From:	Jack Doolittle
To:	SCO
Cc:	Seiler, Ann; Carpinone, Paul L.; Larry Curtin
Subject:	Tampa Electric Petition for Modification of Big Bend Power Station Certification for Big Bend II Solar Project--PA 79-12
Date:	Thursday, November 16, 2017 4:19:19 PM
Attachments:	SCAModBigBendIISolar_111617.pdf

Ann,

Attached is the Tampa Electric Petition for Modification of Big Bend Power Station Site Certification PA 79-12 for its proposed Big Bend II Solar Project. Tampa Electric is sending a check for the application fee by overnight delivery so you should receive it tomorrow. If you have any questions or need more, please contact Paul Carpinone at Tampa Electric.

Jack

Jack D. Doolittle, CEO
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November 16, 2017

Ms. Cindy Mulkey
Program Administrator
Siting Coordination Office
2600 Blairstone Road, MS 5500
Tallahassee, Florida 32399-2400

Via FedEx
Airbill No. 7707 6807 5260

Re: Petition for Modification of Site Certification
Big Bend Power Station Unit 4-PA79-12-Big Bend II Solar Project

Dear Ms. Mulkey:

As we discussed, attached is Tampa Electric Company's Petition for Modification of Site Certification Big Bend Power Station Unit 4-PA79-12, along with a check in the amount of $10,000.00 for the application fee, to authorize construction and operation of the Big Bend II Solar Project at the Big Bend Power Station site in southwestern Hillsborough County, Florida. The Big Bend Solar II Project involves construction and operation of an approximately 33-MW_{AC} renewable solar energy generation facility on a project area of approximately 191 acres. Approximately 95 acres of the project site is within the certified site for the existing Big Bend Power Station. We are requesting that the remaining approximately 96 acres comprising the project site be added to the certified site increasing the certified area from 1,054 acres to 1,150 acres. The approximately 96 acres of land that we are requesting be added to the certified site is owned by Tampa Electric Company and a request to rezone the property to allow the solar facilities was approved by the Hillsborough County Board of Commissioners at a regularly scheduled public meeting on November 7, 2017. Documentation of the approval is enclosed.

We understand that the Siting Coordination Office will distribute copies of the attached materials to the appropriate agencies and any interested parties who have requested copies. We intend to submit the information required by the Environmental Resource Permit Application as a post-certification submittal in accordance with the existing Conditions of Certification.

Please let us know if you have any questions or need additional information. We look forward to working with you on this important project.

Sincerely,

Paul Carpinone

Paul Carpinone
Director Environmental, Health & Safety

EHS/ank/PLC/PetitionForModificationOfSiteCertificationBigBend

cc: Ms. Ann Seiler

Petition for Modification of Site Certification Big Bend Power Station Unit 4 — PA 79-12

Big Bend II Solar Project

Prepared for:

TECO
TAMPA ELECTRIC
AN EMERA COMPANY

Prepared by:

ECT Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street, Gainesville, Florida 32606
ECT No. 170442-0100

November 2017

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List of Acronyms and Abbreviations

AC	alternating current
APE	area of potential effect
ASC-1	Agricultural, Single-Family Conventional (land use category)
BB	Big Bend
BMP	best management practice
CCR	coal combustion residuals
CHHA	Coastal High Hazard Area
CO_2	carbon dioxide
COC	condition of certification
CRAS	cultural resources assessment survey
DC	direct current
ECT	Environmental Consulting & Technology, Inc.
ERP	environmental resource permit
ESA	Endangered Species Act of 1973
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDHR	Florida Division of Historical Resources
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
First Solar	First Solar Electric, LLC
Fla. Stat.	Florida Statutes
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FLUM	future land use map
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
ft	foot
FWC	Florida Fish and Wildlife Conservation Commission
I-75	Interstate 75

List of Acronyms and Abbreviations
(Continued, Page 2 of 2)

kV	kilovolt
LDC	land development code
LI	Light Industrial (land use category)
LOS	level of service
MW	megawatt
MW_{AC}	megawatt alternating current
NAVD88	North American Vertical Datum of 1988
NHPA	National Historic Preservation Act of 1966
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
PPSA	Florida Electrical Power Plant Siting Act
PV	photovoltaic
RES-20	Residential-20 (land use category)
RES-6	Residential-6 (land use category)
RMC-16	Residential-Multifamily, Conventional (land use category)
SCA	site certification application
SCO	Site Coordination Office
SLOSH	Sea, Lake, and Overland Surges from Hurricanes
SPCC	spill prevention, control, and countermeasures
SWFWMD	Southwest Florida Water Management District
Tampa Electric	Tampa Electric Company
TBRPC	Tampa Bay Regional Planning Council
TIA	Tampa International Airport
US 301	U.S. Highway 301
US 41	U.S. Highway 41
USFWS	U.S. Fish & Wildlife Service

1.0 Introduction

Tampa Electric Company (Tampa Electric) is planning to expand its solar electric generation capabilities at its existing Big Bend (BB) Power Station in southwestern Hillsborough County, Florida (see Figure 1-1). The proposed expansion will involve the installation and operation of new photovoltaic (PV) solar panels on approximately 191 acres of land in the southeast portion of the BB Power Station property. Approximately 95 acres of this land is currently located within the BB Power Station certified site boundary adjacent to the southwest portion of the existing BB I Solar project site. The remaining approximately 96 acres of land purchased by Tampa Electric is located adjacent to the southeast corner of the BB Power Station certified site along the west side of U.S. Highway 41 (US 41). The new facilities will be capable of producing approximately 33 megawatts (MW) alternating current (MW_{AC}). The planned facility will be referred to as the BB II Solar Project, or Project.

The purpose of this petition for modification of the site certification for BB Power Station Unit 4 (PA 79-12) is to obtain certification (i.e., approval) for the construction and operation of the proposed BB II Solar Project on the total approximately 191-acre Project Site (Site), as well as for the modification of the existing BB certified site boundary to include the approximately 96 acres of additional Tampa Electric-owned land for the Project.

Tampa Electric is proposing the BB II Solar Project to meet certain of its business needs based on potential future regulations, focus group results polling its customers' desire for solar energy, and economic benefits. Further, its strategic considerations for the Project are designed to address the renewable energy and sustainability climate of the electric utility industry, including the following benefits:

- Renewable solar generation is one pathway to help lower Tampa Electric's overall carbon dioxide (CO_2) emissions.
- The Project addresses increased interest in utility-scale ownership of PV solar facilities.

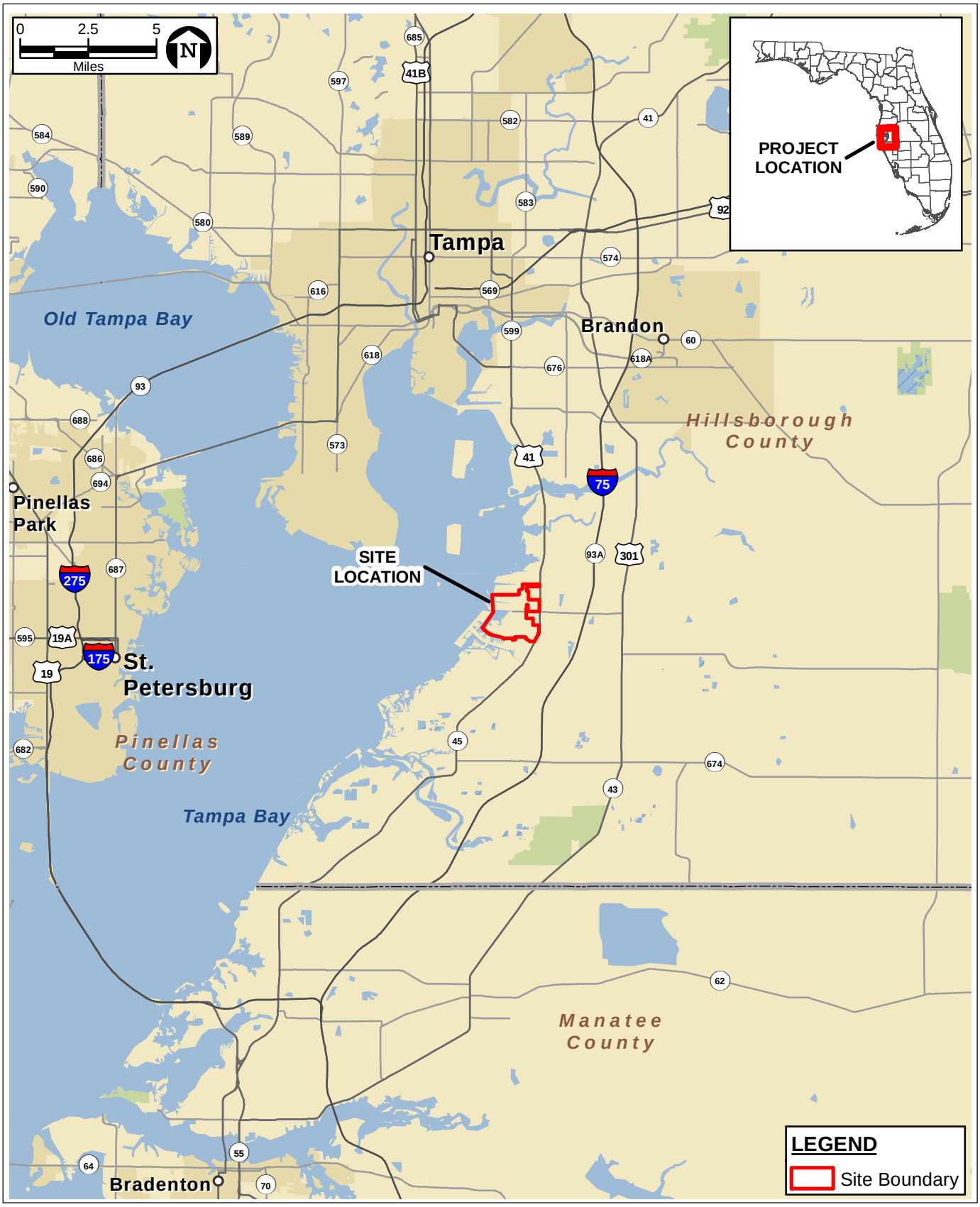

FIGURE 1-1.
LOCATION OF BIG BEND II SOLAR PROJECT
BIG BEND POWER STATION

Sources: FDOT, 2017; ESRI, 2016; ECT, 2017.

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- Tampa Electric has received positive response to its other solar projects at BB and Tampa International Airport, and this Project builds on that goodwill.
- The Project provides energy diversity.
- The Project offers capacity value in higher energy months.
- Tampa Electric would own the environmental attributes and any future renewable energy credits from the BB II Solar Project.

The proposed BB II Solar Project will be located on approximately 191 acres of Tampa Electric-owned property at the BB Power Station site. Currently, facilities on the property include four coal-fired units (i.e., Units 1 through 4), two natural gas- or oil-fired combustion turbines, and various associated facilities to support the power generation units. The property also includes the approximately 23-MW BB I Solar project power generating facility, which was placed in service in February 2017. In addition, the site contains Tampa Electric's Manatee Viewing Center, which has hosted more than 5 million visitors since it opened in 1986, and the Florida Conservation and Technology Center, which is a partnership between Tampa Electric, the Florida Aquarium, and the Florida Fish and Wildlife Conservation Commission (FWC).

Portions of the BB Power Station property were certified in August 1981 (PA 79-12) for the addition of Unit 4, pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501 through .518, Florida Statutes (Fla. Stat.). The original certification and conditions of certification (COCs) covered only the construction and operation of BB Unit 4 and associated facilities. Units 1, 2, and 3 were not subject to PPSA requirements, since the units were constructed prior to the effective date of the PPSA. The BB I Solar facilities were added to the certified facilities in 2017, based on Tampa Electric's request for an amendment of the site certification, which was approved by the Florida Department of Environmental Protection (FDEP) on May 9, 2016.

Figure 1-2 shows the certified and noncertified portions of the BB Power Station site. Currently, the certified area includes approximately 1,054 acres of the approximately 1,774 acres of Tampa Electric-owned property. Figure 1-2 also shows the approximately 96-acre parcel of additional land for the proposed BB II Solar Project, which Tampa Electric is requesting to be added to the

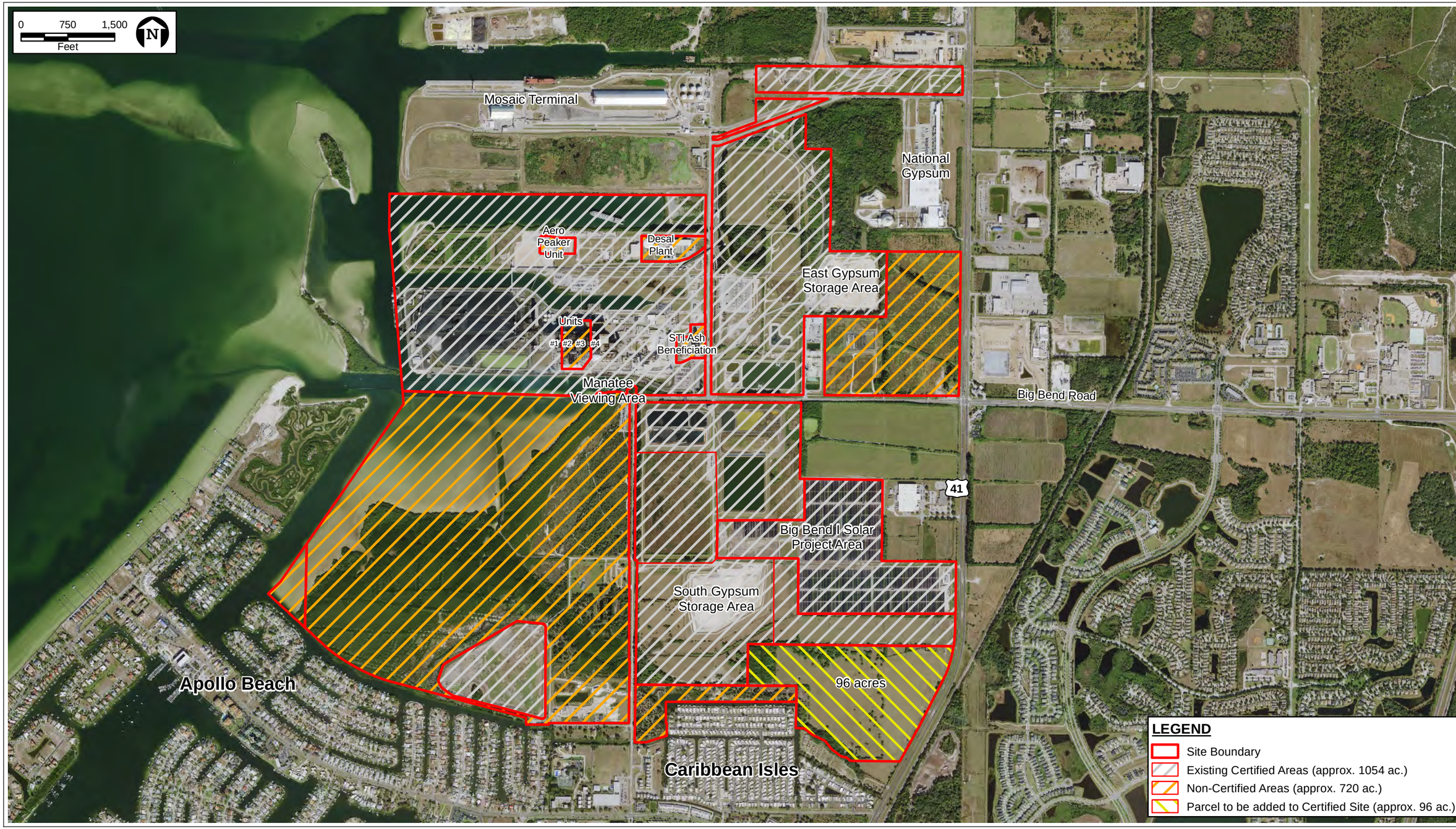

FIGURE 1-2.

BIG BEND POWER STATION SITE
PPSA CERTIFIED AND NONCERTIFIED AREAS

Sources: FLDOT, 2017; TECO, 2016; ECT, 2017.

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certified site as part of this petition for modification. Upon approval of this addition, the BB Power Station certified site area will be approximately 1,150 acres.

Under the PPSA, this petition for modification of the site certification is being filed with the FDEP Siting Coordination Office (SCO) and submitted to the affected agencies and other parties to the original and any subsequent certification proceedings. The petition includes descriptions of the proposed BB II Solar Project facilities and anticipated environmental effects due to the construction and operation of the Project. Of note, the Project will not involve any impacts to wetlands, and applicable environmental resource permit (ERP) application forms and supporting information (i.e., primarily related to stormwater management systems) will be provided in accordance with the existing COCs for the BB Power Station Unit 4.

2.0 Project Description

Tampa Electric's proposed BB II Solar Project will involve the construction and operation of an approximately 33-MW_{AC} renewable solar energy generation facility. The Project will be located on Tampa Electric's existing BB Power Station site in southwestern Hillsborough County, Florida, approximately 10 miles south of the city of Tampa. The BB Power Station site is located between US 41 and Tampa Bay and just north of the unincorporated Apollo Beach community. Several other industrial facilities, such as the Mosaic Company phosphate marine terminal and a National Gypsum wallboard facility, are located north of the BB Power Station site.

2.1 Project Location

As shown in Figure 2-1, the proposed BB II Solar Project will be located in an approximately 191-acre area in the southwestern portion of Tampa Electric's BB Power Station property (Project Site). The Project Site consists primarily of undeveloped land to the southeast of the existing BB fossil-fueled electric generating facilities, south of the BB I Solar facilities, and west of US 41, which is a four-lane, divided highway in the Project Site. The south gypsum byproduct storage area is situated in the northwest portion of the Project Site, and a 230-kilovolt (kV) transmission line corridor runs adjacent to the northeastern boundary of the Project Site. The Caribbean Isles community is located south and southwest of the Project Site, and the Waterset community is located east of US 41.

The Project Site is relatively flat, ranging from 8 to 10 feet (ft) above mean sea level (see Figure 2-2). Project Site soils consist of fine, poorly drained sand with a seasonal high-water table near the land surface to a depth of approximately 10 inches during wet periods. However, during prolonged dry periods, the water table can drop to 40 inches below land surface. According to the Federal Emergency Management Agency (FEMA) flood insurance rate map information shown on Figure 2-2, the majority of the Project Site is located within the 100-year flood zone AE with base flood elevations of 9 to 10 ft North American Vertical Datum of 1988 (NAVD88).

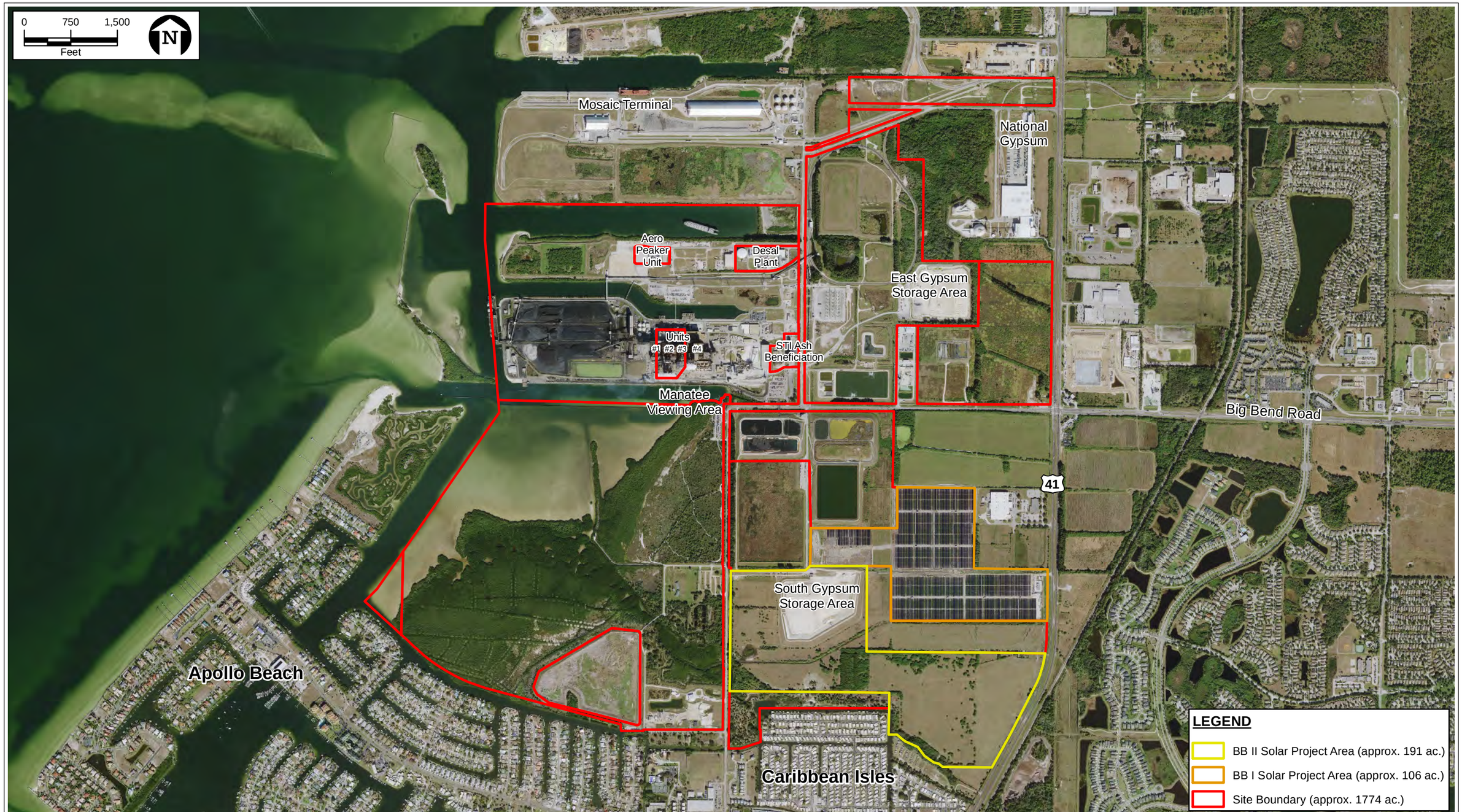

FIGURE 2-1.

BIG BEND II SOLAR PROJECT AREA ON
BIG BEND POWER STATION SITE

Sources: FLDOT, 2017; TECO, 2016; ECT, 2016.

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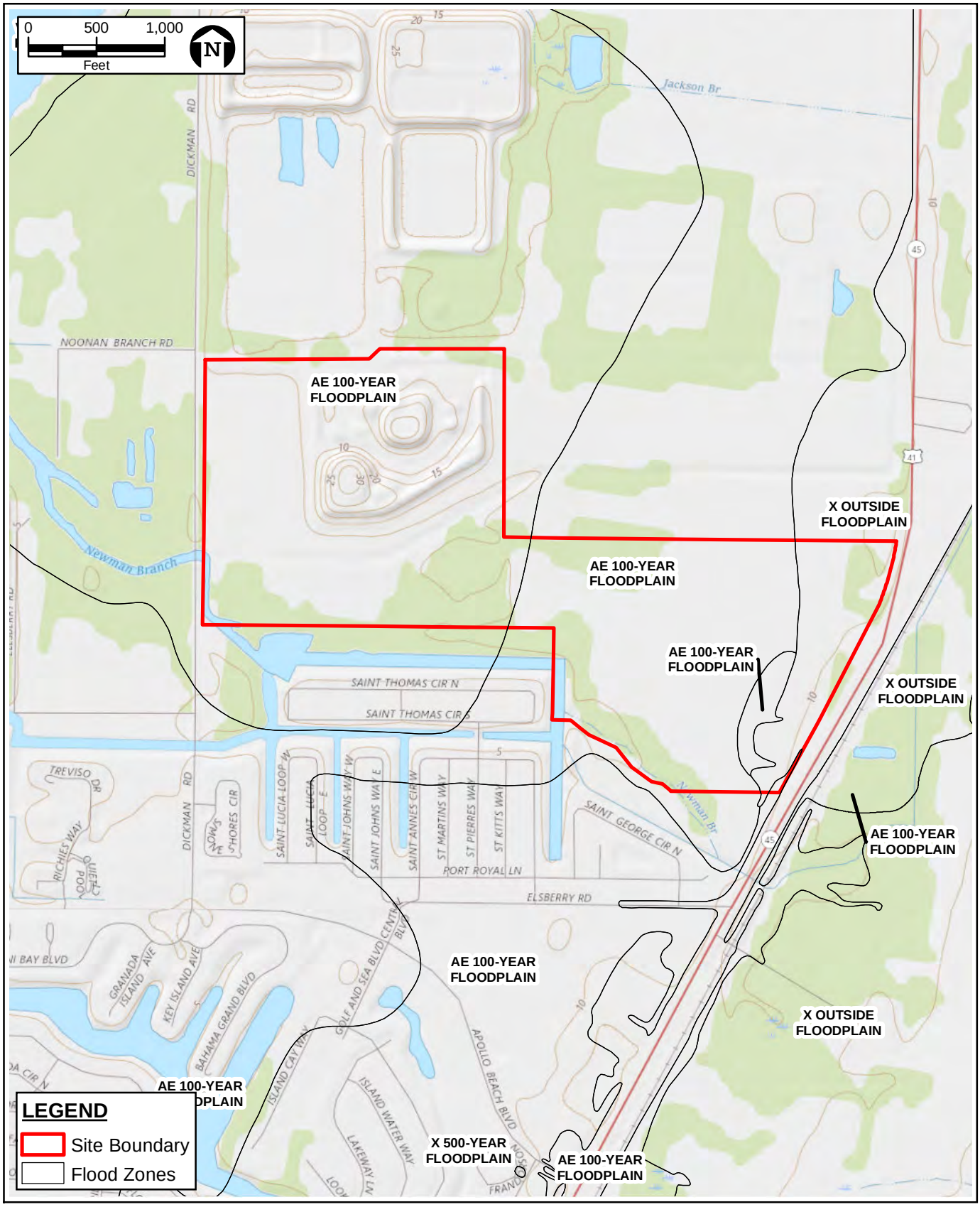

FIGURE 2-2.

TOPOGRAPHIC AND FLOOD ZONE MAP
BIG BEND II SOLAR PROJECT

Sources: FEMA, 2017; USGS, Gibsonton Quad, 2016; ECT, 2017.

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Most of the Project Site consists of cleared, improved and unimproved pasture covered with forage grasses previously used for sod production and cattle grazing and the existing south gypsum storage area (SGSA) (see Figure 2-3). A monoculture of Brazilian pepper trees (*Schinus terebinthifolius*), a highly invasive exotic species, has invaded along several drainage ditches and perimeter portions of the Project Site. A few remnant areas of oak and/or cabbage palm upland forest are also located along the perimeters of the Project Site. Remnants of Newman Branch, a small tidally influenced creek, including a channelized stream portion, several upland cut ditches, and a small, shallow ponded area, are the surface water features onsite. A few of the upland cut ditches may need to be filled for Project development. The filling of any of the old agricultural ditches will not impact natural drainage patterns on the property. A saltwater marsh and mangrove swamp, which occur at the southwestern corner of the property, connect to Newman Branch. No existing wetlands or their buffers on the Project Site will be affected by the proposed Project.

As shown in Figure 2-3, the northwestern portion of the Project Site contains an area that is used for storage of gypsum byproduct from the existing BB coal-fired generation facilities, known as the SGSA. For the BB II Solar Project, the gypsum in this area will be excavated and provided to National Gypsum for beneficial reuse in wallboard production. As required by the federal Coal Combustion Residuals (CCR) Rule, the SGSA will also be closed, and any applicable corrective actions implemented prior to use of the area for the Project. Such closure plans will be submitted to FDEP for review and approval.

2.2 Project Description

The proposed BB II Solar Project will involve the construction and operation of an approximately 33-MW_{AC} renewable solar energy generation facility. The facility will consist of multiple arrays of solar PV panels, an electrical collection system and direct current (DC)-to-alternating current (AC) inverters, a 13.8-kV transmission line interconnection to the BB I Solar substation, access roads, and stormwater management measures.

Figure 2-4 shows the layout of the proposed BB II Solar Project facilities on the Project Site.

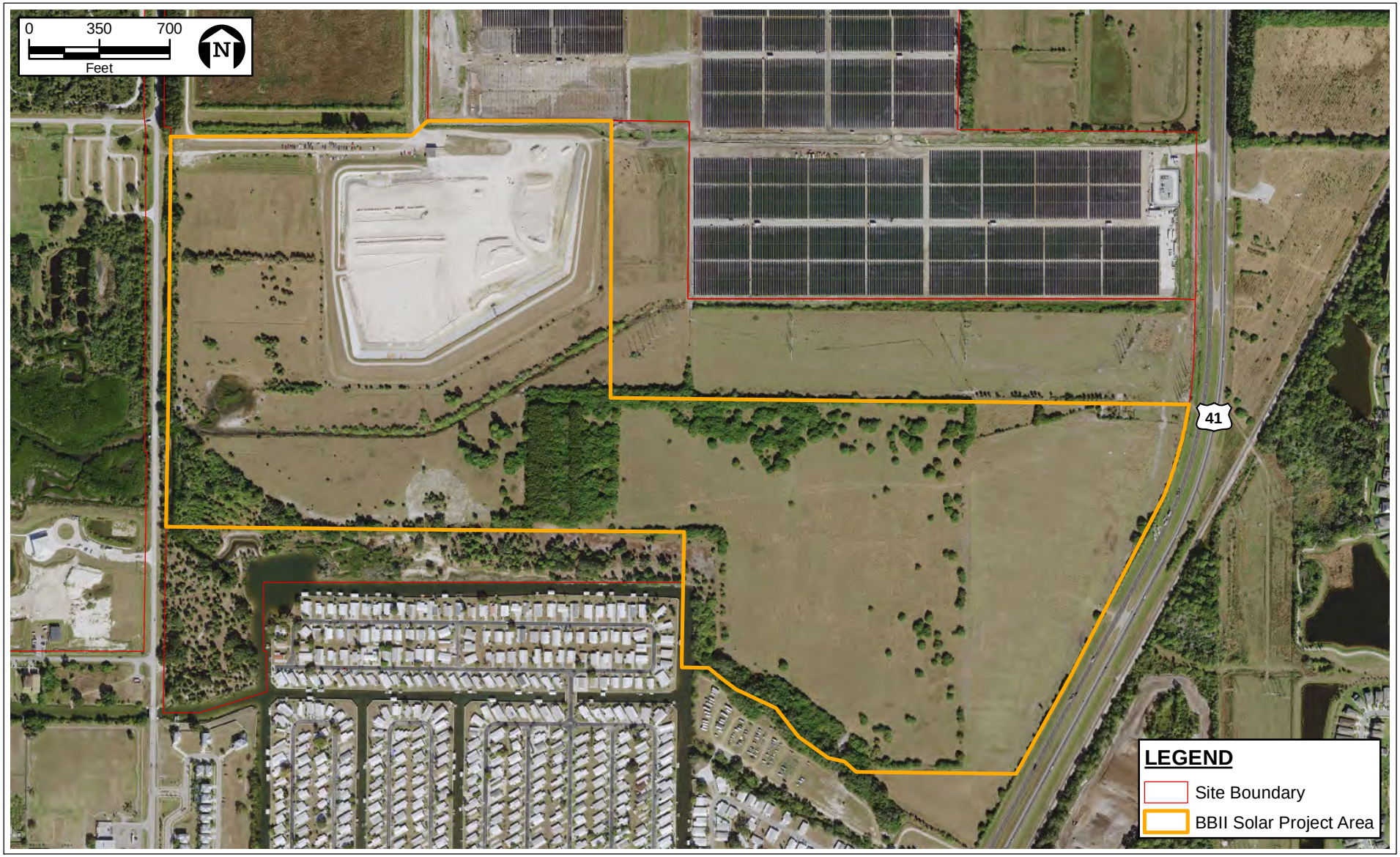

FIGURE 2-3.
BIG BEND II SOLAR PROJECT AREA

Sources: FDOT, 2017; TECO, 2016; ECT, 2017.

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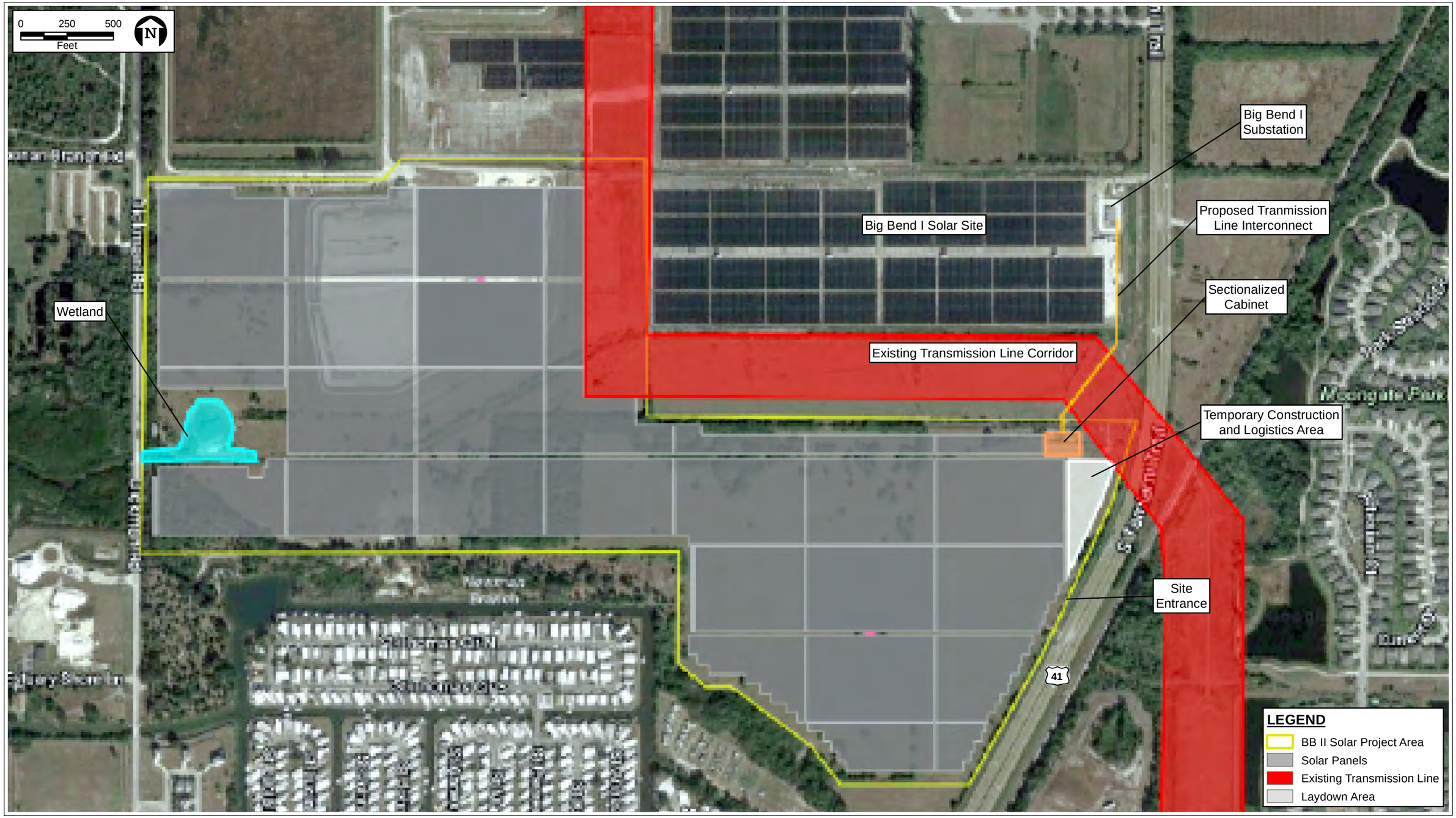

FIGURE 2-4.

