EW Consultants, Inc.
Natural Resource Management, Wetland, and Environmental Permitting Services

P1 MOTOR CLUB

Environmental Impact Report

Prepared For:

P1 Motor Club, LLC

Prepared By:

EW Consultants, Inc.

February 2023

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Purpose and Intent

This Environmental Impact Report (EIR) has been prepared in support of a proposed race track development on a 629 +/- acre property referred to as P1 Motor Club. The subject property is located in western St. Lucie County at the southwest corner of Summerlin Road and Okeechobee Road (SR70). The site is comprised of a specialty agricultural commodity (*Pongamia*) farm, agricultural drainage/irrigation swales and ditches, and a water storage reservoir.

This report has been prepared in accordance with Section 11.02.09.A.5 "Environmental Impact Report" of the St. Lucie County Land Development Code.

Introduction

The subject 629 +/- acre property covered by this Environmental Impact Report is located within portions of Sections 5, 6, 7, and 8, Township 36 south, Range 38 east in St. Lucie County, Florida. The site is located in unincorporated St. Lucie County at the southwest corner of Summerlin Road and Okeechobee Road (SR70). A Location Map (Figure 1), USGS Quad Map (Figure 2), and Aerial Photo (Figure 3) depicting the parcel boundaries and the immediate surrounding area are provided in the Appendix.

Property Description

Field reconnaissance in support of this EIR was initiated in December 2022, and includes follow up site reviews and assessments of the site and surrounding area in January and February 2023. Detailed vegetation cover assessment and mapping as well as listed species surveys and observations have been conducted intermittently over this period. The following property description and environmental evaluation reflect these observations on the site.

The site is comprised of several land cover types with the predominant type being an actively managed tree (*Pongamia*) farm. A network of ditches and furrows utilized for drainage and irrigation of the tree farm is present and actively managed. There is a pumped impoundment at the northeast corner of the property that serves the drainage and irrigation requirements of the farm.

There are no native upland vegetation assemblages present on the property. Further, there are no wetlands present, as the entire property is under active agricultural management. The impoundment at the northeast corner is intermittently flooded by a pump system and exhibits a vegetation composition which includes both native and non-native vegetation species.

Soils

A Soil Resource Report produced by the United States Department of Agriculture/Natural Resources Conservation Service is provided in the Appendix. The soils report identifies eight distinct soil types (along with open water in the impoundment) on the site. Due to the agricultural conversion of the land to citrus and subsequently to *Pongamia* tree farm, the site vegetation cover, hydrology, and drainage patterns have been significantly altered from the conditions described in the identified soil types. The descriptions of these soils, in their natural state (prior to agricultural and drainage alterations), is provided in the attached soil survey data.

Natural Communities and Land Cover

The following is a summary of the land cover types and vegetative communities found on the subject site. Land cover and vegetative community classifications are mapped based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS) developed by the Florida Department of Transportation. Field reconnaissance between December 2022 and February 2023 along with aerial imagery interpretation were employed in the mapping of the vegetative communities on the subject property. The vegetative community descriptions include discussions of potential wildlife habitat provided by the various resources present in those communities. Detailed observations and occurrences of wildlife are discussed in subsequent sections.

A FLUCFCS land cover map of the observed vegetative community types is included as Figure 4 in the Appendix of this report. The land cover types observed on the property are described as follows:

223 – Other Groves –

The land cover on the site is predominantly a specialty tree crop (*Pongamia*) grove/farm, comprising nearly 95% of the site. The trees and associated beds and furrows are highly maintained with mowing and other required maintenance. In the south east portion of the site, there is an area of considerably older trees that those in the remainder of the site, which appears with a darker more defined signature on the aerial photograph.

510 – Ditches –

A system of man-made linear surface waters built for the purpose of controlling the drainage and irrigation of the tree farm uses extends throughout the property. The ditches are generally un-vegetated as a result of regular maintenance.

533 – Reservoirs > 10 acres < 100 acres –

There is man-made above ground impoundment pond on the property. The pond has a constructed containment berm and is filled by pumping and lowered by gravity outflow in response to drainage and irrigation requirements of the crops. The pond includes areas of open water as well as a combination of both native and non-native vegetative cover tolerant of regular inundation and drainage.

Wildlife

Non-listed Wildlife

Observations for wildlife presence and signs of utilization were made from December 2022 through February 2023. Several common avian species were observed within the property and surrounding area, and several others are likely to occur on a foraging or migratory basis. The following non-listed avian species were observed during one or more site reconnaissance visits to the property:

Great egret, great blue heron, black vulture, turkey vulture, red-shouldered hawk, mourning dove, and boat-tailed grackle.

Direct observation and signs of utilization by mammals were observed during the site reconnaissance including raccoons, armadillos, and feral hogs.

Reptile observations included black racers, mud turtles, and southern leopard frogs.

Listed Species Inventory and Evaluation –

The survey methodologies used for determining the status of state and/or federally listed wildlife species occurrence on the site followed generally accepted protocols as specified in state and Federal guidance documents. The geographic range of the property and its associated habitats, vegetative cover types, and natural or disturbed status were the primary considerations in assessing potential occurrence of listed species.

