# *Florida Power & Light Company*

# *Juno Beach Offices*

## *Preserve Area Management Plan*

- *Preserve Areas*
- *Buffer Areas*
- *Littoral Zone*

*Revised January 1993*

Note; Burn Plan Appendix in condition compliance Book 2 of 2.

FSB7:FSB:fp:\dri\jbomgpl
March 8, 1993

# PRESERVE AREA MANAGEMENT PLAN

# FOR THE FPL JUNO BEACH PROPERTY

## GENERAL PRINCIPLES

### Preserve Area

The area to be managed and maintained as native habitat, pursuant to Condition 4, on the FPL Juno Beach property consists of four parts: 1) a northern scrub and wetland area, 2) a southern scrub area, 3) a scrub buffer area, and 4) a native transitional vegetation area (Appendix 1). These areas will be managed to encourage the survival of the site's Rare, Threatened and Endangered species of animals and plants, that is, the Florida Scrub Jay, the Florida Gopher Tortoise, the Florida Scrub Lizard and the Four-petal Pawpaw. The basic philosophy of the management plan is that the survival of these keystone species can best be assured by maintaining the present sub-climax scrub habitat. The Scrub Jay is considered the focal species for the management plan both because there is more information on its requirements and ecology than is the case with the three other species, and because conditions for the Scrub Jay survival are believed to be generally favorable for the other three species.

### Littoral Zone

In addition, pursuant to Condition 5, this management plan addresses maintenance of the littoral zone adjacent to the retention ponds. The littoral zone has been added since the original management plan was submitted, and is included here to provide for a coordinated management approach.

## CHARACTERISTICS AND REQUIREMENTS OF THE SPECIES OF CONCERN

### Florida Scrub Jay

The Florida Scrub Jay (Aphelocoma coerulscens coerulscens) is listed as Threatened by the Florida Game and Freshwater Fish Commission and by the United States Fish and Wildlife Service. Florida

Scrub Jays occur only in peninsular Florida. These Jays have very specific habitat requirements. They live in oak scrub consisting of sand live oak, myrtle oak and Chapman oak, along with saw palmetto, scrub palm, scattered sand pine and rosemary. The birds avoid wet habitats and forests, including canopied sand pine stands.

Scrub Jays are omnivorous and opportunistic feeders: they will eat almost anything they can catch. During the spring and summer, Scrub Jays primarily eat insects, spiders, lizards and frogs which should be present in sufficient numbers on the FPL site. In the fall and winter months, acorns become the primary food. Enough oaks must be present to provide sufficient acorns every year to carry the Jays through the winter. It is known that acorn crops vary from year to year. At the FPL site, acorn production may not be sufficient to support the Scrub Jay population indefinitely. It appears that Scrub Jays on the site must be subsisting during the winter months on acorns produced by the scrub and on food provided by nearby residents. A banding program has been initiated to determine the resident population and its use of other nearby scrubs. The tameness of the FPL Jays indicates that they are accustomed to the presence of humans and suggests that they are being fed by people living nearby. Since the scrub west of the FPL site has been cleared, supplemental feeding has been provided for the Scrub Jays to survive the winter months; the amount of feeding by neighbors is not known and in any case it cannot be relied on for survival of the FPL Scrub Jay colony.

Scrub Jay nesting occurs from March through mid-June. Florida Scrub Jays require dense thickets of oaks for nesting. Nests are usually placed just inside the edge of a thicket or in a single oak. Scrub Jays generally avoid areas where oaks average over 10 feet in height. Except for a small stand of sand pines in the southern scrub, most of the habitat ideally should be maintained at an average height of less than 6 feet. Under natural conditions, sand pine scrub communities are maintained by wildfires that burn every 8-15 years.

Scrub Jays generally prefer areas with 10-40% bare ground. Surplus food, such as acorns, is

buried in the sandy soil, recovered and eaten later. The birds also spend considerable time on the ground foraging for insects and lizards. Scrub Jays seem to prefer small patches of bare sand a few feet across scattered among the oak thickets, rather than large open areas next to a dense thickets of oaks.

Field observations indicate that the FPL site provides suitable habitat for at least one family of Jays. As many as ten adults have been seen at one time on the FPL property. The range of this family group probably extends to the west on land that is already developed and includes the nearby residential area to the north. The proposed management plan provides adequate foraging and nesting areas for this small family group, even assuming complete development of the land to the west. But this small a population of Scrub Jays is vulnerable to predators, disease, etc. Although there are no Scrub Jays populations immediately adjacent to the FPL site, if the present occupants were to leave or be eliminated by predators, disease, or inbreeding there are Jays within several miles which could recolonize the site.

**Gopher Tortoise**

The Gopher Tortoise (Gopherus polyphemus), is listed as a Species of Special Concern by the Florida Game and Freshwater Fish Commission and as a candidate for listing (C2) by the United States Fish and Wildlife Service.

The Gopher Tortoise is a medium sized turtle that grows to a length (shell) of about 25-30 cm. Scattered populations of the Gopher Tortoise occur in suitable habitats in southern peninsular Florida from Cape Sable northward along both coasts. The main area of the more or less continuous portion of the range is southern Georgia, southeastern Alabama, the panhandle of Florida and the northern and central parts of the peninsula Florida. The Gopher Tortoise is considered protected due to poaching for food, but more so because of encroachment on its habitat by citrus groves, cattle pastures and real estate developments.

