APPENDIX E

Historical, Architectural, Archaeological and Cultural Resources

E.1 | PHASE IA CULTURAL RESOURCES ASSESSMENT

E.2 | PHASE IA CULTURAL RESOURCES ASSESSMENT ADDENDUM LETTER REPORT

E.3 | SHPO CONSULTATION

APPENDIX E.1

Phase IA Cultural Resources Assessment

Phase IA Cultural Resources Assessment

Signature East and Signature South Improvements
Teterboro Airport
Teterboro and Moonachie Townships
Bergen County, New Jersey



PREPARED FOR:

LANGAN

LANGAN ENGINEERING AND ENVIRONMENTAL
300 KIMBALL DRIVE, 4TH FLOOR
PARSIPPANY, NJ 07054-2172

JUNE 2024 REVISED

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PHASE IA CULTURAL RESOURCES ASSESSMENT

SIGNATURE EAST AND SIGNATURE SOUTH IMPROVEMENTS
TETERBORO AIRPORT
TETERBORO AND MOONACHIE TOWNSHIPS
BERGEN COUNTY, NEW JERSEY

PREPARED FOR:

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LANGAN ENGINEERING AND ENVIRONMENTAL
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JUNE 2024 Revised

EXECUTIVE SUMMARY

On behalf of Langan Engineering and Environmental Consultants (Langan), E2 Project Management, LLC (E2PM) has conducted a Phase IA Cultural Resources Assessment for the proposed Signature East and Signature South Flight Improvements Projects at Teterboro Airport, Teterboro and Moonachie Boroughs, Bergen County, New Jersey. The proposed project includes the construction of additional airplane hangars and airplane apron parking areas for two existing Fixed Base Operators (FBOs) at Teterboro Airport (TEB). FBOs are airport service centers within the airport's property responsible for aircraft services, such as passenger handling, aircraft fueling, parking, maintenance, charters, rentals, flight training and de-icing. As an Undertaking subject to the oversight of the Federal Aviation Administration, the project will be subject to review under the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). The project is anticipated to require New Jersey Department of Environmental Protection (NJDEP), Division of Land Resource Protection (DLRP) permits and approvals. As such, projects permitted, sponsored, or funded, in whole or in part, by New Jersey State agencies must comply with the requirements of the New Jersey State Register Act (NJAC 7:4), which provides both the regulatory vehicle for this investigation as well as guidelines for conducting cultural resources investigations.

The project area consists of two distinct locations—Signature East and Signature South—comprised of undeveloped airport property. The Area of Potential Effects (APE) for each location is comprised of an APE—Direct Effects (e.g. the area or areas which will be directly physically impacted by the proposed project through ground disturbance, demolition, landscape modification, etc…) and an APE—Indirect Effects (e.g. the area or areas which will be indirectly affected or impacted by the proposed project through visual, vibration, or other indirect means).

Archaeological Resources:

With specific regard to prehistoric archaeological resources, the Area of Potential Effects-Direct Effects for both locations originated as the bottom of Glacial Lake Hackensack. As the lake drained the sea level conversely rose keeping the area inundated throughout much of prehistory. Unique to Teterboro is the fact that the airport property is situated within the actual lake bottom—a lake bottom which never fully drained and remained uninhabitable from the Wisconsinan Glaciation until the early 20th century when modified through drainage and fill. In addition to having been an inhospitable environment during prehistory, the areas are overgrown with phragmites, an invasive plant species typically indicative of recent ground disturbance (Saltonstall 2002). Given the submerged nature of the land through all of New Jersey's prehistory and surface-visible evidence of recent ground disturbance via phragmites, the APE-Direct Effects for both locations are characterized as having low to no sensitivity to contain prehistoric archaeological resources.

Sensitivity for historic archaeological resources is based upon a review of historic maps, atlases, and aerial images. As mentioned above for prehistoric archaeological sensitivity, the project area remained inundated wetlands until ca. 1917 when different companies began to drain, fill, and develop the marsh/swamp. While the APE-Direct Effects for Signature South remains undeveloped to this day, the APE-Direct Effects for Signature East once contained a hangar and ancillary buildings belonging to the Wright Aeronautics Corporation and to the Gates Flying Circus. These buildings appear within the APE-Direct Effects on the 1930 USDA Aerial images. Based upon the available information, the Signature South APE-Direct Effects is considered to have low to no sensitivity for historic archaeological resources while the potential for archaeological resources associated with the former Gates Flying Circus and Wright Aeronautics Corporation buildings which once occupied Signature East project area cannot be completely ruled out. Therefore portions of the Signature East APE-Direct Effects are considered to have low sensitivity for historic archaeological resources related to the Gates Flying Circus and the Wright Aeronautical Corporation. A section of the Signature East APE-Direct Effects is also characterized as previously disturbed in association with the grading, filling, cutting, and earthwork employed to establish an access

road. As such, this disturbed area is not considered sensitive for archaeological resources. Limited Phase IB testing at a 100-foot interval is recommended to determine presence/absence of archaeological resources within undisturbed upland areas of low archaeological sensitivity only, should such areas exist.

Historic Architectural Resources:

E2PM identified no previously recorded NJ State or National Register listed or eligible properties within the APE-Indirect Effects for either location. In addition, no buildings meeting the 50-year threshold for New Jersey or National Register listing are present within the APE-Indirect Effects. As a result, the proposed project will have no effect on historic properties as none are present. No further survey is recommended for historic architecture.

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

On behalf of Langan Engineering and Environmental Consultants (Langan), E2 Project Management, LLC (E2PM) has conducted a Phase IA Cultural Resources Assessment for the proposed Signature East and Signature South Flight Improvements Projects at Teterboro Airport, Teterboro and Moonachie Boroughs, Bergen County, New Jersey (see Figures 1 through 3; see also Appendix A). The proposed project includes the construction of additional airplane hangars and airplane apron parking areas for two existing Fixed Base Operators (FBOs) at Teterboro Airport (TEB). FBOs are airport service centers within the airport's property responsible for aircraft services, such as passenger handling, aircraft fueling, parking, maintenance, charters, rentals, flight training and de-icing. Airports are Federally-regulated ports of entry and, therefore, the proposed project is subject to oversight and approval through the Federal Aviation Administration (FAA). Projects funded, permitted, or sponsored by Federal agencies must comply with both the National Environmental Policy Act of 1977 (NEPA) and Section 106 of the National Historic Preservation Act of 1966, as amended. As such, Langan is in the process of preparing an Environmental Assessment for the proposed project under NEPA. As part of the NEPA review process, the Federal Agency must consider a project's impacts on historic and archaeological resources in compliance with both NEPA and Section 106 of the NHPA. In addition, the proposed project is also anticipated to require New Jersey Department of Environmental Protection (NJDEP), Division of Land Resource Protection (DLRP) permits and approvals. As such, projects permitted, sponsored, or funded, in whole or in part, by New Jersey State agencies must comply with the requirements of the New Jersey State Register Act (NJAC 7:4), which provides both the regulatory vehicle for this investigation as well as guidelines for conducting cultural resources investigations.

1.2 AREA OF POTENTIAL EFFECTS

According to 36 CFR Part 800.16(d), the Area of Potential Effects (APE) is defined as:

> The geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

INDIRECT EFFECTS

The APE for Indirect Effects encompasses the area from which the proposed project may be visible. The project site is within the limits of the existing Teterboro Airport and comprises portions of Tax Block 203, Lots 1 and 1.02 in Teterboro Borough and Block 76, Lot 1 in Moonachie Borough. Please refer to Figures 1-3 for a delineation of the APE for Indirect Effects.

DIRECT EFFECTS

The APE for Direct Effects includes those portions of the project area to be physically affected or impacted by the proposed project. The proposed project intends the construction of new buildings, parking areas, stormwater management features, and landscaping. Activities associated with creating these features may include but are not limited to grading, landscape modification, trenching, excavation, and the installation of fencing and/or utilities. As a result, the APE for Direct Effects is limited to portions of Tax Block 203, Lots 1 and 1.02 in Teterboro Borough and Block 76, Lot 1 in Moonachie Borough, Bergen County, New Jersey (see Figures 1 through 3).

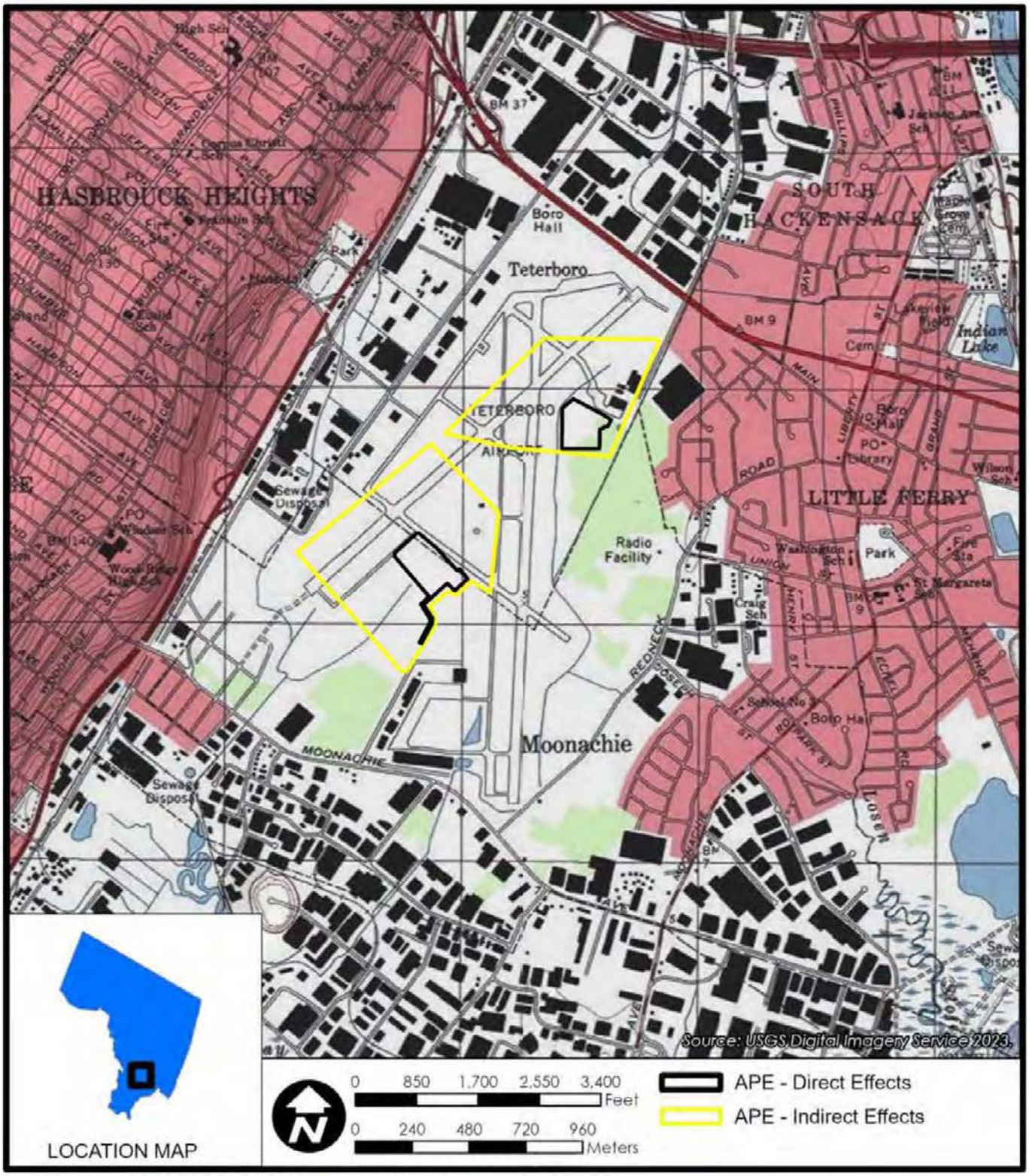


FIGURE 1: USGS TOPOGRAPHIC MAP DEPICTING THE PROJECT AREA.



FIGURE 2: AERIAL VIEW OF THE PROJECT AREA.

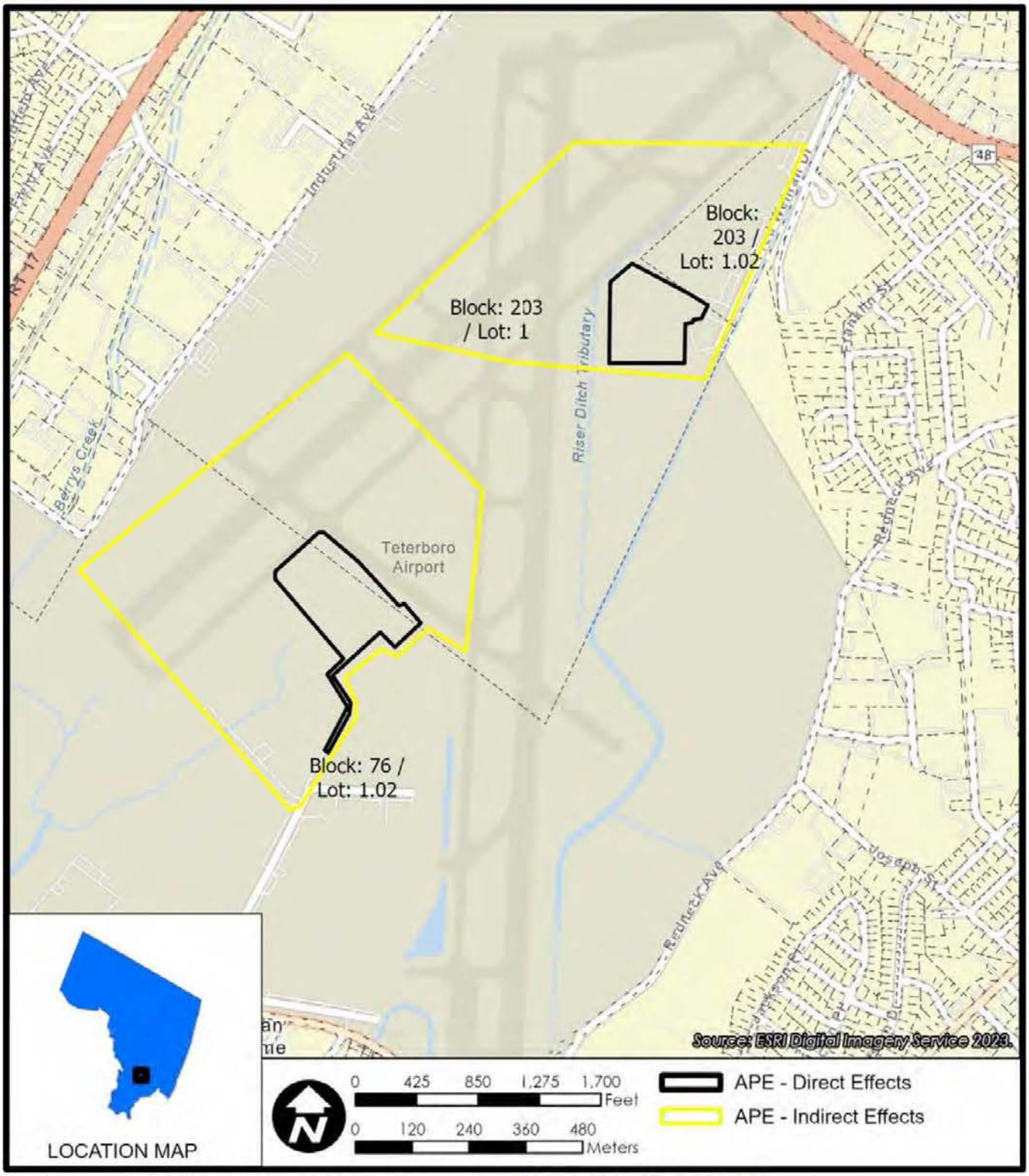


FIGURE 3: TAX LOTS WITHIN THE PROJECT AREA SHOWING THE ARCHITECTURAL APE.

