USER NOTES: FORT PIERCE NW & SW; NE & SE (Partials), NATIONAL WETLANDS INVENTORY MAP

Map Preparation:

The wetland classifications that appear on the Fort Pierce NW & SW; NE & SE (Partials) National Wetlands Inventory (NWI) Base Map are in accordance with Cowardin et.al. (1977). The delineations were produced through stereoscopic interpretation of 1:58,000 scale color infrared photography. The photography was taken during January, February, and March of 1984.

Field checks of areas found within Fort Pierce NW, SW, NE and SE 1:100,000 maps were made prior to the actual delineation of wetlands on the photography. Field check sites were determined in order to clarify varying signatures (colors and textures) found on the photography. These photographic signatures were then identified in the field using vegetation and soil types, as well as additional observations made by the field personnel. A limited one-day field trip was made to check the accuracy of finished photos as well as to investigate any unusual signatures encountered during the initial photointerpretation.

Collateral data included USGS topographic maps, SCS soil surveys; climate and vegetation information.

The user of the map is cautioned that, due to the limitation of mapping primarily through aerial photointerpretation, a small percentage of wetlands may have gone unidentified. Since the photography was taken during a particular time and season, there may be discrepancies between the map and current field conditions. Changes in landscape which occurred after the photography was taken would reflect such discrepancies. Questions regarding any problems affiliated with this map should be made to John Hefner, Regional Wetlands Coordinator, U.S. Fish and Wildlife Service, Region 4; R.B. Russell Federal Building, 75 Spring Street, S.W.; Atlanta, Georgia 30303. Aerial photointerpretation and drafting were completed by Martel Laboratories, Inc., St. Petersburg, Florida.

Geography:

The study area covered by Fort Pierce NW & SW ; NE & SE (Partials) NWI Base Map is located in central Florida. Bailey's Ecoregion Classification (1978) places the study area into the Outer Coastal Plains Forest Province within the general Humid Subtropical Region. This area is the flat and irregular southern Gulf Coast Plains. Rivers and streams are sluggish and there are numerous wet depressions, marshes, swamps, and lakes. The eastern and southwestern sections of the study area are gently sloping to rolling. Local relief is less than 100 ft. The central and northwestern sections are dominated by the Central Florida Ridge. These sections are characterized by high elevations and numerous lakes and depressions. However, the elevation rarely exceeds 250 ft.

The drainage is dominated by the Peace River in the west and the Kissimmee River in the east. However, numerous creeks and tributaries as well as man-made ditches and canals provide drainage throughout the entire study area. The channelized Kissimmee River flows south from Lake Kissimmee to Lake Okeechobee. The other major river basin, the Peace River, flows from the northwestern part of the mapping area near Bartow to the southwestern section. The river is tidally influenced from Ft. Ogden south to Charlotte Harbor which is off the study area. The remainder of creeks (including the Charlie, Arbuckle, Taylor, Bowlegs, Payne and Little Payne Creeks) and canals (Indian Prairie, Harvey Pond and Istokpoga Canals) are non-tidally influenced.

Climate:

The climate is characterized by long, warm, humid summers and mild, dry winters. Temperatures are moderated somewhat by the Atlantic Ocean and the Gulf of Mexico and by the many large lakes present in the study area. The average temperature in winter is 65°F while in summer the average temperature is 82°F. Average annual precipitation is 53 inches with 70% of the rainfall occurring between April and September. Extended periods of extreme dry weather (droughts) can occur in any season, but are most common in spring and fall.

Vegetation:

Bailey (1978) characterizes the mapping area as the Temperate Rainforest. Commonly found trees are evergreen oaks and members of the laurel and magnolia families. This Beech-Sweetgum-Magnolia-Pine-Oak forest section is further divided into the Eastern-Gulf-Atlantic Coastal Flats and the Eastern Gulf-Atlantic Rolling Plains. These forests usually have a well developed understory of ferns, small palms, shrubs, and herbaceous plants.

The climax vegetation of these mesophytic habitats is the evergreen-oak and magnolia forest. Second growth, xerophytic and hydrophytic, forests are represented by large areas of sandy upland consisting of loblolly and slash pine and swamps where bald cypress is the dominant tree.