Well drained soils and a dense herbaceous ground cover seem to be a prime requisite for the Gopher Tortoise. Major xeric habitats utilized by this species include coastal oak scrub, sand pine scrub,

longleaf pine/turkey oak sandhills, pine flatwoods, and oak hammocks, as well as abandoned pastures and old fields.

Gopher Tortoise feed primarily on broadleaf grasses, forbs and other succulent species such as the prickly pear cactus. However, fallen leaves of several species of trees and herbs are eaten, as well as occasional wild fruits and berries. Grazing by gopher tortoises is often a matter of habit, resulting in paths and small clearings that are maintained by constant cropping in an otherwise developed herbaceous layer. Research has indicated that the tortoise density in any given area is related to the available herbaceous biomass.

As many as five gopher tortoise burrows have been observed within the southern and parking lot scrubs on the FPL site. Based on an estimate of active and inactive burrows, as many as 3 adults may be utilizing the site.

The FPL Juno Beach colony of Gopher Tortoises seem to have adequate food supplies and range to be self-sustaining. Due to emigration from the site, or pressure by predators, the indefinite survival of Gopher Tortoises on the site cannot be assured.

**The Florida Scrub Lizard**

The Florida Scrub Lizard (Sceloporus woodi) is classified as Rare by the Florida Committee on Rare and Endangered Plants and Animals and as a candidate for listing (C2) by the United States Fish and Wildlife Service.

The Florida Scrub Lizard is a rough, spiny-scaled, relatively small, reptile generally pale brown or gray-brown in color. As the name indicates, it is found in scrub vegetation and is endemic to Florida. The Scrub lizard is disjunctly distributed in sand pine-scrub oak communities along the central ridge from Marion and Putnam counties southward to Highlands County. Populations of this lizard also occur on both coasts: in Lee and Collier counties on the west and continuously from Brevard County to Broward County on the east.

The Scrub Lizard is a carnivore: ants, adult beetles, and orthopterans comprised nearly 85% of the food identified from a gut sample captured from the Ocala National Forest.

The Scrub lizard is infrequently observed throughout the southern scrub preserve on the FPL site. Management for this lizard requires the maintenance of bare, sandy areas which are utilized as forage sites for this species.

**Four-petal Pawpaw**

The Four-petal Pawpaw (Asimina tetramera), is classified as Endangered by the Florida Committee on Rare and Endangered Plants and Animals, Florida Department of Agriculture and Consumer Services (FDA), and the United States Fish and Wildlife Service.

The Four-petal Pawpaw is endemic to scrubs in Martin and northern Palm Beach Counties and has been located from at least 17 different sites. This species is endemic to scrub vegetation on old dunes inland from the present coast, typically in open stands of scrub oaks or sand pines. At times, this species is often found mixed with other species of Asimina, and it is often associated with myrtle oak, stagger-bush, and scrub hickory. This species is intolerant of heavy shade and does best in disturbed clearings or open stands. A. tetramera is the tallest species of Asimina in eastern peninsular Florida, sometimes reaching a height of 10 feet.

The Four-petal Pawpaw reacts to burning or cutting by rapidly producing new shoots from a well-developed taproot, even in older less productive plants. Resprouts from cut or burned stumps may flower and fruit in the same season.

As many as one quarter of the A. tetramera known to exist in Florida are found on the FPL site.

## DESCRIPTION OF THE AREAS

Approximately 8.99 acres of upland, 2.57 acres of wetland and 1.5 acres of transitional vegetation will be maintained within the FPL site.[1] The upland vegetation is divided into approximately 7.24 acres of sand pine scrub preserve and 1.75 acres of scrub buffer. The sand pine scrub habitat is comprised of 4 disjunct areas: 1) the southern scrub preserve, 2) the parking lot scrub, 3) the northwestern scrub, and 4) the northeastern scrub. The scrub buffer is located along the north, south and western edges of the preserve system and is characterized by oak scrub vegetation. (See Appendix 1, Map B)

The original DRI preserved approximately 2.0 acres of freshwater marsh in the northwestern quarter of the FPL site and 1.51 acres of transitional vegetation were created as part of the buffer. Additionally, 0.75 acres of vegetated littoral shelf have been created as part of the surface water management system for the FPL site.

### Sand Pine Scrub Preserve

Most of the scrub community associated with the preserve system is best described as oak scrub dominated by a shrub layer of sand live oak (Quercus geminata), myrtle oak (Quercus myrtifolia), Chapman's oak (Quercus chapmanii), which range in heights from 6-18 feet and usually form a dense thicket with low light levels. Scattered throughout the oak thickets and along the margins of the site are several shrub species such as shiny blueberry (Vaccinium myrsinites), rusty lyonia (Lyonia ferruginea), gopher apple (Licania michauxii), tallowwood (Ximenia americana), four-petaled pawpaw (Asimina tetramera), saw palmetto (Serenoa repens), rosemary (Ceratiola ericoides), and scrub palm (Sabal etonia). An overstory canopy of sand pine (Pinus clausa) is lacking except for a small 0.4 acre stand located in the southern scrub.

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[1]These acres differ slightly from those outlined in the original D.O. since an area originally proposed for scrub buffer was found to have unsuitable soils for supporting scrub species, consequently alternate native species were planted to from a transitional area suited to the soils. In addition, the littoral zone area has been incorporated into this management plan.

