CITY OF CAPE CORAL
YELLOW FEVER CREEK PRESERVE

PRELIMINARY ENVIRONMENTAL SUPPLEMENT

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1 INTRODUCTION

The proposed Yellow Fever Creek Preserve is located within the City of Cape Coral in Sections 20 and 29, Township 43 S, Range 24 E, Lee County, at Strap #'s 20-43-24-C3-00002.0000 and 29-43-24-C1-00001.0010. These properties are south and east of Del Prado Boulevard, several blocks north of Kismet Parkway, and west of Garden Boulevard. The properties are also adjacent to preserve land owned by Lee County to the south and east.

The project site consists of several different upland and wetland habitats as well as hiking trails. The total project area is 198.65 acres, with 186.18 acres of wetlands and 82.47 acres of uplands. The project consists of constructing a public park with a parking lot, road, hiking trails, picnic areas, and camping areas.

Listed species found to be utilizing the site included gopher tortoises (*Gopherus polyphemus*) and trees were examined for cavities for potential Florida bonneted bat roosts. There is a known bald eagle nest on the Lee County land to the east of the proposed park.

2 EXISTING CONDITIONS

The project encompasses approximately 198.54 acres. Existing conditions including habitat descriptions, listed species survey information, archaeological site information, and soil descriptions are outlined in the following sections.

2.1 HABITAT DESCRIPTIONS

The existing habitat types (based on FLUCFCS codes) are shown in Table 1 and the attached exhibits. The site consists of both uplands (116.18 acres) and wetlands (82.47 acres).

Table 1: FLUCFCS Codes and Descriptions

Habitat Type	FLUCFCS Code	Acreage
Upland Habitat		
Shrub and Brushland	320	0.98
Palmetto Prairie	321	19.80
Pine Flatwoods	411	86.01
Live Oak	427	1.26
Cabbage Palm	428	2.00
Disturbed Land	740	2.39
Primitive Trails	8146	3.74
Total Uplands		**116.18**
Wetland Habitat		
Willow and Elderberry	618	2.32
Cypress	621	12.48
Cypress-Pine-Cabbage Palm	624	6.68
Hydric Pine Flatwoods	625	34.20
Freshwater Marsh	641	8.45
Wet Prairie	643	17.11
Primitive Trails/Hydric	8146H	1.23
Total Wetlands		**82.47**
TOTAL		**198.65**

2.1.1 320 Shrub and Brushland (0.98 acres)

Shrub and brushland habitat are characterized by saw palmetto mixed with other woody scrub and other shrubs and various short herbs and grasses. The shrub and brushland habitat on-site is composed mostly of broom grass (*Andropogon virginicus*), saw palmetto (*Serenoa repens*), and arrowfeather threeawn (*Aristida purpurascens*).

2.1.2 321 Palmetto Prairies (19.80 acres)

Palmetto prairies are also dominated by saw palmetto with woody shrubs. The palmetto prairie on-site hosted saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), hog plum (*Ximenia americana*), and coastalplain staggerbush (*Lyonia fruticosa)*. This habitat also lends itself to small herbs and grasses such as wild pennyroyal (*Piloblephis rigida*), chocolateweed (*Melochia corchorifolia*) and broom sedge (*Andropogon virginicus*). Between the saw palmetto islands frequently there were bog buttons (*Eriocaulon spp.*) and yellow-eyed grass (*Xyris spp.*).

2.1.3 411 Pine Flatwoods (86.01 acres)

Pine Flatwoods in south Florida are dominated by slash pine typically with an understory of saw palmetto and wax myrtle. This habitat on-site contained slash pine (*Pinus elliottii*), live oak (*Quercus laurifolia)*, dahoon holly (*Ilex cassine*), and cabbage palm (*Sabal palmetto*) in the canopy along with earleaf acacia (*Acacia auriculiformis*). The midstory contained slash pine, melaleuca (*Melaleuca quinquinervia*), wax myrtle (*Morella cerifera*), Brazilian pepper (*Schinus terrebinthifolia*), myrsine (*Myrsine cubana*) and earleaf acacia. The understory contained saw palmetto (*Serenoa* repens), myrsine, wax myrtle, gallberry (*Ilex glabra*), coastalplain staggerbush (*Lyonia fruticosa*), slash pine, dog fennel (*Eupatorium capillifolium*), chocolateweed (*Melochia corchorifolia*), melaleuca, Caesarweed (*Urena lobata)*, broom sedge (*Andropogon virginicus*), and arrowfeather threeawn (*Aristida purpurascens*).