Soils:

Temperate Rainforests grow on a wide variety of upland soils, but most tend to be wet, acidic, and low in the major plant nutrients. The soils range from heavy clay to gravel, but sandy materials predominate.

Sands are prevalent in hilly areas but they, along with the silts, also occur on broad level areas. The soils consist mainly of four orders: Alfisols, Entisols, Spodosols, and Ultisols. According to Caldwell and Johnson (1982), the two major land resource areas in the study area are the Central Florida Ridge and the Central and South Florida Flatwoods.

The Candler-Apopka-Astatula association dominates the Central Florida Ridge. Minor soils consist of the Arredondo and Tavares series. These areas are nearly level to strongly sloping with excessively drained, thick sandy soils.

The soils of the Central and South Florida Flatwoods are of the Adamsville-Felda, Istokpoga-Samsula, Myakka-Immokalee-Waveland, Oldsmar-Immokalee-Malabar, and Wabasso-Felda-Pompano associations. These associations are nearly level to level sloping, poorly to very poorly drained; with organic to sandy soils. Some soils consist of loamy to sandy subsoils.

Biological Characteristics of Wetland Habitats:

A. Estuarine: The Estuarine system is found in a small section of the study area along the lower Peace River and consists of a variety of wetlands.

Unconsolidated bottoms are found along the lower reaches of the Peace River, as well as the adjacent salt marshes.

Unconsolidated shores are found on sand and mud bars. These river bars are regularly flooded.

Emergent wetlands consist of black needle rush (*Juncus roemarianus*) and cordgrass (*Spartina* spp.). Black needle rush is found in irregularly flooded areas while cordgrass is typical of regularly flooded areas. However, mixes of both species are common.

Submerged aquatic beds are located on the Peace River as well as adjacent waterways.

Scrub/shrub communities are composed of black mangrove (*Avicennia germinans*), red mangrove (*Rhizophora mangle*), and white mangrove (*Laguncularia racemosa*). The different species of mangrove are indistinguishable on the photography. Therefore, the unknown water regime was used for these communities.

Estuarine forested areas are found in palm hammocks. Common species are cabbage palm (*Sabal palmetto*), southern red cedar (*Juniperus silicicola*) and pines (*Pinus* spp.).

B. Riverine: Lower perennial and tidal subsystems were present in the Riverine system of the study area. The Peace River which extends along the western edge of the study area is tidally influenced (R1UBV) south of Fort Ogden. The majority of the Peace River is lower perennial (R2UBH). The other major river is the Kissimmee River. This lower perennial river, which connects Lake Kissimmee with Lake Okeechobee, is channelized (R2UBHx). Other rivers and tributaries will be labeled R2UBH. Drainage ditches and canals will be identified as R2UBHx.

Aquatic beds are often present on these Riverine systems. The floating aquatics (R2AB4H) include water hyacinth (Eichhornia crassipes), water spangles (Salvania spp.), duckweed (Lemna minor) and water lettuce (Pistia stratiotes). Rooted aquatics consist of water lilies (Nymphaea odorata) and spatterdock (Nuphar luteum).

C) Lacustrine: Both the limnetic and littoral subsystems are found in the Lacustrine system. These lakes, which are greater than 20 acres, are generally concentrated in the central part of the study area. The major lakes found in this area are Lakes Kissimmee, Istokpoga, Weohyakoyka, Arbuckle, Jackson, June in Winter, and Placid. The largest lake, Lake Okeechobee, is found in the southeastern corner of the work area. Unvegetated lakes will be labeled L1UBH. There are also man-made lakes (L1UBHx), especially in the northwestern section of the study area where phosphate mining is common.

Dense areas of aquatic beds are commonly found on natural lakes. Rooted aquatic beds (L2AB3H) contain water lilies and spatterdock. Floating aquatics (L1AB4H) include water hyacinth, duckweed, and water lettuce. Unknown aquatic beds found on Lake Okeechobee will be labeled L2AB5H.

D) Palustrine: Forested, scrub-shrub, emergent, aquatic bed, unconsolidated shore and unconsolidated bottom are all classes found within the Palustrine system.

Naturally occurring ponds of less than 20 acres are identified as PUBH. Borrow pits, rock quarries, sand pits, aeration ponds and strip pits full of water are labeled PUBHx.

Unconsolidated shore is restricted to areas which indicate water still remaining but only as shallow pockets. These are labeled PUSCx and are common in phosphate mining areas.