Pedestrian and vehicular surveys were employed to assess the relative quality and wildlife utilization of the property. In addition, the protected species evaluations and survey methodologies have been, and will continue to be, addressed on a species-specific basis in accordance with Florida Fish and Wildlife Conservation Commission (FFWCC) and U.S. Fish and Wildlife Service (USFWS) protocols and techniques relative to the species under consideration.

The state and/or federally listed wildlife species with potential to occur on the subject site based on available habitat characteristics and geographic location are summarized in the following table. Likelihood of occurrence has been indicated based on species-specific evaluations and best professional judgment and noted as either observed during site review or likelihood of occurrence as high, medium, or low.

Common Name	**Scientific Name**	**Preferred Habitat**	**Occurrence***	**Listed Status****
				State/Federal
American alligator	*Alligator mississippiensis*	Wetland and aquatic habitat	O[2]	FT/SA
Bald Eagle	*Haliaeetus leucocephalus*	Nest in tall trees (usually pine) near coasts, rivers, lakes and wetlands	L	No longer listed Nest trees protected
Florida Burrowing Owl	*Athene cunicularia*	Sandhills, ruderal communities, dry prairies	L	ST/-
Eastern indigo snake	*Drymarchon corais couperi*	A diversity of upland/low land habitat	L	FT
Florida Sandhill Crane	*Grus canadensis pratensis*	Breed in emergent palustrine wetlands; forage in pastures/prairies	O[1]	ST/-
Gopher tortoise	*Gopherus polyphemus*	Sandhills, xeric oak scrub, sand pine scrub, scrubby flatwoods; agricultural lands	L	ST/-
Audubon's crested caracara	*Polyborus plancus audbonii*	Nest in cabbage palms, dry prairie and pastures	L	FT
Little Blue Heron	*Egretta caerulea*	Breeding: marshes, swamps, ponds, estuaries, rivers; nest in shrubs and small trees	M	ST/-
Red-cockaded Woodpecker	*Picoides borealis*	Mature pine woodlands	L	FE
Roseate Spoonbill	*Ajaia ajaja*	Breeding: marshes, swamps, ponds, estuaries, rivers; nest in shrubs and small trees	M	ST/-

Common Name	Scientific Name	Preferred Habitat	Occurrence*	Listed Status**
Reddish egret	*Egretta rufescens*	Breeding: marshes, swamps, ponds, estuaries, rivers; nest in shrubs and small trees	L	ST/-
Southeast American Kestrel	*Falco sparverius paulus*	Sandhill and open rangeland nest in cavities of dead trees and abandoned woodpecker nests	L	ST/-
Tricolored Heron	*Egretta tricolor*	Breeding: marshes, swamps, ponds, nest in shrubs and small trees	M	ST/-
Wood Stork	*Mycteria americana*	Estuarine or freshwater wetlands; nest in tops of trees in cypress or mangrove swamps	M	FT

[1] Observed transient
[2] Observed nesting and/or resident
[3] Observed utilization
*O= Observed; H= High probability; M= Medium probability; L= Low probability; FE = Federal Endangered; FT = Federal Threatened; FT/SA = Federal Threatened due to similarity of appearance; ST = State Threatened

The preferred nesting habitat for Florida sandhill cranes is native freshwater marsh habitat, which does not occur on the property. Sandhill crane were observed foraging in the impoundment area during the December 2022 site reconnaissance and wildlife survey. This species likely also utilizes the property for foraging in the ditches, but its presence would likely only be transient. Although not "native" freshwater marsh, the impoundment area does provide conditions that may be suitable for nesting by sandhill cranes, thus nesting activity surveys in advance of development activity are warranted.

Bald eagles, while no longer listed, remain protected under the Bald and Golden Eagle Protection Act. There are no suitable nesting trees on the project site. The open water body (impoundment) may provide foraging opportunities, but nesting by this species unlikely. There were no bald eagle nests or bald eagles observed during field reconnaissance.

The subject site is within the consultation area of the Audubon's crested caracara. However, the subject site does not provide caracara nesting habitat or opportunities. There is potential for use of the surrounding pasture areas by caracara for foraging and the potentially nesting. Due to the lack of habitat within the property, site specific surveys for the Crested caracara were not conducted.

The wood stork is a federally listed threatened species that is likely to forage on site in existing ditches as well as the impoundment area. The agricultural ditches and the impoundment on the site provide foraging opportunities for wood storks, however, the site does not provide suitable nesting habitat due to the absence of natural forested wetlands. The site is, however, within the 18.6-mile core forage area of wood stork rookeries as per USFWS, thus an assessment of wood stork forage biomass loss and replacement is warranted. At such time as development details have been finalized, a Wood Stork Forage Biomass Analysis will be prepared in accordance with the forage biomass calculation methodology set forth in the USFWS programmatic concurrence letter dated January 25, 2010 and revised on May 18, 2010.

At this time, no correspondence has been received from the U.S. Fish and Wildlife Service on the proposed project. By use of the USFWS programmatic key, no individual foraging prey base analysis would be required by the USFWS as the proposed project will not impact any wetlands. Nonetheless, as mentioned above, a Wood Stork Forage Biomass Analysis will be prepared for this project site.

