INDIAN MOUND STATION SANCTUARY MANAGEMENT PLAN

Mims, Florida

Approved by BOCC on 02/22/2011

Prepared by:
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Photo Credit EEL Program 2010

Management Plan Compliance Checklist - Natural Resource Lands	
Requirements	**Page Numbers**
18-2.021 Acquisitions and Restoration Council.	
1. Executive Summary (Example #1) This should be included in the packet and should be the first page.	1
Management Plans. Plans submitted to the division for ARC review under the requirements of Section 253.034 F.S. should be in a form and manner prescribed by rule by the board and in accordance with the provisions of S. 259.032 and should contain where applicable to the management of resources the following:	
2. The common name of the property.	1
3. A map showing the location and boundaries of the property plus any structures or improvements to the property. (Example #2)	6-7
4. The legal description and acreage of the property.	1, 64
5. The degree of title interest held by the Board, including reservations and encumbrances such as leases.	1
6. The land acquisition program, if any, under which the property was acquired.	2-5
7. The designated single use or multiple use management for the property, including other managing agencies.	1
8. Proximity of property to other significant State/local/federal land or water resources. (Example #3) May be included in the map in item #2.	5
9. A statement as to whether the property is within an Aquatic Preserve or a designated Area of Critical State Concern or an area under study for such designation. If yes, make sure appropriate managing agencies are notified of the plan.	12
10. The location and description of known and reasonably identifiable renewable and non-renewable resources of the property including, but not limited to, the following:	
A. Brief description of soil types, using U. S. D. A. maps when available;	9, 11-12
B. Archaeological and historical resources*;	29-33, 109-123
C. Water resources including the water quality classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Waters;	13, 79
D. Fish and wildlife and their habitat;	27-29
E. State and federally listed endangered or threatened species and their habitat;	27-29, 88-108
F. Beaches and dunes;	--

Additional Requirements—Per Trustees	
25. Letter of Compliance of the management plan with the Local Government Comprehensive Plan. Letter from local government saying that the plan is in compliance with local government's comprehensive plan.	4-5, 62-63
253.034 State-Owned Lands; Uses. —Each entity managing conservation lands shall submit to the Division of State Lands a land management plan at least every 10 years in a form and manner prescribed by rule by the Board.	
26. All management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing entity plans to identify, locate, protect and preserve, or otherwise use fragile nonrenewable resources, such as archaeological and historic sites, as well as other fragile resources, including endangered plant and animal species.	31-33, 113-119
27. The management plan shall provide for the conservation of soil and water resources and for the control and prevention of soil erosion.	12
28. Land management plans submitted by an entity shall include reference to appropriate statutory authority for such use or uses and shall conform to the appropriate polices and guidelines of the state land management plan.	4-5
29. All land management plans for parcels larger than 1,000 acres shall contain an analysis of the multiple-use potential of the parcel, which analysis shall include the potential of the parcel to generate revenues to enhance the management of the parcel.	--
30. Additionally, the land management plan shall contain an analysis of the potential use of private managers to facilitate the restoration or management of these lands.	--
31. A physical description of the land.	5, 22-26
32. A desired outcome	1-2
33. A quantitative data description of the land which includes an inventory of forest and other natural resources; exotic and invasive plants; hydrological features; infrastructure, including recreational facilities; and other significant land, cultural, or historical features.	22-26, 29-33, 42-43
34. A detailed description of each short-term and long-term land management goal, the associated measurable objectives, and the related activities that are to be performed to meet the land management objectives. Each land management objective must be addressed by the land management plan, and where practicable, no land management objective shall be performed to the detriment of the other land management activities.	52-56
35. A schedule of land management activities which contains short-term and long-term land management goals and the related measurable objectives and activities. The schedule shall include for each activity a timeline for completion, quantitative measures, and detailed expense and manpower budgets. The schedule shall provide a management tool that facilitates development of performance measures.	52-56