BIG BEND II SOLAR PROJECT SITE DEVELOPMENT PLAN

Sources: FLDOT, 2017; TECO, 2016; ECT, 2017.

Tampa Electric retained First Solar Electric, LLC (First Solar), to design and construct the BB II Solar Project. The proposed renewable energy generation facility will employ thin film PV panels that absorb sunlight and directly produce electricity. The Project will have a maximum generation capacity of approximately 33 MW_{AC}, and will be owned by Tampa Electric. The final Project design may be adjusted based on results of ongoing engineering and site studies but will not alter the Project's overall footprint or maximum generation capacity.

In general, solar electric generation facilities consist of three main systems: the PV field and support structures, an electrical collection and inverter system, and the electrical substation. The PV panels are anti-reflective coated and will be attached to a single-axis tracking system mounted on embedded (pounded) steel posts. The tracking system allows the panels to rotate east-to-west throughout the day to track the movement of the sun, maximizing energy yield. Support posts will extend approximately 4 to 7 ft above grade to elevate the exposed electrical equipment at least 1 ft above established base flood elevations. When fully constructed, the typical height of horizontal PV panels will be approximately 6 ft, with a maximum height of up to 15 ft at full rotation.

The PV panels will be arranged in north-to-south rows with center-to-center spacing of approximately 12 to 16 ft. The rows of PV panels will be organized into electrical groups referred to as "arrays." The arrays will include inverters that convert the DC power from the solar panels to AC power, which is utilized on the power grid. Each array will encompass approximately 15 acres to produce approximately 3 MW of electricity and will include one modular inverter. The size of each array will depend on the capacity of the inverters mounted on the array's associated inverter skid. Each inverter skid is anticipated to be an approximately 10-ft-by-35-ft structure up to 15 ft in height. The inverter skids will be mounted on steel or concrete structures to be elevated above base flood elevation. Each inverter skid will have an associated transformer to step up electricity voltage from the inverter output voltage to a distribution voltage of 13.8 kV, which will minimize electrical losses in the collection system. From each such transformer, electricity will be conveyed via a 13.8-kV collection system circuit, and all circuits will be combined into a sectionalizing cabinet located in the northeast corner of the site. The Project will have a maximum capacity of 33 MW_{AC} electricity for transmission into

the power grid and will interconnect to the existing electrical substation at the BB I Solar facility located north and east of the Project Site.

Figure 2-5 provides a representative photograph of a typical solar PV panel array. Figure 2-6 provides a representative photograph of a typical single-axis tracking solar PV panel array and steel support structures at ground level. Figure 2-7 presents an example of the elevated inverter skid.

A 6-foot (ft) security fence with 12 inches of barbed wire will surround the solar facility. A 20-ft-wide, aggregate base, compacted access road will be installed from a proposed temporary driveway off US 41 into the Project Site. This driveway will be designed in accordance with Florida Department of Transportation (FDOT) standards and will eventually be converted to a permanent driveway for the Project. The most critical/heaviest loads utilizing this access road will be the inverter skid deliveries. A 20-ft-wide perimeter road will be constructed on the interior side of the Project fence. The surfacing of this road will be compacted native soil or aggregate base. Approximately 14- to 20-ft-wide interior roads will be installed for access to the arrays and inverter skids. These interior roads will be constructed at grade and may incorporate a geotextile fabric underlayment.

To interconnect the BB II Solar Project with the electrical grid, a new 13.8-kV transmission line will be constructed from the sectionalizing cabinet in the northeast corner of the Project Site to the existing substation at the BB I Solar site area. As shown in Figure 2-4, the new transmission line will run approximately 1,200 ft on Tampa Electric-owned BB Power Station property, including across the existing 230-kV transmission line corridor.

2.3 Construction Activities

Construction activities for the Project will consist of the following:

- Best management practices (BMPs) implementation for erosion control and site clearing
- Grading and site preparation, including fencing and roadway installation
- Foundation and solar panel support racking installation
- PV panel and inverter skid installation

FIGURE 2-5.

PHOTOGRAPH OF TYPICAL SOLAR PV PANEL ARRAY

Source: First Solar, 2017.

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FIGURE 2-6.

PHOTOGRAPH OF TYPICAL SOLAR PV PANEL ARRAY AND SUPPORT STRUCTURES AT GROUND LEVEL

Source: B&M, 2016.

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FIGURE 2-7.

PHOTOGRAPH OF ELEVATED INVERTER SKID

Source: B&M, 2016.

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- Electrical collection system installation
- Testing and commissioning

Initial site clearing activities within the Project boundary will involve removal of trees necessary for solar array installation and prevention of shading on the panels. Trees within the actual solar array/inverter and roadway areas will be entirely removed, including stumps and roots. Areas disturbed by grading will be seeded with native grasses. Sloped areas particularly subject to erosion will be protected by seeding and other appropriate erosion control methods. Herbicides will be used to treat tree stumps during initial clearing and for weed and vegetation management during operations. Site preparation activities will be conducted in accordance with applicable Hillsborough County and FDEP stormwater management requirements. The stormwater plans will primarily involve shallow drainage ditches/swales along access roads. Since the solar panels and inverter skids are mounted on piles above the 100-year floodplain elevation, and the panels themselves do not alter drainage patterns, stormwater runoff characteristics will be basically the same as existing conditions.

As discussed previously, gypsum in the SGSA in the western portion of the Site will be excavated for beneficial use and appropriate closure, and any required corrective actions will be implemented prior to construction in the area. Based on these activities, the Project may be developed in phases.

During construction, water is not anticipated to be needed to support the activities. Drinking water for the construction workforce will be provided by bottled water, and portable toilets will be used for sanitary service. In the event water is needed to achieve proper compaction of roadway or equipment areas, water would be hauled to the site by tanker truck.

Construction of the BB II Solar Project may require a peak workforce of up to 300 management, supervisory, and craft workers. Workers will access the site from US 41, which is expected to have minimal impact on traffic flow. In addition, Project construction is expected to require approximately 10 to 12 truck deliveries per day for materials and equipment.

The Project has been designed to avoid impacts to jurisdictional wetlands, wetland buffers, and significant other surface waters, such as natural streams and other important drainages. Staging areas will be located within the Project boundary footprint. Where proposed construction activities occur near wetlands or water bodies, appropriate erosion and sediment control BMPs will be implemented to prevent disturbance of the wetlands or wetlands buffers. Sediment controls may include installation of staked silt fences along wetlands buffers. If required, a spill prevention, control, and countermeasures (SPCC) plan will be developed and implemented for Project construction and operation. The SPCC plan would address fuels, lubricants, and hydraulic fluids expected to be used for construction equipment. The equipment will be properly maintained to minimize leaks and, as warranted, prevent spills.

PV solar panels are designed to absorb radiation (i.e., sunlight), not to reflect it. To minimize glare issues, the proposed solar PV panels will be constructed of dark-colored (i.e., blue or black) materials and covered with an antireflective coating. Modern solar PV panels reflect as little as 2 percent of incoming sunlight. Also, a number of PV solar installations with current antireflective technology have been successfully located at or near United States airports, such as Tampa Electric's solar PV installation the existing BB I Solar Project and the at Tampa International Airport (TIA) in Tampa.

2.4 Operation Activities

After commercial service begins, solar PV electric generating facilities typically require only minimal operational and maintenance activities. BB II Solar Project facilities will automatically operate and sync with the transmission grid every day and disconnect every night. The facilities will be operated remotely using electronic communications systems by Tampa Electric personnel currently operating other electric generating facilities at the BB Power Station. The remote communication systems will be used to monitor system electrical output, performance, and reliability and identify malfunctioning equipment or systems. Therefore, the Project will not require onsite operational personnel. Existing Tampa Electric personnel will periodically inspect the facilities and perform maintenance, as needed.

The operation of the BB II Solar Project electric generation facilities will produce up to 33 MW_{AC} of clean, renewable power and will not produce air pollutant emissions.

Project operations will not require the use of water. Because of frequent rainfall in the Project region, washing of the solar PV panels is not anticipated, and there are no plans for other water use, such as irrigation. Therefore, the Project will also not produce any wastewater that requires treatment or discharge/disposal. As discussed previously, the stormwater management plan for the Project will be designed to meet applicable Hillsborough County and FDEP requirements. The plan will primarily involve shallow drainage ditches/swales and culverted crossings along the access roads. Since the solar panels and inverter skids are mounted on piles above the 100-year flood elevation, stormwater runoff characteristics will be basically the same as existing conditions.

Project operations will not produce solid or hazardous wastes. Most of the equipment for the facility are self-contained modular units (i.e., solar panels, inverters, and transformers). If such equipment is broken or malfunctions and cannot be repaired, the equipment will be removed and replaced with a new unit. The broken equipment will be trucked offsite for appropriate repair or disposal. No chemicals, fuels, or lubricants will be stored on the site.

The operational life of the proposed BB II Solar Project is expected to be 25 to 30 years.

3.0 Environmental Effects of the Project

As required under the provisions of Rule 62-17.211, F.A.C., Modification of Certification, the following subsections describe the expected potential effects of the proposed BB II Solar Project on the environment. These descriptions focus on the key areas of potential effects associated with the construction and operation of the Project. In general, due to the location, design, and nature of the technology, overall potential environmental effects of the Project are expected to be minor.

3.1 Air Quality

The proposed BB II Solar Project will involve the use of solar PV technology to convert sunlight into renewable electrical energy.

During construction of the Project, three general activities will produce air emissions. First, land clearing, grading, site preparation, and vehicle movement will produce fugitive dust emissions. Second, internal combustion engines in construction equipment will emit nitrogen oxides (NO_x), CO_2, and other combustion products. Third, construction worker and delivery truck travel to and from the site will result in vehicular emissions. The level of emissions during construction will generally be low and will vary due to weather conditions and on an hourly and daily basis as construction progresses. As needed, appropriate measures will be used to control/limit air emissions such as watering trucks for dust suppression and proper equipment maintenance. Construction-related air emissions will be intermittent, limited to the Project Site, and temporary over the 2- to 4-month construction period. Any potential emissions are expected to have minimal impact on air quality in the Project Site.

During operation, the proposed Project will produce up to 33 MW_{AC} of power and will not produce air pollutant emissions. The solar PV technology for electric generation is considered a clean renewable energy technology. Therefore, the proposed Project will have a beneficial effect on air quality.

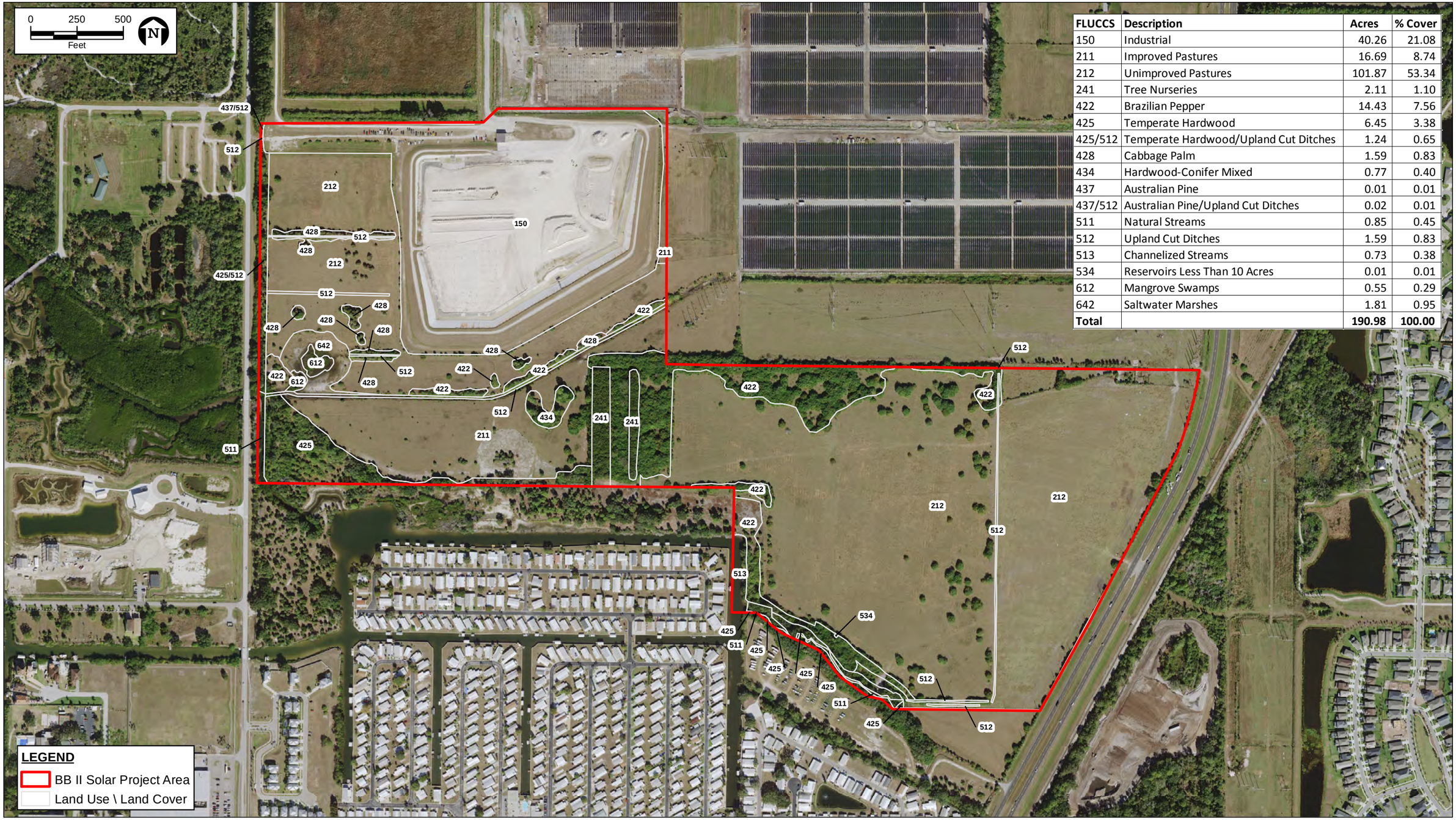
3.2 Surface Water

Historically, the Project Site has been used for agriculture and consists primarily of pastureland covered with forage grasses. As shown in Figure 3-1, the Project Site also contains several surface water features, including remnants of Newman Branch, a small tidally influenced creek, including a channelized stream portion, several upland cut ditches, and a small, shallow ponded area. Upland-cut agricultural drainage ditches occur throughout the Project Site. As shown in the proposed site development plan provided in Figure 2-4, the majority of these surface water features will not be impacted by Project construction, except for the north-south upland-cut drainage ditch in the eastern portion of the Site and a few east-west upland cut drainage ditches located on the western portion of the Site, which will be filled.

According to the Hillsborough County Stormwater Management Master Plan, the BB Power Station site, including the BB II Solar Project Site, is located within the Bull Frog/Wolf Branch watershed. The Project Site generally drains to the south and southwest and discharges into the remnant features of Newman Branch along the southeastern and southwestern Project Site boundaries, which ultimately discharges to Tampa Bay, approximately 1,400 ft to the west.

Currently, water is not anticipated to be required for Project construction or operation. In the event water is needed during construction to achieve proper compaction of roadways or equipment pads or for fugitive dust control, limited amounts of water would be hauled to the Project Site by tanker truck. Also, no wastewater will be produced or discharged from Project construction or operation activities. Therefore, the Project is not expected to impact surface water resources in the area.

The stormwater management plan for the Project Site will be designed in accordance with applicable Hillsborough County and FDEP surface water management regulations. Because of the generally flat topography of the Project Site requiring only minimal grading, stormwater runoff characteristics across the Project Site with the Project will be basically the same as the predevelopment, existing conditions. Minor grading will be performed along the primary access roads within the Project Site. Roadside ditches/swales, approximately 6 inches deep, will be



FLUCCS	Description	Acres	% Cover
150	Industrial	40.26	21.08
211	Improved Pastures	16.69	8.74
212	Unimproved Pastures	101.87	53.34
241	Tree Nurseries	2.11	1.10
422	Brazilian Pepper	14.43	7.56
425	Temperate Hardwood	6.45	3.38
425/512	Temperate Hardwood/Upland Cut Ditches	1.24	0.65
428	Cabbage Palm	1.59	0.83
434	Hardwood-Conifer Mixed	0.77	0.40
437	Australian Pine	0.01	0.01
437/512	Australian Pine/Upland Cut Ditches	0.02	0.01
511	Natural Streams	0.85	0.45
512	Upland Cut Ditches	1.59	0.83
513	Channelized Streams	0.73	0.38
534	Reservoirs Less Than 10 Acres	0.01	0.01
612	Mangrove Swamps	0.55	0.29
642	Saltwater Marshes	1.81	0.95
Total		**190.98**	**100.00**

FIGURE 3-1.

LAND USE AND LAND COVER NATURAL RESOURCES MAP
BIG BEND II SOLAR POWER PLANT

Sources: FDOT Aerial Photograph, 2017; George F. Young Inc., 2017; ECT, 2017.

TECO TAMPA ELECTRIC AN EMERA COMPANY

graded along the access roads to provide for compensatory storage in accordance with Hillsborough County and FDEP requirements. During construction activities, appropriate BMP measures will be implemented to control sedimentation and erosion. The graded areas will be revegetated with native grasses and will contain check dams to allow runoff to infiltrate. Appropriately designed culverts will be installed at roadway crossings of drainage features.

As discussed previously, much of the Project Site is located within the FEMA 100-year floodplain. The proposed solar panels and inverter skids will be located on piles/piers to elevate the equipment at least 1 ft above the 100-year flood elevation and allow stormwater flows to pass beneath the equipment without increasing flood depths.

Therefore, no adverse impacts to surface waters or floodplains are anticipated because of Project construction or operation.

3.3 Groundwater

The proposed Project will not use groundwater during construction or operations. Due to the nature of the Project equipment and planned installation methods, no dewatering or deep excavations for foundations are needed during construction. Construction contractors will be required to follow appropriate measures to minimize the potential for spills of fuels, lubricants, or chemicals used during construction. In the unlikely event of a spill, appropriate containment and cleanup measures will be followed in accordance with applicable local, state, and federal regulations.

During operations, no fuels, chemicals, or other potentially hazardous materials will be stored on the Project Site. The onsite transformers on the inverter skids and at the substation will contain nonhazardous vegetable and mineral oils, which do not normally require replacement.

Therefore, the proposed Project construction and operation are not expected to adversely impact onsite or offsite groundwater resources.

3.4 Ecology/Wetlands

The following subsections provide descriptions of the ecological resources on the proposed Project Site and summarize the expected impacts of the Project's construction and operation.

3.4.1 Wetlands and Land Use

To determine the ecological resources in the Project Site, Environmental Consulting & Technology, Inc. (ECT), ecologists conducted a wetlands and land use/cover survey of the Project Site on September 8, 2016, and May 2 and October 27, 2017. The Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999) was used to identify the land use and cover types on the Project Site. These FLUCFCS categories were classified and mapped to Level III. The most current FLUCFCS does not differentiate among the various types of linear water bodies (i.e., linear water bodies are classified as FLUCFCS 510, Streams and Waterways). For the purposes of the BB II Solar Project, natural streams, artificially created linear water bodies, and channelized streams were separately described and classified using a modified Level III FLUCFCS (i.e., FLUCFCS 511, 512, and 513, respectively). Finally, a wildlife-based habitat classification scheme was included by using the Florida Natural Areas Inventory (FNAI) 2010 Guide to the Natural Communities of Florida. FNAI categories are based on "natural" areas. However, disturbed areas are also categorized under Appendix 2, Altered Land Cover Types.

Figure 3-1 shows the location and extent of each of the vegetation/land use types and natural resources identified in the approximately 191-acre BB II Project Site. Overall, 15 vegetation communities/land uses were identified in the BB II Solar Project Site. As shown in Figure 3-1, the majority (i.e., approximately 54.7 percent) of the Project Site consists of unimproved pasture used for cattle grazing. Also, approximately 7.6 percent in the northern and western portions of the Project Site is covered with invasive exotic species monocultures consisting of Brazilian pepper. As discussed previously, several man-made, upland-cut ditches and remnant features of Newman Branch are located along the southern boundary of the Project Site.

The following narrative describes land use and cover types occurring within the Project Site.

3.4.1.1 100—Urban and Built-up

150—Industrial (FNAI: Developed)

The industrial FLUCFCS category includes land where there are facilities for manufacturing, assembly, or processing of materials and internal infrastructures such as roads, parking, warehouses, and materials/byproduct storage. For the purpose of this mapping, this category was used for storing gypsum, a byproduct of the electrical generation plant.

3.4.1.2 200—Agricultural

211—Improved Pastures (FNAI: Pasture – Improved)

An improved pasture is an area cleared of native vegetation and seeded with forage grasses for the support of domesticated grazers. Bahiagrass (*Paspalum notatum*) is the most common planted grass in these pastures, but bermudagrass (*Cynodon dactylon*) and limpograss (*Hemarthia altissima*) are also present. Minor other species noted in the improved pastures include cogongrass (*Imperata cylindrica*), dogfennel (*Eupatorium capillifolium*), cabbage palm (*Sabal palmetto*), and Caesarsweed (*Urena lobata*). A few cattle are present in the improved pasture.

212—Unimproved Pastures (FNAI: Pasture – Semi-Improved)

FLUCFCS Category 212 is generally used for pastures created by clearing the land and allowing recruitment of native and nonnative forage grasses. A review of historical aerial photographs indicates, prior to conversion to pasture, this area was pine-saw palmetto flatwoods. Trails visible on the photograph indicate the area was used as rangeland. During the 1950s, it appears the land was cleared of saw palmettos (*Serenoa repens*), and a grid of upland-cut ditches were excavated. This pasture has been cut for sod and was categorized as unimproved, since it has degraded with the establishment of Brazilian peppers, torpedograss (*Panicum repens*), cogongrass, Caesarsweed, smutgrass (*Sporobolus indicus*), dogfennel, tropical soda apple (*Solanum viarum*), and other nuisance plants. A small herd of cattle was present.

241—Tree Nurseries, Abandoned (FNAI: Agriculture)

This land use type is used where trees are grown for ornamental and landscape purposes. The nursery area is located in the western portion where laurel oaks (*Quercus laurifolia*) are planted in raised rows with shallow furrows. Equipment ruts, some of the furrows, and other

mechanically damaged areas hold water after heavy rainfall. Eight or so rows of laurel oaks remain apparently abandoned. Brazilian pepper trees have invaded the nursery area, except under the oak canopy. A number of Senegal date palms (*Phoenix reclinata*) present in the nursery are considered pest plants.

3.4.1.3 400—Upland Forests

422—Brazilian Pepper (FNAI: Invasive Exotic Monoculture)

Brazilian pepper trees are related to poison ivy and were introduced to Florida as an ornamental and a crop ("pink peppercorns") in the late 19th century. The plant flowers several times a year and harvests were a "sure bet" for cash-poor farmers. Pink peppercorns cause allergic reactions in some people; consequently, as a spice, the novelty wore off. With its high production of berries, Brazilian pepper trees have spread into many different habitats and are listed as invasive species that displace the native vegetation. In the 1990s, a few Brazilian pepper trees were present on an adjacent property, and they have now become established along fence rows and ditches and are spreading out into portions of the pastures.

425—Temperate Hardwood (FNAI: Mesic Hammock)

This classification is used to describe forests with a mix of hardwood trees—laurel oaks, live oaks (*Quercus virginiana*), red maples (*Acer rubrum*), water oaks (*Quercus nigra*), and cabbage palms, with a few slash pines (*Pinus elliottii*) and other species. Small bands of mixed hardwoods are present in the southern and western portions of the Project Site along a remnant and altered portion of Newman Branch. Typical shrubs in temperate hardwood forests are wax myrtle (*Morella cerifera*) and saw palmetto. Swamp ferns (*Blechnum serrulatum*) were observed growing in low places along the creek.

428—Cabbage Palm (FNAI: Mesic Hammock)

This category is used where cabbage palm is the dominant species in the canopy of the habitat. Cabbage palms are native to Florida and provide forage, cover, and nesting locations for numerous animal species. On the Project Site, stands of cabbage palms are often invaded by Brazilian pepper trees or other shrubby species.

434—Hardwood-Conifer Mixed (FNAI: Upland Hardwood Forest)

A small area of mixed hardwood and conifer forest is present onsite. The composition of this upland forest community type is similar to temperate hardwoods, except the pines and hardwoods are co-dominants. The understory may have saw palmetto or be relatively free of vegetation.

437—Australian Pine (FNAI: Invasive Exotic Monoculture)

Australian pines (*Casuarina equisetifolia*), an exotic species, were introduced to Florida from Australia for use as a wind break and soil stabilizer. Historical aerial photographs indicate Australian pines were planted around the same time as the land was cleared and converted to row crop farming. The Australian pines were probably planted in rows as a windbreak and for shade to protect crops, livestock, and reduce soil erosion on spoil piles.

3.4.1.4 500—Water

511—Natural Streams (FNAI: Blackwater Stream)

A remnant of Newman Branch (a small tidally influenced creek) occurs along portions of the southern and western Project Site boundary.

512—Upland-cut Ditches (FNAI: Canal/Ditch)

Upland-cut ditches are constructed conveyances to drain surface waters and are considered jurisdictional if they have a one-to-four or steeper depth to width ratio, have an ordinary high-water line, or contain wetland plant species. The small upland-cut ditches on the Project Site were excavated sometime in the late 1940s or early 1950s for agricultural purposes. Most of these drainage ditches are partially silted-in, and several no longer flow to larger conveyances.

513—Channelized Streams (FNAI: Canal/Ditch)

A portion of a canal used for recreational boating occurs along the southwestern boundary of the Project Site. This canal comprises a portion of channelized Newman Branch.

534—Reservoirs Less than 10 Acres (FNAI: Artificial Pond)

These man-made reservoirs are detention ponds that collect and hold surface runoff. These reservoirs hold water permanently year-round and support numerous wildlife species. However,

the only cattle pond on the property is a small, shallow, ponded area probably created by tractors or other machinery.

3.4.1.5 600—Wetlands

612—Mangrove Swamps (FNAI: Mangrove Swamp) and 642—Saltwater Marshes (FNAI: Salt Marsh)

A disturbed saltwater marsh is located at the southwest corner of the Project Site. This saltwater marsh is mostly open with a dense association of halophytic (salt-tolerant) plants such as herbs, grasses, sedges, and rushes. Halophytic plants found growing in the ground layer include marshhay cordgrass (*Spartina patens*), black needlerush (*Juncus roemerianus*), saltgrass (*Distichlis spicata*), Gulf cordgrass (*Spartina spartinae*), seaside dropseed (*Sporobolus virginicus*), marsh fimbry (*Fimbrystylis spadicea*), Virginia glasswort (*Sarcocornia ambigua*), and capeweed (*Phyla nodiflora*). An area of mangrove swamp dominated by black mangroves (*Avicennia germinans*) is also present along the lowest elevations of the saltwater marsh. The basin-shaped depression receives freshwater runoff from abutting upland pasture, but most of the standing water is brackish and fluctuates with the tides. Thousands of fiddler crabs are present in the area, as well as several species of small fish. The crabs and fish provide ample forage for wading birds and raccoons. A ditch intersects the outflow area of the marsh and Newman Branch, but the marsh does not appear to have been affected by drainage alteration. Charred pine stumps indicate the area burned in the past, probably decades ago. The area is maintained for pasture and is now too close to industry and housing for burning.

3.4.2 Wildlife and Listed Species

The Florida Natural Areas Inventory (FNAI) database was accessed for Hillsborough County to review the listed animals, plants, and plant communities that could potentially occur within or in the vicinity of the Project Site. The Atlas of Florida Vascular Plants, Institute for Systematic Botany, University of South Florida, was consulted for proper plant species taxonomic nomenclature. The FWC Water Bird Colony Locator and Bald Eagle Nest Locator were accessed for the occurrence of documented wading bird rookeries or bald eagle nest sites within the surrounding area, respectively.

On September 8, 2016, and May 2 and October 27, 2017, two ECT ecologists conducted surveys for listed animal and plant species on the Project Site. Survey methodologies for listed species were generally based on the most current FWC and U.S. Fish & Wildlife Service (USFWS) guidelines available. The listed species surveys were conducted in concert with wetlands delineations on the subject property. Vehicular and pedestrian transects in combination with visual scanning were utilized in surveying most of the Project Site.

The Project Site is mostly degraded improved pasture with considerable intrusion of Brazilian pepper trees, especially along old fence lines and ditches. The wooded portions of the Project Site provide shrub and canopy for passerines, and the open grassy areas provide opportunities for raptors to hunt. A small length of Newman Branch, a tidally influenced creek, remains along the southwestern boundary of the Project Site.

During the field survey, little wildlife was seen, with the exception of gray catbird (*Dumetella carolinensis*), northern mockingbird (*Mimus polyg*lottus), red-winged blackbird (*Agelaius phoeniceus*), and laughing gull (*Leucophaeus atricilla*). No herpetofauna were seen on the Project Site. Raccoon (*Procyon lotor*) tracks were seen along Newman Branch. No other mammal signs were identified. The few wildlife species that were seen, as well as others in the area, have become adapted to the altered condition of the Project Site, and regional wildlife populations should not be significantly affected by Project development. No listed wildlife species with the potential to occur on the Project Site were observed during the field survey.

The FNAI Species Tracking List identified 17 listed plants and 27 listed animals (1 fish, 10 reptiles, 14 birds, and 2 mammals) as occurring within Hillsborough County, Florida. The potential for occurrence of the listed species on the Project Site was determined by a habitat analysis, literature review, and ground surveys. Based on an evaluation of habitat preference and distribution of species, out of the 44 listed plant and animal species recorded for Hillsborough County, 13 listed animal species (3 reptiles and 10 birds) and 2 delisted but still protected bird species were identified as expected or possible to occur within or in proximity to the Project Site. The following narrative provides more details regarding the listed/protected species that might occur on the Project Site.

3.4.2.1 Reptiles

American Alligator and American Crocodile

American alligators (*Alligator mississippiensis*) occur in every county of Florida, inhabiting freshwater marshes, swamps, rivers, and lakes. Alligators are federally listed as a threatened species due to a similarity of appearance to the American crocodile (*Crocodylus acutus*). American crocodiles, federally and state-listed as threatened, live in coastal areas throughout the Caribbean and occur at the northern end of their range in south Florida. They live in brackish or saltwater areas and can be found in ponds, coves, and creeks in mangrove swamps. Because of their range of distribution in Florida, crocodiles are not expected to occur within the Project Site. No alligators were seen during surveys of the Project Site. However, alligators could also be present along the tidal creek on the Project Site. Direct impacts or habitat alterations because of development are not likely to adversely impact these mobile species.

Gopher Tortoise

During the field survey, 15 to 20 percent of the upland habitats located within and adjacent to the Project Site limits were surveyed for the state-listed (threatened) gopher tortoise (*Gopherus polyphemus*). No gopher tortoise burrows were found on the Project Site. A 100-percent gopher tortoise survey will be conducted prior to construction to locate tortoises and their burrows as required under FWC's Gopher Tortoise Permitting Guidelines (revised January 2017). Potentially occupied gopher tortoise burrows found within or in proximity to the Project Site limits will be identified, and gopher tortoise relocation will be conducted pursuant to authorization obtained from FWC for burrows that may be potentially affected by construction activities. Gopher tortoise burrows will be excavated, and gopher tortoises will be captured and relocated to a gopher tortoise recipient site. Burrow commensal species will either be avoided during construction or excavated and relocated along with gopher tortoises prior to construction in accordance with applicable guidelines for that species. The gopher tortoise surveying, permitting, and relocation will need to be conducted by an FWC-certified gopher tortoise agent.

Eastern Indigo Snake

Since eastern indigo snakes (*Drymarchon corais couperi*) can be potentially found in nearly any wooded uplands habitat throughout Florida, they have the potential to occur on the Project Site. They are also a commensal species commonly associated with gopher tortoise burrows.

However, eastern indigo snake was not observed, nor is it expected to occur, on the Project Site. Even though highly unlikely, there is still a limited potential for eastern indigo snake to be moving across the Project Site from offsite habitats. Indigo snakes will be evaluated further as part of any future gopher tortoise survey efforts. If potentially occupied gopher tortoise burrows are found on the Project Site, the FWC Standard Protection Measures for the Eastern Indigo Snake (August 2013) to minimize potential conflicts with this species will be followed during construction. Taking of eastern indigo snakes is prohibited by the Endangered Species Act of 1973 (ESA) without a permit. "Taking" is defined by USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Only individuals currently authorized through an issued incidental take statement in association with a USFWS biological opinion, or by a Section 10(a)(1)(A) permit issued by USFWS, to handle an eastern indigo snake are allowed to do so. As stated previously, eastern indigo snakes are a commensal in gopher tortoise burrows. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e., burrow excavation), USFWS will be contacted immediately. Because of its protected status, no attempt will be made to touch or handle the snake. Nearby activities will cease until such time that a USFWS representative returns the call (within one day) with further guidance as to when activities may resume. If USFWS does not return the call within one day and the snake leaves the area, construction activities will resume.

3.4.2.2 Birds

Marine Birds (Least Tern, Piping Plover, and Reddish Egret)

The least tern (*Sternula antillarum*), a state-listed threatened species, is typically a coastal bird, but does occur inland. It prefers nesting on sand or gravel substrates and has been known to nest on dirt roads and roof tops. Its likelihood of occurrence in the area of the Project Site is low. The least tern nesting season is from late April/early May to August.

The other listed marine birds such as the state-listed threatened reddish egret (*Egretta rufescens*) and the federal and state-listed threatened piping plover (*Charadrius melodus*) are mostly found along coastal beaches, mudflats, sandbars, spoil dredge islands, mangroves and/or lagoons and would not be expected to occur within the Project Site.

To reduce the potential for adverse effects to ground nesting birds, the following actions will be implemented:

- Conduct construction activities outside the breeding season (generally April to August), if feasible.
- Clear the subject property only when ready to build.
- Avoid leaving cleared areas with little or no activity for an extended period of time.
- Monitor daily any cleared sites to ensure no active nests of ground-dwelling birds are present prior to commencement of construction activities.

Florida Grasshopper Sparrow

The Florida grasshopper sparrow (*Ammodramus savannarum floridanus*) is a federally listed endangered bird restricted to the dry prairie ecosystem of Central and South Florida. The Florida grasshopper sparrow is a nonmigratory species living in Florida year-round. Florida grasshopper sparrows are named for one of their calls: a quiet buzz that sounds much like a grasshopper. The Florida grasshopper sparrow nests in spring (April through July) on the ground, under palmettos or in grass lumps. Based on the quality of habitat, the likelihood of occurrence for the Florida grasshopper sparrow on the Project Site is considered low. Therefore, Florida grasshopper sparrows should not be adversely affected by construction on the Project Site.

Wood Stork

The wood stork (*Mycteria americana*) is a federal and state-listed threatened wading bird species. The FWC Water Bird Colony Locator was specifically reviewed for occurrence of wood storks in the area. The closest recorded wood stork colony is a historic nesting site located 4.5 miles to the northwest (i.e., Water Bird Colony identification code 615333). The last time it was surveyed in the 1990s, anhinga (*Anhinga anhinga*), double-crested cormorant (*Phalacrocorax auritus*), great egret (*Ardea alba*), cattle egret (*Bubulcus ibis*), little blue heron (*Egretta caerulea*), black-crowned night heron (*Nycticorax nycticorax*), and wood stork nests were present, and more than 100 birds were recorded. However, the USFWS database was also reviewed for the presence of wood stork nesting and foraging sites. Another historical wood stork nesting site, last surveyed to be active in 2014, was identified approximately 11.3 miles northeast of the Project Site. No wood storks were observed on or in the immediate vicinity of the Project Site.

