
SUPPORTING DATA

13 Conservation

Conservation Supporting Data

The purpose of the Conservation Element is to provide for the conservation, protection, and wise use of all natural ecosystems and natural resources on the University site and in the context area.

1. Inventory and Analysis of Existing Conditions

1.a. Inventory of the Existing Natural Resources on the University Campus and within the Context area adjacent to the University

An ecological assessment of the University site was conducted by Williams, Hatfield & Stoner, Inc. (WHS) during March 1994, and WHS identified the following natural resources in their *Evaluation of Potential Site for FAU/Barry University Branch Campus* report.

Soil Characteristics

There are four soil types on site: Oldsmar sand (26), Pepper sand (31), Pople sand (36), and Nettles sand (25) (**Figure 13.1**). A brief description of the soils as provided in the Soil Conservation Service's (SCS) Soil Survey of St. Lucie County Area, Florida, follows.

Oldsmar sand

This nearly level soil is in depressional areas in the flatwoods. These areas are more poorly drained than the surrounding flatwoods.

The water table in Oldsmar sand is above the surface for 6 to 9 months or more in most years. Available water capacity is very low in the surface and subsurface layers and medium in the rest of the soil. Permeability is rapid in the surface and subsurface layers, moderate to moderately rapid in the sandy part of the subsoil, and slow to very slow in the loamy part of the subsoil. Natural fertility and organic matter content are low.

In most of the acreage, natural vegetation is scattered to dense sandweed, stillingia, longleaf threeawn, maidencane, and sand cordgrass.

SUPPORTING DATA

13 Conservation

Pepper sand

This poorly drained, nearly level soil is on broad areas of flatwoods.

Pepper sand has a water table within a depth of 10 inches for 2 to 4 months during the summer rainy season and between depths of 10 to 40 inches for 6 months during most years. It is perched above the subsoil during the summer rainy season and after periods of heavy rainfall. Available water capacity is low in the surface layer, very low in the subsurface layer, and low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers and very slow to slow in the subsoil. Natural fertility and organic matter content are low.

In a large part of the acreage, natural vegetation is open forest of south Florida pine and an understory of sawpalmetto, running oak, inkberry, and fetterbush. The most common native grasses are pineland threeawn and Florida threeawn. Other grasses include several varieties of bluestem.

Pople sands

This poorly drained, nearly level soil is on flatwoods and in sloughs.

Pople sand has a water table at a depth of less than 10 inches for less than 3 months and between depths of 10 to 40 inches for 2 to 6 months. In slough areas, however, the water table is 1 to 3 inches above the surface for about 2 to 7 days during periods of heavy rainfall. It recedes to a depth of more than 40 inches during extended dry periods. Available water capacity is low in the surface and subsurface layers and medium in the subsoil and substratum. Permeability is moderately rapid in the surface layer and upper part of the subsoil, slow to very slow in the lower part of the subsoil, and moderately slow to moderate in the substratum. Natural fertility and organic matter content are low.

In a large part of the acreage, natural vegetation is scattered cabbage palms and south Florida slash pine and an understory of sawpametto and running oak. In places there is inkberry. The most common native grass is pineland threeawn. In the sloughs, the principal vegetation is maidencane and pineland threeawn and scattered clumps of sawpalmetto and south Florida slash pine.

SUPPORTING DATA

13 Conservation

Nettles sand

This poorly drained, nearly level soils is on broad flatwoods areas.

The water table in Nettles sand is within a depth of 10 inches for 2 to 4 months during wet seasons and between depths of 10 to 40 inches for 6 months or longer in most years. It is perched above the subsoil early in the summer rainy season and after periods of heavy rainfall in other seasons. During extended dry periods, the water table may recede to a depth below 40 inches. Available water capacity is very low in the surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers and very slow to slow in the subsoil. Natural fertility and organic matter content are low.