36. A summary budget for the scheduled land management activities of the land management plan. For state lands containing or anticipated to contain imperiled species habitat, the summary budget shall include any fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitats, which fees shall be used solely to restore, manage, enhance, repopulate, or acquire imperiled species habitat. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3).	56-57
Each management plan shall describe both short-term and long-term management goals, and include measurable objectives to achieve those goals. ***Short-term and long-term management goals shall include measurable objectives for the following, as appropriate:*** *(A) Habitat restoration and improvement;*	52-56
(B) Public access and recreational opportunities;	54-55
(C) Hydrological preservation and restoration;	52-53
(D) Sustainable forest management;	--
(E) Exotic and invasive species maintenance and control;	53
(F) Capital facilities and infrastructure;	--
(G) Cultural and historical resources;	54
(H) Imperiled species habitat maintenance, enhancement, restoration, or population restoration	54
253.036 Forest Management. —	
31. For all land management plans for parcels larger than 1,000 acres, the lead agency shall prepare the analysis, which shall contain a component or section prepared by a qualified professional forester which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel. (Example #8)	79-82

259.032 Conservation And Recreation Lands Trust Fund; Purpose. —	
(10)(a) State, regional or local governmental agencies or private entities designated to manage lands under this section shall develop and adopt, with the approval of the Board of Trustees, an individual management plan for each project designed to conserve and protect such lands and their associated natural resources. Private sector involvement in management plan development may be used to expedite the planning process.	
32. Individual management plans required by s. 253.034(5), for parcels over 160 acres, shall be developed with input from an advisory group - Management plan should list advisory group members and affiliations.	--
33. The advisory group shall conduct at least one public hearing **in each** county in which the parcel or project is located. Managing agency should provide DSL/OES with documentation showing date and location of public hearing.	--
34. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. Managing agency should provide DSL/OES with copy of notice.	--
35. The management prospectus required pursuant to 259.032 (9) (d) shall be available to the public for a period of 30 days prior to the public hearing.	--
36. Summary of Advisory Group Meeting should be provided to DSL/OES.	--
37. Individual management plans shall conform to the appropriate policies and guidelines of the state land management plan and shall include, but not be limited to:	
A. A statement of the purpose for which the lands were acquired, the projected use or uses as defined in s. 253.034, and the statutory authority for such use or uses.	1
B. Key management activities necessary to achieve the desired outcomes, including, but not limited to, providing public access, preserving and protecting natural resources, protecting cultural and historical resources, restoring habitat, protecting threatened and endangered species, controlling the spread of nonnative plants and animals, performing prescribed fire activities, and other appropriate resource management activities.	47-51
C. A specific description of how the managing agency plans to identify, locate, protect, and preserve, or otherwise use fragile, nonrenewable natural and cultural resources.	47-51
D. A priority schedule for conducting management activities, based on the purposes for which the lands were acquired. (Example #10) The schedule must include a goal, an objective, and a time frame for completion.	52-56
E. A cost estimate for conducting priority management activities, to include recommendations for cost-effective methods of accomplishing those activities. *Using categories as adopted pursuant to 259.037, F.S., is suggested. These are: (1) Resource Management; (2) Administration; (3) Support; (4) Capital Improvements; (5) Visitor Services/Recreation; and (6) Law Enforcement.*	56-57

F. A cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired. The cost estimate shall include recommendations for cost-effective methods of accomplishing those activities. *Using categories as adopted pursuant to 259.037, F.S., is suggested. These are: (1) Resource Management; (2) Administration; (3) Support; (4) Capital Improvements; (5) Visitor Services/Recreation; and (6) Law Enforcement.(Example #10) Include approximate monetary cost and cost effective methods. Can be placed in the appendix.*	56-57
38. A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	43-46
259.036 Management Review Teams.—	
39. The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. *Can be addressed in the body of the plan or addressed in an appendix. If not in agreement, the managing agency should reply in a statement in the appendix.*	5
Other Requirements	
40. This checklist table at front of plan (pursuant to request of ARC and consensus agreement of managing agencies.)	i-vi
41. Accomplishments (implementation) from last plan (format variable by agency)	--
42. FNAI-based natural community maps (may differ from FNAI in some cases)	88-108
43. Fire management plans (either by inclusion or reference)(259.032)	66-77
44. A statement regarding incompatible uses [ref. Ch. 253.034 (9)]	--
45. Cultural resources, including maps of all sites except Native American sites*	109-112
46. Arthropod control plan	27, 84-87

*While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

Indian Mound Station Sanctuary (IMSS) is part of a sanctuary network established by the Environmentally Endangered Lands (EEL) Program in Brevard County. The intent of the Program is to acquire environmentally sensitive lands as a first step "towards long-term protection of essential natural resources, open space, green space, wildlife corridors and maintenance of natural ecosystems functions" (Brevard County EEL Program, Sanctuary Management Manual, 1997). The network of public lands also provides passive recreation and environmental education programs to Brevard County residents and visitors. Currently, title to the property is held by Brevard County through the EEL Program. The EEL Program may seek to sell the property to the State for 50% of the purchase price, in which time the title will be transferred to the Board of Trustees.

