

Cultural Resource Assessment Survey
for the
Turkey Point Units 6 & 7 Site, Associated Non-Linear Facilities, and
Spoils Areas on Plant Property

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Attachment 2:	Photographs of the Site Conditions Provided by Bechtel (September 2008)
Attachment 3:	Photographs of the Site Conditions (December 2008)
Attachment 4:	Photographs of the Radial Collector Wells Conditions (March 2009)
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INTRODUCTION

On behalf of Florida Power & Light Company (FPL), and in association with Golder Associates, Janus Research conducted a cultural resources assessment survey (CRAS) for the Turkey Point Units 6 & 7 Project (“the Project”) in Miami-Dade County. The survey was conducted during the months of October 2008, December 2008, March 2009, and April 2009.

The Project includes Turkey Point Units 6 & 7, transmission lines and transmission system improvements to connect the new nuclear generating units to the FPL transmission system, a reclaimed water pipeline from the Miami-Dade Water and Sewer Department (MDWASD) South District Wastewater Treatment Plant to a FPL reclaimed water treatment facility, treated reclaimed water delivery pipelines from the FPL Reclaimed Water Treatment Facility to Units 6 & 7, potable water pipelines, radial collector wells and associated pipelines connected to caissons on the Turkey Point peninsula, FPL-owned fill source northwest of the FPL Turkey Point Plant Property, equipment barge unloading area, and access roads and bridges connecting the Turkey Point Units 6 & 7 Site (the Site) to public roadways in southern Miami-Dade County.

Included in this report are the Site and associated non-linear facilities (Attachment 1: Sheets 1-4, Figure 1, Figure 2). The Site refers to the Turkey Point Units 6 & 7 plant area and also includes the proposed laydown areas to the west. The associated non-linear facilities include:

- Nuclear administration building, training building and parking area;
- FPL reclaimed water treatment facility and delivery pipelines to the plant area;
- Radial collector wells and delivery pipelines;
- Equipment barge unloading area; and
- FPL-owned fill source.

The Project also includes one existing heavy haul road that will be upgraded and spoils areas on FPL plant property that are used during construction.

Associated linear facilities are addressed in a separate report (Janus Research 2009). The objective of the survey was to identify cultural resources within the area of potential effect (APE) and assess their eligibility for listing in the National Register of Historic Places (National Register).

A search of the Florida Master Site File (FMSF) conducted as part of this Project, revealed no previously existing archaeological sites or historic resources within or adjacent to the proposed Site and associated non-linear facilities. Informants, and an analysis of aerial photographs, confirmed that construction of the Turkey Point Plant began in the mid 1960s with the first unit being completed in 1967. Additionally, no standing structures were located within the water treatment plant or proposed radial collector well locations. Background research and an analysis of aerials from 1938, 1952, and 1963 identified no buildings within one mile of the Project. The only visible manmade feature within one mile of any of the facilities was the Florida City Canal. The canal, which is first visible on the 1938 aerial, runs E-W approximately 0.4 miles north of the reclaimed water treatment plant location. This analysis indicated that before 1963, the area

surrounding the site and associated facilities was undeveloped. Therefore, this survey focused on identifying archaeological resources within the APE.

The current Site is located adjacent to Biscayne Bay and subject to both tidal and seasonal inundation. Conversations with Mr. Ken Kosky, the Golder Associates Project Manager for this Project and Mr. Linwood Bennett of Bechtel, the Expansion Site Access Coordinator, confirmed that the Site was inundated when this investigation began. Photographs of the Site conditions in September are included in Attachment 2 (Photographs 1 and 2). A desktop analysis was initially conducted to identify any previously recorded cultural resources and areas with the potential for containing unrecorded cultural resources within the Site. An archaeological field assessment was conducted in December 2008 after the water receded. Photographs of the Site conditions in December 2008 are included in Attachment 3 (Photographs 1-4).

A desktop analysis and subsequent archaeological field assessment of the radial collector wells, FPL reclaimed water treatment facility, and FPL-owned fill source were conducted in March and April 2009. Photographs of these locations are included in Attachment 4 (Photographs 1 and 2), Attachment 5 (Photographs 1-4), and Attachment 6 (Photographs 1 and 2).

The current survey identified no newly or previously recorded archaeological sites or historic resources within the APE.

Legal and Regulatory Requirements

The key environmental approval will be Site Certification under Florida's Power Plant Siting Act (PPSA). The Project requires issuance of an Air Construction Permit and modifications to the existing Industrial Wastewater (IWW) Facility Permit. Accordingly, the Project is being conducted in compliance with the Electrical Power Plant Siting Act and as prescribed by the Florida Department of Environmental Protection (DEP) Form 62-11.211(1), F.A.C. The CRAS complied with Chapter 267, Florida Statutes (Florida Historical Resources Act); Chapter 1A-46 (Archaeological and Historical Report Standards and Guidelines), F.A.C., and the minimum field methods, data analysis, and reporting standards embodied in the Florida Division of Historical Resources' (FDHR) *Cultural Resource Management Standards and Operational Manual* (February 2003).

In anticipation of a U.S. Army Corps of Engineers (USACE) Section 404 permit, the assessment also complied with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended) as implemented by 36 CFR 800 (Protection of Historic Properties, effective January 2001). All work conforms to professional guidelines set forth in the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716) and reporting standards embodied in the Florida Division of Historical Resources' *Cultural Resource Management Standards and Operational Manual* (February 2003). The Principal Investigator meets the Secretary of the Interior's Professional Qualification Standards (48 FR 44716). Archaeological investigations were conducted under the direction of Kathleen Hoffman, Ph.D. Historic resource investigations were conducted under the direction of Amy Groover Streelman, M.H.P.

Project Location

The Turkey Point property is located adjacent to Biscayne Bay and Card Sound, approximately 25 miles south of Miami. The Site and associated non-linear facilities are located on the Arsenicker Keys (1988), Homestead (1988), and Card Sound (1988) U.S. Geological Survey (USGS) quadrangle maps (Attachment 1: Figure 2; Table 1).

Table 1. Location of Site and Associated Non-Linear Facilities

Facility	Township / Range / Section
Site	T57S / R40E / S 33, 34
Nuclear Administration Building, Training Building and Parking Area	T57S / R40E / S 28, 33
Radial Collector Wells and Delivery Pipelines to the Site	T57S / R40E / S 27, 33, 34
FPL Reclaimed Water Treatment Facility and Delivery Pipelines to the Site	T57S / R40E / S 28, 33
FPL-Owned Fill Source	T57S / R40E / S 7, 8, 18
Equipment Barge Unloading Area	T57S / R40E / S 27
Heavy Haul Road on Plant Property	T57S / R40E / S 27, 28, 33
Spoils Areas on Plant Property	T57S / R40E / S 33 T58S / R40E / S 4, 9, 16, 21, 28, 29

Project Description

The Turkey Point plant is an existing generating facility originally constructed in the mid to late 1960s, with the commercial in-service for Units 1 and 2 in 1967 and 1968, respectively. Unit 3 and Unit 4 were constructed in the early 1970s with commercial in-service in 1972 and 1973, respectively. A 5,900-acre industrial wastewater facility was constructed within the Turkey Point Plant Property in the 1970s to support the operation of Turkey Point Units 1 through 4. Turkey Point Unit 5 is a natural gas-fired combined-cycle unit which began commercial operation in 2007. The Plant consists of the following units:

- Unit 1 – 400 MW (nominal capacity)
 - Steam electric generating unit firing residual oil and natural gas
- Unit 2 – 400 MW (nominal capacity)
 - Steam electric generating unit firing residual oil and natural gas
- Unit 3 - 700 MW (nominal capacity)
 - Nuclear electric generating unit
- Unit 4 - 700 MW (nominal capacity)
 - Nuclear electric generating unit
- Unit 5 – 1,150 MW (nominal capacity)

- Combined-cycle generating unit firing natural gas as the primary fuel and ultra low sulfur distillate oil as backup

FPL is seeking to construct and operate two approximately 1,100-megawatt (MW) nuclear units on the existing 11,000-acre Turkey Point Plant Property located in unincorporated Miami-Dade County, Florida. This Project will further develop approximately 300 acres of the plant property west and south of these existing units, primarily within an existing industrial wastewater facility. The Units 6 & 7 Project will include the construction of the two nuclear units, six circulating water cooling towers, cooling water makeup reservoir, Clear Sky Substation, and other associated facilities. Staging and laydown areas, the nuclear administration building, training building and parking area are located north of the Site inside the perimeter canals of the industrial wastewater facility. Turkey Point Unit 6 is expected to be in commercial operation in 2018, with Unit 7 expected to be in commercial operation in 2020.

The electric generating components consist of the reactor, steam generators, pressurizer, and steam turbine/electric generator. Condenser cooling for the steam turbine will be accomplished using circulating water cooling towers. The structures are the nuclear island (containment building, shield building, and auxiliary building), turbine building, annex building, diesel generator building, and radwaste building.

Condenser cooling for Units 6 & 7 will be accomplished using circulating water cooling towers with two sources of water. The cooling water sources include reclaimed water from MDWASD and saltwater groundwater from radial collector wells. The radial collector wells will be located on the narrow peninsula of land called Turkey Point, east of the existing Turkey Point Plant. Use of the reclaimed water will involve nutrient removal, continuous water quality monitoring, flow equalization and metering, de-chlorination, disinfection, and pumping facilities. The radial collector wells will withdraw saltwater groundwater from under Biscayne Bay. A well caisson would be located onshore. The multiple lateral collectors would be located beneath the floor of Biscayne Bay radiating from the central caisson extraction location.

Area of Potential Effects (APE)

The Area of Potential Effects (APE) is defined as “the geographic area(s) within which the proposed undertaking may directly or indirectly cause changes in the character or use of historic properties listed or eligible for listing in the National Register of Historic Places.” The APE is influenced by the scale and nature of an undertaking, and as such, depends on the proposed action under consideration.

The APE is determined by evaluating the improvements that will be implemented as part of the Project. For this Project, the archaeological APE consists of those areas of potential or likely ground disturbance. These areas include the:

- Turkey Point Units 6 & 7 Site;
- Nuclear administration building, training building and parking area;
- FPL reclaimed water treatment facility and delivery pipelines to the plant area;

- Radial collector wells and delivery pipelines;
- Equipment barge unloading area;
- FPL-owned fill source;
- Heavy haul road on plant property; and
- Spoils areas on plant property.

As shown in Attachment 1 (Figures 2 and 3), the APE for the Project encompasses the Site and associated non-linear facilities noted above.

The APE for the historic resources survey considers direct as well as secondary and cumulative effects. The historic APE for direct effects will include areas within the footprints of the Site and associated non-linear facilities (Attachment 1: Figures 2 and 3). The APE for potential secondary and cumulative effects is defined as the area within which potential visual effects from the improvements could be observed. The potential effects from noise and emissions to historic properties are also considered. The APE for potential secondary and cumulative effects was based on the height of the highest proposed structure. The highest proposed structure will be 400 feet, which will not exceed the current height of the structures associated with the existing units. Also considered, is the relatively flat topography and the undeveloped character of the surrounding area. Based on these factors, an indirect effects APE of one-half mile from the Site was considered (Attachment 1: Figures 2 and 3). As noted in the introduction, the area within this radius remained undeveloped until the 1960s. Therefore, the analysis of secondary and cumulative effects on historic properties was not needed.

PRECONTACT OVERVIEW

The following discussion of the precontact time period of the general area of the Site and associated non-linear facilities is included in order to provide a framework within which the local archaeological record can be understood. This cultural history provides a chronology, or broad sequence, of precontact cultures defined largely in geographical terms, but also reflecting shared environmental and cultural factors.

Paleoindian Period (12,000–7500 BC)

The prevailing view of Paleoindian culture is that of a nomadic hunting and gathering existence, in which now-extinct Pleistocene megafauna were exploited. Settlement patterns were restricted by availability of fresh water and access to high-quality stone from which the specialized Paleoindian tool assemblages were made. Most sites of this time period are found near karst sinkholes or spring caverns. The majority of Paleoindian sites in Florida consist of surface finds. The most widely recognized Paleoindian tool in Florida is the Suwannee point, typically found along the springs and rivers of northern Florida. Other points, including Simpson and Clovis points, are found in lesser numbers. Some of these, and other Paleoindian lanceolate points, were hafted by attaching them to an ivory shaft that was, in turn, attached to a wooden spear shaft (Milanich 1994:48–49). Other tools include Bifacial and “hump-backed” unifacial scrapers, blade tools, and retouched flakes.

Archaic Period (7500–500 BC)

The Archaic period is generally believed to have begun in Florida around 7500 BC (Milanich 1994:63). This period is further divided into three sequential periods: the Early Archaic (7500–5000 BC), the Middle Archaic (5000–3000 BC), and the Late Archaic (3000–500 BC). The Late Archaic is subdivided into the Preceramic Late Archaic (3000–2000 BC) and the Orange Period (2000–500 BC).

Early Archaic (7500–5000 BC)

Early Archaic peoples might be viewed as a population changing from the nomadic Paleoindian subsistence pattern to the more sedentary coastal- and riverine-associated subsistence strategies of the Middle Archaic period. Sites with Early Archaic components are typically located near natural springs and the extensive perched water sources of northern Florida. Early Archaic points are found in smaller numbers at upland sites in northern Florida where there is a lack of Paleoindian materials (Neill 1964). The Windover Pond site near Titusville in Brevard County represents an Early Archaic wetland site consisting of a precontact cemetery consisting of over 160 burials in the natural peat deposits of what was, during the Early Archaic, a woody marsh (Stone et al. 1990:177).

Middle Archaic Period (5000–3000 BC)

The Middle Archaic period is characterized by increasing population and a gradual shift toward shellfish, fish, and other food resources from freshwater and coastal wetlands as a significant part of their subsistence strategy (Watts and Hansen 1988:310; Milanich 1994:75–84). Middle Archaic sites are found in a variety of locations, including, the freshwater shell middens along

the St. Johns River and the Atlantic Lagoon, and throughout the forests of the interior of northern Florida (Milanich 1994:76). Three common types of Middle Archaic sites are known: small, special-use camps, large base camps, and quarries.

The small, special-use camps appear archaeologically as scatters of lithic waste flakes and tools such as scrapers, points, and knives. These sites are numerous in river basins and along wetlands and probably represent sites of tool repair and food processing during hunting and gathering excursions (Milanich 1994:78). The large base camp may cover several acres or more, and contains several thousand or more lithic waste flakes and tools. Quarry-related sites occur in proximity to chert outcrops, which tend to be along rivers, lakes or wetlands or around lakes and wetlands as erosion cuts through the soil to the underlying limestone bed.

The Middle Archaic artifact assemblage is characterized by several varieties of stemmed, broad-blade projectile points. The Newnan point is the most distinctive and widespread in distribution (Bullen 1975:31). Other stemmed points of this period include the less common Alachua, Levy, Marion, and Putnam points (Bullen 1968; Milanich 1994). Other common artifacts include cores, blades, modified and unmodified flakes, ovate blanks, hammerstones, “hump-backed” unifacial scrapers, and sandstone “honing” stones, and thermally altered tools.

Late Archaic Period (3,000–500 BC)

After 3000 BC, there was a general shift in settlement and subsistence patterns emphasizing a greater use of wetland and marine food resources than in previous periods. This shift was related to the natural development of food-rich wetland habitats in river valleys and along the Atlantic and Gulf coasts (Bense 1994). By the Late Archaic period, a regionalization of precontact cultures began to occur as human populations became adapted to specific environmental zones. Extensive Late Archaic middens are found along the northeastern coast inland waterway from Flagler County north and in the braided river-marsh system of the central St. Johns River, especially south of Lake George.

Orange Period

By about 2000 BC, pottery appears in the archaeological record. The earliest ceramics in Florida were tempered with plant fibers such as palmetto fiber or Spanish moss. The first use of pottery is well dated to the period from circa 2000 BC to 1000 BC. Although at first undecorated, various techniques were used to apply surface decoration, starting sometime around 1650 BC, providing an important tool for differentiating sites dating to the second half of the Late Archaic, known as the Orange Period (2000–500 BC) (Milanich 1994:86, 94). Table 2 illustrates the long-accepted Orange Period ceramic chronology.

Riverine middens in the East and Central cultural region have produced artifacts that illustrate aspects of Late Archaic subsistence technology, such as the throwing stick, use of which is indicated by the presence of steatite throwing-stick weights and stemmed projectile points. Russo (1992:198) suggests that, along the coast, fine-mesh nets were also used to catch fish from the estuarine tidal creeks. Also common in these midden sites were picks and hammers made of shell, pins, points, and other tools made of bone (Milanich 1994:92-93).

Table 2. Orange Period Ceramic Chronology

Period	Dates
Orange 5	1000–500 BC
Orange 4	1250–1000 BC
Orange 3	1450–1250 BC
Orange 2	1650–1450 BC
Orange 1	2000*–1650 BC

Source: Milanich (1994) based on Bullen (1955, 1972)
* or slightly earlier.

Formative Period (500 BC–AD 1513)

The Formative Period represents a time when changes in pottery and technology occurred throughout Florida. The specific changes in pottery traditionally used by archaeologists to mark the beginning of this period include the replacement of fiber-tempered pottery with sand-tempered, limestone-tempered, and chalky-paste ceramics. Three different projectile point styles (basally-notched, corner-notched, and stemmed) also occur in some areas in contexts contemporaneous with these new ceramic types. This profusion of ceramic and tool traditions suggests population movement and social interaction between culture areas. The earliest known major occupations of southern Florida date to this period (Bullen et al. 1968; Sears 1982).

The regional diversity that marked this period has been primarily attributed to local adaptation to varied ecological conditions within the state. Traditionally, this diversity has been described archaeologically in terms of cultural periods based on variations in ceramic types. The ceramic tradition for southern Florida, characterized by sand-tempered bowls with incurvate rims, is known as the Glades or Everglades cultural tradition.

Glades Culture

The Site and associated non-linear facilities are located in the Glades cultural region (Attachment 7: Figure 1; Milanich 1994:301). As defined by Milanich (1994:298), the Glades cultural region includes all of south Florida east and south of the Caloosahatchee and Okeechobee regions. It includes most of St. Lucie County, the Everglades itself, a largely sawgrass marsh in Hendry, Palm Beach, Broward, Dade, and Monroe counties; the Big Cypress Swamp west of the Everglades in Collier County; and extensive saltwater marshes and mangrove forests are found along both coasts.

John Goggin established a ceramic sequence for the Glades region on the basis of work he conducted from the 1930s to early 1950s (Goggin n.d.). Subsequent research has only served to refine his basic chronological framework. The most recent revision was presented by John Griffin (1988). In presenting his revisions, Griffin makes a point to emphasize that the Glades sequence represents a chronology of stylistic and technological changes in ceramics to which other cultural traits have been added.

Table 3 is based on Griffin's 1988 work and presents the chronological framework for southern Florida. Summaries of the ceramic markers associated with each period are provided, as well. It is important to note that the information provided in this table is most applicable to the heartland of the Glades archaeological area: the Big Cypress Swamp, Everglades, and coastal portions of southern Florida to the south of Lake Okeechobee.

Table 3. Glades Cultural Sequence

Period	Dates	Distinguishing Characteristics
Glades I early	500 BC–AD 500	First appearance of sand-tempered pottery; no decoration
Glades I late	AD 500–750	First appearance of decorated pottery: Fort Drum Incised, Fort Drum Punctated, Cane Patch Incised, Gordon's Pass Incised, Opa Locka Incised, Sanibel Incised; sand-tempered plain persists
Glades IIa	AD 750–900	Appearance of Key Largo Incised and Miami Incised; sand-tempered plain and Opa Locka Incised persist; none of the earlier decorated types are present
Glades IIb	AD 900–1100	Sand-tempered plain and Key Largo Incised persist; Matecumbe Incised appears; none of the earlier decorated types are present; certain rim modifications (incised lip arcs and lip crimping and grooving) also appear for the first time
Glades IIc	AD 1100–1200	Almost no decorated ceramics; some grooved lips but no more lip arcs or crimped rims; Plantation Pinched appears
Glades IIIa	AD 1200–1400	Plantation Pinched is no longer present; Sand-tempered plain and grooved lips persist; appearance of Surfside Incised and St. Johns Check Stamped
Glades IIIb	AD 1400–1513	Glades Tooled, sand-tempered plain and St. Johns Check Stamped are present, Surfside Incised and grooved lips are not present
Glades IIIc	AD 1513–ca.1700	Same as previous period with the addition of historic artifacts

Source: Griffin 1988: 124–142

Glades period sites include those at Gordon's Pass (Goggin 1939), Goodland Point (Goggin 1950), Marco Island (Van Beck and Van Beck 1965), Useppa Island (Milanich et al. 1984), Horr's Island (McMichael 1982), Sanibel Island (Fradkin 1976), and the Turner River site (Sears 1956). An interesting feature of these large coastal sites is the progressive movement of habitation areas toward the water (e.g. Cushing 1896; Goggin 1950; Sears 1956), and indications are that dwellings may have been built to extend out over the water. Inland sites consist of shell and dirt middens along major watercourses (e.g., Laxson 1966) and small dirt middens containing animal bone and ceramic sherds in oak/palm hammocks or palm islands associated with freshwater marshes. The coastal Glades subsistence pattern is typified by the exploitation of fish and shellfish, wild plant food, and inland game, while Glades sites in the Big Cypress Swamp show a greater, if not exclusive, reliance on interior resources.