Emergent pockets or depressions are numerous and range from temporarily flooded to intermittently exposed. Temporarily flooded (PEM1A) emergents consist of broomsedge (Andropogon virginicus), dog fennel (Eupatorium compositifolium) and yellow-eyed grass (Xyris ambigua). Seasonally and semi-permanently flooded emergents may include any of the following: arrowhead (Sagittaria spp.), rushes (Juncus spp.), sand cordgrass (Spartina bakeri), cattail (Typha spp.), sawgrass (Cladium jamaicensa) and pickerelweed (Pontederia cordata).

Aquatic beds consist of both rooted (PAB3H) and floating (PAB4H) vegetation. They contain the same vegetation types as those found in the Riverine and Lacustrine systems.

Scrub-shrub commmunities are mainly composed of willow (Salix spp.) and/or wax myrtle (Myrica cerifera). If willows and buttonbush are present, they are labeled PSS1A, C or F. Wax myrtle and short red bay (Persea borbonia), sweetbay (Magnolia virginiana) or loblolly bay (Gordonia lasianthus) make up PSS3, A or C. Mixes of the above scrub-shrub species are common.

Some shrub species, mainly St. John's Wort or sandweed (Hypericum fasciculatum), was identified in the field generally in the drier depressional areas. However, due to the small amount of leaf area present on this species, combined with the surrounding associated emergents, they produce an emergent signature on the photography. Therefore, unless identified in the field, they will be included as emergents.

Palustrine broad-leaved deciduous forests include red maple (Acer rubrum), laurel oak (Quercus laurifolia), water oak (Quercus nigra), live oak (Quercus virginiana), sweetgum (Liquidambar styraciflua), Carolina ash (Fraxinus caroliniana) and willows. These can be found in various hydrological conditions: PFO1A, C, or F. The oaks, particularly live oak, are characteristic of the drier (A) conditions. Broad-leaved deciduous trees are found in a variety of locales, from small sloughs to large floodplains.

Needle-leaved deciduous trees consists primarily of bald cypress (Taxodium distichum). Cypress is commonly found in pure stands or as circular domes. These are identified as PFO2, C or F. However, mixes do occur especially with maples (PFO6, C or F) and bays (PFO2/3, C or F).

Broad-leaved evergreen trees include sweetbay, red bay, loblolly bay and cabbage palm (Sabal palmetto). When the bays are found in isolated pockets (bayheads) or depressions, they are labeled PFO3B. They are identified as PFO3C when connected to another wetland community (eg. in floodplains). Cabbage palms and bays are commonly found in mixes. Mixes occur in cypress swamps (PFO2/3, C or F), low wet pinewoods (PFO7, A or C), and hydric hardwood swamps (PFO1/3C). Needle-leaved evergreen forests (PFO4, A or C) are comprised of pines (Pinus spp.). They occur in low wet depressions and transitional areas adjacent to other wetland communities. Pines are also mixed with broad-leaved deciduous trees and are labeled PFO1/4, A or C.

General Note: Table One

In the Palustrine Forested NWI codes, the split subclasses will be meant to also include the inverse subclasses. However, the vegetation characteristics will be the same only in different percentages.

Also, any split classes will contain these vegetation characteristics found in the singular class.

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TABLE ONE

NWI CLASSIFICATION FOR FORT PIERCE, FLORIDA

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
E1UB	Estuarine, subtidal, unconsolidated bottom	Lower Peace River	Unconsolidated material
E2US	Estuarine, intertidal, unconsolidated shore	Bars and flats	Sand or mud
E2EM1	Estuarine, intertidal, emergent, persistent	Salt marsh	*Spartina* spp. (cordgrass) *Juncus roemerianus* (black needle rush)
E2AB5	Estuarine, intertidal, aquatic bed, unknown submergent		Unknown vegetation
E2SS3	Estuarine, intertidal, scrub shrub, broad-leaved evergreen	Mangrove or high marsh shrub	*Rhizophora mangle* (red mangrove) *Avicennia germinans* (black mangrove) *Laguncularia racemosa* (white mangrove)
E2F07	Estuarine, intertidal, forested, evergreen	Salt marsh or coastal palm hammock	*Sabal palmetto* (cabbage palm) *Pinus* spp. (pines) *Juniperus silicola* (southern red cedar)
R1UB	Riverine, tidal, unconsolidated bottom	Rivers	Unconsolidated material
R1US	Riverine, tidal, unconsolidated shore	River Sand bars	Unconsolidated material
R1AB5	Riverine, tidal, aquatic bed, unknown submergent	Rivers	Unknown submergent vegetation
R2UB	Riverine, lower perennial, unconsolidated bottom	Rivers, drainage ditches or canals	Unconsolidated material

