battalion of Hackensack, and the Gatling Gun Company A of Elizabeth. Each unit brought a band, and 1/10 of the camp's strength was composed of musicians. Concerts were given almost hourly during the day and a daily dress parade was held featuring all 160 musicians.

The headquarters of the encampment was a former farmhouse occupied by Quartermaster General Murray located at the north entrance to the camp. A *Newark Evening News* article described the character of the encampment in its first years:

Along the main avenue, then but a lane, ungraded and with a heavy growth of pine scrubs, fakirs and others had erected stands, giving more the appearance of a country fair than a military encampment (Anonymous 1891).

The location of the camp is shown on the map of Sea Girt included in Chester Wolverton's (1889) *Atlas of Monmouth County, New Jersey* (Figure 40). In 1891, an order was issued by Chancellor McGill directing the state treasurer to pay the owners of the ground on which the camp was established \$53,000 plus an additional \$4,500 for easements. With these payments, the state acquired clear title to the land. The state had already paid \$30,000 for grading and permanent improvements to the property.

In July of that year, four regiments, three battalions, and two Gatling gun companies, comprising the First Brigade of the New Jersey National Guard, arrived at camp. An added feature was the bath houses provided by the state for the guardsmen. Target practice included seacoast battery practice with floating targets several hundred yards out and practice at the "finest equipped rifle range in the country" (Anonymous 1891).

By 1898, the encampment totaled 150 acres of land. Shortly after, permanent headquarters and commissary buildings were erected, and the New Jersey State Building at the St. Louis Exposition was brought to the site for use as the Governor's residence. The annual military encampment began to be held on the site in July and August of each year (Venino 1967:14).

In 1924 and 1925, the State Legislature had appropriated a total of \$100,000 for a new arsenal at Sea Girt and for reclaiming land adjoining Stockton Lake (Chapter 240, Laws 1924; Chapter 237, Laws 1925). In addition, Federal funds were obtained to permit construction of shower baths and latrines, permanent kitchen and mess halls, and two administrative buildings, as well as additions and improvements to the rifle range (Adjutant General 1925:28).

By 1939, plans had been prepared for facilities to house Company E, 119th Quartermaster Regiment on the State Camp Grounds. Proposed facilities would consist of an administrative building, garage, and general storage building (Adjutant General 1939:32). The National Guard Camp was officially annexed to the Borough of Sea Girt in that year (Venino 1967:1).

2.2.2.7 Vineland

Vineland, Cumberland County, the largest city in area in the state, was established in 1861 by Charles K. Landis, a Philadelphia lawyer. Landis, who also established Hammonton and Sea Isle City, bought the site of the city from Richard D. Wood, a Philadelphia merchant and owner of a large cotton manufacturing mill in neighboring Millville. Having developed the 5,000 acre tract of Hammonton, Landis sought a larger tract for Vineland. He purchased 20,000 acres from Wood. At the time of its purchase, the land was sparsely settled with scattered farmhouses on the road from Millville to Philadelphia. Landis intended to develop the land as a major agricultural community (Anonymous 1976:1; Cushing and Shepard 1883:703; League 1960:7).

In initial planning, Landis developed a set of principles which were included in the contract of each sale. Each contract required that a dwelling or business be erected within one year, that country houses be set back 70 feet from the road and town houses be set back twenty feet, and that shade trees be planted.

The center, or borough, in vicinity of present Landis Avenue, was laid out in small lots, while the outlying area was divided into small farms of five to ten acres each. As settlers, Landis sought hardworking groups from New England and Italy, placing advertisements in the *Boston Journal*, the *New York Herald*, and the *Philadelphia Public Ledger*. New England settlers were primarily of white collar professions and lived in the center of town. They included merchants, mechanics, manufacturers, writers, financiers, professional people, and retired ministers and teachers. Among them were social reformers, feminists, temperance workers, and “free thinkers” (League 1960:7-8).

Farm land was initially sold for \$25 per acre, while five acre lots initially sold for \$150 to \$200 and ten acre lots from \$300 to \$350. Town lots, 50 feet frontage and 150 feet deep, sold from \$150 to \$200. The soil was described as suitable for a wide variety of crops including wheat, grass, potatoes, sweet potatoes, corn, tobacco, and a variety of fruits and berries. In 1861, the population consisted of four families. Eight years later, the population of Vineland had grown to over 10,000 (Landis et al. 1869:2-3).

By 1873, Italian settlers began to arrive in Vineland, most settling in the eastern portion of the tract. In 1896, Landis went to Italy to recruit additional laborers and farmers. These immigrants provided the manpower necessary to drain the swamps, clear the land, work the farms, and perform factory work (Cushing and Shepard 1883:705).

Among nineteenth century Vineland residents was Dr. T.B. Welch, who produced the first modern unfermented grape juice for use in Protestant Communion services. This product became known as Welch's grape juice.

In 1864, the tract, then known as Vineland, became Landis Township. It was set off from the northeastern part of Millville Township. In 1880, an area of one mile square in the center of Landis Township, became incorporated as the Borough of Vineland. In 1952, Landis Township and Vineland Borough merged to become the city of Vineland.