2.1.4 427 Live Oak (1.26 acres)

This habitat is typically dominated by live and laurel oaks as well as dahoon holly and cabbage palmetto. This is the case on this site. Canopy consisted of live oak (*Quercus virginicus*), laurel oak (*Quercus laurifolia*), dahoon holly (*Ilex cassine*), and cabbage palm (*Sabal palmetto*). The sub-canopy included live oak, laurel oak, dahoon holly, cabbage palm, wax myrtle (*Morella cerifera*), and myrsine (*Myrsine cubana*). The ground cover consisted of wild coffee (*Psychotria nervosa*), dotted wild coffee (*Psychotria punctata*), swamp fern (*Telmatoblechnum serrulatum*), and saw palmetto (*Serenoa repens*).

2.1.5 428 Cabbage Palm (2.00 acres)

This type of habitat is almost a monoculture of cabbage palm (*Sabal palmetto*). There is wild coffee in the understory on this site along with Boston fern (*Nephrolepis spp.*).

2.1.6 618 Willow and Elderberry (2.32 acres)

This community typically occurs in deeper wetland systems. On this site it occurs within the deepest portion of the cypress dome on the eastern side of the property. This habitat was

dominated by Carolina willow (*Salix caroliniana*) and Peruvian primrosewillow (*Ludwigia peruviana*).

2.1.7 621 Cypress (12.48 acres)

Cypress communities are dominated by cypress in the canopy and ferns and other herbs in the ground cover. On this site the canopy was dominated by cypress (*Taxodium spp.*) and cabbage palm (*Sabal palmetto*). The understory contained swamp fern (*Telmatobelchnum serrulatum*), downy shield fern (*Thelypteris dentata*), Virginia chain fern (*Woodwardia virginica*), common buttonbush (*Cephalanthus occidentalis*), false nettle (*Boehmeria cylindrica*), maidencane (*Panicum hemitomon*), alligator flag (*Thalia geniculata),* mock bishopsweek (*Ptilimnium capillaceum*), and marsh mermaidweed (*Proserpinaca palustris*).

2.1.8 624 Cypress-Pine-Cabbage Palm (6.68 acres)

The canopy in this habitat type consists of cypress, slash pine and cabbage palm with no one species achieving dominance. This community is typically found between the deeper cypress domes/sloughs and the hydric pine flatwoods as the landscape transitions to a more upland environment. On-site this area consists of the appropriate canopy, with saltbush (*Baccharis halimifolia*), myrsine (*Myrsine cubana*), swamp bay (*Persea palustris*), and swamp fern (*Telmatobelchnum serrulatum*).

2.1.9 625 Hydric Pine Flatwoods (34.2 acres)