The herbaceous layer is primarily restricted to the open sandy areas between oak thickets and within the buffer areas. The most common species include natal grass (Rhynchelytrum repens), wireweed (Polygonella gracilis), jointweed (Polygonella polygama), Polanisia tenuifolia, Stipulicida setacea, scrub wiregrass (Aristida gyrans), camphorweed (Heterotheca subaxillaris), Lechea deckertii, hair sedge (Bulbostylis ciliatifolia), scrub sedge (Rhynchospora megalocarpa), silkgrass (Pityopsis graminifolia), sand spike moss (Selaginella arenicola), and nutsedge (Cyperus retrorsus).

**Scrub Buffer**

About 1.75 acres of scrub buffer are located along the western and southern edge of the west parking lot (Appendix 1). Portions of this area remain in their original natural vegetated condition whereas other areas contain plants relocated from the parking lot development. A few clusters of cabbage palms, ( previously existing or transplanted from on site), determined not to be in conflict with the area, remain in low spots of the buffers. The scrub buffer has been enhanced with native scrub species to provide additional habitat for scrub jays and other plant and animal species as well as to serve as a visual screen to the site. A mixture of sand live oak (Quercus myrtifolia), myrtle oak (Quercus myrtifolia), Chapman's oak (Quercus chapmanii), rusty lyonia (Lyonia ferruginea), gopher apple (Licania michauxii), scrub palm (Sabal etonia), saw palmetto (Serenoa repens), rosemary (Ceratiola ericoides), scrub mint (Conradina grandiflora), scrub aster (Garberia heterophylla), tough bumelia (Bumelia tenax), and scrub hickory (Carya floridana) have been installed within the buffer areas.

**Transitional Vegetation**

Along the northern edge of the site, approximately 1.5 acres of transitional vegetation were created, (Appendix 1). These areas were created on former wetland soils and enhanced with a mixture of red maple (Acer rubrum), laurel oak (Quercus laurifolia), cocoplum (Chrysobalanus icaco) and swamp

fern (Blechnum serrulatum).

**Wetlands**

Approximately 1.6 acres of mixed swamp/freshwater marsh and 0.4 acres of created freshwater marsh wetlands are included within the preserve system (Appendix 1).

Historically, these wetlands were part of a larger system that has been fragmented by development and road construction. It appears that the original wetland was dominated by sawgrass (Cladium jamaicense) and other freshwater macrophytes at a time when the water table was several feet higher than it is today. This has allowed several woody species such as red maple (Acer rubrum), Carolina willow (Salix caroliniana), pond apple (Annona glabra) and buttonbush (Cephalanthus occidentalis) to invade the marsh.

The herbaceous components include smartweed (Polygonum punctatum), red ludwigia (Ludwigia repens), torpedo grass (Panicum hemitomon), coinwort (Centella asiatica), marsh pennywort (Hydrocotyle umbellata), pickerelweed (Pontederia cordata), arrowhead (Sagittaria lancifolia), and swamp fern (Blechnum serrulatum).

In order to enhance the habitat value of the system, an additional 0.4 acres of wetland were excavated along the southern edge to create areas of standing water. Stormwater from the site is being diverted into the existing system which is an additional longterm survival measure for the marsh system.

**Littoral Zone**

In addition to the existing wetland, approximately 0.75 acres of littoral shelf were created (May 1992) within two ponds for the construction of Building D located on the north side of the existing FPL facility. The planted areas within Pond B and E were approximately 18,272 square feet and 14,588 square feet, respectively. The upper transitional zones were mulched with wood chips to reduce erosion and weed invasion since most of these areas were above normal pool design.

A mixture of blue flag iris (Iris virginiana), canna lily (Canna flaccida), string lily (Crinum americanum), arrowhead (Sagittaria lancifolia), pickerelweed (Pontederia cordata), bald cypress (Taxodium distichum), red bay (Persea borbonia), wax myrtle (Myrica cerifera), and dahoon holly (Ilex cassine) were installed within the created littoral areas.

## MANAGEMENT PLAN

As more and more tracts of land become isolated or fragmented due to urban sprawl, preservation of these isolated natural communities can no longer be achieved without the implementation of a resource management plan that will preserve and maintain the integrity of the floristic and faunal components.

The Management Plan for the FPL preserve and buffer areas has been developed with the objective of encouraging the survival of the site's Rare, Threatened and Endangered species, but yet providing assurance for the longterm stability of the scrub ecosystem. To this end, it is intended that the areas will be managed to maintain the scrub vegetation at the equivalent of a fire sub-climax state and the wetlands as both viable and productive; emphasizing the dynamics of change associated with succession from a freshwater marsh to a mixed hardwood forest. Existing exotics (Melaleuca, Brazilian pepper and Australian pine) will be eliminated from the preserve and buffer areas and invading exotics will be removed as part of the on-going management program.

### Sand Pine Scrub Areas

The scrub preserve and buffer will be managed to maintain approximately 8.99 acres of viable scrub habitat. Existing vegetation will largely be retained, however, large herbaceous weeds, such as ragweed (Ambrosia artemisiifolia), Caesar's weed (Urena lobata), and dogfennel (Eupatorium capillifolium), may be periodically removed because their prolific seed production could negatively impact the species balance. Love vine (Cassytha filiformis), a native scrub species, often becomes a pest in areas of fire suppression, forming dense mats on the vegetation and thereby reducing vigor and productivity.

Hand removal must occur at least once a year, if necessary, to prevent loss of oak vigor which may lead to poor acorn production.