HISTORIC OVERVIEW

The purpose of this overview is to help determine the probable types and locations of prehistoric and historic archaeological sites and other historic resources that may be located within the Site and associated non-linear facilities.

European Contact and Colonial Period (ca. 1513-1821)

Official credit for the “discovery” of Florida by Europeans is credited to Juan Ponce de León, whose voyage of 1513 took him along the East Coast of the peninsula (Tebeau 1971:21). Other Spanish explorers followed Juan Ponce de León's lead, and over the next 50 years the Spanish government and private individuals financed expeditions in hopes of establishing a colony in Florida. Jesuit missions were established in the Central Peninsular Gulf Coast and Glades archaeological regions, including the mission of Carlos at Charlotte Harbor, the mission of Tocobaga at Tampa Bay, and a mission at a Tequesta village at the mouth of the Miami River. By 1572, native groups in Florida were still resistant to Christian conversion, and Jesuit authorities decided to abandon their missionary efforts in Florida.

The Franciscan mission effort began in the 1570s and focused predominantly in northern areas of Florida. One possible reason may have been differences in Native American settlement patterns and economies. According to Milanich (1978:68), the failure of the Spanish missions among the south Florida native population was due partially to the groups' subsistence pattern, which required seasonal movement for maximum resource exploitation. Consequently, for the remainder of the First Spanish Period (1565-1763), the area surrounding the Site and associated non-linear facilities was virtually ignored as the Spanish concentrated their efforts in the northern half of the peninsula.

By the beginning of the eighteenth century, the Native American population of South Florida had declined considerably as a result of disease, slave raids and intertribal warfare. Many who survived integrated into the Seminoles, descendants of Creek Indians who moved into Florida during the early eighteenth century to escape the political and population pressures of the expanding American colonies to the north (Wright 1986:218).

By the end of the eighteenth century, the Seminoles had become the dominant Native American group in the state. Groups of fugitive African American slaves had also settled among the Seminoles by the early nineteenth century (Brown 1991:5-19). Armed conflict with pioneers, homesteaders, and eventually the United States Army resulted in the removal of most Seminoles from Florida. This action forced the withdrawal of the remaining Seminole population to the harsh environment of the Everglades and Big Cypress Swamp by the late nineteenth century.

The Territorial and Statehood Period (1821-1860)

In 1821, after several years of negotiations with Spain, the United States acquired Florida as a territory. The population of the territory at that time was still centered in the northern areas around Pensacola, St. Augustine, and Tallahassee. As more European-American settlers moved into the region, conflicts arose with the Seminole people over available land. Pressure was

brought to bear upon the government to remove the Seminoles from North Florida and relocate them farther south. The Treaty of Moultrie Creek (1823) restricted the Seminole people to approximately four million acres of land in the middle of the state, running south from Micanopy to just north of the Peace River (Mahon 1967: Rear foldout map). This treaty was unpopular with the Seminoles, as they were reluctant to move from their established homes to an area that they felt could not be cultivated. Equally unpopular were the later treaties of Paynes Landing (1832) and Fort Gibson (1833), which called for Seminole emigration to the western territories (Mahon 1967:75-76, 82-83). These three treaties helped foster Seminole resentment of settlers and outbreaks of hostility that culminated in the Second Seminole War in 1835.

At the beginning of the Second Seminole War, the conflict was centered near the Withlacoochee region. In 1838, U.S. troops moved south to pursue the retreating Seminoles into the Lake Okeechobee and Everglades regions. Colonel Zachary Taylor was sent to the area between the Kissimmee River and Peace Creek. Colonel Persifor Smith and his volunteers were dispatched to the Caloosahatchee River, and U.S. Navy Lt. Levi N. Powell was assigned the task of penetrating the Everglades (Mahon 1967:219-220). Powell's detachment had several skirmishes with Seminole people near Jupiter Inlet. Powell established a depot on the Miami River and erected Fort Dallas in the approximate location of present-day downtown Miami. For three months, Fort Dallas was a base of operations as Powell led his men into the Everglades in search of the Seminoles (Gaby 1993:47).

The Second Seminole War had a deleterious effect on new settlement in Florida. To encourage settlement in the middle portion of the territory after the war, the Armed Occupation Act of 1842 offered settlers 160 acres of land at no cost, provided they built a house, cleared five acres, planted crops, and resided on the land for five years. Any head of a family or single man over 18 years of age and able to bear arms was eligible to receive a homestead. This act, plus the end of the Second Seminole War, created a small wave of immigration by Anglo-American pioneers to Central Florida. Most of these immigrants were Anglo-American farmers and cattle ranchers, or “crackers” from the southeast United States.

Civil War and Post-Civil War Period (1860-1898)

The onset of the Civil War disrupted serious development in Florida. Most of the State did not have daily contact with battles; however, Florida contributed 15,000 troops and supplies to the Confederate Army (Miller 1990). Florida cattlemen became an important supplier of beef to the Confederate Army after the occupation of Vicksburg on July 4, 1863. Florida's governor, John Milton, organized a commissary service under James McKay and supervised collections from south Florida ranges (Gannon 1996: 241). In addition, the State supplied salt for tanning and meat preservation from coastline salt works. Although Florida was not involved in many Civil War battles, Union forces established control of the Florida coastline in 1863 (Miller 1990).

Like the other former Confederate states, Florida suffered economic devastation at the Civil War's end. Six railroad lines in north Florida at the war's beginning were destroyed or fell into disrepair during the war. Florida's cotton industry had grown in the decade before the war; however as a

result of limited markets, short supply of men, and blocked ports, the industry declined. At this time, much of the state's agricultural production came to a halt (Miller 1990).

Settlement increased slightly in central and southern Florida, but development was limited by a lack of transportation to the state's interior and the state's internal debt. Although the economy was in ruins, tax-supported public school and university systems were established. Some industries including lumbering and cattle ranching emerged during this period. Despite some economic activity, the overall condition was hard for most residents (Miller 1990).

The presidential election of 1876 marked the end of Reconstruction. The Post-Reconstruction era ushered in economic growth, prosperity, and population expansion for Florida. Transportation routes, primarily through the railroad's expansion along both coasts, encouraged the state's overall development. Agricultural products were now more easily shipped to out-of-state markets and building materials were shipped into the state. By 1890, agricultural products included lumber, cigars, turpentine, fertilizers, printing, shipbuilding, cattle ranching, and citrus production. Several cities and six new counties were established during the Post-Reconstruction period (Miller 1990).

In the 1880s, interest in south Florida's resources intensified and was promoted by businessmen Hamilton Disston, Henry Plant, and Henry Flagler. By 1881, the State of Florida faced a financial crisis involving title to the public lands. On the eve of the Civil War, land had been pledged by the Internal Improvement Fund to underwrite railroad bonds. After the war, when the railroads failed, the land reverted to the State. Almost one million dollars were needed by the state to pay off the principal and accumulated interest on the debt, thereby giving clear title. Outside businessmen saw Florida's potential and began purchasing the land for large projects. Hamilton Disston, son of a wealthy Philadelphia industrialist, contracted with the State of Florida in two large land deals: the Disston Drainage Contract and the Disston Land Purchase. The Drainage Contract was an agreement between Disston and the State in which Disston and his associates agreed to drain and reclaim all overflow lands south of present day Orlando and east of the Peace River in exchange for one-half the acreage that could be reclaimed and made fit for cultivation. A contract was signed on March 10, 1881. Disston and his associates formed a company called the Atlantic and Gulf Coast Canal and Okeechobee Land Company on July 20, 1881 (Davis 1938:205).

During 1881 and 1882, channels were dug between the lake systems to the north and the Kissimmee River (Tebeau 1971:288). The Atlantic and Gulf Coast Canal and Okeechobee Land Company were responsible for opening up Lake Okeechobee to the Gulf of Mexico by dredging a channel to the Caloosahatchee River. Disston and his associates received 1,652,711 acres of land under the Drainage Contract, although they probably never permanently drained more than 50,000 acres (Tebeau 1971:280). Drainage operations began and the Florida Land and Improvement Company and Kissimmee Land Company were formed to help fulfill the drainage contract (Hetherington 1980:6).

Disston changed Florida from a wilderness into an area ripe for investment. This enabled Henry Plant and Henry Flagler to expand their railroad lines south (Mann 1983:68; Harner 1973:18-23). Plant built and operated the Jacksonville, Tampa & Key West Railway on the west coast and Flagler

built and operated the Florida East Coast Railroad on the east coast. Through the efforts of these men, areas south of Pensacola and Jacksonville were opened to development. All the development encouraged the beginning of Florida's tourist industry.

Spanish–American War Period/Turn-of-the-Century Period (1898-1917)

At the turn-of-the-century, Florida's history was marked by the outbreak of the Spanish-American War in 1898. As Florida was the closest state to Cuba, American troops were stationed and deployed from the state's coastal cities. Harbors in Tampa, Pensacola, and Key West were improved as ships were launched with troops and supplies. "The Splendid Little War" was short in duration, but evidence of the conflict remained in the form of improved harbors, expanded railroads, and military installations (Miller 1990).

In 1904, Governor Napoleon Bonaparte Broward initiated significant reforms in Florida politics. Several of Broward's major issues included the Everglades drainage project, railroad regulation, and the construction of roads. During this time, railroads were constructed throughout the state and automobile use became more prevalent. Improved transportation in the state opened lines to export Florida's agricultural and industrial products. As various products such as fruits and vegetables were leaving the state, people were arriving in Florida. Some entered as new residents and others as tourists. Between 1900 and 1910, the state population increased from 528,542 residents to 752,619. At this time, St. Lucie and Palm Beach counties were established, indicative of the increasing numbers of people moving to the East Coast of the state (Miller 1990).

Rapid and widespread growth was the theme of this period in Florida history. Thousands of miles of railroad tracks were laid at this time. The Florida East Coast, Atlantic Coast Line, and Seaboard Air Line railroads each had systems running throughout the state. While agriculture, especially the citrus industry, was the main source of Florida's economy, manufacturing and industry grew during the beginning of the century. Fertilizer production, boat building, and lumber and timber products were large industries (Weaver et al. 1996:3).

World War I and Aftermath Period (1917-1920)

The World War I and Aftermath period of Florida's history starts with the United States' entry into World War I in 1917. Wartime activity required that several training facilities were set up in the state and protecting the coastlines was a priority at this time. Although the conflict only lasted until November of 1918, the economy was boosted by the war. Shipbuilding was accelerated. The war brought industrialization to Tampa and other port cities such as Jacksonville, where war ships were built. These cities also functioned as supply depots and embarkation points. As agricultural production increased, products such as beef, vegetables, and cotton were in great demand (Miller 1990). Immigration and housing development slowed during the war; however, tourism increased as the war in Europe forced Americans to vacation in the United States. At the conclusion of the war, railroad construction resumed. Railroad tycoons such as Henry Flagler and Henry Plant were not only building railroad facilities, but also erecting hotels for winter visitors. These magnates took an interest in the promotion and improvements in

Florida in an effort to bring more people into the state. The end of the war marked a slight increase in population, and Flagler and Okeechobee counties were created at this time.

Florida Boom Period (1920-1930)

After World War I, Florida experienced unprecedented growth. Many people had relocated to Florida during the war to work in wartime industries or had been stationed in the state as soldiers. Bank deposits increased, real estate companies opened in many cities, and state and county road systems expanded quickly. Earlier land reclamation projects had created thousands of new acres of land to be developed. Real estate activity increased steadily after the war's end and drove up property values. Prices on lots were inflated to appear more enticing to out-of-state buyers. Every city and town in Florida had new subdivisions platted and lots were selling and reselling for quick profits. Southeast Florida, including cities such as Miami and Palm Beach, experienced the most activity, although the boom affected most communities in central and south Florida (Weaver et al. 1996:3).

Building roads became a statewide concern as road building shifted from a local to a state function. These roads made all parts of the state accessible and allowed the boom to spread. Apparently, up to twenty thousand people were arriving in the state on a daily basis. Besides the cheap property, Florida legislation that prohibited income and inheritance taxes also encouraged more people to move to the state.

The Boom period began to decline in August 1925, when the Florida East Coast Railway placed an embargo on freight shipments to south Florida. Ports and rail terminals were overflowing with unused building materials. In addition, northern newspapers began to suggest fraudulent land deals were occurring in Florida. In 1926 and 1928, two hurricanes hit southeast Florida killing people and destroying thousands of buildings. The collapse of the real estate market and the subsequent hurricane damage effectively ended the boom. Further damaging Florida's economy was a Mediterranean fruit fly infestation in 1929 that devastated citrus groves throughout the state (Weaver et al. 1996:4).

By the time the stock market collapsed in 1929, Florida was already suffering from an economic depression. Construction activity had halted and industry dramatically declined. Subdivisions platted several years earlier remained empty and buildings stood on lots partially finished and vacant.

Depression and New Deal Period (1930-1940)

This era of Florida's history dates from the stock market crash of 1929. As previously discussed, there were several causes for the economic depression in Florida including the grossly inflated real estate market, the hurricanes, and fruit fly infestation. During the Great Depression, Florida suffered significantly. Between 1929 and 1933, 148 state and national banks collapsed, more than half of the state's teachers were owed back-pay, and one in four residents was receiving public relief (Miller 1990).

As a result of hard economic times, President Franklin D. Roosevelt initiated several national relief programs. Important New Deal-era programs in Florida were the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC). The WPA provided jobs for professional workers and laborers. Their work included the construction or improvement of many roads, public buildings, parks and airports in Florida. The CCC improved and preserved forests, parks, and agricultural lands (Miller 1990).

Most areas of the state's economy were affected by the Depression. Beef and citrus production declined, manufacturing slowed, and development projects were stopped. Even the railroad industry felt the pressures of the 1930s; service was greatly reduced and personnel were let go. Also, the increasing use of the automobile lessened the demand for travel by rail. Despite the Depression, tourism remained an integral part of the Florida economy during this period. New highways made automobile travel to Florida easy and affordable and more middle-class families were able to vacation in the "Sunshine State."

World War II and the Post War Period (1940-1950)

From the end of the Great Depression until after the close of the post-war era, Florida's history was inextricably bound with World War II and its aftermath. It became one of the nation's major training grounds for the various military branches including the Army, Navy, and Air Force. Up until that time, tourism had been the state's major industry and it was brought to a halt as tourist and civilian facilities such as hotels and private homes were placed into wartime service. The influx of thousands of servicemen and their families increased industrial and agricultural production in Florida, and also introduced these new residents to the warm weather and tropical beauty of Florida.

Railroads once again profited, since servicemen, military goods and materials needed to be transported. However, airplanes were now becoming the new form of transportation, and Florida became a major airline destination. The highway system was also being expanded at this time. The State Road Department constructed 1,560 miles of highway during the war era (Miller 1990).

At the conclusion of World War II, Florida's economy was almost fully recovered. Tourism quickly rebounded and became the major source of the state's economy. Additionally, former military personnel found the local climate amenable and remained in Florida permanently after the war. These new residents greatly increased the population during the late 1940s and 1950s.

ENVIRONMENTAL OVERVIEW

Environmental and ecological factors through time are used to reconstruct past conditions that influenced early human occupation and to assist with the development of archaeological probability zones and an appropriate testing strategy.

Paleo-Environment

Although a comprehensive paleoenvironmental reconstruction is beyond the scope of this report, a brief description of the large-scale climatic and hydrologic conditions that have occurred since 31,050 BC is provided. The discussion below provides a general indication of the ecological context within which pre-Columbian people lived at different times.

Since the termination of the Pleistocene Epoch at the end of the Wisconsin glaciation, approximately 11,550 BC, Florida has undergone significant climatic and environmental change. Notable changes in climate and subsequently in flora and fauna required human groups to adapt to their surroundings. These adaptations resulted in cultural changes in their hunting/foraging strategies and seasonal migration patterns. Within the archaeological record, these changes can be observed by differences in settlement patterns, midden composition, refuse disposal patterns, and the kinds of stone tools or pottery made.

Although Florida was not glaciated, the glacial conditions associated with the Laurentide ice sheet affected the paleoclimates of Florida. Paleobotanical evidence suggests that between 31,050 and 11,550 BC, Florida was dry, windy, and cool (Whitehead 1973). By the early Holocene, roughly 11,550 BC, the climate in west-central Florida had warmed and it is likely that precipitation increased; as a result, the shallow, perched lake levels rose. After 3050 BC, the environment in central Florida began to take on a more modern appearance. Large stands of slash pine (*Pinus elliottii*) became established, probably at the expense of oak in the wetter, low-lying areas. Rainfall increased and sea level rose, creating wetter conditions.

The earliest inhabitants of Florida accessed a permanent water supply from a number of solution lakes and ponds and a seasonal water supply from perched water ponds. Shallow water ponds and rivers fed by the Floridan Aquifer were dry during this period due to insufficient rainfall and the depressed level of the Aquifer. Settlement appears to have been limited to areas around sinkholes that penetrated the Floridan Miocene age limestones (Clausen et al. 1975, 1979) or areas within the Central Gulf Coast Karst Region where both solution lakes and perched water were available (Dunbar and Waller 1983).

By 8050 BC, the previously dry perched water systems began to retain water for longer periods of time as precipitation increased. By 6550 BC, the water levels in the perched water systems approached modern levels; however, the level of the Floridan Aquifer remained depressed due to lowered sea levels. By 4050 BC, the Floridan Aquifer reached modern levels. This resulted in fresh water discharge from springs, and spring-fed rivers. Arid conditions caused many of the perched water ponds to dry; thereby, restricting potable water to the deeper springs, rivers, and sinkholes (Dunbar 1982:98).

Between 550 BC and AD 1700, the level of the Floridan Aquifer rose. This rise, in combination with higher than present rainfall conditions, probably resulted in seasonal flooding of low-lying regions (Dunbar 1982:102). Potable water was abundant during this period. It is likely that pre-Columbian site location at this time was more dependent on the proximity of plant and animal resources than on the availability of water.

The Holocene Climatic Optimum, a time of warmer and drier environmental conditions, occurred during the Middle Archaic period (5000 to 3000 BC). Pine species replaced oak as the dominant forest element (Watts 1975). This implies that the availability of acorns and the animals that fed on those acorns would have been more restricted. Water was more plentiful, but only in rivers and springs fed by the Floridan Aquifer or at sinkholes.

By Late Archaic times, the environment of the region approached present conditions. With the incipient development of the Everglades, Lake Okeechobee, Lake Kissimmee, swamps, wetlands, and other drainages, water was no longer the limiting factor to site and resource location. The choice of site location was probably more a matter of finding a reasonably dry spot rather than a nearby water supply (Almy 1976, 1978; Grange et al. 1979). Sea levels were still fluctuating, but were within one meter of current levels (Mörner 1969; Widmer 1983).

The climatic fluctuations that have occurred over the past 13,000 years have affected the way human groups were able to use the resources found within the area of the Site and associated non-linear facilities. The Paleoindian and Early Archaic inhabitants would have found the area drier and access to water restricted, possibly only seasonally available at perched water ponds, or in solution lakes (sinkholes). The Florida peninsula was wider as sea level was as much as 49 m (160 feet) lower than present level (Milanich 1994:38). The continental shelf was exposed in what is now the Gulf of Mexico. Mixed forests of oak and pine probably dominated the lower, riparian areas and the higher, arid locations were covered with rosemary scrub and grass species. Precontact groups exploited microhabitats that existed until modern logging, ranching, and land drainage practices were instituted.

Physiographic Regions of the Site and Associated Non-Linear Facilities

The Site and associated non-linear facilities are located in the Southern or Distal Physiographic Zone, and within the Southern Slope, a feature associated with the Atlantic Coastal Ridge (White 1970). Known in Miami-Dade County as the Miami Ridge, the ridge consists of a narrow, gently sloping limestone ridge that extends from Hollywood south to Homestead. The bedrock in the area is Miami Oolite (United States Department of Agriculture [USDA] 1996). Features associated with the Miami Ridge include the Atlantic Ocean to the east, the Everglades to the west, and the Southern Slope to the south. A portion of the southern slope extends northeastward along the western shore of Biscayne Bay, terminating across from Key Biscayne. Elevation along the Southern Slope averages 3 to 4.5 m with elevations in the Coconut Grove area of South Miami reaching 6 to 7 m.

Physical Environment of the Site and Associated Non-Linear Facilities

An understanding of the features and topography of the Site and associated non-linear facilities not only helps in the development of project-specific archaeological testing strategies, but it assists in understanding how specific environments may have influenced prehistoric and historic settlement. A brief overview of the natural community within which the Site and associated facilities are located is followed by relevant environmental features and conditions associated with the Site and associated non-linear facilities.