Hydric pine flatwood habitat is characterized by slash pine in the canopy with and understory of grasses and herbs with the occasional saw palmetto. The hydric pine habitat on this site consisted of slash pine (*Pinus elliottii*), cabbage palm (*Sabal palmetto*), dahoon holly (*Ilex cassine*), laurel oak (*Quercus laurifolia*), and melaleuca (*Melaleuca quinquinervia*) in the canopy. The mid-story consisted of slash pine, cabbage plam, wax myrtle (*Morella cerifera*), melaleuca, and laurel oak. Ground cover consisted of wire grass (*Aristida stricta*), purple lovegrass (*Eragrostis spectabilis*), melaleuca, broom sedge (*Andropogon virginicus*), yellow-eyed grass (*Xyris spp.*), narrowleaf yellowtop (*Flaveria linearis*), Ceasarweed (*Urena lobata*), chocolateweed (*Melochia corchorifolia*), prostrate false buttonweed (*Spermacoce prostrata*), saw-grass (*Cladium jamaicense*), wax myrtle, white-top sedge (*Rhynchospora colorata*), saw palmetto (*Serenoa repens*), bog buttons (*Eriocaulon spp.*), blue maidencane (*Amphicarpum muhlenbergianum*), narrowfruit horned beaksedge (*Rhynchospora innundata*), pineland heliotrope (*Euploca polyphylla*), marsh mermaidweed (*Proserpinaca palustris*), cypress witchgrass (*Dichanthelium ensifolium*), south Florida little bluestem (*Schizachyrium rhizomatum*), southern beaksedge (*Rhynchospora microcarpa*), netted nutrush (*Scleria reticularis*), and bluejoint panicum (*Coleataenia tenera*).

2.1.10 641 Freshwater Marsh (8.45 acres)

Freshwater marshes can be characterized by the dominant species within them. The freshwater marsh on the south side near the center of the project area is primarily blue maidencane (*Amphicarpum muhlenbergianum*), cordgrass (*Spartina bakerii*), and melaleuca (*Melaleuca quinquinervia*). The two marshes on the eastern side of the property are characterized by knotted spikerush (*Eleocharis interstincta*).

2.1.11 643 Wet Prairie (17.11 acres)

Wet prairie habitat consists of grassy vegetation is hydric soils. The vegetation in this habitat on-site is similar to the ground cover within the hydric pine flatwoods. The ground cover consisted of Ground cover consisted of wire grass (*Aristida stricta*), purple lovegrass (*Eragrostis spectabilis*), melaleuca, broom sedge (*Andropogon virginicus*), yellow-eyed grass (*Xyris spp.*), narrowleaf yellowtop (*Flaveria linearis*), Ceasarweed (*Urena lobata*), chocolateweed (*Melochia corchorifolia*), prostrate false buttonweed (*Spermacoce prostrata*), saw-grass (*Cladium jamaicense*), wax myrtle, white-top sedge (*Rhynchospora colorata*), saw palmetto (*Serenoa repens*), bog buttons (*Eriocaulon spp.*), blue maidencane (*Amphicarpum muhlenbergianum*), narrowfruit horned beaksedge (*Rhynchospora innundata*), pineland heliotrope (*Euploca polyphylla*), marsh mermaidweed (*Proserpinaca palustris*), cypress witchgrass (*Dichanthelium ensifolium*), south Florida little bluestem (*Schizachyrium rhizomatum*), southern beaksedge (*Rhynchospora microcarpa*), netted nutrush (*Scleria reticularis*), and bluejoint panicum (*Coleataenia tenera*).

2.1.12 740 Disturbed Land (2.39 acres)

Disturbed land is usually classified as an area that has be altered through anthropogenic activities. The portion of this project area that borders on Del Prado Boulevard has been clared and there is a berm along the fence line, constituting disturbed land.

2.1.13 8146 Primitive Trails and 8146H Primitive Trails Hydric (4.97 acres)

There are several existing trails throughout the site. These trails are primarily loose sand with little to no vegetation growing in them due to usage. The trails traverse each of the habitats on-site and therefore cross through both uplands and wetlands.

2.2 LISTED SPECIES

The project is surrounded by paved roadways to the north and west, and open land, preserved by Lee County, to the south and east. The preserved land is surrounded by platted lots with single family homes and developments, streets and canals. Wildlife movement is somewhat limited to smaller species and avian species onsite. A list of protected species that could be expected to occur on the subject property can be given through analysis of known vegetative communities both on-site and contiguous to the site and available background data. Sources include the Fish and Wildlife Service Multi Species Recovery Plan, Part 2, Appendix C, Species of Concern and their Respective Community Types in South Florida, in addition to communication with personnel at state and federal wildlife agencies.