Some areas of these soils have been cleared and are cultivated. A few areas are used for urban purposes. Most areas are used for urban purposes. Most areas are in natural vegetation of scattered south Florida slash pine and cabbage palm and an understory of sawpalmetto, waxmyrtle, inkberry, fetterbush, creeping bluestem, chalky bluestem, Florida threeawn and pineland threeawn.

Vegetative Characteristics

The vegetative communities on site were classified according to the Florida Land Use Cover and Forms Classification System (FLUCFCS). The communities were mapped (**Figure 13.2**) and are briefly described as follows.

Existing Buildings and Paved Parking (171)

Existing FAU Treasure Coast Campus buildings and paved parking comprise this classification. Approximately 3.59 acres cover this site.

Grass (310)

Mowed and maintained grass exists in this area of approximately 4.53 acres.

Mixed Shurb Thicket (329)

This thicket classification has no canopy. It is comprised of understory with wax myrtle (*Myrica certifera*) and groundsel bush (*Baccharis halmifolia*). Groundcover in this area consists of grasses, red root (*Lachnanthes caroliniana*), broomsedge (*Andropogon* spp.) and bog buttons (*Lachnocaulon* spp.). The thicket is approximately 6.33 acres.

SUPPORTING DATA

13 Conservation

Pine Flatwoods (411)

The pine flatwoods on site are characterized by slash pine (*Pinus elliottii*) in the canopy with scattered sabal palms (*Sabal palmetto*). Understory consists of a mixture of saw palmetto (*Serenoa repens*), gallberry (*Illex glabra*), fetterbush (*Leuothoe racemosa*), wax myrtle and grounself bush. Groundcover consists of broomsedge, red root, maidencane (*Panicum hemitomon*) and runner oak (*Quercus pumila*). The acreage of the pine flatwoods is approximately 26.84 acres.

Brazilian Pepper (422)

This classification is limited to the southern border of the site and is comprised of understory that is nearly exclusively Brazilian pepper (*Schinus terebinthifolius*), scattered with wax myrtle and groundsel bush. This area is approximately 0.37 acres.

Wax Myrtle Thicket (429)

This small patch of wax myrtle thicket understory is along a wetland bank and is comprised of nearly exclusively wax myrtle with scattered Brazilian pepper and groundsel bush. This thicket area is comprised of approximately 0.07 areas.

Open Water (510)

These open water bodies are manmade lakes with adjacent vegetated wetland fringe areas. This area is comprised of approximately 3.60 acres.

Ditches (511)

These drainage ditches are also manmade to direct stormwater runoff to the open water bodies. The ditches have emergent vegetation consisting of cattails (*Typha* spp.), primrose willow (*Ludwigia peruviana*), duck potato (*Sagittaria lancifolia*) and spike rush (*Eleocharis* spp.).

Marsh (641)

The marsh areas are understory comprised of primrose willow and wax myrtle. Groundcover consists of St. John's wort (*Hypericum* spp.), maidencane, broomsedge, sedges and rushes. This area comprises approximately 1.74 acres.

SUPPORTING DATA

13 Conservation

Shrub Wetland (646)

This area's understory consists of wax myrtle, primrose willow and groundsel bush with climbing fern (*Lygodium japonicum*). The groundcover consists of red root, maidencane and bog buttons. The wetland shrub consist of approximately 2.93 acres.

1.a.1. Rivers, Lakes, Bays, Wetlands, and Bottom Lands

The original St. Lucie West development reserved 2.984 acres of Water Management Tract Parcel 27G as a lake. Additionally, 2.439 acres of wetland habitat was reserved as Conservation Tracts along with 2.347 acres of buffer zones around the wetlands (See **Figure 13.3**). Therefore, 7.77 acres of the University's total 50.0 acres was "undevelopable".