In 1960, the new city's population was estimated at more than 38,000. The economy was roughly equally balanced between agriculture and industry. Millions of dollars of fruit and vegetables were sold, and the city was one of the major egg and poultry producers of the eastern United States. The city also included 1,245 manufacturing establishments including glass, clothing, canned goods, concrete products, poultry equipment, chemicals, paper products, fertilizers, fireworks, lumber, and truck bodies. The city was also the site of several major institutions including the New Jersey Memorial Home, a residence for retired military personnel; the Vineland State School, a training institution for mentally handicapped girls and women; and the privately operated Training School for mentally handicapped children (League 1960:7-14).

The armory site, in South Vineland, is located on the road presently designated as Delsea Drive. In the nineteenth century, this thoroughfare was known as Malaga Road. In 1876, the armory site appeared to have been a portion of the 50-acre D. Clark Farm (Figure 41). A 1953 topographic map shows the armory on the west side of State Route 47. Across Delsea Drive was a short row of residences, while to the north of the armory site were buildings close to the road with oblong outbuildings to their rears (Figure 20).

3.0 METHODS

3.1 BACKGROUND RESEARCH

Prior to fieldwork, the files of the New Jersey Historic Preservation Office (NJ HPO) and the Archaeology/Ethnology Bureau of the New Jersey State Museum (NJSM), both located in Trenton, were consulted for pertinent information on previously recorded archeological sites and cultural resource surveys in the vicinity of the seven installations, including any sites that may have been listed in the National Register of Historic Places or the New Jersey Historic Site Inventory. In addition, the archeological site files of the Pinelands Commission in Pemberton were consulted, in connection with the Fort Dix armory. Additional information, especially about the historical and environmental contexts of specific installations, was collected from the New Jersey State Library (Trenton); the Office of Environmental Compliance at the Department of Military and Veterans Affairs (Trenton); Special Collections of Alexander Library, Rutgers University; Morristown and Morris Township Public Library; Vineland Public Library; National Archives and Records Administration (College Park, Maryland); West Orange Public Library; Monmouth County Historical Society; and the Wall Township branch of the Monmouth County Library. Additional data on the regional and local environment, prehistory, and history were obtained through a review of cultural and environmental resources reports, publications, and journals on file at the JMA office library.

3.2 FIELDWORK

The Office of Environmental Compliance of the New Jersey Department of Military and Veterans Affairs provided JMA with electronic copies of the Geographic Information System (GIS) data files for each of the seven installations. Coverages in these files included digital orthophotography, streets, buildings, surface water, wetlands, soils, and topography. Acreages of the installations were included in the databases. The GIS map layers were used as base maps in the field to record observations about archeological sensitivity, obvious disturbances to the landscape, photograph angles, shovel test locations, etc.

Depending on the scope of work for each installation one or more stages of fieldwork were conducted (Appendix I). For all seven installations, fieldwork commenced with a pedestrian survey noting characteristics of the landscape and obvious disturbances. Phase IA sensitivity assessments were performed in the Picatinny, West Orange, Lawrenceville, Fort Dix, and Vineland installations. No artifacts were collected or sites excavated in these surveys. Rather, fieldwork was intended to generate data to augment the literature review in developing an archeological site sensitivity model, thus providing a solid basis on which to formulate recommendations for Phase IB surveys.

Two major classes of information were collected during the Phase IA assessments: (1) the nature and extent of existing impacts to the landscape, and (2) topographic and geomorphic characteristics of the terrain. Detailed notes were made in the field regarding attributes of the physical landscape, existing disturbances, and potential for archeological testing. These notes were numbered and keyed to the installation base maps. In addition, disturbances and representative topographic/geomorphic settings were photographed and also keyed to the base maps.

Phase I surveys were conducted in the Morristown and Sea Girt armories. Areas of undisturbed or potentially undisturbed terrain were covered by vegetation. Recently plowed fields were not present in either of these armories. Undisturbed or potentially undisturbed terrain was shovel tested. Each shovel test measured approximately 40 cm (16 in.) in diameter. Excavation proceeded in natural layers or horizons, and all soil was passed through ¼-inch-mesh screen to ensure the uniform recovery of artifacts. All artifacts other than such modern debris as plastic, recent bottle glass, pull-tabs, etc. were retained and placed in field bags marked with the appropriate provenience information. Shovel tests were excavated at least 10 cm (4 in.) into Pleistocene subsoil, except when the water table was intercepted. The depths of shovel tests were restricted to approximately 70 cm (28 in.), the practical limit for such excavations. Locational and stratigraphic information for each shovel test was recorded on pre-printed forms, including unit location relative to other units or natural/cultural landmarks; topographic setting; and thickness, Munsell color, texture, inclusions, and artifactual content of each exposed soil horizon. Each shovel test was backfilled immediately upon completion of excavation and recordation. The locations of shovel tests were plotted on project base maps. The field director maintained daily field notes recording specific details of the fieldwork and general observations. The surveys were photo documented with black-and-white prints and color slides.