In Florida, fire plays a major role in shaping natural plant communities. Many plant communities (e.g., sand pine scrub, pine flatwoods, freshwater marshes) are maintained by periodic wildfires that burn at regular intervals necessary to maintain habitat structure and function. Fire has historically been viewed as an external agent causing successional setbacks within communities that is neither innately destructive nor constructive....it simply causes change.

Following many years of fire suppression, many "preserves" have, through natural succession, changed into another more complex community, often displacing the original species that were an integral part of the community. With this in mind, the Preserve Area Management Plan (PAMP) included both the option to burn, as well as the option to periodically mechanically alter (i.e., cut by hand and/or by machine) the scrub in lieu of burning to simulate results of natural burns.

To date, maintenance at the FPL site has focused on cutting, in deference to the urban setting of the site. While mechanical treatment of the scrub has been successful in terms of oak revegetation, it has not been efficient for controlling nuisance and exotic species such as Brazilian pepper and love vine. In particular, the love vine has been very prolific and in some areas has reduced the habitat value of the preserves.

In order to improve the habitat value of the preserve areas and enhance management of the scrub for the protected species on site (in particular the Florida Scrub Jay), prescribed burns will periodically be considered. In 1992, the Treasure Coast Regional Planning Council (TCRPC), in consultation with the Town of Juno Beach, specifically requested reconsideration of a controlled burn program. The successful completion of prescribed burns will provide information necessary to promote the burning of the other scrub areas within the preserve system (See Appendix 2 for information on test case burn proposal for 1993). Controlled burns will be continually considered as part of the scrub management process.

However, in areas where burning is not proposed as a maintenance tool, approximately 30% of each existing unburned portion of sand pine scrub should be mechanically altered to simulate burning necessary for Scrub Jay survival. The small stand of sand pine (Pinus clausa) in the southern scrub preserve and other isolated sand pine trees will not be cut in mechanically altered areas of scrub, but will be retained because of their value as lookout sites for the Scrub Jays. Burning of the sand pine stand will be initiated only when the trees begin to reach senescence or between 40-50 years old. The areas to be mechanically altered will be irregular in shape and will be cut on a 10-year rotation to provide a mosaic of different age stands. However, if the monitoring program indicates that this cutting schedule should be revised, the percentage area cut or frequency of cutting may be revised accordingly.

All mechanical alteration will be done during the period of October through February, to avoid the Scrub Jay nesting season. Because of the brush-free or open space requirements of the Scrub Jay and the Gopher Tortoise, cut brush will be hauled from the site, and litter in the cut areas will be removed by raking to produce areas of open sand. This will also provide forage sites for the Scrub lizard.

All of the Four-petal Pawpaws are within the proposed preserve/buffer areas, and a 2 foot cleared area will be retained around existing and transplanted plants. The Four-petal Pawpaw is stimulated to grow and reproduce by periodic fire or pruning, so management of the scrub on-site to simulate a sub-climax should be favorable for its survival.

It has long been established in the forestry literature that removal of slash and wood from the forest land can seriously reduce the growth of succeeding generations of trees because of mineral losses. Under natural fire-maintained communities, the minerals of the slash and litter are returned to the soil in the form of ash. Loss of mineral nutrients by repeated removal of cut trees and brush as a management substitute for fire might accentuate the already nutrient-poor status of the sandy scrub soil. This is an additional reason for prescribed burning to be considered as a regular management tool for the scrub ecosystem.

Several bird feeder's will be located in the scrub areas and regularly filled with unsalted peanuts from mid-October through mid-March to provide supplemental food reserves for the Scrub Jay population during periods of low acorn production or food shortages that may be caused by weather conditions.

**Wetland Preserve Areas**

The existing wetland within the FPL preserve has been subjected to various degrees of anthropogenic disturbance. The bottom elevation of these wetlands generally varies between 3 and 3.5 feet above mean sea level (MSL), with some pockets varying between 2 to 2.5 feet above MSL. Over the past few decades it appears that the water table on the site has dropped somewhat to its current annual average of approximately 3 feet above MSL. The slightly drier conditions have allowed the invasion of several native woody species such as Carolina willow (Salix caroliniana), red maple (Acer rubrum) and buttonbush (Cephalanthus occidentalis). With the creation of an additional 0.4 acres along the southern edge of the existing wetland, exotic and nuisance species such as southern cattail (Typha domingensis), primrose willow (Ludwigia peruviana), torpedo grass (Panicum hemitomon), Brazilian pepper (Schinus terebinthifolius) and Australian pine (Casuarina equisetifolia) have invaded the marsh.

To further enhance the habitat value and assure the survival of the wetland system, stormwater from most of the site is being collected, treated, and then supplied to the wetland. Treatment of stormwater is provided by routing the water through a combination of grassed swales, perforated pipes, natural soil filters, and a detention tank. By redirecting most of the surface runoff from the site to the wetland preserve, it is anticipated that the historical, predevelopment hydroperiod will be approximated. This will give the species typical of a sawgrass marsh system a competitive advantage over exotic and less desirable native species.

Maintenance of these wetlands is imperative to prevent the complete dominance of nuisance vegetation which often eliminates natural wetland species through competition. Maintenance practices will include periodic chemical treatment of torpedo grass, southern cattails and submerged aquatics such as

hydrilla (Hydrilla verticillata) and bladderwort (Utricularia spp.). Where possible, all primrose willow will be hand removed from the wetland or cut and the stumps chemically treated to prevent resprouting which will affect the long-term establishment of woody tree species. Sprayed cattails will be hand removed to remove above ground biomass which may inhibit recruitment of natural vegetation. Chemical treatment with rodeo herbicide is necessary prior to removal in an effort to kill the root system which will resprout if broken or removed without spraying. Currently, chemical treatment methods are lacking for the elimination of torpedo grass, however, quarterly spraying will be conducted in order to curtail its spread or invasion into areas of desirable vegetation. Following herbicide treatment, torpedo grass should be mowed or cut to the water's surface to prevent the buildup of decomposing biomass which will inhibit natural regeneration of aquatic species. These practices will occur on a quarterly basis to control all nuisance and exotic species to levels not to exceed 10% cover of the planted portion of the wetland.