Abbreviations used in the discussion are as follows:

F = Federal	SSC = Florida Species of Special Concern
S = State	C = Federal Candidate
E = Endangered	* = FWS Species of Management Concern
T = Threatened	R = Rare

The following species have been identified onsite and/or have the highest potential to be found within or adjacent to the proposed project based on habitat type and location: gopher tortoise (*Gopherus polyphemus,* ST), eastern indigo snake (*Drymarchon corais couperi*, FT), Florida bonneted bat (*Eumpos floridanus,* FE), red-cockaded woodpecker (*Picoides borealis*), and Florida scrub jay (*Aphelocoma coerulescens,* FT), Florida sandhill crane (*Antigone canadensis pratensis*, ST), little blue heron (*Egretta caerulea,* ST), reddish egret (*Egretta rufescens,* ST), roseate spoonbill (*Platalea ajaja*, ST), tricolor heron (*Egretta tricolor,* ST), and wood stork (*Mycteria americana*, FT).

The only species noted on-site was the gopher tortoise. A detailed threatened and endangered species survey was conducted and is discussed in the Listed Species Survey report (Appendix B) for Yellow Fever Creek Preserve.

During the listed species survey 24 gopher tortoise burrows were located within the proposed project boundary. All of these burrows occur in areas that are not proposed to be impacted by the development of the parking lot, road or campsites associated with the project.

Immediately prior to construction an eastern indigo snake survey will be needed to ensure they are not utilizing areas where large equipment will be working. Special construction guidelines for the indigo snake will have to be followed by construction personnel during all phases of work onsite.

Trees on-site were surveyed for cavities that would provide potential roosting habitat for red-cockaded woodpeckers and Florida bonneted bats. Five trees were identified to have cavities suitable for bat roosting. No trees were identified with red-cockaded woodpecker usage. Only one of these trees occurs within the proposed development footprint. The cavity will need to be examined prior to commencement of construction.

2.3 ARCHAEOLOGICAL RESOURCES

There are no known historical or archaeological sites within or near the proposed project area. No resources or artifacts were uncovered when the area was originally cleared, dredged and filled. Should any artifact be uncovered during construction, work in the area of the discovery will be halted until proper authorities and archaeological experts have a chance to review and analyze the find.

2.4 SOILS

Based on the National Resource Conservation Service (NRCS) "Soil Survey of Lee County, Florida" (NRCS, 1984) there are six soil types associated with the subject area. These are #26 Pineda fine sand (hydric), #35 Wabasso sand (non-hydric), #42 Wabasso sand, limestone substratum (non-hydric), #49 Felda find sand, depressional (hydric), #73 Pine fine sand, depressional (hydric), and #74 Boca fine sand, slough (hydric).

2.4.1 #26 Pineda fine sand (hydric)

This is a nearly level, poorly drained soil on sloughs. Slopes are smooth to slightly concave and range from 0 to 1 percent.

Typically, the surface layer is black fine sand about 1 inch thick. The subsurface layer is very pale brown fine sand about 4 inches thick. The upper part of the subsoil is brownish yellow fine sand about 8 inches thick. The next 10 inches is strong brown fine sand. The next 6 inches is yellowish brown fine sand. The next 7 inches is light gray fine sand with brownish yellow mottles. The lower part of the subsoil is light brownish gray fine sandy loam with light gray sandy intrusions about 18 inches thick. The substratum is light gray fine sand to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Wabasso, Valkaria, Felda, Hallandale, Boca, and Malabar soils. Also included are small areas of Pineda soils that are in higher positions on the landscape. Small areas of Pineda, depressional, soils are also included.

Some areas of this soil are underlain by limestone or shell fragments at a depth of 60 inches or more. In a few places, a thin layer of very friable calcareous material is at a depth of 10 to 30 inches, and in other places a thin dark brown or black layer occurs at the base of the subsurface layer. Included soils make up about 10 to 15 percent of any mapped area.