3.3 ARTIFACT PROCESSING AND LABORATORY ANALYSIS

All recovered artifacts were cleaned and inventoried in accordance with the guidelines established by the New Jersey Historic Preservation Office (2002). If possible, artifacts were identified by function and/or cultural affiliation. Artifacts selected for permanent curation at the Sea Girt Armory Museum were placed in heavy-duty archivally stable plastic bags secured with twist-ties for permanent storage, with an acid-free provenience tag placed in each bag. Provenience information was also written on the outsides of the bags, using a permanent marker. All artifacts will be submitted to the Sea Girt Armory Museum for permanent curation.

4.0 RESULTS

4.1 PHASE IA SENSITIVITY ASSESSMENTS

4.1.1 *PICATINNY ARMY AVIATION SUPPORT FACILITY #2*

4.1.1.1 Review of Existing Archeological Data

Numerous archeological resource studies have been conducted in the vicinity of the Picatinny Army Aviation Support Facility #2 (Bianchi et al. 1988; Historic Conservation & Interpretation 1996; Rutsch 1991; Rutsch and van Voorst 1989, 1990; Rutsch et al. 1986, 1994; Schieppati 1998, 2000; U.S. Army Corps of Engineers 1995).

One previously documented archeological site is located within a one-mile radius of the Picatinny Army Aviation Support Facility #2 (Gregory Lattanzi, personal communication 2003a; Schieppati et al. 2000). Site 28MR287 is a “small lithic workshop” of unknown antiquity situated on a terrace overlooking Green Pond Brook, between Picatinny Lake and Lake Denmark (Schieppati et al. 2000:7-1). The site is located about 2,500 ft. to the west of the armory. Historic Conservation & Interpretation documented two complexes of historic homesteads and a charcoal kiln site, located to the southeast and northeast of the armory (Rutsch et al. 1994:Figure 1a). Rutsch et al. (1994:9-12) suggested that these homesteads were linked to the local water-powered iron industry and may be thought of as part of a forge farm.

4.1.1.2 Sensitivity Assessment

The portion of the Picatinny Arsenal that was studied is called Army Aviation Support Facility #2. This facility encompasses approximately 29 acres (Table 1). Much of the area has been graded or otherwise disturbed in the construction of runways, parking areas, and the control tower/offices (Figures 42-44). Several discrete portions of the armory area remain relatively undisturbed. The largest of these is a large wooded tract located in the northern part of the armory grounds. A few smaller areas of grass and woods are dispersed in the northwestern and southern portions of the armory (Figure 42). In total, the undisturbed areas cover approximately 10 acres (Table 2).

Topographically, the Army Aviation Support Facility #2 is situated atop a small hill overlooking Green Pond Brook at 900 ft. AMSL. Soils of the landform are shallow, very stony, and well drained to moderately well drained. This setting would be a likely location for small transitory hunting or upland foray camps. As such, the undisturbed portions of the support facility are highly sensitive for prehistoric archeological resources. Historic maps of the area show a residence near the intersection of Snake Hill Road and Lake Denmark Road, from 1853 to 1887 (Figures 23-25). This house appears to be located outside of the support facility property. Some of the yard deposits may have extended into the western portion of the facility, in the area of the current runway and helipad (compare Figures 23, 24, and 25 to Figure 42).

4.1.2 WEST ORANGE ARMORY

4.1.2.1 Review of Existing Archeological Data

A few archeological resource surveys have been conducted in the vicinity of the West Orange Armory (Andrews et al. 2001; Greenhouse Consultants 1993; Springstead et al. 1979). No previously documented archeological are located within a one-mile radius of the armory (Gregory Lattanzi, personal communication 2003b).

In their sensitivity assessment of landforms in the vicinity of the Mount Pleasant Place bridge, located about .75 miles to the northeast of the armory, Greenhouse Consultants (1993:17) concluded that “almost all [sites are] located on well drained knolls near springs and streams.”

4.1.2.2 Sensitivity Assessment

The West Orange Armory sits on approximately 65 acres of land along the lower slope of Watchung Mountain, at an elevation of about 420 ft. AMSL (Table 1; Figure 8). Approximately 46 acres of the armory property is wooded (Figures 45 and 46). Of this, almost 11 acres consists of a flat area near the top of Watchung Mountain (Figure 8). Most of the armory land is comprised of wooded steeply sloping terrain (31.5 acres). A 3.8-acre section of the property is an open grassy field on flat to moderately sloped ground (Figure 47). The remaining 18.3 acres consist of buildings, parking lots, and a tank shooting range (Figures 45, 48, and 49).

The armory land is divided between sloping and flat portions of Watchung Mountain. This area overlooks the upper Rahway River. The flat areas are considered to be highly sensitive for prehistoric archeological resources. The moderately sloped northwestern portion of the open grassy field has medium sensitivity for archeological resources. The areas of steep slopes possess low sensitivity for archeological resources. No rockshelters were documented on the armory land. The developed portions of the armory possess little to no potential for archeological resources. None of the historic maps available for the area show structures in the approximate location of the armory, from 1850 to 1879 (Figures 29-32).