IMSS encompasses ±85 acres east of I-95 in Titusville, Brevard County, Florida. The 85 acre site is located within Section 19, Township 21 South, Range 35 East. The site was acquired in April 2006 from the Parrish Holder Corporation with EEL Program funds. The Sanctuary lies south of Parrish Road and east of I-95 and Holder Road. IMSS, along with the other EEL properties in the North Regional Management Area is served by the EEL Program Management & Education Center at the Enchanted Forest Sanctuary, located south of IMSS on State Road 405. As described in the Sanctuary Management Manual (SMM), IMSS is a Category II site, or intermediate site. Category II sites may include nature trails, a dedicated parking area and interpretive signs along some nature trails. The single use site will be open for passive recreation to the public and only be accessed during daylight hours.

The property consists primarily of oak-saw palmetto scrub, scrubby flatwoods and floodplain swamp. Preliminary surveys of the site and surrounding lands noted the presence, or potential presence, of several listed animal species. Protected wildlife species documented on site during recent or past studies include the Bald Eagle (*Haliaeetus leucocephalus*) and gopher tortoise (*Gopherus polyphemus*). The property also contains an Indian Burial Mound and a portion of a tramway that connected the St. Johns River and the Indian River Lagoon.

The primary goals of the site include the conservation and restoration of ecosystem function, natural communities, and native species habitat. The collection and documentation of natural and cultural resource data are important management goals. Other management goals include the provision of public access and environmental education.

Existing trails throughout the site offer opportunities for public access including hiking, bicycling, nature observation and archeological education. A trailhead on Parrish Rd. will provide access to these trails. An educational kiosk will include information about the site and the EEL Program. The proposed recreation and educational opportunities will serve Brevard County residents with an appreciation of the unique and valuable resources available in Brevard County, thereby promoting the long-term preservation of natural areas.

II. INTRODUCTION

In a 1990 referendum, Brevard County voters approved the Environmentally Endangered Lands (EEL) Program. The Program's Vision Statement is as follows:

> "The Environmentally Endangered Lands (EEL) Program acquires, protects and maintains environmentally endangered lands guided by scientific principles for conservation and the best available practices for resource stewardship and ecosystem management. The EEL Program protects the rich biological diversity of Brevard County for future generations. The EEL Program provides passive recreation and environmental education opportunities to Brevard's citizens and visitors without detracting from primary conservation goals of the program. The EEL Program encourages active citizen participation and community involvement."

The Program established a conceptual framework and funding mechanism to implement an EEL sanctuary network in Brevard County. The EEL sanctuary network represents a collection of protected natural areas that form a regional conservation effort focused upon protection of biological diversity. Within the countywide EEL sanctuary network, four management areas are geographically defined within Brevard County. For each management area, a specific site is identified as a Center for Regional Management. The sites that will function as Centers for Regional Management for the EEL Program are:

I. The Enchanted Forest Sanctuary (Regional Management Center for North Mainland)
II. Pine Island Conservation Area (Regional Management Center for Central Mainland)
III. Malabar Scrub Sanctuary (Regional Management Center for South Mainland)
IV. Barrier Island Center (Regional Management Center for South Beaches)

These Centers provide strategically located hubs for implementing the countywide conservation, passive recreation, and environmental education goals of the EEL Program.

Other EEL sanctuaries within the North Regional Management Area include the Buck Lake Conservation Area (managed jointly with SJRWMD), North Buck Lake Scrub Sanctuary, South Lake Conservation Area, Fox Lake Sanctuary, Scottsmoor Flatwoods Sanctuary, Indian River Sanctuary, and Dicerandra Scrub Sanctuary.

The EEL Program *Sanctuary Management Manual* (SMM) guides conservation and land stewardship decisions implemented by the Brevard County EEL Program. The SMM details principles and directives for conservation, public access and environmental education within the EEL sanctuary network. The SMM also outlines the EEL Selection & Management Committee's (SMC) role in advising staff and the Brevard County Board of County Commissioners on acquisition and management related issues (Chapter 2, Section 4.3.4).