Other Wading Birds (Little Blue Heron, Tricolored Heron, and Roseate Spoonbill)

Little blue heron, tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Platalea ajaja*) are state-listed threatened species of wading birds that occur in Hillsborough County, Florida. The FWC Water Bird Colony Locator was reviewed for occurrence in the Project Site. One historical wading bird rookery is recorded as occurring approximately 5 miles to the north of the Project Site near the mouth of the Alafia River (i.e., Wading Bird Locator identification code 615007; last recorded as active in 1999; reported to support nesting colonies of 19 wading bird species, including great blue heron [*Ardea herodius*], reddish egret, and roseate spoonbill). No water bird colonies were observed on or in the immediate vicinity of the Project Site. It is anticipated that wading birds would use the ditches, tidal creek, and wetlands on the Project Site for foraging and staging areas. Even though wading birds may use wetlands and surface water resources within the Project environs, no nests were found during the survey. Although some wading birds may be using the drainages on the Project Site, wading bird populations in the immediate region should not be significantly affected by the proposed Project construction, because there is ample foraging area of similar or greater quality occurring on adjoining lands. Development should not impact the ability of wading birds to forage. The Project Site is not anticipated to be used for nesting by wading birds.

Florida Sandhill Crane

The Florida sandhill crane (*Antigone canadensis pratensis*) is a state-listed threatened species that prefers foraging in wet prairies, shallow edges of freshwater marshes and ponds, pastureland, and other grassy ruderal habitats. Their nest is a mound of herbaceous plant materials in shallow water or the ground of marshy areas. There are two subspecies of sandhill cranes that occur in Florida: the greater sandhill crane (*Antigone canadensis tabida*) and the state-designated threatened Florida sandhill crane. No Florida sandhill cranes were seen on or in the vicinity of the Project Site. The open grassy areas on the Project Site may provide foraging habitat for Florida sandhill cranes, but potential nesting habitat is marginal. FWC recommends surveys for nesting sandhill cranes be conducted immediately prior to any construction that occurs during the January through August breeding season. If evidence exists of nesting during this period, FWC recommends active Florida sandhill crane nests be buffered by 400 ft to avoid disturbance by human activities. If nesting is discovered after construction has begun, or if

maintaining the recommended buffer is not possible, Tampa Electric representatives will coordinate with FWC regarding mitigation options.

Southeastern American Kestrel

Two subspecies of American kestrel occur in Florida: a northern subspecies (*Falco sparverius sparverius*) that winters here between September and April, and a resident, nonmigratory subspecies, the Southeastern American kestrel (*Falco sparverius paulus*). Kestrels seen in Florida during May and June are resident Southeastern American kestrels. American kestrels nest in cavities they do not excavate. Instead, they depend on woodpeckers and natural processes to create holes in trees. Kestrels nest predominantly in dead but standing longleaf pine trees, called snags, usually in the abandoned cavities of pileated woodpeckers. Typically, American kestrels can be seen perching on telephone wires at the edge of a field or other open area. Southeastern American kestrels nest between mid-March and early June in Florida. No kestrels were seen on the Project Site during the recent wildlife survey. However, there is some kestrel nesting and hunting habitat available on and in the vicinity of the Project Site.

Bald Eagle

Although the bald eagle (*Haliaeetus leucocephalus*) is not currently classified by USFWS or FWC as threatened or endangered, it is protected under the Federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, as well as Florida's Bald Eagle Management Plan. The closest documented bald eagle nest sites are HL041, located 1.51 miles north-northwest of the property, and HL042 located 1.58 miles to the west-southwest. Both nests were last surveyed in 2013. Only HL042 was active at that time. Nesting habitat generally consists of mature canopy trees (usually pine trees) located along habitat edges, providing an unobstructed view of surrounding areas. No eagles or eagle nests were observed on or near the Project Site. Therefore, based on the wildlife surveys and FWC data, no active eagle nests are known to occur within approximately 1.5 miles of the Project Site. However, it is possible an eagle could build a nest in proximity to the Project Site. If eagles build a nest near the Project Site, applicable state and federal guidelines during development will be followed.

Osprey

The osprey (*Pandion haliaetus*) is a large raptor that builds large nests on conifers with broken tops or on artificial structures, such as nesting platforms and utility poles. Like the bald eagle, the osprey is not a listed species in Florida, except as a species of special concern in Monroe County. However, the osprey is federally protected by the Migratory Bird Treaty Act (United States Code [U.S.C.], Title 16, Sections 703 through 712) and state-protected by Chapter 68A of the Florida Administrative Code (F.A.C.). No ospreys or their nests were seen on the Project Site during the surveys. Osprey or large raptor nests that might be affected will be removed prior to construction activities pursuant to authorization from FWC and/or USFWS.

The Project Site offers minimal habitat for foraging and nesting/denning for most wildlife, except animals like raccoons, opossums, and cattle egrets that have adapted to urban conditions. The nearby coastline of Tampa Bay, with its beaches, salt marshes, and mangrove swamps provides considerably better opportunities for use by wading birds, passerines, and raptors. The continual agricultural use for more than 60 years has eradicated any threatened or endangered plants that may have been on the land prior to clearing in the 1950s. A 100-percent survey for gopher tortoise burrows will be performed prior to construction activities to determine whether or not potentially active burrows are located within areas of potential construction. Based on the analyses and survey conducted, potential adverse effects to federal or state-listed threatened or endangered animal species are not anticipated from development of the Project Site as long as gopher tortoises and burrow commensals within potentially active burrows located within areas of potential construction are captured and relocated, eastern indigo snake protection measures are employed, and no nesting areas of any listed species are found to be in conflict with proposed construction activities.

3.4.3 Preconstruction Listed Species Surveys

As required under the existing COCs for the BB Power Station (i.e., Specific Condition II, FWC, A. Listed Species Survey, and B. Listed Species Locations), Tampa Electric will conduct additional wildlife and species-specific surveys of the Project Site prior to initiation of site clearing and construction activities. The species-specific surveys will follow established protocols approved by USFWS and FWC and will include, but not be limited to, gopher tortoise

surveys. The results of these preconstruction surveys will be provided to FWC in accordance with the referenced specific condition.

3.4.4 Species Management

Based on previous discussions with FWC representatives regarding the BB I Solar Project, FWC has expressed a potential concern with birds mistaking the solar panel arrays for water bodies and colliding into the panels. The Project has been designed to minimize or avoid such concerns. The solar panels will be constructed of dark-colored materials and will be covered with antireflective coatings to reduce glare. Also, since the panels will use a sun tracker system, the panels will rotate during daylight hours, which should deter the birds from mistaking the panels as water bodies. Tampa Electric currently has solar panel arrays at BB I Solar site, TIA, and the Manatee Viewing Center and has not experienced bird collision issues at those facilities.

In accordance with the existing COC B.II.B.3 for the BB Power Station, in the unlikely event bird collision issues arise during Project operations, Tampa Electric will consult with FWC, FDEP, and other agencies to determine appropriate steps to minimize or mitigate such issues.

3.5 Socioeconomics

3.5.1 Site and Adjacent Property Uses

As shown in Figure 2-1, the properties adjacent to the Project Site currently consist of facilities associated with the BB Power Station to the north and west; the Caribbean Isles Mobile Home Park, boat storage, and vacant land proposed as a Hillsborough County fire station to the south; and undeveloped land to the east (across US 41). The remainder of the Caribbean Isles Mobile Home Park and the Apollo Beach community are located farther to the south. Other residentially developed areas are located east of US 41 (Waterset). An existing 230-kV transmission line corridor runs adjacent to the northeast portion of the proposed Project Site, and the existing BB I Solar project is located to the north and east.

Currently, the Project Site primarily consists of improved and unimproved pastureland.

3.5.2 Governmental Jurisdictions

The BB II Solar Project will be located within unincorporated Hillsborough County, north of the unincorporated area of Apollo Beach. The nearest incorporated municipality to the site is Tampa, located approximately 12 miles to the north-northwest. Unincorporated Brandon is located approximately 12 miles to the northeast, and incorporated Plant City is located more than 23 miles to the northeast.

The Project Site is also within the jurisdiction of the Tampa Bay Regional Planning Council (TBRPC) and the Southwest Florida Water Management District (SWFWMD).

3.5.3 Comprehensive Planning and Zoning

The following subsections describe the current future land use plan designation and the current and proposed zoning districts for the Project Site based on applicable sections of the Hillsborough County Comprehensive Plan and the Hillsborough County Land Development Code (LDC).

Based on the evaluation of existing conditions and consistency with the comprehensive plan, zoning, and land development regulations, the proposed BB II Solar Project is a compatible development on the Site and is not expected to result in impacts to the sociopolitical environment in the surrounding area.

3.5.3.1 Comprehensive Plan

The Local Government Comprehensive Planning and Land Development Regulation Act of 1985 (Chapter 163, Florida Statutes [Fla. Stat.]) requires counties and municipalities within the state to prepare comprehensive plans. The Project is located in the Residential-20 (RES-20) and Light Industrial (LI) land use designations of the Hillsborough County Future Land Use Map (FLUM). According to the future land use element of the Hillsborough County Comprehensive Plan, the intent of the RES-20 land use category is to designate areas for high density residential development as well as urban-scale neighborhood commercial, office, and mixed-use developments. The intent of the LI land use category is to provide areas for concentrated industrial development that involve the processing of hazardous and nonhazardous materials. Allowable uses include processing, manufacturing, and assembling of materials with associated

storage. Typical uses are identified as residential, neighborhood commercial, office uses, multipurpose projects, and mixed-use developments. The land use categories surrounding the Project Site are LI to the north, Residential-6 (RES-6) to the west, RES-20 and RES-6 to the south, and Community Mixed Use to the east. Figure 3-2 depicts the onsite and surrounding future land use map designations.

A review of the future land use element map series indicates a portion of the Project Site is located within the Coastal High Hazard Area (CHHA) overlay. The CHHA is defined as the area below the elevation of the Category 1 storm surge line as established by TBRPC using the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. The coastal management element of the comprehensive plan contains goals, objectives, and policies addressing the coastal planning area. The BB II Power Station is identified as a water-dependent use. Objective 7 addresses water-dependent and water-related uses. Policy 7.1 (in part) states, "The County shall give priority to locating water-dependent and water-related uses within the coastal planning area designed for industrial development on the Future Land Use Map."

According to the livable communities element of the Hillsborough County Comprehensive Plan, the entire BB Power Station site is located within the SouthShore Areawide community planning area. The community plan for the SouthShore area recommends strategies for growth and development in three main areas: transportation, environmental/natural, and cultural/historical. There are references to the Hillsborough County Corridor Preservation Plan map, Hillsborough County Greenways map, and SouthShore Historical Resources Inventory map. A review of these maps indicates roadway improvement in the vicinity of the site is the future six-laning of US 41. There are no greenways depicted in the vicinity of the site. No designated historical landmarks or properties eligible for local landmark designation or listing on the National Register of Historic Places (NRHP) are depicted in the vicinity of the site. The community vision and strategies do not change allowable uses, maximum densities, or other changes in land use approvals.

3.5.3.2 Zoning

As shown in Figure 3-3, the Project Site was previously zoned Planned Development, Residential-Multifamily, Conventional (RMC-16), and Manufacturing (M). The Planned Development zoning (06-2114) is for a multifamily development up to 360 units. Other

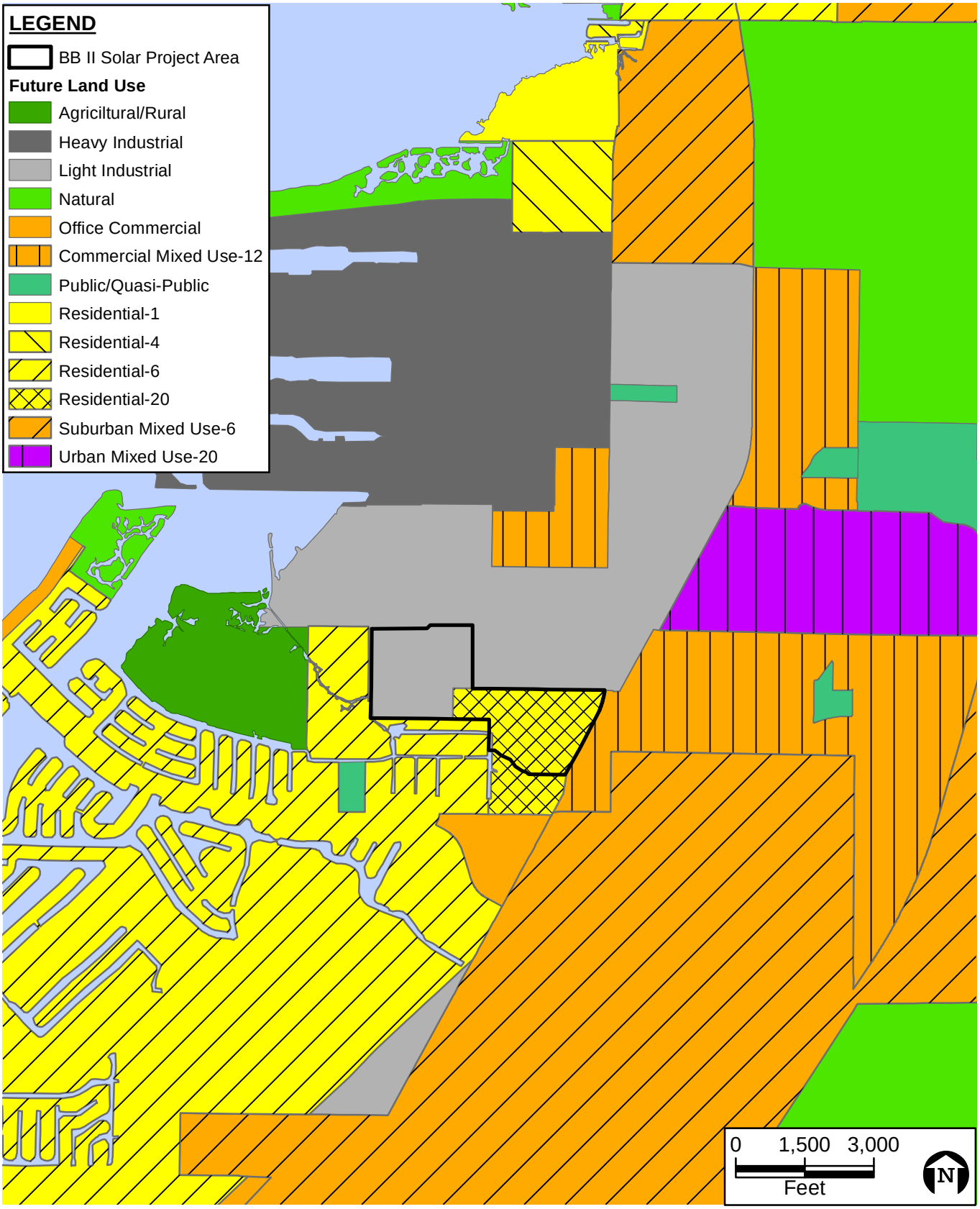


FIGURE 3-2.

FUTURE LAND USE MAP

Sources:Hillsborough County, 2016; ECT, 2017.

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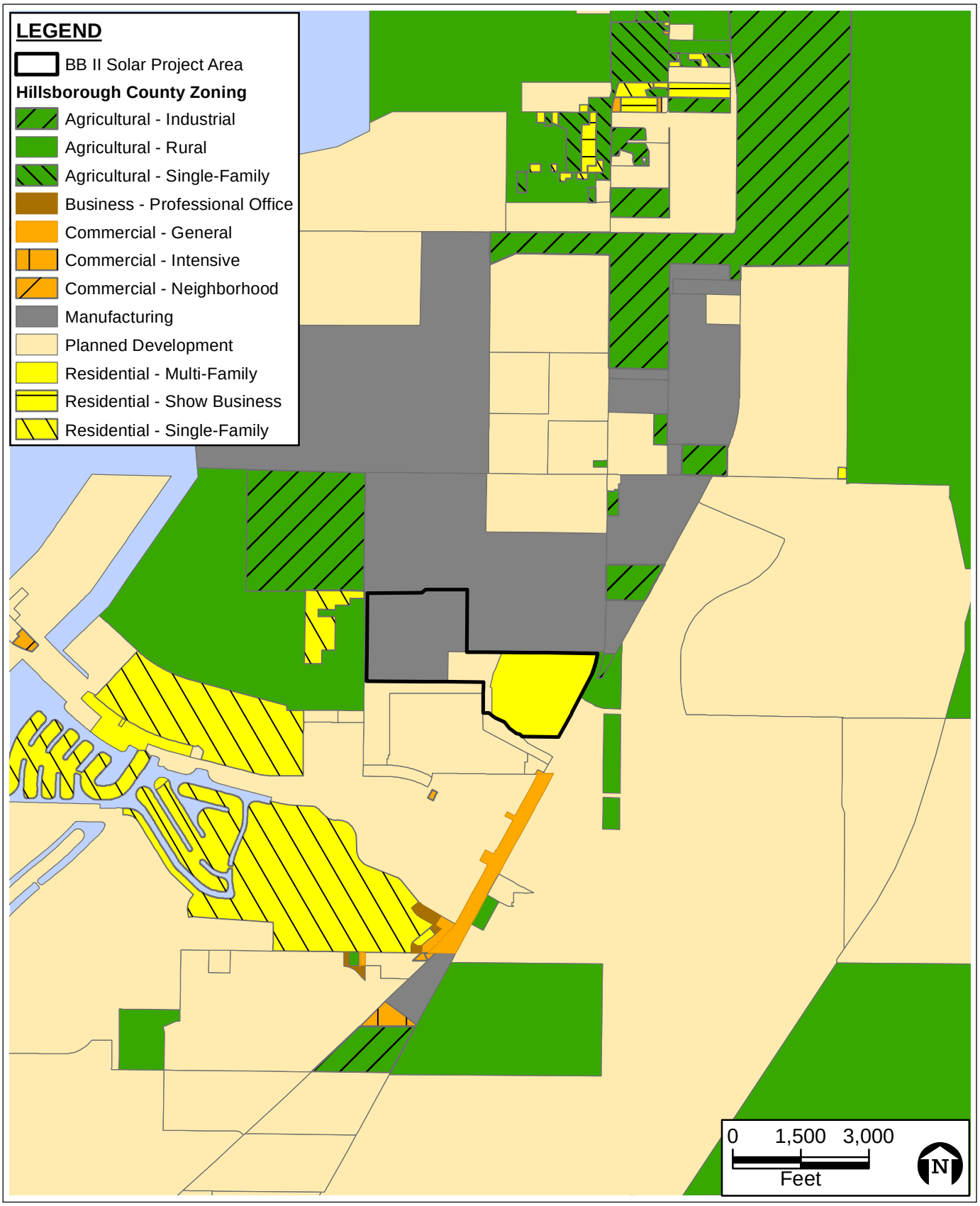

FIGURE 3-3.

PREVIOUS ZONING MAP

Sources:Hillsborough County, 2016; ECT, 2017.

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permitted uses are a club house, marina, and a marina sales and supply facility. The purpose of the RMC-16 zoning district is to provide the opportunity for areas of conventional, multifamily dwelling units in a medium-density living environment. The previous PD and RMC-16 zoning districts for a portion of the Site did not allow for development of the solar Project. The Project is allowed on the M zoning portion of the Site.

A request for a rezoning to the Agricultural, Single-Family Conventional (ASC-1) zoning district (Figure 3-4) was filed by Tampa Electric with Hillsborough County on June 6, 2017. At a meeting with Hillsborough County planners in September 2016, it was determined the proposed solar energy use can be accommodated within the existing future land use map category of RES-20. The interpretation is that solar energy production is allowed in Agricultural zoning districts, and these zoning districts are allowed in any land use category. Therefore, a FLUM amendment was not required, and an Agricultural zoning is appropriate. The proposed BB II Solar Project is allowed, pursuant to the LDC, as a conditional use. The rezoning request to ASC-1 was approved by Hillsborough County Board of County Commissioners on November 7, 2017. Appendix A contains a copy of the approval letter from Hillsborough County.

Section 6.11.125 of the Hillsborough County Comprehensive Plan specifically addresses solar energy production facilities as follows:

A. “In agricultural zoning districts, the host parcel shall be a minimum of five acres in size.
B. In agricultural zoning districts, a minimum setback of 50 feet shall be required from all boundaries of the site. This setback shall apply to all solar panels and other above-ground structures excluding transmission line poles.
C. In agricultural zoning districts, the solar panels shall be ground mounted and have a maximum height of 15 feet as measured when the panels are tilted to the design degree that creates the greatest overall height. All other structures shall conform with principal structure height requirements of this Code.

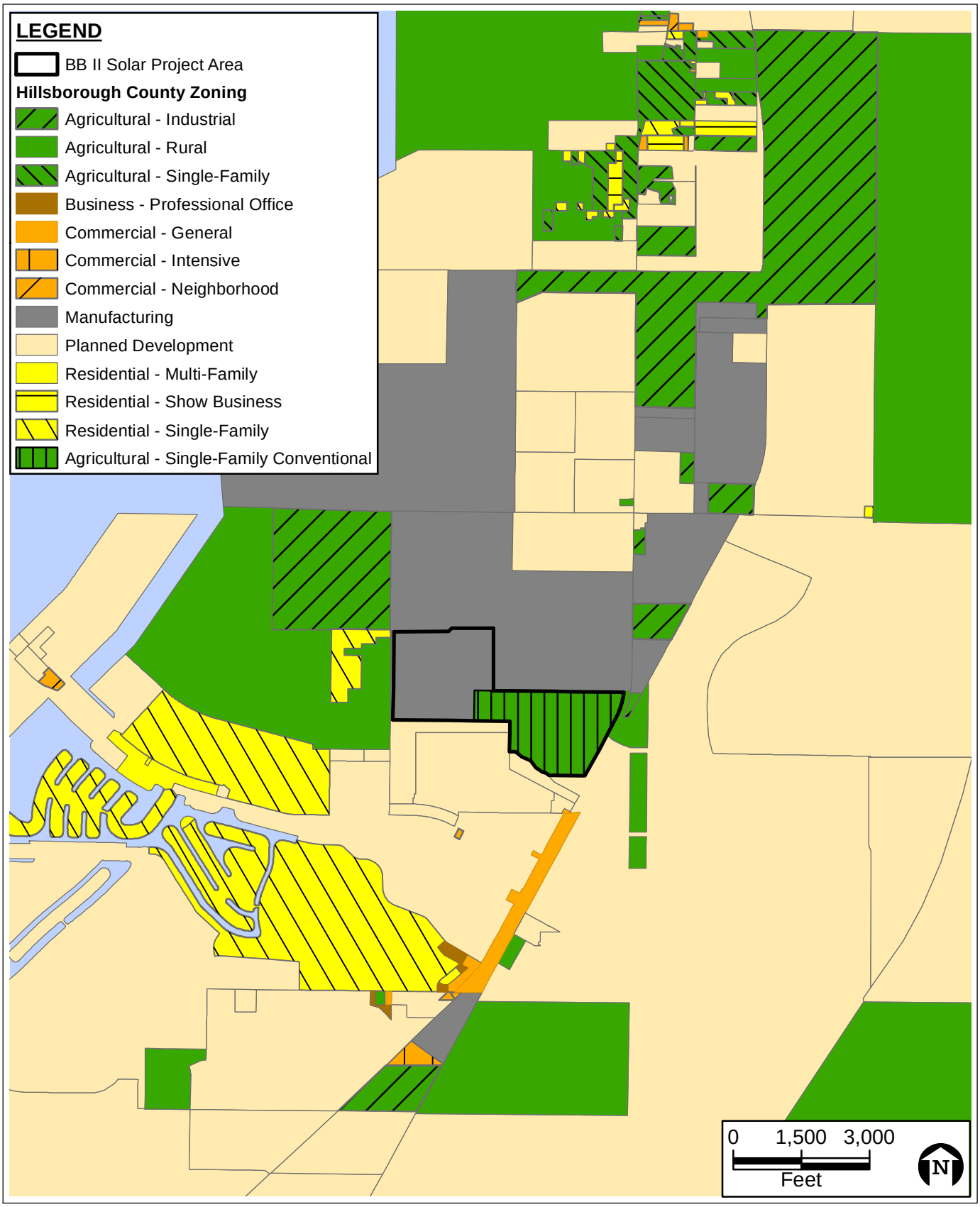

FIGURE 3-4.

CURRENT ZONING MAP

Sources:Hillsborough County, 2016; ECT, 2017.

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D. Ground-mounted facilities shall be enclosed with a security fence with a minimum height of six feet to discourage unauthorized entry. The fence location and maximum height shall comply with the requirements of this Code. Clearly visible warning signs shall be placed on the fence and/or site perimeter advising of potential high voltage hazards.

E. In agricultural zoning districts, the facility shall be classified a Group 1 use for buffering and screening purposes under this Code.

F. Where ground-mounted solar panels face abutting residentially developed or zoned parcels or public roadways and screening is not otherwise required under the provisions of this Code, the panels shall be made of glare reducing materials or shall be visually screened from said abutting parcels and roadways as follows:

   1. In agricultural districts, the screening shall be comprised of evergreen plants with a minimum opacity of 75 percent at the time of planting. The plants shall be six feet in height or the height of the solar panels, whichever is less. Alternatively, an increased setback of 100 feet may be provided in lieu of screening.
   2. The Administrator may waive these screening requirements in cases where equivalent or greater screening is provided by existing vegetation, fences or non-residential structures on the host parcel and/or abutting residential parcels or roadways.

G. Onsite power lines and interconnections shall be placed underground to the greatest extent possible.

H. Prior to preliminary site plan approval or construction plan where the preliminary process is waived, the applicant shall submit proof of notice to the utility company that operates the power grid where the solar energy production facility will be located of the intent to develop an interconnected power generation facility. Prior to site construction plan approval, the applicant shall submit proof of an executed interconnection agreement with the utility or other written proof of an agreement with the utility that construction can proceed.

I. A solar energy production facility shall be considered abandoned after a one-year period without energy production. The property owner shall be responsible for removing all energy production and transmission equipment and appurtenances within 120 days of abandonment.

J. Solar power generation facilities which require certification under the Florida Electrical Power Plant Siting Act shall be allowed only in Planned Development districts which specifically permit the use."

The proposed Project will comply with these specific requirements. With regard to solar panel glare, the PV panels will be constructed of dark-colored materials (usually blue or black) and will be covered with antireflective coatings to reduce glare.

Surrounding zoning districts are Agricultural Rural and Manufacturing to the north, Planned Development (land owned by Tampa Electric) to the west, Planned Development (approved for boat and recreational storage) and RMC-16 to the south, and Planned Development and Agricultural Rural to the east.

Construction and operation impacts of the proposed BB II Solar Project on land use on and in the vicinity of the Project Site are expected to be insignificant. The proposed Project use is allowed within the current land use category and will be allowed within the rezoned district. Also, the proposed Project use is located within the certified boundary of the BB Power Station site, which also encompasses the western and northern adjacent properties.

3.5.4 Transportation

Transportation facilities that will service the Project Site are proximate roadways. Major roadways within a 5-mile radius of the Project Site include US 41, Big Bend Road, Interstate 75 (I-75), and U.S. Highway 301 (US 301). US 41, I-75, and US 301 are identified as state principal arterials on the Hillsborough County 2025 Functional Classification Map. Big Bend Road is identified as a local minor arterial. The Project Site will be accessed from US 41 along the eastern boundary. The western portion of the Site will also potentially be accessed from US 41 via Big Bend Road and Dickman Road along the western boundary.

There is a full median cut on US 41 located approximately 50 ft north of the planned access road to the Project Site. The new access road for the Project will be paved, developed to county standards, and extended into the Project Site. The access will be a right-in, right-out only intersection with US 41.

No public or private aviation facilities are located within a 5-mile radius of the Project Site. The closest airport to the site is MacDill Air Force Base, approximately 6.2 miles to the northwest. Peter O. Knight airport is located approximately 9.5 miles to the north-northwest. The Wimauma Air Park Airport (private airport) is located approximately 7.8 miles to the southeast. TIA lies approximately 15 miles to the northwest.

During construction of the Project, construction labor force and delivery traffic will use the upgraded access from US 41 only. Entering and exiting traffic will be southbound, since the only access is right-in only. Delivery traffic is likely to exit I-75 at Big Bend Road and travel west to US 41 or travel south along US 41 from north of Big Bend Road. Construction worker traffic will follow a similar pattern as well as workers traveling north and then entering the Project Site from north of the access on US 41. These routes are expected to be adequate for Project construction traffic. Access to the Project Site will be controlled for security purposes. It is not anticipated there will be any required short-term closures of any roadways.

As noted previously, access to the Project Site is from US 41, located between Apollo Beach Boulevard and Big Bend Road. This portion of US 41 operated at level of service (LOS) C in 2014, according to the Hillsborough County 2014 LOS Report prepared by the Hillsborough Metropolitan Planning Organization. The report indicates the LOS D capacity is 39,800, and the annual average daily traffic was 29,000 in 2014. The county minimum LOS standard for state roads is LOS D.

Some temporary construction-related transportation impacts are expected as a result of movement of construction workers, machines, and equipment to and from the Project Site. The peak number of construction workers is anticipated to be 300, and 10 to 12 deliveries per day are expected. For the purposes of a transportation analysis, the following assumptions apply:

- Construction-related trip generation of 2.0
- Vehicle occupancy rate of 1.2
- 100-percent southbound trips (US 41 to access road)

All trips will have to access the Project Site from US 41. Access to the Project Site will be controlled.

Using these three listed assumptions, a total of 500 daily trips will be generated during the expected peak construction employment period with as many as an additional 20 to 24 daily trips for deliveries.

The original Big Bend Unit 4 Site Certification Application (SCA) transportation analysis found the roadway links and intersections within the traffic impact area would operate at acceptable LOS with the existing geometry. No additional roadway improvements were recommended, and none were required after construction of the plant entrances. Since 2010, the annual average daily traffic on the affected segment has increased only by 2,500 trips. Therefore, even at the peak of construction activities for the Project, the surrounding roadway network is expected to operate at an acceptable LOS.

During construction activities, construction vehicles (e.g., graders, bulldozers, dump trucks) will also access the Project Site. The majority of these heavier construction vehicles are anticipated to remain onsite for the duration of the initial construction activities, entering at initiation and exiting at completion. Since the majority of these vehicles are not expected to make daily trips to and from the Project Site, potential traffic impacts from these vehicles are expected to be minimal.

Operation of the Project will not create any additional employment. Therefore, there will be no impacts to transportation or any public facilities. Any required inspections and maintenance will be performed by existing Tampa Electric BB Power Station employees.

3.5.5 Public Services and Facilities

3.5.5.1 Medical Facilities

The nearest hospital to the Project Site is St. Joseph South Hospital located on Big Bend Road, approximately 2.4 miles to the east (approximately 3.1 miles by ambulance). South Bay Hospital is located in Sun City Center approximately 5 miles to the south-southeast. Tampa General Hospital is located approximately 11.1 miles to the north-northeast (approximately 17 miles by

ambulance). These three hospitals are equipped with emergency rooms, and Tampa General Hospital is equipped with a trauma center.

3.5.5.2 Fire Protection and Emergency Rescue Services

The nearest fire station to the Project Site is Fire Station 29 located at 626 Golf and Sea Boulevard in Apollo Beach, approximately 1.6 miles to the southwest. Fire and Rescue Station 3 (Summerfield) located at 10817 Big Bend Road, is approximately 4 miles to the east. Fire and Rescue Station 12 (Gibsonton), at 8612 Gibsonton Drive, is located approximately 4.6 miles to the northeast. Fire and Rescue Station 28 (Sun City Center), at 4551 Sun City Center Boulevard, is located approximately 5.6 miles to the southeast. There is a fire engine located at Fire Station 29, and fire trucks and rescue vehicles are assigned to the other nearby stations.

3.5.5.3 Police Protection

The Project Site is located in unincorporated Hillsborough County and receives police services from the Hillsborough County Sheriff's Department. The Project Site is located in District IV. The district office is located in Ruskin, approximately 8.6 miles to the south.

Approximately 15 to 20 officers per two, 12-hour shifts work out of the District IV office. Responses are prioritized according to urgency, with an estimated response time of less than 10 minutes for a routine response, with a considerably shorter time expected for high-priority emergencies. Because the Project Site lies in unincorporated Hillsborough County and is more than 10 miles from the nearest municipality, responses by city police departments under most all circumstances are not expected.

3.5.5.4 Potable Water, Sanitary Sewer, and Solid Waste

The Project Site is located in the urban service area of Hillsborough County, an area provided with public potable water supply and sanitary sewerage service. Although sanitary sewerage service is available in the general area, there will be no provision for such services onsite, since there will be no operational employees. Portable facilities will be provided during construction. There is no potable water service supplied to the Project Site, and no potable water services are requested, because there will be no employees onsite after construction.

Operation of the Project will not negatively affect essential services or facilities. While the Project will rely on local police and fire protection, the existing BB Power Station is already equipped with its own fire protection and other safety-related systems, and the Project Site will be secured with controlled, fenced access. Medical facilities in the surrounding area are sufficient to handle most emergencies involving the construction workforce.

There will be no connection to Hillsborough County sanitary sewer or potable water systems and, therefore, no impact to distribution lines or treatment capacities during construction or operation. Portable facilities will be made available during construction. Bottled water will be made available to construction workers.

Solid waste generated during construction activities will be disposed in accordance with applicable rules and regulations. Disposal of solid waste (i.e., typical municipal solid waste) will be in appropriate waste collection containers located around the construction areas; the waste will be transported offsite for disposal at an approved solid waste landfill (South County). Construction debris, such as scrap wood, concrete, and metal, will first be transported to a specified salvage storage area on the Project Site where they will be separated and stockpiled for potential salvage and recycling. Construction debris not salvaged or recycled will be transported to the South County Landfill.

Used oil from construction vehicles and equipment will be collected in appropriate containers and transported offsite for recycling or disposal at an approved facility. The approved disposal facility will be an existing facility that has been permitted for commercial recycling or disposal of used oils.

Individual contractors will be responsible for handling any hazardous materials required to perform their tasks and any resulting hazardous wastes. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes in accordance with federal and state hazardous waste regulations.

3.6 Archaeological and Historical Sites

A cultural resources assessment survey (CRAS) of the proposed BB II Solar Project Site of the approximately 96-acre eastern portion to be added to the BB certified site was conducted by Janus Research (Janus) in June and July 2017. A CRAS of the approximately 95-acre western portion of the Site currently within the BB certified site was also conducted by Janus in March 2016 as part of the BB I Solar project. The objectives of these surveys were to identify archaeological and historical resources within and adjacent to the Project Site and assess the significance of identified resources in terms of eligibility for existing in the NRHP. The CRAS was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as implemented by the Code of Federal Regulations (CFR), Title 36, Part 800 (Protection of Historic Properties, as amended); Chapter 267, Fla.Stat.; the minimum field methods, data analysis, and reporting standards embodied in the Florida Division of Historical Resources (FDHR's) Cultural Resource Management Standards and Operations Manual (February 2003); and Chapter 1A-46, F.A.C. (Archaeological and Historic Report Standards and Guidelines). Appendix B provides a copy of the CRAS for the approximately 96-acre eastern portion of the Project Site and a copy of the letter from FDHR concurring with the findings of the CRAS that no additional work is recommended. Appendix C provides a copy of the CRAS and FDHR concurrence letter for the western portion of the Project Site, which also covered the area for the BB I Solar project and was previously provided in the request for site certification amendment for that project.

