

8/88

DRAFT

USER NOTES: ORLANDO NE, SE, NW, & SW
NATIONAL WETLANDS INVENTORY MAPS

Map Preparation:

The wetland classification that appears on the Orlando National Wetlands Inventory (NWI) Base Map (Figure #1) is 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 Orlando NE, SE, NW & SW photography were made prior to the actual delineation of wetlands. Field check sites were selected to clarify varying signatures found on the photography. These photographic signatures were then identified in the field using vegetation types and soil-types, as well as additional input from field personnel.

Collateral data included USGS topographic maps, SCS soil surveys, climate, vegetation and ecoregional 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 photo interpretation and drafting were completed by Martel Laboratories, Inc., St. Petersburg, Florida.

Geography:

The study area covered by Orlando NE, SE, NW & SW base maps is located in central to east central Florida. (See Figure #2) Bailey classifies the study area into the Outer Coastal Plains Forest Province within the general Humid Subtropical Division. The Eastern Gulf Atlantic Rolling Plains cover approximately 5% of the mapping area in the northwestern section. The Eastern Gulf Atlantic Coastal Flats comprise the remaining area. Bailey includes the area as Beech-Sweetgum-Magnolia-Pine-Oak Forest section.

The mapping area includes several swamps. The Green Swamp and Seminole Swamp are prominent in the area. Sand ridges extend north and south in the mapping area where the topography is gently sloping to very steep. Sugarloaf Mountain west of Lake Apopka reaches an elevation of 315 feet.

Rivers and streams are sluggish and there are numerous marshes, swamps, lakes and ponds in the study area. Many of the ponds and lakes are sinkhole depressions. The western and central part of the area is gently sloping to rolling. The eastern section is generally nearly level (0-100ft. local relief).

Climate:

The climate is characterized by long, warm, humid summers with mild, dry winters. The annual range of temperature is moderate with an average annual temperature of 60° - 70°F (15° - 21°C). Rainfall is well distributed throughout the year ranging from 40" to 60". Seminole County has a poor distribution of rainfall with very dry spells in the fall, winter and spring. Forest fires are frequent in the spring months.

Vegetation:

The study area is characterized as the Temperate Rainforest. Commonly found trees are evergreen oaks and members of the laurel and magnolia families. These forests usually have a well developed understory of tree ferns, small palms, shrubs, and herbaceous plants. Lianas and epiphytes are abundant.

The climax vegetation of these mesophytic habitats is the evergreen-oak and magnolia forest. Second growth forests, xerophytic and hydrophytic, 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 Rainforest 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 the broad level areas of west-central Florida.

The soils consist mainly of four orders: Alfisols, Entisol, Spodosols and Ultisols. According to Caldwell and Johnson (1982), there are two major land resource areas in the work area. These are the Central Florida ridge and the Central and South Florida Flatwoods.

The soils of the Central Florida Ridge found in the work area are of the Arredondo-Kendrick-Millhopper, Blichton-Flemington-Kanapaha and Candler-Apopka-Astatula associations. The first and latter associations are generally level to strongly sloping and are poor to moderately well-drained soils with a loamy subsoil at 20 to 80 inches. The other association is nearly level to strongly sloping poorly drained soils with a loamy subsoil.

The soils of the Central and South Florida Flatwoods found in the work area are of the Adamsville-Felda, Myakka-Immokalee-Waveland, Okeelanta, Pomona-Wauchula-Placid and Tidal Marsh and Tidal Swamp associations. These associations are generally nearly level, poorly drained, sandy to organic soils.

The soils of the St. John's river flood plains are of the Felda-Florida-Winder, and Floridana-Chobee-Felda Associations. These are nearly level, poorly and very poorly drained sandy soils with a loamy layer below. Other swampy associations include Montverde-Micco-Tomoka soils.

BIOLOGICAL CHARACTERISTIC OF WETLAND HABITATS

A) Marine

Marine areas consist of unconsolidated bottom and unconsolidated shore (beach) along the Atlantic Ocean. These are indicated by M1UBL (permanently flooded) and M2USN (regularly flooded) with some irregularly exposed tidal flats labeled M2USM. The unconsolidated shore is predominantly M2USP (irregularly flooded).