As outlined in the SMM, the EEL Program will adopt and implement an ecosystem approach to environmental management. Ecosystem management is defined as an integrative, flexible approach to the management of natural resources. Key themes of ecosystem management include the following:

1. Adaptive Management – Natural areas must be managed in the context of the landscape in which they exist and based on scientific knowledge. Resource managers must adapt to continuing advances in the scientific understanding of ecosystems and changing environmental and human influences on the resources.

2. Partnerships – Interagency and private sector partnerships are essential to manage and protect ecosystems. Natural resource management is complex and requires multi-disciplinary skills and experiences.

3. Holistic Approach – Ecosystem management includes the maintenance, protection, and improvement of both natural and human communities. This system approach to management considers the "big picture" of natural resource protection, community economic stability and quality of life.

Land management issues, such as fire management, protection and restoration of natural hydrologic cycles, threatened and endangered species, and removal of invasive exotics must be integrated with issues, such as provisions for public access and levels of human use. The integration of ecosystem protection and human needs combine to form the foundation of an effective ecosystem management strategy.

The Environmentally Endangered Lands Program SMM establishes a general framework for management of specific sites and establishes ten Principles of Conservation summarized below, to achieve the following:

1. Maintain all sites in a natural state and/or restore sites to enhance natural resource values.
2. Protect natural resource values by maintaining biological diversity and using conservation as a primary goal for decision-making.
3. Balance human use with the protection of natural resources.
4. Apply the most accurate scientific principles to strategies for conservation.
5. Collect and use the most accurate data available for developing site management plans.
6. Consider the interests and values of all citizens by using scientific information to guide management policy making.
7. Promote effective communication that is interactive, reciprocal, and continuous with the public.
8. Promote the value of natural areas to Brevard County residents and visitors through the maintenance of the quality of resource values, public services, and visitor experiences.

9. Promote the integration of natural resource conservation into discussions of economic development and quality of life in Brevard County.
10. Provide a responsible financial strategy to implement actions to achieve long-term conservation and stewardship goals.

In addition to the Principles of Conservation, this Management Plan will provide specific goals, strategies, and actions to guide management of the sanctuary in terms of the objectives of the Environmentally Endangered Lands Program. The plan is divided into the following ten sections:

I. *Executive Summary* identifies the location, size, general natural resource features and primary management goals for the site.

II. *Introduction* provides a brief introduction to the EEL Program and the site and describes the structure of the management plan.

III. *Site Description and Location* provides a detailed site location and description.

IV. *Natural Resource Descriptions* includes physical resources (climate, geology, topography, soils, and hydrology), biological resources (ecosystem function, flora, fauna, designated species, and biological diversity), and cultural resources (archaeological, historical, land-acquisition history, and public interest).

V. *Factors Influencing Management* includes natural trends, human-induced trends, external influences, legal obligations and constraints, management constraints, and public access and passive recreation.

VI. *Management Action Plans* include specific goals, strategies and actions.

VII. *Projected Timetable for Implementation* prioritizes activities and provides a time frame for Management Plan implementation.

VIII. *Financial Considerations* discusses funding mechanisms and projected management costs.

IX. *Bibliography* cites original research and publications used to develop the Management Plan.

X. *Appendices* includes supplemental information

Uses planned for IMSS comply with the Conceptual State Lands Management Plan and its requirement for "balanced public utilization," and comply with the mission of the EEL program as described in the SMM. Such uses also comply with as derived from Article VIII, Section 1 of the Florida Constitution as well as the guidance and directives of Chapters 375, 380, 259, 125, and 403 of the Florida Statutes. This plan is also in conformance with the Local Government Comprehensive Plan for Brevard County,

Florida, as approved and adopted. The letter confirming compliance is contained in Appendix A. Additionally, the EEL Program will consider the findings and recommendations of the Land Management Review Team in finalizing the required 10-year update should the title be transferred to the State of Florida.