According to 36 CFR 800.16(d) of the NHPA, the area of potential effect (APE) for the CRAS is, "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." The survey for archaeological sites typically focuses on identifying and evaluating resources within the geographic limits of the proposed action and its associated ground-disturbing activities. The APE for historical resources includes the area of the proposed activities as well as the areas within which potential visual or noise effects could be observed. As shown in Figures 3-5 and 3-6 for the eastern and western portions of the Site, respectively, the archaeological APE for the CRAS included the Project Site where the proposed PV solar panel arrays, inverter skids, and access

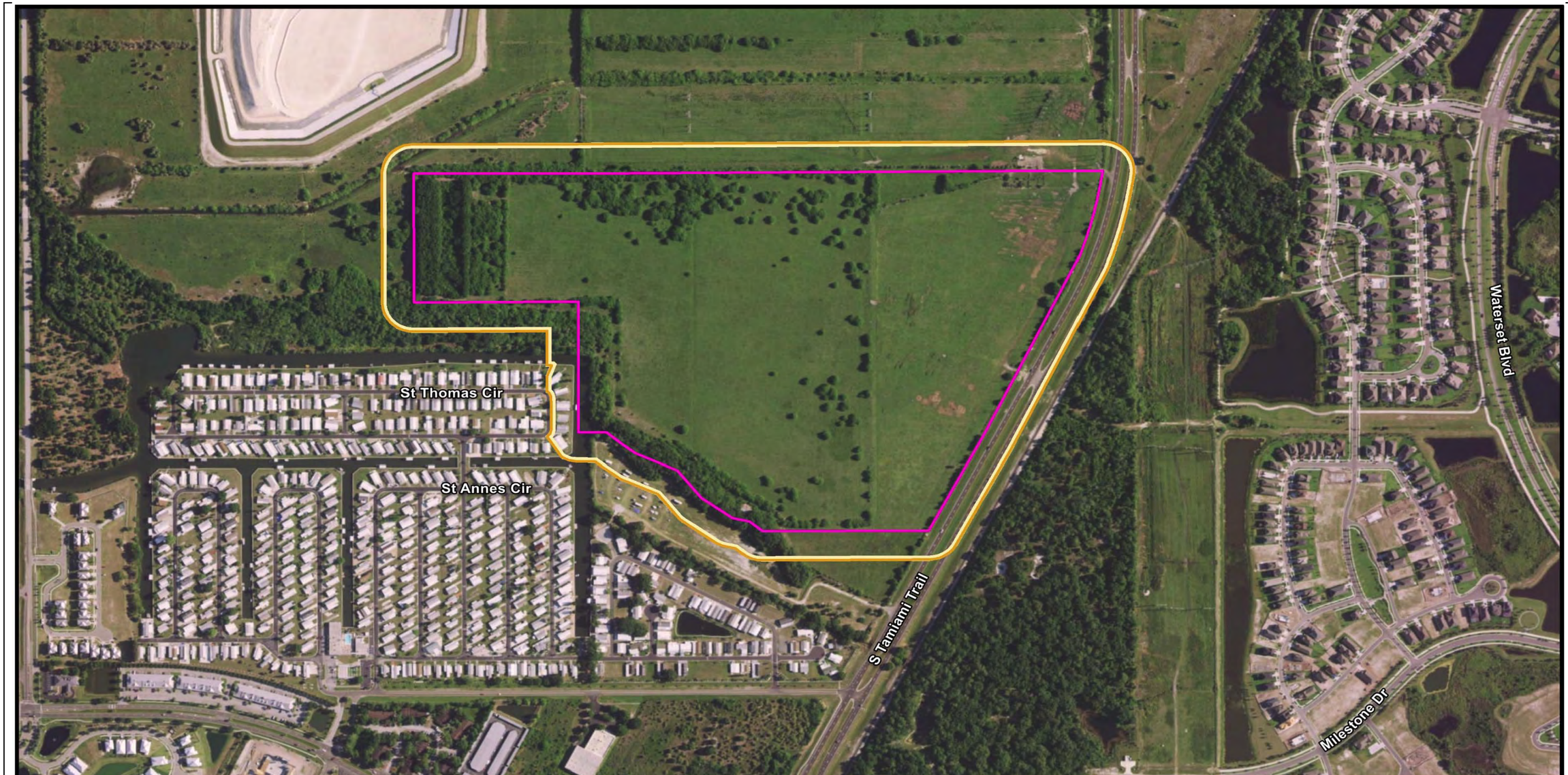

Figure 2: Project APE

SLA-75, LLC:
ABH Project

Archaeological APE
Historic Resources APE

Hillsbough County
Meters 0 100 200
Feet 0 250 500

FIGURE 3-5.

PROJECT APE FOR EASTERN PORTION OF THE SITE

Source: Janus, 2017.

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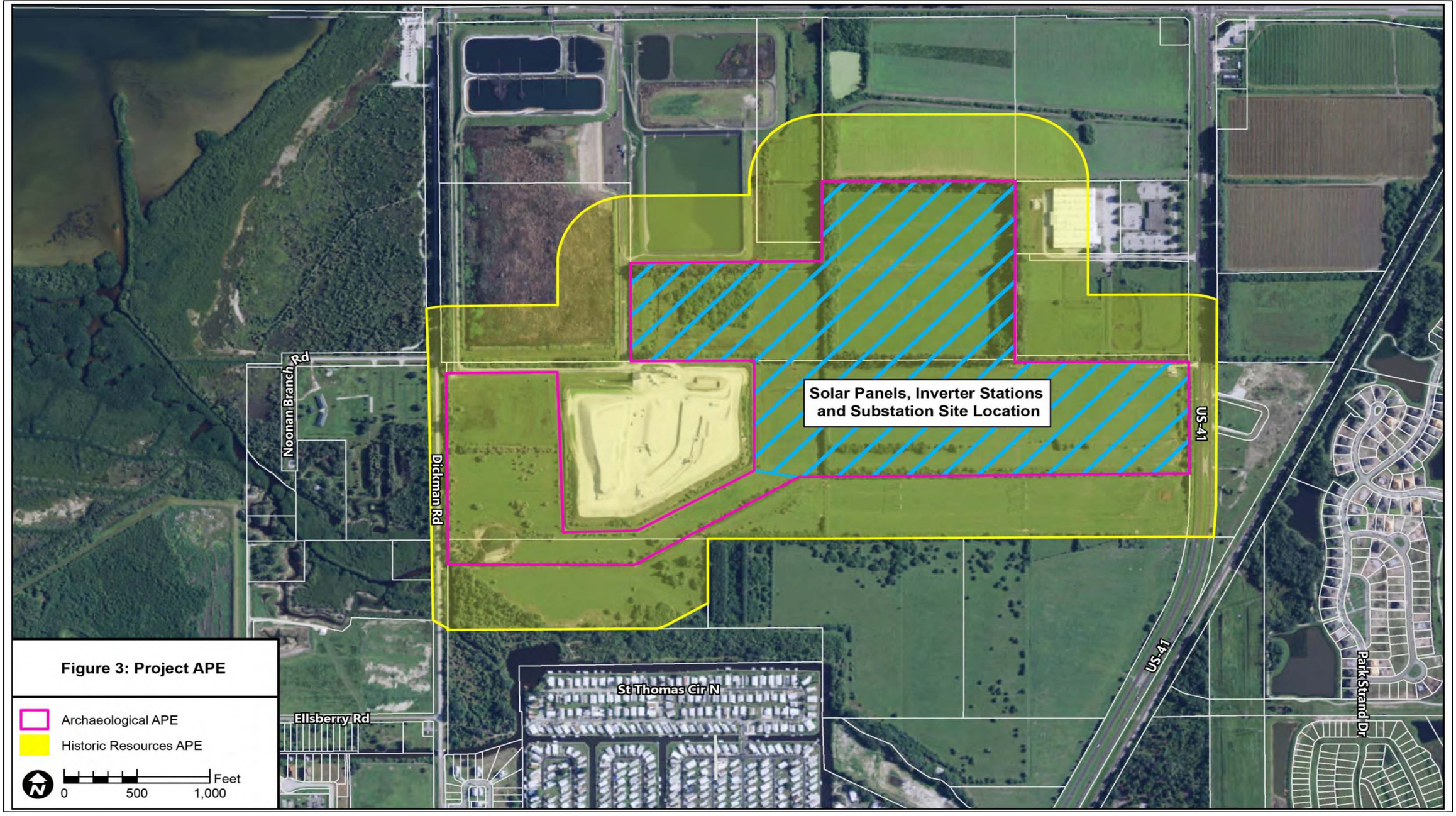

FIGURE 3-6.

PROJECT APE FOR WESTERN PORTION OF THE SITE

Source: Janus, 2016.

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roads will be located. The historical APE consisted of adjacent parcels up to 150 ft from the edge of the Project Site to allow for the consideration of potential visual or noise impacts.

As an initial step in the CRAS, an archaeological and historical literature and background information search pertinent to the Project Site was conducted to determine the type, chronological placement, and location of known cultural resources within the APE. This search included a review of Florida Master Site File (FMSF) data, previous surveys, property appraiser records, and historical research material for the Project Site, and no archaeological sites have been recorded within the Project Site. The FMSF search did not identify any previously conducted cultural resources survey within the Project Site. The FMSF data identified three previously recorded archaeological sites approximately 0.85 mile northwest of the Project Site.

The FMSF background search also identified no previously recorded historical resource within the historical resource APE.

To assess the probability for archaeological sites, the Archaeological Site Predictive Model for Hillsborough County developed by Janus was reviewed for the Project Site. The majority of the archaeological APE was indicated as having a low probability for archaeological sites. The areas adjacent to Newman Branch along the southern and western perimeters of the Project Site were indicated as having a moderate probability for archaeological sites (see Figure 3-7 and 3-8). Based on these findings, an archaeological field survey consisting of a pedestrian survey and subsurface testing was conducted. As shown in Figures 3-7 and 3-8, a total of 28 and 12 shovel tests were excavated systematically in the eastern and western portions of the Site, respectively, at 50-meter intervals within the moderate site potential zones and at selected locations in the low potential site zones. In addition, systematic surface inspections were conducted for the entire archaeological APE. No cultural resource material was recovered from the subsurface shovel test efforts.

The historical field survey resulted in identification of an undocumented portion of US 41 (8HI12129) within the historical resources APE. The portion of US 41 located within the APE runs in a roughly southwest/northeast direction south of Big Bend Road and north of Apollo Beach Boulevard. The length of US 41 within the Project APE is approximately 0.4 mile and

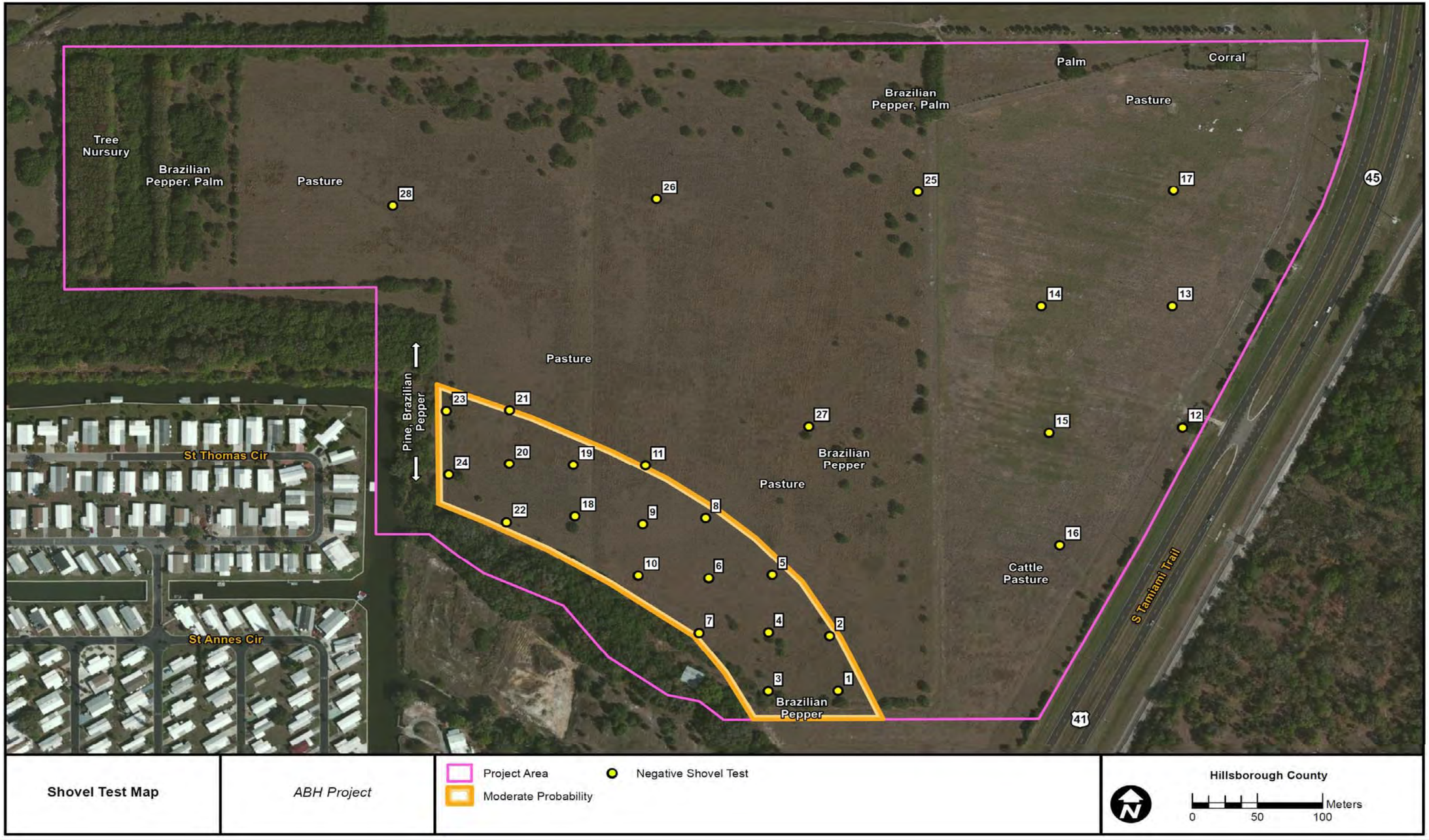

FIGURE 3-7.

MODERATE ARCHAEOLOGICAL PROBABILITY ZONES, SHOVEL TEST LOCATIONS, AND CURRENT CONDITIONS WITHIN THE ARCHAEOLOGICAL APE FOR THE EASTERN PORTION OF THE SITE

Source: Janus, 2017.

TECO TAMPA ELECTRIC AN EMERA COMPANY

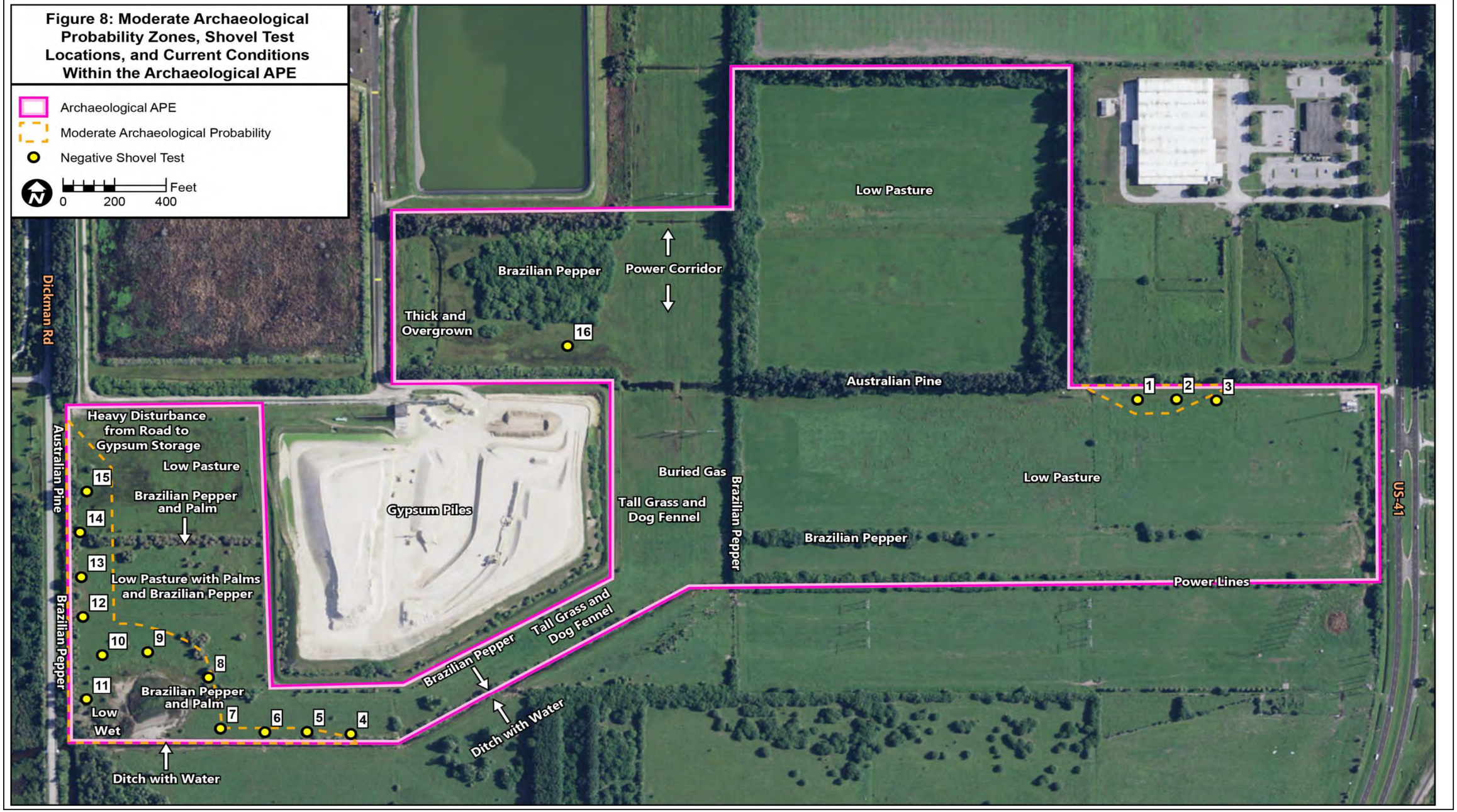

FIGURE 3-8.

MODERATE ARCHAEOLOGICAL PROBABILITY ZONES, SHOVEL TEST LOCATIONS, AND CURRENT CONDITIONS WITHIN THE ARCHAEOLOGICAL APE FOR THE WESTERN PORTION OF THE SITE

Source: Janus, 2016.

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consists of a four-lane vehicular roadway split into two northbound and two southbound lanes and separated by a large grassy median. This small portion of the roadway also features one cross-over across the median. The roadway exhibits modern asphalt paving and marking, modern signage and lampposts, and the addition of bicycle-only lanes on both the northbound and southbound sides. Large powerlines also traverse the roadway in this location. The segment of US 41 (8HI12129) within the APE is shown on a current aerial in Figure 3-9.

The portion of US 41 within the Project APE was constructed circa 1915 and originally constituted nothing more than a 9-ft-wide shell road paid for by a $30,000 local bond issue. Because of the growing importance of truck farming, this road and others were built to facilitate transportation of produce to local markets throughout the 1920s (http://visitruskin.com/Articles/history_of_ruskin.htm). The construction of Tamiami Trail (US 41) began in 1923 and was completed in 1928.

A 7.7-mile-long portion of US 41 located approximately 2.25 miles north of the current Project APE was previously documented by Archaeological Consultants, Inc., as part of the 2013 CRAS of US 41 from Kracker Avenue to South of State Road 676 (Causeway Boulevard) Project Development and Environment Study, Hillsborough County, Florida. This survey found US 41 to be ineligible for inclusion in the NRHP, and the State Historic Preservation Office concurred with this finding on February 10, 2014.

Like the previously documented portion of US 41 to the north, the portion of the roadway within the Project APE has been drastically altered by nonhistorical improvements and widening. This segment of the roadway has undergone a series of substantial transformations based on modern transportation needs, such that it no longer conveys its historical appearance. Within the APE, there is no evidence the roadway is historic. This section of the roadway within the Project APE exhibits similar characteristics to a section to the north that has already been determined NRHP-ineligible by the State Historic Preservation Office. Based on its compromised historical physical integrity, which greatly affects its significance, the section of US 41 located within the Project APE is considered ineligible for listing in the NRHP under Criteria A, B, C, or D, either individually or as part of a historical district.

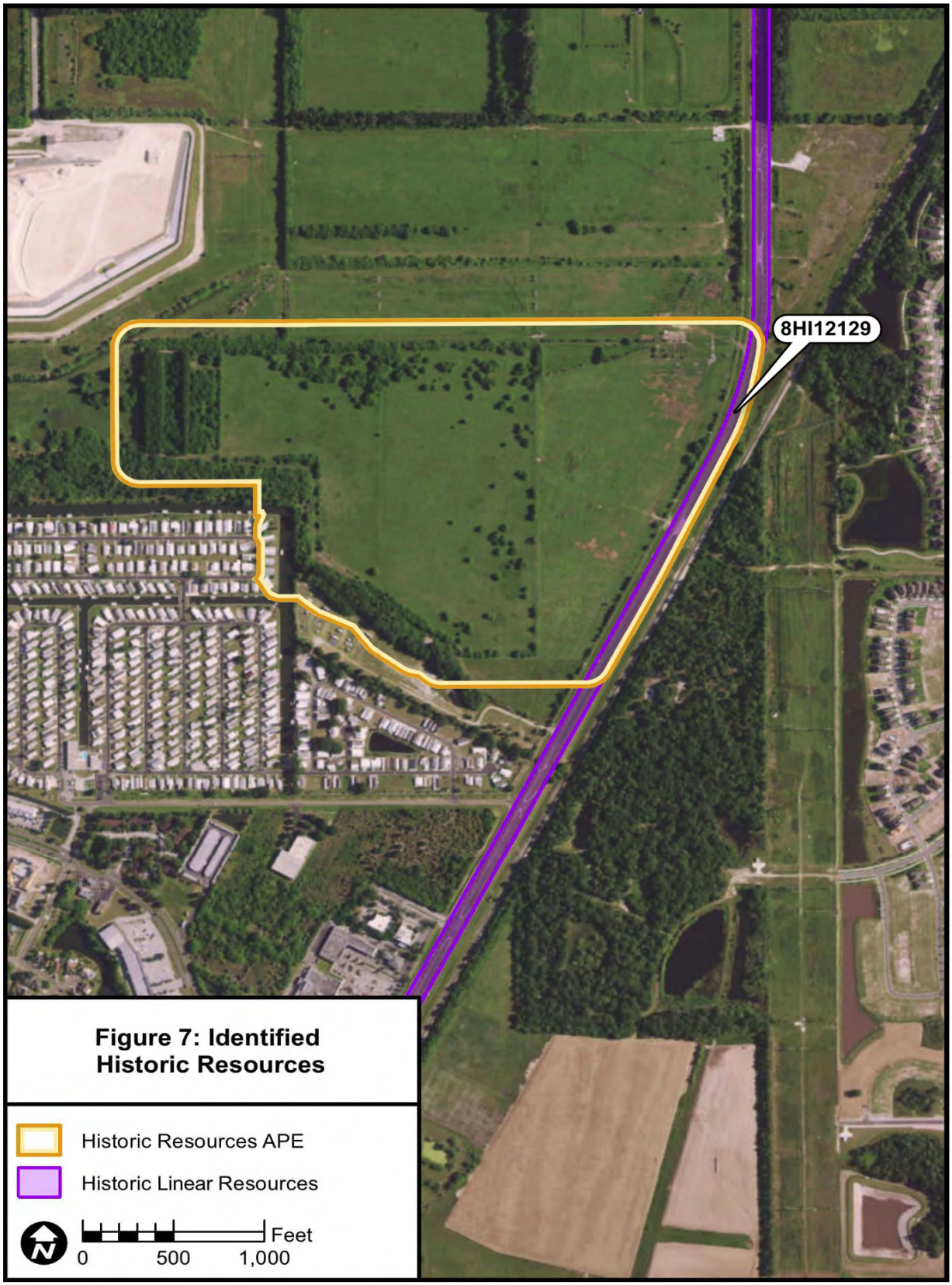

FIGURE 3-9.

IDENTIFIED HISTORICAL RESOURCES

Source: Janus Research, 2017.

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No newly or previously recorded archaeological sites were identified within the Project APE. Shovel tests were excavated within the Project APE during the surveys. No cultural material was recovered in the tests. The historical field survey resulted in the identification of an undocumented portion of US 41 (8HI12129) within the historical resources APE. This section of US 41 (8HI12129) is considered ineligible for listing in the NRHP. No further work is recommended.

Although unlikely, should the Project development activities uncover archaeological materials, the activity in the area of the material will be stopped, and the FDHR will be consulted to determine appropriate action, consistent with the current COCs (i.e., B.III.B) for the BB Power Station Unit 4.

Appendix A

Hillsborough County Rezoning Approval Letter

Hillsborough County Florida

DEVELOPMENT SERVICES
PO Box 1110 Tampa, FL 33601-1110

BOARD OF COUNTY COMMISSIONERS
Victor D. Crist
Ken Hagan
Al Higginbotham
Pat Kemp
Lesley "Les" Miller, Jr.
Sandra L. Murman
Stacy R. White
COUNTY ADMINISTRATOR
Michael S. Merrill
COUNTY ATTORNEY
Chip Fletcher
INTERNAL AUDITOR
Peggy Caskey

CHIEF DEVELOPMENT & INFRASTRUCTURE SERVICES ADMINISTRATOR
Lucia E. Garsys

November 7, 2017

Reference: **RZ-STD 17-1034 APB**
Tampa Electric Company
W/S of N. US Hwy. 41, 4,026' +/-
S/O Big Bend Rd./51555.0000 + Multiple

Joe Kickliter
Teco Engery
702 N. Franklin St.
Tampa, FL 33602

Dear Applicant:

At the regularly scheduled public meeting on November 7, 2017, the Board of County Commissioners **approved** your request for rezoning the tract of land described in your application from RMC-16 & PD (06-2114) (Residential, Multi-Family Conventional and Planned Development (06-2114)) to ASC-1(R) (Agricultural, Single-Family Conventional (Restricted)).

Please keep this letter for your records. If you have any questions regarding this, please feel free to contact Brian Grady at 813-276-8343 or by email at GradyB@HCFLGov.net.

Sincerely,

Joseph Moreda, AICP,
Zoning Administrator

JM/ml

FINAL RESTRICTIONS OF APPROVAL	PETITION NUMBER:	RZ-STD 17-1034 APB
	MEETING DATE:	November 7, 2017
	DATE TYPED:	November 8, 2017

Staff recommends approval of the request, subject to the following restrictions:

- Permitted uses shall be limited to a solar energy production facility.

Appendix B

Cultural Resources Assessment Survey and FDHR Concurrence Letter for Eastern Portion of the Project Site

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Kathleen Hoffman
Vice President
Janus Research
1107 N. Ward Street
Tampa, FL 33607

August 29, 2017

RE: DHR Project File No.: 2017-3667, Received by DHR: July 28, 2017
RE: Cultural Resources Assessment Survey for the ABH Property in Hillsborough County, Florida

Dear Dr. Hoffman:

In June and July 2017, Janus Research conducted the above referenced survey on behalf of Environmental Consulting & Technology, Inc. (ECT). Our office proceeded to review this report with the expectation that ECT will be engaging in permitting processes that will require this office to comment on possible effects to cultural resources listed, or eligible for listing, in the *National Register of Historic Places (NRHP)*, or otherwise of historical, architectural, or archaeological significance. We recommend at the time such actions are taken, a copy of this letter be forwarded to the permitting agency(ies) with the application. This letter does not constitute a review under Section 106 of the *National Historic Preservation Act.*

Janus identified no new or previously recorded archaeological sites within the project area during their investigation. Janus did identify an undocumented portion of US 41/Tamiami Trail (8HI12129) within the project area. Janus recommended this section of US 41/Tamiami Trail as ineligible for listing in the National Register. Janus recommended no additional work.

Based on the information provided, our office concurs with these determinations and finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.*

If you have any questions, please contact me by email at *Jason.Aldridge@dos.myflorida.com*, or by telephone at 850.245.6344 or 800.847.7278.

Sincerely,

Jason Aldridge
Deputy State Historic Preservation Officer
for Compliance and Review

CULTURAL RESOURCES ASSESSMENT SURVEY OF THE ABH PROJECT HILLSBOROUGH COUNTY, FLORIDA

Prepared for:

Environmental Consulting and Technology, Inc.
1408 N. Westshore Boulevard, Suite 115
Tampa, Florida 33607

Prepared by:

Janus Research
1107 N. Ward Street
Tampa, Florida 33607

July 2017

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INTRODUCTION

A cultural resource assessment survey (CRAS) of the ABH Project in Hillsborough County, Florida was conducted for Environmental Consulting & Technology, Inc. (ECT) In June and July of 2017. The objective of this survey was to identify cultural resources located within and adjacent to the project area and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places* (National Register) according to the criteria set forth in 36 CFR Section 60.4. The project area is located in Apollo Beach in unincorporated Hillsborough County (Figure 1). The ABH project area covers approximately 96.9 acres in Sections 15 and 22 of Township 31, South, Range 19 East on the Gibsonton (1956 Photorevised [PR] 1987) United States Geological Survey (USGS) quadrangle map.

This cultural resource assessment survey was conducted as part of due diligence and in anticipation of a future Environmental Resources Permit (ERP) and/or a U.S. Corps of Engineers permit that will require compliance with either 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* (incorporating amendments effective August 5, 2004); the revised Chapter 267, *Florida Statutes (F.S.);* or both.

No previously recorded or newly recorded archaeological sites were identified within the project APE. One historic linear resource, US 41/Tamiami Trail (8HI12129), is located within the historic resources APE and is considered National Register–ineligible.

AREA OF POTENTIAL EFFECT

According to 36 CFR 800.16(d), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking as well as its geographical setting, and must include measures to identify and evaluate both archaeological and historical resources. The project APE, therefore, considers the improvements that will be implemented as part of the proposed project and the extent of potential ground disturbance as well as the setting and character of the project area. The survey for archaeological sites typically focuses on identifying and evaluating cultural resources within the geographic limits of the proposed action and its associated ground disturbing activities. The identification and evaluation of structural resources generally includes an examination of the project area as well as adjacent areas to consider visual and auditory impacts.

The ABH Property is located within an area of Hillsborough County consisting predominantly of undeveloped land with residential areas in the environs. As currently proposed, the archaeological APE for the ABH project consists of the footprint of the 96.9 acres as shown on Figure 2. The historic APE includes this acreage as well as a larger area to the north, south, and west in order to accommodate any future improvements. The historic resources APE includes adjacent parcels up to a distance of 150 feet from the edge of the project area to allow for the consideration of potential visual impacts (Figure 2).

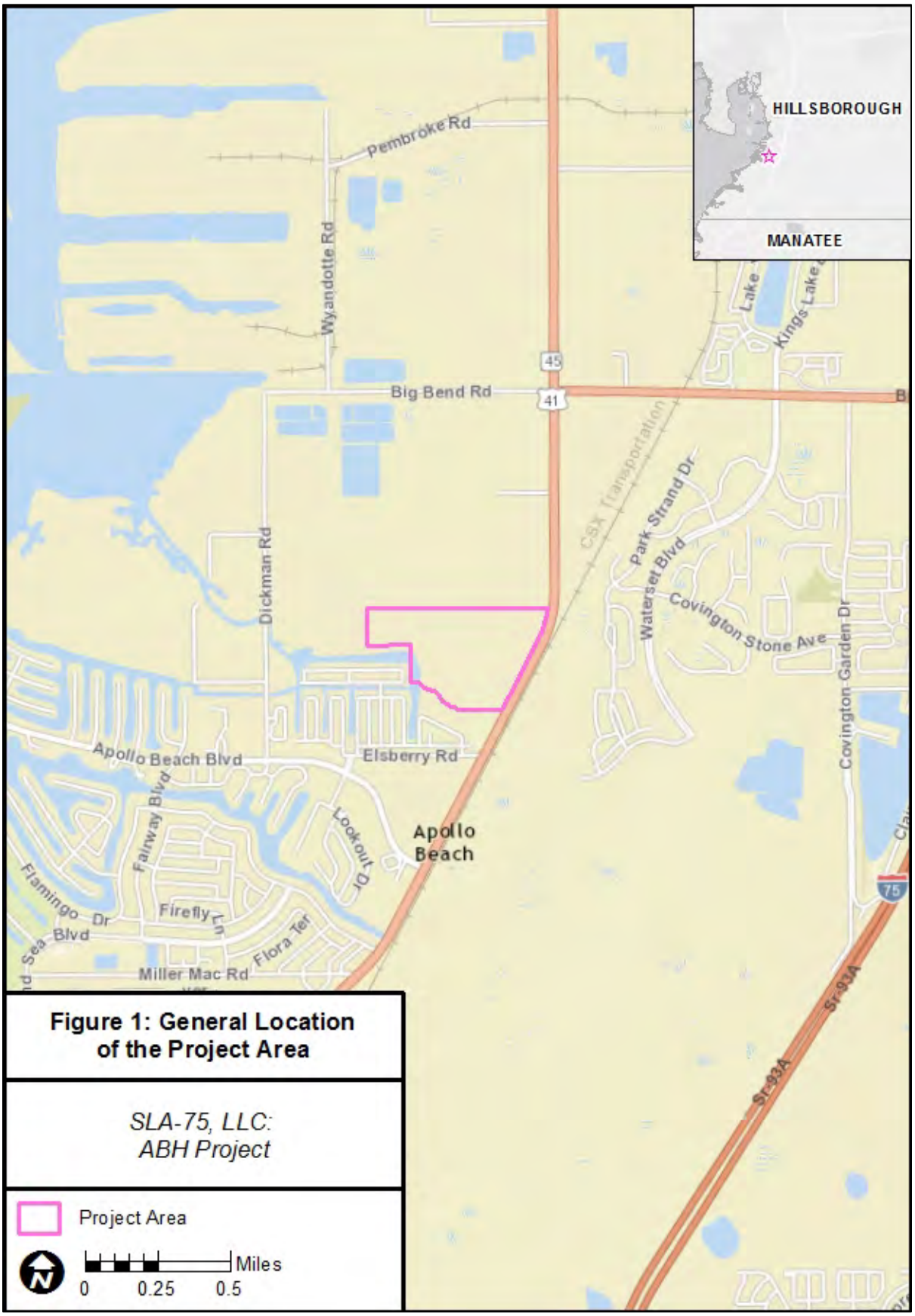

Figure 1: General Location of the Project Area

SLA-75, LLC: ABH Project

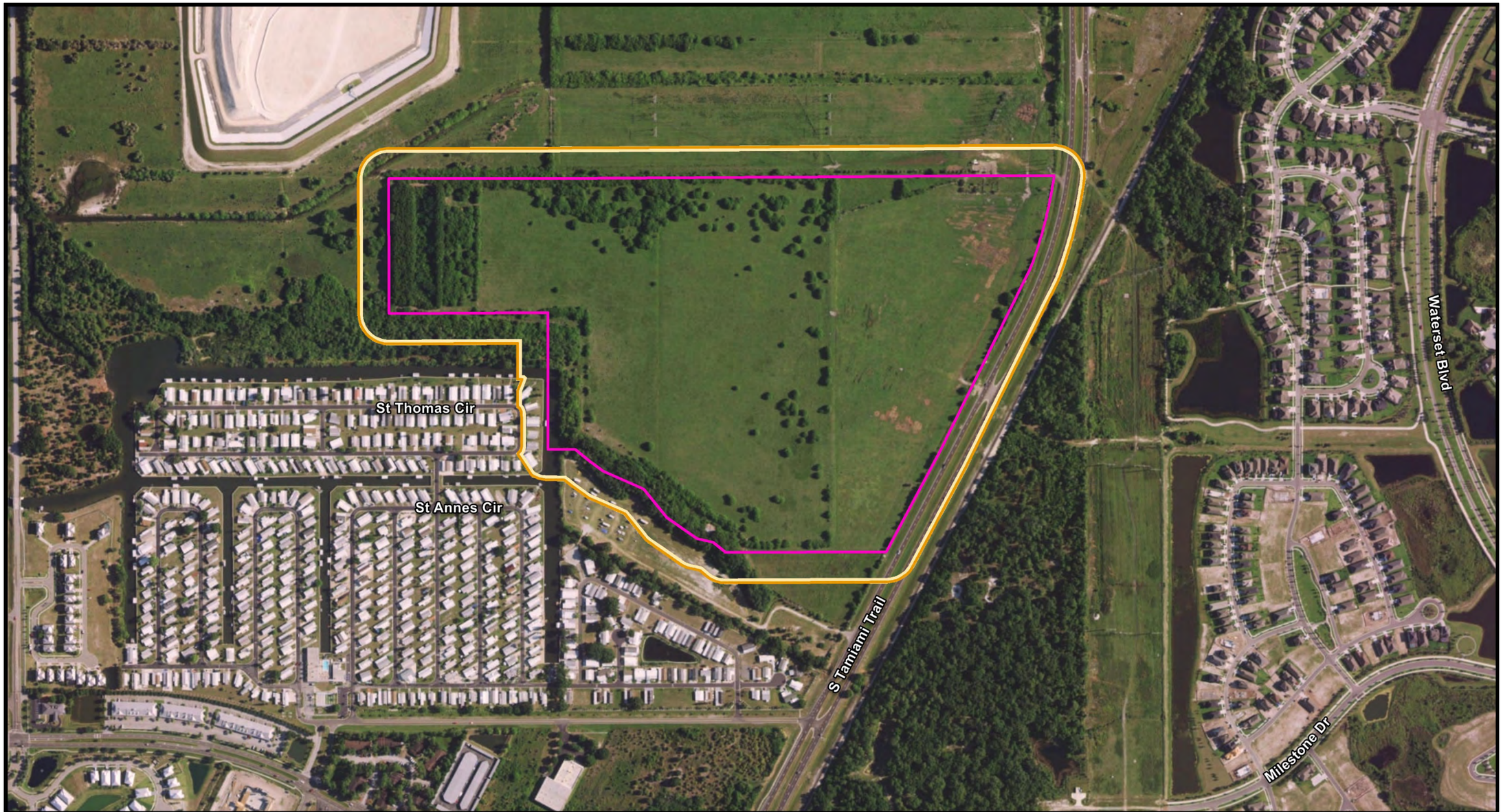

Figure 2: Project APE

SLA-75, LLC:
ABH Project

Archaeological APE
Historic Resources APE

Hillsbough County
Meters
0 100 200
Feet
0 250 500

ENVIRONMENTAL SETTING

Environmental and ecological factors had a direct influence on the choice of areas used and occupied by precontact and historic period populations. These factors change over time and are used to reconstruct past conditions that influenced early human occupation of the project area.