The Site and associated non-linear facilities are located in southeastern Miami-Dade County approximately 25 miles south of Miami, 8 miles east of Florida City, and 9 miles southeast of Homestead, Florida within the Tidal Swamp Natural Community (Florida Natural Areas Inventory [FNAI] 1990:70). Tidal swamps occur in flat coastal areas and the soils are typically saturated with brackish water and inundated during high tides. The dominant plants of Tidal Swamp Natural Community include mangrove, black mangrove, white mangrove and buttonwood. These four species occasionally occur in zones which are defined by varying water levels, with red mangrove occupying the lowest zone, black mangrove the intermediate zone, and white mangrove and buttonbush the highest zone. Other associated plants include saltgrass, black needlerush, spike rush, glasswort, Gulf cordgrass, sea purslane, saltwort and seaoxeye. Typical animals of the tidal swamp include mangrove water snake, brown pelican, white ibis, osprey, bald eagle, and a variety of shorebirds, herons, egrets, and raccoon. Also included are sponges, oysters, marine worms, barnacles, mangrove tree crabs, fiddler crabs, mosquitoes, and numerous other invertebrates. Fishes are likewise diverse in this community and include black-tipped shark, lemon shark, nurse shark, bonnethead shark, rays, tarpon, ladyfish, bonefish, menhaden, sardines, lookdown, permit, snapper, sheepshead, porgies, pinfish, and mullet.

The Site

The Site is located within the industrial wastewater facility to the south of the existing Units 1-4 in a low, flat area subject to tidal and seasonal inundation. Cooling canals associated with the industrial wastewater facility bound the Site to the north, east, south, and west. Two additional remnant cooling canals bisect the Site. The Biscayne Bay Aquatic Preserve lies to the east. Maps depict the area as mangrove marsh. The area is frequently under several inches of water, and appears to be devoid of any natural vegetation.

Nuclear Administration Building, Training Building and Parking area.

The nuclear administration building, training building and parking area are located within the plant property in an area dominated by mangrove and coastal plain willow.

Heavy Haul Road

The heavy haul is an existing heavy haul road located within the plant property. The only improvements will be to improve the road for additional weight (e.g. add additional asphalt).

Spoils Areas

Spoils generated from demucking the Site will be deposited onto existing spoils berms located adjacent to the Grand Canal (main return canal) and the southern boundary of the industrial

wastewater facility. The existing berms consist of limestone taken from the adjacent canals. These areas comprise approximately 200 acres.

FPL Reclaimed Water Treatment Facility and Delivery Pipeline to Plant Area

The proposed boundaries for the FPL reclaimed water treatment facility are within an area of dwarf mangroves and sawgrass dotted by clusters of Australian pine. The reclaimed water treatment facility will occupy approximately 50 acres. The delivery pipelines route to the Site follow an existing access road south of the facility, cross fill areas, roadways and then beneath the existing discharge canal before terminating at the southwest portion of the Site.

Radial Collector Wells and Delivery Pipeline

The radial collector wells are located on the Turkey Point peninsula jutting north-eastward from the main facility, and the delivery pipelines are located along the eastern edge of the existing Turkey Point plant and Site. The peninsula consists of a rocky shoreline, with a large man-made rock-fill road running through the middle of it, also in a north-east to south-west fashion. Areas along the shoreline and to the side of the road, both along the peninsula and extending to the south, are vegetated with mangroves.

Equipment Barge Unloading Area

The equipment barge unloading area is located within the plant property to the north of the Site in land currently classified as electric power facilities. A portion of the existing barge unloading area will be expanded.

FPL-Owned Fill Source

The FPL-owned fill source, which is approximately 300 acres, is located approximately four miles northwest of the Site and to the southeast of Homestead Air Reserve Base. Currently, the FPL-owned fill source is located within a planted palm tree nursery that has scattered wetland vegetation and secondary growth. The delivery system extends from the FPL-owned fill source south along existing access roads to the Site.

BACKGROUND RESEARCH

Background research methods included a search of the Florida Master Site File (FMSF)¹ to identify previously recorded cultural resources and resources with recorded human remains. During this analysis, Janus Research identified resources within and adjacent to (within 100 feet) the APE established for the Site and associated non-linear facilities. Background research also included a review of Miami-Dade County and local site inventories.

Previously Recorded Cultural Resources

The FMSF search identified no previously recorded archaeological resources, sites with human remains, historic structures, historic districts, historic cemeteries, historic bridges, or historic linear resources within the proposed APE.

A review of Janus Research's in-house copy of the Miami-Dade County Department of Planning and Zoning Office of Historic and Archaeological Resources GIS map and list of locally designated resources was reviewed. No known locally designated sites are located within or adjacent to the APE.

Previously Conducted Cultural Resource Surveys

The work of previous investigators was reviewed in order to gather information about the types of pre-Columbian and early historic period sites expected to occur within the Site and associated non-linear facilities. An extensive search of pertinent records was conducted to determine the locations of previously recorded National Register of Historic Places-listed, eligible, and potentially eligible resources, as well as any archaeological and historical assessments of other tracts of land, within the Site and associated non-linear facilities.

The FMSF search identified five previously conducted cultural resource surveys within the boundaries of the Site and associated facilities (Table 4). Three of these previously conducted surveys (FMSF Survey No.: 340, 602, and 1217) are county-wide and did not result in intensive testing of the Site or associated non-linear facilities.

¹ Please note that the FMSF serves as an archive and repository of information about Florida's recorded cultural resources. It represents an inventory of resources for which available information exists and describes their condition at a particular point of time. Because the inventory of resources is not all-inclusive on a statewide basis, gaps in data may exist. The FMSF is only as accurate and as comprehensive as the information that is submitted and users should be cognizant of the sometimes uneven quality of the information. The FMSF is an important planning tool that assists in identifying potential cultural resources issues and resources that may warrant further investigation and protection. It can be used as a guide but should not be used to determine the Division of Historical Resources'/State Historic Preservation Office's (FDHR/SHPO) official position regarding the significance of a resource.

Table 4. Previously Conducted Cultural Resource Surveys within the Site and Associated Non-Linear Facilities

Survey No.	Survey Name (Author[s] and Date)
340	Dade County Archaeological Survey: Interim Report (Carr 1980)
602	Dade County Historic Survey - Introduction: The Archaeological Survey (Recommendations for Preservation Priorities and List of Inventory Properties; Inventory, Photographs, Etc.) (Carr and Rodriguez 1981)
2127	Dade County Historic Survey, Phase II, Final Report (Metropolitan Dade County 1989)
5103	Phase I Archaeological Resource Survey Of The Florida Power & Light Company's South Dade Mitigation Bank, Dade County, Florida (Davis And Lewis 1996)
No Survey No. on record	Florida Gas Transmission Company Turkey Point Project (Janus Research 2005)

The Florida Gas Transmission Company Turkey Point project included a connection tee and side valve located at the Turkey Point power plant. The connection tee and side valve are situated within the 90 acre site reviewed by the Florida SHPO as part of the FPL Turkey Point Plant Expansion and adjacent to the 13,500 acre survey of the Everglades Mitigation Bank. No archaeological sites were identified during the FGT project or within the Everglades Mitigation Bank.

In addition to the projects listed in Table 4, a previous power plant expansion (Unit 5) was completed in compliance with F.A.C. Electrical Power Plant Siting and as prescribed by DEP Form 62-11.211(1), F.A.C. (FPL Company 2003). In a letter to Dr. Janet Snyder Matthews, (then) Director of DHR and Florida State Historic Preservation Officer (SHPO), Golder Associates requested a “determination as to whether a pedestrian survey with subsurface testing is required” (Letter dated October 15, 2003). In a letter dated November 7, 2003, the DHR/SHPO issued a letter stating that “it is the opinion of this office that the proposed project [FPL Turkey Point Power Plant Expansion] will have no effect on historic properties listed or eligible for listing in the National Register of Historic Places, or otherwise of historical, architectural, or archaeological value” (Letter from Frederick Gaske to Richard Zwolak, November 7, 2003; see Attachment 8).

RESEARCH DESIGN AND ARCHAEOLOGICAL SITE POTENTIAL

The designation of archaeological site potential zones was based on previous research conducted within South Florida. Four environmental factors were used in predicting site locations: soil type (soil drainage), distance to fresh (potable) water, distance to hardwood hammocks, and relative topography. The relative importance of each of these variables depends upon the composite environmental setting. In a sand hills environment, for example, a majority of the known sites are located near a water source on a ridge slope. If a water source is not located in the vicinity, the probability of site occurrence decreases dramatically. Water will not be a determining factor, however, if another resource with more limited distribution, such as stone for tool manufacture, is available. In areas of relatively low relief and abundant wetlands, areas of higher elevation relative to the surrounding terrain would be considered more likely to contain sites.

Soil characteristics alone are not necessarily the best predictors of site location in this region. Other variables, such as the presence of tree islands, hammocks or natural wells serve as more reliable indicators of site location. Tropical hammocks (hydric, mesic, or xeric) provide a variety of resources, which would have been exploited by the native people who lived in the region. Their use by precontact, Seminole and modern hunters, campers and permanent residents is well documented. One obvious reason for their use is that they are not prone to flooding, except perhaps during episodes of very high water. Yet, hammocks are moist enough to retard the development and spread of fires.

The thick foliage of hammocks also provides a great deal of shade as well as serving to moderate temperatures year-round. The thick canopies of hammocks also provide good shelter during periods of heavy weather. Mature hammocks are noted for a lack of ground cover vegetation due to the closed canopy above shading out younger trees, herbs and shrubs. Thus, mature hammocks offer enough open space for habitation and activity areas. Finally, many fruits, nuts and tubers are available in hammocks that are important as human food sources as well as for their ability to attract game animals. Previous research suggests that habitation sites tend to occur on the northern end of these tree islands, while burials frequently occur on the southern ends (Milanich 1994:298).

Pre-Development Environment and Land Use History

Government Land Office Records

A review of the 1925 Government Land Office (GLO) historic plat map for Township 57 South, Range 40 East (DEP 1925) did not indicate any cultural or natural features within the Site or associated non-linear facilities. Field surveyor's notes for Township 57 South, Range 40 East were not available for review. However, the 1875 GLO plat map for Township 58 South, Range 40 East (DEP 1875) which depicts the area south of the Site, illustrates a small hammock which may extend into the Site and in the area of the spoils areas just south of the site (Attachment 9: Figure 1). A small hammock is also noted in the associated field surveyor's notes for Township 58 South, Range 40 East (DEP 1874; Attachment 9: Figure 2). This hammock is located at the intersection of Sections 3 and 4 of Township 58 South, Range 40 East and Sections 33 and 34 of Township 57 South, Range 40 East (the location of the current Site). The 1874 surveyor's notes describe the intersection of these four sections as "with the exception of a small hammock, marsh

and mangrove swamp” and the surveyor’s notes describe the rest of the land traversed by the spoils area as marsh, or marsh and mangrove swamp.

The Arsenicker Keys (1988), Homestead (1988), and Card Sound (1988) USGS quadrangle maps and historic aerial photographs were also reviewed to help identify potential historic resources. The review of the USGS quadrangle maps did not provide information regarding potential historic resources due to the non-historic survey date of 1988. However, the aerial photographs of the Site and associated non-linear facilities dating from 1938, 1952, and 1963 (State University System of Florida [SUSF] 2004) were compared to 1970 and current aerials in order to form an impression of the properties and development from the historic period in comparison to the present day. Aerial photographs illustrating the vicinity of the Site and associated non-linear facilities in 1938, 1952, 1963, and 1970 are included in Attachment 9 (Figures 3-14). These aerial photographs revealed that the area of the Site and associated non-linear facilities was undeveloped prior to 1963. Additionally, these photographs illustrate the wet and inundated nature of the Site and associated non-linear facilities prior to development. By 1970, the aerial photographs illustrate the presence of cooling canals within and around the Site and roadway adjacent to the northern portion of the reclaimed water treatment facility. With the exception of a drainage ditch intersecting the southern portion of the spoils areas that runs east-west, visible as early as 1952, no structures are visible within the Site or associated non-linear facilities nor are any structures, other than the plant located in the vicinity of the Site or associated non-linear facilities.

No hammocks are apparent on aerial photographs from 1938, 1952, 1963, or 1970 (SUSF 2004; Attachment 9: Figures 3-14). The 1938, 1952, and 1963 aerials show the Site and associated non-linear facilities in their pre-development condition. The Little River, as identified on the 1988 Arsenicker Keys USGS quadrangle map, is apparent in the southeast quadrant of the Site and other drainages from the Everglades into Biscayne Bay are evident throughout the Site and in the vicinity of the FPL reclaimed water treatment facility. These aerials confirm the wet nature of the Site and associated non-linear facilities prior to any development.

The 1970 aerial shows the Turkey Point plant as well as a linear cooling canal extending to the south of the plant. This aerial also depicts the Site as bounded by a cooling canal on the three sides (north, south, and west) and bisected by two additional cooling canals. This aerial also shows roads along the northeast boundary and portion of the southern boundary of the FPL reclaimed water treatment facility. No structures are apparent within the Site or associated non-linear facilities nor are any structures, other than the power plant located in the vicinity of the Site or associated non-linear facilities. The 1970 aerial depicts the Site and associated non-linear facilities much the same as the 1988 USGS quadrangle. By 1988, the cooling canal that borders the eastern edge of the Site and the southeastern edge of the FPL reclaimed water treatment facility was constructed.

The Dade County Area Soil Survey (USDA 1996) confirms the wet and modified nature of the Site and associated non-linear facilities illustrated by the GLO historic plat maps and aerial photographs (Attachment 10: Figures 1-3). Soils of the site and associated non-linear facilities include the Perrine-Biscayne-Pennsuco association, which are included in soils of the freshwater and sawgrass marsh, and the Perrine-Terra Ceia-Pennsuco association, which represent soils of the tidal swamps.

Soils of the freshwater and sawgrass marsh are generally described as organic soils over limestone bedrock or marl over oolitic limestone bedrock. Soils of the tidal march consist of marl over limestone or muck. The specific soil units included in the Site and associated non-linear facilities consist of Udorthents-water complex; Pennsuco marl, tidal; Terra Ceia muck, tidal; Perrine marl; Biscayne marl, drained; Krome very gravelly loam, and urban land.

Soils of the Udorthents-water complex were located in the northwestern and southwestern edges of the Site, western extent of the heavy haul road running north-south, the northwestern edge of the nuclear administration building, training building and parking area, within the radial collector wells and the FPL reclaimed water pipeline that extends into the Site, and within the portion of the spoils areas running north-south. Areas included within the Udorthents-water complex include both udorthents and open bodies of water. Typically, udorthents consist of mixed light gray and white limestone gravel and loamy carbonatic material which extend to a depth of 80 inches or more. They overlie limestone and consist of “unconsolidated or heterogeneous geologic material removed during the excavation of ditches, canals, ponds, lakes, and quarries” (USDA 1996:19). The material is commonly piled along banks or in scattered areas. In some areas weeds and native grasses have become established while other areas are devoid of vegetation (USDA 1996:19). This soil is characteristic of berms located adjacent to the cooling canals and other areas of modified land.

Pennsuco marl, tidal is a deep, poorly drained soil found in tidal mangrove swamps and subject to tidal flooding. The surface layer typically consists of light gray marl to a depth of approximately 51 inches, where soft porous bedrock is found. Under natural conditions, these soil remains saturated and the water table fluctuates with the tides. The soil is moderately saline or saline and permeability is moderately slow. Natural vegetation includes scattered and stunted red mangrove, and the soil is in the Mangrove Swamp ecological plant community (USDA 1996:28). Tidal flooding and ponding is common with these soils. These soils were found predominantly within the western portion and southeastern corner of the Site, the southeastern portion of the heavy haul road, the eastern $\frac{1}{3}$ of the southern portion of the spoils areas, and within a large portion of the FPL reclaimed water treatment facility and delivery pipeline to the plant area.

Tidal Terra Ceia muck is also subject to tidal flooding. Typically, the soil is muck to a depth of 80 inches or more and the soil remains saturated under natural conditions. Natural vegetation consists predominantly of red and black mangroves (USDA 1996:28). These soils were located within the eastern portion of the Site, the northwestern corner of the FPL reclaimed water treatment facility and delivery pipeline to the plant area, a large portion of the radial collector wells and delivery pipeline, small portions of the northern and southern extent of the heavy haul road, and the majority of the nuclear administration building, training building and parking area.

Biscayne marl, drained soil is a very shallow or shallow nearly level soil found on broad coastal flats or transverse glades. Under natural conditions, this soil is associated with the freshwater marsh and sawgrass ecological plant communities (USDA 1996:22). This soil type is present within most of the FPL-owned fill source.

Perrine marl is described as a moderately deep, nearly level, poorly drained soil found on broad, low coastal flats and in transverse glades. Under natural conditions, this unit is periodically inundated or contains water close to the surface (USDA 1996:17). This unit is found predominantly in the south-

central and southeastern portion of the southern FPL-owned fill source and within the western $\frac{2}{3}$ of spoils areas running east-west.

Krome very gravelly loam is a nearly level moderately drained soil on broad low hills of the Miami Ridge. Typically, limestone is near the surface and all areas have been rock-plowed or mechanically scarified and cultivated in the past (USDA 1996:18). This unit is found in a small area in the southwestern corner of the southern FPL-owned fill source.

The entire equipment barge unloading area, majority of the northeastern portion of the heavy haul access road, and the southern edge of the nuclear administration building, training building, and parking area are located within an area classified in the soil survey as urban land. Urban land is developed and modified land that is often covered with large standing structures or paved areas and has usually been subjected to land grading and shaping (USDA 1996:21-22).

The pre-development and land use history, as well as the lack of archaeological sites identified during previous surveys in the vicinity, indicates that the Site and associated non-linear facilities have a low probability for containing archaeological sites.

METHODS

The methods used in this study were designed to locate and evaluate archaeological sites and historic resources and evaluate their National Register–eligibility. This background research revealed that no historic buildings or structures exist within the vicinity of the Site or associated non-linear facilities. It also indicated that the Site and associated non-linear facilities are frequently inundated and have a low probability for archeological sites.

Archaeological Survey Methods

Archaeological field methods included the pedestrian survey of the project area and visual inspection of exposed ground to identify evidence of archaeological sites. A careful surface inspection was done in areas of minimal vegetation and/or upturned soil and in areas adjacent to past dredging. Subsurface testing was also conducted.

Shovel tests were circular and approximately 50 cm (20 in) in diameter. All shovel tests were excavated to a minimum depth of 1 m (39 in), unless water or limestone bedrock was encountered. All excavated soil was screened through ¼-in hardware cloth suspended from portable wooden frames.

Standard archaeological methods for recording field data were followed throughout the project. The identification number, location, stratigraphic profile, and soil descriptions were recorded for every shovel test performed. The location of each shovel test was recorded on current aerial photographs. Labels indicating the shovel test number are placed next to the shovel test location. Field conditions were also noted on the aerial maps.

RESULTS

A pedestrian survey and subsurface shovel testing was conducted during the months of October 2008, December 2008, March 2009, and April 2009. The field investigations confirmed that the locations of the Site and associated non-linear facilities have a low probability for archeological sites. No archaeological sites were newly identified within the project APE.

A total of 21 shovel tests were judgmentally excavated: two within the Site, four within the radial collector wells, five within the FPL reclaimed water treatment facility, and 10 within the FPL-owned fill source. Field maps illustrating the locations of shovel tests are included in Attachment 11 (Figures 1-4) and representative photographs are included in Attachment 3 (Photographs 1-4), Attachment 4 (Photographs 1 and 2), Attachment 5 (Photographs 1-4), and Attachment 6 (Photographs 1 and 2). These subsurface tests resulted in stratigraphic sequences consistent with land modification, disturbance, and inundation. No artifacts, features, or cultural material were identified in any of the shovel tests conducted during the current survey. A Survey Log is included in Attachment 12.

Site

The area along the southern edge of the Site was examined to determine whether any remnants of a possible hammock, as suggested by the historic plat map, existed. The survey confirmed that this area consisted of a spoil pile from the canal bordering the property to the south. An area of slightly higher elevation on the spoil pile appeared to be in the approximate location of the possible hammock. A shovel test was excavated in that location, and revealed that the strata consisted of 30 cm of spoil overlying black peat. Water was encountered at 60 cm below the surface. A second shovel test was excavated to the north of the spoil pile in an area containing mangroves. This shovel test consisted of brown muck and water, which was evident at the surface.

The remainder of the Site consisted of mudflats, some of which were too low or unstable to walk on or through. The mudflats are frequently inundated and have been impacted by flooding and hurricanes over the years.

Nuclear Administration Building, Training Building and Parking Area

The nuclear administration building, training building and parking area are located within the plant property in an area dominated by mangrove and coastal plain willow. This area is considered to have a low probability for archaeological sites. Given the wet environmental conditions, the results of the current survey, and the lack of previously recorded sites within or adjacent to the Turkey Point plant property and the Everglades Mitigation Bank, subsurface testing was not deemed necessary.