1.3 CRITERIA FOR EVALUATION

The criteria for evaluating the potential for a historic resource to be eligible for inclusion in the NRHP is established by the U.S. Department of Interior. Potentially significant historic properties include districts, structures, objects, or sites which are at least 50 years old (typically), and which meet at least one National Register criterion. First, the potential historic resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association and should be or have:

(a) associated with events that have made a significant contribution to the broad patterns of our history; or
(b) associated with the lives of persons significant in our past; or
(c) the embodiment of the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(d) yielded, or may be likely to yield, information important in prehistory or history.

1.4 OBJECTIVES AND RESEARCH DESIGN

The following Cultural Resources investigation included both a Phase IA Archaeological Assessment and an Intensive-Level Historic Architectural Survey assessing the eligibility and effects of the proposed project on any identified historic resources. The purpose and design of a Phase IA archaeological investigation is twofold. The first goal is to determine a given area's potential to contain known or previously undocumented archaeological resources which may be eligible for inclusion on the New Jersey State or National Registers of Historic Places (NRHP). The next goal is to conduct a sensitivity assessment delimiting the project's location into areas of high, moderate, and low archaeological sensitivity as well as defining areas where due to disturbance, erosion, mining, or other reasons bear no archaeological sensitivity.

In order to complete these goals, the Phase IA archaeological investigation will include background research conducted at the New Jersey State Historic Preservation Office (NJHPO), the New Jersey State Museum (NJSM), and the New Jersey State Library (NJSL), all located in Trenton, New Jersey, as well as at other pertinent research institutions and online resources, as required, in order to synthesize a land-use history of the project area detailing any recorded prehistoric or historic site occupations. Access to the NJHPO is unavailable at this time[1] and reviews of the NJHPO's LUCY database and the NJDEP's Data Miner interface were substituted to complete this research. Also, included in this land-use history is an analysis of environmental factors which may provide a more robust understanding of the property's past use.

In addition to background research, the investigation will include a pedestrian reconnaissance for the purposes of visually identifying physical environmental factors which may impact archaeological sensitivity. Such factors can include but are not limited to surface-visible evidence of deep past ground disturbance, e.g., push-piles, sinkholes, washouts, excavations, debris piles, and the presence of phragmites. Past ground disturbance negatively affects the archaeological sensitivity of an area as it may result in the removal or mixing of soils to such a degree that any interpretable information regarding the nature or NRHP eligibility of an identified archaeological resource is no longer present. As such, identified areas of past ground disturbance are generally photo-documented as part of the pedestrian reconnaissance and determined to hold no potential for intact archaeological resources.

Developing a predictive model to identify archeological sensitivity within an APE is an essential step prior to initiating archeological fieldwork. The model stratifies the APE into areas of high, moderate, low, and no archeological sensitivity

[1] NJHPO does not currently allow in office research, due to the Covid-19 pandemic.

thus providing the basis for determining levels of effort conducted during archeological testing. Archaeological site sensitivity generally falls into two main categories: prehistoric—covering the period of New Jersey's occupation prior to European Settlement and historic—addressing the period of European Settlement to present day. Predicting the likelihood each site-type would occur within any given area requires different empirical datasets. Following is a brief explanation of each predictive model type.

In general, the predictive model for determining prehistoric site sensitivity requires analysis of the presence/absence of nearby previously identified prehistoric archaeological resources proximal to the subject area and an examination of environmental data such as access to potable water, soil drainage, slope, degree of past ground disturbance, and azimuth. Scholarly and avocational articles and cultural resources studies conducted since the early twentieth century reveal that prehistoric site locations tend to favor flat, level upland areas with well-drained soils situated within 500 feet of surface-potable water. In addition, the probability of encountering undocumented prehistoric archaeological resources also increases within 500 feet of previously documented sites (Skinner and Schrabisch 1913; Cross 1941; Pagoulatos 1992, 1998, 2001; Mounier 2003; Reith 2008). Recorded archaeological site information is available through the archaeological site files maintained by the New Jersey State Museum, site maps prepared by noted New Jersey avocational archaeologist Ralph Philips, and National and State Register site data curated by the New Jersey Historic Preservation Office located in Trenton, New Jersey.

For the purposes of this project, areas characterized with high prehistoric archaeological sensitivity are situated on well-drained flat, level (less than 15% slope) undisturbed uplands within 300 feet of surface potable water and/or previously identified prehistoric archaeological sites. Areas with moderate sensitivity are situated between 300 and 500 feet, while low sensitivity areas are located beyond 500. Areas comprised of steep slopes, having poor drainage or those subjected to deep ground disturbance are considered to have low to no sensitivity to contain undocumented prehistoric archaeological resources.

Predicting the possible presence/absence of previously undocumented historic archaeological resources relies in large part on an analysis of historical cartographic data, aerial images, degree of past ground disturbance, and documentary evidence. Sources of such data include published historic maps and atlases, historical societies, libraries, published local histories, historic aerial images, and historic documents such as deeds, wills and probate inventories, county road books and other such public records, and online sources as appropriate. In general, historic archaeological sites tend to occur within 300 feet of mapped historic structures, given the conditions of the project area. In addition, the potential to encounter previously undocumented historic archaeological resources associated with known historic archaeological sites is highest within 300 feet of previously recorded historic archaeological sites. As such, undisturbed areas situated within 200 feet of mapped historic structures or previously identified historic archaeological sites or historic properties are considered to have high sensitivity for undocumented historic archaeological deposits. Areas between 200 and 300 feet are considered to have moderate sensitivity and areas greater than 300 feet are considered to have low to no sensitivity for historic archaeological resources. Areas visibly affected by deep past ground disturbance are considered to have no sensitivity for historic archaeological resources.

The purpose of an Identification-Level Architectural Survey is to visually identify the presence of any above-ground historic resources which may meet the requirements for eligibility for listing in the NRHP. Methods employed to conduct such an architectural survey include:

- Visual observation/inspection of the exterior and available interior of the buildings and their settings;
- Photo-documentation of the surveyed buildings;

1.5 SCOPE OF WORK AND PERSONNEL

The cultural resources investigations conducted for this project consisted of background research, a pedestrian site reconnaissance, and photo documentation. As part of the background research, E2PM consulted records on file at the New Jersey State Museum (NJSM), the NJHPO's online Lucy database, land records maintained by the Burlington County Clerk, and reports curated and maintained on the NJDEP Data Miner website.

E2PM's Cultural Resources Sector Manager, Scott Wieczorek, MA, RPA served as the Project Manager and Principal Investigator for archaeology and architectural history. Resumes of Key Personnel are included in Appendix B.

2.0 ENVIRONMENTAL SETTING

The proposed project is solely located within New Jersey's Piedmont physiographic province. The Piedmont comprises a swath of 1,600 square miles running from Bergen County in the northeast to Mercer County in the southwest. This province encompasses approximately one-fifth of New Jersey's geography. Underlain by slightly folded and faulted sedimentary rocks, the province is derived from rocks of Triassic and Jurassic age (240 to 140 Mya). The low rolling plain is divided by a series of higher ridges and varies in width from 16 to 30 miles. Elevation generally ranges from 300 to 400 feet above mean sea level (amsl) with the highest point in the province reaching 914 feet while its lowest elevation is at the interface with the coastal plain at roughly 100 feet amsl.

Bedrock geology in the vicinity of the project area belongs to the Passaic Formation consisting of sandstone and siltstone facies (NJGeoWeb 2023). Glacial deposits in this area are classified as Lake Bottom Deposits of Wisconsinan Age (75,000 to 11,000 YAG) (NJGeoWeb 2023). At the end of the Wisconsinan glacier (ca. 11,000 YAG), the project area lay beneath the waters of glacial lake Hackensack which breached about 10,000 years ago and did not reach today's levels until roughly 1,000 years ago. Surficial geology belongs to Salt Marsh and Estuarine Deposits indicating it remained relatively inundated until recent historic periods (NJGeoWeb 2023).

Soils within the project area belong to the Udorthents and Transquaking Mucky Peat series. Udorthents describes soils comprised of disturbed, cut, or fill soils which have been recently modified by human activity. While well drained, such soils are derived from imported fills and generally overlay truncated glacially-laid strata. There is no typical pedon for this series. Transquaking series soils are very deep, poorly drained soils flooded by tidal waters and consist of organic decomposed plant matter underlain by loamy sediment. Transquaking soils are generally found in the Coastal Plain province, not in Piedmont. These soils formed in brackish estuaries along tidal rivers and creeks. A typical pedon for this series is provided in Table 1.

TABLE 1: SOILS WITHIN THE PROPOSED PROJECT AREA

Transquaking (TrkAv)	Oi	0-9	very dark brown (10YR2/2)	peat
	Oe1	9-22	black (10YR2/1)	mucky peat
	Oe2	22-46	very dark gray (10YR3/1)	mucky peat
	Oa	46-65	very dark gray (10YR3/1)	muck
	Cg	65-80	very dark brown (5Y3/1)	silty clay

Drainage in the vicinity of the project area belongs to Riser Ditch, an artificial drainage ditch established in the 19th century to drain nearby wetlands, and to a tributary of Berry's Creek. Both drainages feed into Berry's Creek which connects to the Hackensack River which flows into Newark Bay. From Newark Bay, waters flow to Raritan Bay either via the Arthur Kill or Kill Van Kull to Upper New York Bay. From Raritan Bay, the waters drain into the Atlantic Ocean.

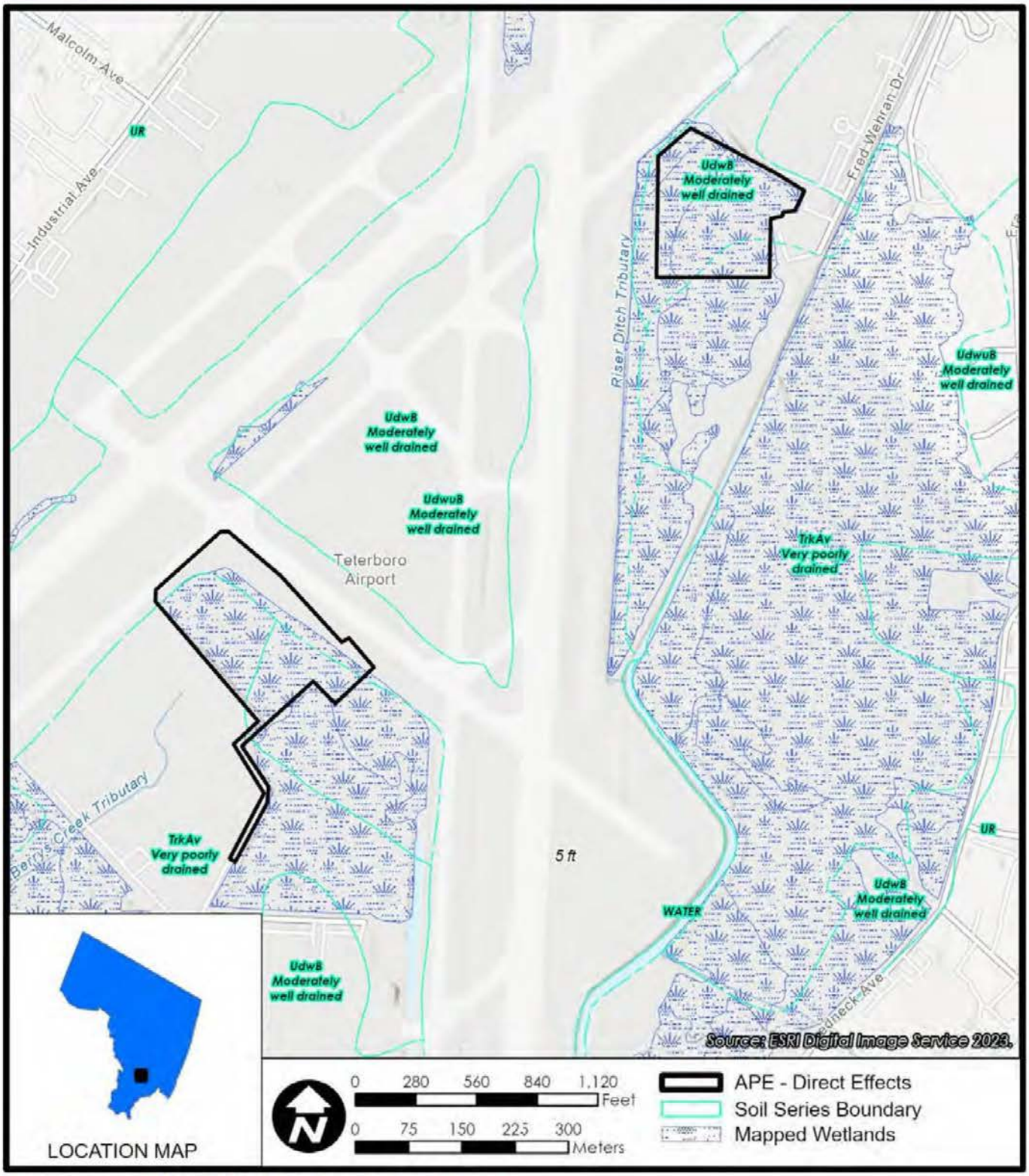


FIGURE 4: SOILS WITHIN AND NEAR THE PROJECT AREA.