4.1.3 LAWRENCEVILLE ARMORY

4.1.3.1 Review of Existing Archeological Data

A few archeological resource surveys have been conducted in the vicinity of the Lawrenceville Armory (Abell et al. 1996; Kardas and Larrabee 1975; Thomas et al. 1984). One previously documented archeological site is located approximately 3,000 ft. to the northeast of the armory. Site 28ME128 was identified to be the remains of a portion of a probable twentieth-century road, about 10 m wide and 100 m long (Gregory Lattanzi, personal communication 2003c; Thomas et al. 1984:63).

4.1.3.2 Sensitivity Assessment

The Lawrenceville Armory occupies about 78 acres of land (Table 1; Figure 50). A considerable amount of the armory property is covered in woods (28.86 ac.) and grassy fields (22.05 ac.). The remaining 27.23 acres have been developed in building complexes and parking areas (Figures 51-53). The armory is situated in the vicinity of wetlands and headwater streams associated with

Little Shabakunk Creek, Shabakunk Creek, and Assunpink Creek (Figure 11). The terrain is flat and the soils consist of well-drained loam. Other studies conducted in similar settings in this portion of New Jersey have identified numerous archeological sites dating to the full range of prehistory, especially to the Late Archaic period (Benedict and Siegel 1996; Curbishley 1954; Dillian 2002; Guzzo 2002; Hasenstab 1991; Kalb 1988; Kardas and Larrabee 1976a, 1976b, 1978a, 1978b, 1981a, 1981b, 1983, 1984; Roberts et al. 1988; Siegel and Benedict 1996; Siegel and Tobias 2003). The wooded and grassy portions of the armory, totaling about 50 acres, are highly sensitive for prehistoric archeological resources. The developed sections of the armory possess no potential for archeological resources (Table 2). Historic maps available for the area do not show any structures within the area of the armory land (Figures 33 and 34).

4.1.4 FORT DIX ARMORY

4.1.4.1 Review of Existing Archeological Data

A number of archeological resource surveys have been conducted in the vicinity of the Fort Dix Armory (Braubitz and Burrow 2001; Harmon and Grubb 1993; Louis Berger & Associates 1985, 1988; Maresca and Burrow 2002a, 2002b; U.S. Army Corps of Engineers 1995; Young et al. 1999). Eighteen sites located within an approximate one-mile radius of the armory are documented in the archeological site files of the New Jersey State Museum and the Pinelands Commission (Table 3). Of these, four are unknown prehistoric lithic scatters, two have no information, and one is a historic railroad. The remaining sites contain prehistoric occupations dating to the Paleo-Indian (1 possible), Middle Archaic (1), Late Archaic (7), Terminal Archaic (4), Early Woodland (5), Middle Woodland (5), Late Woodland (3), and undifferentiated Woodland (1). Many more prehistoric sites are documented a few miles further to the west. According to Barry Brady, these sites seem to be centered around cuesta formations, which were sources of quartz used in stone-tool production (Barry Brady [Pinelands Commission], personal communication 2003; see also Ranere and Hansell [1987]). Most of the sites are also in close proximity to wetlands and stream headwaters. The pattern of sites oriented to upland wetlands, noted earlier in connection with the Lawrenceville Armory setting, applies to the Fort Dix context as well.

4.1.4.2 Sensitivity Assessment

The Fort Dix Armory occupies about 44 acres of land (Table 1; Figure 54). A considerable amount of the terrain is heavily developed with large buildings, parking lots, and storage areas (Figures 54-57). The 1957 USGS 7.5-minute series quadrangle shows a large building complex that is no longer present (Figure 14). Joe Dunleavy ([New Jersey Department of Military and Veterans Affairs] personal communication 2003) indicated that these buildings were part of a military hospital that was removed approximately 30 years ago. A wooded area located along the eastern edge of the armory was also present when the hospital buildings were in existence (compare Figures 14 and 54).

The pre-Fort Dix Armory setting was highly sensitive for prehistoric archeological resources. The only portion of the armory that retains this sensitivity rank is the 8-acre wooded area along the eastern edge of the property (Table 1; Figure 54). The large grassy area located along the western edge of the armory was covered by hospital buildings in the mid-twentieth century (Figure 14). The installation and removal of these buildings and subsequent landscaping has not obviously destroyed the integrity of the original soils in this area. The nearly 8-acre grassy area possesses

moderate potential for the presence of archeological resources. There is no potential for the existence of archeological resources in the 28 acres of heavily developed ground within the armory (Table 2). Available historic maps show no buildings within the approximate area of the armory (Figures 35 and 36).