Radial Collector Wells

Four test excavations conducted within the radial collector well corridor demonstrated an average of a 40 cm deposit of limestone fill before the shovel test was inundated with groundwater. This supports the soil characteristics of the Udorthents-water complex within the APE which is typical of made land.

FPL Reclaimed Water Treatment Facility and Delivery Pipelines to the Plant Area

The FPL reclaimed water treatment facility consisted of dwarf mangroves and sawgrass with clusters of Australian pines. One of the Australian pine clusters was tested and showed a black muck to a depth of about 40 cmbs underlain by water. A line of five shovel tests was placed running along the northern area resulting in a white-ashy muck to a grayish brown colored muck and water was encountered very close to the surface.

The delivery pipeline to the plant follows an existing access road south of the facility, crosses fill areas, roadways and goes underneath the existing discharge canal before ending at the southwest portion of the Site. This area is considered to have a low probability for archaeological sites. Given the existing conditions, the results of the current survey, and the lack of previously recorded sites within or adjacent to the Turkey Point plant property and the Everglades Mitigation Bank, subsurface testing was not deemed necessary.

FPL-Owned Fill Source

Archaeological testing within the FPL-owned fill source revealed gray brown loamy clay, which ranged in depth from approximately 10 to 30 cm below the surface, over limerock. No archaeological material was identified.

Equipment Barge Unloading Area

The equipment barge unloading area is located within the plant property to the north of the Site in land currently classified as electric power facilities. A portion of the existing barge unloading area will be expanded. This area is considered to have a low probability for archaeological sites. Given the existing conditions, the results of the current survey, and the lack of previously recorded sites within or adjacent to the Turkey Point plant property and the Everglades Mitigation Bank, subsurface testing was not deemed necessary.

Heavy Haul Road on Plant Property

The heavy haul is an existing heavy haul road located within the plant property. The only improvements will be to improve the road for additional weight. This area is considered to have a low probability for archaeological sites. Given the existing conditions and the lack of proposed ground disturbance, no subsurface testing was deemed necessary.

Spoils Areas on Plant Property

Spoils generated from demucking the Site will be deposited onto existing spoils berms adjacent to the Grand Canal (main return canal) and the southern boundary of the industrial wastewater facility. The existing berms consist of limestone taken from the adjacent canals. This area is considered to have a low probability for archaeological sites. Given the existing conditions and the lack of proposed ground disturbance, subsurface testing was not deemed necessary.

CONCLUSIONS

The field assessment confirmed the low archaeological potential of the Site and associated non-linear facilities. No archaeological sites were identified within the APE.

Unanticipated Finds

A formal Unanticipated Finds or Discovery Plan and Contractor Training will be prepared in coordination with FDHR prior to the start of construction. Should construction activities uncover archaeological remains, it is recommended that activity in the immediate area of the remains be stopped while a professional archaeologist evaluates the remains. In the event that human remains are found during construction or maintenance activities, the provisions of Chapter 872.05 of the Florida Statutes will apply. Chapter 872.05 states that, when human remains are encountered, all activity that might disturb the remains shall cease and may not resume until authorized by the District Medical Examiner or the State Archaeologist. The District Medical Examiner has jurisdiction if the remains are less than 75 years old or if the remains are involved in a criminal investigation. The State Archaeologist has jurisdiction if the remains are more than 75 years of age.

Curation

Representative photographs (Attachments 2-6), field maps (Attachment 11), and Survey Log Sheets (Attachment 12) will be curated at the Florida Master Site File in Tallahassee, along with a copy of this report. No artifacts were collected. Field notes and other pertinent project records are temporarily stored at Janus Research and returned to the client, as appropriate.

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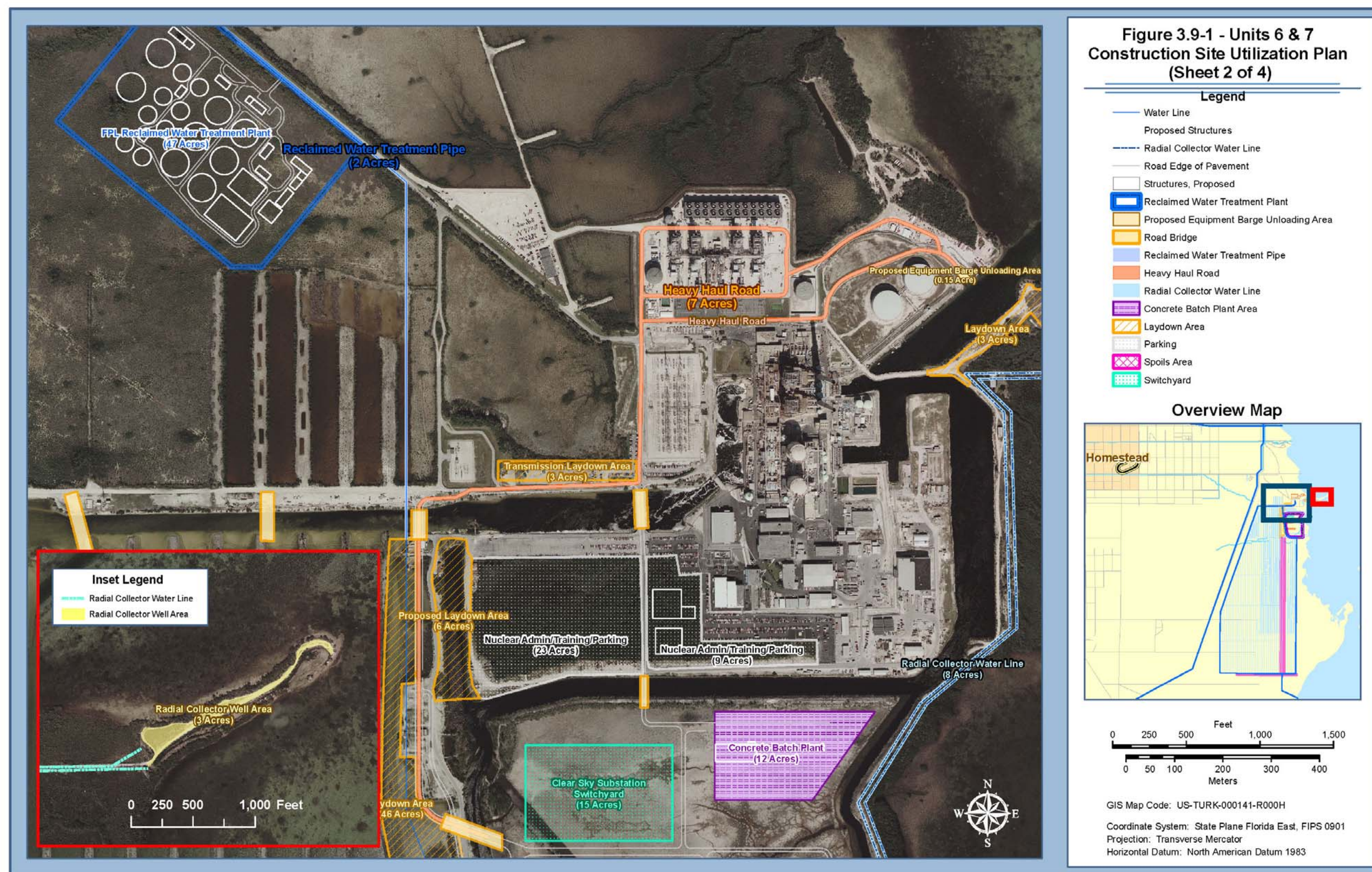
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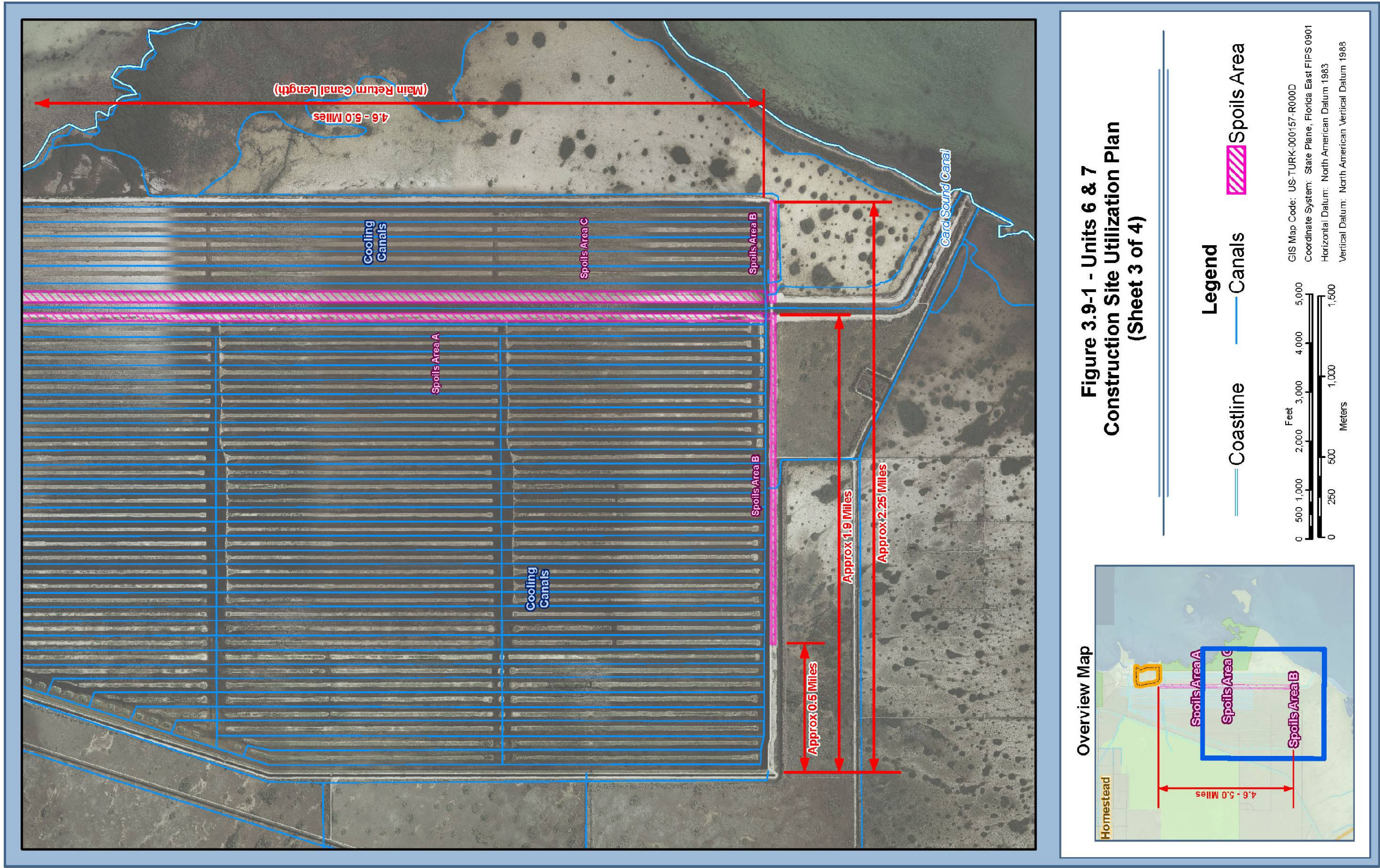
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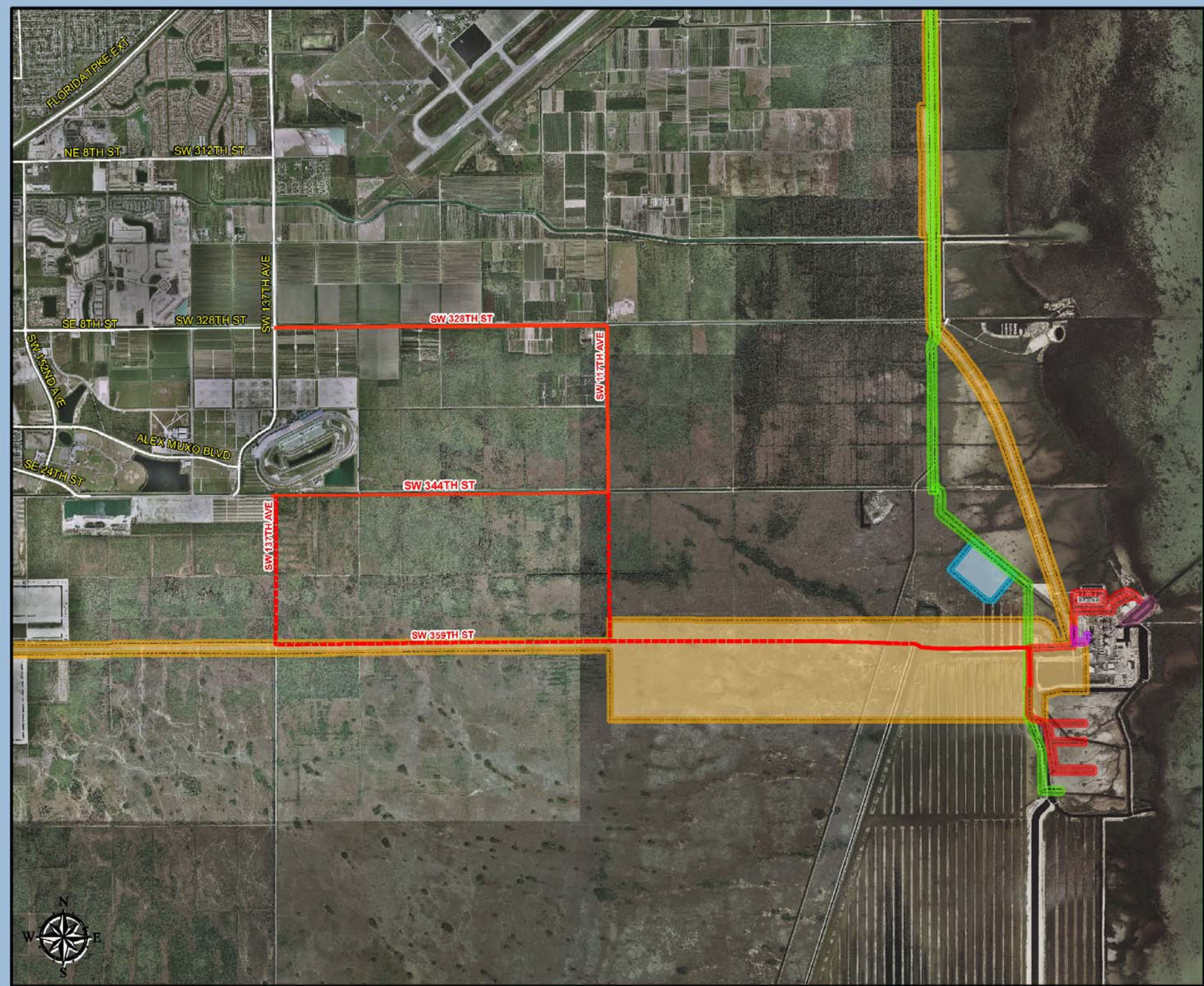
Attachment 1:

- **Sheets 1-4: Units 6 & 7 Construction Site Utilization Plan**
- **Figure 1: Location of the APE on USGS Quadrangle Maps**
- **Figure 2: Location of the APE on a 2004 Aerial Map**







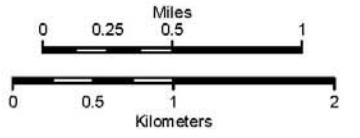


**Figure 3.9-1 - Units 6 & 7
Construction Site Utilization Plan
(Sheet 4 of 4)**

Legend

- Access Road, Existing
- - - Access Road, Proposed
- Proposed Borrow Pit
- Reclaimed Water Pipeline
- Water Pipeline
- FPL Reclaimed Water Treatment Plant
- Turkey Point Units 6 and 7 Site
- Transmission Line Corridor

Overview Map



GIS Map Code: US-TURK-000158-R000G
 Coordinate System: State Plane Florida East, FIPS 0901
 Projection: Transverse Mercator
 Horizontal Datum: North American Datum 1983

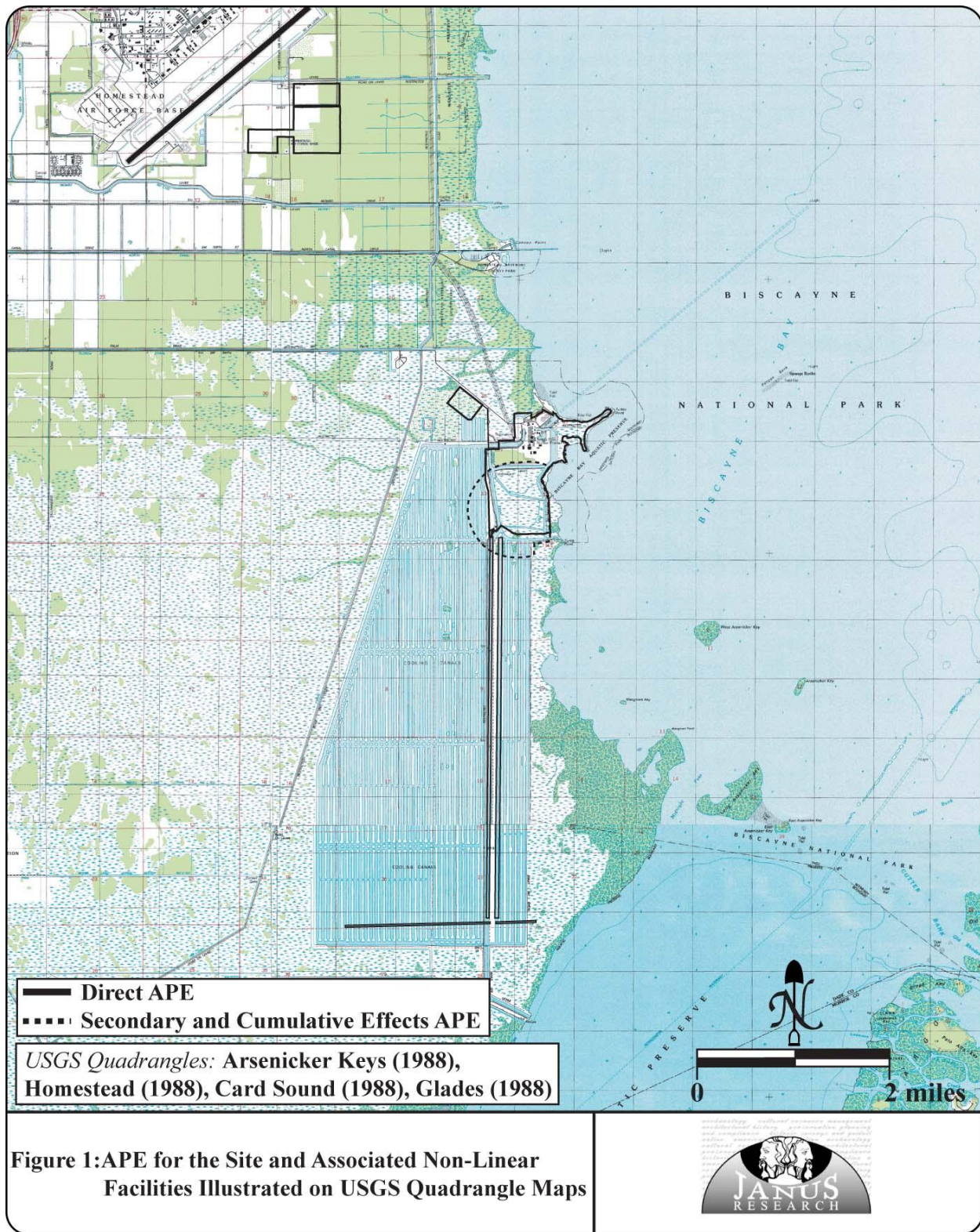




Figure 2: APE for the Site and Associated Non-Linear Facilities

Attachment 2: Photographs of the Site Conditions Provided by Bechtel (September 2008)



Photograph 1: View of Site, facing Northeast



Photograph 2: View of Site, facing East

Attachment 3: Photographs of the Site Conditions (December 2008)



Photograph 1: Area Surrounding Shovel Test 1 in Southern End of Site, facing East



Photograph 2: South-Central Area of Site, facing North



Photograph 3: View of Mudflats on Site, facing East



Photograph 4: View of Site, facing South

**Attachment 4: Photographs of the
Radial Collector Wells Conditions (March 2009)**



**Photograph 1: Shovel Test 1 in Radial Collector Wells Corridor
Illustrating Limestone Fill and Water, facing North**



**Photograph 2: Representative Photograph of Radial Collector Wells
in the Northeastern Portion of the Peninsula, facing North**



**Photograph 3: Representative Photograph of Radial Collector Wells
on the Western Portion of the Turkey Point Peninsula, facing Southeast**

**Attachment 5: Photographs of the
FPL Reclaimed Water Treatment Facility Conditions (March 2009)**



**Photograph 1: Shovel Test 8 within FPL Reclaimed Water Treatment Facility
Illustrating Water Table**



**Photograph 2: Cluster of Australian Pine and Brazilian Pepper
within FPL Reclaimed Water Treatment Facility, facing West-Northwest**