3.0 PREHISTORIC AND HISTORIC CONTEXT

3.1 PREHISTORIC ARCHAEOLOGICAL CONTEXT

With respect to the prehistoric culture history of New Jersey, it is important to understand the basic human connection to watercourses. Watercourses are the most common and important element of human settlement patterns providing Native American groups with access to numerous plants and animals that were used for food and clothing, as well as a host of raw materials that were used for tool production, pottery manufacture and protection from harsh environments. Water courses also provided a means of transportation and aided in navigating across the landscape.

PALEOINDIAN PERIOD

New Jersey's earliest recognized occupation dates to the Paleoindian period and is characterized by distinctive fluted lanceolate points. Three known Paleoindian sites have been written about extensively and provide a wealth of knowledge regarding this period of New Jersey's cultural past—the Port Mobil Site, located on the western shore of Staten Island (Eisenberg 1978; Funk 1977; Kraft 1977); the Zierdt Site, located in Sussex County; and the Dutchess Quarry Cave Site, located in southeastern New York State. The nearest of these, the Port Mobil Site, has been dated to circa 10,000 BP and was interpreted as a small resource-procurement/hunting encampment (Eisenberg 1978; Funk 1977). The artifact assemblage from the site includes fluted points, unfluted trianguloid points, scrapers, knives, borers, and gravers.

Radiocarbon dates from preserved pollen remains suggest that about 17,000 BP a gradual warming trend followed the retreating Pleistocene glaciers bringing forth predominantly herbaceous vegetation consisting of mosses, lichens, and sedges. By about 13,000 BP this herbaceous growth became supplanted by open-parkland vegetation followed by mixed-forest zones predominated by pine and spruce. Pine became the dominant vegetation in central New Jersey sometime after 12,000 BP, roughly coinciding with the beginning of the Paleoindian period. During the Paleoindian period, the sea lay below its modern level and the New Jersey shoreline lay significantly farther east of its present position almost near the margins of the continental shelf (Marshall 1982).

It is theorized that Paleoindian subsistence focused on game hunting supplemented by the gathering of plant foods, which leave little to no trace in the archaeological record. The location of known Paleoindian sites in New York and New Jersey suggests a preference for high, well-drained ground, near streams or wetlands, offering vantage points for observing game and collecting edible plants. It is probable that many Paleoindian sites were situated on what is now the continental shelf (Marshall 1982).

ARCHAIC PERIOD

The warmer Holocene climates encouraged population migrations and the development of new subsistence strategies that characterize the Archaic period (10,000 to 3000 BP). These changes included expanding the artifact types employed by Archaic-period peoples to reflect more diverse subsistence and technological activities, though hunting remained the central method of procuring sustenance. In New Jersey the Archaic Period is generally divided into three major subperiods: Early Archaic, Middle Archaic, and Late Archaic with a fourth—the Terminal Archaic or Transitional period recognized in parts of New Jersey and in adjoining areas of New York and Pennsylvania (Kraft and Mounier 1982a).

Investigations at the Harry's Farm Site (Kraft 1975), the Rockelein Site (Dumont and Dumont 1979), and the Shawnee-Minisink Site (McNett et al. 1977)—all located in the Upper Delaware River Valley—provide vital information to identify Early Archaic period (10,000 to 8000 BP) sites, particularly the presence of corner-notched, stemmed, and bifurcate-stemmed projectile points (Broyles 1971; Coe 1964). Numerous Coastal Plain locations have also yielded Early Archaic

diagnostic artifacts, often found together with Paleoindian artifacts (Berger 1988). This association suggests that although the transition from Late Paleoindian to Early Archaic period was marked by a change in projectile point morphology, it does not denote the adoption of a new way of life. Instead, the same basic adaptation and subsistence strategies continued while the change in projectile point morphology merely reflects a technological rather than a cultural paradigm shift (Gardner 1974). Supporting this interpretation is the fact that New Jersey's environment underwent a dramatic change. Retreating glaciers coincided with an increase in temperature and the park-like tundra gave way to a boreal forest of pine trees and growing numbers of oak trees (Sirkin 1977). The last of the large game headed north to cooler climes while deer, moose, elk, bear, and small mammals flourished. Though Early Archaic-period settlement patterns maintained the same preferences for site location as during the Paleoindian period, settlement in New Jersey's coastal plain expanded into the many smaller estuarine environments, as also seen in the Delmarva Peninsula (Berger 1986:III-19). It should be noted that the relative scarcity of Early Archaic sites in New Jersey could be attributable to the northward retreat of the large game drawing Native American populations away from the coastal plain.

Middle Archaic remains, dated 8000 to 6000 BP, are extremely rare in the region, possibly owing to unclear typological definitions for this period. So little is known about the Middle Archaic occupation of New Jersey that it is often linked with either the Early or Late Archaic (Kraft and Mounier 1982a). The few encountered traces of this period suggest an exploitation of a broader resource base than in earlier periods as well as a change in lithic material preferences marked by a greater reliance on argillite. Settlement models for the Middle Archaic suggest two types of sites: one representing large group activities situated to maximize access to a wide variety of resources and the other reflecting small group activities such as forays from base camps or staging areas. Larger sites tend to be found on floodplains and low terraces of major rivers and streams or associated with marsh, swamp, and estuarine environments while smaller sites occupy a wider variety of environmental settings (Berger 1986:III-21-22).

Late Archaic period (6000 to 4500 BP) sites are more common and of longer duration compared to those of earlier periods, suggesting an increase in Native American populations. Various narrow-bladed notched and stemmed projectile points, including Lackawaxen, Poplar Island, Lamoka, and Sylvan types, are diagnostic of the Late Archaic period. Tool assemblages from Late Archaic sites also include atlatl weights, ground stone and pecked-stone implements, heavy and light woodworking tools, net sinkers, and food-grinding implements (Kinsey et al. 1972; Kraft 1975). Specialized food processing tools reveal an increased reliance on gathered wild plants while net sinkers, stone-boiling features, and faunal remains indicate the importance of fishing and shell fishing.

As the climate continued its warming trend and became somewhat drier, the dominant vegetation became fully temperate deciduous forest marked by increases in hickory and pine and overall decreases in oak. This vegetative arrangement produced a more open forest with a higher carrying capacity. Around 3950 BP on the Coastal Plain of New Jersey, alder and birch also made their first appearance (Carbone 1976; Curry and Custer 1982; Sirkin 1977). In addition, the maximum rise in sea level produced a change in topography with an increase in swamps and marshes.

Late Archaic settlement models suggest three alternatives: 1) a central-based wandering system, 2) shifting base camps or 3) territorial mobility with resource-driven base camps. In the first model, a fixed base camp is occupied on a semi-sedentary basis while seasonal or constant forays to other camps would occur with the base camp periodically or seasonally abandoned and reoccupied during later parts of the annual cycle. The second model involves a shifting base-camp location changing when local resource bases became depleted or as seasonal resources became available in other areas. The third model proposes restricted wandering within a given territory, with periodic group consolidation at changing base-camp locations as resource availability allowed (Berger 1986:III-27).

The Terminal Archaic or Transitional period (4500 to 3000 BP) is distinguished by broad-bladed projectile points, including Susquehanna and Perkiomen types; the flared-stem Orient Fishtail point also appeared during the Terminal Archaic and persisted well into the following Woodland period. The appearance of soapstone or steatite vessels and artifacts on New Jersey Coastal Plain sites of this period provides evidence of interregional trade and may suggest residential stability, since stone bowls are items that are not easily transported from site to site. A major habitation and mortuary site from this period was reported at the Savich Farm in Marlton, New Jersey (Regensburg 1971). The cremated remains of about 52 individuals were identified, some accompanied by grave goods, suggesting incipient social ranking.

WOODLAND PERIOD

The Woodland period (3000 BP/1150 BC to AD 1600) consists of three successive subperiods: Early, Middle, and Late. The introduction of ceramic vessels distinguishes the Early Woodland (1150 BC to AD 1) from the preceding Late Archaic period. Other changes include a trend toward greater sedentism, subsistence specialization, and experimentation with cultigens. In general, ceramics followed a progression from Marcey Creek and Ware Plain types, consisting of flat-bottomed, straight-sided vessels with lugs or handles, followed by Vinette I conical-based, coarse-gritted, coil-constructed vessels with interiors and exteriors covered with the marks of cord-wrapped paddles (Kraft 1975; Williams and Thomas 1982). Meadowood projectile points are also common on Earl Woodland sites in New Jersey.

Two settlement models exist for the Early Woodland period. The first model suggests occupation of base camps proximal to resource-rich areas where small groups exploited the nearby resources but remained within the base camp's general environmental setting. The alternative model, more strongly supported by current data, suggests seasonal periods of social fusion and fission focused on specialized procurement and processing sites such as anadromous fish runs or along coastal settings (Berger 1986:III-30).

During the Middle Woodland period (AD 1 to 700), technological changes included the replacement of coarse cord marked pottery with net impressed and zoned ceramics while projectile point forms consisted of Rossville, Fox Creek, and Jack's Reef projectile point types. Pestles, hammer stones, and anvil stones are common processing implements associated with this period suggesting a greater reliance on plant-based subsistence as well as refinement in tool production technologies, while the presence of net sinkers attests to the continued exploitation of fish resources (Stewart 1985; Williams and Thomas 1982).

Settlement patterns appear to reflect a general continuation of those identified during the preceding Late Archaic and Early Woodland periods modified only by an increase of sedentism and the occupation of semipermanent base camps while site location models are like those discussed for the Late Archaic/Early Woodland, with increasing emphasis on riverine and estuarine/coastal areas (Berger 1986:III-32).

Late Woodland period (AD 700 to 1600) sites are the most prolific throughout New Jersey with large sites usually located on major rivers and representing semi-permanent multi-seasonal base camps. An abundance of smaller sites exists on tributaries and near natural springs likely occupied as temporary or seasonal camps. Horticultural practices were broadly utilized during this period supplemented by hunting, gathering, and fishing. Excepting stylistic changes and reliance upon locally-sourced materials, the Late Woodland toolkit resembled that of earlier periods reflecting the ability to exploit a broad resource base. Diagnostic artifacts include triangular points, collared and collarless ceramic vessels bearing incised geometric motifs and cord marking, and a variety of ground stone and chipped- and pecked-stone tools (Berger 1989:III-8).

Settlement patterns for the Late Woodland period belong to two models: base camps occupied on a year-round basis with small seasonal forays and seasonal base camps focused around time-sensitive resource exploitation. In both models, social fusion and fission would occur in differing degrees away from the base camp (Berger 1986:III-39-40).

CONTACT PERIOD

By the time early European explorers navigated New Jersey's waters, the Unami branch of the Lenape (renamed the "Delaware" by Europeans) occupied the territory (Goddard 1978; Kraft 1986). The Algonquian-speaking Unami existed in loosely structured, autonomous bands residing in small, dispersed settlements as opposed to the "tribes" often used to describe Native American groups (Kraft 1981). Through contact with European traders and settlers, the Unami abandoned many of their traditions and relied heavily on European goods in exchange for land and furs.

More than a century of warfare, disease, and alcoholism impacted native populations to the degree that by 1759 it was estimated only 300 Lenape remained in the Province of New Jersey. By 1801 only a handful of Lenape family groups or Lenape descendants remained in the state; today their descendants reside primarily in Oklahoma and Canada (Kraft 1986).

PAST-CULTURAL RESOURCES SURVEYS

Preliminary research performed using the New Jersey Historic Preservation Office's LUCY GIS database reveals the archaeology-APE does not fall within the archaeological site grid.

In 2004, Langan submitted a historical/archaeological review, Historic/Archeological Resource Review Request First Aviation Services, South Development Area, Teterboro Airport: Block 76, Lot 1.02, Borough of Moonachie, Bergen County, New Jersey, for the Teterboro Airport South Development Area to New Jersey Historic Preservation Office (SHPO) for review. The project area of the review is adjacent to the south of TEB-South archaeological-APE. The project involved the construction and relocation of First Aviation Services operations to a new location within the airport. The Langan submission consisted of archival documentary research. It concluded that there are no historic properties in or eligible for in the inclusion in the National Register of Historic Places that would be impacted within the project area. In addition, research at the New Jersey State Museum determined that there are no known registered archaeological resources located within the vicinity of the project area. On 27 May 2004, the SHPO concurred with these findings.

A review of the Bergen County bibliography for previously conducted cultural resources investigations identified twelve (12) past surveys within one-mile of the project area. These are:

BER AA 872
2012
URS Corporation

"Phase IA Cultural Resource Investigation for the Teterboro Airport Control Tower Project, Teterboro, Moonachie, and Hasbrouck Heights, Bergen County, New Jersey"

Located at Teterboro Airport approximately 950 feet southeast of the current project area, the Phase IA survey addressed the proposed construction of a parking lot, base building, airport control tower, culvert and bridge and included background research and a pedestrian reconnaissance. URS concluded that the project site exhibited low potential for either prehistoric or historic archaeological resources, identified no historic properties, and recommended no further work.

MULT F 362
1997
Cultural Resources Consulting Group

"Evaluation of U.S. Route 46 Grade Separations From Route 17, Hasbrouck Heights Borough, Bergen County to Riverview Drive, Totowa Borough, Passaic County"

The survey spanned multiple townships and the investigation's southern terminus is approximately 3,400 feet from the current project area. The survey evaluated 20 grade-separated interchanges along U.S. Route 46 regarding National Register eligibility and consisted of background research of as-built highway plans, annual reports, and aerial photographs. The survey recommended none of the 20 interchanges as eligible for inclusion on the National Register.

BER AA 387
2003
Richard Grubb and Associates, Inc.

"Section 106 Consultation, Verizon Wireless, Hasbrouck Heights 2, 208 Boulevards, Borough of Hasbrouck Heights, Bergen County, New Jersey"

Located approximately one mile west of the current project area, the survey concerned the construction of an eighty-two-foot monopole cellular tower, chain link fence, bollards, and air conditioning units in the central business district of Hasbrouck Heights and consisted of documentary research and a site visit. The survey identified no archaeological sensitivity and no NR-listed properties within the viewshed of the monopole while recommending no further cultural resources investigations.

BER AA 187
2002
ARCH² Inc.

"Cultural Resources Survey for the AT&T Wireless N97-F Hasbrouck Heights II Site, 174 Boulevard, Block 41, Lot 34, Borough of Hasbrouck Heights, Bergen County, New Jersey"

Located approximately 5,300 feet west of the current project area, the survey concerned a proposed monopole construction in downtown Hasbrouck Heights and consisted of research at the NJSM and SHPO. The survey identified no prehistoric or historic archaeological resources within its APE for either direct or indirect effects and recommended no further cultural resources investigations.