**Littoral Zone**

The creation of littoral zone plantings within two stormwater treatment ponds east of the existing preserve (Appendix 1) will also provide valuable wildlife habitat, stormwater retention, natural filtration and a variety of other benefits to the entire site.

As per Condition #5, management procedures to assure the viability and health of the littoral zone plantings are to become part of a management plan. Maintenance practices will be similar to the existing wetland, but will also include the treatment of submerged aquatics and algae within the entire planted and open water portion of the pond in order to assure long-term survival of the planted species.

Maintenance practices will include periodic chemical treatment of torpedo grass, southern cattails and many submerged aquatics such as hydrilla (Hydrilla verticillata) and bladderwort (Utricularia spp.). During periods of warm weather, algae may become a problem to natural recruitment of desirable species. Treatment by a licensed applicator with an acceptable algicide may be utilized to curtail any bloom that may affect the viability and aesthetics of this system. Where possible, all primrose willow shrubs will be

hand removed from the wetland to prevent resprouting which will affect the long-term establishment of other desirable emergent species. Treated cattails will be hand pulled to remove the above ground biomass which may inhibit natural recruitment. All nuisance vegetation will be removed from the wetland and disposed of according to FPL policy.

**Monitoring and Reporting**

To ensure the overall health and integrity of the sand pine scrub preserve and associated wetlands, a quarterly monitoring program was implemented in 1987 by FPL. Monitoring reports have discussed the overall condition of the sand pine scrub areas, wetlands, and associated listed plant and animal species; reports also included maintenance recommendations and action items necessary for the long-term survival of this fragile ecosystem. FPL will be continuing this monitoring approach unless the results of the monitoring indicate a need to modify the frequency or content of this program; the littoral zones will be included for long term monitoring and maintenance.

In addition, as per SFWMD Permit #50-00742-S, littoral zone maintenance, monitoring and reporting activities have been initiated on a semi-annual basis for a period of 3 years beginning in August, 1992; percent cover of planted and naturally recruited species, water levels, and nuisance species cover will be reported during each monitoring event (Appendix 3). Each report will include maintenance recommendations necessary to promote the long-term establishment and survival of the planted species within the created littoral areas of the ponds.

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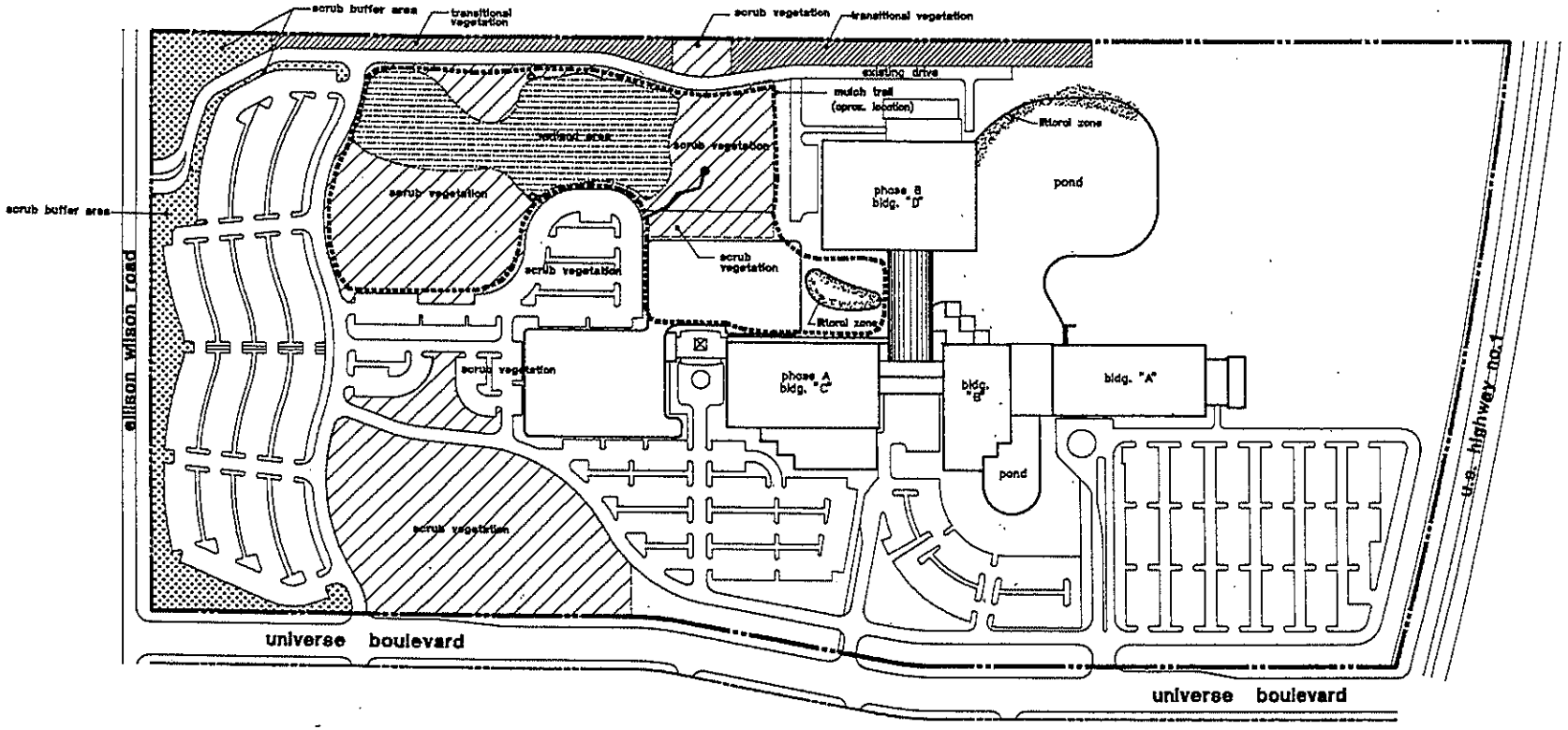
CHG
March 4, 1993