The proposed project has not yet been discussed with Florida Fish and Wildlife Conservation Commission (FFWCC). Based on the site assessment, documented and potential natural resources present on site, and proposed project, no objections from FFWCC are anticipated.

There is potential for several species of wading birds that are listed as State Threatened to utilize the site for foraging opportunities. None of these species have been observed during multiple site reconnaissance visits. Occurrence of any such species would be limited to transient foraging as no evidence of nesting or suitable nesting substrate was observed on the site.

The conditions on the site do not provide potential habitat for the Florida burrowing owl, which is listed as a State threatened species. The burrowing owl is a small ground-dwelling owl often found in open, treeless fields, where it spends most of its time on the ground, perching on dirt mounds, small posts, fences, or short shrubs. No burrowing owls or burrowing owl burrows were observed during the site reconnaissance.

The conditions on the property do not provide potential habitat for gopher tortoises and associated commensal species. A representative habitat survey indicated that there were no potentially occupied gopher tortoise burrows present on the site. The gopher tortoise is listed as a threatened species by the FFWCC. Should any gopher tortoises occur on the site in proposed development areas, they will be relocated in accordance with FFWCC requirements to avoid impacts from development activity.

A listed reptile species that was not observed but has some potential to occur on the site is the Federally threatened eastern indigo snake. The eastern indigo snake ranges widely over a diversity of upland and wetland habitats, and is known to occur in the region. Although no individuals of this species were observed, potential occurrence of Eastern indigo snakes will be addressed by

standardized and specific construction awareness and notification procedures implemented for the protection of this species during site development.

The American alligator is listed as Federally Threatened due to similarity of appearance with the American crocodile. An alligator was observed in the impoundment area on several occasions, and could potentially occur in the on-site ditches.

Impact Summary

Uplands –

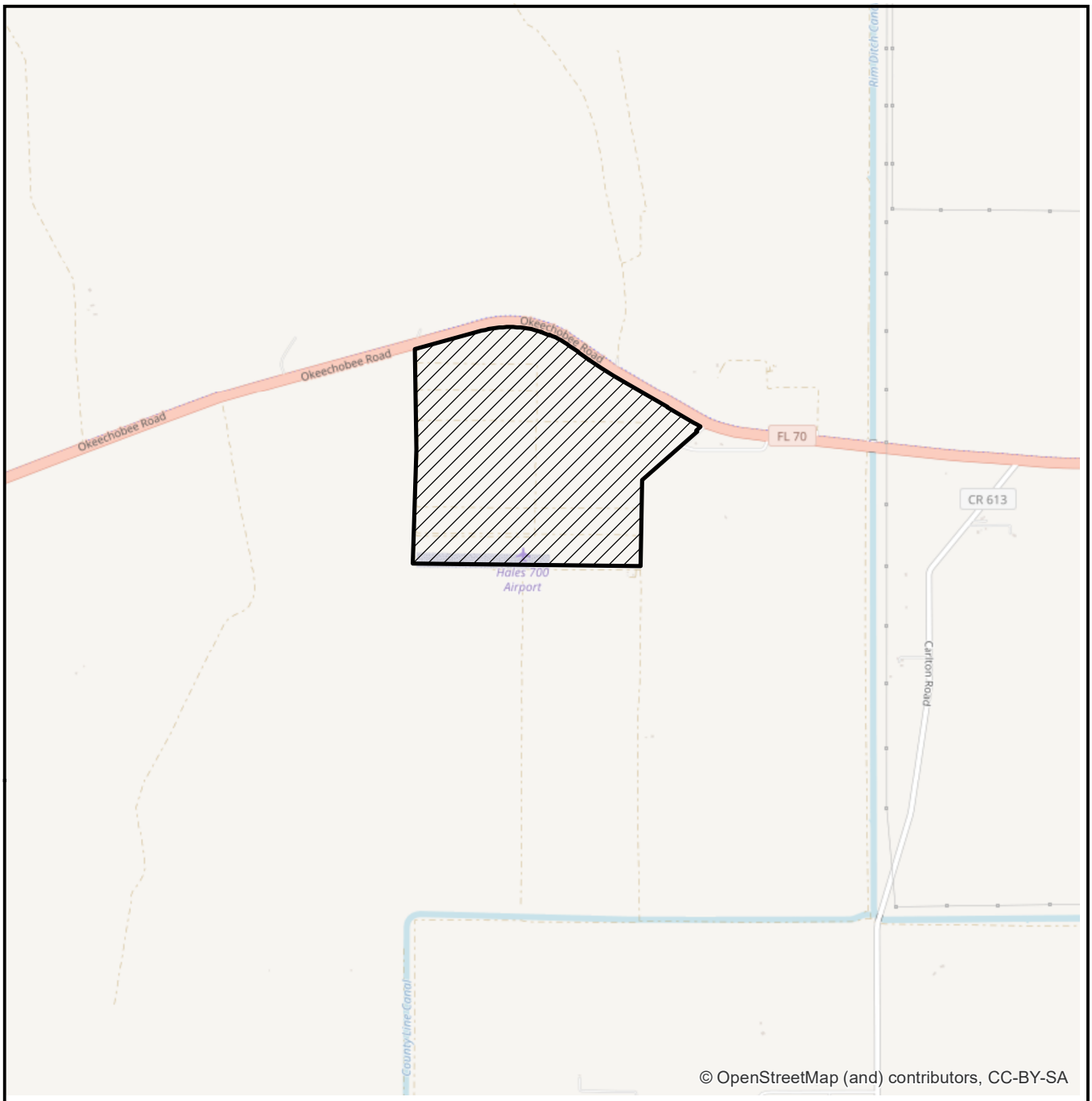
The subject site has no areas of native upland habitat. The entirety of the site has been previously altered for drainage improvements and agricultural uses resulting in the elimination of all native upland habitat.