BER AA 491
2004
IVI International

"Section 106 Survey, Woodridge T-Mobile Site, 190 Valley Road, Woodridge, Bergen County, New Jersey 07075"

Located approximately 4,300 feet southwest of the current project area, the survey addressed a proposed wireless telecommunications facility at the First Presbyterian Church in Woodridge and consisted of a windshield survey and a viewshed analysis. IVI identified 16 potential architectural resources during their windshield survey but recommended none as eligible for inclusion on the New Jersey State and/or National Registers of Historic Places.

BER F 394
1997
John Milner Associates (JMA)

"Phase I Archaeological Survey and Architectural Resources Investigation, Route 46/Liberty Street/Phillips Street/Grand Street/Little Ferry Circle Improvements, Little Ferry Borough and South Hackensack Township, Bergen County, New Jersey"

This survey addressed the impacts of a road improvement project in Little Ferry and South Hackensack, NJ located approximately 2,200 feet northeast of the current project area JMA assessed the project area as having low sensitivity for archaeological resources and four excavated shovel test pits encountered no cultural materials. The architectural investigation examined all nearby structures over 50 years of age and recommended none eligible for NR-listing.

BER F 2
1978
Archaeological Survey Consultants

"Phase I Cultural Resource Survey of the Proposed Redneck Avenue Extension, Bergen County, New Jersey"

Located 970 feet east of the current project area, the survey preceded the proposed Redneck Avenue construction in Moonachie, Teterboro, and Little Ferry Boroughs, NJ. Documentary and background research, pedestrian survey, and the excavation of eighteen 1x1 meter test pits encountered no cultural materials and identified no historic properties.

BER E 170a
1989
Richard Grubb & Associates, Inc.

"Stage 1B Cultural Resource Survey, Wood-Ridge Wastewater Treatment Plant, Borough of Wood-Ridge, Bergen County, New Jersey"

Located approximately 3,600 ft. southwest of the current project area, this cultural resource survey addressed upgrades to the Wood-Bridge wastewater treatment facility and assessed its project site as having high sensitivity for archaeological resources. 27 excavated STPs encountered no prehistoric or historic archaeological resources.

BER A 159
1993
United States Army Corps of Engineers

"Cultural Resources Reconnaissance Report, Hackensack River Basin Flood Control Project - Berry's Creek Area"

Located approximately 2,500 ft. south of the current project area, the project preceded the construction of three levees in the Hackensack River Flood Basin and consisted of research and documentation of previous cultural resource surveys. Historic architectural and archaeological background research identified no properties or sites located within the current project area but recommended areas of moderate to high archaeological sensitivity within the Hackensack River Flood Basin.

BER E 236
1997
CRCG

"Phase IA Cultural Resource Investigation, the Wood-Ridge Site, Wood-Ridge and Carlstadt Boroughs, Bergen County, New Jersey"

Located approximately 5,000 ft. southwest of the current project area, the survey included surface inspection, and visual reconnaissance of the study area. CRCG recommended low potential to contain archaeological resources and identified no potentially NR-eligible properties.

BER AA 452
2003
Hunter Research Inc.

"Phase IA Archaeological Survey For The Proposed Valley National Bank, 199 Moonachie Road, Borough of Moonachie, Bergen County, New Jersey"

Located approximately 5,000 ft. south of the current project area, the survey consisted of background research at the NJ State Museum and NJ State Historic Preservation Office, as well as site reconnaissance. Hunter assessed the project's site as having low sensitivity for archaeological resources.

BER AA 437
2003
BL Companies

"Section 106 Review: Proposed Telecommunications Tower, 280 Moonachie Road, Moonachie, Bergen County, New Jersey"

Located approximately 4,400 ft. east of the current project area, this study addressed a proposed 100-foot monopole installation in Moonachie, New Jersey and included a literature search to identify previously recorded historic structures and/or archaeological sites and a site reconnaissance. The study characterized its project site as having low sensitivity for cultural resources and identified no historic properties.

2016
Langan Engineers

"Phase IA Archaeological and Reconnaissance Level Architectural Survey, Signature Flight Support Expansion at Teterboro Airport, Borough of Moonachie: Block 76, Lot 1.02 (Portion), Borough of Teterboro: Block 203, Lot 1 (Portion), Bergen County, New Jersey"

This Phase IA investigation concerned the very same project as the current study. Langan characterized the project area as having moderate to low sensitivity for prehistoric archaeological resources and no sensitivity for historic-period resources. The architectural portion of the survey identified no historic properties.

KNOWN ARCHAEOLOGICAL RESOURCES

Coordination with Dr. Gregory Lattanzi of the New Jersey State Museum (NJSM) reveals there are no previously identified archaeological sites within, adjacent, or within one-mile of the archaeological-APEs.

3.2 HISTORIC CONTEXT

Officially formed in 1682, Bergen County's initial settlement began in the 1650s as part of the Dutch New Netherland colony. When Cornwallis' troops first landed to invade New Jersey, they disembarked at the foot of the palisades in Alpine Township and marched to Fort Lee where they encountered Colonial resistance. *A Sketch Map of the Northern Parts of New Jersey* published in 1781 by John Hills depicts no specific development within the project area but does provide vital clues to its historic land use (see Figure 5; Hills 1781). As depicted on the map, several major settlements surrounded the project area—Little Ferry, Acquackanonk, and Hackensack. The map also depicts the southern development area as situated within tidal marsh belonging to the Hackensack River.

As early as 1825, deeds for the lands now contained within Teterboro Airport described the property as "more than half salt marsh and cedar swamps" (Holden 2009). In fact, *A Map of the State of New Jersey* published in 1833 by Thomas Gordon to accompany his popular Gazetteer depicts the project area situated within marshlands surrounding a tributary to Berry Creek (see Figure 6; Gordon 1833). This quote from Holden derives, in fact, from Gordon's Gazetteer which states while addressing Lodi Township that "More than half the t-ship consists of salt marsh and cedar swamp" (Gordon 1834). Gordon also identified several creeks which traversed the marsh—Berry's, Kirkland's, and Sawmill creeks. Lodi's 1830 population included 1,356 residents and included 1 store, 5 grist mills, and 4 sawmills (Gordon 1834).

According to G.M. Hopkins' *Map of the Counties of Bergen and Passaic* published in 1861, the project area remained undeveloped inundated wetlands (see Figure 7; Hopkins 1361). The 1889 *Topographical Map of the Counties of Bergen, Hudson, and Essex* developed as part of the New Jersey State Geological Survey by George H. Cook similarly depicts the project area as inundated wetlands (see Figure 8; Cook 1889) as does the 1903 USGS Paterson Quadrangle Topographic Map (see Figure 9; USGS 1903).

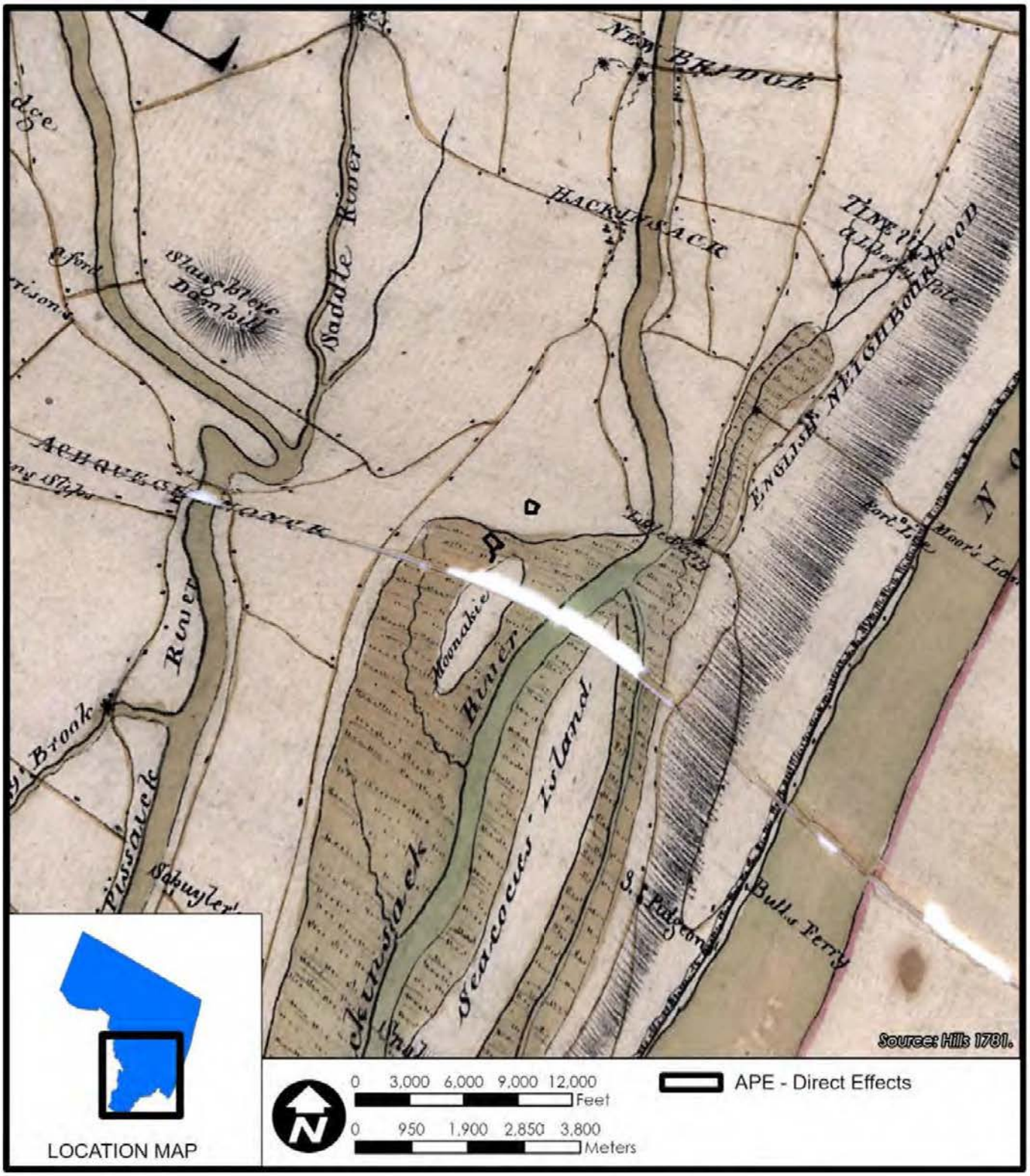


FIGURE 5: 1781 *A SKETCH MAP OF THE NORTHERN PARTS OF NEW JERSEY* by JOHN HILLS.