B) Estuarine

The estuarine system includes both the subtidal and intertidal subsystems. Various wetland types are included, ranging from unconsolidated bottom (E1UBL) to forested (E2F07P).

Unconsolidated bottom (E1UBL) identifies the Indian River, Banana River, Newfound Harbor and their tributaries. Within the salt marshes adjacent to the estuarine rivers, open water bodies will be identified as unconsolidated bottom (E1UBL). Several excavated canals (E1UBLx) exist within the estuarine system.

The unconsolidated shore (E2US) is areas of intertidal sand and mud adjacent to the unconsolidated bottom. Water regimes range from irregularly exposed to irregularly flooded (E2USM, E2USN, E2USP).

The emergent vegetation is predominantly composed of black needlerush (Juncus roemarianus) and (Spartina spp.). The irregularly flooded areas, (E2EM1P), are black needlerush and saltmeadow cordgrass (Spartina patens). Smooth cordgrass (Spartina alterniflora), a regularly flooded species (E2EM1N), forms nearly pure stands in the seaward zone of the low marsh.

Black needlerush and saltmeadow cordgrass are usually found in zones above smooth cordgrass on slightly higher elevations. Glasswort (Salicornia virginica), sea purslane (Sesuvium portulacastrum) and saltgrass (Distichlis spicata) can be found in coastal salt flats or barréns that are periodically inundated by tidal action. These are identified as E2EM1P. Sea oxeye daisy (Borrchia frutescens) is common in irregularly flooded high marshes in mixed populations (E2EM1P).

The Estuarine scrub-shrub communities of mangroves include black mangrove (Avicennia germinans), red mangrove (Rhizophora mangle), and dominate the regularly flooded high energy areas while black mangroves become increasingly abundant in areas inundated only by high tides. White mangroves (Laguncularia racemosa) are often mixed with red or black mangroves, except in the deepest areas; they are most abundant inland of black mangrove zone. Most mangroves were frost damaged from the freezes of Christmas 1983 and winter 1985. However, many have presence of regrowth and will be identified as E2SS3U. Unknown water regime is used because the three mangrove species cannot be distinguished on the high altitude color infrared imagery. Associated species in the transition zone may be included in the delineations. They include brazillian pepper (Schinus terebinthifolius) and saltbush (Baccharis halimifolia).

Mosquito ditching is prevalent in the intertidal areas of the Merritt Island National Wildlife Refuge. The major ditches are identified (E1UBLx). The spoil from this ditching is vegetated with mangroves, brazillian pepper and some saltbush. These areas are mapped as spoil (E2SS3Us). The user is cautioned that some uplands may be included in the spoil areas and that some estuarine emergents may have gone unidentified.

Coastal palm hammocks make up the forested component of the Estuarine system, E2F07P. Present were cabbage palm (Sable palmetto), wax myrtle (Myrica cerifera), saltbush and brazillian pepper.

C) Riverine

The Riverine system contains both tidal and lower perennial subsystems in the study area. Sykes River, which connects the Banana River and Newfound Harbor is tidally influenced (R1UBV).

Major lower perennial rivers include the Wekiva, Withlacoochee, St. Johns, Econlockhatchee and numerous tributaries which are identified as R2UBH. Drainage ditches are identified as R2UBHx.

Rivers are often vegetated with floating aquatics (R2AB4H) and rooted aquatics (R2AB3H). The floating aquatics include water hyacinth (Eichhornia crassipes), water lettuce (Pistea stratiotes) and duckweed (Lemna spp.). Water hyacinth is often found in association with water lettuce which it often replaces during the growing season. Rooted aquatics (R2AB3H) contain water lilies (Nymphae odorata) and spatterdock (Nuphar luteum).