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R2AB4	Riverine, lower perennial, aquatic bed, floating vascular	Rivers	*Salvania* spp. (water spangles) *Eichornia crassipes* (water hyacinth) *Pistia stratiotes* (water lettuce) *Lemna minor* (duckweed)
R2AB3	Riverine, lower perennial, aquatic bed, rooted vascular	Rivers	*Nymphaea odorata* (water lilies) *Nuphar luteum* (spatterdock)
L1UB	Lacustrine, limnetic, unconsolidated bottom	Lakes	Unconsolidated material
L1AB4	Lacustrine, limnetic, aquatic bed, floating vascular	Lakes	*Salvania* spp. (water spangles) *Eichornia crassipes* (water hyacinth) *Pistia stratiotes* (water lettuce) *Lemna minor* (duckweed)
L2AB5	Lacustrine, littoral, aquatic bed, unknown submergent	Lake marshes	Unknown vegetation
L2AB3	Lacustrine, littoral, aquatic bed, rooted vascular	Lake marshes	*Nymphaea odorata* (water lilies) *Nuphar luteum* (spatterdock)
PUB	Palustrine, unconsolidated bottom	Natural or man-made ponds	Unconsolidated material
PAB4	Palustrine, aquatic bed, floating vascular	Ponds	*Salvania* spp. (water spangles) *Eichornia crassipes* (water hyacinth) *Pistia stratiotes* (water lettuce) *Lemna minor* (duckweed)

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PAB3	Palustine, aquatic bed, rooted vascular	Ponds or deep marshes	Nymphaea odorata (water lilies) Nuphar luteum (spatterdock)
PEM1	Palustrine, emergent, persistent	Depressions, marshes, ponded prairies or drainage areas	Panicum, Xyris (grasses) Carex, Dichromena (sedges) Cladium jamaicense (sawgrass) Typha spp. (cattail) Pontedaria cordata (pickerelweed) Sagittaria spp. (arrowhead) Polygonum amphibium (smartweed)
PSS1	Palustrine, scrub shrub, broad-leaved deciduous	Scrub thickets, marshes, depressions	Salix spp. (willows) Cephalanthus occidentalis (buttonbush)
PSS3	Palustrine, scrub shrub, broad-leaved evergreen	Evergreen shrub marshes, depressions	Myrica cerifera (wax myrtle) Magnolia virginiana (sweet bay) Persea borbonia (red bay) Gordonia lasionthus (loblolly bay)
PFO1	Palustrine, forested, broad-leaved deciduous	Floodplains, sloughs, swamps or depressions	Acer rubrum (red maple) Quercus nigra (water oak) Quercus laurifolia (laurel oak) Quercus virginiana (live oak) Liquidambar styraciflua (sweetgum) Salix spp. (willow)
PFO2	Palustrine, forested, needle-leaved deciduous	Cypress domes, sloughs or swamps	Taxodium distichum (bald cypress)