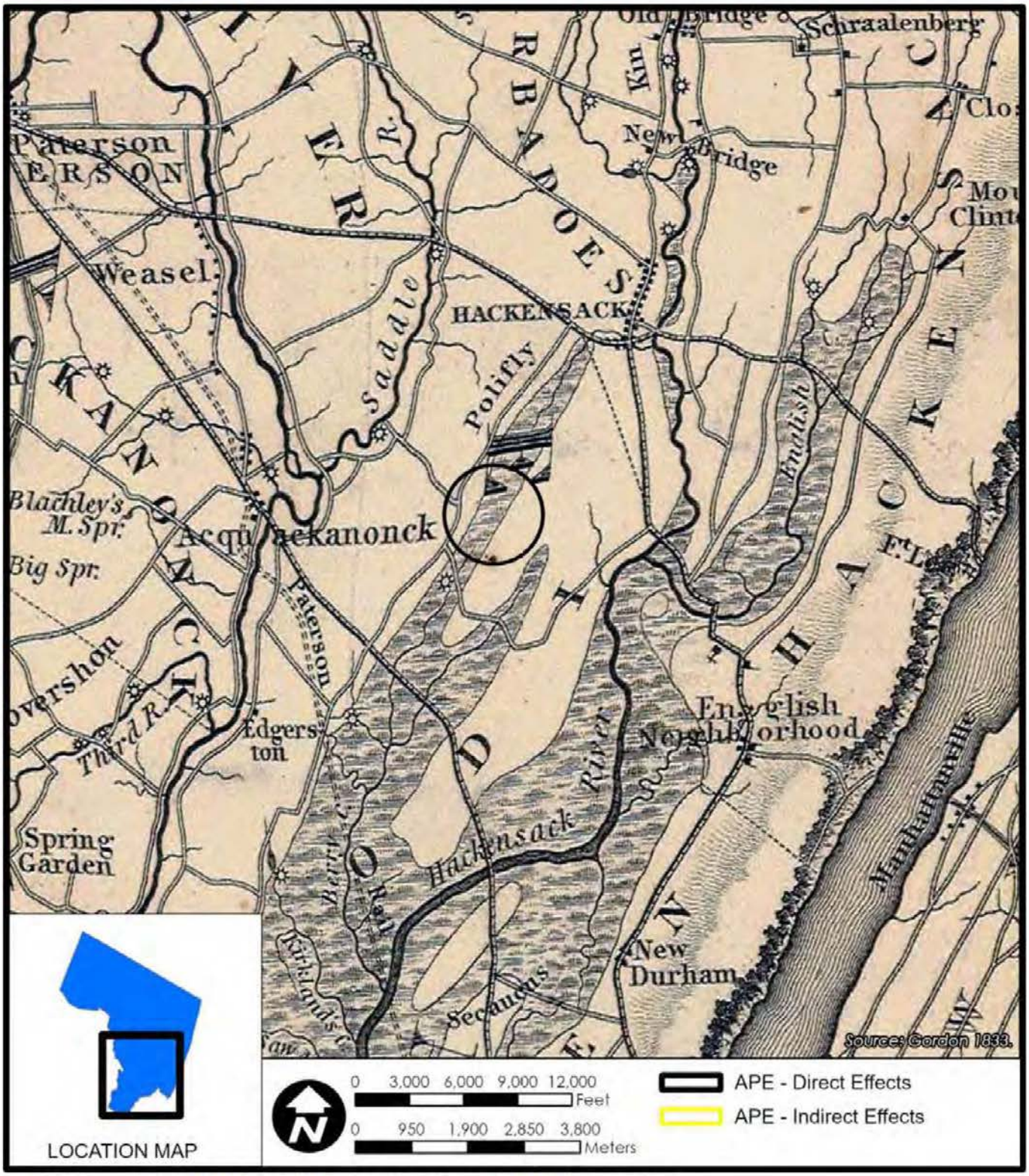


FIGURE 6: **1833 *MAP OF THE STATE OF NEW JERSEY* BY THOMAS GORDON.**

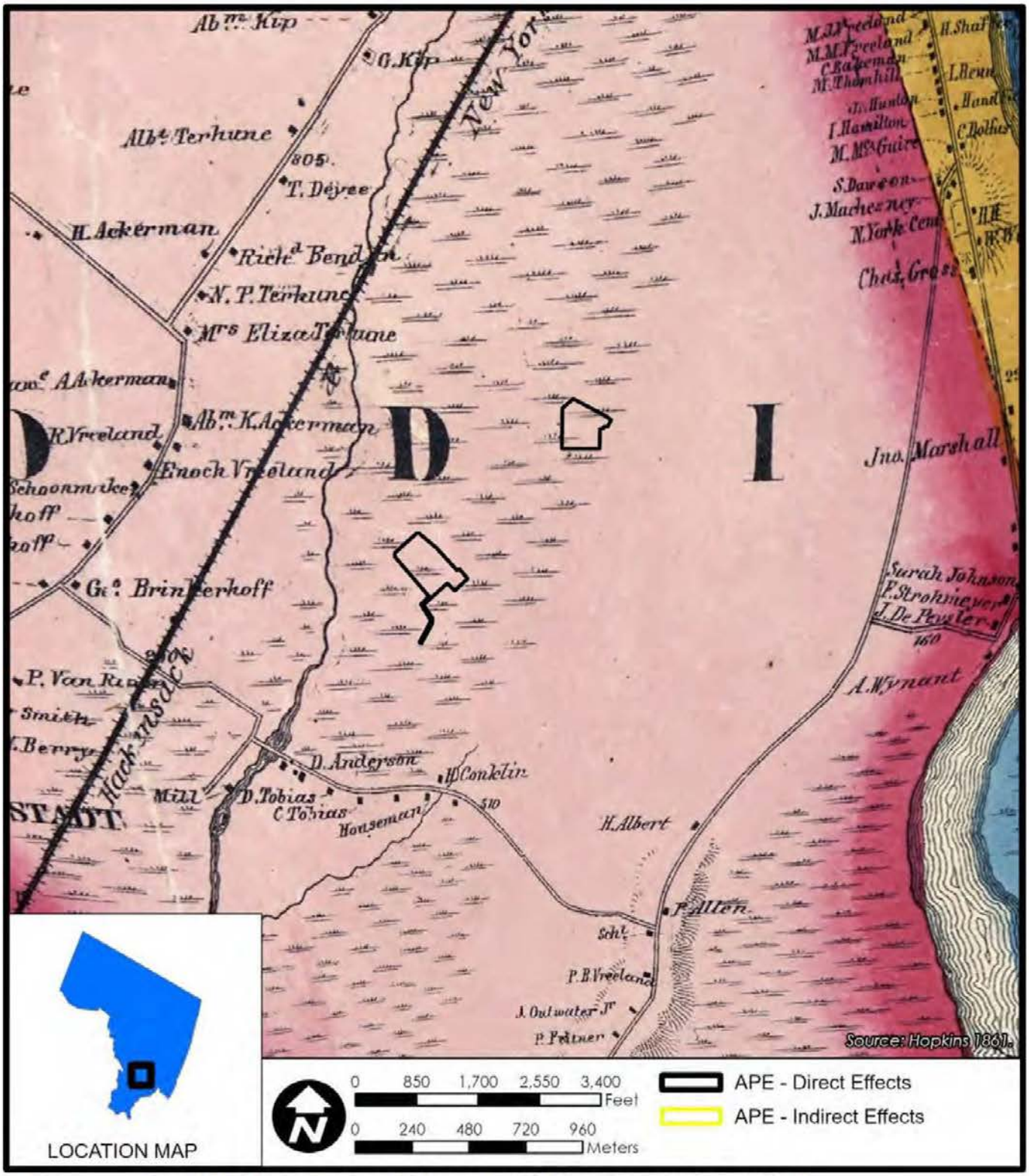


FIGURE 7: **1861 *MAP OF BERGEN AND PASSAIC COUNTIES, NEW JERSEY* BY G.M. HOPKINS.**

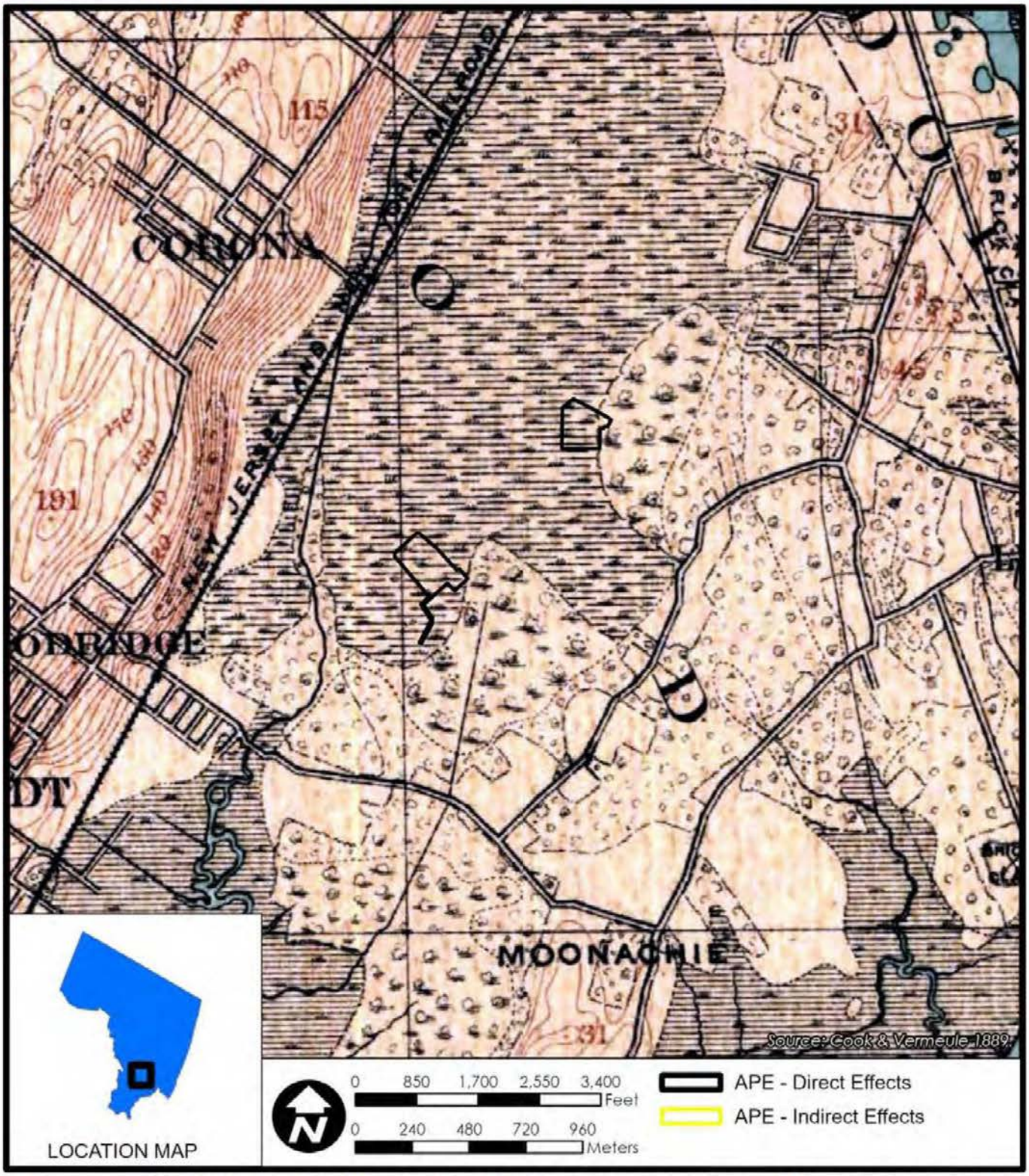


FIGURE 8: **1889 *TOPOGRAPHICAL MAP OF THE COUNTIES OF BERGEN, HUDSON, AND ESSEX* BY COOK AND VERMEULE.**

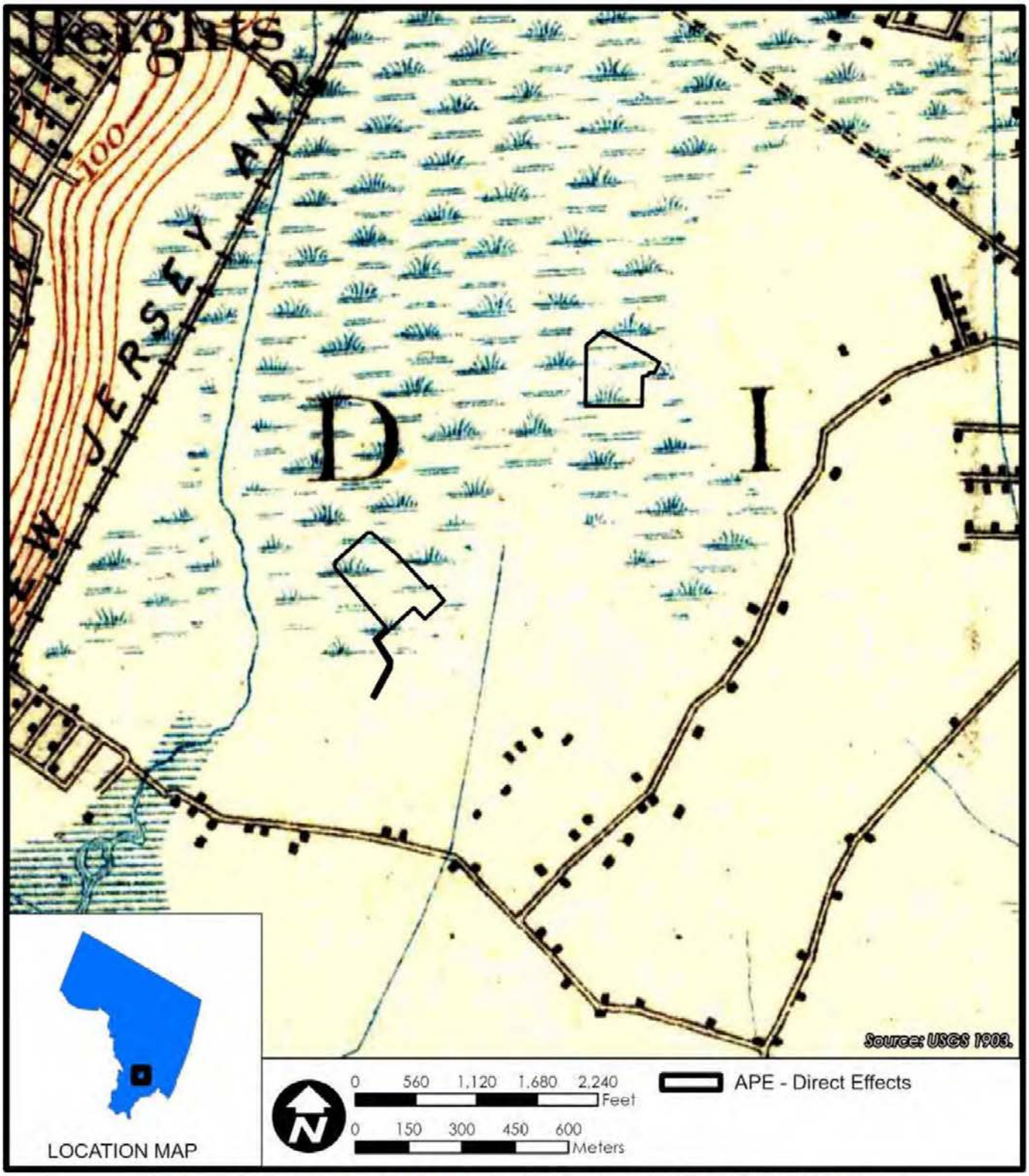


FIGURE 9: **1903 *PATERSON QUADRANGLE*, UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHIC MAP.**

The first substantial development within the vicinity of the project area began during the first quarter of the twentieth century. Frederick Kuhnert, a German émigré and florist in Hackensack, New Jersey leased a 15-acre parcel of land in Lodi Township and established with Matthew Andronico the Kuhnert Aerial Construction Company "to erect, exhibit, and manufacture airships and aero engines" (*The Record* 24 April 1911). Kuhnert also planned to establish an aerodrome—a predecessor term of the commonly used airfield or airport of today—by filling and grading the marshy land he leased, though soggy and soft soils seemed to continue to plague the field. Known as the "Hackensack Aerodrome," this land became but one of Kuhnert's many entrepreneurial schemes that also included a bus company and other small businesses. An airplane inventor himself, Kuhnert promoted exhibitions and airshows both for profit and to showcase his own invention. By May of 1911, Kuhnert and two other aviation designers planned an exposition to show off their planes, but the event failed to take place due to high winds damaging several of the planes (*The Record* 29 May 1911, 31 May 1911). Once Kuhnert took himself out of the equation of providing an aerial exhibition, his aerodrome bore some moderate success (*The Record* 24 July 1911, 18 August 1911). When not frequented by aircraft enthusiasts, Kuhnert's fields hosted sporting events such as baseball and football games (*The Record* 4 November 1911).

By July of 1913, the Bleriot Aeroplane Company of France leased Kuhnert's airfields for a term of three years which ended the exhibitions and airshows (*The Record* 9 July 1913). Bleriot operated a flight school that also participated in conducting experiments in wireless communications between airplanes and ground stations (*The Record* 15 December 1913).

Despite this early spate of land use in the vicinity of the project area, the lands within the Area of Potential Effects remained undeveloped wetlands. Concerted development of the swamps began with the 1917 purchase of 700 acres of swamps and marsh land by Walter C. Teter, a New York real estate developer who lobbied to partition his lands into their own borough set aside from Hasbrouck Heights. Teter's plan focused on draining and infilling the swampland and converting it to industrial space (*The Record* 7 March 1917). Despite local resistance to Teter's plan, his political influence won out as the State Assembly passed a bill promoted by Assemblyman Walter G. Winne to create Teterboro Borough from 80 acres of Moonachie Borough, 24 acres of Lodi Township, and 23 Acres of Little Ferry Borough (*The Record* 14 March 1917).

The raging war in Europe, a local tie to aviation, and cheap land ready for development created a unique situation for a Newark-based aircraft manufacturing concern named the Wittemann-Lewis Aircraft Company who purchased lands within the flooded meadows around 1918 to establish a new factory consisting of three buildings and a massive flying field (*The Record* 10 September 1919). Despite drainage and filling completed by Teter, the lands surrounding the company's buildings remained frequently flooded and soggy (see Figures 10 to 12; Holden 2009). The factory focused on converting surplus World War I aircraft into mail carriers for the establishment of the United States Airmail Service.