In most years, under natural conditions, the water table is within 10 inches of the surface for 2 to 4 months. It is 10 to 40 inches below the surface for more than 6 months, and it recedes to more than 40 inches below the surface during extended dry periods. During periods of high rainfall, the soil is covered by a shallow layer of slowly moving water for periods of about 7 to 30 days or more (fig. 4).

The available water capacity is very low in the surface and subsurface layers and in the upper, sandy part of the subsoil and medium in the lower, loamy part of the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper, sandy part of the subsoil and slow or very slow in the lower, loamy part of the subsoil.

Natural vegetation consists of pineland threeawn, panicums, sedges, maidencane, waxmyrtle, South Florida slash pine, and scattered clumps of sawpalmetto.

This soil has poor suitability for cultivated crops because of wetness. With a complete water control system, it is fairly suited to many fruit and vegetable crops. A complete water control system removes excess water rapidly and provides a means of applying subsurface irrigation. Good soil management includes crop rotations that keep the soil in close-growing cover crops at least two-thirds of the time. Seedbed preparation should include bedding. Fertilizers should be applied according to the needs of the crop.

With proper water control, the soil has fair suitability for citrus trees. Water control systems that maintain good drainage to a depth of about 4 feet are needed. Bedding and planting the trees on the beds helps to provide good surface drainage. A good cover of close-growing vegetation between the trees protects the soils from blowing when the trees are young. The trees require regular applications of fertilizers and occasional liming.

This soil is well suited to pasture and hay crops with proper water control. It is well suited to pangolagrass, bahiagrasses, and clovers. Excellent pastures of grass or grass-clover mixtures can be grown with good management. Regular applications of fertilizer and controlled grazing help to produce highest yields.

The potential productivity for pine trees is moderately high. Seedling mortality, equipment limitations, and plant competition are the main management concerns. A water control system is needed to obtain the potential. South Florida slash pine is the best tree to plant.

This soil has high potential for desirable range plant production. The dominant forage consists of blue maidencane, chalky bluestem, and bluejoint panicum. Management practices should include deferred grazing. This Pineda soil is in the Slough range site.

This soil has severe limitations for urban development primarily because of the high water table.

This Pineda soil is in capability subclass IIIw.

2.4.2 #35 Wabasso sand (non-hydric)

This is a nearly level, poorly drained soil on flatwoods. Slopes are smooth to slightly convex and range from 0 to 2 percent.

Typically, the surface layer is dark gray sand about 6 inches thick. The subsurface layer is sand to a depth of 24 inches. The upper 11 inches is light brownish gray with dark grayish brown stains along root channels, and the lower 7 inches is light gray with dark grayish brown stains. The subsoil is about 38 inches thick. The upper 4 inches is dark brown sand with few iron concretions. The next 8 inches is brownish yellow sandy clay loam with light brownish gray, light gray, and reddish brown mottles. The lower 26 inches is light gray sandy clay loam with pale olive and olive mottles and stains along root channels. Below is light gray fine sandy loam with olive mottles extending to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Boca, EauGallie, Hallandale, Felda, Myakka, and Oldsmar soils. Also included are soils, similar to this Wabasso soil, with a surface layer that is more than 8 inches thick. Included soils make up about 10 to 15 percent of any mapped area.

In most years under natural conditions, the water table is less than 10 inches below the surface for 2 to 4 months. It is 10 to 40 inches below the surface for more than 6 months. It recedes to a depth of more than 40 inches during extended dry periods.

The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil.

Natural vegetation consists of sawpalmetto, South Florida slash pine, pineland threeawn, cabbage palm, and bluestem.

This soil is poorly suited to cultivated crops because of wetness. The number of adapted crops is very limited unless intensive water control measures are used. With a water control system that is designed to remove excess water in wet seasons and provide subsurface irrigation in dry seasons, the soil is well suited to many kinds of flower and vegetable crops. Good management, in addition to water control, includes crop rotation that keeps close-growing, soil-improving crops on the land at least two-thirds of the time. Fertilizer and lime should be added according to the need of the crop.