**Attachment 6: Photographs of the
FPL-Owned Fill Source Conditions (April 2009)**



**Photograph 1: Representative Photograph of Planted Palms
within the FPL-Owned Fill Source, facing South**



**Photograph 2: Disturbed Area adjacent to Planted Palms
Within FPL-Owned Fill Source, facing East**

Attachment 7: Cultural Regions of Florida

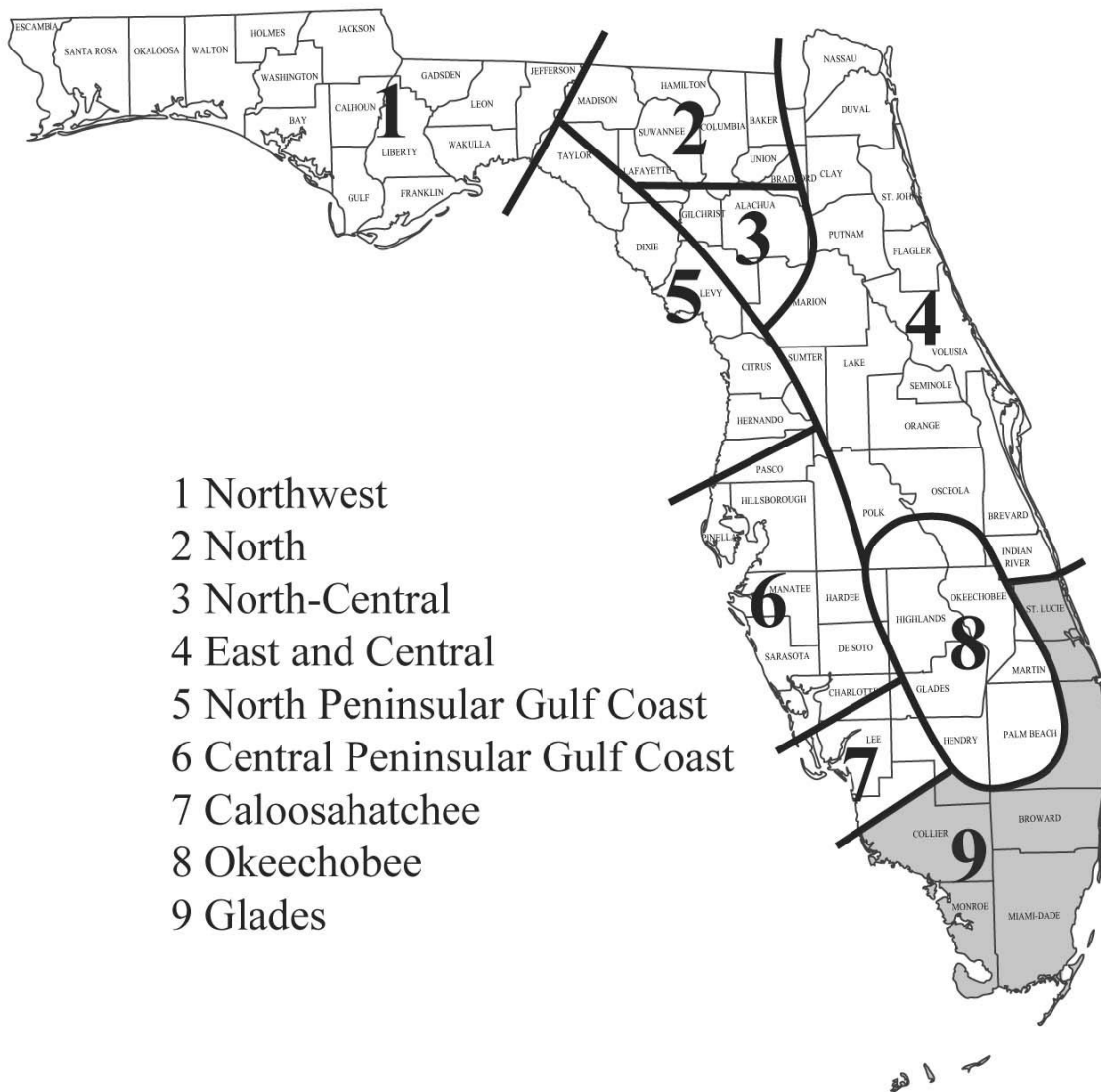


Figure 1: Cultural Regions of Florida
Source: Milanich 1994: 301



Attachment 8: 2003 SHPO Letter for the Turkey Point Power Plant Expansion (Unit 5)



FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. Richard Zwolak
Golder Associates Inc.
5100 West Lemon Street, Suite 114
Tampa, Florida 33609

November 7, 2003

Re: DHR No. 2003-9076 / Received by DHR: October 17, 2003 *SAK 11/10/03*
FPL Turkey Point Expansion Project
Miami-Dade County, Florida

Dear Mr. Zwolak:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, *36 C.F.R., Part 800: Protection of Historic Properties*, Chapters 267, and 403, *Florida Statutes*, and implementing state regulations, regarding possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties (listed or eligible for listing, in the *National Register of Historic Places*), assessing the project's effects, and considering alternatives to avoid or reduce the project's effect on such properties.

A review of the Florida Master Site File and our records indicates that there are no recorded archaeological sites or historic structures located within the subject parcel. Based on the information provided, it is the opinion of this office that the proposed project will have no effect on historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. However, fortuitous finds may occur within this parcel and our agency should be immediately notified if archaeological or historic remains are encountered. Ground disturbing activities in the immediate vicinity of artifact finds should also be halted until the area can be investigated. In the event that any unmarked human remains are encountered at anywhere on the subject property, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

If you have any questions concerning our comments, please contact Samantha Earnest, Historic Sites Specialist, at searnest@dos.state.fl.us or (850) 245-6333. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Frederick P. Gaskie, Deputy SHPO
Janet Snyder Matthews, Ph.D., Director, and
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

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☐ Archaeological Research
(850) 245-6444 • FAX: 245-6436

☒ Historic Preservation
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☐ Historical Museums
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☐ Palm Beach Regional Office
(561) 279-1475 • FAX: 279-1476

☐ St. Augustine Regional Office
(904) 825-5045 • FAX: 825-5044

☐ Tampa Regional Office
(813) 272-3843 • FAX: 272-2340



FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF HISTORICAL RESOURCES

June 9, 2003

David Gatchel
Golder Associates, Inc.
5100 West Lemon St. #114
Tampa, FL 33609
FAX (813) 287-1716

Dear Mr. Gatchel,

In response to your inquiry of June 9th, 2003, the Florida Master Site File lists no previously recorded archaeological sites, no standing structures, and one field survey in the following parcels of Dade County:

TS7S, R40E, Sections: 27, 28

In interpreting the results of our search, please remember the following points:

- Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites or historical structures.
- While many of our records relate to historically significant properties, the entry of an archaeological site or an historical structure on the Florida Master Site File does not necessarily mean that the structure is significant.
- Since vandalism is common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.
- As you may know, federal and state laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.

If you have any further questions concerning the Florida Master Site File, please contact us as below.

Sincerely,

Patrick Gensler
Data Analyst, Florida Master Site File
Division of Historical Resources
R. A. Gray Building
500 South Bronough Street

Phone 850-245-6440, Fax: 850-245-6439
State SunCom: 205-6440
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☐ Historic Preservation
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☐ Historical Museums
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☐ Palm Beach Regional Office

☐ St. Augustine Regional Office

☐ Tampa Regional Office

Attachment 9: Historic Plat Maps, Field Surveyor's Notes, and Aerial Photographs

- **Figure 1: 1875 GLO Plat Map of Township 58S, Range 40E and 1925 GLO Plat Map of Township 57S, Range 40E**
- **Figure 2: 1874 Field Surveyor's Notes for Township 58S, Range 40E**
- **Figures 3-6: Aerial Photographs Illustrating the APE (with the Exception of the FPL-Owned Fill Source and Spoils Areas)**
- **Figures 7-10: Aerial Photographs Illustrating the Spoils Areas APE**
- **Figures 11-14: Aerial Photographs Illustrating the FPL-Owned Fill Source APE**

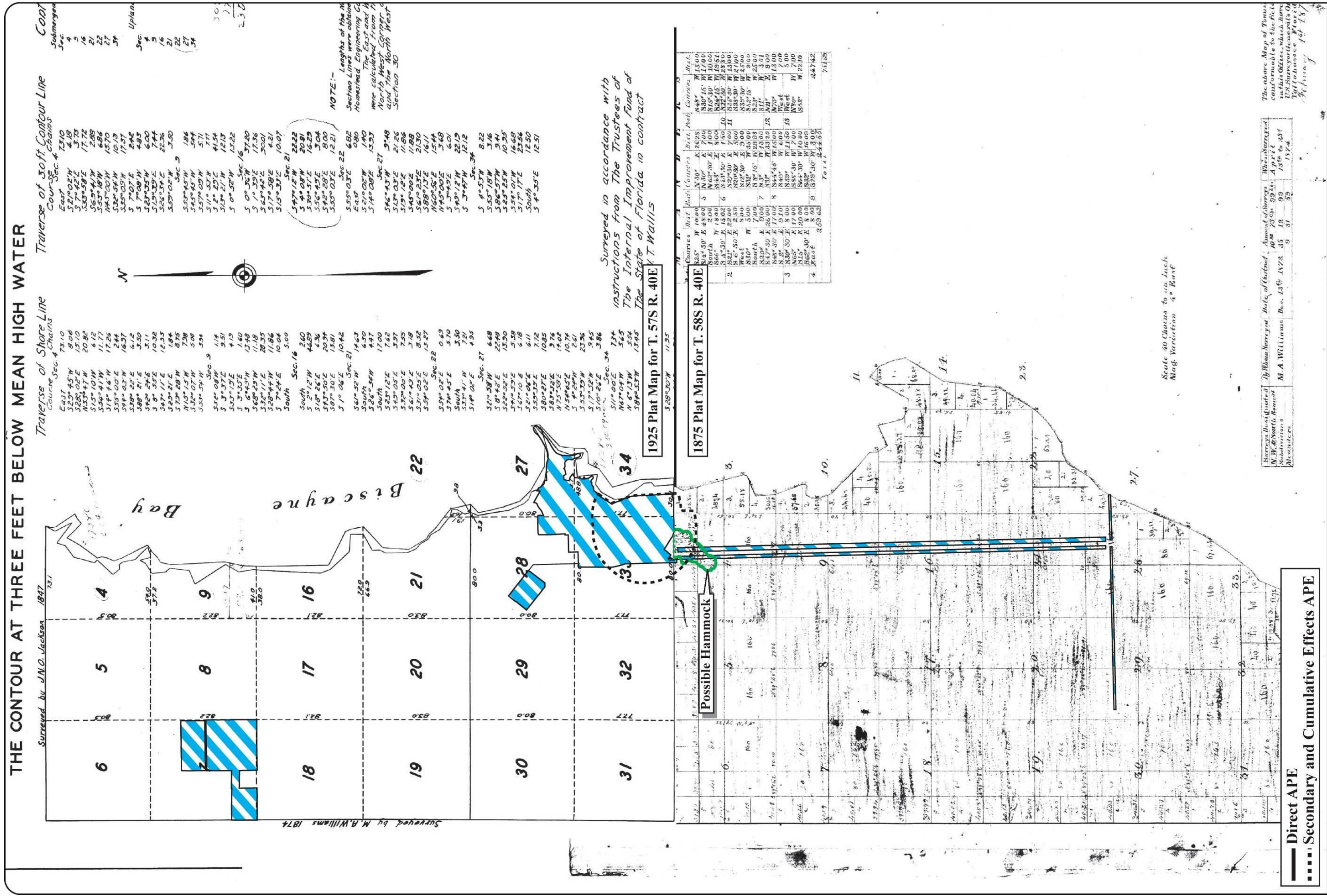


Figure 1: Approximate Location of the APE for the Site and Associated Non-Linear Facilities Illustrated on Historic GLO Plat Maps



T58 S R40 E

Continued 3rd Mile - N Boundary Sec 4.

80.00 to Corner Section 4-3. 33.434 Set post

Mangrove 3 inches in dia N28E15

3 " " " N46W20

3 " " " S17°E16

3 " " " S28W17

with the exception of a small hammock
balanced Marsh & Mangrove Swamp

4th Mile East along North Boundary Sec 3

22.05 to Bucayne Bay Set post

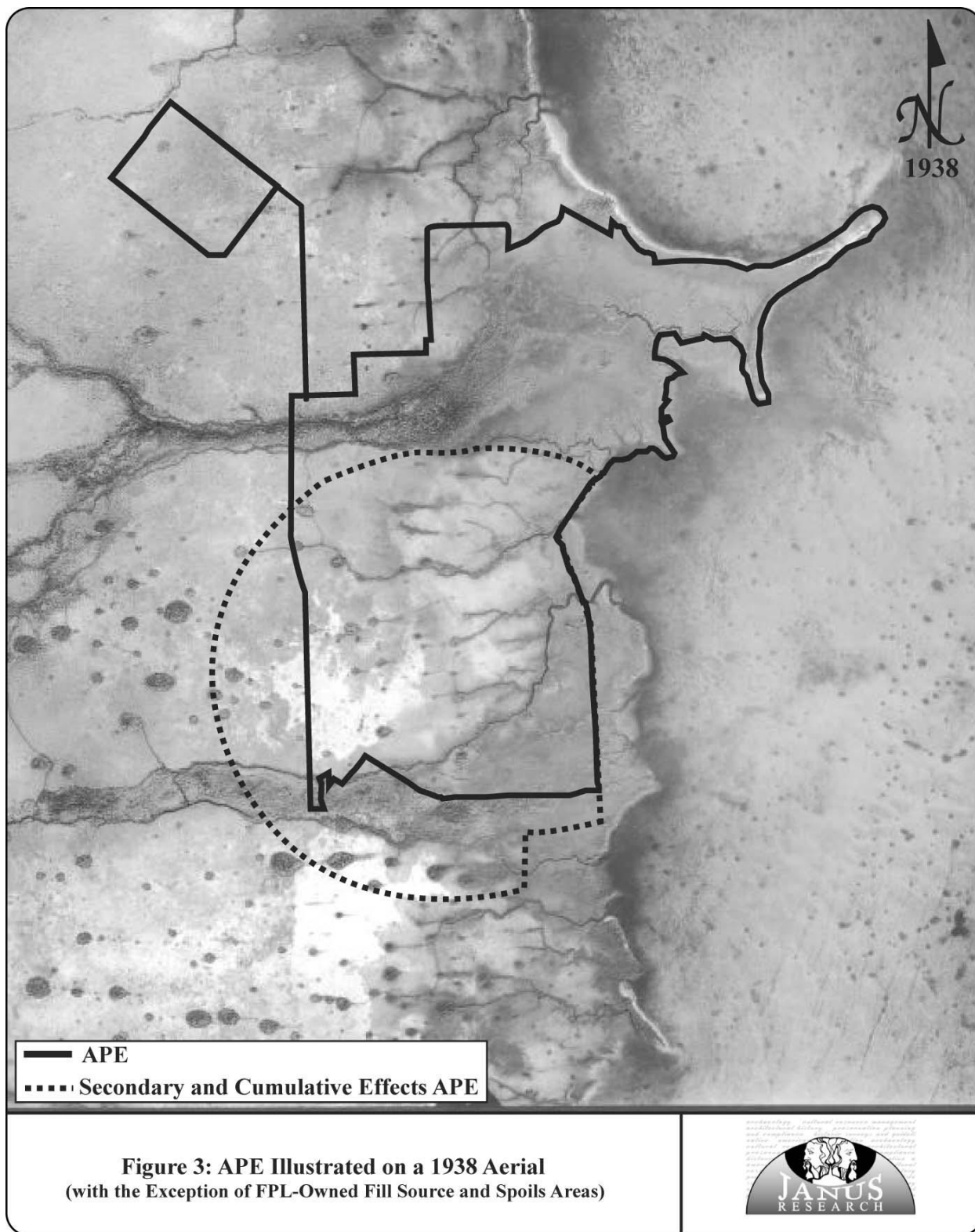
Bearings Bottom Wood 4 inches in dia N10E28