The mail carrier contract proved lucrative for the manufacturing company as they grew their factory. However, their luck turned south after winning in 1920 a contract to build the Barling Bomber for the United States Army. Designed by Walter H. Barling, an English expatriate, Wittemann won the contract to bring the design to life under the Army's supervision. After three years of labor, the prototype emerged from the Teterboro factory to be shipped to Dayton Ohio for its inaugural test flight. According to *The Record* of 23 August 1923, the plane passed all tests and successfully flew (*The Record* 23 August 1923).

The same article which detailed the successful test flight, however also revealed that Wittemann sold the factory in 1923 to Dutch airplane designer, Anthony Fokker who created the planes used by the German army during World War I, most notably the biplane used by Manfred Richthofen, the infamous "Red Baron" (Holden 2009; *The Record* 23 August 1923). Fokker's plans for the Wittemann factory site also included the establishment of a permanent large airport within six miles of Times Square (*The Record* 13 September 1923).



FIGURE 10: 1920S PHOTOGRAPH OF THE WITTEMANN-LEWIS FACTORY AT TETERBORO (HOLDEN 2009). NOTE THE EXTENSIVE FLOODING AND SURFACE PONDING.

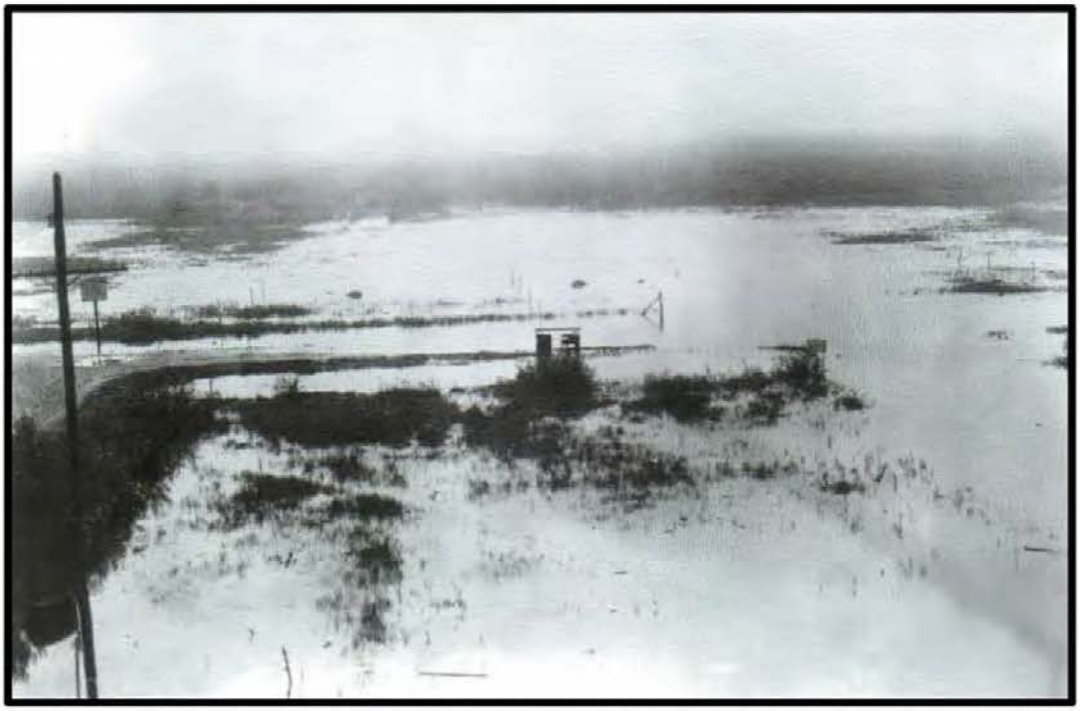


FIGURE 11: 1920S PHOTOGRAPH OF INUNDATED WITTEMANN-LEWIS AIRFIELDS AT TETERBORO (HOLDEN 2009).



FIGURE 12: 1920S AERIAL PHOTOGRAPH OF WITTEMANN-LEWIS FACTORY (HOLDEN 2009). NOTE THE EXTENSIVE DRAINAGE TRENCHES SCARRING THE LANDSCAPE.

Under Fokker's ownership, the factory—renamed the Atlantic Aircraft Corporation—had the capacity to produce up to 360 planes per year (*The Record* 8 November 1924). In fact, Fokker's Teterboro factory built airplanes used in two separate Arctic expeditions—the 1926 Detroit Arctic Expedition, which failed due to a lack of supplies, and Admiral Byrd's flight over the North Pole (*The Record* 26 May 1926).

The Wright Aeronautical Corporation of Paterson, New Jersey also purchased in 1925 a plot of land in the marshes to establish a hangar for their own aircraft. This same hangar also provided a home to the Gates Flying Circus, an aeronautics acrobat group who practiced wing walking and similar stunts (*The Record* 30 October 1925; Holden 2009). The hangar and associated buildings once occupied a portion of the project area for the Signature East improvements. Yet, photographs of these buildings from the 1920s reveal the area routinely dealt with significant flooding despite measures to fill and drain the former swamplands (see Figures 13 to 15).

As Fokker and Wright attracted buyers, other businesses also viewed the open marsh lands as a land of opportunity. Colonial Air Transport, a 1925 restructured iteration of the Connecticut-based *Bee Line* and operated under the management of Juan Trippe of New York and Connecticut Governor John H. Trumbull, established in 1926 their own mail and express terminal at Teterboro. Due to its proximity to the city, Teterboro became the company's New York Terminal (*The Record* 21 April 1926). Several of the planes within Colonial Air Transport's fleet came from the Fokker factory at Teterboro (*The Record* 1 July 1926).

In August 1927 a contingent of Bergen County officials visited the Biltmore Hotel in New York to advocate to the Hoover Commission to choose Teterboro as a new airport site serving the Atlantic Seaboard (*The Record* 4 August 1927). By



FIGURE 13: POST 1925 PHOTOGRAPH OF THE WRIGHT AERONAUTICS CORPORATION (WRIGHT) HANGAR AT TETERBORO (HOLDEN 2009).



FIGURE 14: POST 1925 PHOTOGRAPH OF THE GATES FLYING CIRCUS PRACTICING IN FRONT OF THE FLOODED WRIGHT HANGAR AT TETERBORO (HOLDEN 2009).



FIGURE 15: 1920S PHOTOGRAPH OF THE FOKKER FACTORY AT TETERBORO (HOLDEN 2009). NOTE THE EXTENSIVE FLOODING AND SURFACE PONDING.

November that same year Teterboro boasted 22 incoming flights and 21 outgoing flights monthly (*The Record* 29 November 1927). The article also proclaimed that an additional 1,688 passengers took short flights within the past month. All this braggadocio served to paint Teterboro's existing popularity as a regional airport.

Another major event impacting in 1927 revolved around Colonial Air Transport's decision to begin offering passenger service. After several test flights, the company broke off a subsidiary company with Juan Trippe at the helm named Pan American World Airways (PanAm). The dedicated passenger airline employed Fokker-built airplanes right from the factory at Teterboro (Holden 2009).

Aerial images of the project area taken by the United State Department of Agriculture in 1930 show the limited extent of the airfield at Teterboro. While the western side of the property appears the most heavily developed, much of the land is visibly inundated and cut with drainage trenches (see Figure 16; USDA 1930). Eastern and southern portions of the land are both largely still depicted as un-reclaimed swampland. Though, several former buildings are situated within the limits of the Signature East APE-Direct Effects. Photographs of the airport from the 1920s/1930s indicate these buildings belonged to the Wright Aeronautical Corporation and Gates Flying Circus (see Figures 13 and 14). No development is depicted within the APE-Direct Effects for the Signature South improvements.

March 31, 1931, inaugurated the end of Fokker's dominance in aviation design. A Transcontinental & Western Air (TWA) airliner flight from Kansas City to Indiana crashed in a field after losing a wing at 600 feet killing all seven occupants of the plane. The celebrity of one of the occupants, Knute Rockne, who coached Notre Dame's Fighting Irish football team, brought Fokker and his company unwanted negative attention as the Fokker F-10 TWA employed possessed a design flaw which disallowed for full inspection of the plane's parts to check for rot and defects prior to flight. Blamed for the cause of crash, Fokker's company and reputation never recovered from the tragedy of Rockne's death (Holden 2009).

The collapse of the United States economy during the depression impacted all facets of America life, not least of all air travel. Following Fokker and Atlantic Aviation's demise, the hangars fell to sundry uses such as a dance hall and meeting center. Hard times wore on the airport and the companies occupying it. Even Wright's workers went on strike as the demand for airplanes, which had been bolstered by government contracts, waned (*The Record* 26 February 1931).

In 1937 the Bendix Aviation Company explored the possibility of establishing a new factory at Teterboro (*The Record* 15 February 1937). The firm purchased a massive tract of land with the intent of building a $3 million factory to relocate its manufacturing from Indiana to New Jersey and bring with it roughly 2,000 jobs (*The Record* 18 February 1937, 19 February 1937). Residents of Teterboro so lauded the company's move from Indiana that the borough's name officially changed in 1937 to Bendix (*The Record* 15 April 1937).

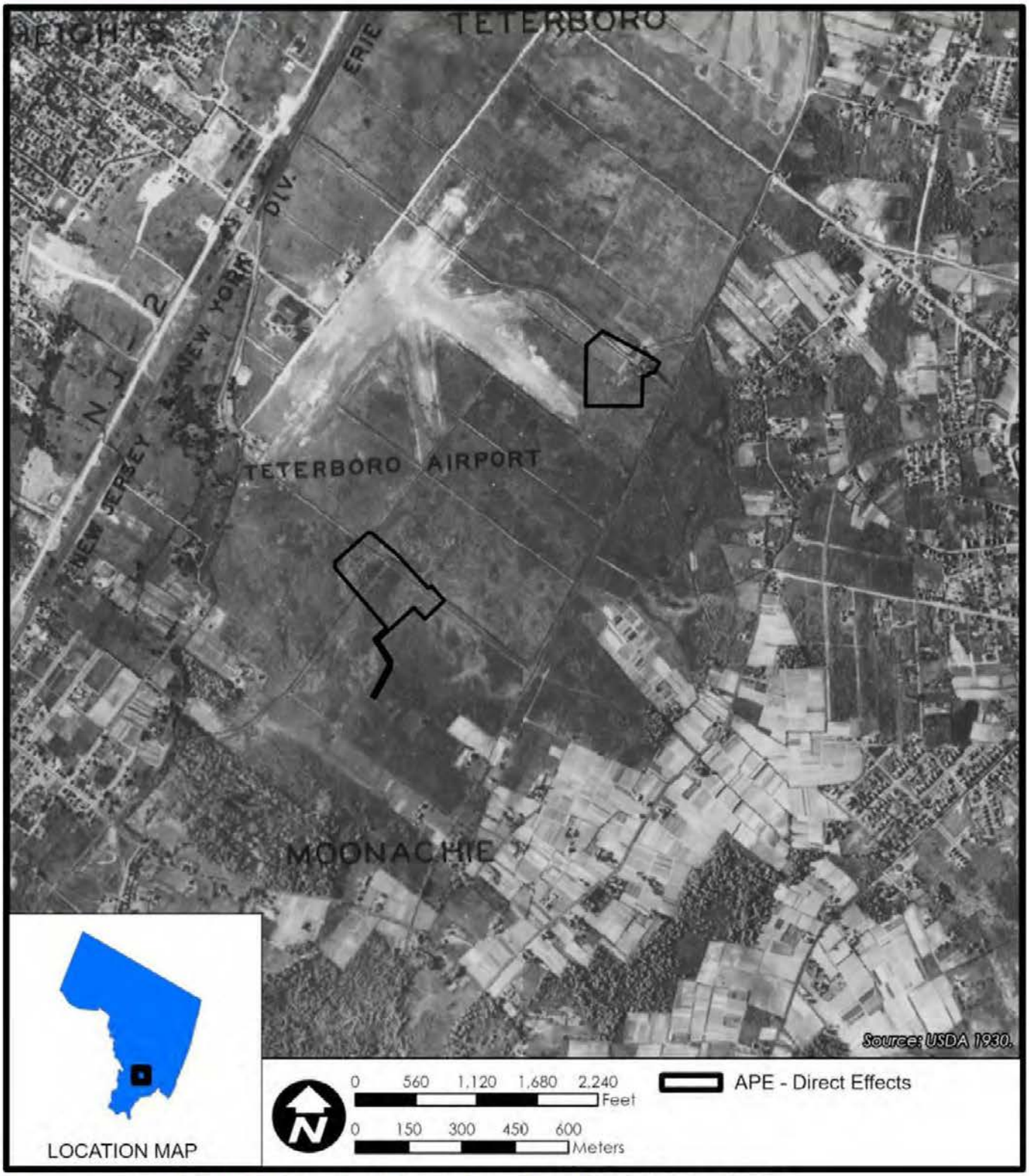


FIGURE 16: 1930 AERIAL IMAGE BY THE UNITED STATES DEPARTMENT OF AGRICULTURE.

Another renowned airship made the airport its home in May of 1939 when workers erected a hangar for the Goodyear Blimp (*The Record* 19 May 1939). Fred Wehran, a former Marine, purchased the airport in 1941 but soon after it came under the management of the United States Army through the War Department and the United States' involvement in World War II. As a result of the take-over, the Army closed all civilian air traffic in and around Bendix/Teterboro airport (Holden 2009). Wehran did not regain control of the airport until 1946, well after the conclusion of the war. Under civilian control, Atlantic Aviation Corporation established their place as the most prominent fixed-base operator at the airport. In 1949 the Port Authority of New York and New Jersey (the current owner) purchased the airport from Wehran for $3M and invested nearly $10.5M in upgrading its infrastructure (Holden 2009).

Historic aerial images available for free online viewing at www.historicaerials.com reflect the many changes to the airport since taken over by the Port Authority. The 1953 aerial image depicts no development within either the Signature East or Signature South APEs—Direct Effects (NETR 1953). In fact, the former hangar and buildings of the Wright company no longer appear on the aerial images. The 1954 aerial shows extensive ground disturbance in the Signature East APE-Direct Effects as well as drainage basins and mounds of fill (NETR 1954).

An oblique aerial image taken of the airport in 1960 shows the construction of new hangars and buildings near the Signature East project area but portrays the Signature South area as occupied by wetlands (see Figure 17; Holden 1960). 1977 aerials taken by the New Jersey Department of Environmental Protection as part of a program to update the locations of known wetlands in New Jersey and maintained by the New Jersey Geographic Information Network (NJGIN) show the presence of several stands of trees within the Signature East APE-Direct Effects as well as overgrown wetlands (see Figure 18; NJGIN 1977). The APE-Direct Effects for Signature South is also depicted as overgrown wetlands (NJGIN 1977).