D) Lacustrine

Lacustrine areas, which are greater than 20 acres, include both limnetic and littoral subsystems. Numerous lakes exist within the study area. The major lakes are Lake Apopka, Harris, Eustis, Tohopekaliga, Monroe, Jessup, and Harvey. The organic soils north of Lake Apopka, west to northwest of Melbourne, and near Lake Hart have been reclaimed for farming. These areas, as other farmed wetlands, will not be identified as wetlands. Unvegetated lakes are labeled L1UBH and man-made lakes are given the excavated modifier (L1UBHx).

Aquatic bed species, both rooted and floating, can be found in dense colonies in many of the lake systems. The predominant areas are rooted (L2AB3H) and contain water lilies (Nymphaea odorata) and spatterdock (Nuphar luteum). Floating aquatics (L1AB4H) include duckweed (Lemna spp.), water hyacinth (Eichhornia crassipes), and water lettuce (Pistia stratiotes).

E) Palustrine

Palustrine areas include forested, scrub-shrub, emergent, aquatic bed, unconsolidate shore, and unconsolidated bottom. Excavated ponds and borrow pits are considered unconsolidated bottom and labeled PUBHx. Sinkholes and other naturally occurring ponds are identified as PUBH. Stock ponds, which are impounded, are labeled PUBHh.

The southwestern portion of the work area (Orlando SW) has numerous phosphate mines, both in progress and past mining areas. The water filled strip pits are labeled PUBHx. Due to limitations of mapping, the unconsolidated bottom areas may include some upland spoil areas. The mining areas that are in progress are mapped at the specific time of the photography and may reflect different conditions at the time of ground truthing.

Unconsolidated shore is restricted to areas of excavation which indicate water still remaining in deep pockets. These are identified as PUSC_x, eg. Phosphate mines. Dried up ponds may be identified as PUSC.

Aquatic beds are both rooted (PAB3H) and floating (PAB4H). The predominant areas are rooted and contain water lilies (Nymphaea odorata) and spatter-dock (Nuphar luteum) as the dominant species. Floating aquatic beds are composed mainly of water hyacinth (Eichhornia crassipes), water lettuce (Pistia stratiotes), duckweed (Lemna spp.) and water spangles (Salvinia minima).

Emergent areas are mainly species of cattail (Typha spp.), softrush (Juncus effuses), Arrowhead (Sagittaria spp.), smartweed (Polygonum spp.), bullrush (Scirpus spp.), sand cordgrass (Spartina bakeri), sawgrass (Cladium spp.) and maidencane (Panicum hemitomon). These are identified as PEM1F and are sometimes seasonally flooded (PEM1C). These species are found in sloughs, wet savannahs, freshwater marshes and along lakes and pond shores. They are often found adjacent to hydric hardwood swamps and cypress swamps. Cattail, sawgrass and softrush were dominant species encountered in the study area. Yellow eyed grass (Xyris elliottii) is found in temporarily flooded (PEM1A) wetlands. Permanent water marshes indicated on the topographic map are labeled PEM1G (intermittently exposed).

The Merritt Island National Wildlife Refuge has numerous fresh water impoundments along the Banana River, Mosquito Lagoon, and Indian River. These areas are created to provide habitat to many types of wildfowl. During very high tides the impoundments are inundated with salt water. Several fixed position pumps and portable pumps are used to remove the salt water. The emergents in these areas are identified by fresh water, tidally influenced water regimes with an impounded modifier (PEM1Th).

Scrub shrub communities encountered are primarily willow (Salix caroliniana) or wax myrtle (Myrica cerifera). The deciduous scrub shrub (PSS1C or F) contains willows, buttonbush (Cephalanthus occidentalis), or primrose (Ludwigia spp.). Typically, thicket swamps are circular or oval, but sometimes form elongated strands usually surrounding a central pond.

The evergreen scrub shrub communities PSS3B, C, or F include wax myrtle (Myrica cerifera), elderberry (Sambucus spp.), St. Johns Wort (Hypericum fasciculatum), Ilex sp., sweetbay (Magnolia virginiana) and red bay (Persea borbonia). Pure stands of sweetbay and red bay may be found in swamps. These are identified as PSS3C. The bays may sprout after mild fires and sometimes form dense thickets.