The project area is located in extreme western Hillsborough County within the Gulf Coast Lowlands physiographic region of the Atlantic Coastal Plain (White 1970: Plate 1-B; Rupert 1991:1). The Gulf Coastal Lowlands extend along the Gulf Coast of Florida from the western edge of the panhandle south to the Caloosahatchee River and west of a series of upland ridges. They contain a limestone substrate and tend to be low, flat or gradually sloping toward the coast, and often swampy (Rupert 1991:1).

Some topographic relief in this region is supplied by relict sand dunes of late Pleistocene age. Elevations range from sea level to a maximum of 60 feet above mean sea level (AMSL) within Dixie County (Rupert 1991:2). Elevations within the project area range from five to ten feet above mean sea level and slope down to the west toward Tampa Bay. The Alafia River lies four miles north of the project area, while the Little Manatee River is five miles to the southwest.

Major permanent streams and surface drainage systems in Hillsborough County include the Withlacoochee River, North Prong Alafia River, and the Peace River. The Withlacoochee River drains the northern part of the county, the North Prong Alafia River drains the western part, and the Peace River drains the central part to the Highlands County line. The Kissimmee River drains a large area in the southeastern part of the county. The many branches and creeks are interconnected to complete the drainage of the county.

The surface lithology of Hillsborough County is composed primarily of undifferentiated deposits of sand and clay of Pleistocene and Recent age, which are underlain by Miocene age limestones of the Tampa/St. Marks Formation, and by the Suwannee Limestone of Oligocene age (Knapp 1980). Limestone is present at or near the ground surface around the shore of Tampa Bay and along the central and lower portions of the Hillsborough River (Duerling and MacGill 1981; Knapp 1980). Precontact peoples exploited exposures of silicified limestone, or chert, as raw material for stone tool manufacture (Upchurch et al. 1982).

In Hillsborough County, three major rivers drain the uplands and discharge into Tampa Bay: the Hillsborough River, the Alafia River, and the Little Manatee River. Combined, these three rivers drain more than 1,300 square miles. The surface drainage is toward Old Tampa Bay, Hillsborough Bay, and Tampa Bay.

There is a relatively high degree of micro-environmental diversity within the region, particularly in the major river basins. This diversity would have provided a variety of plant and animal resources suitable for exploitation by precontact and early historic inhabitants. Vegetation in the project area is fairly homogeneous and consists primarily of unimproved

pasture (79 acres, or 82 percent), with scattered pockets of Brazilian Pepper and isolated occurrences of palm and pine.

Pasture and flatwoods communities are generally characterized as having a relatively low ecological diversity that offered little in the way of subsistence resources to precontact hunters and gatherers (e.g. Milanich and Fairbanks 1980:17; Larson 1980:56). In the ABH project area, ditches are present that were dug to improved drainage, and a short segment of Newman Branch, with associated hardwood hammock, is present along the southwestern edge of the tract.

Hardwood hammocks along the springs, streams, creeks, and rivers, would have provided excellent forage for deer, which, in turn, would have attracted precontact hunters. A variety of edible plants could have been collected including persimmon, saw palmetto berries, oak and hickory nuts, pigeon plum, beautyberry, wild grapes, dahoon holly, arrowroot, and wild coffee. Ponds and marshes would have contained a number of edible aquatic plants including arrowroot, arrowhead, duck potato, and various rushes.

Physical Environment of the Project Area

A review of the GLO historic plat maps (Florida Department of Environmental Protection [FDEP] 1848) and surveyors' field notes (FDEP 1847) was conducted to examine past environmental conditions within the vicinity of the project area. The project area is located in an area illustrated on the historic plat map and described in the surveyors' notes as 3rd rate pine. An unnamed creek is located along the southwestern border of the project area. No cultural features or anomalies (roads, mounds, etc.) were noted on the property by the surveyor.

The drainage characteristics of soil is considered in the formulation of site location predictive models. *The Soil Survey of Hillsborough County* (United States Department of Agriculture [USDA] 1989) identified no soils or vegetation typically associated with high archaeological probability. The soil survey noted three soil types, all of which are poorly drained. The vegetation associated with these soils are summarized below.

Wabasso fine sand supports longleaf pine and slash pine, with an understory of lopsided indiagrass, gallberry, saw palmetto, pineland threeawn, and wax myrtle (USDA 1989:48–49). Malabar fine sand is located in low-lying sloughs and shallow depressions on the flatwoods and supports cabbage palm, longleaf pine, and slash pine, with an understory of broomsedge, bluestem, inkberry, maidencane, saw palmetto, and wax myrtle (USDA 1989:31–32). A very small portion of the project area contains Myakka fine sand. Vegetation consists of longleaf pine and slash pine, with an understory of gallberry, running oak, saw palmetto, pineland threeawn, and waxmyrtle (USDA 1989:32–33).

A review of historic aerial photographs from 1957 and 1968 (University of Florida, George A. Smathers Libraries 2017) was conducted to examine land use through time. In 1957 the project area and surrounding lands were undeveloped; the project area does show drainage ditches throughout the property, and US 41 is evident to the east. By 1968 the same ditches are also evident. Construction of the Apollo Beach development, which is also seen on the 1968 aerial,

is shown to the south and west of the project area, and construction of the Big Bend Power Station was underway. Today, the project areas remains undeveloped and comprises pasture land and a series of drainage ditches.

PRECONTACT OVERVIEW

People have inhabited Florida for at least 14,000 years. The earliest cultural periods are pan-Florida in extent, while later cultures exhibited unique regional traits. The following discussion of the precontact time period is included in order to provide a framework within which the local archaeological record can be understood.

Paleoindian Period (12,000–7500 BC)

The earliest period of precontact cultural development dates from the time people first arrived in Florida. The greatest density of known Paleoindian sites is associated with the rivers of northern and north-central Florida where distinctive lanceolate projectile points and bone pins have been found in abundance in and along the Santa Fe, Silver, and Oklawaha Rivers (Dunbar and Waller 1983). The majority of these have been found at shallow fords and river crossings where the Native Americans presumably ambushed Pleistocene mammals.

The prevailing view of the Paleoindian culture, a view based on the uniformity of the known tool assemblage and the small size of most of the known sites, 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.

Archaic Period (7500–500 BC)

The Archaic period of cultural development was characterized by a shift in adaptive strategies stimulated by the onset of the Holocene and the establishment of increasingly modern climate and biota. It 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)

Cultural changes began after about 8000 BC in the late Paleoindian times with the onset of less arid conditions, which correlate with changes in projectile-point types, specifically a transition from lanceolate to stemmed varieties. Beginning about 7500 BC, Paleoindian points and knives were replaced by a variety of stemmed tools, such as the Kirk, Wacissa, Hamilton, and Arredondo types (Milanich 1994:63).

Kirk points and other Early Archaic diagnostic tools are often found at sites with Paleoindian components, suggesting that Early Archaic peoples and Paleoindians shared similar lifeways (Daniel and Wisenbaker 1987:33–34). However, it appears that the distribution of Early Archaic artifacts is wider than that of Paleoindian materials. Sites having both Paleoindian and Early Archaic components have been largely restricted to natural springs and the extensive perched water sources of northern Florida.

With the wetter conditions that began about 8000 BC and the extinction of some of the Pleistocene animal species that helped to sustain earlier populations, Paleoindian subsistence strategies were no longer efficient for gathering resources from a very different Florida environment. As environmental conditions changed, surface water levels throughout the state increased and new locales became suitable for occupation and resource extraction. 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.

Middle Archaic Period (5000–3000 BC)

Throughout the Middle Archaic, environmental and climatic conditions would become progressively more like modern conditions, which appeared by the end of the period, circa 3000 BC. During this time, rainfall increased, surface water became much less restricted and, as a result, vegetation patterns changed. 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). Pollen evidence from Florida and south-central Georgia indicates that after about 4000 BC, a gradual change in forest cover took place, with oaks in some regions giving way to pines or mixed forests. The vegetation communities that resulted from these changes are essentially the same as those present in historic times before widespread land alteration took place (Watts 1969, 1971; Watts and Hansen 1988).

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). In addition to these stemmed points, the Middle Archaic lithic industry in Florida included the production of cores, true blades, modified and unmodified flakes, ovate blanks, hammerstones, “hump-backed” unifacial scrapers, and sandstone “honing” stones (Purdy 1981; Clausen et al. 1975). Additionally, thermal alteration, a technique in stone tool production, reached its peak during the Middle to Late Archaic periods.

Three common types of Middle Archaic sites are known in Florida (Bullen and Dolan 1959; Purdy 1975). The first are small, special-use camps, which 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 locations used for tool repair and food processing during hunting and gathering excursions (Milanich 1994:78). The second common site type is the large base camp. This type of site may cover several acres or more, and contain several thousand or more lithic waste flakes and tools. The third common type of site is the quarry-related site that occurs in localities of chert outcrops.

Middle Archaic sites are found in a variety of locations, including, for the first time, freshwater shell middens along the St. Johns River and the Atlantic Lagoon. Middle Archaic sites have been found in the Hillsborough River drainage northeast of Tampa Bay, along the southwestern Florida coast, and in South Florida locales such as Little Salt Spring in Sarasota County. In

addition, Middle Archaic sites occurred throughout the forests of the interior of northern Florida (Milanich 1994:76).

Late Archaic Period (3000–500 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 across the peninsula.

Based on current evidence, it appears that relatively large numbers of Late Archaic peoples lived in some regions of the state but not in others. For example, large sites of this period are uncommon in the interior highland forests of northwestern Florida and northern peninsular Florida, regions where Middle Archaic sites are common. The few Late Archaic sites found in these areas are either small artifact scatters or are components within sites that contain artifacts from several different time periods. This dearth of sites in the interior forests suggests that non-wetland locales either were not inhabited year-round or were only inhabited by small populations (Milanich 1994:87).

Extensive Late Archaic middens are found along the northeastern coast. The importance of the wetlands in these regions to precontact settlements was probably similar to other coastal regions, especially the Central Peninsular Gulf Coast and the Northwest (Milanich 1994:85). However, in many of these coastal areas, such as Tampa Bay, many of the Late Archaic sites are inundated (Warren 1964, 1970; Warren and Bullen 1965; Goodyear and Warren 1972; Goodyear et al. 1980).

Orange Period (2000–500 BC)

By about 2000 BC or slightly earlier, the firing of clay pottery was either invented in Florida or the technique diffused from coastal Georgia and South Carolina, where early dates for pottery have been obtained (Milanich 1994:86). At one time, it was thought that the earliest pottery-manufacturing culture in Florida was the Orange culture of the St. Johns region in northeast Florida. But additional evidence from southwest Florida indicates fired clay pottery from northeastern and southwestern Florida is comparable to the early dates from sites in Georgia and South Carolina (Division of Archives 1970; Cockrell 1970; Widmer 1974; McMichael 1982; Russo 1991).

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, making fiber-tempered pottery a convenient horizon across the state. Originally, the Orange period was divided into sub-periods based on surface decoration. Recent research suggests that variations in Orange period paste, form, and decoration do not represent temporal changes (Sassaman 2003). In addition, early pottery was not limited to fiber-tempered wares. Sand-tempered pottery and thick St. Johns Plain (chalky wares) have also been recovered from Late Archaic period contexts.

Formative and Mississippian Periods (500 BC–AD 1513)

Changes in pottery and technology occurred in Florida during the Late Archaic period, also known as the Florida Transitional period; these changes mark the beginning of the Formative period. Fiber-tempered pottery was replaced by sand-tempered, limestone-tempered, and chalky temperless ceramics and three different projectile point styles (basally-notched, corner-notched, and stemmed) occur in relatively contemporaneous contexts. These pottery and tool traditions suggest population movement and social interaction between culture areas.

This period in Florida cultural history has many regional variants. The project area is located within the Central Peninsular Gulf Coast cultural region (Milanich 1994:211) (Figure 3).

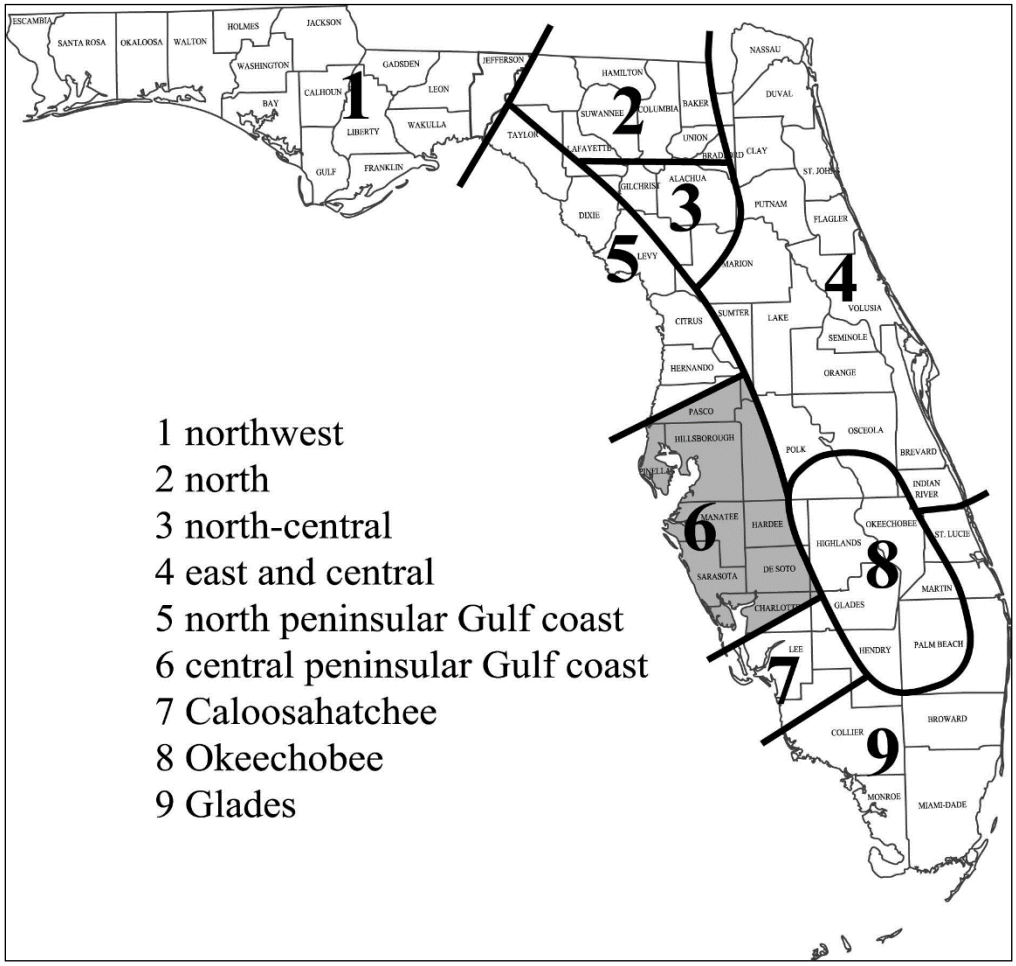

Figure 3: Central Peninsular Gulf Coast Cultural Region

Manasota Culture

During the Formative period, the Central Peninsular Gulf Coast region was dominated by the Manasota culture, primarily known as a coastal dwelling people. Sand-tempered plain pottery, as well as shell and bone tools, characterize their material culture (Luer and Almy 1982). The identification of interior Manasota sites has been hampered by the difficulty in distinguishing

between the various types of undecorated, sand tempered pottery used by different precontact cultures of South Florida (Milanich 1994: 224–226). A chronology for the Manasota Culture based on variations in pottery and burial practices is presented in Table 1.

Table 1. Manasota Culture Chronology

Period	Dates
Safety Harbor	AD 900–1513
Late Weeden Island	AD 700–900
Early Weeden Island	AD 300–700
Manasota	500 BC–AD 300

Source: Milanich (1994); modified from Luer and Almy (1980, 1982)

Despite its characterization as a primarily coastal culture, a number of inland Manasota sites have been documented (Deming 1976; Wood 1976; Wharton 1977; Ellis 1977; Wharton and Williams 1980; Piper and Piper 1981; Piper, Hardin, and Piper 1982; Almy 1982; Austin and Ste. Claire 1982; Austin and Russo 1989). These sites exhibit characteristics that distinguish them from the typical Manasota site, and are similar to what Luer and Almy define as "inland from the shore" sites. These sites are described as existing in the pine flatwoods, often occurring on a small, low hillock or "mound" of sand near a freshwater source, and having artifact assemblages similar to those of coastal sites except for a significantly lesser amount of shell and shell tools (Luer and Almy 1982:39–43).

Weeden Island–Related Manasota Culture

During its later periods, the Manasota culture was influenced by the extensive Weeden Island socio-political complex, which is best known in northern Florida, southern Georgia, and Alabama—the recognized "heartland" of Weeden Island cultures. Present evidence suggests a date of circa AD 200 for the beginning of the Weeden Island period. Mound burial customs, artifact evidence of an extensive trade network, and settlement pattern data suggest a complex socio-religious organization, and Weeden Island pottery types are considered outstanding examples of pre-Columbian pottery in terms of technology and style. Evidence for the adoption of Weeden Island customs by local Manasota groups appears in the archaeological record around AD 300–900. This period in Manasota development is often referred to as "Weeden Island–related" (Milanich 1994:227; Luer and Almy 1982:46–47).

Safety Harbor Culture

The final pre-Columbian cultural manifestation to occur in this region was the Safety Harbor culture, which evolved out of the Manasota and later Weeden Island–related Manasota cultures. Similar to those regional cultures, the Safety Harbor culture had a subsistence economy based on gathering shellfish and other marine resources (Grange et al. 1979; Milanich 1994:412).

The Safety Harbor culture, known after Spanish contact to be the culture of the Tocobaga, is typified by ceremonial centers with truncated, pyramidal temple mounds and open village plazas surrounded by middens, as well as burial mounds with associated charnel structures. Most Safety Harbor sites are found along the coast, although villages, camps, and mounds are

also located inland (Milanich 1994:395, 403). Although the Safety Harbor culture is centered on the Tampa Bay area and associated river drainages, it extends well to the north into Pasco, Hernando, and Citrus counties, and to the south and west into Sarasota, Polk, Manatee, Hardee, and Desoto counties. Safety Harbor pottery has also been found in mounds south of Charlotte Harbor in the Caloosahatchee archaeological area (Milanich 1994:391).

HILLSBOROUGH COUNTY HISTORY

Hillsborough County, located in west central Florida, was created on January 25, 1834. It extended north to Dade City and south to Charlotte County, and encompassed eight future counties (Mormino and Pizzo 1983:45). The first non-Indian settlement occurred in 1819 when Richard S. Hackley bought an 11-million-acre Spanish land grant that included all of Tampa Bay (Tebeau 1971:124).

In 1823, Colonel George Mercer Brooke was sent by the U.S. Army to establish a fortification on Tampa Bay near present-day central Tampa to suppress Indian unrest in the Florida Territory. Colonels Brooke and Gadsden selected a site within the land grant, forced Hackley to leave, and sited Fort Brooke by the Hillsborough River (Chamberlin 1968:12–13). The location offered the highest and driest land on the eastern shore of Tampa Bay, a supply of fresh water, and easy access to the interior from the sea. Because the fort offered the nearest and quickest access to forts and communities in the interior of Florida, it became a military depot and staging area for the Second Seminole War (Hillsborough County Planning Commission 1973: I-13).

Due to its isolated location, Hillsborough County grew very little after the Seminole Wars. A civilian community developed around Fort Brooke and some development took place as a result of the Armed Occupation Act of 1842. The Act provided 160-acre land grants to men over the age of 18, as long as they lived on the land for five years and cultivated at least five acres. Many of these settlers helped to establish Alafia, one of the oldest communities in Hillsborough County.

Raising cattle became the main industry of the land grant settlers. A fort, Alafia Garrison, was built in response to Native American uprisings in the area (HDR Engineering, Inc. 1992:15). Settlers were establishing settlements in other areas of Hillsborough County, as well. In 1856, John Brandon, a blacksmith and farmer from Mississippi, settled the Brandon area, calling it East Hills. When the railroad reached the area in 1890, East Hills was renamed Brandon (HDR Engineering, Inc. 1992:15).

Although blockade-runners carried supplies to other parts of the South and cattle were supplied to the Confederate Army, the Civil War hampered the County's economy (Hillsborough County Planning Commission 1973: I-13). The Civil War's end brought Reconstruction to the County, where military rule lasted from 1866 to 1869. The economy continued to decline.

Wartime and reconstruction impeded the county's development until the late 19th century. The county rebounded with the arrival of Henry Plant's railroad from Kissimmee in 1883–1884 (Westfall 1985:5). Plant had established the Jacksonville, Tampa & Key West Railway Line

in 1883 (Harner 1973:23). In bringing the railroad to Tampa, Plant bypassed the community of Shiloh in the eastern part of the county, where J. T. Evers owned a small store. Realizing the potential of increased markets the railroad could bring, he purchased a large tract of land adjoining the railroad. Evers had the land platted in 1883 and named the new town Plant City after the railroad magnate. Other merchants followed Evers and moved to Plant City. In 1890, another railroad, the Florida Railway and Navigation Company, extended its rails to Tampa from Ocala via Plant City. Plant's railroad and others connected the formerly isolated Hillsborough County to Florida's interior, the east coast, and the nation (Hillsborough County Planning Commission 1973: I-14).

The brief Spanish-American War brought an immense and sudden influx of business, adding to the momentum of economic and population growth started by the railroad and cigar industries. Around the same time the Spanish-American War was being launched, another important industry for Hillsborough County was developing. Phosphate was discovered in 1899 at Dunnellon in Marion County. The discovery at Dunnellon began the industry that became most important to Hillsborough County. The largest phosphate deposits were found in the County's eastern portion.

During the previous decade, 11,000 acres of Hillsborough County were under cultivation, and beef cattle outnumbered the county's population. County farms produced rice, corn, oats, sugar, potatoes, and honey (HDR Engineering, Inc. 1992:17, 20). Citrus production increased and lumber and turpentine were harvested.

While industrialization and agriculture flourished, immigration and housing development slowed during World War I. Tourism increased as a result of the war in Europe, which forced Americans to vacation domestically and was fostered by the efforts of tycoons such as Henry Flagler and Henry Plant. During the early 20th century, the Seaboard Air Line laid tracks from Turkey Creek in Hillsborough County to Oneco in Manatee County. This rail line passed through the rural settlements of Lithia, Boyette, Balm, and Wimauma.

The Florida Land Boom era of the 1920s ushered in a time of great prosperity for Hillsborough County until a series of events brought that to an end, including a financial collapse in real estate and two hurricanes. During the economic decline of the Great Depression, the cigar industry was damaged when smokers gave up the luxury of cigars for less expensive cigarettes. Industry was in decline and factories closed or moved to the north and 4,000 workers were laid off during the decade (Ingalls 1985:129–130). In addition, many mines, mills, and citrus packing plants were closed.

The government established a Tampa headquarters for the Works Progress Administration (WPA). The WPA employed 8,000 people and funded large-scale projects such as the Davis Island airport (Mormino and Pizzo 1983:168). In other areas of the county, modern citrus canning plants and cooperatives were established in citrus grove areas (HDR Engineering, Inc. 1992:21).

The outbreak of World War II saw prosperity return to Hillsborough County. Three air bases were located in the County: MacDill Field, Drew Field, and Henderson Field (Hillsborough

County Planning Commission 1973:I-15). MacDill Field was opened in 1940 and became a staging area for the war. During the war, 25,000 soldiers were stationed at MacDill and Drew fields. In addition to air base activity, the port was expanded for the numerous shipbuilding enterprises (Hillsborough County Planning Commission 1973:I-15). Shipbuilding was again producing at full capacity with the industry employing 16,000 people (Mormino and Pizzo 1983:174). Many military personnel were introduced to the area during the war and many returned as permanent residents (Hillsborough County Planning Commission 1973: I-16).

World War II also produced a demand for food for the war effort. This need caused a rapid expansion in citrus canning in the grove belt region that included Brandon and Valrico (HDR Engineering, Inc. 1992:21). After World War II, Tampa continued to prosper as a place for company offices, retirees, and tourists. As retirees earned pensions that freed them from being dependent on their children, many moved to Florida. Building activity during the post-war years was equivalent to the market during the 1920s, but "without the speculative aspects" (Grismer 1950:286). Wholesalers and distributors of various goods that residents had been without during the lean war years were also flourishing (Grismer 1950:286).

The Federal Interstate System founded in the 1950s helped bring many new residents to Florida. Interstate 75 (I-75) connected the Midwest to the Tampa Bay area and large numbers of people migrated to the area. The retirees have fueled real estate development of affordable housing and retirement centers (Trigaux 1999:11h). Between 1950 and 1960, a 59 percent population increase occurred in Hillsborough County.

The project area remained relatively rural until the development of Apollo Beach which began in the late 1950s and early 1960s. The owner of the Apollo Beach development land sold a portion of the land to TEC in the early 1960s for the construction of the Big Bend Power Plant. The plant began operations in the 1970s with three generating units. A fourth unit was added in 1985. (TEC 2016). Development around the project area was sporadic and the area has remained largely rural until the more recent building boom that started in the early 21st century.

FLORIDA MASTER SITE FILE SEARCH AND LITERATURE REVIEW

An archaeological and historical literature and background information search pertinent to the project area was conducted to determine the types, chronological placement, and location of cultural resources within the archaeological APE. A review of Florida Master Site File (FMSF) data, previous surveys, property appraiser records, and historical research material was conducted to determine the potential for cultural resources within the project APE that are listed, eligible, or considered eligible for listing in the National Register, or that have potential or confirmed human remains. 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 State Historic Preservation Officer's (SHPO) official position about the significance of a resource.

Previous Cultural Resource Surveys

The FMSF search did not identify any previously conducted cultural resource surveys in the project area and no sites have been recorded within the tract. One previous archaeological survey was conducted east of the project area. The *Cultural Resource Assessment Survey of US 41 (SR 45) from 12th Street to Kracker Avenue Project Development and Environment (PD&E) Study, Hillsborough County, Florida* was conducted in 2008 by Archaeological Consultants, Inc. This FDOT corridor project encountered no archaeological sites but did result in the recording of a number of historic structures.

More recently, The *Cultural Resources Assessment Survey of the Tampa Electric Company (TEC) Big Bend Solar Pv Project, Hillsborough County, Florida* was conducted in 2016 by Janus Research. Located immediately north of the current study area, and covering 105.8 acres, no archaeological sites, isolated occurrences, or historic structures were encountered.

Previously Recorded Archaeological Sites

The search of the FMSF data did not identify any previously recorded archaeological sites within the archaeological APE. The search identified one previously recorded archaeological site approximately 0.85 miles from the project area (Figure 4). 8HI65 (Big Bend) is a precontact shell midden that has not been evaluated by the SHPO for inclusion in the National Register.

Previously Recorded and Potential Historic Structures

The FMSF background search identified no previously recorded historic structures within the historic resources APE. In addition, a review of the Unincorporated Hillsborough County Historic Landmarks Map (Hillsborough County Infrastructure and Development Services 2014) identified no locally designated historic landmarks within the vicinity of the historic APE. A search of property appraiser records identified one parcel to the north of the historic

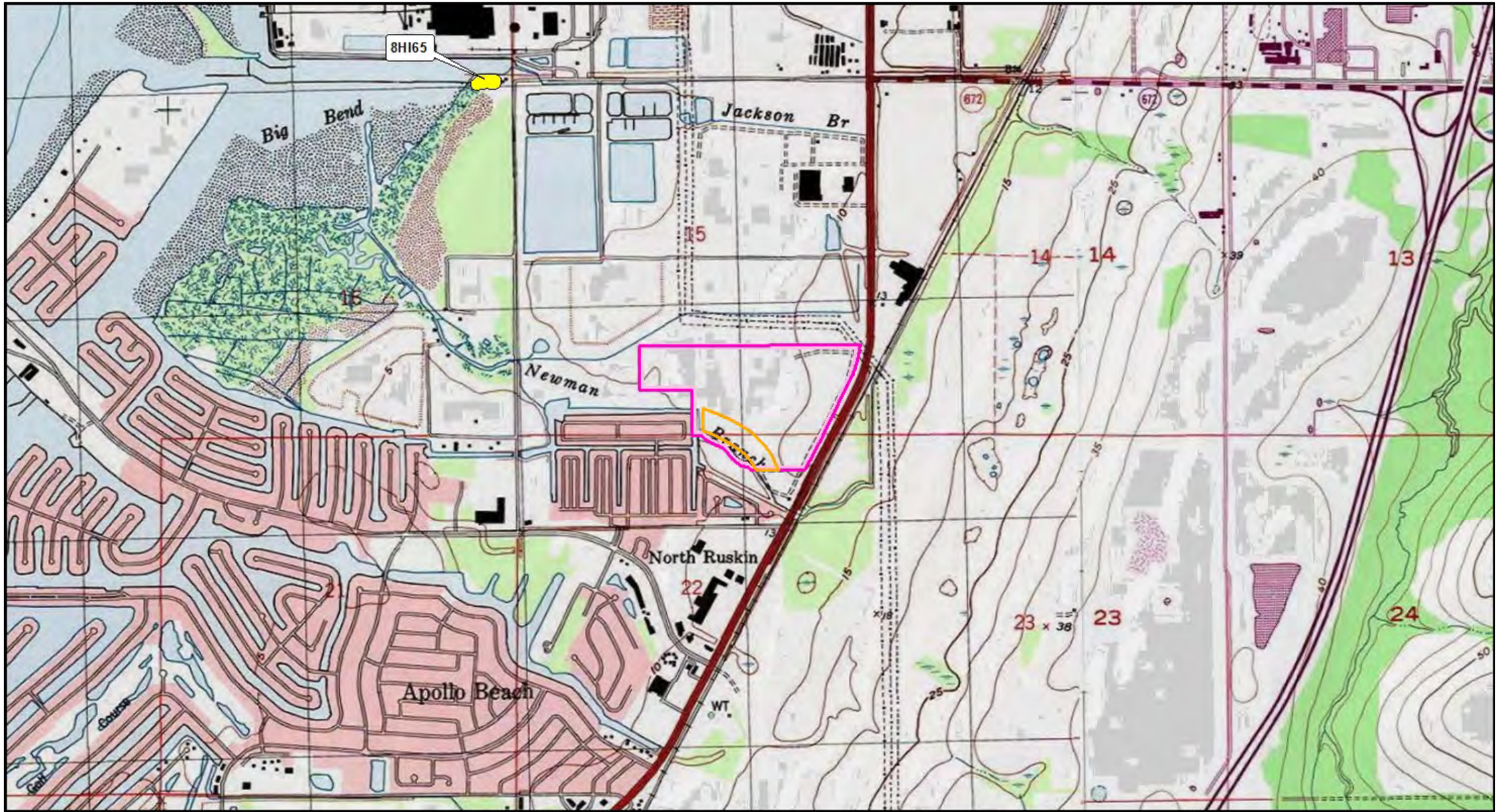

Figure 4: Previously Recorded Archaeological Sites and Archaeological Probability Zones	*SLA-75, LLC: ABH Project*	Project Area Moderate Probability Archaeological Site	**USGS Quadrangle Maps:** Gibsonton (1956 PR 1987) Riverview (1956 PR 1969)	**Hillsborough County** N 0 0.25 0.5 Miles

APE with an 'Actual Year Built' (AYRB) date of 1960. The current ABH parcel contains no structures.

A review of historic aerials from 1957 and 1968 (University of Florida, George A. Smathers Libraries 2017) noted that U.S. 41 was extant by 1957 and that the area surrounding the project area remained undeveloped at that time. No historic development was evident within or adjacent to the historic resources APE, with the exception of some drainage ditches within the project area.

PROJECT RESEARCH DESIGN AND SITE LOCATION MODEL

The background research and literature review, in conjunction with a consideration of pertinent environmental variables, contributed to the formulation of project-specific field methods designed to locate and evaluate previously unrecorded archaeological sites. Four environmental factors are typically employed in predicting site locations: soil type (soil drainage), distance to fresh (potable) water, distance to hardwood hammocks, and topography. Fresh water was an important resource for precontact populations, and would have been available from creeks and drainages in the area.