Wetlands -

Field evaluations indicate that there are no areas on the site that would meet the criteria for jurisdictional wetlands in accordance with Chapter 62-340 F.A.C. This will require verification by SFWMD at such time as Environmental Resource Permitting proceeds. The ditches and impoundment are part of an SFWMD permitted system and thus are not considered "Other Surface Waters", in accordance with Chapter 62-340.600 F.A.C.

As of the date of this EIR, ERP applications have not been submitted to the SFWMD.

APPENDIX



0 4,000 Feet

LEGEND

- SITE (628.9+/- AC)

N

P1 MOTOR CLUB
LOCATION

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1000 SE MONTEREY COMMONS BLVD., SUITE 208
STUART, FL 34996
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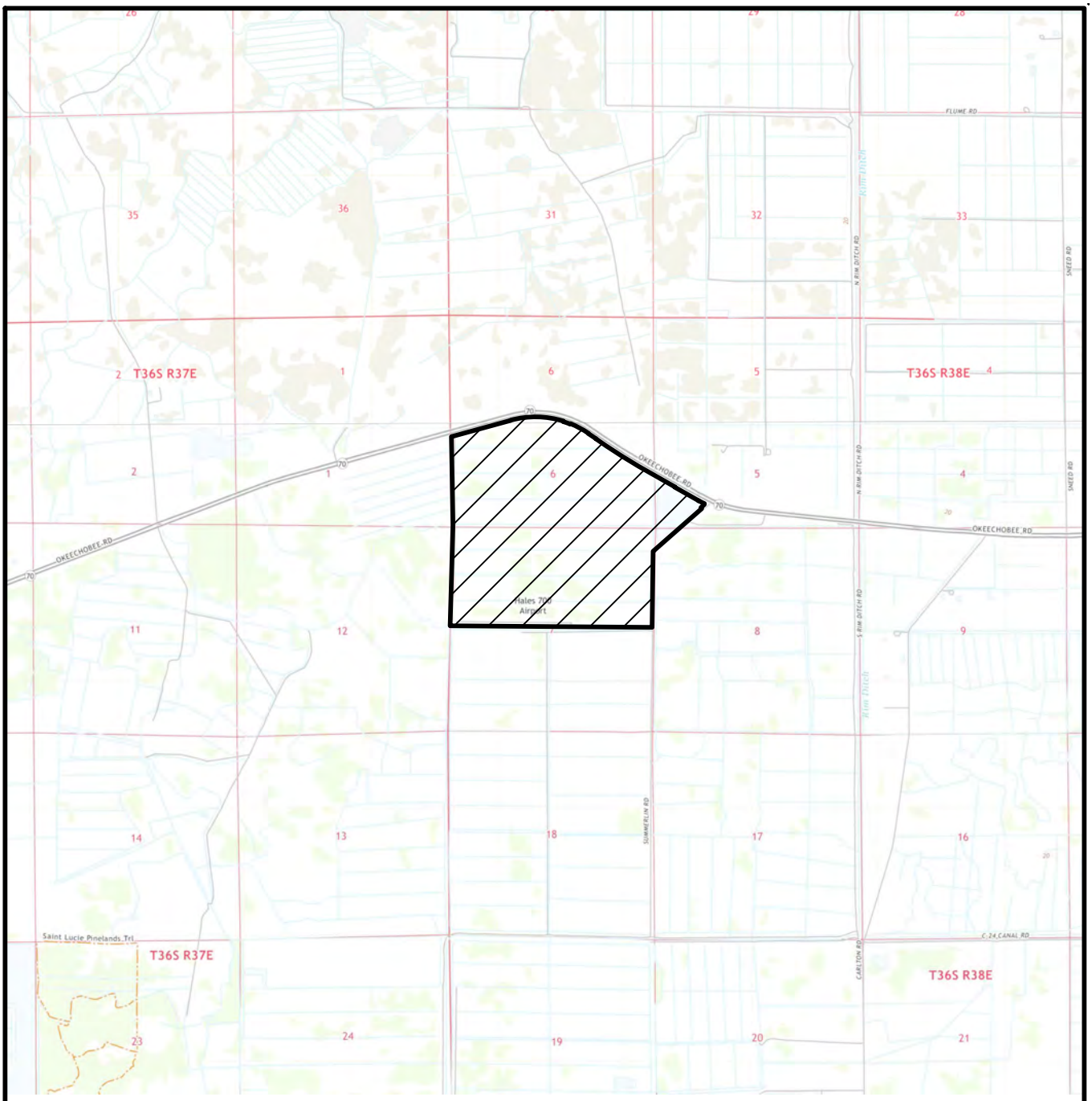
WWW.EWCONSULTANTS.COM