4.1.5 VINELAND ARMORY

4.1.5.1 Review of Existing Archeological Data

A number of archeological investigations have been conducted in the vicinity of the Vineland Armory (Archibald et al. 1999; Cross 1941:44-47; Hernandez et al. 2002; Mounier 1983a, 1983b; Pennington and Archibald 1999; Sheaffer & Roland 1983; Tvaryanas et al. 2001). There are no known archeological resources within a one-mile radius of the armory (Gregory Lattanzi, personal communication 2003b). However, from approximately 1 to 2.5 miles west of the armory there is a group of nine previously documented archeological sites (Cross 1941:44-47; Mounier 1983a, 1983b). Of these, six are unknown prehistoric lithic scatters, one is a large Archaic and Woodland site, one is a small Archaic and Woodland site, and one is a historic site with the remains of three charcoal kilns. In addition, one of the lithic-scatter sites contains the remains of a possible nineteenth-century charcoal kiln. All of these sites are located close to wetlands or along a stream (Muddy Run, Maurice River, Parvin Branch, Tarkiln Branch).

4.1.5.2 Sensitivity Assessment

The Vineland Armory covers approximately 46 acres (Table 1; Figure 58). About 3 acres are heavily developed with armory buildings and parking lots; there is no potential for archeological resources in these areas (Figures 58-60). An environmental site assessment was conducted across the armory property and concluded that there was no evidence for sub-surface landfill activities (Engineering-Environmental Management 1998).

The surface vegetation from an approximate 3.2-acre area to the south and southeast of the main armory building has been removed, although the degree of landscape disturbance is not great (Figure 58). This area is moderately sensitive for archeological resources. The remaining 40 acres are undeveloped and considered to be highly sensitive for prehistoric archeological resources (Table 2; Figures 58, 60, and 61). Wetlands and headwaters of two first-order streams cross much of the western portion of the armory property (Figure 58). These streams flow into larger streams that eventually empty into the Maurice River, to the west of the armory (Figure 20). The armory setting is similar to the settings of the many previously documented sites located about one mile to the west. The 1876 map of the area shows a structure situated within the northeastern portion of the armory property (Figure 41). No structure is present there today, although historic archeological deposits may be preserved in this location. The historic map shows another structure just to the north, which is owned by D. Clark. According to the map, D. Clark owned 50 acres, probably between Garrison Road and Sherman Avenue (Figure 41). It is likely that D. Clark owned the structure that was on the armory property. The northeastern corner of the armory property possesses high potential for a historic archeological resource.

4.2 PHASE IB ARCHEOLOGICAL SURVEYS

4.2.1 MORRISTOWN ARMORY

4.2.1.1 Review of Existing Archeological Data

The Morristown Armory is located in the southern portion of the Highlands, near its border with the Piedmont province (Figure 1). The armory is situated on an upland flat, at an elevation of about 640 ft., surrounded by hills and mountains (Figure 5). A handful of archeological studies were previously conducted in the vicinity of the Morristown armory (Gimigliano 1994; Lenik 1989; Lenik and Carlin 1988; National Park Service 1998; Syneki and Charles 1983). No previously reported archeological sites exist within an approximate one-mile radius of the armory (Gregory Lattanzi, personal communication 2003b). In his survey a short distance to the north of the Morristown Armory, Lenik identified four historic features: cistern, two brick manholes, and a stone survey monument (Lenik and Carlin 1988:1, Figure 1). Lenik (1988) opined that the features are not potentially eligible for listing in the National Register of Historic Places. The Morristown National Historical Park is located about one-quarter mile to the west of the armory (Figure 5). Given its close proximity to the Historical Park, the armory is sensitive for Revolutionary War-related artifacts. Historic maps available for the area show no structures on the armory property (Figures 26-28).

4.2.1.2 Fieldwork and Results

Initially, a pedestrian survey was conducted across the armory property and observations about the terrain were made on the base map. Areas of obvious disturbance and standing water/wetlands were mapped. This was followed by the excavation of shovel tests on a 15-meter interval grid.

Nearly half of the armory property (19.68 acres [47.19%]) has been disturbed from the construction of buildings, a large parking lot, push piles, and a tank-driving area (Table 4; Figures 62-66). In addition, one large area of standing water/wetland and two smaller ones encompass 4.08 acres (9.78% of the property) (Table 4; Figure 62). The remaining 17.94 acres (43.02% of the property) are characterized by wooded undisturbed terrain (Table 4; Figures 62 and 67).

In total, 287 shovel tests were excavated across the armory. For descriptive purposes, the wooded areas were divided into three sections: Woods 1, Woods 2, and Woods 3 (Figure 62). A plowzone (Ap horizon) occurred in most of the shovel tests excavated in Woods 1 and 3. The plowzone in these areas consisted of very dark brown (10YR 2/2), very dark grayish brown (10YR 3/2), dark brown (10YR 3/3), dark grayish brown (10YR 4/2, 2.5Y 4/2), or brown (10YR 4/3) silt loam to silty clay loam. The underlying Bt horizon (subsoil) consisted of dark yellowish brown (10YR 4/4, 4/6) to yellowish brown (10YR 5/4, 5/6, 5/8) silt loam to clay loam. Soils excavated adjacent to and within the wetlands typically contained iron staining and in the B horizon were heavily mottled (Figure 68).