Palustrine broad leaved evergreen forests are predominantly comprised of sweetbays and red bays and are identified as PF03C. These usually occur as isolated swamps or depressional pockets. The evergreen trees are often found in hydric hardwood swamps (PF01/3C), low wet pinewoods (PF07A) and cypress (Taxodium distichum) swamps (PF02/3C or F).

Wetland pines (Pinus sp.) are identified as PF04A or C. Cabbage palm (Sabal palmetto) is found in coastal marsh islands, palm hammocks and a variety of mesic soils. These are identified as PF03A or C.

The broad leaved deciduous forested wetlands include red maple (Acer rubrum), willow, laurel oak (Quercus laurifolia), water oak (Quercus nigra), sweetgum (Liquidambar styraciflua), blackgum (Nyssa sylvatica var. biflora) and water tupelo (Nyssa aquatica). These are usually inundated most of the growing season and are identified as (PF01C or F). Water tupelo inhabits deep river swamps, hydric hardwood swamps and low bottom lands along the rivers. Whereas, blackgum inhabits shallow ponds and swamp edges.

The needle leaved deciduous trees are bald cypress, often found as circular domes or pure stands. Most of the cypress is identified as PF06C or F unless identified in the field as PF02C or F. Cypress is usually associated with water tupelo, red maple, water oak and sweetbay.

Many pine flatwoods (PF04A or C) occur on questionable soils. The topographic maps may not correlate with the soil surveys. These have been identified as temporarily flooded but should be checked individually in the field.

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 generally contain those vegetation characteristics found in the singular class.

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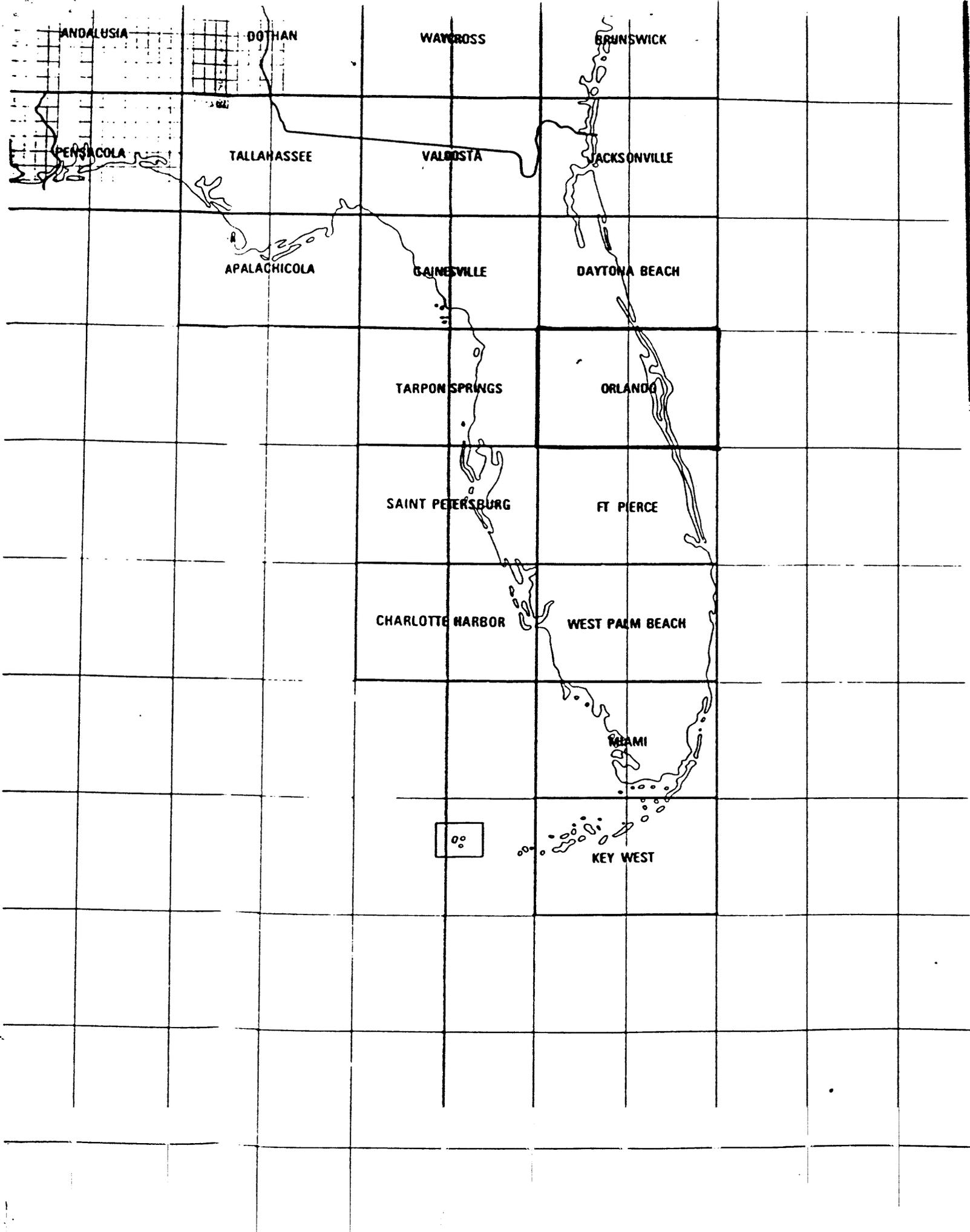
TABLE 1: NWI CLASSIFICATION FOR ORLANDO, FLORIDA