At the request of the University, a U.S. Army Corps of Engineers (COE) Jurisdictional Delineation was acquired in February, 1995. The COE expanded the original wetlands claim by an additional 4.453 acres, which included the above mentioned lake and wetlands, the manmade lake (east of the original Barry University building) and two smaller wetlands in the "developed" portion of the campus (Figure 13.4). Therefore, 12.223 acres of the University's total 50.0 acres is currently "undevelopable" (9.876 acres of wetlands plus 2.347 acres of buffer zone) unless a COE permit is obtained to fill portions of these wetlands, which will require mitigation. The COE Jurisdictional Delineation extends through February 2005, at which time it is the COE's prerogative to either re-validate the delineation or re-review the delineation and possibly claim additional wetlands.

1.a.2. Floodplains

The Flood Insurance Rate Map (FIRM) indicates that the University site is not within the 100-year flood prone area, and that the area is located within Zone X (areas determined to be outside the 500-year floodplain). The drainage improvements that were constructed within the site provide flood control and protection for the area. This area is not prone to flooding.

1.a.3. Known Unique Geological Features

There are no known unique geologic features on site.

1.a.4. Existing Mitigation Sites

There are no existing mitigation areas on site. However, there are conservation tracts and buffer zones, reserved by plat.

SUPPORTING DATA

13 Conservation

1.a.5. Fisheries, Wildlife Habitats and Vegetative Communities, Indicating Existing Dominant Species Present and Species Listed by Federal, State or Local Agencies as Endangered, Threatened or Species of Special Concern

A cursory site visit by WHS identified active gopher tortoise (*Gopherus polyphemus*) burrows in the eastern portion of the site. The gopher tortoise is a state listed Species of Special Concern. The pine flatwoods (**Figure 13.2**) are suitable habitat for the tortoise, and may contain some of the listed species assumed to be present (see **Table 13.1**).

**TABLE 13.1
Protected Fauna Species with Potential Habitat Occurring on Treasure Coast Campus**

Common Name	Scientific Name	Status		Potential Use
		FGFWFC	USFWS	
Gopher tortoise*	<i>Gopherus polyphemus</i>	SSC	NL	F,N
Little blue heron	<i>Egretta caerulea</i>	SSC	NL	F
Snowy egret	<i>Egretta thula</i>	SSC	NL	F
Florida sandhill crane*	<i>Grus canadensis pratensis</i>	T	NL	F
Red-cockaded woodpecker*	<i>Picoides borealis</i>	T	E	F,N
Wood stork	<i>Mycteria americana</i>	E	E	F
Sherman's fox squirrel*	<i>Sciurus niger sherman</i>	T	NL	F,N
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	T	F,N

*WHS, Inc. previously documented occurrence within St. Lucie West Development site.

Status: SSC † Species of Special Concern
 T † Threatened
 E † Endangered
 USFWS † United States Fish and Wildlife Service

SUPPORTING DATA

13 Conservation

FGFWFC ‘ Florida Game and Fresh Water Fish Commission
NL ‘ Not Listed

Use: F’ Feeding
N’ Nesting

1.a.6. Wellfield Cones of Influence

There are no Wellfield Cones of Influence on the university site (see **Figure 13.5**).

1.a.7. Aquifers and Aquifer Recharge Areas

None identified on the University site.

1.a.8. Air Quality

Information not available.

1.a.9. Surface Water Quality

Information not available.

1.a.10. Known Septic Tanks, Grease Traps, Storage Sites of Hazardous, Toxic, or Medical Waste

There are no known septic tanks, grease traps, storage sites of hazardous, toxic or medical wastes.

1.a.11. Chemical and Hazardous Waste Disposal Systems

There are no chemical or hazardous waste disposal systems on the University site.

1.a.12. Surface and Groundwater Hydrology

The hydroperiods of wetland areas A, B, C, D, E and F (Figure 13.1) have been altered due to the excavation of two (2) lakes and several ditches that network and drain the systems. WHS field visit was concurrent with a rain event and standing water was present in all systems. No connection to “Waters of the State” was observed. Note that the COE “claimed” jurisdictional wetlands during a site visit (**Figure 13.4**).