Soils in Woods 2 consisted of very dark gray (10YR 2/2), very dark grayish brown (10YR 3/2), dark brown (10YR 3/3), dark grayish brown (10YR 4/2), or brown (10YR 4/3) gravelly silt loam (Ap horizon). The underlying Bt horizon contained dark yellowish brown (10YR 3/6, 4/4, 4/6) to yellowish brown (10YR 5/4, 5/6) gravelly silt loam to gravelly silty clay. The A horizon of the shovel tests was very shallow, rarely exceeding 30 cm and often measuring less than 15 cm (Figure 68).

The ruins of a semi-subterranean structure were documented southeast of the armory's fenced enclosure (Figures 62 and 69). The western and northern walls were severely disturbed by recent earth-moving activities. Originally, the structure measured approximately 45 ft. (13.7 m) by 18.9 ft. (5.8 m). Its long axis was orientated toward magnetic north, with the gabled ends located on the building's short axis. The walls of the structure were constructed of mortared fieldstone measuring 1.6 ft. (.5 m). The doorway was centered along the northern wall and measured 4 ft. (1.2 m) across. Based on size and shape, the structure was probably a root cellar. The root cellar may have been an out-building associated with a residence owned by A. Johnson in 1868 (Figure 27). Modern trash and fill deposits were noted within the structure; no additional structures or features were observed. Given the great amount of recent disturbance documented within and around the structure, it is unlikely that intact archeological deposits are present.

The shovel test survey resulted in a collection of 155 artifacts. Many of these were recent items that were noted in the artifact inventory and discarded (Appendix II). Most of the artifacts that were retained consisted of historic ceramics. Most of the ceramics are associated with long date ranges, from the nineteenth century to the present. Two sherds of pearlware with a date range of 1779-1830 were collected (Appendix II). As a group, the artifact assemblage represents general field scatter (Figure 62). No archeological sites were identified.

4.2.2 *SEA GIRT ARMORY*

4.2.2.1 Review of Existing Archeological Data

The Sea Girt Armory is located on the Atlantic shore in Manasquan (Figure 1). A number of archeological investigations have been conducted in the vicinity of the armory (Archaeological Survey Consultants 1980; Ball 1999; Duncan 1995; Gimigliano 1989; Hunter Research 1993; James 1991; Klein and Yamin 1991; Kraft 1975b, 1976b; Miller 1990; Miller et al. 1990; Mitchell 1996; Pickman 1988; Veit and Bello 1999). Many of these studies addressed offshore shipwrecks. Kraft (1976b) tested a Late Woodland site about two miles to the southwest of the armory, in Brielle. Site 28MO283 reportedly was located on the Sea Girt Armory property (Gregory Lattanzi, personal communication 2003d). This site corresponds to the New Jersey State Museum Atlas Coordinates 29-33-6-5, 8. Skinner and Schrabisch (1913:48) report "that scattered specimens have been found on the point of land at Brielle and Manasquan" for this site. From the description the site appears to be prehistoric, although the information is ambiguous.

Military training at Sea Girt commenced in 1884, when a rifle range was opened; a State military encampment was established the following year. Over the next 100 years the property underwent a series of building episodes, largely associated with the Spanish American War, the two World Wars, and training for State police and corrections officers (McVarish 2004:15-16).

4.2.2.2 Fieldwork and Results

The Sea Girt Armory property encompasses 171 acres. In developing the scope of work, in consultation with the Corps Technical Point of Contact, much of the Sea Girt facility was thought to have been heavily disturbed by construction and demolition over a long period of time. Accordingly, 48 shovel tests were estimated to adequately cover the undisturbed portions of the armory at a 15-meter interval and to re-locate Site 28MO283 (Appendix I).

Initially, the armory property was subjected to a pedestrian survey. Areas of obvious disturbance were documented on the project base map (Figure 70). Shovel testing commenced at the eastern shore end of the property. Aside from small pockets of terrain near the eastern and southern ends of the armory (Figure 71), the large grassy fields covering much of the property contain intact soils.

The beach (6.71 acres [3.92% of the property]) and dunes (9.70 acres [5.67%]) defining the east end of the property were pedestrian surveyed (Figures 70 and 72). No artifacts or any indication of cultural resources were documented in these areas. A small wetland, 1.70 acres (.99%) in area, was noted in the southeastern portion of the property (Figure 70). Graded, filled, and otherwise disturbed areas; parking lots; and buildings account for 68.29 acres (39.93%). A 3.35-acre (1.95%) croquet/bocce lawn and associated field located in the northwestern section of the armory was not shovel tested (Table 4).

The remaining 81.27 acres (47.52%) of the armory are covered by large grassy fields (parade grounds) with intact sediments (Figures 73 and 74). Surveying this area at a 15-meter interval would require 1,309 shovel tests. In order to survey the area within the allotted amount of time it was decided to widen the shovel test interval to approximately 100 meters. In doing so, 51 shovel tests were excavated, providing broad coverage of the armory (Figure 70).