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
M1UB	Marine, sub-tidal, unconsolidated bottom	Atlantic Ocean	Unconsolidated bottoms
M2US	Marine, intertidal unconsolidated shore	Beaches or exposed tidal flats of the Gulf of Mexico	Sand and shell fragments
E1UB	Estuarine, sub-tidal unconsolidated bottom	Intracoastal waterways including: bays, inlets, and adjacent salt marshes	Unconsolidated bottoms
E1AB3	Estuarine, sub-tidal, aquatic bed, rooted	Seagrass beds	<u>Thalassia testudium</u> (turtle grass) <u>Cymodocea filiforme</u> (manatee grass) <u>Halodule beaudettei</u> (shoal grass)
E2AB3	Estuarine, intertidal, aquatic bed, rooted	Seagrass beds	<u>Thalassia testudium</u> (turtle grass) <u>Cymodocea filiforme</u> (manatee grass)
E2US	Estuarine, intertidal unconsolidated shore	Beaches, bars, or flats	Sand or mud
E2EM1	Estuarine, intertidal emergent, persistent	Salt marsh	<u>Spartina spp.</u> (cordgrass) <u>Juncus roemerianus</u> (black needle rush)
E2SS3	Estuarine, intertidal scrub-shrub, broad-leaved evergreen	Mangrove or high marsh shrub	<u>Rhizophora mangle</u> (red mangrove) <u>Avicennia germinans</u> (black mangrove) <u>Laguncularia racemosa</u> (white mangrove) <u>Baccharis halimifolia</u> (saltbush) <u>Schinus terebinthifolius</u> (brazilian pepper)

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
E2F07	Estuarine, inter-tidal forested, evergreen	Coastal palm hammocks	<u>Sabal palmetto</u> (cabbage palm) <u>Juniperus silicicola</u> (southern red cedar) <u>Myrica cerifera</u> (wax myrtle) <u>Pinus</u> spp. (pines)
R1UB	Riverine, tidal unconsolidated bottom	Rivers	Unconsolidated bottoms
R1AB5	Riverine, tidal, aquatic bed, unknown submergent	Rivers	<u>Hydrilla verticillata</u> (hydrilla) <u>Vallisneria americana</u> (tape grass)
R2UB	Riverine, lower perennial, unconsolidated bottom	Rivers or drainage ditches	Unconsolidated bottoms
R2AB4	Riverine, lower perennial, aquatic bed, floating vascular	Rivers	<u>Eichornia crassipes</u> (water hyacinth) <u>Pistia stratiotes</u> (water lettuce) <u>Lemna</u> spp. (duckweed)
R2AB3	Riverine, lower perennial aquatic bed, rooted vascular	Rivers	<u>Nymphaea</u> spp. (water lilies)
L1UB	Lacustrine, limnetic, unconsolidated bottom	Lakes	Unconsolidated bottoms
L2AB3	Lacustrine, littoral, aquatic bed, rooted vascular	Lake Marshes	<u>Nymphaea odorata</u> (water lilies) <u>Nuphar luteum</u> (spatterdock)
L1AB4	Lacustrine, limnetic, aquatic bed, floating vascular	Lakes	<u>Eichornia crassipes</u> (water hyacinth)