2. Future Needs/Requirements

2.a. Existing Commercial, Recreational, and Conservation Uses for the Following:

- **Rivers, Lakes, Bays, Wetlands, and Bottom Lands**

SUPPORTING DATA

13 Conservation

The existing conservation tracts and buffer zones annotated on the plat and WHS' survey must be retained. Additionally the wetlands "claimed" by the COE (**Figure 13.4**) are to be avoided during future development.

- **Floodplains**
None
- **Known Unique Geological Features**
None
- **Existing Mitigation Sites**
None
- **Fisheries, Wildlife Habitats and Vegetative Communities, Indicating Existing Dominant Species Present and Species Listed by Federal, State or Local Agencies as Endangered, Threatened or Species of Special Concern**
The area of pine flatwoods identified in **Figure 13.2** will need to be evaluated the presence of listed plant and animal species on site, prior to any plans for development of that area.
- **Wellfield Cones of Influence**
None
- **Aquifers and Aquifer Recharge Areas**
None
- **Air Quality**
Information not available/None
- **Surface Water Quality**
Any improvements on site must not degrade existing water quality, and must meet state water quality requirements.
- **Known Septic Tanks, Grease Traps, Storage Sites of Hazardous, Toxic, or Medical Waste**
None.
- **Chemical and Hazardous Waste Disposal Systems**

SUPPORTING DATA**13 Conservation**

None.

- **Surface and Groundwater Hydrology**
None

2.b. Opportunities and Methods for Protection or Restoration of the Following:

According to the COE's Jurisdictional Determination dated February, 1995 (**Figure 13.4**), there are environmental/natural resources on the campus to be protected and/or restored.

- **Rivers, Lakes, Bays, Wetlands, and Bottom Lands**
According to the COE's Jurisdictional Determination dated February, 1995 (**Figure 13.4**), there are environmental/natural resources on the campus to be protected and/or restored. Further, the COE will re-evaluate the site at the expiration (February, 2000) of the current jurisdictional determination. If the low lying areas remain unchanged, it is likely the COE will expand the areas of jurisdictional wetlands.
- **Floodplains**
None
- **Known Unique Geological Features**
None
- **Existing Mitigation Sites**
Existing conservation tracts, buffer zones and jurisdictional wetlands may be enhanced.
- **Fisheries, Wildlife Habitats and Vegetative Communities, Indicating Existing Dominant Species Present and Species Listed by Federal, State or Local Agencies as Endangered, Threatened or Species of Special Concern**
Identification of the presence of listed species on site early in the development process will permit any future development plans to provide for the best treatment of the species.
- **Wellfield Cones of Influence**
None

SUPPORTING DATA**13 Conservation**

- **Aquifers and Aquifer Recharge Areas**
None
- **Air Quality**
Information not available.
- **Surface Water Quality**
As the campus is developed, areas for water quality treatment, resulting from stormwater runoff, will be provided in accordance with the SFWMD Permit (56-00573-S), dated August 12, 1993.

2.c. Known Sources and Rates of Discharge of Generation of Pollution of the Following:

- **Rivers, Lakes, Bays, Wetlands, and Bottom Lands**
No known sources or generators of pollution.
- **Flood plains**
No known sources or generators of pollution.
- **Known Unique Geological Features**
No known sources or generators of pollution.
- **Existing Mitigation Sites**
No known sources or generators of pollution.
- **Fisheries, Wildlife Habitats and Vegetative Communities, Indicating Existing Dominant Species Present and Species Listed by Federal, State or Local Agencies as Endangered, Threatened or Species of Special Concern**
No known sources or generators of pollution.
- **Wellfield Cones of Influence**
No known sources or generators of pollution.

SUPPORTING DATA

13 Conservation

- **Aquifers and Aquifer Recharge Areas**
No known sources or generators of pollution.
- **Air Quality**
No known sources or generators of pollution.
- **Surface Water Quality**
No known sources or generators of pollution.
- **Known Septic Tanks, Grease Traps, Storage Sites of Hazardous, Toxic, or Medical Waste**
No known sources or generators of pollution.
- **Chemical and Hazardous Waste Disposal Systems**
No known sources or generators of pollution.
- **Surface and Groundwater Hydrology**
No known sources or generators of pollution.