Between 1977 and 1979, the airport installed an operations tower adjacent the Signature East APE-Direct Effects while the Signature South area remained undeveloped wetlands (NETR 1979). Between 2002 and 2006, a building campaign at the airport removed many of the older structures near the Signature East project area, replacing them with new buildings. A building campaign also finally introduced the first development recorded in and around the Signature South APE-Direct Effects with the construction of the current buildings (NETR 2002, 2006).

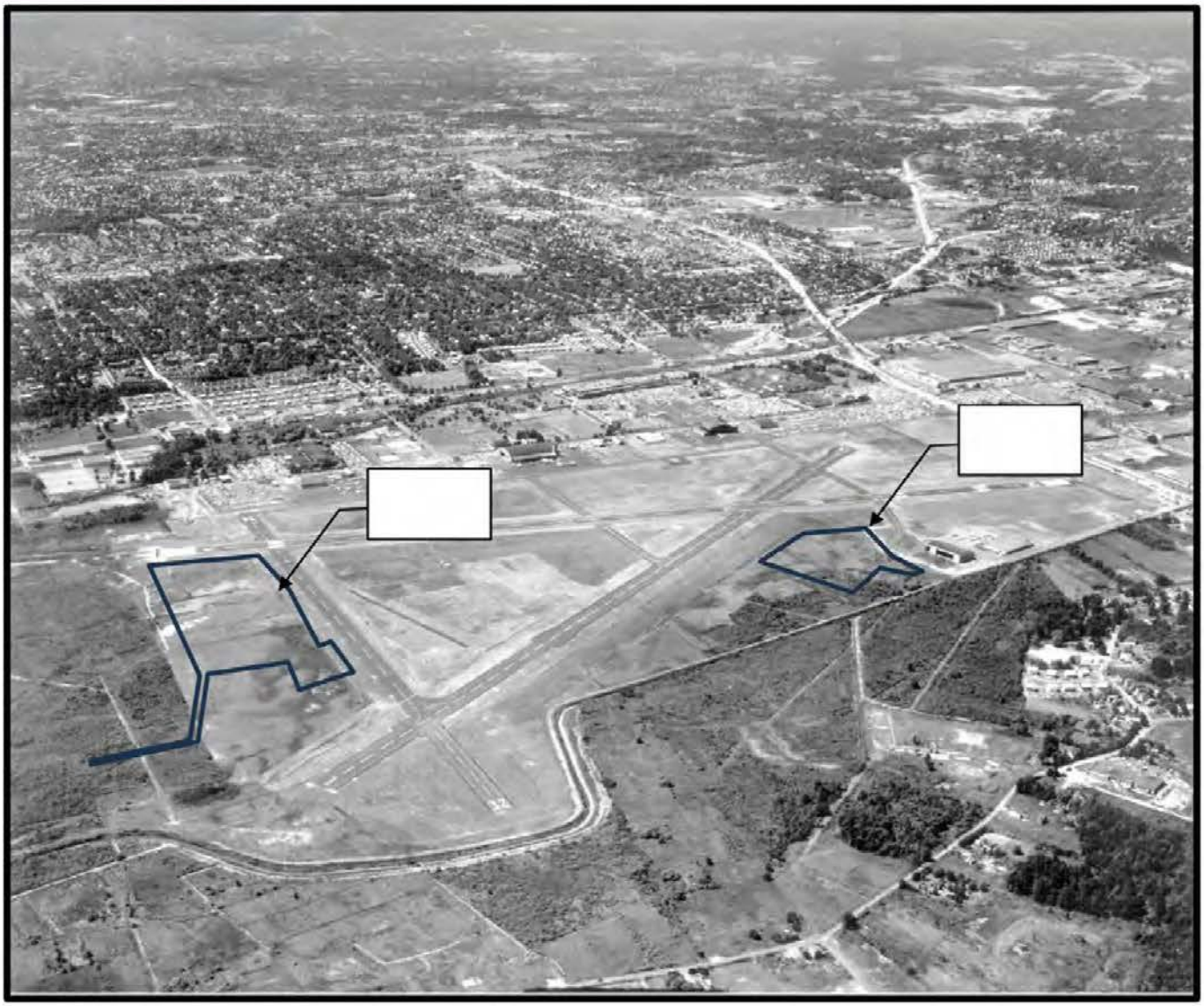


FIGURE 17: 1960 *AERIAL IMAGE* (HOLDEN 2009).

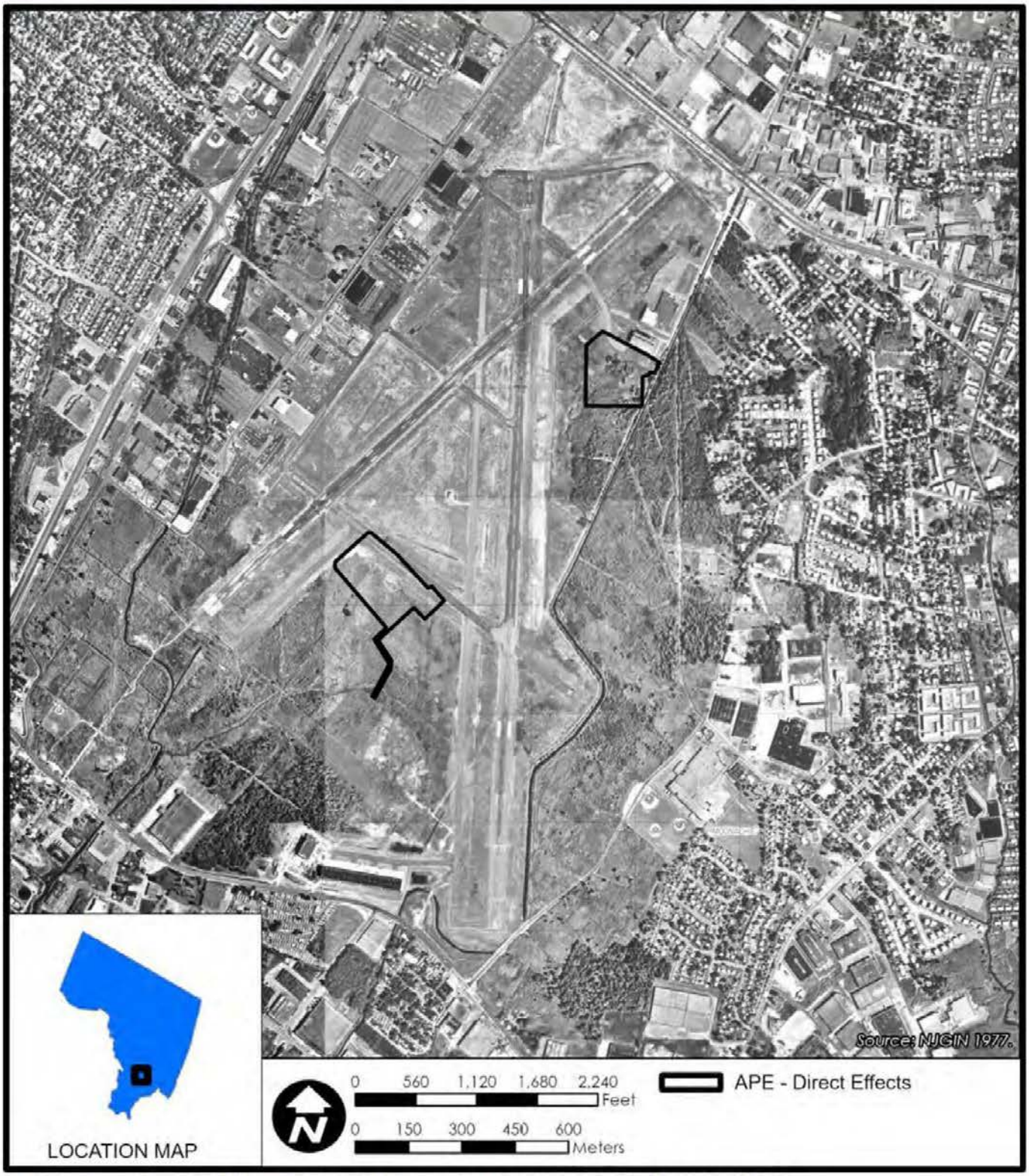


FIGURE 18: 1977 *AERIAL IMAGE* BY NEW JERSEY GEOGRAPHIC INFORMATION NETWORK.

4.0 ARCHAEOLOGICAL SENSITIVITY ASSESSMENT

4.1 PEDESTRIAN RECONNAISSANCE

The project area for Signature East consists of an overgrown wetland adjacent to an active airport terminal (see Figure 19; and Plates 1 to 14). The land is flat, level, and poorly drained with surface ponding. Dense growths of phragmites cover most of the APE-Direct Effects while the eastern portion of the area is covered by dense new growth vegetation and trees. Surface water tends to pond rather than redirect toward drainage ditches surrounding the APE-Direct Effects. An access road runs along the western boundary of the area while the northern extent abuts flat, level pavement. A chain-link fence forms the eastern boundary. E2PM observed no evidence of historic or prehistoric archaeological resources within the APE-Direct Effects for Signature East.

The project area for Signature South is nearly concave, level, and contains undeveloped wetlands. Dense growths of phragmites are spread throughout the whole area with sporadic infill of other marsh grasses. Surface water is visible within the phragmites suggesting the area remains untouched and undrained wetlands. Taxiways are located to the north and west of the area while a runway is situated to the east. Paved asphalt apron is situated south of the project area. E2PM observed no evidence of prehistoric or historic archaeological resources within the APE-Direct Effect for Signature South.

4.2 SENSITIVITY ASSESSMENT

The general predictive models provided in Chapter One give a basic introduction to the archaeological sensitivity of the project location (see Figure 20). With specific regard to prehistoric archaeological resources, the APE-Direct Effects for both locations originated at the bottom of Glacial Lake Hackensack. As the lake drained the sea level conversely rose keeping the area inundated throughout much of prehistory. In fact, as depicted on topographic maps as early as 1833, the area remained inundated wetlands with the only change being a trade between fresh and brackish water. A Phase IA investigation conducted in 2016 by Langan Engineering concerning these same project areas characterized them as having moderate to low archaeological sensitivity for prehistoric resources based upon geotechnical factors of sites in Kearney. The difference in environmental conditions, however, is that the Kearney site lay outside the lake bottom deposits of Glacial Lake Hackensack with glacial sediments characterized as continuous till derived from the lake outwash. Unique to Teterboro is that the areas surrounding the airport are identified as lower postglacial stream terrace deposits while the airport property is situated within the actual lake bottom—a lake bottom which never fully drained and remained uninhabitable since the Wisconsinan Glaciation until the early 20th century when modified through drainage and fill. In addition to having been an inhospitable environment during prehistory, the areas are overgrown with phragmites, an invasive plant species typically indicative of recent ground disturbance (Saltonstall 2002). Given the submerged nature of the land through all of New Jersey's prehistory and surface-visible evidence of recent ground disturbance via phragmites, the APE-Direct Effects for both locations are characterized as having low to no sensitivity to contain prehistoric archaeological resources.

Sensitivity for historic archaeological resources is based upon a review of historic maps, atlases, and aerial images. As mentioned above for prehistoric archaeological sensitivity, the project area remained inundated wetlands until ca. 1917 when different companies began to drain, fill, and develop the marsh/swamp. While the APE-Direct Effects for Signature South remains undeveloped wetlands to this day, the APE-Direct Effects for Signature East once contained a hangar and ancillary buildings belonging to the Wright Aeronautics Corporation and to the Gates Flying Circus. These



FIGURE 19: PHOTO KEY MAP FOR DIRECT EFFECTS.



PLATE 1: OVERVIEW OF THE SIGNATURE EAST APE-DIRECT EFFECTS. VIEW SOUTHWEST. WIECZOREK: 08/16/2023.



PLATE 2: TARMAC LOOKING TOWARD THE SIGNATURE EAST APE-DIRECT EFFECTS. VIEW SOUTHEAST. WIECZOREK: 8/16/2023.



PLATE 3: OVERVIEW OF THE SIGNATURE EAST APE-DIRECT EFFECTS. VIEW SOUTHEAST. WIECZOREK: 8/16/2023. NOTE THE PHRAGMITES INDICATING RECENT DEEP GROUND D STURBANCE.



PLATE 4: OVERVIEW OF THE SIGNATURE EAST APE-DIRECT EFFECTS. VIEW SOUTHEAST. WIECZOREK: 4/27/2023.



PLATE 5: OVERVIEW OF THE SIGNATURE EAST APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW SOUTHEAST. WIECZOREK: 8/16/2023.



PLATE 6: OVERVIEW OF THE SIGNATURE EAST APE-DIRECT EFFECTS. VIEW NORTHEAST. WIECZOREK: 8/16/2023.



PLATE 7: OVERVIEW OF THE SIGNATURE EAST APE-DIRECT EFFECTS. VIEW WEST. WIECZOREK: 8/16/2023.



PLATE 8: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW NORTHEAST. WIECZOREK: 8/16/2023.



PLATE 9: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW NORTHEAST. WIECZOREK: 8/16/2023.



PLATE 10: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES AND MARSH GRASS. VIEW NORTHEAST. WIECZOREK: 8/16/2023.



PLATE 11: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW EAST. WIECZOREK: 8/16/2023.



PLATE 12: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW SOUTHWEST. WIECZOREK: 8/16/2023.



PLATE 13: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW SOUTHWEST. WIECZOREK: 8/16/2023.



PLATE 14: OVERVIEW OF THE SIGNATURE SOUTH APE-DIRECT EFFECTS SHOWING DENSE PHRAGMITES. VIEW SOUTHWEST. WIECZOREK: 8/16/2023.