## APPENDIX 1

SITE PRESERVATION PLAN

# MAP A




**legend**

**habitat data**

mulch trail

observation platform - exact location of up to three shall be decided at a later date

| | |
|---|---|
| transitional vegetation | 1.51 ac. |
| scrub buffer | 1.75 ac. |
| wetland area | 2.0 ac± |
| scrub | 7.24 ac. |
| total area | 12.50 ac. |

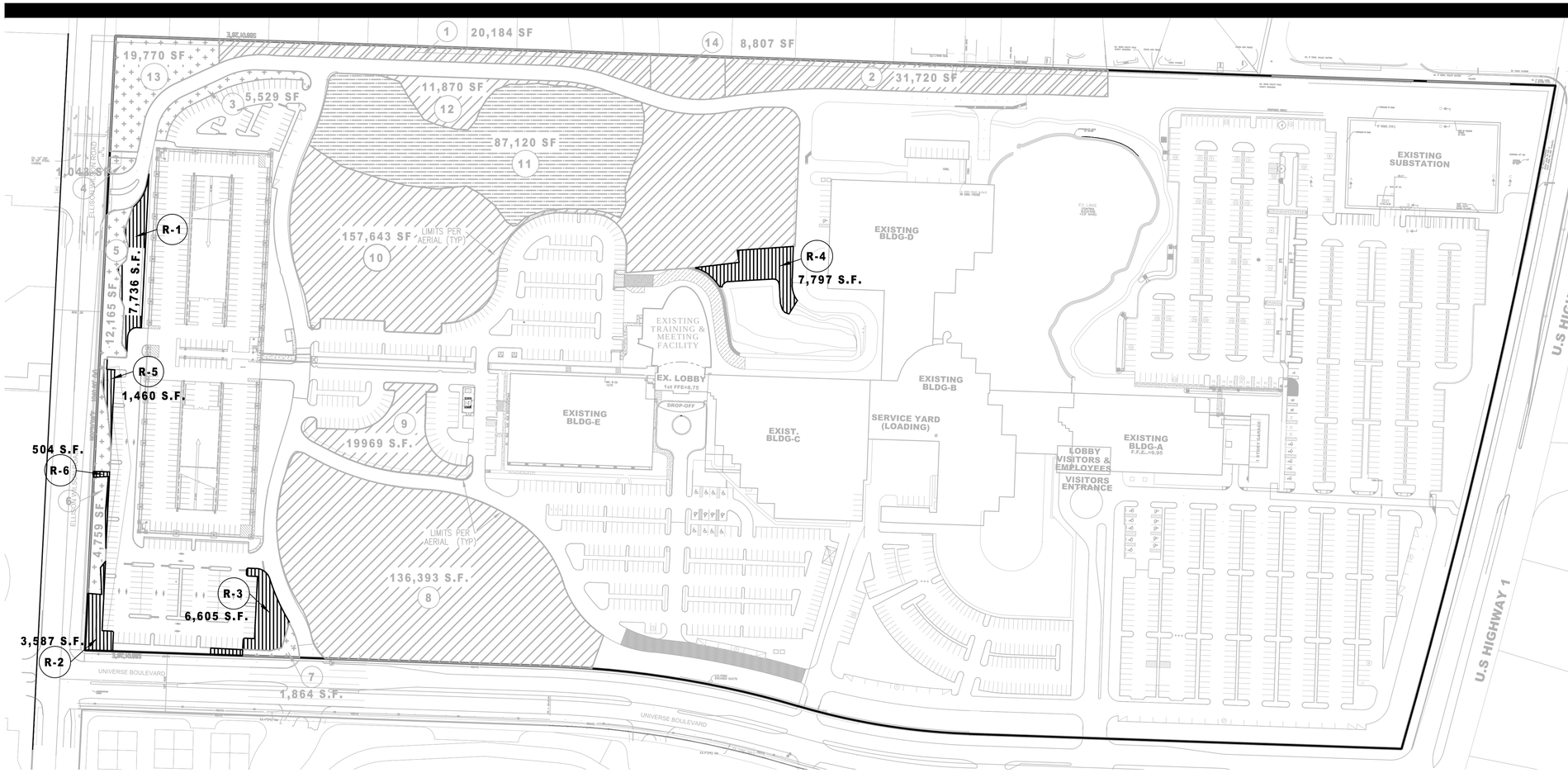
**Site Preservation Plan**

0 50 100 200 300

SCALE IN FEET

note: conceptual master plan base prepared by Spillis Candela & Partners, Inc.