This soil is poorly suited to citrus trees because of wetness. With good drainage it is moderately suited to oranges and grapefruit. Drainage should be adequate to remove excess water from the soil rapidly to a depth of about 4 feet after heavy rains. The trees should be planted on beds. A cover of close-growing vegetation between the trees protects the soil from blowing when it is dry and from washing during heavy rains. The trees require regular applications of fertilizer and occasional applications of lime. Highest yields require irrigation through the water control system or by sprinklers in seasons of low rainfall.

This soil is well suited to pasture and hay. Pangolagrass, bahiagrass, and clover are well adapted and grow well if they are well managed. They require simple drainage to remove excess surface water in times of high rainfall. They also require regular use of fertilizers and lime. Carefully controlling grazing helps to maintain healthy plants for highest yields.

The potential productivity for South Florida slash pine is moderately high. Bedding of rows helps in establishing seedlings and in removing excess surface water.

This soil has moderate potential for desirable range plant production. The dominant forage is creeping bluestem, lopsided indiangrass, pineland threeawn, and chalky bluestem. Management practices should include deferred grazing and brush control. This Wabasso soil is in the South Florida Flatwoods range site.

This soil has severe limitations for urban development because of the high water table.

This Wabasso soil is in capability subclass IIIw.

2.4.3 #42 Wabasso sand, limestone substratum (non-hydric)

This is a nearly level, poorly drained soil on broad flatwoods. Slopes range from 0 to 2 percent.

Typically, the surface layer is black sand about 3 inches thick. The subsurface layer is sand about 16 inches thick. The upper 10 inches is gray, and the lower 6 inches is light gray. The subsoil is about 32 inches thick. The upper 2 inches is dark brown sand that is well coated with organic matter. The next 2 inches is dark reddish brown friable sand. The next 14 inches is brown loose sand with dark brown streaks along root channels. The lower 14 inches is light brownish gray, firm fine sandy loam with light olive brown mottles. A hard, fractured limestone ledge and boulders are at a depth of 51 inches.

Included with this soil in mapping are small areas of Boca, Myakka, Oldsmar, and Wabasso soils on similar landscape positions. Also included are similar soils with limestone at a depth of less than 40 inches or at a depth of more than 60 inches. In addition there are similar soils that have iron-cemented sandstone in the subsoil. Included soils make up about 15 percent of any mapped area.

In most years, under natural conditions, the water table is within 10 inches of the surface for 1 to 3 months. It is 10 to 40 inches below the surface for 2 to 4 months. It is below the limestone during extended dry periods.

The available water capacity is low in the surface and subsurface layers and the upper part of the subsoil and medium in the lower part of the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and the upper part of the subsoil. It is slow in the lower part of the subsoil.

Natural vegetation consists of sawpalmetto, South Florida slash pine, dwarf huckleberry, cabbage palm, gallberry, and pineland threeawn.

This soil is poorly suited to cultivated crops because of wetness. The number of adapted crops is very limited unless intensive water control measures are used. With a water control system that is designed to remove excess water in wet seasons and provide subsurface irrigation in dry seasons, these soils are well suited to many kinds of flower and vegetable crops. Good management, in addition to water control, includes crop rotation that keeps close-growing, soil-improving crops on the land at least two-thirds of the time. Fertilizer and lime should be added according to the need of the crop.

This soil is poorly suited to citrus trees because of wetness. With good drainage it is moderately suited to oranges and grapefruit. Drainage should be adequate to remove excess water from the soil rapidly to a depth of about 4 feet after heavy rains. The trees should be planted on beds. A cover of close-growing vegetation between the trees is needed to protect the soil from blowing when it is dry and from washing during heavy rains. The trees require regular applications of fertilizer and occasional applications of lime. Highest yields require irrigation through the water control system or by sprinklers in seasons of low rainfall.

This soil is well suited to pasture and hay. Pangolagrass, bahiagrass, and clover are well adapted and grow well if they are well managed. They require simple drainage to remove excess surface water in times of high rainfall. They also require regular use of fertilizers and lime. Grazing should be carefully controlled to maintain healthy plants for highest yields.