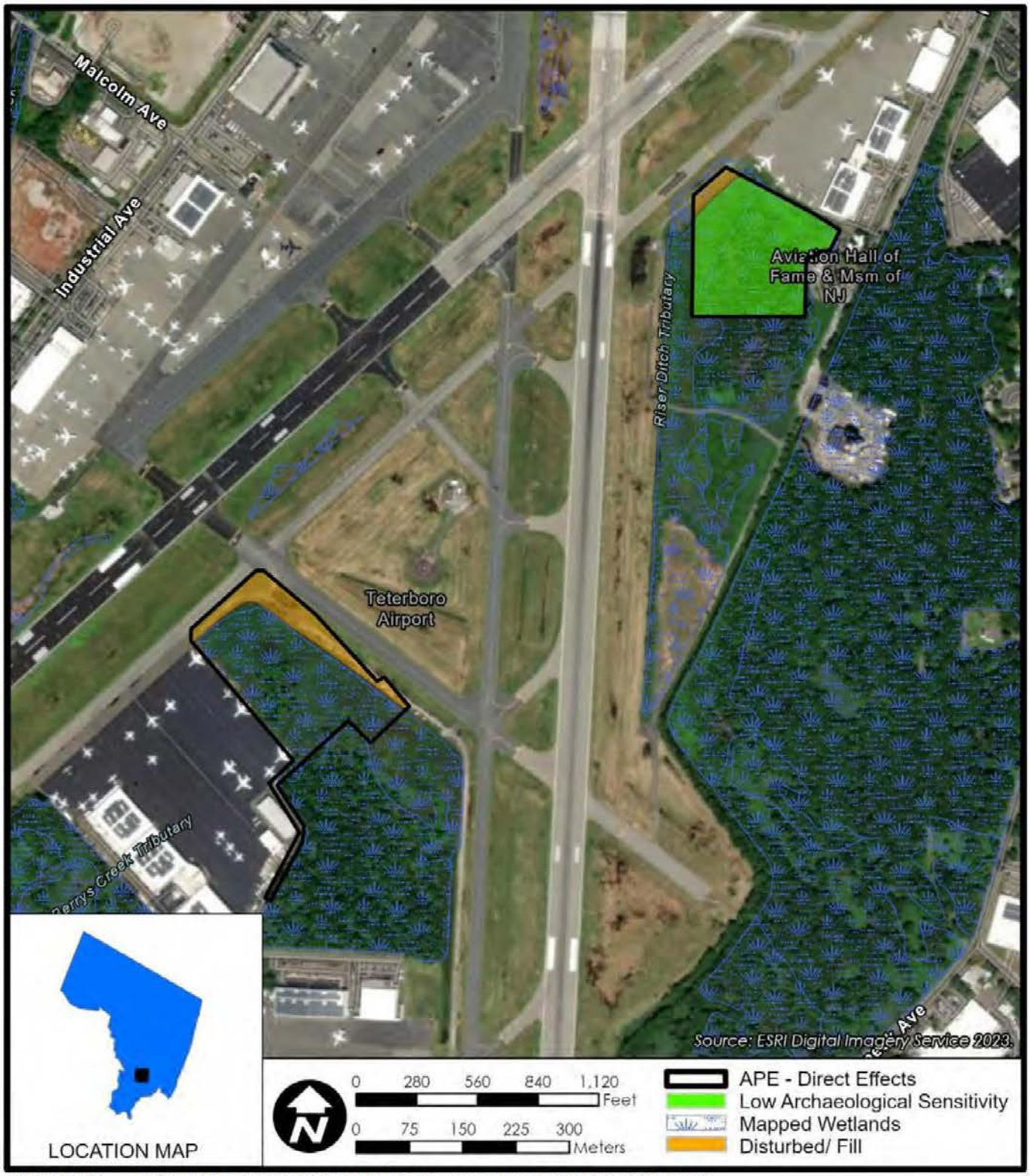


FIGURE 20: ARCHAEOLOGICAL SENSITIVITY AREAS WITHIN THE PROJECT AREA.

buildings appear within the APE-Direct Effects on the 1930 USDA Aerial images. However, the 1953 aerial images show sections of bare earth where the buildings once stood. Based upon the developmental history of the property, the Wright and Gates companies likely built these structures ca. 1925 with a demolition date of ca. 1953. Typically, the archaeological resources most likely to contain intact subsurface deposits are well shafts, privies, and cisterns. However, by the early twentieth century small iron-lined artesian wells and concrete septic tanks became commonplace (Melosi 2000). As a result, the disposal of artifacts into abandoned wells, privies, or cisterns would not have taken place between 1925 and 1953 when the Wright and Gates buildings existed. In addition, the presence of phragmites—a surface visible indicator of recent ground disturbance—coupled with aerial images from 1953 showing patches of bare earth within this area suggests that recent grading and/or filling in this area likely obliterated any past artifact deposits which may provide information about the site. Based upon the available information, the Signature South APE-Direct Effects is considered to have low to no sensitivity for historic archaeological resources while the Signature East APE-Direct Effect are considered to have low sensitivity for historic archaeological resources. A section of the Signature East APE-Direct Effects is characterized as previously disturbed in association with the grading, filling, cutting, and earthwork employed to establish an access road. As such, this disturbed area is not considered sensitive for archaeological resources.

5.0 EXTANT STRUCTURES WITHIN THE PROJECT AREA

Pursuant to the rules of the New Jersey State Register Act (NJAC 7:4) and Section 106 of the National Historic Preservation Act, the New Jersey Division of Land Resource Protection (DLRP) and the Federal Aviation Administration (FAA) must take into consideration the potential impacts a permitted project may have upon historic and archaeological properties listed on or eligible for the New Jersey State and/or National Registers of Historic Places. As such, cultural resources investigations may be required through the NJHPO to assess, identify, evaluate, and/or mitigate any such impacts. Cultural resources investigations follow the methods promulgated in the rules and regulations published in NJAC 7:4, and the NJHPO's *Guidelines for Architectural Survey.*

Background research was conducted through the NJHPO's online LUCY cultural resources website, the NJDEP's Data Miner interface for previous cultural resources surveys, the New Jersey State Library, the New Jersey State Archives, the Bergen County Clerk's Office, and other physical and online repositories as appropriate.

5.1 IDENTIFIED HISTORIC PROPERTIES

E2PM conducted a review of NJHPO's LUCY online database to find any previously identified historic properties within or adjacent to the APE-Indirect Effects for both the Signature East and Signature South Improvements projects. Based upon this review, there are no known historic properties within or adjacent the APE for indirect effects.

5.2 POTENTIAL HISTORIC PROPERTIES

A review of historic aerial images reveals no surviving buildings within or adjacent the project area which meet the 50-year threshold for the New Jersey State and/or National Registers of Historic Places (see Figure 21 and Plates 15 and 16). All the buildings surrounding the project areas have been built since 2007 except for the existing Air Traffic Control Tower east of the Signature East Project which was built ca. 1975 and the Aviation Museum building which was built ca. 1985.

The Air Traffic Control Tower consists of a tall central tower with a single-story appendage on the east elevation (see Plate 15). The approximately 5-story central tower is square at the base and tapers slightly toward the top. Clad in aluminum sheeting, the upper elevation is an enclosed six-sided observation deck surrounded by a metal mesh walkway. Fenestration for the observation deck is paired trapezoidal lights angled outward from the observation deck's metal-clad knee walls. Corrugated metal sheathing caps the windows to a low-pitch metal roof with a short railing around the edge. A one-story imbricated block flat-roofed extension is appended to the tower's east elevation. This wing serves as the entryway to the tower with a single metal fire door on the front elevation protected by a hipped-roof portico. This wing has no fenestration.

A one-story shed-roofed concrete block shed is situated to the west of the tower. The roof overhangs the front elevation protecting the single metal fire door from the weather. The building is unadorned with a louvered grate at its east elevation adjacent the electric service. There is no fenestration on this shed.

The Aviation Hall of Fame of New Jersey building consists of two principal blocks (see Plate 16). The eastern block is a one-story rusticated concrete block rectangular structure capped by a flat roof encircled with broad overhangs and a tall entablature emblazoned with the building's name. The front elevation is broken by a central double-leaf glass door flanked by a row of single-pane windows underneath the eaves. The entablature continues across the western block as a belt course encircling the middle of the two-story block.

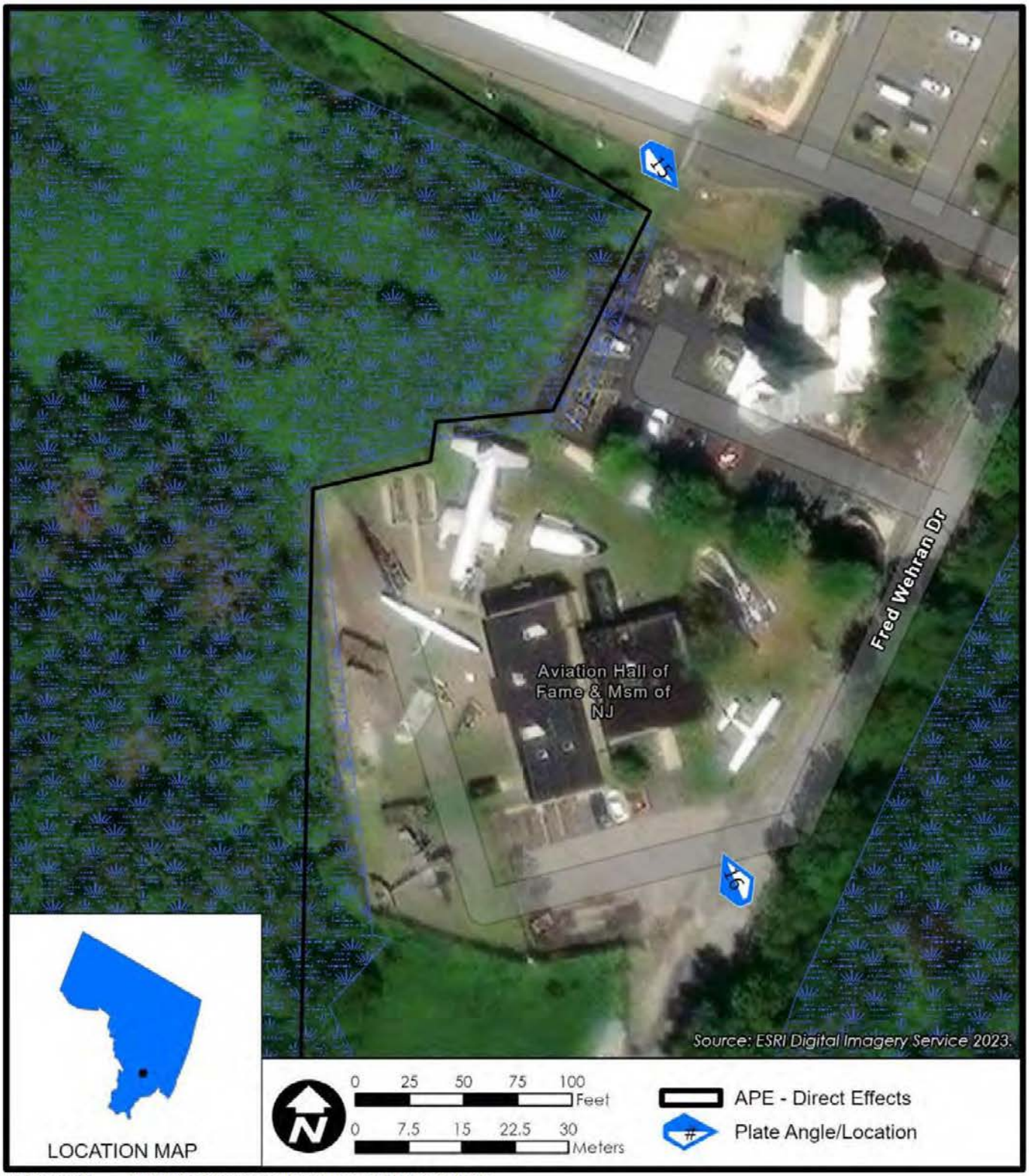


FIGURE 21: PHOTO KEY FOR HISTORIC ARCHITECTURE.



PLATE 15: CA. 1975 AIR TRAFFIC CONTROL TOWER. VIEW SOUTHEAST. WIECZOREK: 8/16/2023.



PLATE 16: AVIATION HALL OF FAME. VIEW NORTHWEST. WIECZOREK: 8/16/2023.

Constructed of rusticated concrete block, the two-story western portion of the museum building is rectangular in shape with a simple entablature and capped with a low slope roof. The entablature of the adjoining block serves as a belt course for this structure. A massive garage bay door occupies the south elevation.

Despite being the oldest of the buildings within the APE for Indirect Effects, neither meets the 50-year threshold for inclusion on the New Jersey State or National Registers of Historic Places. These structures also do not meet Criterion G of the National Register, where buildings could be eligible based on exceptional importance even if they are less than 50 years old. As a result, no historic properties have been identified for this project as proposed. In addition, the proposed project will have no effect on historic architectural properties as none are present.

6.0 CONCLUSIONS

Archaeological Resources:

Prehistoric Archaeology:

With specific regard to prehistoric archaeological resources, the APE-Direct Effects for both the Signature East and Signature South project locations originated as the bottom of Glacial Lake Hackensack. As the lake drained the sea level conversely rose keeping the area inundated throughout much of prehistory. Unique to Teterboro is the fact that the airport property is situated within the actual lake bottom—a lake bottom which never fully drained and remained uninhabitable from the Wisconsinan Glaciation until the early 20th century when modified through drainage and fill. In addition to having been an inhospitable environment during prehistory, the areas are overgrown with phragmites, an invasive plant species typically indicative of recent ground disturbance (Saltonstall 2002). Given the submerged nature of the land through all of New Jersey's prehistory and surface-visible evidence of recent ground disturbance via phragmites, it is highly unlikely to have been inhabited or visited by Native American peoples. As such, the APE-Direct Effects for both locations are characterized as having low to no sensitivity to contain prehistoric archaeological resources.

Historic Archaeology:

Sensitivity for historic archaeological resources is based upon a review of historic maps, atlases, and aerial images. As mentioned above for prehistoric archaeological sensitivity, the project area remained inundated wetlands until ca. 1917 when different companies began to drain, fill, and develop the marsh/swamp. While the APE-Direct Effects for Signature South remains undeveloped wetlands to this day, the APE-Direct Effects for Signature East once contained a hangar and ancillary buildings belonging to the Wright Aeronautics Corporation and to the Gates Flying Circus. These buildings appear within the APE-Direct Effects on the 1930 USDA Aerial images. Based upon the available information, the Signature South APE-Direct Effects is considered to have low to no sensitivity for historic archaeological resources while portions of the Signature East APE-Direct Effects are considered to have low sensitivity for historic archaeological resources associated with the former Gates Flying Circus and Wright Aeronautics Corporation buildings which once occupied this area. A section of the Signature East APE-Direct Effects is also characterized as previously disturbed in association with the grading, filling, cutting, and earthwork employed to establish an access road. As such, this disturbed area is not considered sensitive for archaeological resources. Limited Phase IB testing at a 100-foot interval is recommended to determine presence/absence of archaeological resources and characterize the soil relationships within undisturbed upland areas of low archaeological sensitivity only, should such areas exist.

Historic Architectural Resources:

E2PM identified no previously recorded NJ State or National Register listed or eligible properties within the APE-Indirect Effects for either location. In addition, no buildings meeting the 50-year threshold for New Jersey or National Register listing are present within the APE-Indirect Effects. As a result, the proposed project will have no effect on historic properties as none are present. No further survey is recommended for historic architecture.

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APPENDIX A

PROJECT PLANS

APPENDIX B

RESUMES OF KEY PERSONNEL