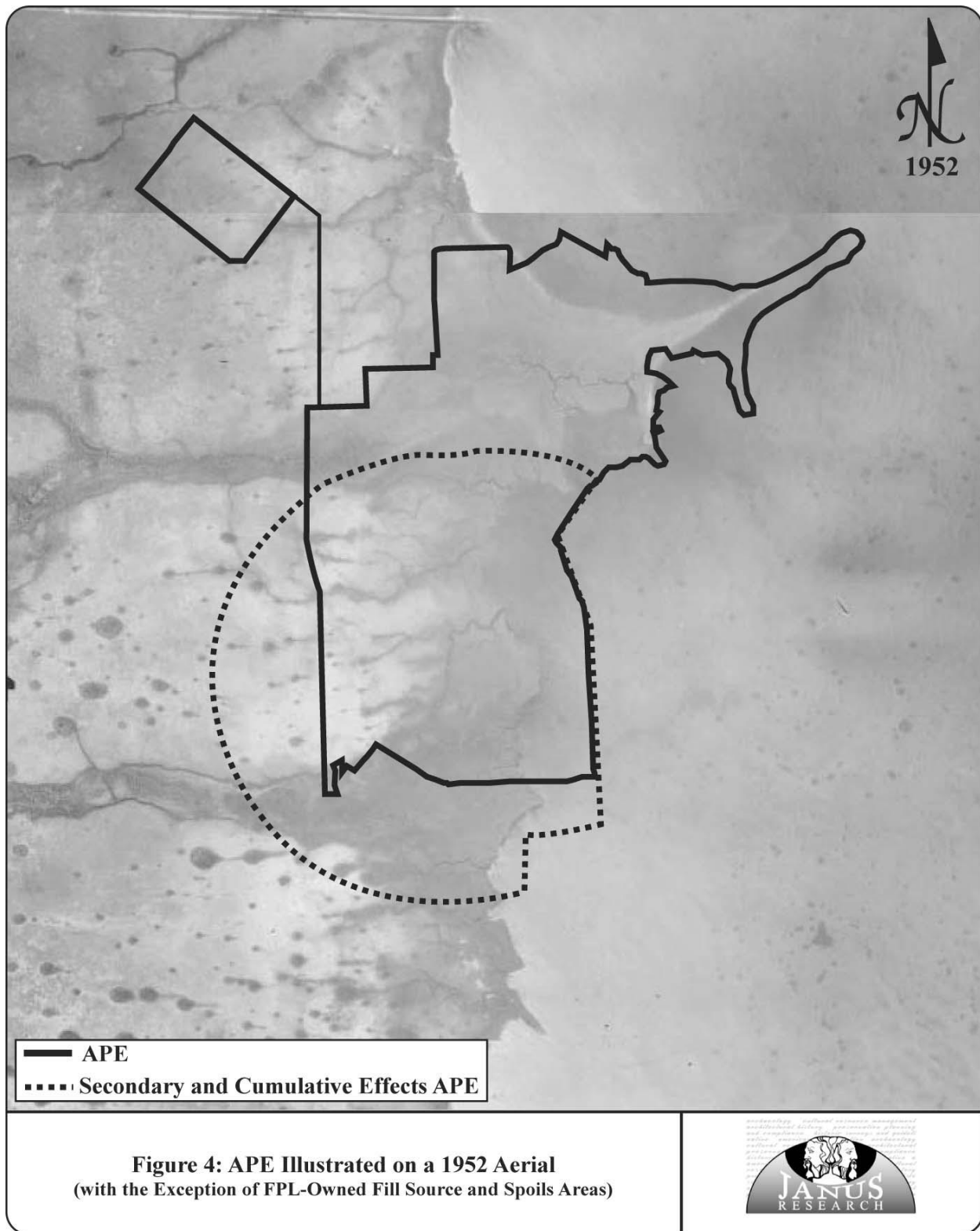
Black Mangrove 10 " " " S29W16

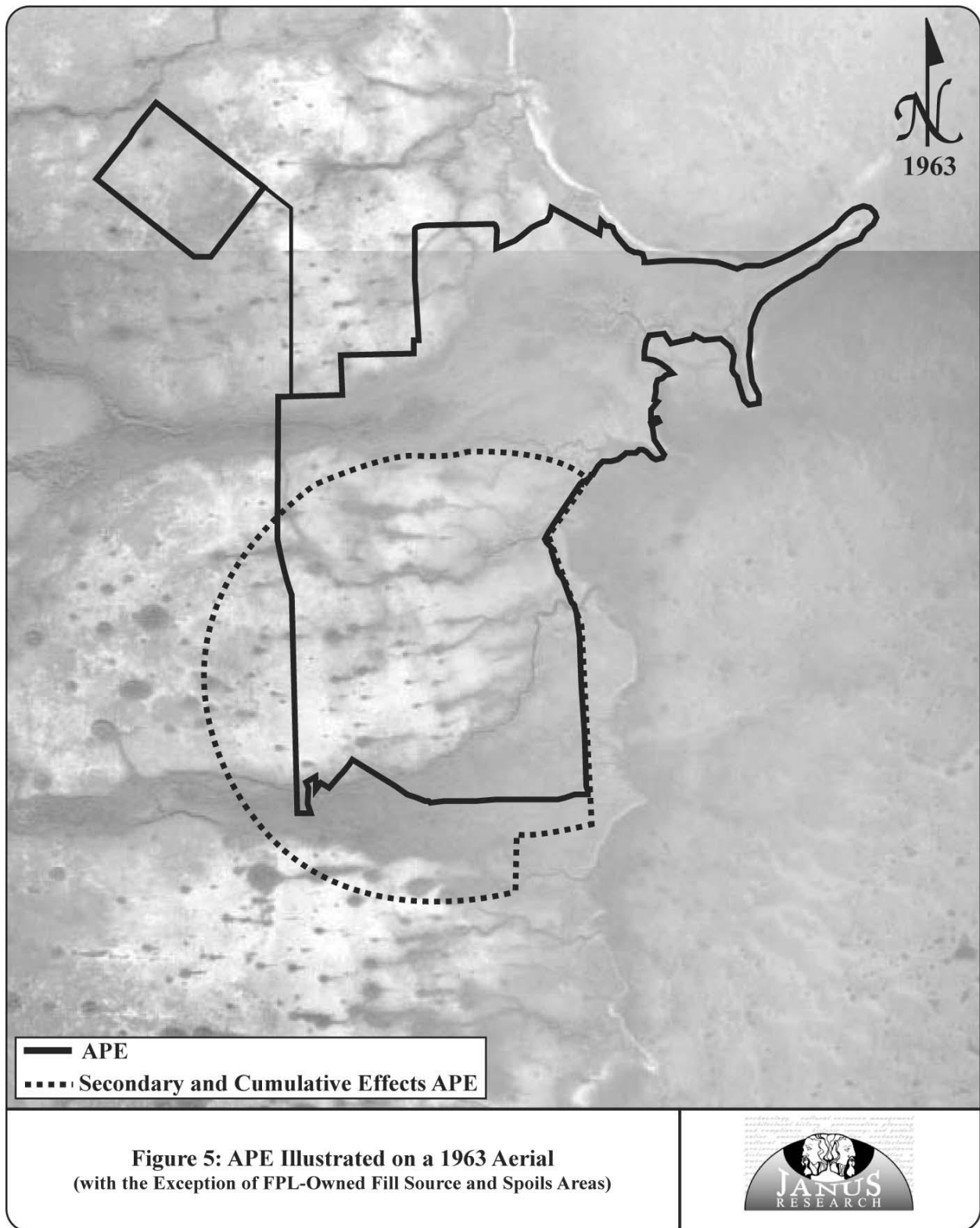
Mangrove Swamp -

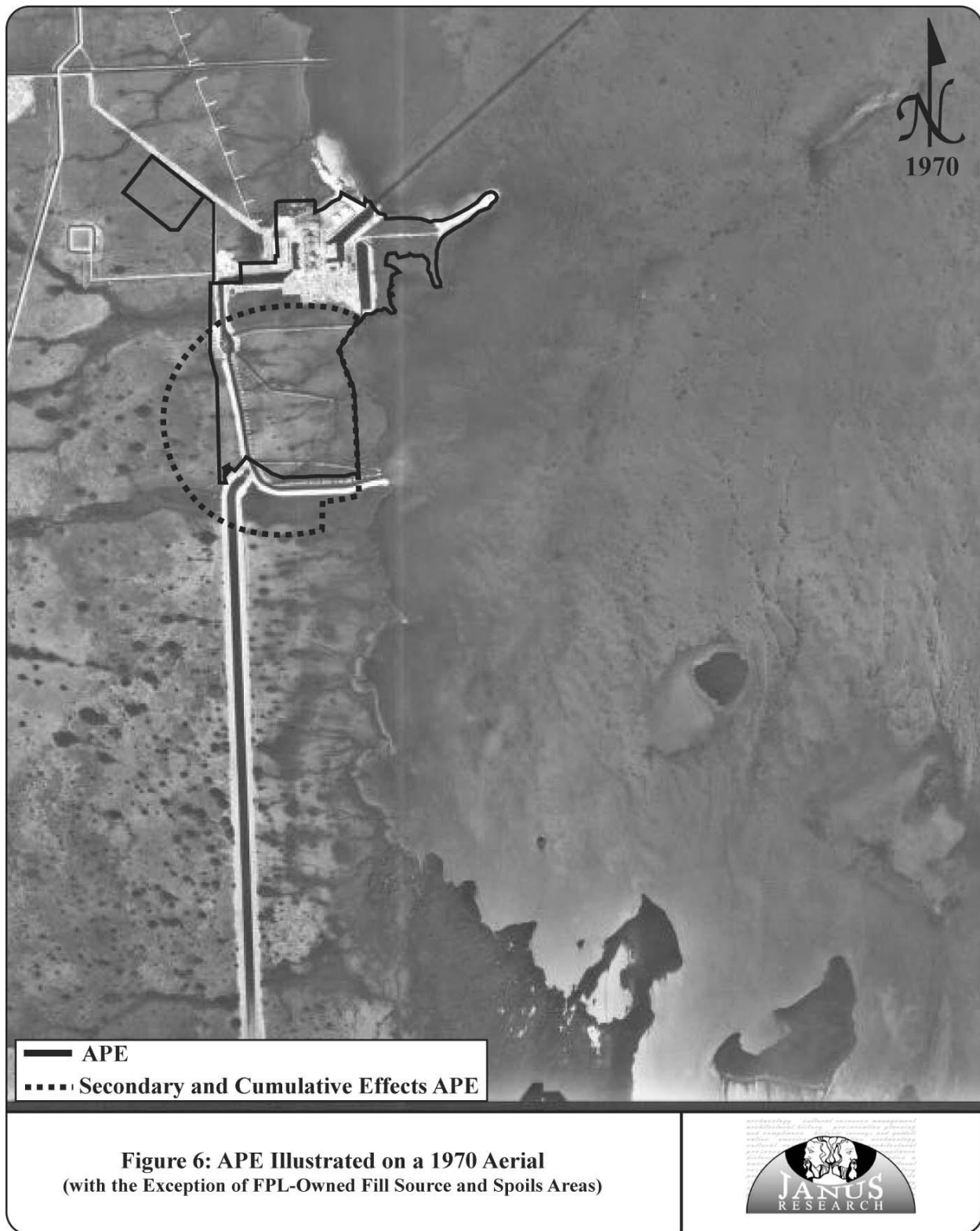
April 13 1874

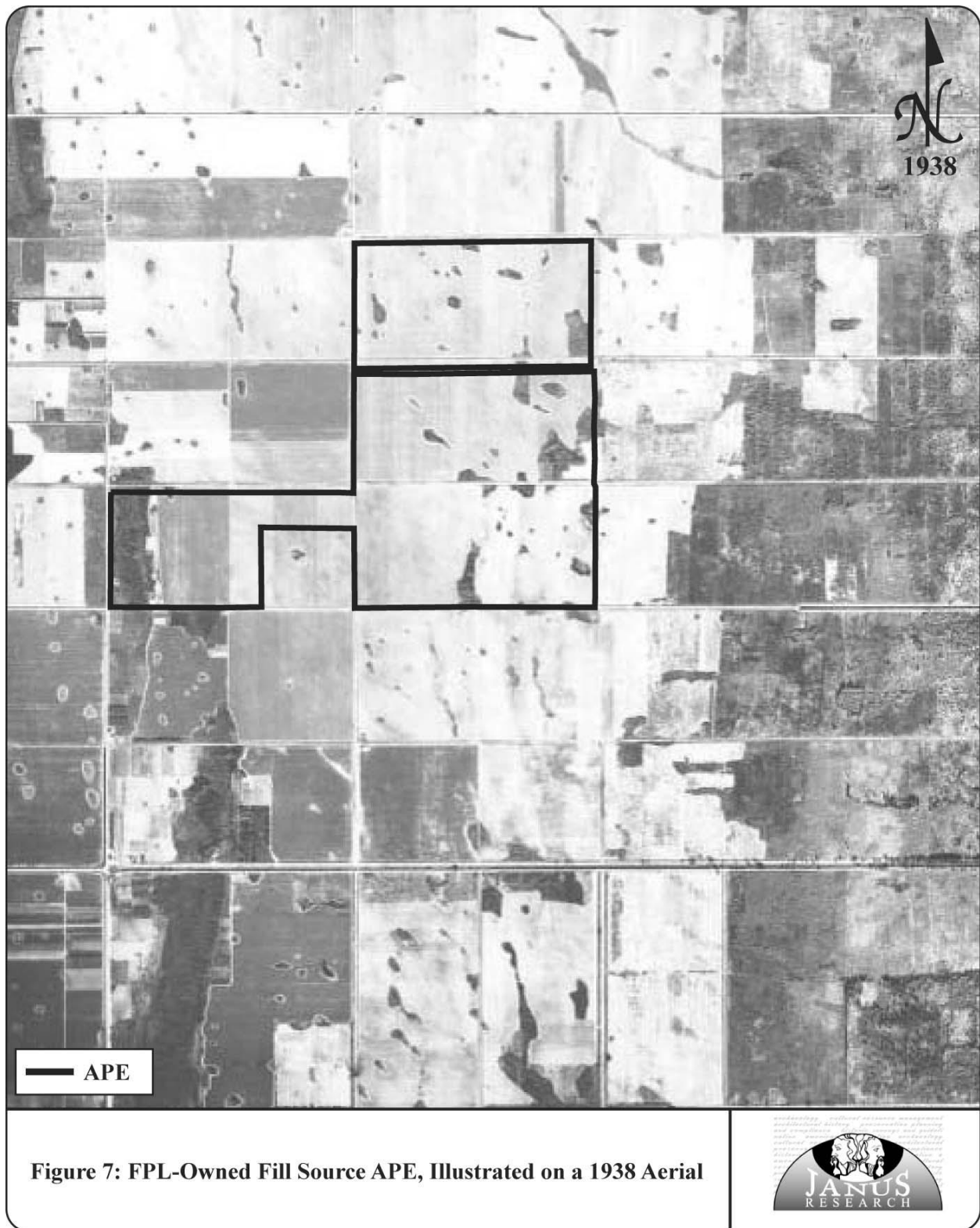
Figure 2: 1874 Field Surveyor's Notes for Township 58S, Range 40E