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
PUB	Palustrine, unconsolidated bottom	Ponds or borrow pits	Unconsolidated bottoms
PAB3	Palustrine, aquatic bed, rooted vascular	Ponds or deep marshes	<u>Nymphaea odorata</u> (water lilies) <u>Nuphar luteum</u> (spatterdock)
PAB4	Palustrine, aquatic bed, floating vascular	Ponds	<u>Eichornia crassipes</u> (water hyacinth) <u>Pistia stratiotes</u> (water lettuce) <u>Lemna</u> spp. (duckweed) <u>Salvinia minima</u> (water spangles)
PEM1	Palustrine, emergent, persistent	Ponded prairies, marshes, depres- sions or drainage areas	<u>Panicum, Xris</u> (grasses) <u>Carex, Dichromena</u> (sedges) <u>Juncus</u> spp. (rushes) <u>Typha domingensis</u> (cattails) <u>Thalia geniculata</u> (alligator weed) <u>Pontederia cordata</u> (pickerelweed) <u>Scirpus californicus</u> (giant bulrush) <u>Hydrocotyle umbellata</u> (pennywort) <u>Sagittaria latifolia</u> (common arrowhead)
PSS1	Palustrine, scrub shrub, broad-leaved deciduous	Willow thicket	<u>Salix caroliniana</u> (willow) <u>Cephalanthus</u> <u>occidentalis</u> (button bush) <u>Ludwigia</u> spp. (primrose)

NWI CODE	NWI DESCRIPTION	COMMON DESCRIPTION	CHARACTERISTIC VEGETATION
PSS3	Palustrine, scrub shrub broad-leaved evergreen	Thicket	<u>Myrica cerifera</u> (wax myrtle) <u>Sambucus spp.</u> (elder) <u>Persea borbonia</u> (red bay)
PF01	Palustrine, forested, broad-leaved deciduous	Floodplains, swamps or depressions	<u>Acer rubrum</u> (red maple) <u>Quercus laurifolia</u> (laurel oak) <u>Liquidambar</u> <u>styraciflua</u> (sweetgum) <u>Nyssa sylvatica</u> (black gum) <u>Nyssa aquatica</u> (water tupelo)
PF02	Palustrine, forested, needle-leaved deciduous	Cypress domes, sloughs or swamps	<u>Taxodium distichum</u> (bald cypress)
PF03	Palustrine, forested, broad-leaved evergreen	Bayheads or bay swamps	<u>Magnolia virginiana</u> (sweet bay) <u>Persea borboria</u> (red bay) <u>Gordonia lasianthus</u> (loblolly bay)
PF04	Palustrine, forested, needle-leaved evergreen	Pine flatwoods	<u>Pinus elliottii</u> (slash pine) <u>Pinus serotira</u> (pond pine)
PF02/4	Palustrine, forested, needle-leaved deciduous/ needle-leaved evergreen	Depressions	<u>Taxodium distichum</u> (bald cypress) <u>Pinus spp.</u> (pines)
PF02/3	Palustrine, forested, needle-leaved deciduous/ broad leaved evergreen	Cypress domes, sloughs or swamps	<u>Taxodium distichum</u> (bald cypress) <u>Magnolia virginiana</u> (sweet bay) <u>Myrica cerifera</u> (wax myrtle)