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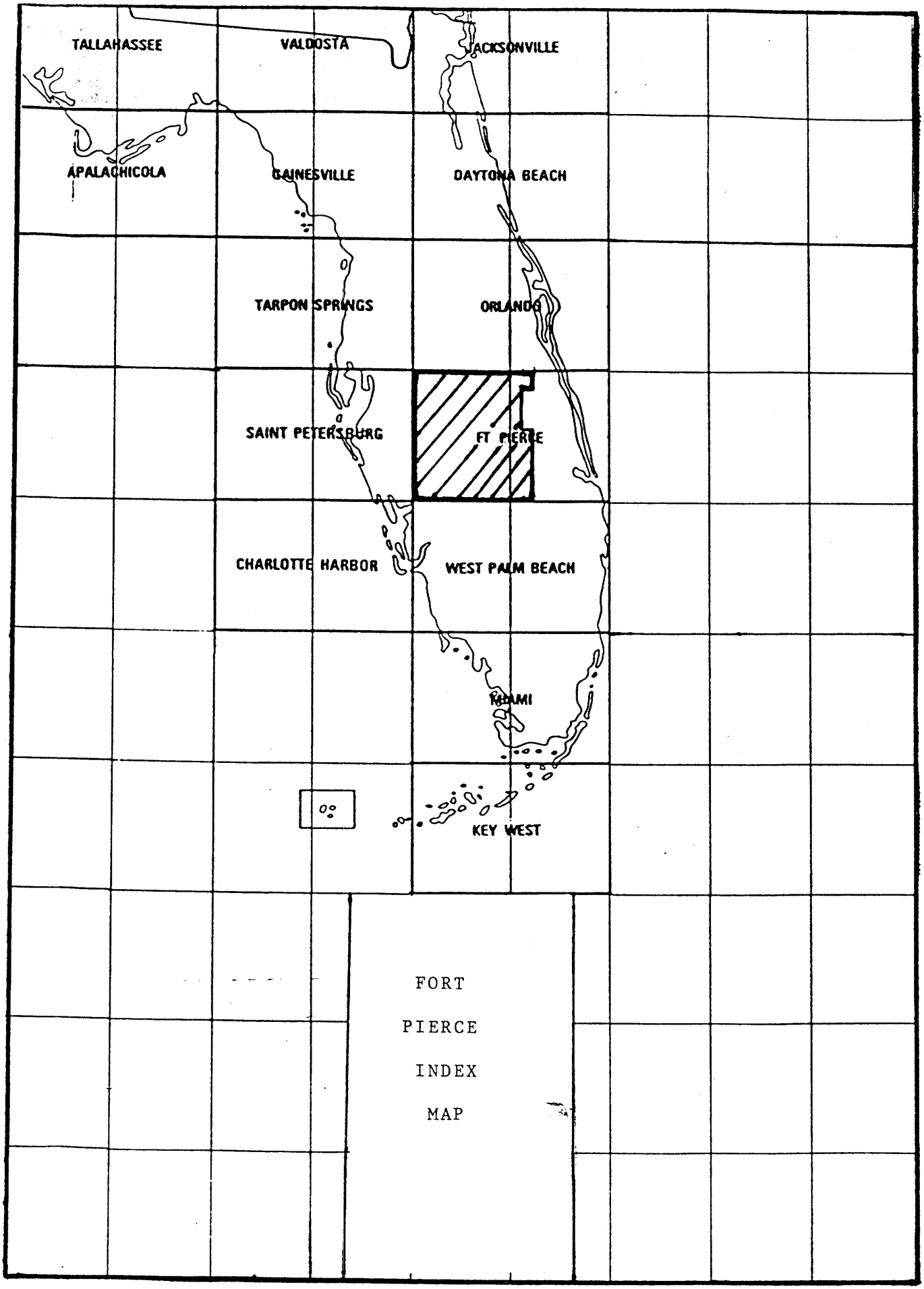
NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
PF03	Palustine, forested, broad-leaved evergreen	Bayheads or swamps	*Magnolia virginiana* (sweetgum) *Persea borbonia* (red bay) *Gordonia lasianthus* (loblolly bay)
PF04	Palustrine, forested, needle-leaved evergreen	Low pine flatwoods	*Pinus elliottis* (slash pine) *Pinus taeda* (loblolly pine)
PF06	Palustrine, forested, deciduous	Swamps, marshes, sloughs or floodplains	*Taxodium distichum* (bald cypress) *Acer rubrum* (red maple) *Quercus* spp. (oaks) *Liquidumbar styraciflua* (sweetgum)
PF07	Palustrine, forested, evergreen	Low pine flatwoods or transitional areas	*Pinus* spp. (pines) *Magnolia virginiana* (sweet bay) *Persea borbonia* (red bay) *Gordonia lasianthus* (loblolly bay)


TALLAHASSEE
VALDOSTA
JACKSONVILLE
APALACHICOLA
GAINESVILLE
DAYTONA BEACH
TARPON SPRINGS
ORLANDO
SAINT PETERSBURG
FT PIERCE
CHARLOTTE HARBOR
WEST PALM BEACH
MIAMI
KEY WEST
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