Hardwood hammocks provide a variety of resources that would have been exploited by the aboriginal inhabitants of this region. Hydric hardwood hammocks can contain abundant animal and plant life, particularly a variety of tubers. Mesic hardwood hammocks contain cabbage palms and other plants that produce edible foodstuffs. Other mesic hardwood species, such as ash and elm, are woods that are known to have been used for specific purposes, i.e., bows, canoes, mortars, and dart shafts (Newsom and Purdy 1983). Often, areas of higher relative elevation correspond with better-drained soils or the presence of hardwood hammocks (xeric and mesic). Hammock vegetation is present adjacent to small creeks and drainages scattered throughout the region, although to a minimal extent in the project area.

Relative elevation is the most difficult variable to quantify for central Florida because of the topographic diversity of the area. This variable has greater potential to locate sites in poorly to somewhat poorly drained areas of flatwoods than it does in typically undulating sandhill scrub environments. A slight topographic rise within a flatwood area adjacent to a wetland slough has a much greater potential for containing a precontact archaeological site than does the summit of a large, well-drained sand hill; even when both are the highest elevations within their respective environments. Given its proximity to Tampa Bay, the archaeological APE is at low elevations, and ranges from between five and ten feet above mean sea level.

The soils within the archaeological APE are all poorly drained and associated with the flatwoods. The soils as well as the review of the historic maps and aerials also suggest that most of the archaeological APE has a low potential for archaeological sites. An area adjacent to Newman Branch along the southwestern portion of the project area was identified and tested as having moderate probability for containing archaeological sites. No areas of high archaeological probability are identified within the project APE.

METHODS

Archaeological Field Methods

The archaeological field survey consisted of a pedestrian survey and subsurface testing. In total, 28 shovel tests were excavated during this investigation. Shovel tests were circular and approximately 50 centimeter (20 in) in diameter. They were excavated to a minimum depth of one meter (39 in) unless obstructed by solid clay or hardpan, or when slumping incurred due to the influx of groundwater. All excavated soils was sifted through 6.4 millimeter (¼-in) metal hardware cloth screen suspended from portable wooden frames and all shovel tests were backfilled upon completion.

Shovel tests were excavated systematically at 50 meter (164 ft.) intervals within the moderate site probability zone (n=18 of 28) adjacent to Newman Branch. The remaining shovel tests were excavated judgmentally in order to test the remaining low probability portion of the property. Additionally, all zones of low site probability were subjected to a careful surface inspection and shovel tested systematically or judgmentally to cover at least 10 percent of the project area. Testing was performed at the specified intervals unless obvious ground disturbance or standing water were encountered. The field crews were instructed to place additional, judgmental shovel tests in areas they deemed likely for sites, regardless of the probability zone or testing interval.

Standard archaeological methods for recording field data were followed throughout the project. The identification number, location, stratigraphic profile, soil descriptions, and environmental setting were recorded for every shovel test excavated. Locations of all shovel tests were recorded in the field with WAAS-enabled hand-held Global Positioning System (GPS) units. The locations of all shovel tests were also recorded on 1” = 64 m aerial photographs (Appendix A).

Historic Structures Survey

A historic resources reconnaissance survey was conducted to identify any previously unrecorded structures within and adjacent to the project APE for a distance of up to 150 feet. Property tax records and historic aerial photography were also consulted to assist in the identification of any such resources. For each resource identified, FMSF forms were completed with field data, including notes from site observations (Appendix B). Each resource’s individual significance was then evaluated for its potential eligibility for inclusion in the National Register. Historic physical integrity was determined from site observations, field data, and photographic documentation.

RESULTS

Archaeological Results

A total of 28 shovel tests was excavated within the project APE during the current survey. No cultural material was recovered in any of the tests. The project area is low lying pasture with grasses, scattered Brazilian pepper, pines, and cabbage palm (Figure 5). Many shovel tests encountered solid clay at approximately 60 to 70 cm below surface (cmbs). The soil stratigraphy in the project area generally consisted of gray sand 0–30 cmbs, light gray or pale brown sand from 30–70 cmbs, and dark brown hydric soil, mottled gray and brown sand, brown clay, or water at 60 cmbs or below (Figure 6). The locations of shovel tests, and the area of moderate archaeological probability, as well as notes on current conditions are illustrated in Appendix A.

Figure 5: Pasture and Moderate Probability Area, Facing Southeast

Figure 6: Soil Stratigraphy in Shovel Test 3, Facing East

Historic Resources Results

The historic field survey resulted in the identification of an undocumented portion of US 41/Tamiami Trail (8HI12129) within the historic resources APE. The portion of the US 41/Tamiami Trail located within the APE runs in a roughly southwest/northeast direction south of Big Bend Road and north of Apollo Beach Boulevard, on the Gibsonton USGS quadrangle map (1956 PR 1987), in the City of Apollo Beach, Hillsborough County, Florida. The length of US 41/Tamiami Trail within the project APE is approximately 0.4 miles, and consists of a four-lane vehicular roadway split into two northbound and two southbound lanes and separated by a large grassy median. Overall, the entirety of the Tamiami Trail is approximately 245 miles in length. This small portion of the roadway also features one cross-over across the median. The roadway exhibits modern asphalt paving and marking, modern signage and lampposts, and the addition of bike lanes on both the northbound and southbound sides. Large powerlines also traverse the roadway in this location. The setting immediately along roadway still appears rural, although modern suburban neighborhoods are located in the vicinity, just out of view from the roadway. The CSX Railroad runs mostly parallel to this section of US 41/Tamiami Trail on the west side. The segment of US 41/Tamiami Trail (8HI12129) within the APE is shown on a current aerial in Figure 7. A current photograph of the roadway within the APE is shown in Figure 8.

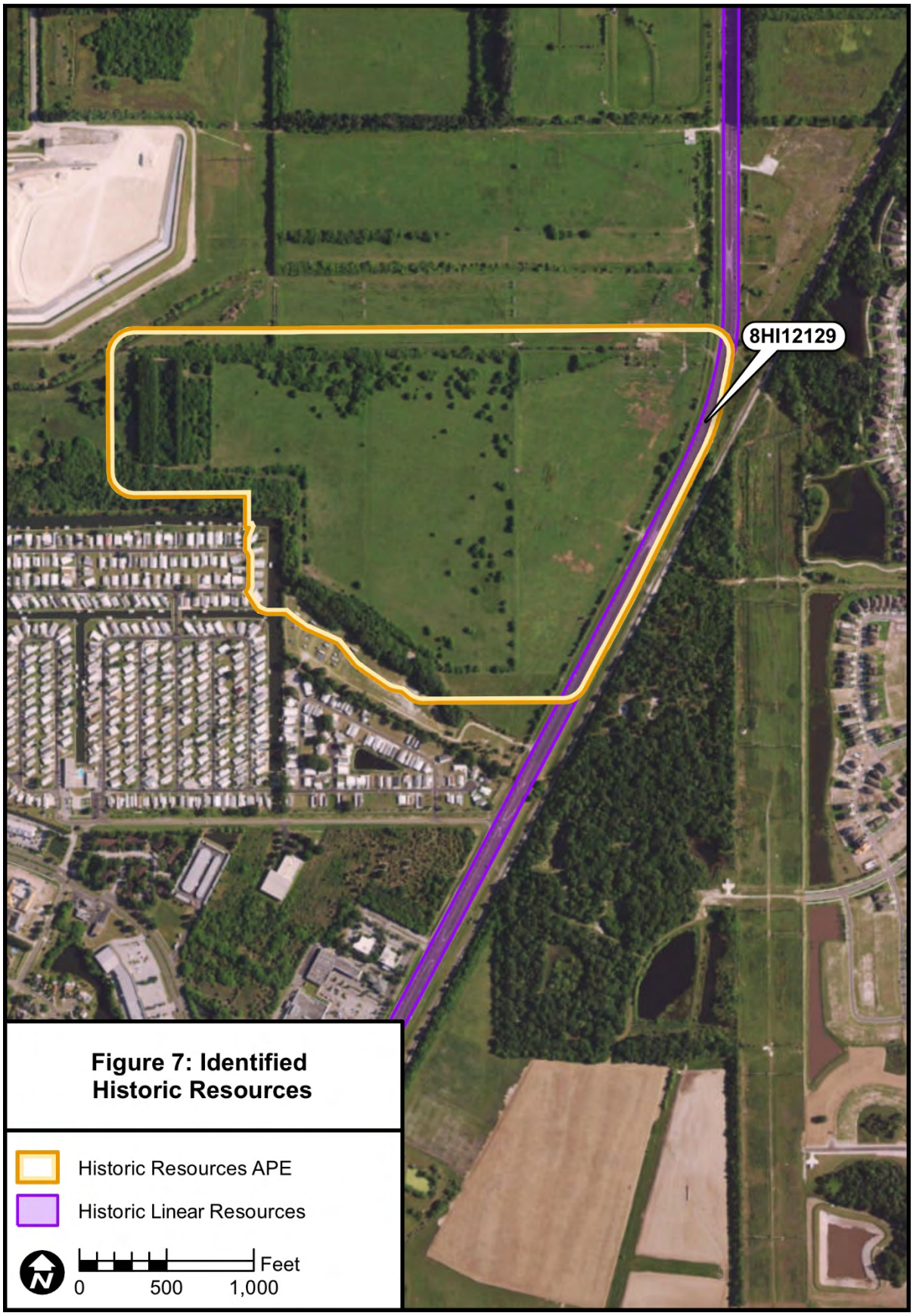

Figure 7: Identified Historic Resources

Figure 8: US 41/Tamiami Trail (8HI12129) within the APE, facing Southwest

The portion of US 41/Tamiami Trail within the current APE was constructed circa 1915 and originally constituted nothing more than a nine-foot-wide shell road paid for by a $30,000 local bond issue. Because of the growing importance of truck farming, this road and others were built to facilitate the transportation of produce to local markets throughout the 1920s (VisitRuskin 2017). The construction of the Tamiami Trail began in 1923 and was completed in 1928. Known originally as Ruskin Road within the APE, this roadway became part of the Tamiami Trail in the 1920s (ACI 2013a). This portion of the roadway was designated US 541 in 1932. In 1951, US 541 was decommissioned and the road was renamed US 41, with the roadway also being widened from two to four lanes in the 1950s (ACI 2013b).

A 7.7 mile-long portion of US 41/Tamiami Trail located approximately 2.25 miles north of the current project APE was previously documented by Archaeological Consultants, Inc. (ACI) as part of the 2013 *Cultural Resources Assessment Survey of US 41 from Kracker Avenue to South of SR 676 (Causeway Boulevard) Project Development and Environment Study, Hillsborough County, Florida*. This survey found US 41/Tamiami Trail to be ineligible for inclusion in the National Register, and the SHPO concurred with this finding on February 10, 2014.

Like the previously documented portion of US 41/Tamiami Trail to the north, the portion of the roadway within the current project APE has been drastically altered by non-historic improvements and widening. This segment of the roadway has undergone a series of substantial transformations based on modern transportation needs such that it no longer conveys its historic appearance. The road exhibits standard road design and common materials for modern road construction, and does not retain any traces of its original materials,

configuration, or character. It has been altered by widening, modern painting, modern signage/streetlights, and the establishment of a large grassy median. Within the APE, there is no longer any evidence that the roadway is historic. This section of the roadway with the current APE exhibits similar characteristics to section to the north that has already been determined National Register–ineligible by the SHPO. Based on its compromised historic physical integrity, which greatly affects its significance, the section of US 41/Tamiami Trail located within the current project APE is considered ineligible for listing in the National Register under Criteria A, B, C, or D, either individually or as part of a historic district.

CONCLUSIONS

No newly or previously recorded archaeological sites were identified within the project APE. A total of 28 shovel tests was excavated within the project APE during the current survey. No cultural material was recovered in any of the tests. The historic field survey resulted in the identification of an undocumented portion of US 41/Tamiami Trail (8HI12129) within the historic resources APE. This section of US 41/Tamiami Trail (8HI12129) is considered ineligible for listing in the National Register. No further work is recommended.

Unanticipated Finds

Although unlikely, 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 75 years of age or older.

Curation

An FMSF form (Appendix B), the Survey Log Sheets (Appendix C), and select photograph are curated at the FMSF in Tallahassee, along with a copy of this report. Field notes and other pertinent project records are temporarily stored at Janus Research and returned to the client, as appropriate.

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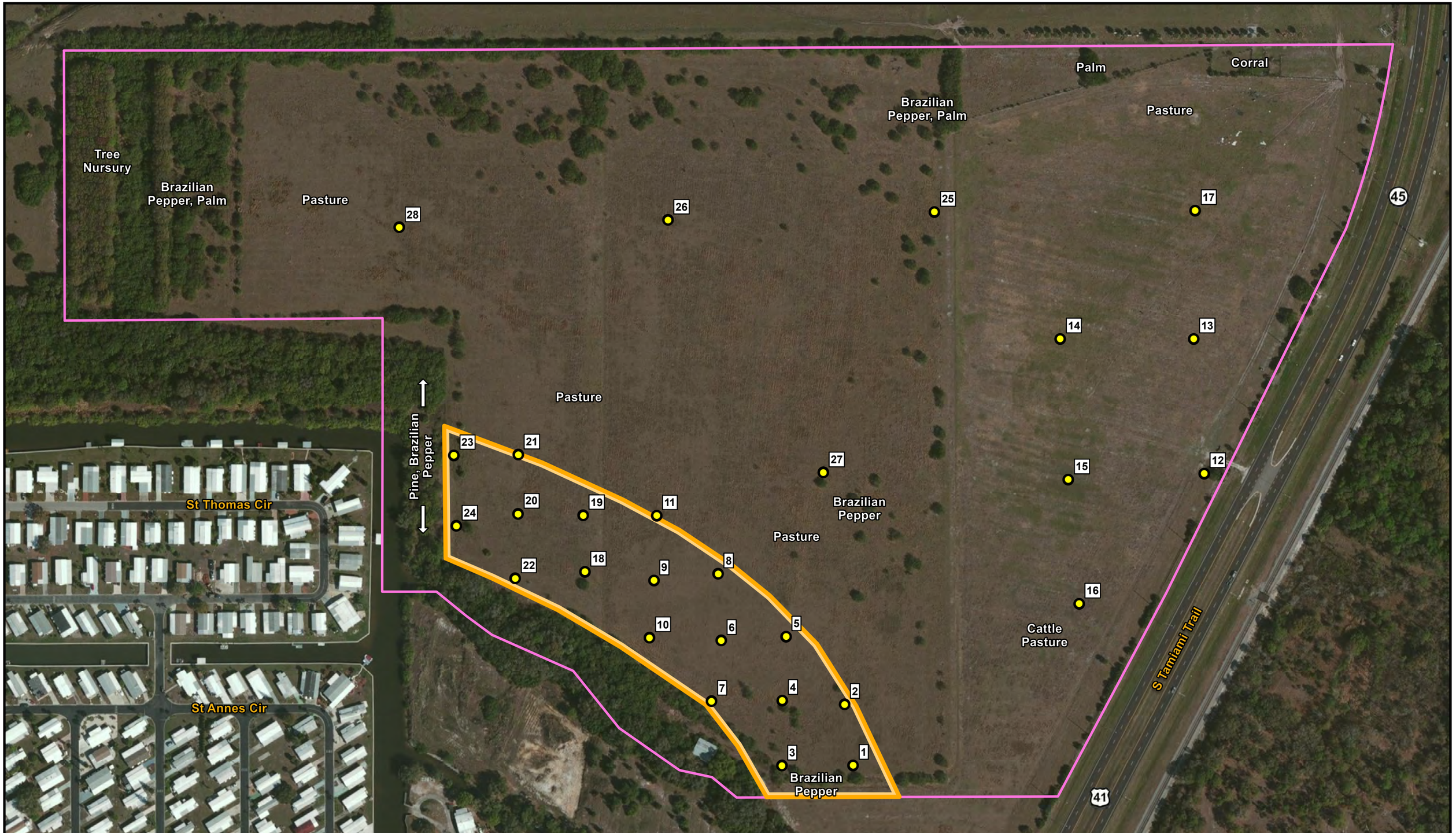
APPENDIX A:

SHOVEL TEST MAP



Shovel Test Map	*ABH Project*	Project Area Moderate Probability Negative Shovel Test	Hillsborough County 0 50 100 Meters

APPENDIX B:

FMSF FORM

☐ Original
☒ Update

RESOURCE GROUP FORM
FLORIDA MASTER SITE FILE
Version 4.0 1/07

Site #8 HI12129
Field Date 7-5-2017
Form Date 7-18-2017
Recorder# 1

NOTE: Use this form to document districts, landscapes, building complexes and linear resources as described in the box below. Cultural resources contributing to the Resource Group should also be documented individually at the Site File. **Do not use this form for National Register multiple property submissions** (MPSs). National Register MPSs are treated as Site File manuscripts and are associated to the individual resources included under the MPS cover using the Site File manuscript number.

Check ONE box that best describes the Resource Group:

- ☐ **Historic district** (NR category "district"): buildings and NR structures only: NO archaeological sites
- ☐ **Archaeological district** (NR category "district"): archaeological sites only: NO buildings or NR structures
- ☐ **Mixed district** (NR category "district"): includes more than one type of cultural resource (example: archaeological sites and buildings)
- ☐ **Building complex** (NR category usually "building(s)"): multiple buildings in close spatial and functional association
- ☐ **Designed historic landscape** (NR category usually "district" or "site"): can include multiple resources (see *National Register Bulletin #18*, page 2 for more detailed definition and examples: e.g. parks, golf courses, campuses, resorts, etc.)
- ☐ **Rural historic landscape** (NR category usually "district" or "site"): can include multiple resources and resources not formally designed (see *National Register Bulletin #30, Guidelines for Evaluating and Documenting Rural Historic Landscapes* for more detailed definition and examples: e.g. farmsteads, fish camps, lumber camps, traditional ceremonial sites, etc.)
- ☒ **Linear resource** (NR category usually "structure"): Linear resources are a special type of rural historic landscape and can include canals, railways, roads, etc.

Resource Group Name US 41/Tamiami Trail Multiple Listing [DHR only] _____
Project Name CRAS of the ABH Project FMSF Survey # _____
National Register Category (please check one): ☐building(s) ☒structure ☐district ☐site ☐object
Linear Resource Type (if applicable): ☐canal ☐railway ☒road ☐other (describe): _____
Ownership: ☐private-profit ☐private-nonprofit ☐private-individual ☐private-nonspecific ☐city ☐county ☒state ☐federal ☐Native American ☐foreign ☐unknown

LOCATION & MAPPING

	Street Number	Direction	Street Name	Street Type	Suffix Direction
Address:					

City/Town (within 3 miles) Apollo Beach In Current City Limits? ☒yes ☐no ☐unknown
County or Counties (do not abbreviate) Hillsborough
Name of Public Tract (e.g., park) _____

1) Township 30S Range 19E Section 2 ¼ section: ☐NW ☐SW ☐SE ☐NE Irregular-name: _____
2) Township 30S Range 19E Section 14 ¼ section: ☐NW ☐SW ☐SE ☐NE
3) Township 30S Range 19E Section 15 ¼ section: ☐NW ☐SW ☐SE ☐NE
4) Township _____ Range _____ Section _____ ¼ section: ☐NW ☐SW ☐SE ☐NE

USGS 7.5' Map(s) 1) Name GIBSONTON USGS Date 1987
2) Name _____ USGS Date _____
Plat, Aerial, or Other Map (map's name, originating office with location) _____
Landgrant _____
Verbal Description of Boundaries (description does not replace required map) The segment of US 41/Tamiami Trail within the APE is located to the south of Big Bend Road and to the north of Apollo Beach Blvd, with a distance of approximately 0.4 miles.

DHR USE ONLY	OFFICIAL EVALUATION	DHR USE ONLY
NR List Date _____ ☐Owner Objection	SHPO – Appears to meet criteria for NR listing: ☐yes ☐no ☐insufficient info Date _____ Init._____ KEEPER – Determined eligible: ☐yes ☐no Date _____ NR Criteria for Evaluation: ☐a ☐b ☐c ☐d (see *National Register Bulletin 15*, p. 2)	

RESOURCE GROUP FORM

Site #8 HI12129

HISTORY & DESCRIPTION

Construction Year: 1915 ☒approximately ☐year listed or earlier ☐year listed or later

Architect/Designer(last name first): Unknown Builder(last name first): Unknown

Total number of individual resources included in this Resource Group: # of contributing 1 # of non-contributing 0

Time period(s) of significance (choose a period from the list or type in date range(s), e.g. *1895-1925*)

1. Twentieth C American 3.
2. 4.

Narrative Description (*National Register Bulletin 16A* pp. 33-34; fit a summary into 3 lines or attach supplementary sheets if needed) See continuation sheet.

RESEARCH METHODS (check all that apply)

☒FMSF record search (sites/surveys)	☐library research	☐building permits	☐Sanborn maps
☐FL State Archives/photo collection	☐city directory	☐occupant/owner interview	☐plat maps
☐property appraiser / tax records	☐newspaper files	☐neighbor interview	☐Public Lands Survey (DEP)
☒cultural resource survey	☐historic photos	☐interior inspection	☐HABS/HAER record search

☒other methods (specify) Historic aerial and aerial photographs

Bibliographic References (give FMSF Manuscript # if relevant) See continuation sheet.

OPINION OF RESOURCE SIGNIFICANCE

Potentially eligible individually for National Register of Historic Places? ☐yes ☒no ☐insufficient information

Potentially eligible as contributor to a National Register district? ☐yes ☒no ☐insufficient information

Explanation of Evaluation (required, see *National Register Bulletin 16A* p. 48-49. Attach longer statement, if needed, on separate sheet.) See continuation sheet.

Area(s) of Historical Significance (see *National Register Bulletin 15*, p. 8 for categories: e.g. "architecture", "ethnic heritage", "community planning & development", etc.)

1. 3. 5.
2. 4. 6.

DOCUMENTATION

Accessible Documentation Not Filed with the Site File - including field notes, analysis notes, photos, plans and other important documents

1) Document type Field notes Maintaining organization Janus Research
Document description File or accession #'s

2) Document type Field maps Maintaining organization Janus Research
Document description File or accession #'s

RECORDER INFORMATION

Recorder Name Janus Research Affiliation Janus Research

Recorder Contact Information 1107 N. Ward St., Tampa FL 33607 / (813) 636-8200 / janus@janus-research.com
(address / phone / fax / e-mail)

Required Attachments

❶ PHOTOCOPY OF USGS 7.5' MAP WITH DISTRICT BOUNDARY CLEARLY MARKED

❷ LARGE SCALE STREET, PLAT OR PARCEL MAP WITH RESOURCES MAPPED & LABELED

❸ TABULATION OF ALL INCLUDED RESOURCES (name, FMSF #, contributing? Y/N, resource category, street address or township-range-section if no address)

❹ PHOTOS OF GENERAL STREETSCAPE OR VIEWS (Optional: aerial photos, views of typical resources) Photos may be archival B&W prints OR digital image files. If submitting digital image files, they must be included on disk or CD AND in hard copy format (plain paper is acceptable). Digital images must be at least 1600 x 1200 pixels, 24-bit color, jpeg or tiff.

SITE NAME: US 41/Tamiami Trail

A. NARRATIVE DESCRIPTION OF SITE

The portion of the US 41/Tamiami Trail located within the project APE runs in a roughly southwest/northeast direction south Big Bend Road and north of Apollo Beach Boulevard, on the Gibsonton USGS quadrangle map (1956 PR 1987), in the City of Apollo Beach, Hillsborough County, Florida. The length of US 41/Tamiami Trail within the project APE is approximately 0.4 miles, and consists of a four-lane vehicular roadway split into two northbound and two southbound lanes and separated by a large grassy median. Overall, the entirety of the Tamiami Trail is approximately 245 miles in length. This small portion of the roadway also features one cross-over across the median. The roadway exhibits modern asphalt paving and marking, modern signage and lampposts, and the addition of bike lanes on both the northbound and southbound sides. Large powerlines also traverse the roadway in this location. The setting immediately along roadway still appears rural, although modern suburban neighborhoods are located in the vicinity, just out of view from the roadway. The CSX Railroad runs mostly parallel to this section of US 41/Tamiami Trail on the west side.

B. DISCUSSION OF SIGNIFICANCE

The portion of US 41/Tamiami Trail within the current APE was constructed circa 1915 and originally constituted nothing more than a nine-foot-wide shell road paid for by a $30,000 local bond issue. Because of the growing importance of truck farming, this road and others were built to facilitate the transportation of produce to local markets throughout the 1920s (VisitRuskin 2017). The construction of the Tamiami Trail began in 1923 and was completed in 1928. Known originally as Ruskin Road within the APE, this roadway became part of the Tamiami Trail in the 1920s (ACI 2013a). This portion of the roadway was designated US 541 in 1932. In 1951, US 541 was decommissioned and the road was renamed US 41, with the roadway also being widened from two to four lanes in the 1950s (ACI 2013b).

A 7.7 mile-long portion of US 41/Tamiami Trail located approximately 2.25 miles north of the current project APE was previously documented by Archaeological Consultants, Inc. (ACI) as part of the 2013 *Cultural Resources Assessment Survey of US 41 from Kracker Avenue to South of SR 676 (Causeway Boulevard) Project Development and Environment Study, Hillsborough County, Florida*. This survey found US 41/Tamiami Trail to be ineligible for inclusion in the National Register, and the SHPO concurred with this finding on February 10, 2014.

Like the previously documented portion of US 41/Tamiami Trail to the north, the portion of the roadway within the current project APE has been drastically altered by non-historic improvements and widening. This segment of the roadway has undergone a series of substantial transformations based on modern transportation needs such that it no longer conveys its historic appearance. The road exhibits standard road design and common materials for modern road construction, and does not retain any traces of its original

materials, configuration, or character. It has been altered by widening, modern painting, modern signage/streetlights, and the establishment of a large grassy median. Within the APE, there is no longer any evidence that the roadway is historic. This section of the roadway with the current APE exhibits similar characteristics to section to the north that has already been determined National Register–ineligible by the SHPO. Based on its compromised historic physical integrity, which greatly affects its significance, the section of US 41/Tamiami Trail located within the current project APE is considered ineligible for listing in the National Register under Criteria A, B, C, or D, either individually or as part of a historic district.

C. HISTORY AND BIBLIOGRAPHY OF PAST WORK AT SITE

Archaeological Consultants, Inc. (ACI)

2013a Cultural Resources Assessment Survey of US 41 from Kracker Avenue to South of SR 676 (Causeway Boulevard) Project Development and Environment Study, Hillsborough County, Florida. On file, Florida Department of State, Division of Historical Resources, Tallahassee, Florida

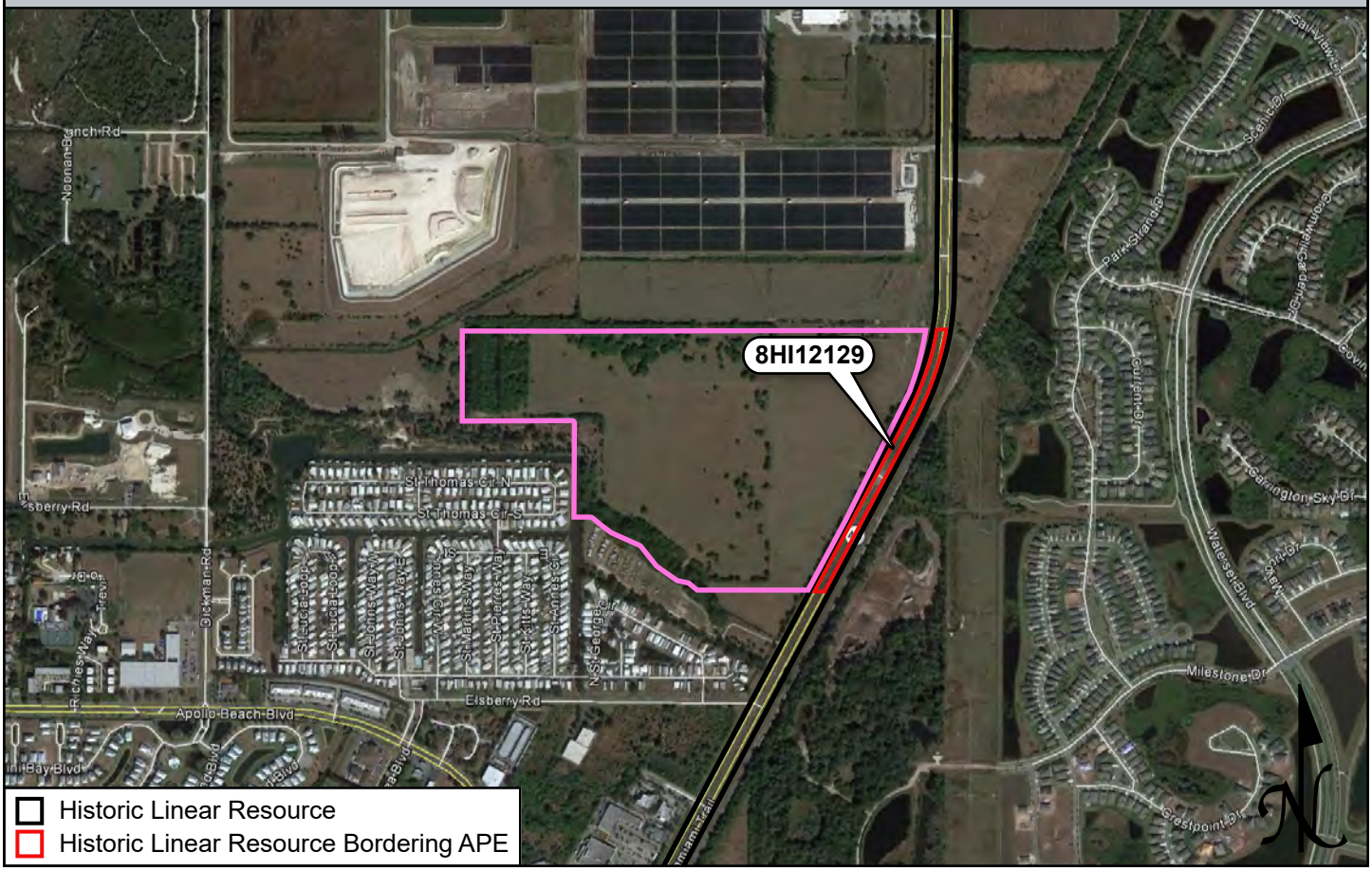
2013b Site file form for US 41 (8HI12129). On file, Florida Department of State, Division of Historical Resources, Tallahassee, Florida.

VisitRuskin

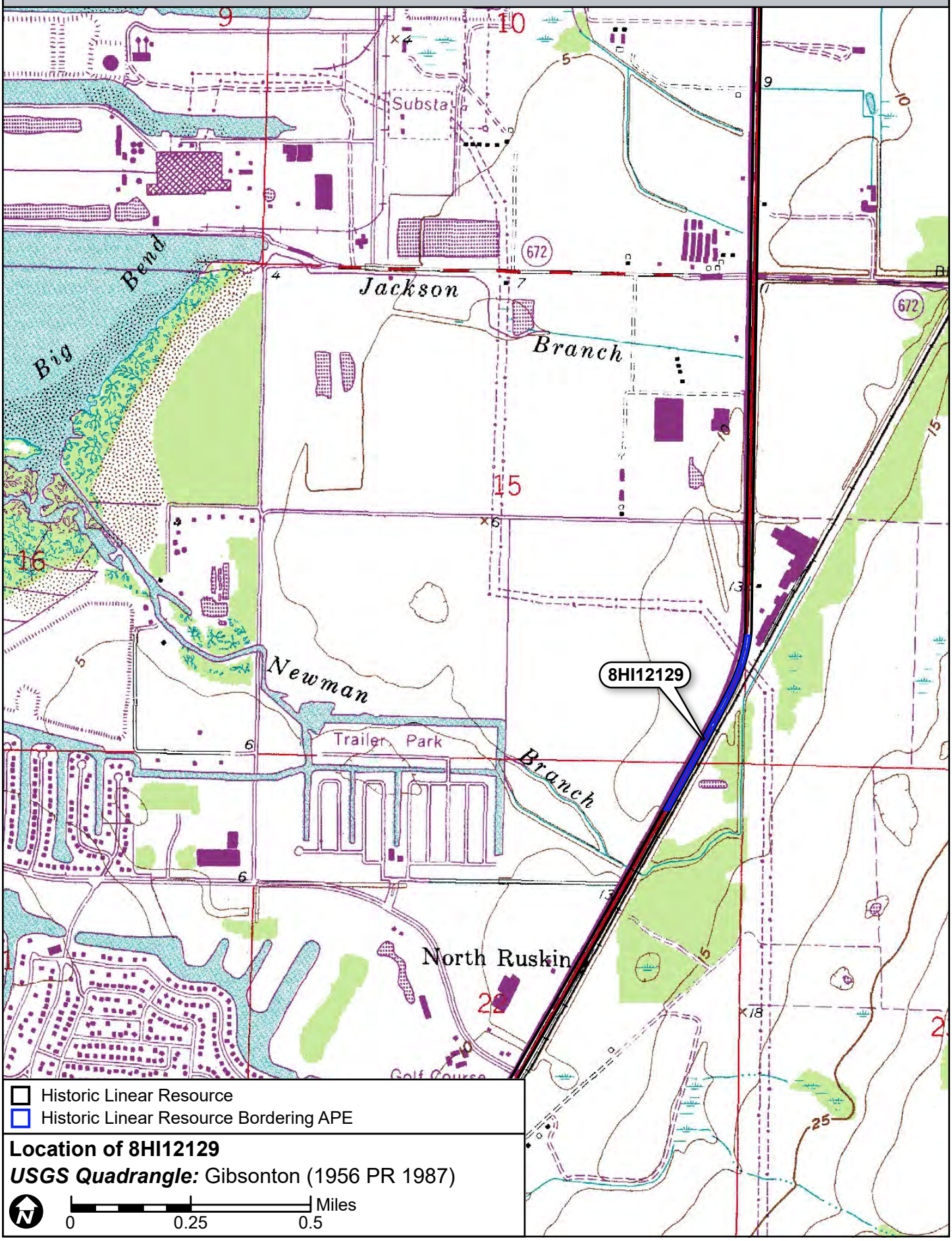
2017 *History of Ruskin*. Accessed online at http://visitruskin.com/Articles/history_of_ruskin.htm on July 18, 2017.

PHOTOGRAPH

SKETCH MAP



USGS QUADRANGLE MAP



APPENDIX C:

SURVEY LOG SHEET

Ent D (FMSF only)_____

Survey Log Sheet

Florida Master Site File
Version 4.1 1/07

Survey # (FMSF only) _____

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

Identification and Bibliographic Information

Survey Project (name and project phase) CRAS of the ABH Project, Hillsborough County

Report Title (exactly as on title page) Cultural Resource Assessment Survey of the ABH Project, Hillsborough County, Florida

Report Authors (as on title page, last names first) 1. Janus Research 2. _____ 3. _____ 4. _____

Publication Date (year) 2017 **Total Number of Pages in Report** (count text, figures, tables, not site forms) 28

Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*.)
Janus Research, 1107 N. Ward Street, Tampa FL 33607

Supervisors of Fieldwork (even if same as author) Names Kathleen Hoffman and Amy Streelman

Affiliation of Fieldworkers: Organization Janus Research City Tampa

Key Words/Phrases (Don't use county name, or common words like *archaeology*, *structure*, *survey, architecture, etc.*)
1. Apollo Beach 2. US 41 3. Tamiami Trail 4. _____ 5. _____ 6. _____ 7. _____ 8. _____

Survey Sponsors (corporation, government unit, organization or person directly funding fieldwork)
Name _____ Organization Environmental Consulting and Technology, Inc.
Address/Phone/E-mail 1408 N Westshore Blvd, Suite 115, Tampa, FL 33607

Recorder of Log Sheet Janus Research **Date Log Sheet Completed** 7-20-2017

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; attach additional sheet if necessary)
1. Hillsborough 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)
1. Name GIBSONTON Year 1987
2. Name RIVERVIEW Year 1969
3. Name _____ Year _____
4. Name _____ Year _____
5. Name _____ Year _____
6. Name _____ Year _____

Description of Survey Area

Dates for Fieldwork: Start 6-30-2017 End 7-7-2017 **Total Area Surveyed** (fill in one) _____ hectares 97 acres

Number of Distinct Tracts or Areas Surveyed 1

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

Survey Log Sheet

Survey #_____

Research and Field Methods

Types of Survey (check all that apply): ☒archaeological ☐architectural ☒historical/archival ☐underwater ☐damage assessment ☐monitoring report ☐other(describe): _____

Scope/Intensity/Procedures Pedestrian survey and subsurface testing. 28 shovel tests were excavated to a depth of between 60 and 100cm below ground surface. Historic resources were documented.