FEB 2023

FIGURE

1



USGS QUAD MAP "NORTH OF BLUEFIELD" SECTIONS 5, 6, 7 & 8 TOWNSHIP 36 SOUTH, RANGE 38 EAST, ST LUCIE COUNTY, FLORIDA, LATITUDE 27°22'03" LONGITUDE -80°34'15"

LEGEND

- SITE (628.9± AC)

0 4000

SCALE IN FEET

P1 MOTOR CLUB

QUAD

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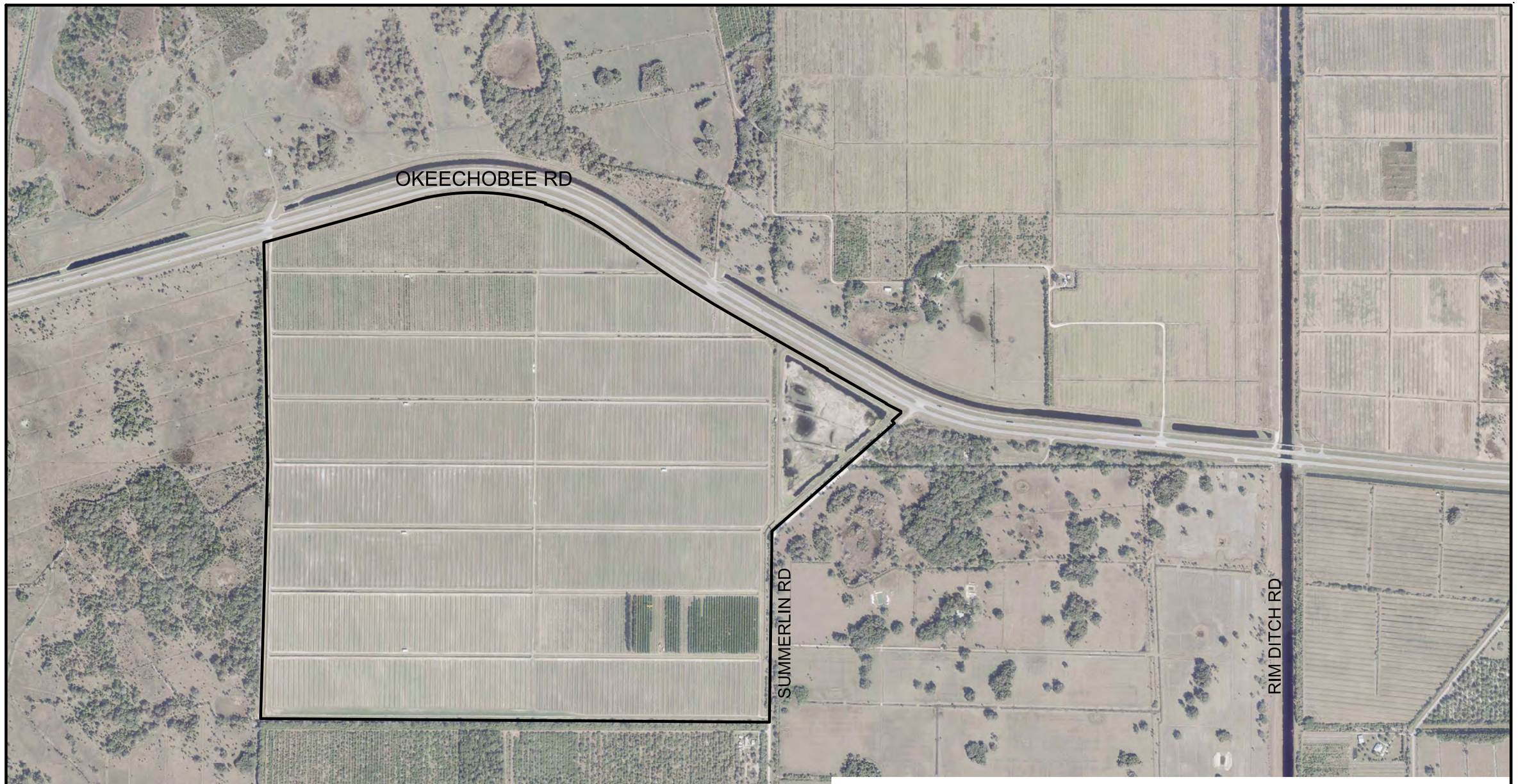
FEB 2023