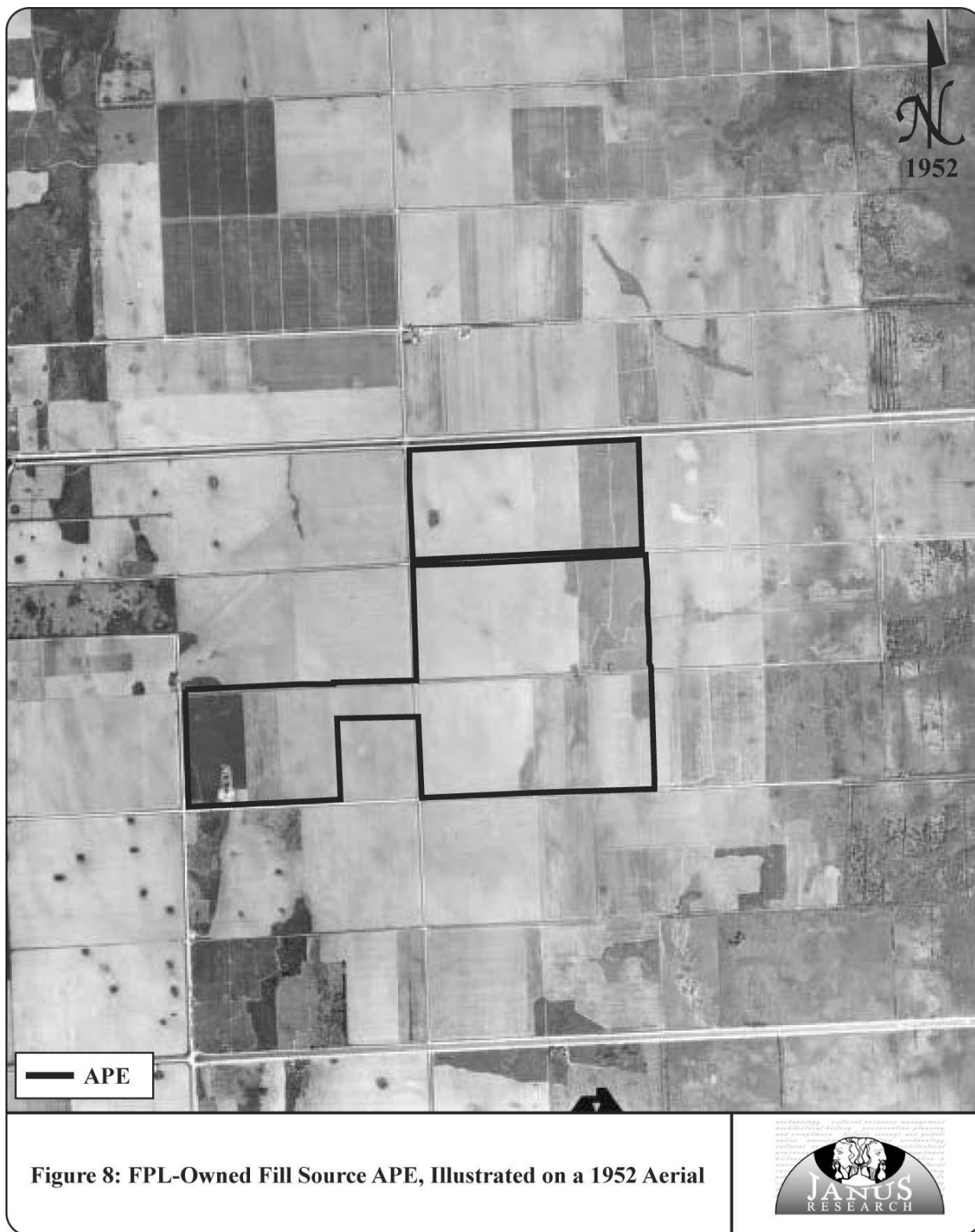


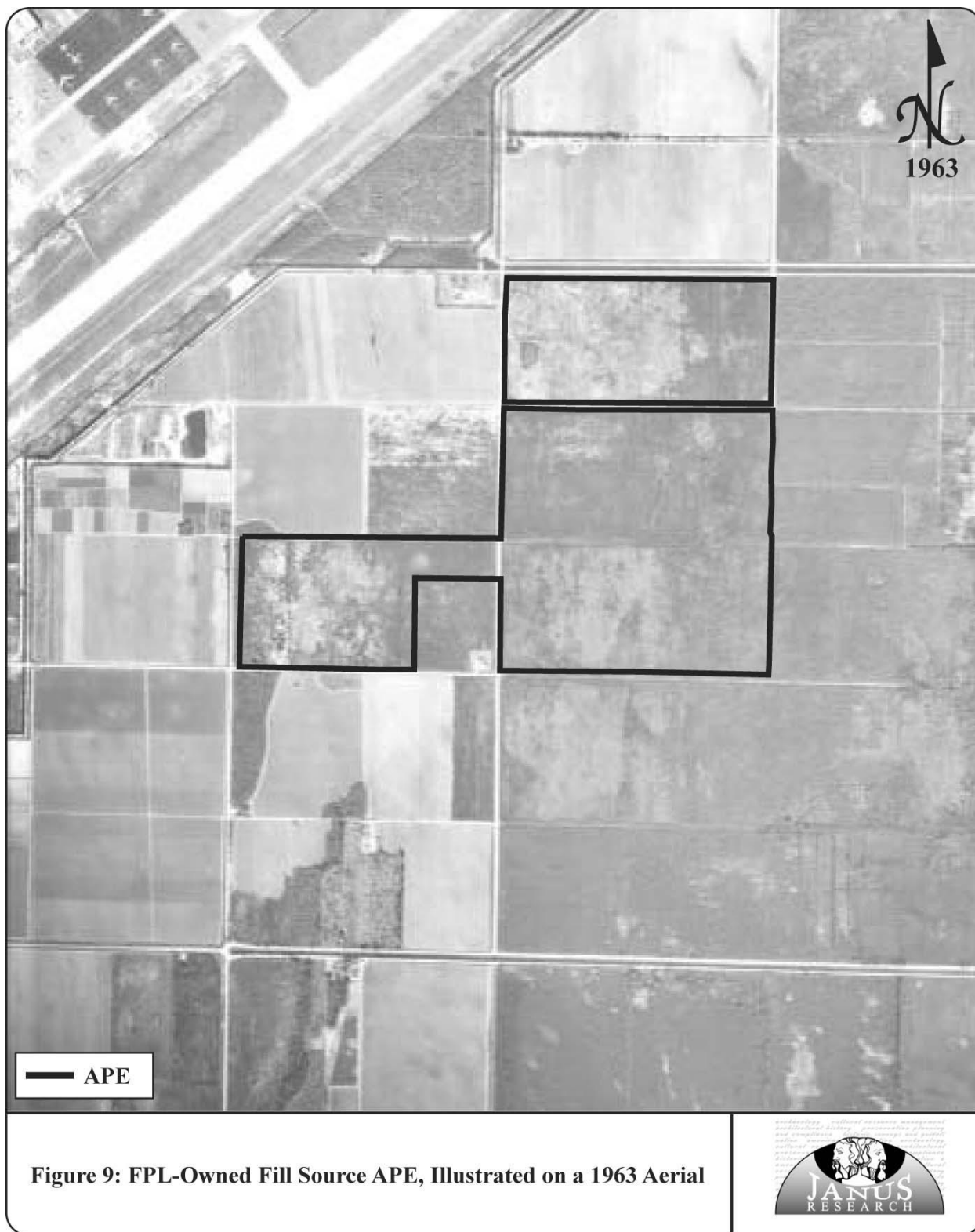




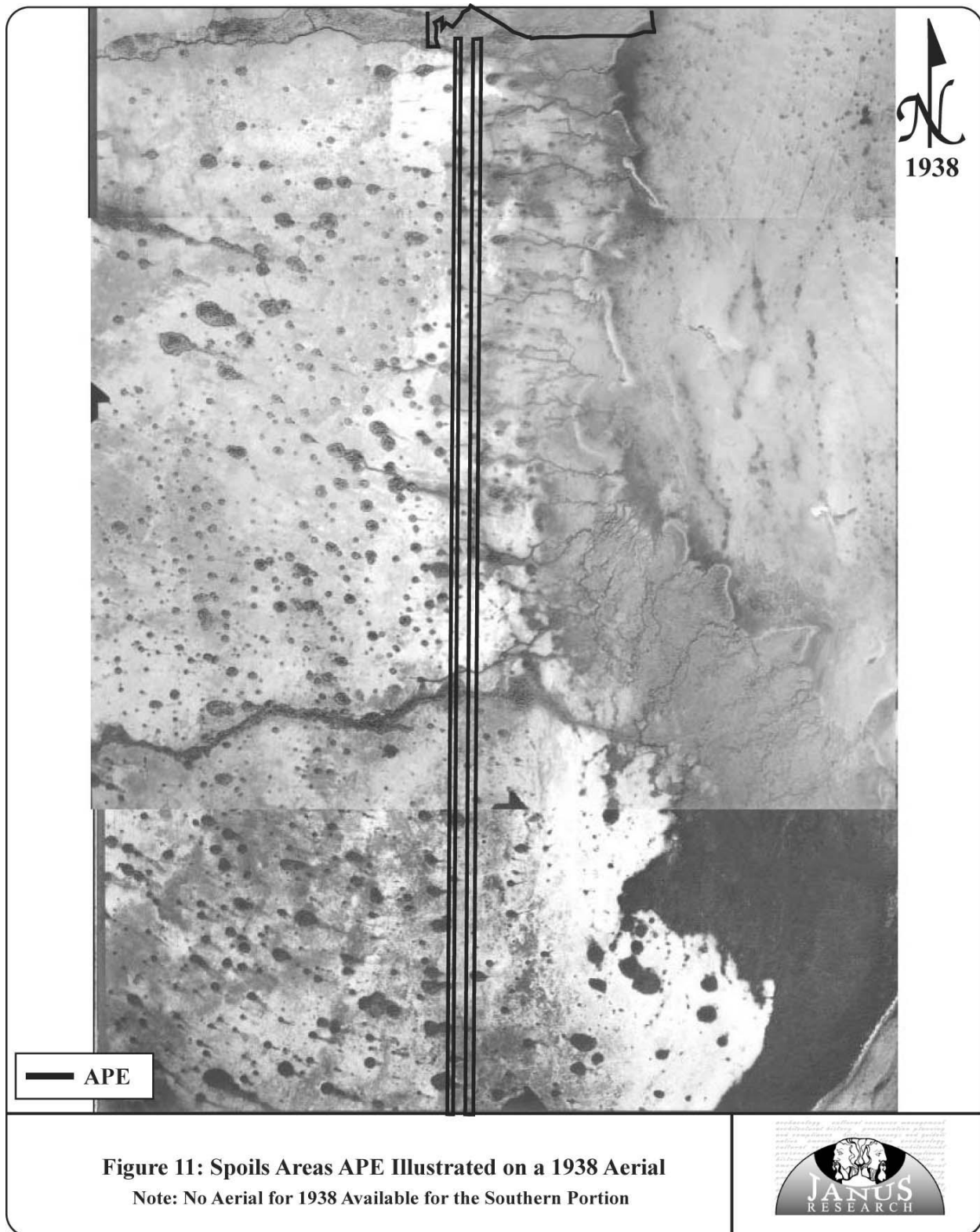


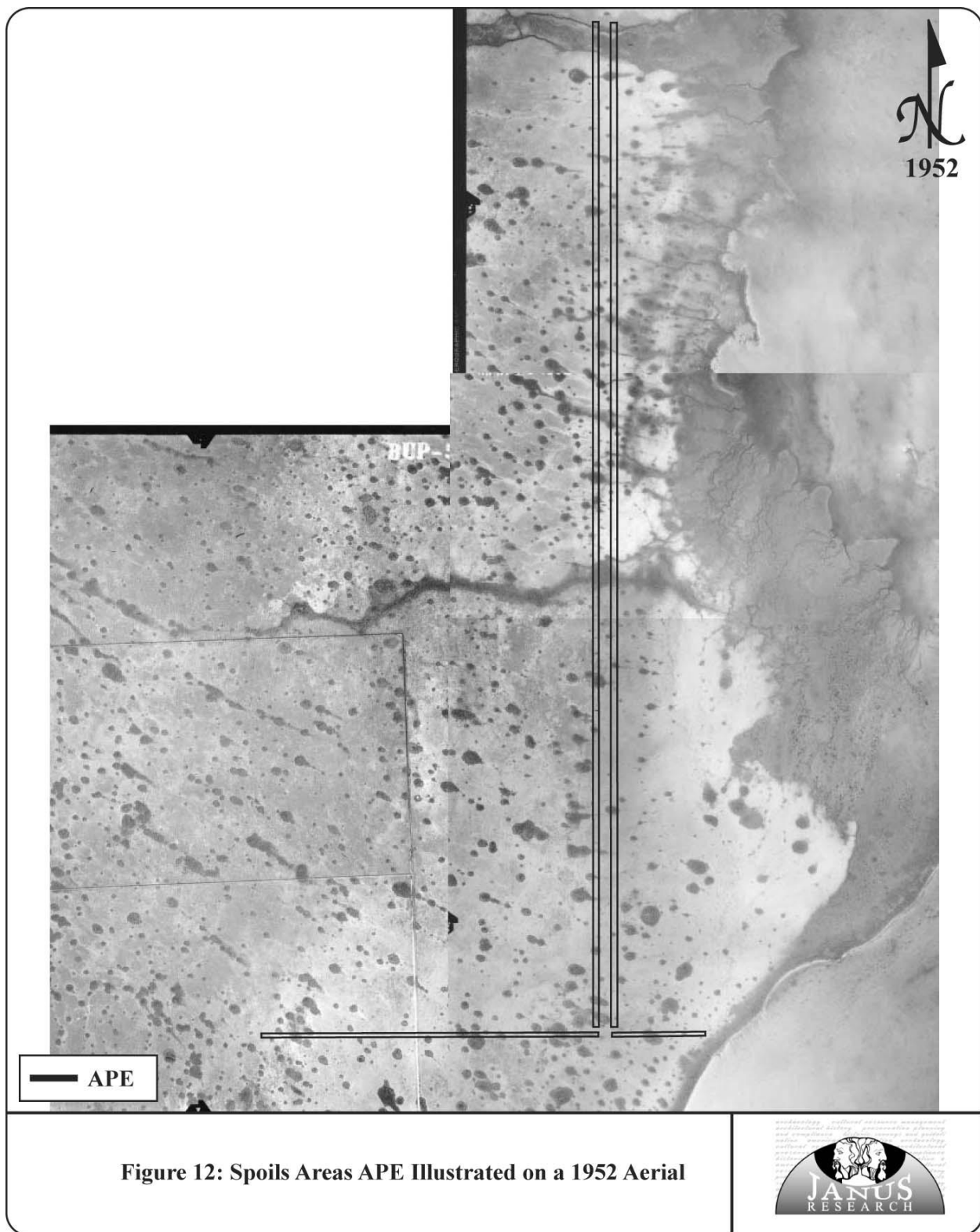


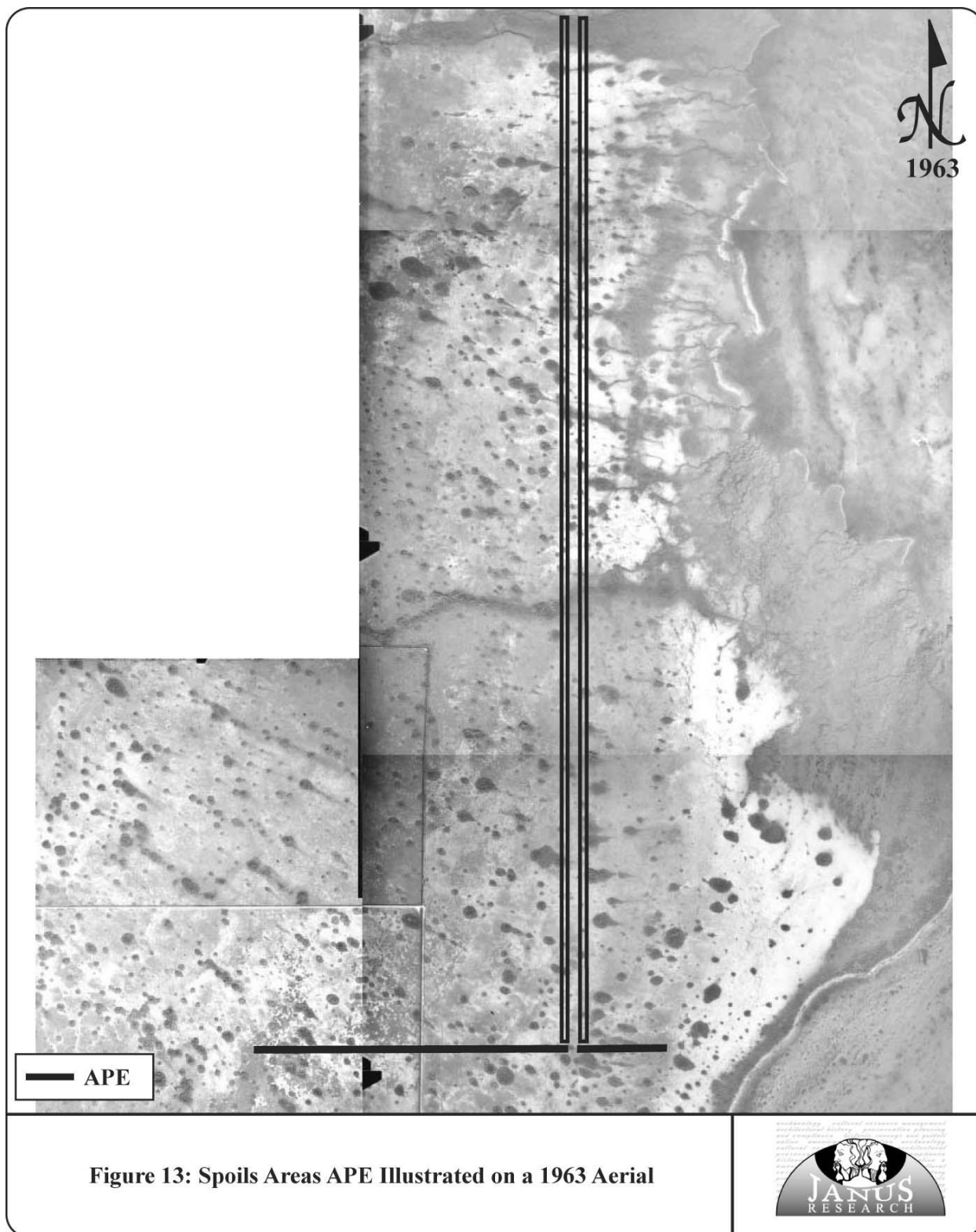








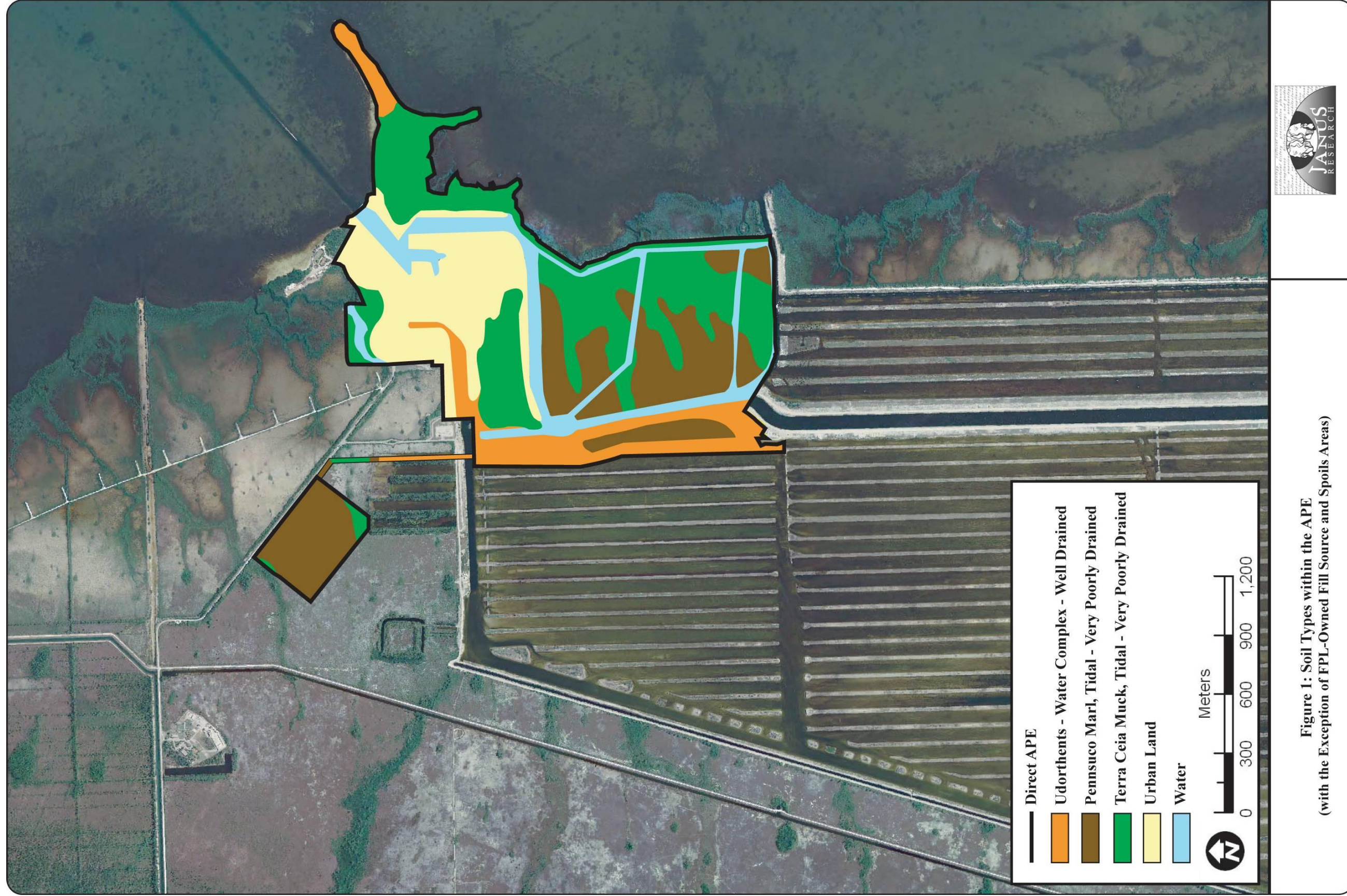






Attachment 10: Soil Types within the APE

- **Figure 1: Soil Types within the APE (with the Exception of the FPL-Owned Fill Source and Spoils Areas)**
- **Figure 2: Soil Types within the Spoils Areas APE**
- **Figure 3: Soil Types within the FPL-Owned Fill Source APE**



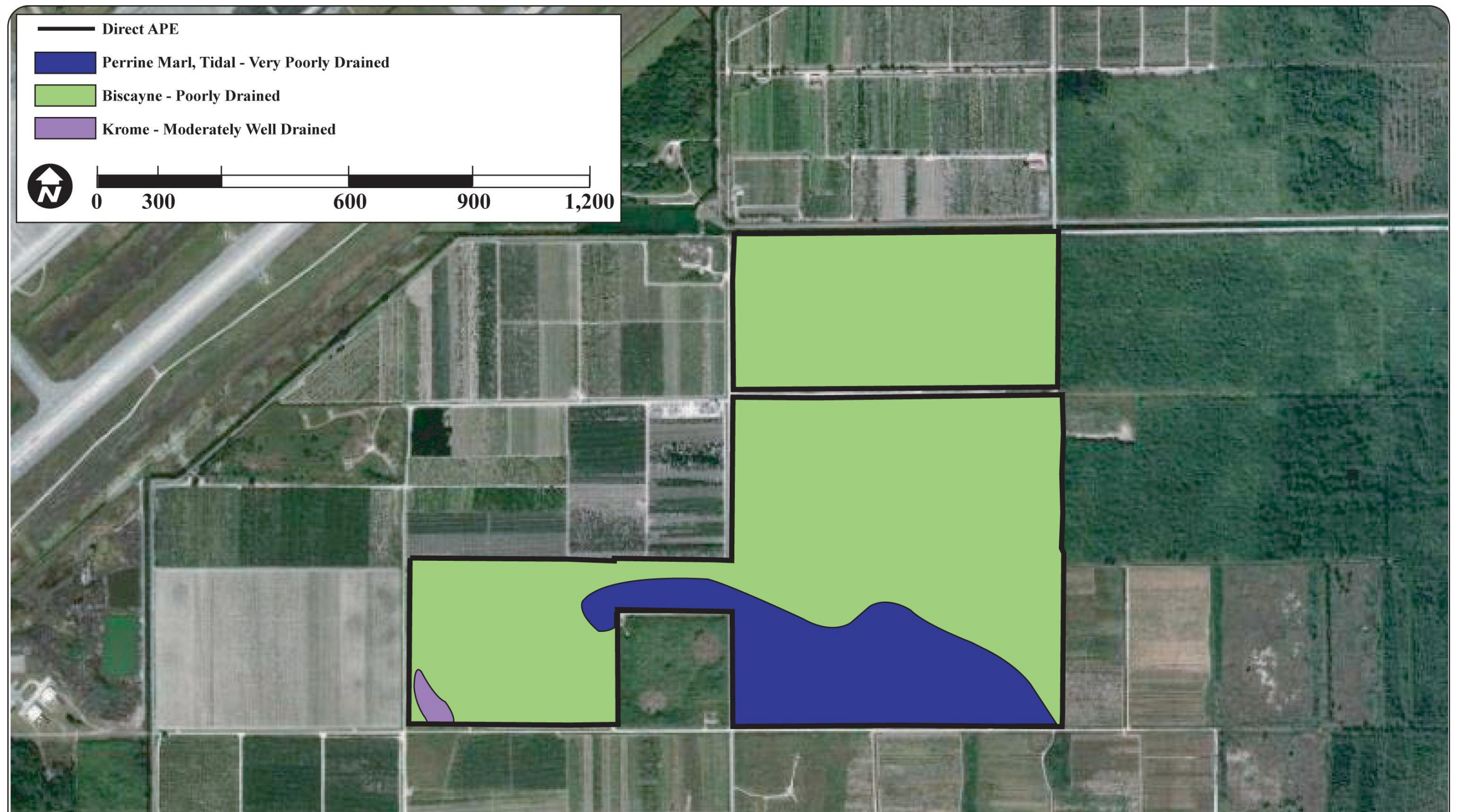


Figure 2: Soil Types within the FPL-Owned Fill Source APE





Figure 3: Soil Types within the Spoils Areas APE

Attachment 11: Field Maps Illustrating the Locations of Shovel Tests

- **Figure 1: Locations of Shovel Tests within the Site**
- **Figure 2: Locations of Shovel Tests within the Radial Collector Wells Corridor**
- **Figure 3: Locations of Shovel Tests within the FPL Reclaimed Water Treatment Facility**
- **Figure 4: Locations of Shovel Tests within the FPL-Owned Fill Source**



Figure 1: Location of Shovel Tests Conducted within the Site



Figure 2: Location of Shovel Tests Conducted within the Radial Collector Wells Corridor



Figure 3: Location of Shovel Tests Conducted within the FPL Water Treatment Facility



Figure 4: Location of Shovel Tests Conducted within the FPL-Owned Fill Source



Attachment 12: Survey Log

Ent D (FMSF only) ___/___/___



Survey Log Sheet

Florida Master Site File
Version 2.0 9/97

Survey # (FMSF only) _____

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Identification and Bibliographic Information

Survey Project (Name and project phase)

Report Title (exactly as on title page)

Report Author(s) (as on title page— individual or corporate; last names first)

Publication Date (year) _____ Total Number of Pages in Report (Count text, figures, tables, not site forms) _____

Publication Information (If relevant, series and no. in series, publisher, and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*: see *Guide to the Survey Log Sheet*.)

Supervisor(s) of Fieldwork (whether or not the same as author[s]; last name first) _____

Affiliation of Fieldworkers (organization, city) _____

Key Words/Phrases (Don't use the county, or common words like *archaeology*, *structure*, *survey*, *architecture*. Put the most important first. Limit each word or phrase to 25 characters.)

Survey Sponsors (corporation, government unit, or person who is directly paying for fieldwork)

Name _____

Address/Phone _____

Recorder of *Log Sheet* _____ Date *Log Sheet* Completed _____

Is this survey or project a continuation of a previous project? ☐ No ☐ Yes: Previous survey #(s) [FMSF only] _____

Mapping

Counties (List each one in which field survey was done - do not abbreviate; use supplement sheet if necessary)

USGS 1:24,000 Map(s) : Map Name/Date of Latest Revision (use supplement sheet if necessary):

Description of Survey Area

Dates for Fieldwork: Start _____ End _____ Total Area Surveyed (fill in one) _____ hectares _____ acres

Number of Distinct Tracts or Areas Surveyed _____

If Corridor (fill in one for each): Width _____ meters _____ feet Length _____ kilometers _____ miles

Survey Log Sheet of the Florida Master Site File

Research and Field Methods

Types of Survey (check all that apply): ☐ archaeological ☐ architectural ☐ historical/archival ☐ underwater ☐ other: _____

Preliminary Methods (✓Check as many as apply to the project as a whole. If needed write others at bottom).

- ☐ Florida Archives (Gray Building) ☐ library research- *local public* ☐ local property or tax records ☐ windshield
☐ Florida Photo Archives (Gray Building) ☐ library-special collection - *nonlocal* ☐ newspaper files ☐ aerial photography
☐ FMSF site property search ☐ Public Lands Survey (maps at DEP) ☐ literature search
☐ FMSF survey search ☐ local informant(s) ☐ Sanborn Insurance maps
☐ other (describe) _____

Archaeological Methods (Describe the proportion of properties at which method was used by **writing in** the corresponding letter. Blanks are interpreted as "None.")

F(ew: 0-20%), **S**(ome: 20-50%); **M**(ost: 50-90%); or **A**(ll, Nearly all: 90-100%). If needed write others at bottom.

☐ Check here if **NO** archaeological methods were used.

- ___ surface collection, controlled ☐ other screen shovel test (size: ___) ☐ block excavation (at least 2x2 M)
 ___ surface collection, uncontrolled ☐ water screen (finest size: ___) ☐ soil resistivity
 ___ shovel test-1/4" screen ☐ posthole tests ☐ magnetometer
 ___ shovel test-1/8" screen ☐ auger (size: ___) ☐ side scan sonar
 ___ shovel test 1/16" screen ☐ coring ☐ unknown
 ___ shovel test-unscreened ☐ test excavation (at least 1x2 M)
 ___ other (describe): _____

Historical/Architectural Methods (Describe the proportion of properties at which method was used by **writing in** the corresponding letter. Blanks are interpreted as "None.")

F(ew: 0-20%), **S**(ome: 20-50%); **M**(ost: 50-90%); or **A**(ll, Nearly all: 90-100%). If needed write others at bottom.

☐ Check here if **NO** historical/architectural methods were used.

- ___ building permits ☐ demolition permits ☐ neighbor interview ☐ subdivision maps
 ___ commercial permits ☐ exposed ground inspected ☐ occupant interview ☐ tax records
 ___ interior documentation ☐ local property records ☐ occupation permits ☐ unknown
 ___ other (describe): _____

Scope/Intensity/Procedures

Survey Results (cultural resources recorded)

Site Significance Evaluated? ☐ Yes ☐ No If Yes, circle NR-eligible/significant site numbers below.

Site Counts: Previously Recorded Sites _____ Newly Recorded Sites _____

Previously Recorded Site #'s with Site File Update Forms (List site #'s without "8." Attach supplementary pages if necessary)

Newly Recorded Site #'s (Are you sure all are originals and not updates? Identify methods used to check for updates, ie, researched the FMSF records. List site #'s without "8." Attach supplementary pages if necessary.)