Preliminary Methods (check as many as apply to the project as a whole)

☐Florida Archives (Gray Building) ☐library research- *local public* ☐local property or tax records ☐other historic maps
☐Florida Photo Archives (Gray Building) ☐library-special collection - *nonlocal* ☐newspaper files ☒soils maps or data
☒Site File property search ☒Public Lands Survey (maps at DEP) ☒literature search ☒windshield survey
☒Site File survey search ☐local informant(s) ☐Sanborn Insurance maps ☒aerial photography
☒other (describe): Janus Library

Archaeological Methods (check as many as apply to the project as a whole)

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

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

Historical/Architectural Methods (check as many as apply to the project as a whole)

☐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): Historic aerial photography

Survey Results (cultural resources recorded)

Site Significance Evaluated? ☒Yes ☐No

Count of Previously Recorded Sites 1 **Count of Newly Recorded Sites** 0

Previously Recorded Site #'s with Site File Update Forms (List site #'s without "8". Attach additional pages if necessary.) Hi12129

Newly Recorded Site #'s (Are all originals and not updates? List site #'s without "8". Attach additional pages if necessary.) _____

Site Forms Used: ☐Site File Paper Form ☒Site File Electronic Recording Form

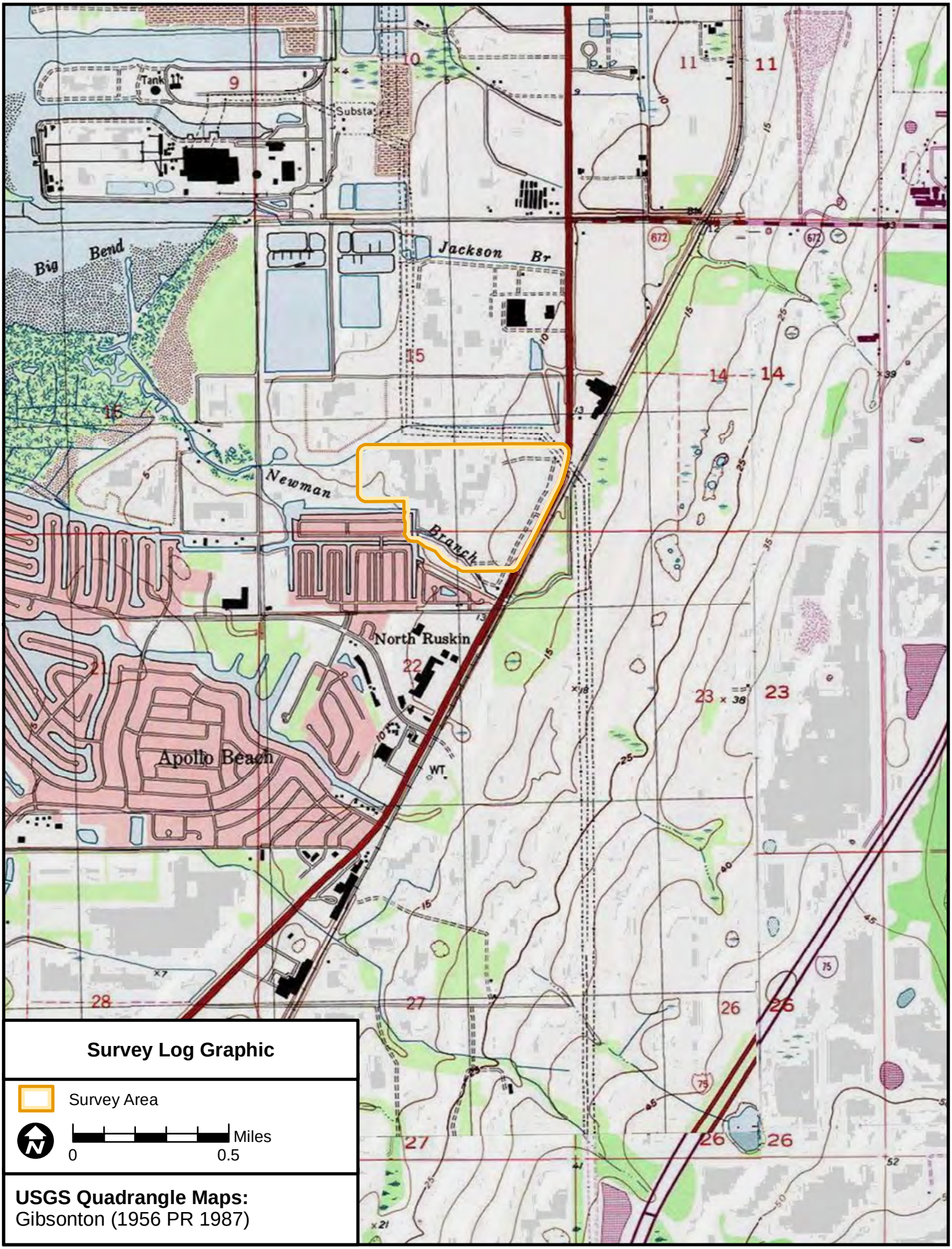
*****REQUIRED: ATTACH PLOT OF SURVEY AREA ON PHOTOCOPY OF USGS 1:24,000 MAP(S)*****

SHPO USE ONLY **SHPO USE ONLY** **SHPO USE ONLY**

Origin of Report: ☐872 ☐CARL ☐UW ☐1A32 # _____ ☐Academic ☐Contract ☐Avocational
☐Grant Project # _____ ☐Compliance Review: CRAT # _____

Type of Document: ☐Archaeological Survey ☐Historical/Architectural Survey ☐Marine Survey ☐Cell Tower CRAS ☐Monitoring Report
☐Overview ☐Excavation Report ☐Multi-Site Excavation Report ☐Structure Detailed Report ☐Library, Hist. or Archival Doc
☐MPS ☐MRA ☐TG ☐Other: _____

Document Destination: _____ **Plotability:** _____


Tank
Substa
Big Bend
Jackson Br
Newman Branch
North Ruskin
Apollo Beach
WT
672
75
Survey Log Graphic
Survey Area
N
0
0.5
Miles
USGS Quadrangle Maps:
Gibsonton (1956 PR 1987)

Appendix C

Cultural Resources Assessment Survey and FDHR Concurrence Letter for Western Portion of the Project Site

#22844

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Lawrence N. Curtin
Holland & Knight LLP
315 South Calhoun Street, Suite 600
Tallahassee, Florida 32301

May 13, 2016

Re: DHR Project File No.: 2016-1484 / Received by DHR: April 25, 2016
Cultural Resources Assessment Survey of the Tampa Electric Company (TEC) Big Bend Solar PV Project, Hillsborough County Florida

Dear Mr. Curtin:

Our office received and reviewed the above referenced report in accordance with Chapters 267, *Florida Statutes,* for possible adverse impact to cultural resources (any prehistoric or historic district, site, building, structure, or object) listed, or eligible for listing, in the National Register of Historic Places (NRHP).

In July 2015, Janus Research conducted an archaeological Phase I survey of the Tampa Electric Company (TEC) Big Bend Solar Photovoltaic (PV) project area on behalf of the Tampa Electric Company. Janus identified no cultural resources within the project tract during this investigation.

Janus determined that the proposed project will have no effect on cultural resources listed, or eligible for listing in the NRHP, or otherwise of archaeological, historical, or architectural significance. Janus recommends no further investigation of the project area.

Based on the information provided, our office concurs with these determinations and finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code*

If you have any questions, please contact Mary Berman, Historic Sites Specialist, by email at Mary.Berman@dos.myflorida.com, or by telephone at 850.245.6333 or 800.847.7278.

Sincerely

Timothy A Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

2016-14841
#22844

Holland & Knight

315 South Calhoun Street, Suite 600 | Tallahassee, FL 32301 | T 850.224.7000 | F 850.224.8832
Holland & Knight LLP | www.hklaw.com

Lawrence N. Curtin
(850) 425-5678
larry.curtin@hklaw.com

April 25, 2016

Via Hand Delivery

Ms. Deena S. Woodward
Florida Department of State
Division of Historical Resources
Bureau of Historic Preservation
500 S. Bronough Street
Tallahassee, FL 32399

Re: Tampa Electric Company Big Bend (PA79-12) Amendment Request (AM16-119)-Solar Project

Dear Ms. Woodward:

Ann Seiler of the Florida Department of Environmental Protection ("FDEP") Siting Coordination Office requested that we provide you with a hard copy of the report entitled "Cultural Resources Assessment Survey of the Tampa Electric Company (TEC) Big Bend Solar Project, Hillsborough County, Florida" that was submitted to FDEP on March 25, 2016, as part of the Tampa Electric Company request for Amendment of Site Certification Big Bend Power Station Unit 4-PA79-12, Big Bend Solar Project. A copy of the report is attached. Please consider this a request by Tampa Electric Company to review the report and to provide any comments that you may have. We understand from Ms. Seiler that although you are not the person responsible for the review of the report, you will provide the report to the appropriate individual or individuals.

#22844

Please let me know if you have any questions, or need any additional information. We appreciate your assistance.

Sincerely yours,

HOLLAND & KNIGHT LLP

Lawrence N. Curtin
Attorneys for
Tampa Electric Company

LNC:kmf

Attachment

Cc: Ms. Ann Seiler
Mr. Paul Carpinone
Mr. Nate Alcoz
all w/o attachment

CULTURAL RESOURCES ASSESSMENT SURVEY OF THE TAMPA ELECTRIC COMPANY (TEC) BIG BEND SOLAR PV PROJECT HILLSBOROUGH COUNTY, FLORIDA

Prepared for:

Environmental Consulting and Technology, Inc.
1408 N. Westshore Boulevard, Suite 115
Tampa, Florida 33607

Prepared by:

Janus Research
1107 N. Ward Street
Tampa, Florida 33607

March 2016

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INTRODUCTION

The cultural resource assessment survey (CRAS) of the Tampa Electric Company (TEC) Big Bend Solar Photovoltaic (PV) Project in Hillsborough County, Florida was conducted for TEC in conjunction with Environmental Consulting & Technology, Inc. (ECT) in July 2015. The objective of this survey was to identify cultural resources located within and adjacent to the project corridor and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places* (National Register) according to the criteria set forth in 36 CFR Section 60.4.

This assessment complies with Section 106 of the *National Historic Preservation Act* (NHPA) of 1966 (Public Law 89-655, as amended), as implemented by 36 CFR 800 (*Protection of Historic Properties,* as amended); Chapter 267, *Florida Statutes*; 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),* and *Chapter 1A-46 (Archaeological and Historical Report Standards and Guidelines), Florida Administrative Code*. Principal Investigators meet the *Secretary of the Interior's Professional Qualification Standards* (48 FR 44716). Archaeological investigations were conducted under the direction of Kathleen S. Hoffman, Ph.D. Historic investigations were conducted under the direction of Amy Groover Streelman, M.H.P.

No previously recorded or newly recorded archaeological sites or historic resources were identified within the project APE.

Project Description

TEC is proposing to construct a new solar PV renewable energy generating facility on approximately 105.8 acres of land situated on the Big Bend Power Station property located along U.S. Highway 41 in Apollo Beach, Florida (i.e., Township 31 South, Range 19 East, and Section 15, Hillsborough County, Florida) (Figures 1 and 2). TEC has undertaken an initiative to develop, own and operate a utility-scale solar PV project on a turnkey basis as part of their broader energy resource mix. The project provides an opportunity to learn more about how a utility-scale facility will operate on their system. Solar prices have declined significantly making utility-scale solar systems a viable option.

The solar energy generation facility will employ PV panels that absorb sunlight and directly produce electricity. The facility consists of a solar field of PV panels mounted on steel support structures, an electrical collection system that aggregates the output from the PV panels and converts the electricity from direct current (DC) to alternating current (AC), and a switching station where all of the facility output is combined and transformed to a voltage of 69-kilovolts (kV) for distribution. The thin film PV panels will be attached to a ground mounted single axis tracking system. The assembled PV panels will have a typical height of about 6 feet and a maximum height of 10 feet. The PV panels will be arranged in rows with center-to-center spacing of approximately 20 feet. The rows will be aligned north to south and the PV panels will rotate to face the sun as it moves across the sky throughout the day from east to west. PV

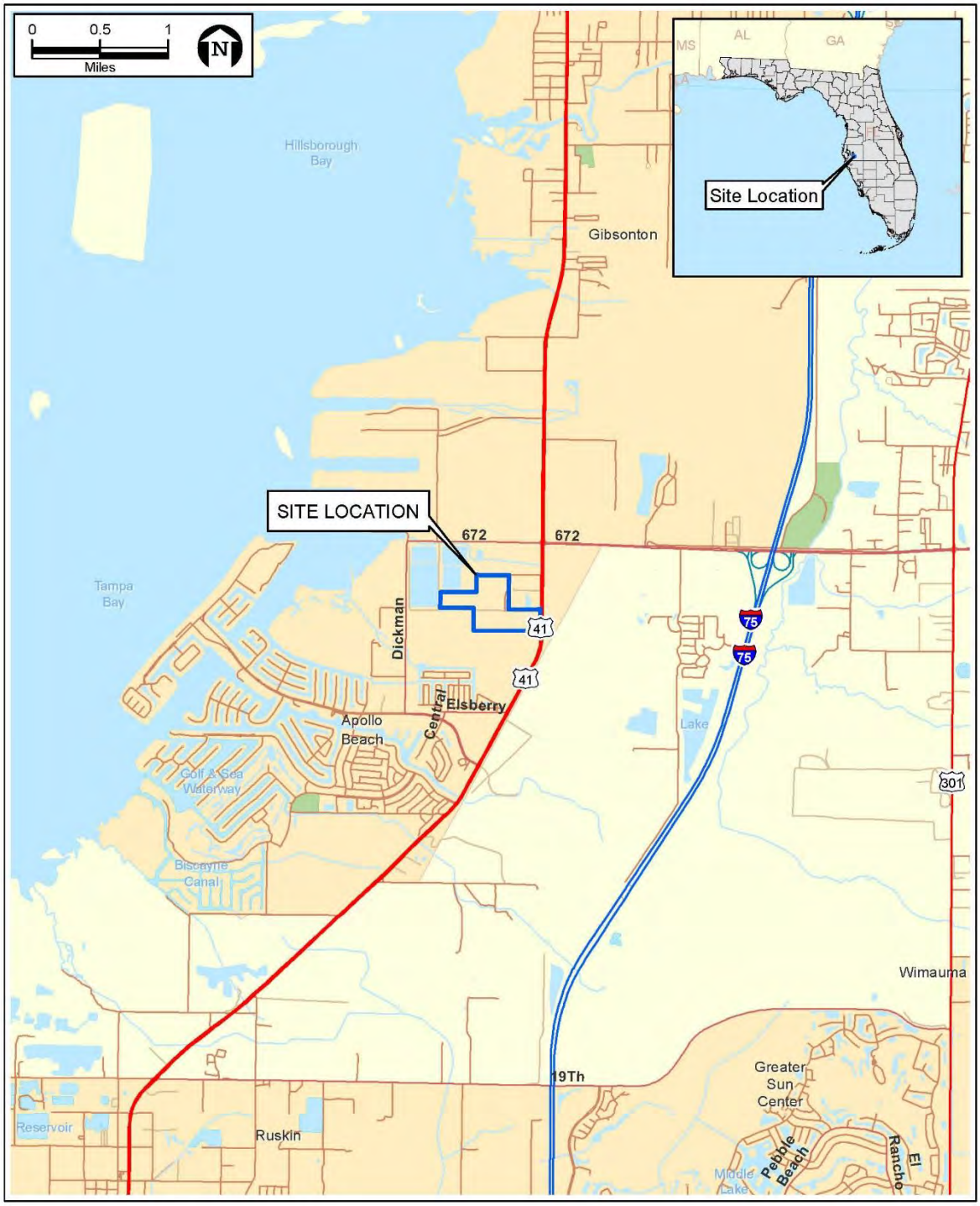

FIGURE 1. SITE LOCATION MAP
TAMPA ELECTRIC COMPANY
TEC BIG BEND SOLAR POWER PLANT
HILLSBOROUGH COUNTY, FLORIDA

Sources: ESRI Street Map Data, 2014; TECO, 2016; ECT, 2016.

TECO
TAMPA ELECTRIC

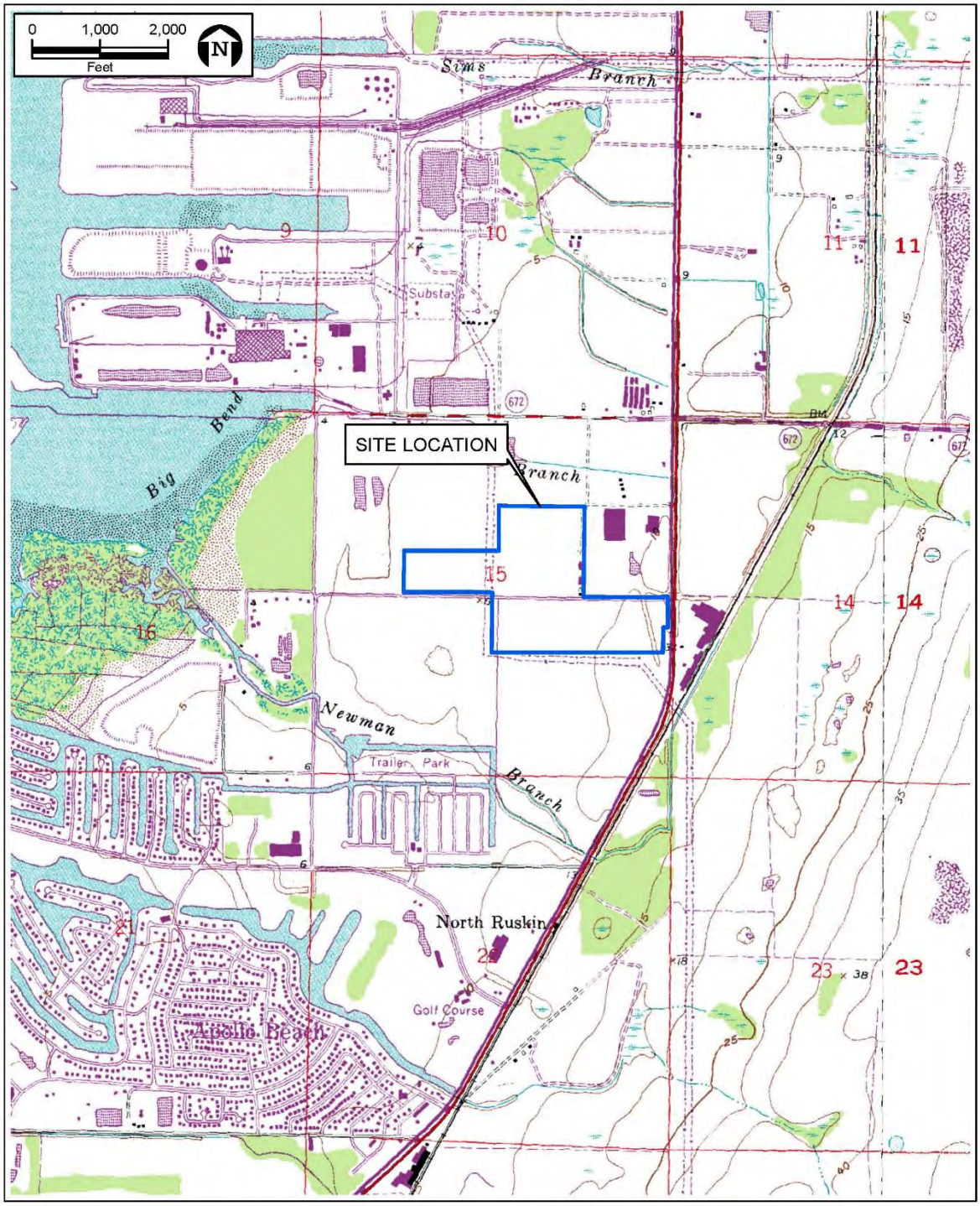

FIGURE 2. USGS TOPOGRAPHIC QUADRANGLE MAP
(T31S, R19E, S15)
TAMPA ELECTRIC COMPANY
TEC BIG BEND SOLAR POWER PLANT
HILLSBOROUGH COUNTY, FLORIDA
Sources: Labins.org USGS Quad Map of Gibsonton FL, 1987; TECO, 2016; ECT, 2016.

TECO
TAMPA ELECTRIC

panels will be organized into electrical groups referred to as "arrays." Each array will consist of PV inverters that convert the DC power from the solar panels to AC power which is utilized on the power grid. Each array will encompass approximately 10 acres of PV panels (producing about 2 MW) and will include one modular inverter. The size of each block will depend upon the capacity of the inverters mounted on the array's associated inverter skid, which in turn will depend upon the type and size of inverters available for purchase and other such electrical design considerations. Electrical output (direct current) from the PV panels will feed into AC inverters. Each skid is anticipated to be an approximately 12-foot-by-34-foot pre-fabricated structure up to 15 feet in height and will be unoccupied, except during inspection and maintenance. Each inverter skid will have an associated outdoor transformer to step up the electricity voltage from the inverter output level to a common distribution level of 13.8 kV, which will minimize the losses in the collection system. From each such transformer, electricity will be conveyed via an underground 13.8-kV collection system circuit to a 13.8-kV bus within the proposed switching station located onsite.

The site is divided into east and west and north and south areas. The east and west areas are separated by a north/south transmission line corridor containing three parallel 230-kV circuits and associated tower structures. The north and south areas located on the east side are separated by an existing farm road. The design will result in the west area housing one array (Array 01) and the east area housing eight of the arrays (Arrays 02 through 09). The east area will have four arrays on the north (Arrays 02 through 05) and south (Arrays 06 through 09) sides of the existing farm road. A switching station will be constructed in the northeast corner of the Project, near Array 09. The switching station is a central hub for the 13.8-kV collection system circuits and step ups the electricity voltage from 13.8-kV to 69-kV for interconnection into the transmission grid.

The interconnection of the proposed Project to the transmission grid will be the 69-kV line that runs adjacent to the project site. The new 69-kV line will be constructed from the switching station dead-end structure to the 69-kV line that is located immediately west of U.S. Highway 41 within the Florida Department of Transportation (FDOT) right-of-way. For the interconnection, one new steel pole will be installed onsite near the switching station and 2 to 3 new steel poles will replace the existing poles located in the FDOT right-of-way. The poles will be approximately 65 feet tall. In addition, a paved access road will be installed at the site entrance off of U.S. Highway 41 and will provide access to the switching station. This asphalt paved road will be designed in accordance with FDOT standards. The most critical/heaviest loads to the project site will be for inverter and transformer deliveries. All-weather access roads will be provided to each inverter to provide a stable delivery path for inverters and other critical equipment. These roads will be 15-feet wide and compacted and surfaced with #57 granite. Twenty-foot wide access drive aisles will be used for operation and maintenance access only. These aisles will not be improved and will maintain existing grades and vegetation. The area within the solar array will be seeded with a low lying grass or vegetative cover and a minimum clearance of 10 feet will be provided between the rows of PV panels.

Area of Potential Effect

According to 36 CFR 800.16(d), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking as well as its geographical setting. The APE must include measures to identify and evaluate both archaeological and historical resources. Normally, archaeological and other below-ground resources will be affected by ground disturbing activities and changes in ownership status. Structural resources and other above ground sites, however, are often impacted by those activities as well as alterations to setting, access and appearance. As a consequence, the survey methodologies for these two broad categories of sites differ.

The survey for archaeological sites typically focuses upon identifying and evaluating resources within the geographic limits of the proposed action and its associated ground disturbing activities. The APE for archaeological resources is typically confined to those areas where subsurface construction activity will take place or is likely to take place. The identification and evaluation for structural resources generally includes a visual examination of the project area as well as the geographic areas alongside it in order to include concerns such as visual and auditory impacts. The APE typically depends on whether the proposed improvements will be at grade or elevated. The APE for historic resources includes the area of the proposed improvements as well as the area within which potential visual, or noise effects could be observed.

The project APE, therefore, considers the improvements that will be implemented as part of the proposed project and the extent of potential ground disturbance as well as the setting and character of the project area. The Big Bend Solar Site is located within an area of Hillsborough County consisting predominantly of undeveloped land with residential areas to the south and east. As currently proposed, the solar panels, inverter stations, and substation will be located on 105.8 acres as shown on Figures 1 and 2. The archaeological APE included this 105.8 acres as well as a larger area to the west of where the facilities are currently proposed in order to accommodate any future improvements (Figure 3). In total, approximately 154 acres were included in the archaeological APE. The historic resources APE consisted adjacent parcels up to a distance of 500 feet from the edge of the project area to allow for the consideration of potential visual or noise impacts (Figure 3).

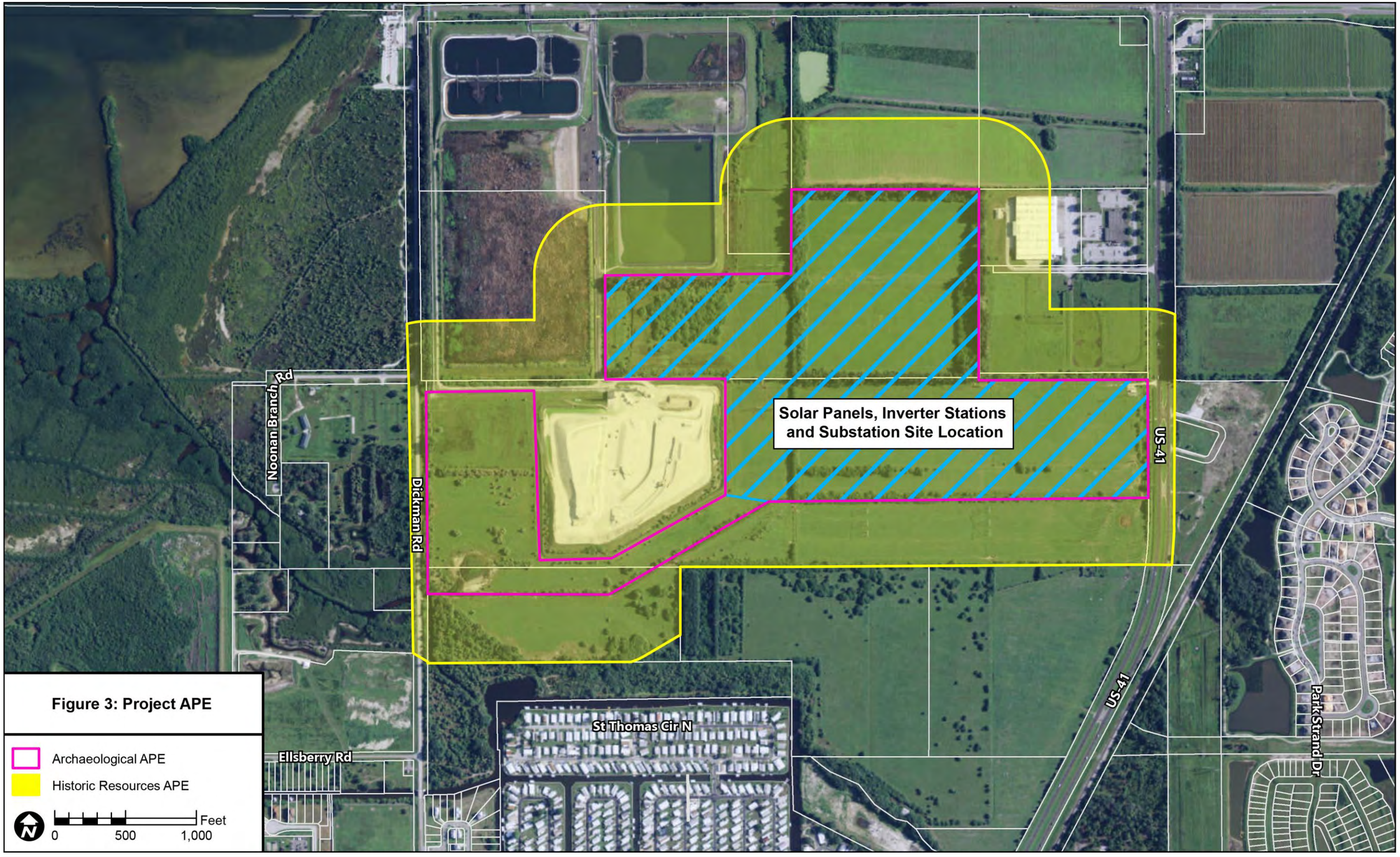

Figure 3: Project APE

ENVIRONMENTAL SETTING

Environmental and ecological factors had a direct influence on the choice of areas used and occupied by pre-Columbian and historic period populations. These factors change over time and are used to reconstruct past conditions that influenced early human occupation of the project corridor.

Regional Environment

The project area is located in southeastern Hillsborough County within the western extent of the Polk Upland physiographic region of the Florida Atlantic Coastal Plain, 0.9 miles east of the Gulf Coast Lowlands (White 1970). The Polk Uplands is an area of broad marine terraces that were formed during interglacial periods by the advances and retreats of the Pleistocene seas. Subsequent exposure to erosion has helped shape the surfaces of these remnant marine terraces. The nature of the sediments and the relative elevation of a particular terrace affect the occurrence and movement of groundwater, which may be the only source of fresh water in some areas (Healy 1975).

Included within the northern Polk Uplands are three irregular, north-south-trending ridges that are separated and bounded by relatively flat uplands. The three ridges are the Lake Wales ridge, the Winter Haven ridge, and the Lakeland ridge. The project corridor is located over 40 miles east of the Lake Wales Ridge, over 20 miles west of the Winter Haven Ridge, and over 16 miles west of the Lakeland Ridge.

The major permanent streams and surface drainage systems are the Withlacoochee River, North Prong Alafia River, and the Peace River. The Withlacoochee River drains the northern part of the county, the North Prong Alafia River drains the western part, and the Peace River drains the central part to the Highlands County line. The Kissimmee River drains a large area in the southeastern part of the county. The many branches and creeks are interconnected to complete the drainage of the county.

The surface lithology of Hillsborough County is composed primarily of undifferentiated deposits of sand and clay of Pleistocene and Recent age, which are underlain by Miocene age limestones of the Tampa/St. Marks Formation, and by the Suwannee Limestone of Oligocene age (Knapp 1980). Limestone is present at or near the ground surface around the shore of Tampa Bay and along the central and lower portions of the Hillsborough River (Duerling and MacGill 1981; Knapp 1980). Precontact peoples exploited exposures of silicified limestone, or chert, as raw material for stone tool manufacture (Upchurch et al. 1982).

In Hillsborough County, three major rivers drain the uplands and discharge into Tampa Bay: the Hillsborough River, the Alafia River, and the Little Manatee River. Combined, these three rivers drain more than 1,300 square miles. The surface drainage is toward Old Tampa Bay, Hillsborough Bay, and Tampa Bay. The project corridor is located to the south of the Alafia River and crosses Little Fishhawk Creek, which is located within the Alafia River Watershed.

Flatwoods communities have been characterized as having a relatively low ecological diversity offering little in the way of subsistence resources to pre-Columbian hunters and gatherers (e.g. Milanich and Fairbanks 1980:17; Larson 1980:56). There is a relatively high degree of micro-environmental diversity within the region, particularly in the major river basins. This diversity would have provided a variety of plant and animal resources suitable for exploitation by precontact and early historic inhabitants.

Hardwood hammocks along the springs, streams, creeks, and rivers, would have provided excellent forage for deer, which, in turn, would have attracted pre-Columbian hunters. A variety of edible plants could have been collected including persimmon, saw palmetto berries, oak and hickory nuts, pigeon plum, beautyberry, wild grapes, dahoon holly, arrowroot, and wild coffee. Ponds and marshes would have contained a number of edible aquatic plants including arrowroot, arrowhead, duck potato and various rushes.

Physical Environment of the Project APE

A review of the GLO historic plat maps (Florida Department of Environmental Protection [FDEP] 1847) and surveyors' field notes (FDEP 1847) was conducted to examine past environmental conditions within the vicinity of the project corridor. The project corridor is located in an area illustrated on the historic plat map and described in the surveyors' notes as 3rd rate pine. An unnamed creek is located along the southwestern border of the project area and a salt marsh is to the west and adjacent to Tampa Bay.

A review of historic aerial photographs from 1938, 1957, 1965, and 1968 (FDOT, Surveying and Mapping Office 2014; University of Florida, George A. Smathers Libraries 2013) was conducted to examine land use during the mid-1900s. In 1938, the project area and surrounding lands were undeveloped. Two small creeks, Jackson Branch and Newman Branch, are evident to the north and south of the project area, which appears to be a low lying with scattered pines and ponds. By 1957, agricultural fields with associated drainage ditches are present in parts of the project area. US 41 is evident to the east. In 1965, the project area remains the same and most of the surrounding area remains undeveloped. Construction of the Apollo Beach development, which is also evident in the 1968 aerial, is shown to the south of the project area. The 1968 aerial also shows that construction of the Big Bend Power Station is underway. The project areas remains undeveloped at this time and contains agricultural fields with associated drainage ditches.

The drainage characteristics of soil is considered in the formulation of site location predictive models. The names of detailed soil types found within the project corridor, as well as their drainage characteristics and environmental associations are listed in Table 1. The 1958 soil surveys identified no soils or vegetation typically associated with a high archaeological probability. The 1989 soil survey noted three soil types, all of which are very poorly or poorly drained. The 1989 soils are also located either within tidal areas subject to flooding, in depressions within the flatwoods, or on plains within the pine flatwoods.

Table 1. Characteristics of Detailed Soil Types within the Archaeological APE

Drainage Characteristics	Soil Type	Environmental Association
1958 Soil Survey		
Moderately well drained to somewhat poorly drained	Sandy local alluvium	In sinkholes or small depressions. Natural vegetation consists of bluejack, live and turkey oaks, pines, shrubs and grasses.
Unclassified	Tidal marsh	Level or nearly level areas a few feet above sea level. Occupies a narrow zone between tidal swamps and flatwoods and is covered or affected by saltwater or brackish water when tides are high. Natural vegetation consists of salt-tolerant grasses.
Somewhat Poorly Drained	Ruskin fine sand	On level or nearly level areas near coast. Natural vegetation consist of pine with an occasional cabbage palmetto, saw palmetto, runner oaks and other shrubs and grasses.
1989 Soil Survey		
Very Poorly Drained	Basinger, Holopaw and/or Samsula	In swamps and depressions in flatwoods. Natural vegetation consists of mangrove trees, seashore saltgrass, glasswort, needlerush, and marshhay cordgrass.
Poorly Drained	Myakka fine sand, frequently flooded	In tidal areas; subject to flooding by the highest of normal tides. Natural vegetation consists of longleaf pine and slash pine with understory of gallberry, running oak, saw palmetto, pineland threeawn, and waxmyrtle.
	Wabasso fine sand	On plains on the flatwoods. Natural vegetation consists of longleaf pine and slash pine with understory of lopsided indiangrass, gallberry, saw palmetto, pineland threeawn, and waxmyrtle.