The potential productivity is moderately high for South Florida slash pine. Bedding of rows helps in establishing seedlings and in removing excess surface water.

This soil has moderate potential for desirable range plant production. The dominant forage is creeping bluestem, lopsided indiangrass, pineland threeawn, and chalky bluestem. Management practices should include deferred grazing and brush control. This Wabasso soil is in the South Florida Flatwoods range site.

This soil has severe limitations for urban development because of the high water table.
This Wabasso soil is in capability subclass IIIw.

2.4.4 #49 Felda fine sand, depressional (hydric)

This is a nearly level, poorly drained soil in depressions. Slopes are concave and less than 1 percent.

Typically, the surface layer is gray fine sand about 4 inches thick. The subsurface layers extend to a depth of 35 inches. The upper 13 inches is grayish brown fine sand and the lower 18 inches is light gray fine sand with yellowish brown mottles. The subsoil is about 17 inches thick. The upper 6 inches is gray sandy loam and the lower 11 inches is sandy clay loam with many

yellowish brown and strong brown mottles. Below this is light gray fine sand to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Anclote, Boca, Malabar, Pineda, Pompano, Winder, and Floridana soils. Included soils make up about 10 to 15 percent of any mapped area.

In most years, under natural conditions, the soil is ponded for about 3 to 6 months or more. The water table is within a depth of 10 to 40 inches for 4 to 6 months.

The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate or moderately rapid in the subsoil.

Natural vegetation consists of baldcypress, waxmyrtle, and water-tolerant grasses and weeds.

This soil has moderate potential for desirable range plant production. The dominant forage is maidencane and cutgrass. The fluctuating water table naturally defers grazing when it is high or ponded. Although this rest period increases forage production, the periods of high water may reduce the grazing value of the site. This Felda soil is in the Fresh Water Marshes and Ponds range site.

This soil is not suited to cultivated crops, improved pasture, or citrus because of prolonged ponding.

This soil has severe limitations for urban and recreational uses because of prolonged ponding.

This Felda soil is in capability subclass VIIw.

2.4.5 #73 Pine fine sand, depressional (hydric)

This is a nearly level, very poorly drained soil in depressions. Slopes are concave and are less than 1 percent.

Typically, the surface layer is dark gray fine sand about 3 inches thick. The subsurface layer is fine sand to a depth of 31 inches. The upper 9 inches is light gray, the next 7 inches is very pale brown with yellowish brown mottles, and the lower 12 inches is brownish yellow with many iron-coated sand grains. The subsoil is fine sandy loam to a depth of 55 inches. The upper 8 inches is gray with very pale brown sandy intrusions and yellowish brown mottles. The lower 16 inches is gray. Below that and extending to a depth of 80 inches is light gray loamy sand.

Included with this soil in mapping, and making up 10 to 15 percent of any mapped area, are small areas of Boca, Felda, Floridana, Malabar, Winder, and Valkaria soils and a soil that is similar to Pineda soils but that has limestone below a depth of 40 inches. Also included are areas of soils that are similar to Pineda soils but that have a black sandy layer immediately above the loamy subsoil.

In most years, under natural conditions, the soil is ponded for about 3 to 6 months or more. The water table is within a depth of 10 to 40 inches for 4 to 6 months.

The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and slow or very slow in the loamy subsoil.

Natural vegetation consists of St.-Johnswort, cypress, maidencane, and other water-tolerant grasses.

This soil has moderate potential for range. The dominant forage plants are maidencane and cutgrass. Since the depth of the water table fluctuates, these areas cannot be grazed during part of the year. Although this rest period increases forage production, the periods of high water may reduce the grazing value of the site. This Pineda soil is in the Fresh Water Marshes and Ponds range site.

This soil is not suited to cultivated crops, improved pasture, woodland, or citrus because of prolonged ponding. It has severe limitations for urban and recreational uses because of prolonged ponding and sandy texture.

This Pineda soil is in capability subclass VIIw.