Site Form Used: ☐ SmartForm ☐ FMSF Paper Form ☐ Approved Custom Form: Attach copies of written approval from FMSF Supervisor.

DO NOT USE SITE FILE USE ONLY DO NOT USE

BAR Related

- ☐ 872 ☐ 1A32
☐ CARL ☐ UW

BHP Related

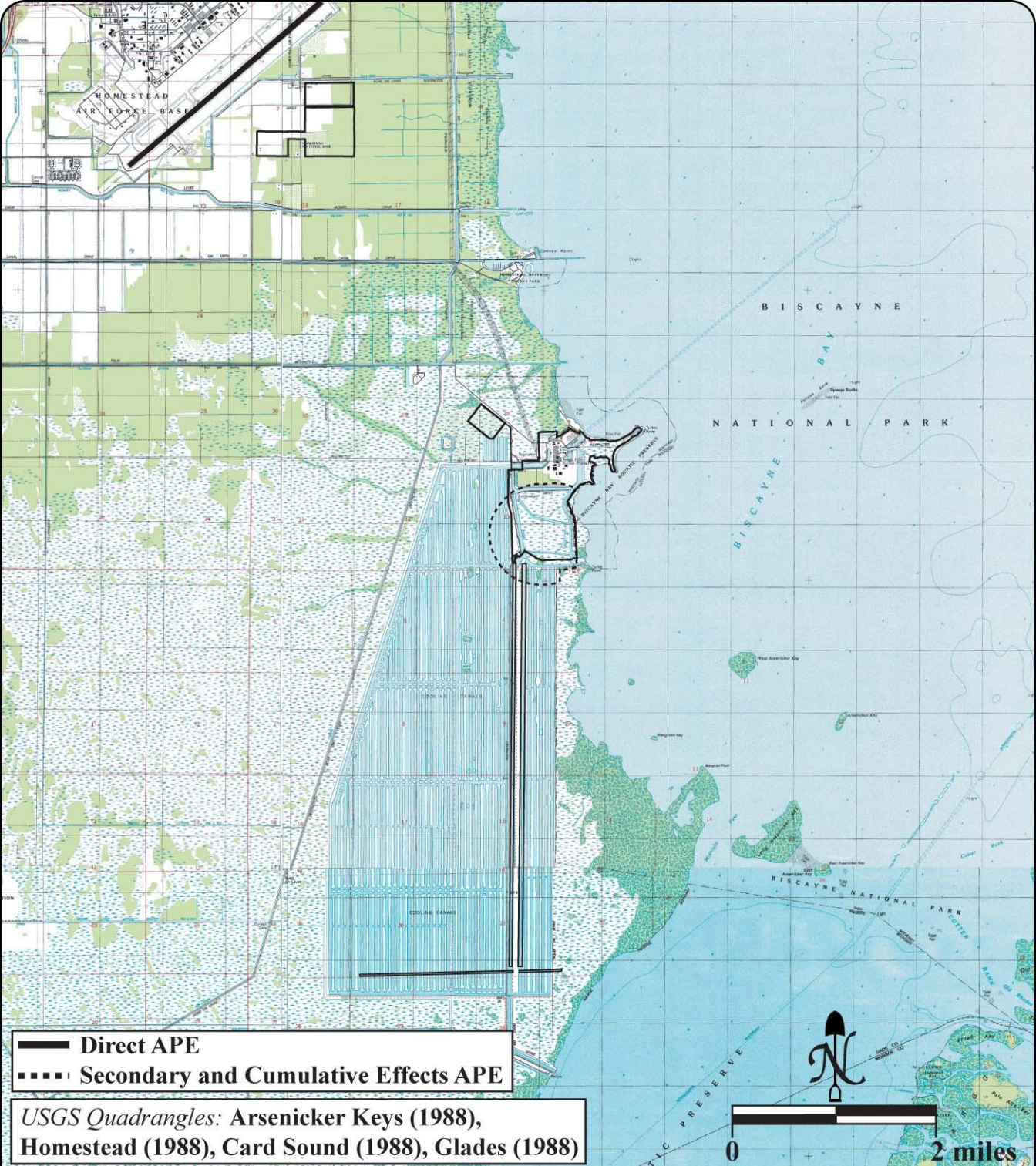
- ☐ State Historic Preservation Grant
☐ Compliance Review: CRAT # _____

ATTACH PLOT OF SURVEY AREA ON PHOTOCOPIES OF USGS 1:24,000 MAP(S)

HR6E06610-97 Florida Master Site File, Division of Historical Resources, Gray Building, 500 South Bronough Street, Tallahassee, Florida 32399-0250

Phone 850-245-6440, Suncom 205-6440, FAX 850-245-6439, Email fmsfile@mail.dos.state.fl.us, Web http://www.dos.state.fl.us/dhr/msfl

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APE for the Site and Associated Non-Linear Facilities Illustrated on USGS Quadrangle Maps



Attachment 13: 2009 SHPO Letter for FPL Turkey Point Units 6 & 7 Project



FLHR-09-0062

February 20, 2009

Ms. Laura Kammerer
Florida Department of State
Division of Historical Resources
RA Gray Building, 4th floor
500 S. Bronough St.
Tallahassee FL 32399-0250

SUBJECT: Florida Power & Light Company Turkey Point Units 6 & 7 Project,
Miami Dade County, Florida

Dear Ms. Kammerer:

Florida Power & Light Company (FPL) is preparing permit and license applications to the U.S. Nuclear Regulatory Commission (NRC), the Florida Department of Environmental Protection (FDEP) and the United States Army Corps of Engineers (USACE) to allow construction and operation of two new nuclear units and associated project features at our existing Turkey Point property in Miami-Dade County, Florida (the "proposed action").

This project will require federal approval by the NRC and USACE. Therefore, consistent with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended), as implemented by 36 CFR 800 (Protection of Historic Properties, effective January 2001), a cultural resource assessment is in progress. Moreover, this project is being conducted in accordance with F.A.C. Electrical Power Plant Siting Act and as prescribed by DEP Form 62-11.211(1), F.A.C. Accordingly, the cultural resource assessment will comply with Chapter 267, Florida Statutes (Florida Historical Resources Act), the minimum field methods, data analysis, and Chapter 1A-46 (Archaeological and Historical Report Standards and Guidelines), F.A.C.

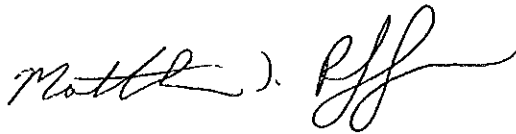
Janus Research is assisting FPL with the cultural resource investigations and will be contacting your office on FPL's behalf to obtain required information as needed. A cultural resource assessment (CRA) survey of the proposed power plant site and facilities associated with the project is in progress. A copy of this report will be submitted with the Site Certification Application. A CRA survey of additional facilities associated with the proposed project (e.g., transmission lines) will be conducted once final routes and locations are selected. Field work in areas where FPL does not control the property may have to wait until the final right of way is secured. Copies of the CRA report for associated facilities will be forwarded to you office when completed and post SCA submittal.

The Turkey Point property is located in Miami-Dade County, Florida, adjacent to Biscayne Bay and Card Sound, about 25 miles south of Miami (Figure 1). The total, non-contiguous property area is approximately 11,000 acres. The developed portion of the property includes a natural gas fueled generating unit; two oil/gas-fired generating units, and two nuclear-powered generating units. This proposed action would further develop approximately 300 acres of the property west and south of these existing units, primarily within an existing cooling canal /industrial wastewater treatment facility. In addition, FPL will construct (1) pipelines to convey dual cooling water supplies (reclaimed and saltwater) to new cooling towers, (2) power transmission lines to connect the new units with the regional electric grid, and (3) a reclaimed water treatment facility to condition the reclaimed water for cooling water uses. In addition, because fill material is necessary for the unit foundations, FPL is proposing to place fill sourced from a commercial mine and/or nearby FPL-owned property approximately 4 miles northwest of the proposed site. These areas are shown in Figures 2 and 3. Figures 2A and 2B include the project features in the vicinity of the proposed plant area. Figure 3 also provides an expanded view of the area showing the proposed transmission corridor.

Please note that an Unanticipated Finds Plan will be in place prior to construction in the unlikely event that any cultural remains are encountered during construction. In the event that human remains, archeological or historical objects are found during construction or maintenance activities, all activity that might disturb the human remains will cease in accordance with the provisions of Chapter 872.05. In addition, if historical or archeological artifacts are discovered, notification will be made to the Florida Department of Environmental Protection Southeast District Office and Bureau of Historical Preservation, Division of Historical Resources Office.

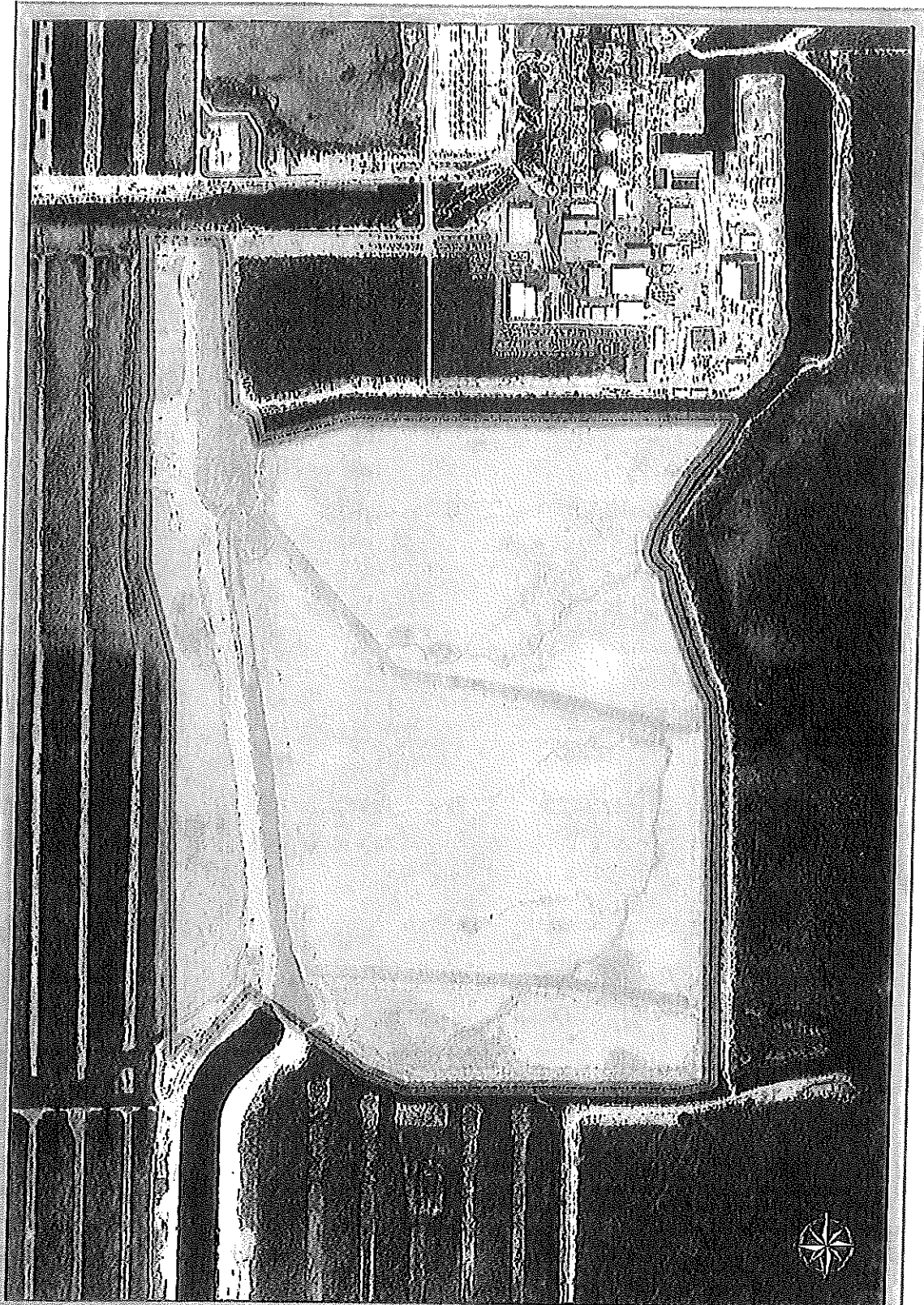
Thank you for your attention to this request; I will follow up with you to confirm receipt and to address any questions or concerns you may have. Should you need to talk to me earlier, please reach me by telephone at 561-691-2808.

Sincerely,

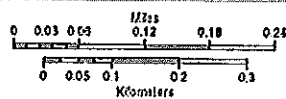
A handwritten signature in black ink, appearing to read "Matthew J. Raffenberg". The signature is fluid and cursive, with a large, stylized "M" and "R".

Matthew J. Raffenberg
Manager, Environmental Licensing

Figure 1



Turkey Point Units 6 and 7 Site



GIS Map Code: US-YURK-000092-R000C

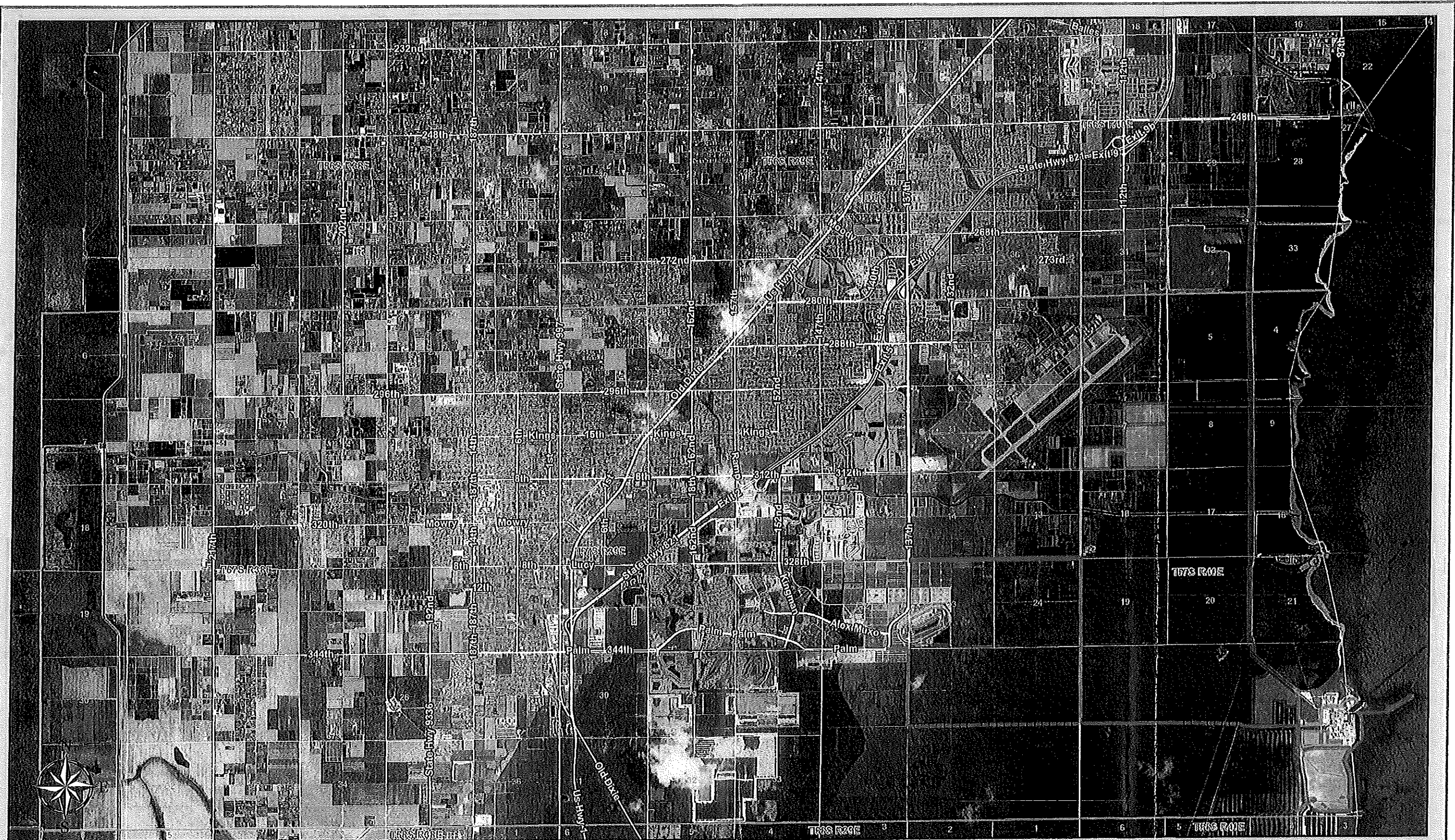


Figure 2A: Turkey Point Units 6 & 7 Potential Project Features (without transmission)

0 0.5 1 2 Miles

GIS Map Code: US-TURK-000159-R000F

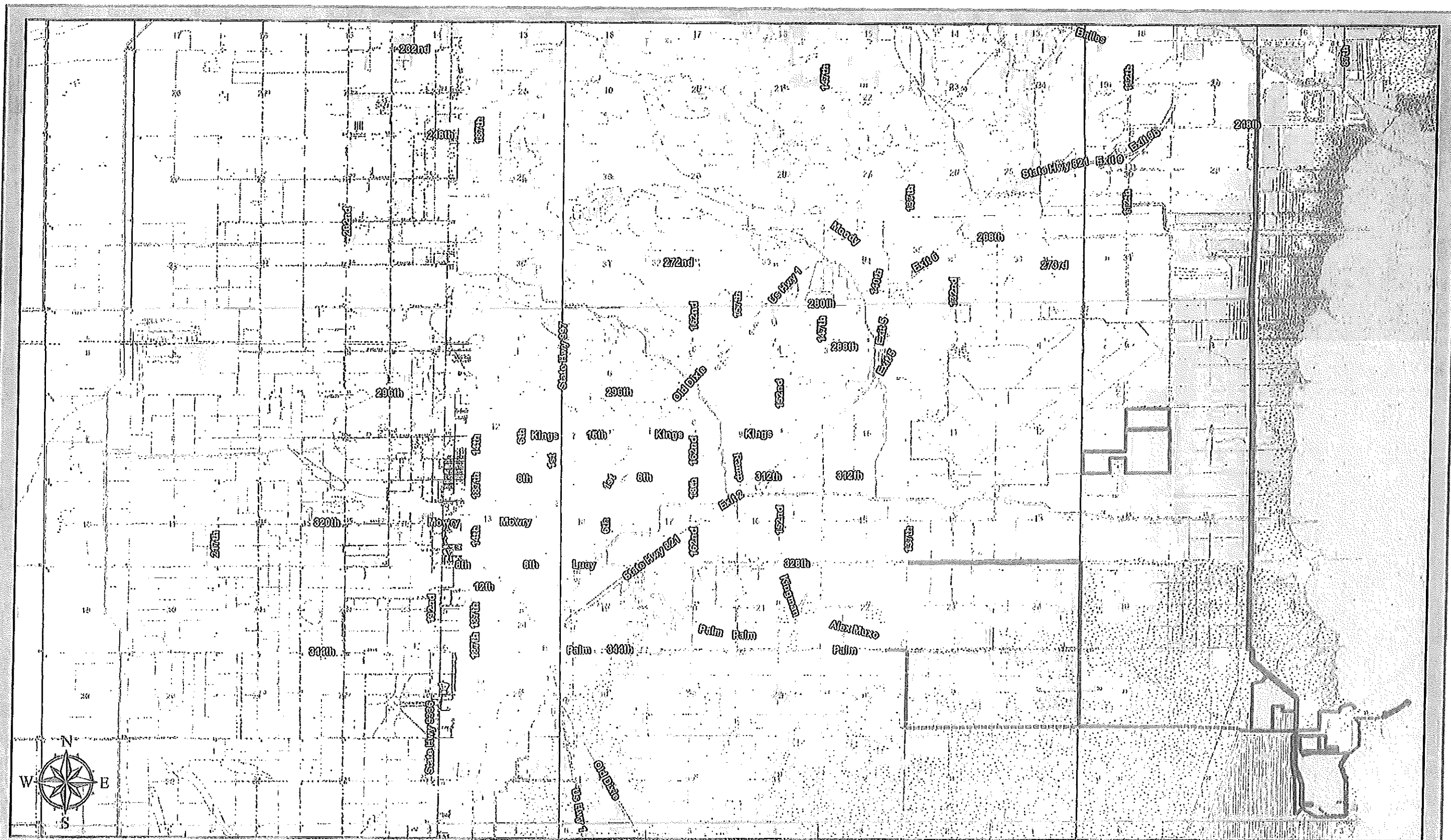


Figure 2B: Turkey Point Units 6 & 7 Potential Project Features (without transmission)

0 0.5 1 2 Miles

FIGURE 3.
POTENTIAL TRANSMISSION ROUTES BEING STUDIED