2.d. Opportunities for the Following:

- **Rivers, Lakes, Bays, Wetlands, and Bottom Lands**
As the campus develops, it is anticipated that lakes and/or wetlands will be developed for stormwater runoff quality and quantity in compliance with the SFWMD Permit (56-00573-S), dated August 12, 1993.
- **Floodplains**
None
- **Known Unique Geological Features**
None
- **Existing Mitigation Sites**
None

SUPPORTING DATA

13 Conservation

- **Fisheries, Wildlife Habitats and Vegetative Communities, Indicating Existing Dominant Species Present and Species Listed by Federal, State or Local Agencies as Endangered, Threatened or Species of Special Concern**

The native pine flatwoods community on site and the presence of any protected species on site can provide opportunities for environmental research and education, as well as carefully planned passive recreational facilities such as observation areas, walking paths and interpretive areas.

- **Wellfield Cones of Influence**

None

- **Aquifers and Aquifer Recharge Areas**

None

- **Air Quality**

Information not available.

- **Surface Water Quality**

None

- **Known Septic Tanks, Grease Traps, Storage Sites of Hazardous, Toxic, or Medical Waste**

None as yet identified.

- **Chemical and Hazardous Waste Disposal Systems**

None as yet identified.

- **Surface and Groundwater Hydrology**

None as yet identified.

2.e. **Current and Projected Water Needs and Sources**

The campus is served by St. Lucie West Utilities' water system and will provide an adequate supply.

SUPPORTING DATA

13 Conservation

SFWMD prefers lakes or reuse wastewater (rather than groundwater wells) be utilized for irrigation purposes. As a conservation measure, the campus will utilize reuse wastewater for irrigation demands. The reuse supply is being provided for the campus and is readily available along its south perimeter (N.W. University Drive), and is adequate and available for the buildout of the campus. Likewise, potable water is being provided for the entire campus and is available along its south (N.W. University Drive) and east (California Boulevard) perimeters, and, therefore, is adequate and available for the buildout of the campus. For further analysis of current and projected potable water needs and sources, see **Element 9**.

2.f. **Opportunities to Reduce Energy Consumption**

There are a number of specific site plan characteristics which could serve to conserve energy. These include the following:

- 1) Site Plan Energy Conservation/Management Measures
 - a) Sidewalks will be provided along the streets and along all campus buildings to encourage pedestrian circulation rather than vehicular usage.
 - b) Curb radii and street widths will be minimized to facilitate pedestrian street crossing.
 - c) Shade trees will be located along pedestrian corridors to encourage walking.
 - d) Shade trees will be located along pedestrian congregating areas to encourage outdoor study.
- 2) Building Design Energy Conservation/Management Measures
 - a) Public facilities will be designed to incorporate energy conserving measures.

SUPPORTING DATA

13 Conservation

- b) Heat producing areas and equipment (cooking, water heating, etc.) will be isolated from air conditioning areas, whenever feasible.
 - c) Where feasible, buildings will use tinted glass to reduce the amount of direct sunlight entering air-conditioned areas.
 - d) Construction criteria to be taken into consideration will include good reflection, prevention of excessive heat build-up, and provisions for overhang to shade walls and windows.
 - e) The possible application of solar energy to generate domestic hot water will be considered whenever feasible.
 - f) Wall and roof installation will be used which meets or exceeds the model energy efficiency code requirements.
- 3) Equipment Selection for Energy Conservation/Management Measures
- a) If it is determined to be financially feasible, a controlled energy management system will be used to reduce the overall building energy consumption for buildings exceeding 50,000 square feet. This system includes control of the air conditioning system, night temperature set back/start up and building lighting control.
 - b) An effort will be made to put in place an energy efficient street lighting system.
 - c) An evaluation of the various lighting alternatives will be considered to determine the most energy-efficient system for both the non-residential and the residential units that are proposed in this development.
 - d) Where feasible, reduction of the amount of exterior lighting during night hours will be considered.