2.4.6 #74 Boca fine sand, slough (hydric)

This is a nearly level, poorly drained soil in sloughs. Slopes are smooth to slightly concave and range from 0 to 1 percent.

Typically, the surface layer is grayish brown fine sand about 3 inches thick. The subsurface layer is light gray and very pale brown fine sand about 30 inches thick. The subsoil, about 5 inches thick, is gray sandy clay loam with yellowish brown and brownish yellow mottles. At a depth of about 38 inches is hard, fractured limestone bedrock with solution holes extending to 46 inches.

Included with this soil in mapping are small areas of Hallandale, Felda, Pineda, Pompano, Wabasso, and Valkaria soils. Also included are small areas of Boca soils in higher positions. Included soils make up about 15 percent of any mapped area.

In most years, under natural conditions, the water table is within 10 inches of the surface for 2 to 4 months. It is 10 to 40 inches below the surface for more than 4 months and recedes to a depth of more than high rainfall, the soil is covered by a shallow layer of slowly moving water for periods of about 7 days to 1 month or more.

The available water capacity is low in the surface and subsurface layers and medium in the subsoil. Natural fertility is low. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil.

Natural vegetation (fig. 7) consists of maidencane, scattered clumps of sawpalmetto, waxmyrtle, pineland threeawn, and South Florida slash pine.

This soil is not suitable for cultivated crops in its native state because of wetness. It can be made suitable for some vegetable crops by using a water-control system to remove excess water in wet seasons and provide water through subsurface irrigation in dry seasons. Flow crops should be rotated with close-growing soil-improving crops. The rotation should include soil-improving crops on the land two-thirds of the time. Seedbed preparation should include bedding of the rows. Fertilizer and lime should be added on the basis of soil tests and on the need of the crop.

This soil is poorly suited to citrus unless very intensively managed. Those areas that are relatively free of freezing temperatures are suitable for citrus, but only after a carefully designed water-control system has been installed that maintains the water table below a depth of 4 feet. The trees should be planted on beds and a vegetative cover maintained between the trees. Regular applications of fertilizer are needed.

The potential productivity for pine trees is moderate. Equipment limitations, seeding mortality, and competition from unwanted plants are the main concerns in management.

This soil has high potential for range. The dominant forage plants are of blue maidencane, chalky bluestem, and bluejoint panicum. Management practices should include deferred grazing. This Boca soil is in the Slough range site.

This soil has severe limitations for sanitary facilities and building site development, primarily because of the high water table.

This Boca soil is in capability subclass Vw.

Soils sampled on-site within the wetland areas were sandy with weak signs of stripped matrix, indicating hydrology moving through the soil. Soils sampled within the upland portions of the site were sandy but did not exhibit stripped matrix, indicating aerobic conditions within the soil profile, supporting that these areas are upland.

3 IMPACTS

The proposed project is located entirely in uplands, primarily to pine flatwoods and shrub and brushland habitat. The areas to be impacted have been degraded by exotic species, which will be removed as part of development. There are currently no impacts to wetlands associated with the proposed park facilities. Wetland mitigation should not be required. The site plans attached illustrate the proposed impacts.

The project will not impact upland habitat currently being used by listed species. One cavity tree with the potential to support bonneted bat roosting will be impacted by the proposed plan. See Section 2.2 above and the Listed Species survey for additional information. Prior to commencement of construction, the tree will need to be re-examined for species utilization.

Should park amenities or trail improvements be proposed at a later date within the wetland areas, then wetland mitigation may be required for those future projects.

4 SUMMARY

The existing conditions on the subject property consist of upland and wetland habitat. The Currently proposed development of the subject site will not impact wetlands and should not adversely impact any state and/or federally listed wildlife species. One cavity tree that has roosting potential for Florida bonneted bats is located within the development footprint. This tree will need to be re-examined prior to commencement of construction to ensure there is no bonneted bat utilization.

Coordination with state and federal regulatory agencies will be on-going to ensure that the project components meet all applicable regulatory requirements.