III. SITE DESCRIPTION AND LOCATION

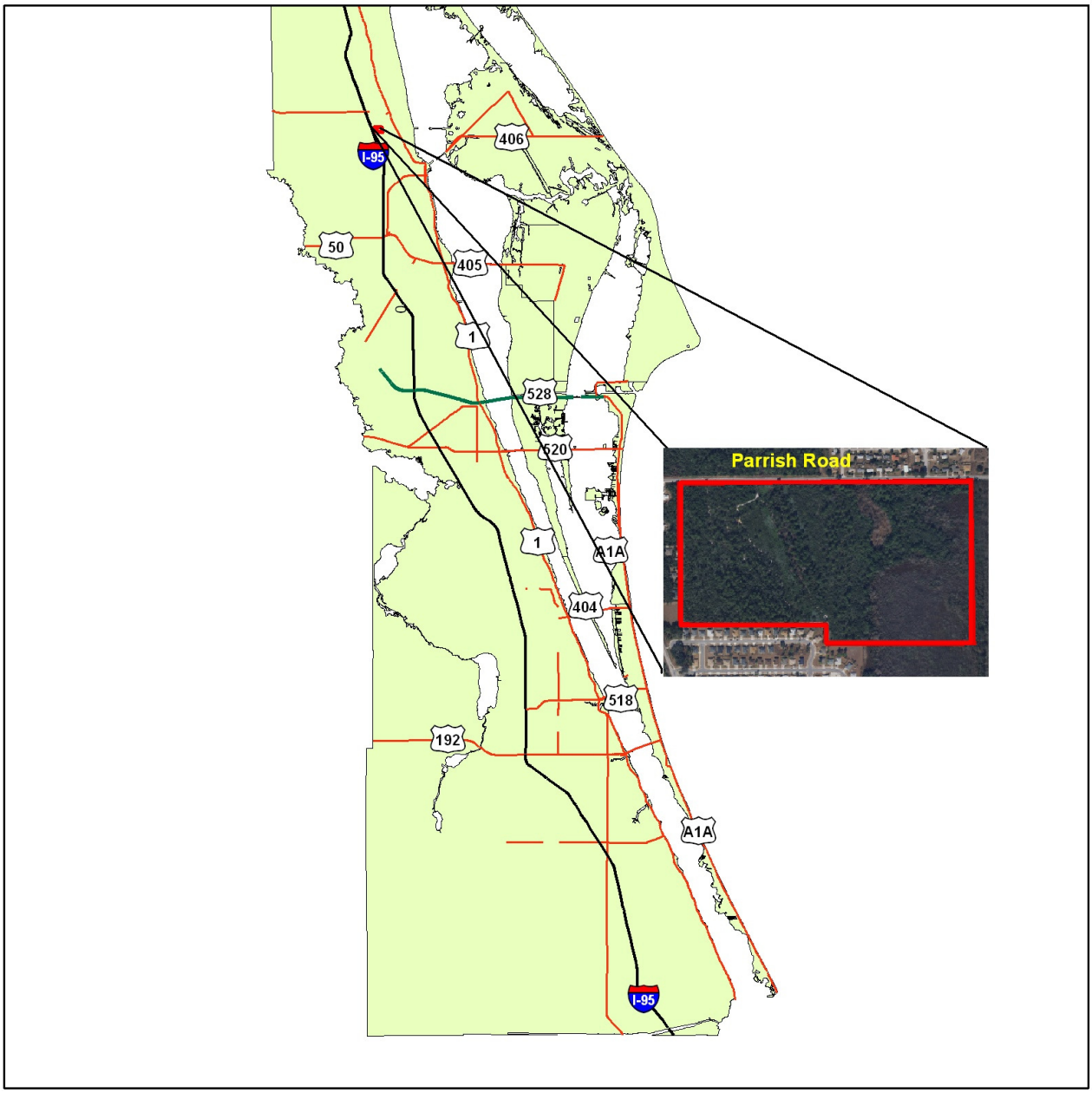
IMSS is an 85-acre site (Township 21S, Range 35E, Section 19) located east of I-95 in Titusville, Brevard County, Florida (Figure 1, Appendix B). Although IMSS is not directly adjacent to conservation lands, South Lake Conservation Area (managed by the EEL Program) and Salt Lake Wildlife Management Area (managed by the Florida Fish and Wildlife Conservation Commission) are located in the vicinity of the Sanctuary. The Sanctuary can be accessed through a gate located along Parrish Road and is bordered by private property to the east, west and south (Figure 2). The EEL Selection and Management Committee considered site location, natural communities, biological diversity, habitat quality, and contribution to functional ecological integrity to determine if the acquisition of IMSS met the EEL Program conservation goals. If the title is transferred to the State of Florida in the future, there is no portion of acreage at IMSS that should be declared surplus.