FIGURE

2

P1 Motor Club.dwg QUAD



FDOT AERIALS DATED 2021

0 1000
SCALE IN FEET

P1 MOTOR CLUB

AERIAL

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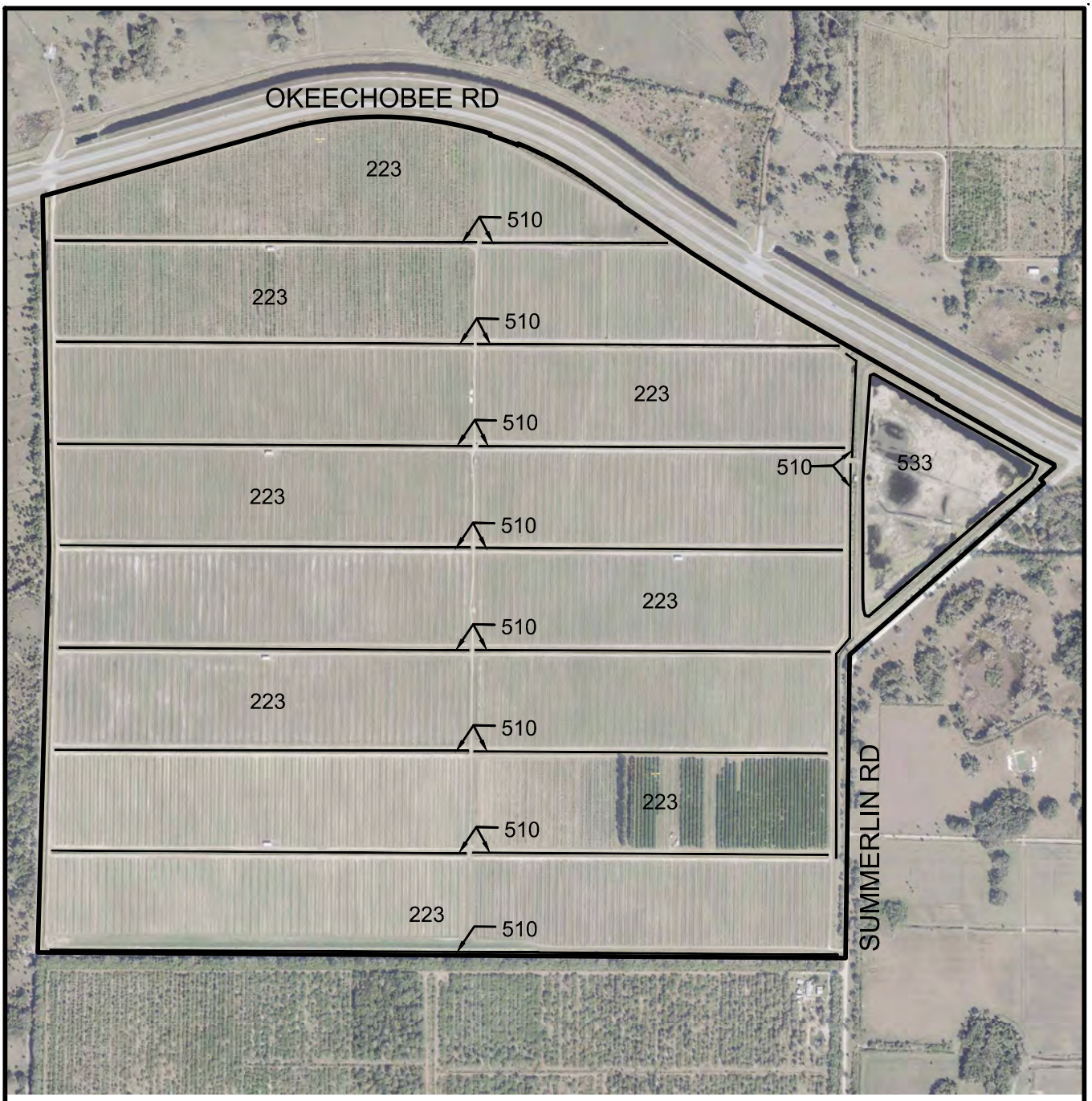
FIGURE 3

P1 Motor Club.dwg AERIAL L



FDOT AERIAL DATED 2021

LEGEND

223 - OTHER GROVES (592.1± AC)

510 - DITCHES (15.4± AC)

533 - RESERVOIRS MORE THAN 10ACS BUT LESS THAN 100ACS (21.4± AC)