# Attachment C
# 2014 Site Preservation Plan




## R-1 PLANT SCHEDULE (7,736 sf)

| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 11 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 11 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 119 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 119 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 119 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 992 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## R-2 PLANT SCHEDULE (3,587 sf)

| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 5 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 5 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 55 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 55 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 55 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 460 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## R-3 PLANT SCHEDULE (6,605 sf)

| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 5 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 4 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 85 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 85 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 85 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 713 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## R-4 PLANT SCHEDULE (7,797 sf)

| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 11 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 11 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 120 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 120 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 120 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 1,000 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## R-5 PLANT SCHEDULE (1,460 sf)

| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 2 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 2 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 22 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 22 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 22 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 187 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## R-6 PLANT SCHEDULE (504 sf)

| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 1 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 1 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 11 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 11 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 11 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 65 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## TOTAL PLANT SCHEDULE (40,738 sf)

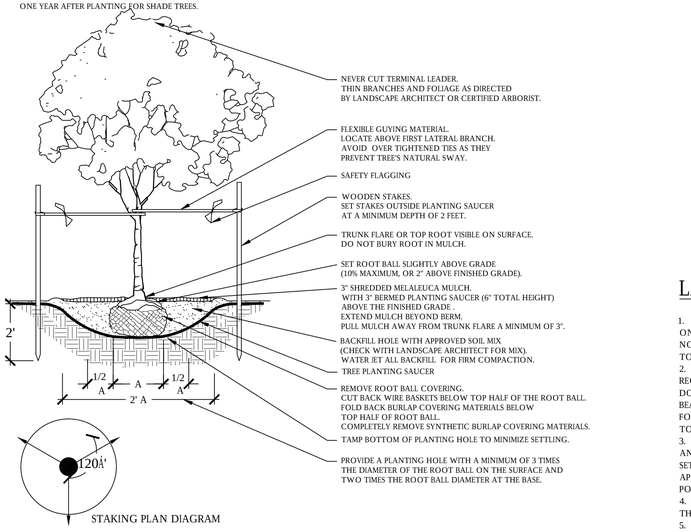
| QTY | COMMON NAME | SCIENTIFIC NAME | SIZE AND SPACING |
|---|---|---|---|
| 55 | Sand Live Oak | *Quercus geminata* | 15 gal., 20' o.c. |
| 54 | Myrtle Oak | *Quercus myrtifolia* | 15 gal., 20' o.c. |
| 627 | Saw Palmetto | *Serenoa repens* | 3 gal., 5' o.c. |
| 627 | Rusty Lyonia | *Lyonia ferruginea* | 3 gal., 5' o.c. |
| 627 | Prickly Pear Cactus | *Opuntia humifusa* | 3 gal., 5' o.c. |
| 5,223 | Gopher Apple | *Licania michauxii* | 1 gal., 3' o.c. |

*Notes:
- Material should be installed randomly to approximate a natural environment
- Any changes or substitutions must be approved by Landscape Architect

## TREE PLANTING DETAIL

NOTE:
1. ALL TREE SUPPORT MATERIALS ARE TO BE REMOVED FROM EACH TREE ONCE IT IS ESTABLISHED. TYPICALLY SIX MONTHS TO ONE YEAR AFTER PLANTING FOR SHADE TREES.

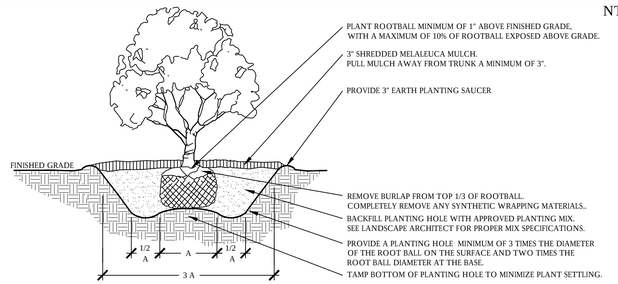
NTS.




STAKING PLAN DIAGRAM

## SHRUB PLANTING DETAIL

NTS.