The majority of shovel tests exhibited an intact profile consisting of an Ap horizon atop a B horizon. The plowzone varied in depth, ranging from 20 to 45 cm. It consisted of very dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), or brown (10YR 4/3) sand to sandy loam. The underlying subsoil consisted of dark yellowish brown (10YR 4/4, 4/6), yellowish brown (10YR 5/4, 5/6), or light yellowish brown (10YR 6/4) sand to sandy loam (Figure 68).

Eight shovel tests, located in the eastern and southern portions of the armory, documented areas that were disturbed from filling and grading activities (Figure 70). These units contained very dark grayish brown (10YR 3/2) to dark grayish brown (10YR 4/2) sand to sandy loam overlying layered fill deposits (Figure 68).

In total, 84 artifacts were retrieved, many of which were noted in the inventory and discarded (Appendix II). Most of the retained artifacts consisted of historic ceramics ($n = 16$), followed by bullets ($n = 10$). A 1913 Barber dime was collected from Shovel Test SG22. Artifacts were distributed relatively evenly across the property and may represent general field scatter, mostly dating to various periods of the armory's history, although at a 100-m shovel-test interval it is difficult to adequately characterize the assemblage (Figure 70). No prehistoric artifacts were recovered and no archeological sites were identified.

5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 SUMMARY AND CONCLUSIONS

5.1.1 PHASE IA SENSITIVITY ASSESSMENTS

5.1.1.1 Picatinny Army Aviation Support Facility #2

The Army Aviation Support Facility #2 covers about 29 acres in Rockaway Township, Morris County. The facility is positioned atop a hill overlooking Green Pond Brook. This setting is a likely location for small transitory prehistoric hunting or upland foray camps. Approximately 18 acres of the facility have been severely disturbed from the construction of runways, parking areas, and buildings. As such, there is no potential for archeological resources to be present in these severely disturbed locations. Undisturbed portions of the terrain account for 10 acres. These 10 acres are considered to be highly sensitive for prehistoric archeological resources.

5.1.1.2 West Orange Armory

The West Orange Armory is situated on approximately 65 acres in West Orange Township, Essex County. The armory is positioned on the lower slope of Watchung Mountain. About 32 acres of the property are covered by undeveloped, wooded, steeply sloped terrain. These areas are considered to possess low potential for archeological resources. Approximately 13 acres of the armory consist of flat undeveloped terrain, most of which is a wooded tract close to the top of Watchung Mountain. These areas are considered to be highly sensitive for prehistoric archeological resources. A moderately sloped portion of a grassy field, about 1 acre in area, has medium sensitivity for archeological resources. The remaining 18 acres of the armory are covered by large buildings, parking areas, and a tank-shooting range. There is no potential for extant archeological resources in these areas.

5.1.1.3 Lawrenceville Armory

The Lawrenceville Armory is located on 78 acres in Lawrence Township, Mercer County. The armory is situated in the vicinity of wetlands and headwater streams associated with several creeks. Similar settings in this portion of New Jersey have produced numerous archeological sites dating to the full range of prehistory. Approximately 50 acres of the armory are covered by undeveloped wooded tracts or grassy fields and are highly sensitive for prehistoric archeological resources. The remaining 27 acres have been developed in building complexes and parking areas; there is no potential for archeological resources in these areas.

5.1.1.4 Fort Dix Armory

The Fort Dix Armory covers 44 acres in New Hanover Township, Burlington County. The general setting of the armory is highly sensitive for prehistoric archeological resources. Twenty-eight acres of the armory property have heavily developed precluding any potential for extant archeological resources (no potential). An 8-acre wooded tract along the eastern edge of the property is undisturbed and is highly sensitive for prehistoric archeological resources. A nearly 8-acre grassy area located along the western edge of the armory property was lightly developed in the past. As such this area is considered to possess moderate potential for archeological resources.

5.1.1.5 Vineland Armory

The Vineland Armory covers about 46 acres in Vineland Township, Cumberland County. The armory is located in the setting of wetlands and headwaters of two streams within the Maurice River watershed. Similar settings in the region have produced numerous prehistoric sites. Approximately three acres of the armory are heavily developed and represent no potential for archeological resources. The surface vegetation from another three acres has been removed, although the degree of landscape disturbance appears to be minimal in this area, thus assigned a moderately sensitive rank for archeological site potential. The remaining 39 acres are considered to be highly sensitive for prehistoric archeological resources. In addition, a small one to two-acre undeveloped area in the northeastern portion of the property possesses high potential for a historic archeological resource because on the 1876 map a structure is shown to be present in this location.

5.1.2 PHASE I ARCHEOLOGICAL SURVEYS

5.1.2.1 Morristown Armory

The Morristown Armory covers 41 acres in Morris Township, Morris County. It is positioned on an upland flat surrounded by hills and mountains. The Morristown National Historical Park is located a short distance to the west of the armory. Wetlands are located in three portions of the armory property, totaling about 4 acres. Approximately 20 acres of the property have been severely disturbed from development and a tank-driving area. Recently disturbed ruins of a small structure, probably a root cellar, were documented southeast of the armory's fenced enclosure. Modern trash and fill deposits were noted within the structure and associated terrain has been disturbed from recent bulldozing. Approximately 18 acres consist of undeveloped wooded terrain. This latter area was shovel tested at a 15-m interval. In total, 287 shovel tests were excavated, which resulted in a collection of 155 artifacts. Many of these were recent items, noted in the inventory, and discarded. The artifact assemblage represents general field scatter. No archeological sites were identified.