ANDALUSIA

DOTHAN

WAYCROSS

BRUNSWICK

PENSACOLA

TALLHASSEE

VALDOSTA

JACKSONVILLE

APALACHICOLA

GAINESVILLE

DAYTONA BEACH

TARPON SPRINGS

ORLANDO

SAINT PETERSBURG

FT PIERCE

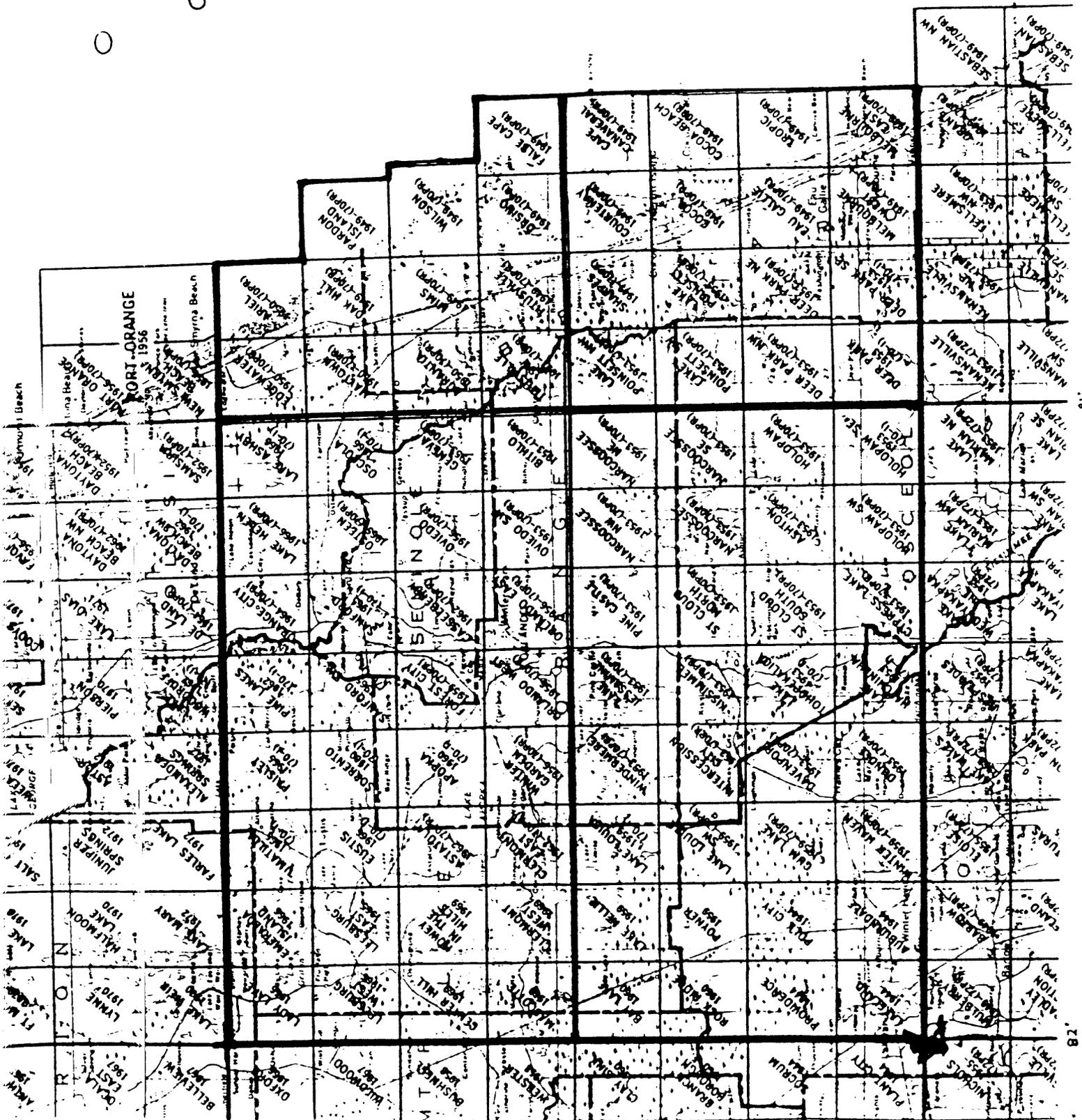
CHARLOTTE HARBOR

WEST PALM BEACH

MIAMI



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