## LANDSCAPE NOTES:

1. STRUCTURAL ELEMENTS AND HARDSCAPE FEATURES INDICATED ON LANDSCAPE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE PLANS ARE TO BE UTILIZED FOR LOCATION OF LIVING PLANT MATERIAL ONLY. LANDSCAPE PLANS SHOULD NOT BE UTILIZED FOR STAKING AND LAYOUT OR LOCATION OF ANY STRUCTURAL SITE FEATURES INCLUDING BUT NOT LIMITED TO: BUILDINGS, SIGNAGE, PATHWAYS, EASEMENTS, BERMS, WALL, FENCES, UTILITIES OR ROADWAYS.
2. CONTRACTOR SHALL ACQUIRE ALL APPLICABLE FEDERAL, STATE, LOCAL, JURISDICTIONAL OR UTILITY COMPANY PERMITS REQUIRED PRIOR TO REMOVAL, RELOCATION, AND/OR INSTALLATION OF LANDSCAPE MATERIALS INDICATED WITHIN PLAN DOCUMENTS. THE CONTRACTOR SHALL HAVE PERMITS "IN HAND" PRIOR TO STARTING WORK. LANDSCAPE ARCHITECT SHALL BEAR NO RESPONSIBILITY FOR WORK PERFORMED WITHOUT PERMITTED DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHANGES TO THE WORK, AT NO ADDITIONAL COST TO THE OWNER, AS A RESULT OF UNAUTHORIZED WORK PRIOR TO RECEIPT OF PERMIT.
3. TREES SHOWN ON THIS PLAN ARE FOR GRAPHIC REPRESENTATION ONLY. TREE SPACING IS BASED ON DESIGN REQUIREMENTS AND THE TREES SHOWN ON THESE PLANS ATTEMPT TO ACCOMPLISH THAT SPACING WHILE MAINTAINING THE REQUIRED SETBACKS FROM UTILITIES. IN THE EVENT OF A CONFLICT, AFFECTED PLANT MATERIAL SHALL BE FIELD ADJUSTED WITH THE APPROVAL OF THE LANDSCAPE ARCHITECT TO AVOID CONFLICTS WITH THE WITH EXISTING AND PROPOSED UTILITIES, LIGHT POLES, DRAINAGE STRUCTURES OR LINES, LAKE MAINTENANCE EASEMENTS OR OTHER AFFECTED SITE FEATURES.
4. ANY PLANTING WITHIN THE SIGHT TRIANGLES SHALL PROVIDE UNOBSTRUCTED VIEWS AT A LEVEL BETWEEN 30" AND 8' ABOVE THE PAVEMENT.
5. TEMPORARY, ABOVE GROUND IRRIGATION IS REQUIRED PROVIDING 100% COVERAGE WITH A MAXIMUM OF 50% OVERLAP, AN AUTOMATIC RAIN SENSOR MUST BE INCLUDED.
6. ALL PLANT MATERIAL TO BE INSTALLED SHALL CONFORM TO FLORIDA POWER AND LIGHT'S (FPL'S) RIGHT TREE RIGHT PLACE GUIDELINES.
7. IN CASE OF DISCREPANCIES PLANS TAKE PRECEDENCE OVER PLANT LIST.
8. LANDSCAPE CONTRACTOR RESPONSIBLE FOR VERIFICATION OF ALL QUANTITIES PRIOR TO BIDDING.
9. REMOVAL OF EXISTING VEGETATION IS RESPONSIBILITY OF LANDSCAPE CONTRACTOR.
10. RELOCATION OF EXISTING VEGETATION IS RESPONSIBILITY OF LANDSCAPE CONTRACTOR. REFER TO SPECIFICATIONS FOR RELOCATION INSTRUCTIONS.
11. ALL PLANT MATERIAL TO BE FLORIDA #1 GRADE OR BETTER.

## HABITAT DATA:

EXISTING AREAS:

| AREA # | HABITAT TYPE | SQ-FT | ACREAGE |
|---|---|---|---|
| 1 | TRANSITIONAL VEGETATION | 20,184 | 0.46 |
| 2 | TRANSITIONAL VEGETATION | 31,720 | 0.73 |
| 3 | SCRUB BUFFER | 5,529 | 0.13 |
| 4 | SCRUB BUFFER | 1,043 | 0.02 |
| 5 | SCRUB BUFFER | 12,165 | 0.28 |
| 6 | SCRUB BUFFER | 4,759 | 0.11 |
| 7 | SCRUB BUFFER | 1,864 | 0.04 |
| 8 | SCRUB | 136,393 | 3.13 |
| 9 | SCRUB | 19,969 | 0.46 |
| 10 | SCRUB | 157,643 | 3.62 |
| 11 | WETLAND | 87,120 | 2.00 |
| 12 | SCRUB | 11,870 | 0.27 |
| 13 | SCRUB BUFFER | 19,770 | 0.45 |
| 14 | SCRUB | 8,807 | 0.20 |
| | TOTAL | 518,836 | 11.91 |

ADDITIONAL RESTORED AREAS:

| AREA # | HABITAT TYPE | SQ-FT | ACREAGE |
|---|---|---|---|
| R-1 | SCRUB BUFFER | 7,736 | 0.18 |
| R-2 | SCRUB BUFFER | 3,587 | 0.08 |
| R-3 | SCRUB BUFFER | 6,605 | 0.15 |
| R-4 | SCRUB BUFFER | 7,797 | 0.18 |
| R-5 | SCRUB BUFFER | 1,460 | 0.03 |
| R-6 | SCRUB BUFFER | 504 | 0.01 |
| | TOTAL | 27,208 | 0.63 |

HABITAT TYPE SUMMARY:

| HABITAT TYPE | SQ-FT | ACREAGE |
|---|---|---|
| TRANSITIONAL VEGETATION | 51,904 | 1.19 |
| SCRUB BUFFER (INCLUDING RESTORED AREAS) | 72,338 | 1.67 |
| WETLAND AREA | 87,120 | 2.0 |
| SCRUB | 333,775 | 7.66 |
| TOTAL AREA | 545,137 | 12.52 |


LAND DESIGN SOUTH
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# FLORIDA POWER & LIGHT CAMPUS
## SCRUB BUFFER RESTORATION PLAN
## TOWN OF JUNO BEACH, FLORIDA



SCRUB BUFFER RESTORATION PLAN

| | |
|---|---|
| SCALE: | 1"=100' |
| DRAWN BY: | RMH |
| DRAWING #: | 2014 08 13 Site Preservation Plan.dwg |
| FILE #: | 959.2 |
| DATE: | REVISED 12/16/2014 |

L.D.S. PROJECT SCHEDULE

| DATE | APPROVAL | NOTES |
|---|---|---|
| XX/XX/XX | | XXXXX |
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SHEET #
SRP.1