5.1.2.2 Sea Girt Armory

The Sea Girt Armory covers 171 acres of Coastal Plain along the Atlantic shore in Manasquan Township, Monmouth County. In developing the scope of work, much of the armory property was believed to have been severely disturbed from previous development and demolition activities. As such, it was estimated that 48 shovel tests would adequately cover the undisturbed portions of the armory, at a 15-m interval. Further, it was thought that these shovel tests would be sufficient to re-locate and investigate Site 28MO283, a previously recorded archeological site believed to be on the armory property.

Shovel testing confirmed that most of the large grassy fields, covering about 82 acres of the armory property, consist of intact soils. The beach and dunes encompass approximately 15 acres of the eastern section of the armory. The beach and dune areas were subjected to a pedestrian survey. A small wetland, about 2 acres in area, is located in the southeastern portion of the property. Sections of the armory that have been severely disturbed from development account for approximately 68 acres.

Surveying the undisturbed portions of the armory at a 15-m interval would require more than 1,300 shovel tests. A field decision was made to widen the interval to 100 m in order to obtain broad survey coverage of the large fields. Fifty-one shovel tests were excavated, resulting in 84 artifacts. Many of these were recent items, which were noted in the inventory and discarded. Artifacts were relatively evenly dispersed across the property and represent general field scatter. No prehistoric artifacts were recovered and no archeological sites were identified.

5.2 RECOMMENDATIONS

5.2.1 PHASE IA SENSITIVITY ASSESSMENTS

5.2.1.1 Picatinny Army Aviation Support Facility #2

Ten acres of the facility encompass undisturbed terrain that is highly sensitive for prehistoric archeological resources. In the opinion of JMA, these sections of the facility should be subjected to a Phase I archeological survey in order to identify the presence or absence of archeological resources.

5.2.1.2 West Orange Armory

The West Orange Amory contains about 13 acres of highly sensitive, 1 acre of moderately sensitive, and 31 acres of low-sensitive terrain for prehistoric archeological resources. In the opinion of JMA, these sections of the property should be subjected to a Phase I archeological survey, divided into three sampling intensities based on sensitivity ranks, in order to identify the presence or absence of archeological resources.

5.2.1.3 Lawrenceville Armory

About 51 acres of the armory property cover undisturbed terrain that is highly sensitive for prehistoric archeological resources. In the opinion of JMA, these sections of the armory should be subjected to a Phase I archeological survey in order to identify the presence or absence of archeological resources.

5.2.1.4 Fort Dix Armory

The Fort Dix Armory contains about 8 acres of highly sensitive and 8 acres of moderately sensitive terrain for prehistoric archeological resources. In the opinion of JMA, these sections of the property should be subjected to a Phase I archeological survey, divided into two sampling intensities based on sensitivity ranks, in order to identify the presence or absence of archeological resources.

5.2.1.5 Vineland Armory

The Vineland Armory contains about 40 acres of high sensitive and 3 acres of moderately sensitive terrain for prehistoric archeological resources. In the opinion of JMA, these sections of the property should be subjected to a Phase I archeological survey, divided into two sampling intensities based on sensitivity ranks, in order to identify the presence or absence of archeological resources. In addition, a one to two-acre area in the northeastern portion of the property is highly

sensitive for a historic archeological resource, based on the 1876 map showing a structure in this vicinity.

5.2.2 *PHASE I ARCHEOLOGICAL SURVEYS*

5.2.2.1 Morrystown Armory

The Phase I archeological survey conducted in the Morrystown Armory documented no archeological resources on the property. In the opinion of JMA, no archeological resources are present. As such, in the opinion of JMA, no further archeological investigations are warranted for the Morrystown Armory.

5.2.2.2 Sea Girt Armory

The Phase I archeological survey conducted in the Sea Girt Armory documented no archeological resources on the property. Approximately 82 acres of the property consist of undisturbed terrain. These sections of the armory were sampled at a 100-meter shovel test interval. In the opinion of JMA, additional Phase I archeological field investigations should be conducted in the undisturbed portions of the armory, at a 15-meter shovel-test interval, in order to refine our understanding of the presence or absence of archeological resources.

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APPENDIX I:

NEW JERSEY ARMY NATIONAL GUARD
IDENTIFICATION OF ARCHEOLOGICAL
RESOURCES

SCOPE OF WORK

APPENDIX II:

NEW JERSEY ARMY NATIONAL GUARD
PHASE I ARCHEOLOGICAL SURVEYS
MORRISTOWN AND SEA GIRT ARMORIES

ARTIFACT INVENTORIES

APPENDIX III:
VITAE OF PRINCIPAL PREPARERS