Source: USDA 1958: 34-37 and 39; 1989: 17, 29, 30, 57, and 58.

PRECONTACT OVERVIEW

People have inhabited Florida for at least 14,000 years. The earliest cultural periods are pan-Florida in extent, while later cultures exhibited unique cultural traits. The following discussion of the precontact time period is included in order to provide a framework within which the local archaeological record can be understood.

Paleoindian Period (12,000–7500 BC)

The earliest period of precontact cultural development dates from the time people first arrived in Florida. The greatest density of known Paleoindian sites is associated with the rivers of northern and north-central Florida where distinctive lanceolate projectile points and bone pins have been found in abundance in and along the Santa Fe, Silver, and Oklawaha Rivers (Dunbar and Waller 1983). The majority of these have been found at shallow fords and river crossings where the Native Americans presumably ambushed Pleistocene mammals.

The prevailing view of the Paleoindian culture, a view based on the uniformity of the known tool assemblage and the small size of most of the known sites, 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.

Archaic Period (7500–500 BC)

The Archaic period of cultural development was characterized by a shift in adaptive strategies stimulated by the onset of the Holocene and the establishment of increasingly modern climate and biota. It 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)
Cultural changes began after about 8000 BC in the late Paleoindian times with the onset of less arid conditions, which correlates with changes in projectile-point types, specifically a transition from lanceolate to stemmed varieties. Beginning about 7500 BC, Paleoindian points and knives were replaced by a variety of stemmed tools, such as the Kirk, Wacissa, Hamilton, and Arredondo types (Milanich 1994:63).

Kirk points and other Early Archaic diagnostic tools are often found at sites with Paleoindian components, suggesting that Early Archaic peoples and Paleoindians shared similar lifeways (Daniel and Wisenbaker 1987:33–34). However, it appears that the distribution of Early Archaic artifacts is wider than that of Paleoindian materials. Sites having both Paleoindian and Early Archaic components have been found to be largely restricted to natural springs and the extensive perched water sources of northern Florida.

With the wetter conditions that began about 8000 BC and the extinction of some of the Pleistocene animal species that helped to sustain earlier populations, Paleoindian subsistence strategies were no longer efficiently adapted to the Florida environment. As environmental conditions changed, surface water levels throughout the state increased and new locales became suitable for occupation. 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.

Middle Archaic Period (5000–3000 BC)

Throughout the Middle Archaic, environmental and climatic conditions would become progressively more like modern conditions, which would appear by the end of the period, circa 3000 BC. During this period, rainfall increased, surface water became much less restricted and, as a result, vegetation patterns changed. 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). Pollen evidence from Florida and south-central Georgia indicates that after about 4000 BC, a gradual change in forest cover took place, with oaks in some regions giving way to pines or mixed forests. The vegetation communities that resulted from these changes, which culminated by 3000 BC, are essentially the same as those found in historic times before widespread land alteration took place (Watts 1969, 1971; Watts and Hansen 1988).

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). In addition to these stemmed points, the Middle Archaic lithic industry, as recognized in Florida, includes production of cores, true blades, modified and unmodified flakes, ovate blanks, hammerstones, "hump-backed" unifacial scrapers, and sandstone "honing" stones (Purdy 1981; Clausen et al. 1975). Additionally, thermal alteration, a technique in stone tool production, reached its peak during the Middle to Late Archaic periods.

Three common types of Middle Archaic sites are known in Florida (Bullen and Dolan 1959; Purdy 1975). The first are small, special-use camps, which 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 second common site type is the large base camp. This type of site may cover several acres or more, and contains several thousand or more lithic waste flakes and tools. The third common type of site is the quarry-related site that occurs in localities of chert outcrops.

Middle Archaic sites are found in a variety of locations, including, for the first time, freshwater shell middens along the St. Johns River and the Atlantic Lagoon. Middle Archaic sites have been found in the Hillsborough River drainage northeast of Tampa Bay, along the southwestern Florida coast, and in South Florida locales such as Little Salt Spring in Sarasota County. In

addition, Middle Archaic sites occurred throughout the forests of the interior of northern Florida (Milanich 1994:76).

Late Archaic Period (3000–500 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. Based on current evidence, it appears that relatively large numbers of Late Archaic peoples lived in some regions of the state but not in others. For example, large sites of this period are uncommon in the interior highland forests of northwestern Florida and northern peninsular Florida, regions where Middle Archaic sites are common. The few Late Archaic sites found in these areas are either small artifact scatters or components in sites containing artifacts from several other periods. This dearth of sites in the interior forests suggests that non-wetland locales either were not inhabited year-round or were only inhabited by small populations (Milanich 1994:87).

Extensive Late Archaic middens are found along the northeastern coast. The importance of the wetlands in these regions to precontact settlements was probably similar to other coastal regions, especially the Central Peninsular Gulf Coast and the Northwest (Milanich 1994:85). However, in many of these coastal areas, such as Tampa Bay, many of the Late Archaic sites are inundated (Warren 1964, 1970; Warren and Bullen 1965; Goodyear and Warren 1972; Goodyear et al. 1980).

Formative and Mississippian Periods (500 BC–AD 1513)

Changes in pottery and technology occurred in Florida during the Late Archaic period, also known as the Florida Transitional period; these changes mark the beginning of the Formative period. Fiber-tempered wares were replaced by sand-tempered, limestone-tempered, and chalky temperless ceramics and three different projectile point styles (basally-notched, corner-notched, and stemmed) occur in relatively contemporaneous contexts. These ceramic and tool traditions suggest population movement and social interaction between culture areas.

The project corridor is located within the Central Peninsular Gulf Coast cultural (Milanich 1994:211) (Figure 4).

Manasota Culture

During the Formative period, the Central Peninsular Gulf Coast region was dominated by the Manasota culture, primarily known as a coastal dwelling people. Sand-tempered plain ceramics, as well as shell and bone tools characterize their material culture (Luer and Almy 1982). The identification of interior Manasota sites has been hampered by the difficulty in distinguishing between the various types of undecorated, sand tempered ceramic wares used by different precontact cultures of South Florida (Milanich 1994: 224–226). A chronology for the Manasota Culture based on variations in ceramics and burial, is presented in Table 2.

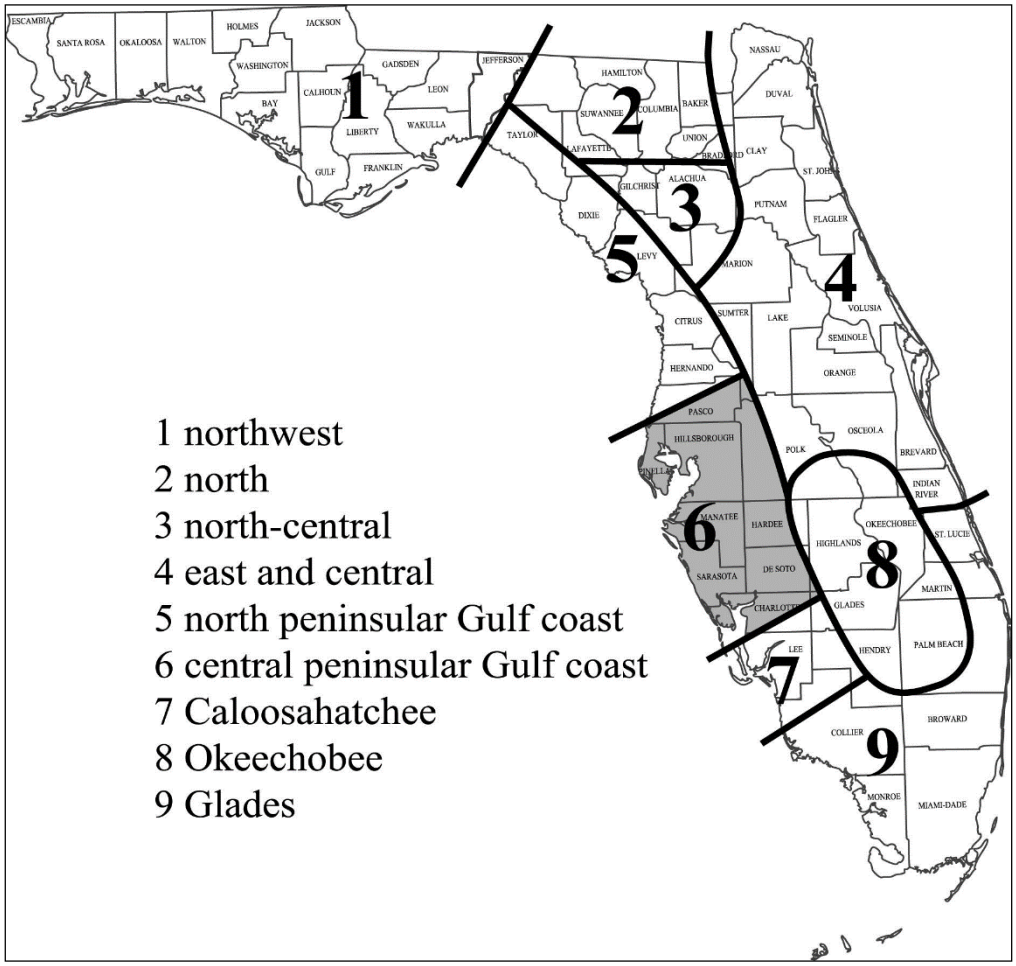

Figure 4: Central Peninsular Gulf Coast Cultural Region

Table 2. Manasota Culture Chronology

Period	Dates
Safety Harbor	AD 900–1513
Late Weeden Island	AD 700–900
Early Weeden Island	AD 300–700
Manasota	500 BC–AD 300

Source: Milanich (1994); modified from Luer and Almy (1980, 1982)

Despite its characterization as a primarily coastal culture, a number of inland Manasota sites have been documented (Deming 1976; Wood 1976; Wharton 1977; Ellis 1977; Wharton and Williams 1980; Piper and Piper 1981; Piper, Hardin, and Piper 1982; Almy 1982; Austin and Ste. Claire 1982; Austin and Russo 1989). These sites share characteristics that distinguish them from the typical Manasota site, which has been defined using characteristics from coastal sites. However, they are similar to what Luer and Almy define as "inland from the shore" sites. These sites are described as existing in the pine flatwoods, often occurring on a small, low

hillock or "mound" of sand near a freshwater source, and having similar artifact assemblages as the coastal sites except for a significantly lesser amount of shell and shell tools (Luer and Almy 1982:39–43). Luer and Almy distinguish these sites from "inland" sites, which are sites situated in interior regions of the peninsula (1982:51).

Weeden Island–Related Manasota Culture

During its later periods, the Manasota culture was influenced by the extensive Weeden Island socio-political complex, which is best known in northern Florida, southern Georgia, and Alabama—the recognized "heartland" of Weeden Island cultures. Present evidence suggests a date of circa AD 200 for the beginning of the Weeden Island period. Mound burial customs, artifact evidence of an extensive trade network, and settlement pattern data suggest a complex socio-religious organization while technologically and stylistically Weeden Island ceramic types are considered outstanding examples of pre-Columbian pottery. Evidence for the adoption of Weeden Island customs by local Manasota groups appears in the archaeological record around AD 300–900. This period of Manasota development is often referred to as "Weeden Island–related" (Milanich 1994:227; Luer and Almy 1982:46–47).

Safety Harbor Culture

The final pre-Columbian cultural manifestation to occur in this region was the Safety Harbor culture, which evolved out of the Manasota and later Weeden Island–related Manasota cultures. Similar to the preceding Manasota and Weeden Island–related cultures of the region, the Safety Harbor culture had a subsistence economy based on gathering shellfish and other marine resources (Grange et al. 1979; Milanich 1994:412).

The Safety Harbor culture, known after Spanish contact to be the culture of the Tocobaga, is typified by ceremonial centers with truncated, pyramidal temple mounds and open village plazas surrounded by middens, as well as burial mounds with associated charnel structures. Most Safety Harbor sites are found along the coast, although villages, camps, and mounds are also located inland (Milanich 1994:395, 403). Although the Safety Harbor culture is centered on the Tampa Bay area and the adjoining river drainages, it extends well to the north into Pasco, Hernando, and Citrus counties, and to the south and west into Sarasota, Polk, Manatee, Hardee, and Desoto counties. Safety Harbor pottery has also been found in mounds south of Charlotte Harbor in the Caloosahatchee archaeological area (Milanich 1994:391).

HILLSBOROUGH COUNTY HISTORY

Hillsborough County, located in west central Florida, was created on January 25, 1834. It extended north to Dade City and south to Charlotte County, and encompassed eight future counties (Mormino and Pizzo 1983:45). The first non-Indian settlement occurred in 1819 when Richard S. Hackley bought an 11-million-acre Spanish land grant that included all of Tampa Bay (Tebeau 1971:124). In 1823, Colonel George Mercer Brooke was sent by the U.S. Army to establish a fortification on Tampa Bay near present-day central Tampa to suppress Indian unrest in the Florida Territory. Colonels Brooke and Gadsden selected a site within the land grant, forced Hackley to leave, and sited Fort Brooke by the Hillsborough River (Chamberlin 1968:12–13). The location offered the highest and driest land on the eastern shore of Tampa Bay, a supply of fresh water, and easy access to the interior from the sea. Because the fort offered the nearest and quickest access to forts and communities in the interior of Florida, it became a military depot and staging area for the Second Seminole War (Hillsborough County Planning Commission 1973: I-13).

Due to its isolated location, Hillsborough County grew very little after the Seminole Wars. A civilian community developed around Fort Brooke and some development took place around as a result of the Armed Occupation Act of 1842 and. The Act provided 160-acre land grants to men over the age of 18, as long as they lived on the land for five years and cultivated at least five acres. Many of these settlers helped to establish Alafia, one of the oldest communities in Hillsborough County. Raising cattle became the main industry of these land grant settlers. A fort, Alafia Garrison, was built in response to Native American uprisings in the area (HDR Engineering, Inc. 1992:15). Settlers were establishing settlements in other areas of Hillsborough County, as well. In 1856, John Brandon, a blacksmith and farmer from Mississippi, settled the Brandon area, calling it East Hills. When the railroad reached the area in 1890, East Hills was renamed Brandon (HDR Engineering, Inc. 1992:15).

Although blockade-runners carried supplies to other parts of the South and cattle were supplied to the Confederate Army, the Civil War hampered the County's economy (Hillsborough County Planning Commission 1973: I-13). The Civil War's end brought Reconstruction to the County, where military rule lasted from 1866 to 1869. The economy continued its decline.

Wartime and reconstruction impeded the county's development until the late 19th century. The county rebounded with the arrival of Henry Plant's railroad from Kissimmee in 1883–1884 (Westfall 1985:5). Plant had established the Jacksonville, Tampa & Key West Railway Line in 1883 (Harner 1973:23). In bringing the railroad to Tampa, Plant bypassed the community of Shiloh in the eastern part of the county. J. T. Evers owned a small store there. Realizing the potential of increased markets the railroad could bring, he purchased a large tract of land adjoining the railroad. He had the land platted in 1883 and named the new town Plant City after the railroad magnate. Other merchants followed Evers and moved to Plant City. In 1890, another railroad, the Florida Railway and Navigation Company, extended its rails to Tampa from Ocala via Plant City. Plant's railroad and others connected the formerly isolated Hillsborough County to Florida's interior, the east coast, and the nation (Hillsborough County Planning Commission 1973: I-14).

The brief Spanish-American War brought an immense and sudden influx of business, adding to the momentum of economic and population growth started by the railroad and cigar industries. Around the same time the Spanish-American War was being launched, another important industry for Hillsborough County was developing. Phosphate was discovered in 1899 at Dunnellon in Marion County. The discovery at Dunnellon began the industry that became most important to Hillsborough County. The largest phosphate deposits were found in the County's eastern portion.

During the previous decade, 11,000 acres of Hillsborough County were under cultivation, and beef cattle outnumbered the county's population. County farms produced rice, corn, oats, sugar, potatoes, and honey (HDR Engineering, Inc. 1992:17, 20). Citrus production increased and lumber and turpentine were harvested.

While industrialization and agriculture flourished, immigration and housing development slowed during World War I. Tourism increased as a result of the war in Europe, which forced Americans to vacation domestically and was fostered by the efforts of tycoons such as Henry Flagler and Henry Plant. During the early 20th century, the Seaboard Air Line laid tracks from Turkey Creek in Hillsborough County to Oneco in Manatee County. This rail line passed through the rural settlements of Lithia, Boyette, Balm, and Wimauma. Portions of the rail bed associated with the railroad are located within the APE of the Aspen to FishHawk segment of the TEC Polk to FishHawk 230-kV Transmission Line project.

The Florida Land Boom era of the 1920s ushered in a time of great prosperity for Hillsborough County until a series of events caused the end of the early 1920s prosperity, including a financial collapse in real estate and two hurricanes. During the economic decline of the Great Depression, the cigar industry was damaged when smokers gave up the luxury of cigars for less expensive cigarettes. Industry was in decline and factories closed or moved to the north and 4,000 workers were laid off during the decade (Ingalls 1985:129–130). In addition, many mines, mills, and citrus packing plants were closed.

The government established a Tampa headquarters for the Works Progress Administration (WPA). The WPA employed 8,000 people and funded large-scale projects such as the Davis Island airport (Mormino and Pizzo 1983:168). In other areas of the county, modern citrus canning plants and cooperatives were established in citrus grove areas (HDR Engineering, Inc. 1992:21).

The outbreak of World War II returned prosperity to Hillsborough County. Three air bases were located in the County: MacDill Field, Drew Field, and Henderson Field (Hillsborough County Planning Commission 1973:I-15). MacDill Field was opened in 1940 and became a staging area for the war. During the war, 25,000 soldiers were stationed at MacDill and Drew fields. In addition to air base activity, the port was expanded for the numerous shipbuilding enterprises (Hillsborough County Planning Commission 1973:I-15). Shipbuilding was again producing at full capacity with the industry employing 16,000 people (Mormino and Pizzo 1983:174). Many military personnel were introduced to the area during the war and many returned as permanent residents (Hillsborough County Planning Commission 1973: I-16).

World War II also produced a demand for food for the war efforts. This need caused a rapid expansion in citrus canning in the grove belt region that included Brandon and Valrico (HDR Engineering, Inc. 1992:21). After World War II, Tampa continued to prosper as a place for company offices, retirees, and tourists. As retirees earned pensions that freed them from being dependent on their children, many moved to Florida. Building activity during the post-war years was equivalent to the market during the 1920s, but "without the speculative aspects" (Grismer 1950:286). Wholesalers and distributors of various goods that residents had been without during the lean war years were also flourishing (Grismer 1950:286).

The Federal Interstate System founded in the 1950s also helped bring many new residents to Florida. Interstate 75 (I-75) connected the Midwest to the Tampa Bay area and large numbers of people migrated to the area. The retirees have fueled real estate development of affordable housing and retirement centers (Trigaux 1999:11h). Between 1950 and 1960, a 59 percent population increase occurred in Hillsborough County. The project area remained relatively rural until the development of Apollo Beach which began in the late 1950s and early 1960s. The owner of the Apollo Beach development land sold a portion of the land to TEC in the early 1960s for the construction of the Big Bend Power Plant. The plant began operations in the 1970s with three generating units. A fourth unit was added in 1985. (TEC 2016). Development around the project area was sporadic and the area remained largely rural until the more recent building boom that started in the early years of the 21st century.

FLORIDA MASTER SITE FILE SEARCH AND LITERATURE REVIEW

An archaeological and historical literature and background information search pertinent to the project area was conducted to determine the types, chronological placement, and location patterning of cultural resources within the archaeological APE. A review of Florida Master Site File (FMSF) data, previous surveys, property appraiser records, and historical research material was conducted to determine the potential for cultural resources within the project APE that are listed, eligible, or considered eligible for listing in the National Register, or that have potential or confirmed human remains. 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 State Historic Preservation Officer's (SHPO) official position about the significance of a resource.

Previously Conducted Cultural Resource Surveys

The FMSF search did not identify any previously conducted cultural resource surveys within the project area. One previously conducted survey was located adjacent to the eastern side of the project area. The *Cultural Resource Assessment Survey of US 41 (SR 45) from 12th Street to Kracker Avenue Project Development and Environment (PD&E) Study, Hillsborough County, Florida* was conducted in 2008 by Archaeological Consultants, Inc. (FMSF Survey No. 15978. No comprehensive survey of historic or archaeological resources has been conducted within the project APE.

Previously Recorded Archaeological Sites

The search of the FMSF data identified three previously recorded archaeological sites within one mile of the project area (Figure 5; Table 3). No previously recorded sites are located within the archaeological APE.

Table 3. Previously Recorded Archaeological Sites Located within One Mile of the Project Area

FMSF Site No.	Site Name	Site Type	National Register Evaluation *
8HI65	Big Bend	Precontact shell midden	Not Evaluated
8HI100	Apollo Beach	Redeposited precontact cultural material	Not Evaluated
8HI101	Elsberry	Precontact shell midden	Not Evaluated

* As recorded in the FMSF; may require re-evaluation

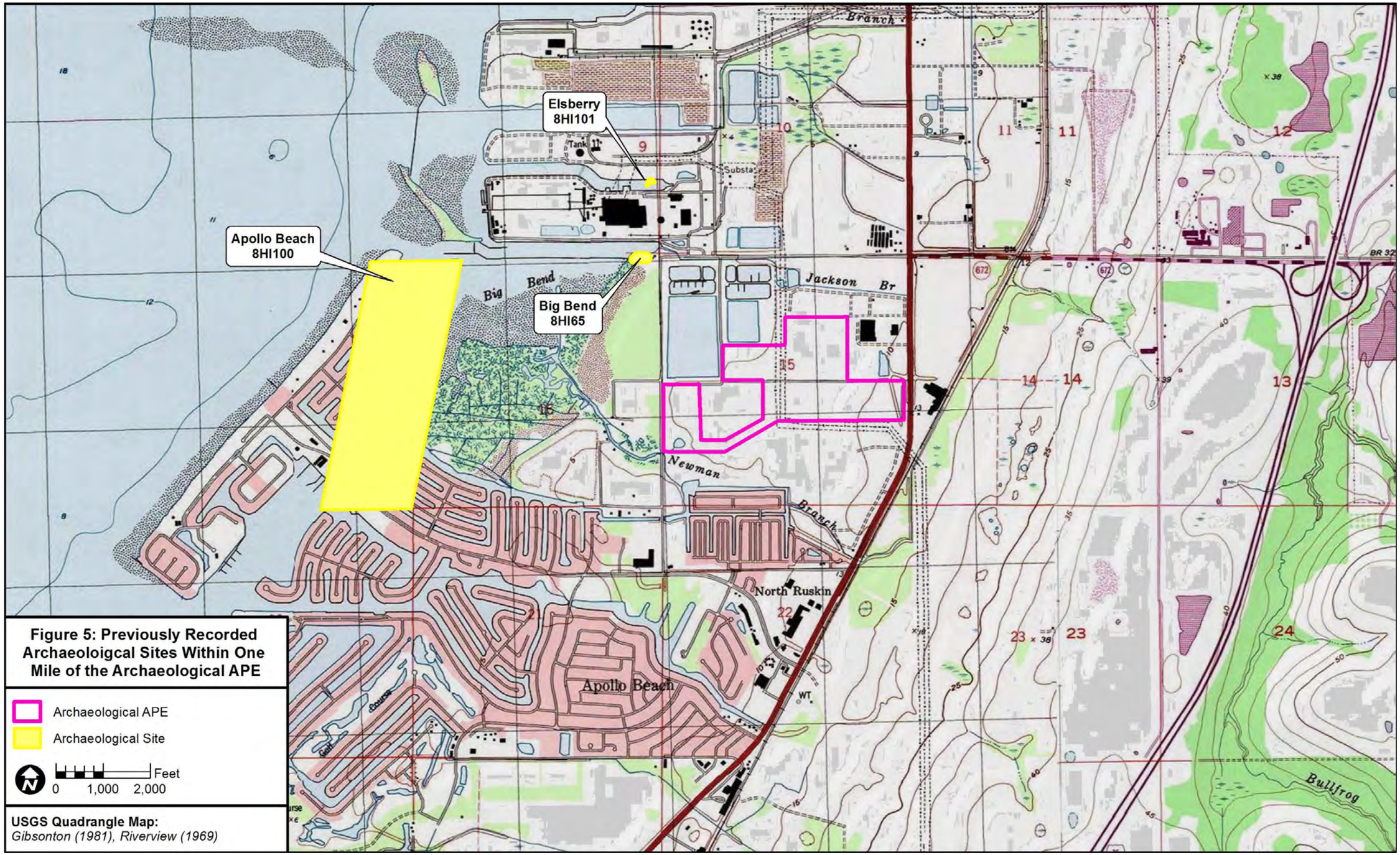

Figure 5: Previously Recorded Archaeoloigcal Sites Within One Mile of the Archaeological APE

Archaeological APE

Archaeological Site

0 1,000 2,000 Feet

USGS Quadrangle Map:
Gibsonton (1981), Riverview (1969)

Previously Recorded and Potential Historic Resources

The FMSF background search identified no previously recorded historic resource within the historic resources APE. In addition, a review of the Unincorporated Hillsborough County Historic Landmarks Map (Hillsborough County Infrastructure and Development Services 2014) identified no locally designated historic landmarks within the vicinity of the historic APE.

Property Appraiser Records
A search of property appraiser records identified two parcels within the historic APE with 'Actual Year Built' (AYRB) dates indicative of the potential for the presence of historic structures or buildings constructed in 1966 or earlier. Neither parcel currently contains any structures.

Florida Department of Transportation Bridge Data
A review of the Florida Department of Transportation (FDOT) bridge data identified no bridges with historic construction dates located within the historic resources APE (FDOT, Office of Maintenance 2014).

Historic Aerial Review
A review of historic aerials from 1938, 1957, 1965, and 1968 (University of Florida, George A. Smathers Libraries 2013) noted that U.S. 41 was extant by 1957 and that the area surrounding the project area remained undeveloped until the 1960s. No historic development was evident within or adjacent to the historic resources APE.

CERTIFIED LOCAL GOVERNMENT COORDINATION

Hillsborough County is included on the February 4, 2016 list of Certified Local Governments (CLG) available on the FDHR website (FDHR 2016). While Hillsborough County does not maintain an inventory of archaeological sites independent of those included in the FMSF, coordination was conducted with Mr. Thomas Hiznay, Senior Planner for Hillsborough County, on February 25, 2016. Mr. Hiznay was asked to provide input regarding local archaeological and historic resources. At the time this CRAS was submitted, a response had not yet been received.

PROJECT RESEARCH DESIGN AND SITE LOCATION MODEL

The background research and literature review, in conjunction with pertinent environmental variables, contributed to the formulation of project-specific field methods designed to locate and evaluate previously unrecorded archaeological sites. Four environmental factors are typically employed in predicting site locations: soil type (soil drainage), distance to fresh (potable) water, distance to hardwood hammocks, and topography. Fresh water was an important resource for precontact populations. Freshwater would have been available from creeks and drainages in the area.

Hardwood hammocks provide a variety of resources that would have been exploited by the aboriginal inhabitants of this region. Hydric hardwood hammocks can contain abundant animal and plant life, particularly a variety of tubers. Mesic hardwood hammocks contain cabbage palms and other plants that produce edible portions. Other mesic hardwoods, such as ash and elm, are woods that are known to have been used for specific purposes, i.e., bows, canoes, mortars, and dart shafts (Newsom and Purdy 1983). Often, areas of higher relative elevation correspond with better-drained soils or the presence of hardwood hammocks (xeric and mesic). Hammock vegetation was present adjacent to small creeks and drainages scattered throughout the area.

Relative elevation is the most difficult variable to quantify for central Florida because of the topographic diversity of the area. This variable has greater potential to locate sites in poorly to somewhat poorly drained areas of flatwoods than it does in typically undulating sandhill scrub environments. A slight topographic rise within a flatwood area adjacent to a wetland slough has a much greater potential for containing a precontact archaeological site than does the summit of a large, well-drained sand hill; even when both are the highest elevations within their respective environments. The archaeological APE has an altitude between 100 and 130 ft. above sea level, with lower areas associated with sloughs and drainageways.

The Updated Archaeological Site Predictive Model for Hillsborough County developed by Janus Research under contract with the Hillsborough County Board of County Commissioners through a Historic Preservation Grant (Grant No. F0305; Janus Research 2004) was also reviewed. This GIS-based model was overlain on current project maps and indicated that the majority of the archaeological APE has a low probability for archaeological sites. A small area adjacent to Dickman road is noted as having a moderate probability for archaeological site. No areas of high archaeological probability are identified within the project APE.

METHODS

Archaeological Field Methods

The archaeological field survey consisted of a pedestrian survey and subsurface testing. In total, 16 round shovel tests were excavated during this investigation. Shovel tests were circular and approximately 50 centimeter (20 in) in diameter. They were excavated to a minimum depth of one meter (39 in) unless obstructed by solid clay or hardpan or slumping incurred due to the influx of groundwater. All excavated soils was sifted through 6.4 millimeter (¼-in) metal hardware cloth screen suspended from portable wooden frames and all shovel tests were backfilled upon completion.

Shovel tests were excavated systematically at 50 meters (164 ft.) intervals within moderate site potential zones. Shovel tests were excavated judgmentally in low site potential zones. Additionally, all zones of low site potential were subjected to a careful surface inspection. Testing was performed at the specified interval unless obvious ground disturbance or standing water were encountered. The field crews were instructed to place additional shovel tests in areas they deemed likely for sites, regardless of the probability zone or testing interval.

Standard archaeological methods for recording field data were followed throughout the project. The identification number, location, stratigraphic profile, soil descriptions, and environmental setting were recorded for every shovel test excavated. Locations of all shovel tests were recorded in the field with WAAS-enabled hand-held Global Positioning System (GPS) units. The locations of all shovel tests were also recorded on 1” = 64 m aerial photographs.

Historic Resources Survey

A historic resources reconnaissance survey was conducted in order to identify any previously unrecorded resources within and in parcels adjacent to the project area for a distance of up to 500 feet. Property tax records and historic aerial photography were also consulted to assist in the identification of any historic resources.

RESULTS

A total of 16 shovel tests were excavated within the project APE during the current survey. No cultural material was recovered. The project area is low lying pasture with grasses, dog fennel, scattered Brazilian pepper and Australian pines, cabbage palm, palmetto (Figure 6). Most shovel tests encountered solid clay at approximately 60 to 70 cm below surface (cmbs). The soil stratigraphy in the project area generally consisted of gray sand 0–30 cmbs, light gray sand 30–50 cmbs, brown sand 50–60 cmbs, and solid brown clay at 60 cmbs (Figure 7). The locations of shovel tests, areas of moderate archaeological probability, as well as notes on current conditions are illustrated in Figure 8. No historic resources were identified within the historic resources APE.

Figure 6: Northwestern Portion of the Project Area, Facing East

Figure 7: Soil Stratigraphy in Shovel Test 1, Facing East

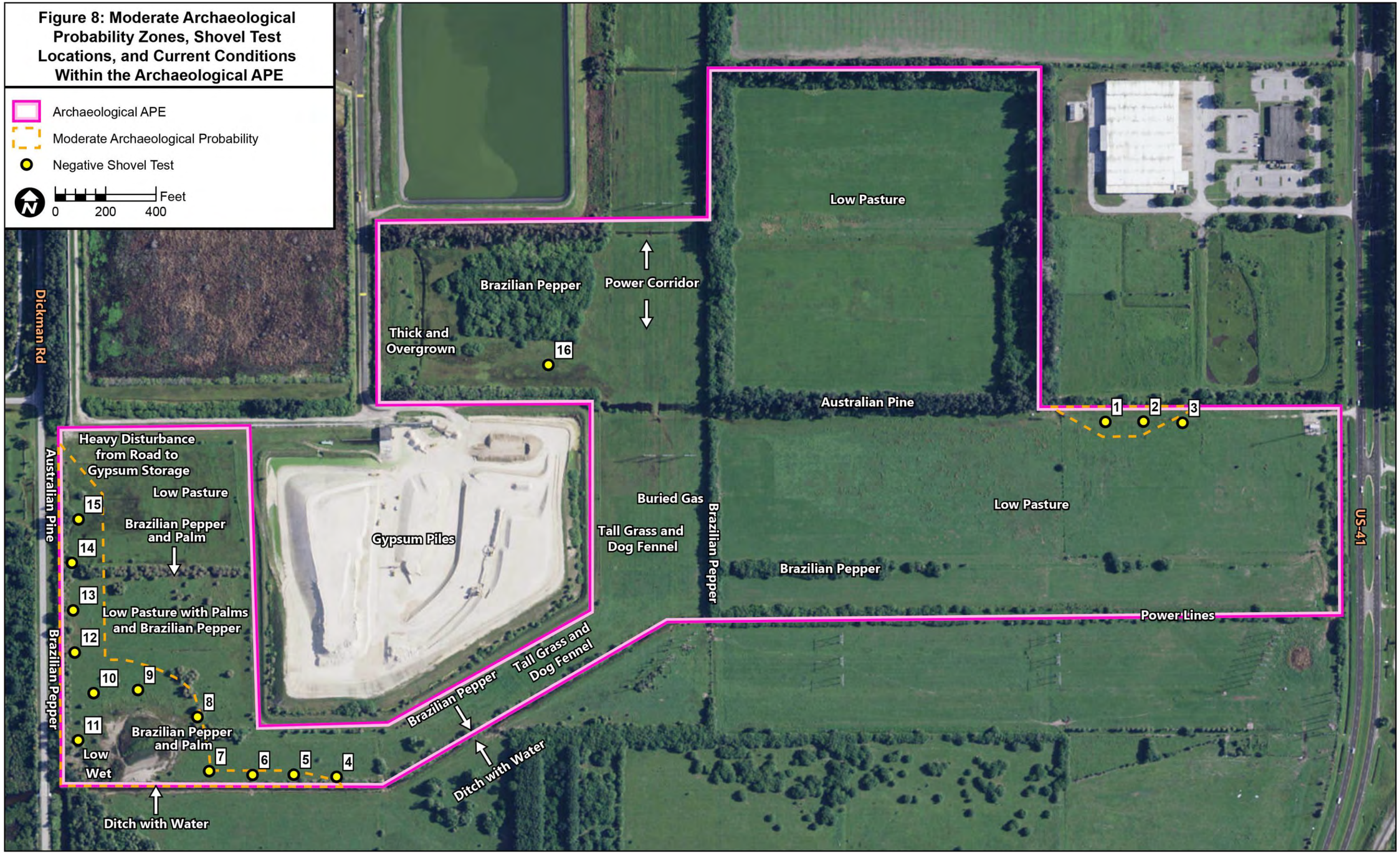

Figure 8: Moderate Archaeological Probability Zones, Shovel Test Locations, and Current Conditions Within the Archaeological APE

CONCLUSIONS

No newly or previously recorded archaeological sites were identified within the project APE. A total of 16 shovel tests were excavated within the project APE during the current survey. No cultural material was recovered. No historic resources were identified and no further work is recommended.

Unanticipated Finds

Although unlikely, 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 75 years of age or older.

Curation

Original Survey Log Sheets (Appendix A), and photographs are curated at the FMSF in Tallahassee, along with a copy of this report. Field notes and other pertinent project records are temporarily stored at Janus Research and returned to the client, as appropriate.

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APPENDIX A:

SURVEY LOG SHEETS