0 1000

SCALE IN FEET

P1 MOTOR CLUB

QUAD

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FIGURE

2

P1 Motor Club.dwg FLUCFCS

United States Department of Agriculture

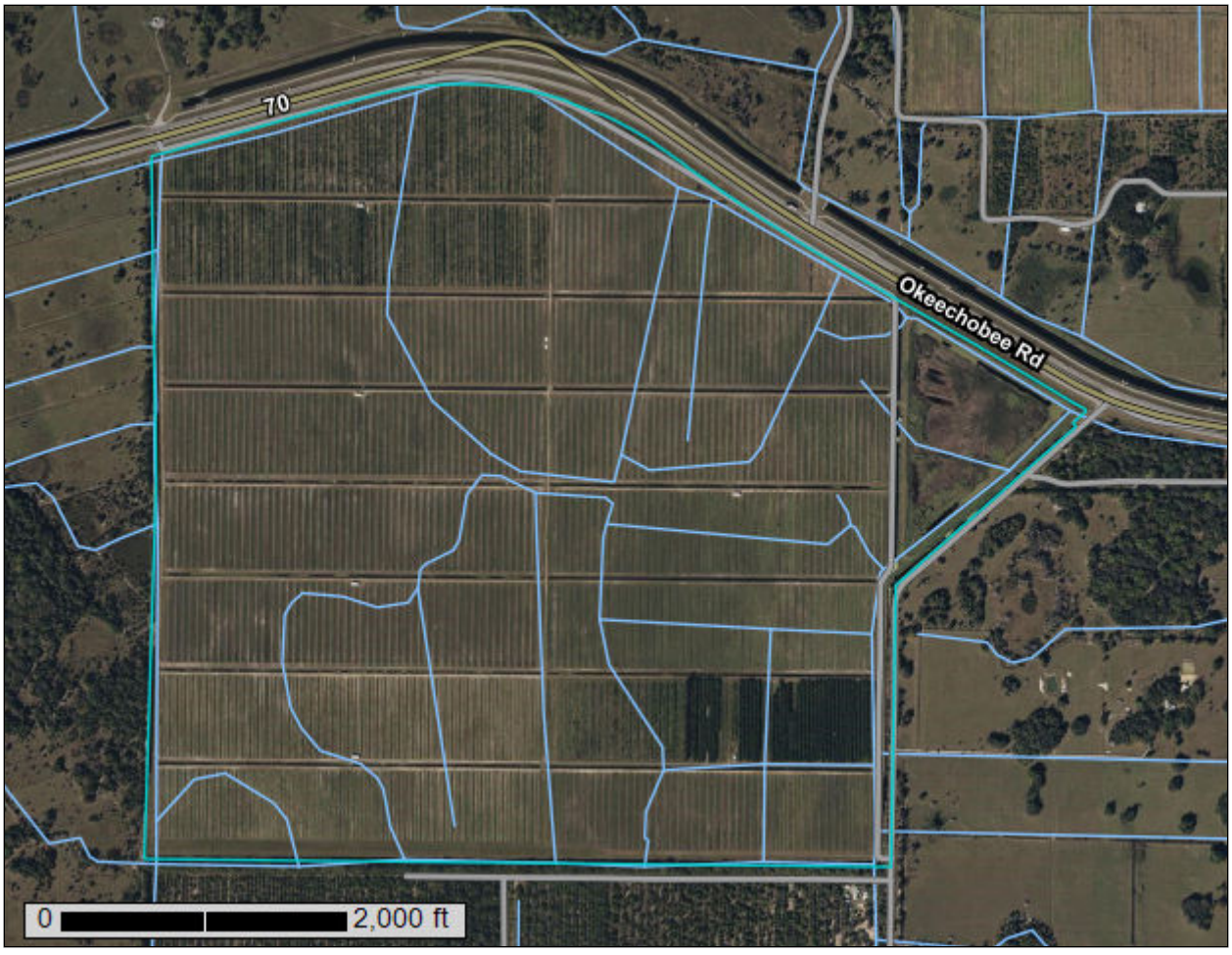
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for St. Lucie County, Florida

P1 Motor Club



February 24, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: St. Lucie County, Florida
Survey Area Data: Version 16, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 18, 2022—Jan 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Floridana sand, frequently ponded, 0 to 2 percent slopes	21.3	3.4%
15	Brynwood sand, 0 to 2 percent slopes	1.9	0.3%
32	Pineda sand, 0 to 2 percent slopes	314.6	50.0%
36	Pople sand	55.2	8.8%
37	Riviera sand, frequently ponded, 0 to 1 percent slopes	158.9	25.3%
48	Wabasso sand, 0 to 2 percent slopes	10.0	1.6%
49	Wabasso fine sand, gravelly substratum	41.9	6.7%
55	Winder loamy sand	2.3	0.4%
99	Water	22.9	3.6%
Totals for Area of Interest		**629.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

St. Lucie County, Florida

13—Floridana sand, frequently ponded, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sm56
Elevation: 0 to 140 feet
Mean annual precipitation: 46 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Floridana and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Floridana

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 21 inches: sand
Eg - 21 to 25 inches: sand
Btg - 25 to 60 inches: sandy clay loam
BCg - 60 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)

Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

Minor Components

Winder
Percent of map unit: 7 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Hydric soil rating: Yes

Felda
Percent of map unit: 4 percent
Landform: Depressions on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

Tomoka
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G156BC645FL)
Hydric soil rating: Yes

Anclote
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

15—Brynwood sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2zlfg
Elevation: 10 to 30 feet
Mean annual precipitation: 49 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Brynwood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brynwood

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits over limestone over sandy marine deposits

Typical profile

Ap - 0 to 6 inches: sand
Bw - 6 to 12 inches: sand
2R - 12 to 37 inches: bedrock
3Cg - 37 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 7 to 23 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 0.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Minor Components

Winder
Percent of map unit: 5 percent
Landform: Depressions on marine terraces, drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave, convex, linear
Across-slope shape: Concave, linear
Other vegetative classification: Wetland Hardwood Hammock (R156BY012FL), Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Hilolo
Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Pople
Percent of map unit: 5 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Other vegetative classification: Cabbage Palm Flatwoods (R155XY005FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

32—Pineda sand, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2x1nb
Elevation: 0 to 100 feet
Mean annual precipitation: 47 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pineda and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 19 inches: sand
Bw - 19 to 35 inches: sand
Btg/E - 35 to 38 inches: sandy loam
Btg - 38 to 60 inches: sandy loam
Cg - 60 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Minor Components

Malabar

Percent of map unit: 6 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Valkaria

Percent of map unit: 2 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

36—Pople sand

Map Unit Setting

National map unit symbol: 1jpvy
Elevation: 20 to 100 feet
Mean annual precipitation: 49 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pople and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pople

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 3 inches: sand
E - 3 to 29 inches: sand
Btkg - 29 to 56 inches: sandy clay loam
Cg - 56 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F156BY041FL - Sandy Over Loamy Pine Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Hydric soil rating: Yes

Minor Components

Hallandale

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY360FL - Subtropical Moist Hammocks of Miami Ridge / Atlantic Coastal Strip
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

Pineda

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F156BY041FL - Sandy Over Loamy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Hydric soil rating: Yes

Hilolo

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156BY030FL - Wetland Hardwood Forests
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Winder, shell substratum, hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Linear
Ecological site: F156BY030FL - Wetland Hardwood Forests
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Winder, hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Linear
Ecological site: F156BY030FL - Wetland Hardwood Forests
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F156BY041FL - Sandy Over Loamy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Hydric soil rating: Yes

37—Riviera sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzwm
Elevation: 0 to 70 feet
Mean annual precipitation: 46 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Riviera and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 0 inches: sand
E - 0 to 22 inches: sand
Btg/E - 22 to 31 inches: sandy loam
Btg1 - 31 to 42 inches: sandy loam
Btg2 - 42 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D

Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

Minor Components

Chobee
Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Hydric soil rating: Yes

Wabasso
Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Brynwood
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Malabar
Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

48—Wabasso sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2svyr
Elevation: 0 to 70 feet
Mean annual precipitation: 46 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Wabasso and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 30 inches: sand
Btg - 30 to 58 inches: sandy clay loam
Cg - 58 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 9 to 50 inches to strongly contrasting textural stratification
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Minor Components

Brynwood
Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Cypress lake
Percent of map unit: 5 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Concave, linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Pineda
Percent of map unit: 4 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

49—Wabasso fine sand, gravelly substratum

Map Unit Setting
National map unit symbol: 1jpwc
Elevation: 20 to 100 feet
Mean annual precipitation: 49 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Wabasso, gravelly substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso, Gravelly Substratum

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 20 inches: fine sand
Bh1 - 20 to 23 inches: sand
Bh2 - 23 to 25 inches: sand
Btg - 25 to 32 inches: sandy loam
2C1 - 32 to 36 inches: very gravelly sandy loam
3C2 - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F156BY040FL - Sandy Pine Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

Minor Components

Hilolo

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex

Across-slope shape: Linear
Ecological site: F156BY030FL - Wetland Hardwood Forests
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Pople

Percent of map unit: 4 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F156BY041FL - Sandy Over Loamy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Hydric soil rating: Yes

Hallandale

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY360FL - Subtropical Moist Hammocks of Miami Ridge / Atlantic Coastal Strip
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

Wabasso

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156BY040FL - Sandy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

55—Winder loamy sand

Map Unit Setting

National map unit symbol: 1jpwk
Elevation: 0 to 30 feet
Mean annual precipitation: 49 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Winder, drained and bedded, and similar soils: 67 percent
Winder, hydric, and similar soils: 15 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Winder, Drained And Bedded

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: loamy sand
E - 6 to 12 inches: sand
Btg1 - 12 to 33 inches: sandy clay loam
Btg2 - 33 to 49 inches: sandy loam
Cg1 - 49 to 61 inches: loamy sand
Cg2 - 61 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F156BY030FL - Wetland Hardwood Forests
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: No

Description of Winder, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Linear

Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: loamy sand
E - 6 to 12 inches: sand
Btg1 - 12 to 33 inches: sandy clay loam
Btg2 - 33 to 49 inches: sandy loam
Cg1 - 49 to 61 inches: loamy sand
Cg2 - 61 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F156BY030FL - Wetland Hardwood Forests
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Minor Components

Floridana

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R156BY021FL - Mineral Isolated Swamps and Marshes
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G156BC245FL)
Hydric soil rating: Yes

Hallandale

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY360FL - Subtropical Moist Hammocks of Miami Ridge / Atlantic Coastal Strip

Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

Riviera

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F156BY041FL - Sandy Over Loamy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Hydric soil rating: Yes

Pineda

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F156BY041FL - Sandy Over Loamy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL)
Hydric soil rating: Yes

Winder, shell substratum, hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Linear
Ecological site: F156BY030FL - Wetland Hardwood Forests
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G156BC341FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156BY040FL - Sandy Pine Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

Wabasso, gravelly substratum

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156BY040FL - Sandy Pine Flatwoods and Hammocks

Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G156BC141FL)
Hydric soil rating: No

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Ecological site: R156BY100FL - Subaqueous Freshwater Riverine Habitats
Forage suitability group: Forage suitability group not assigned (G156BC999FL)
Other vegetative classification: Forage suitability group not assigned (G156BC999FL)
Hydric soil rating: Unranked

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