The majority of the Sanctuary consists of oak-saw palmetto scrub, scrubby flatwoods, and floodplain swamp. The remainder consists of hydric flatwoods and a floodplain marsh. The oak-saw palmetto scrub consists of a canopy of sand pine (*Pinus clausa*) in most areas, and a shrub layer of myrtle oak (*Quercus myrtifolia*), sand live oak (*Quercus geminata*), Chapman's oak (*Quercus chapmanii*), staggerbush (*Lyonia fruticosa*), shiny lyonia (*Lyonia lucida*), saw palmetto (*Serenoa repens*), wiregrass (*Aristida stricta*) and blue stem *Andropogon* spp. Scrubby flatwoods at IMSS are composed of the same understory vegetation as the oak-saw palmetto scrub community, with a canopy of longleaf pine (*Pinus palustris),* slash pine (*Pinus elliottii*) and sand pine in some areas. The floodplain swamp at IMSS consists of a canopy of red maple (*Acer rubrum*) with no understory and a very sparse groundcover, or is composed of an understory of Carolina willow (*Salix caroliniana*), buttonbush (*Cephalanthus occidentalis*), and primrose willow (*Ludwigia* spp.). Groundcover consists of swamp fern (*Blechnum serrulatum*), royal fern (*Osmunda regalis* var. *spectabilis*), sand blackberry (*Rubus cuneifolius*) and bluestem. The floodplain marsh at IMSS is mostly composed of herbaceous plant species including Virginia chain fern (*Woodwardia virginica*), bluestem and maidencane (*Panicum hemitomon*). The hydric flatwoods is composed of an open to closed canopy of slash pine and cabbage palm (*Sabal palmetto*) with a few red maples and an understory of wax myrtle (*Myrica cerifera*), red root (*Lachnanthes caroliana*), dahoon holly (*Ilex cassine*), bracken fern (*Pteridium aquilinum* var. *pseudocaudatum*) and red bay (*Persea borbonia* var. *borbonia*).

IV. NATURAL RESOURCE DESCRIPTIONS

This section provides descriptions of natural resources, including physical resources

Figure 1: Indian Mound Station Sanctuary General Location



0 5 10 20 Miles

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Figure 2: Indian Mound Station Sanctuary Boundary Map

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerial Photography Archive Collection

Legend

- Sanctuary Boundary
- Indian Mound
- Gate
- Tramway
- Ditch

N
W E
S

(climate, geology, topography, soils, and hydrology), biological resources (ecosystem function, flora, fauna, designated species, and biological diversity) and cultural resource information (archeological, historical, land-use history and public interest).

A. Physical Resources

a. Climate

IMSS is located in east central Florida, an isothermal area at the junction of the temperate and sub-tropical climatic zones. Temperature data from representative locations in Brevard County indicate an average annual temperature of approximately 74°F. August is typically the warmest month, averaging 82°F, whereas January is the coolest month, averaging about 62°F (Schmocker et al. 1990). Summer temperatures are moderated by frequent afternoon thunderstorms. Periods of extreme cold weather are infrequent due to the site's latitude and proximity to the Atlantic Ocean. The most recent "hard" freeze occurred in the winter of 1989. Long-term rainfall data for the area indicate an average of 54 inches per year in north Brevard County (Schmocker et al. 1990). Wet and dry seasons are typically well defined, with the wet season occurring between May and October, and the dry season occurring between November and April. Annual and seasonal rainfall is subject to large variation in both amount and distribution.

During summer, Central Florida has some of the highest frequencies of thunderstorms in the world which is the natural ignition source in Florida (Duncan et al. 2010). Cloud to ground lightning strikes occurs frequently during summer storms. This is an important source of natural fire ignition, which determined the historic natural fire regime.

Prevailing winds are generally from north to northeast during the dry season (November to April) and from the east during the wet season (May to October) (ESMC 1989). Climatic change, seasonal variability, topographic relief, soil types, and disturbance contribute to species distribution and community composition.

b. Geology

IMSS is located on the Atlantic Coastal Ridge, a geological shoreline feature estimated to have formed up to 140,000 years ago when the sea level was as much as 30 feet above the present level. The property is part of a relic beach and dune system, an important geological feature that influences the biological diversity of Brevard County.

The Atlantic Coastal Ridge extends along the east coast of Florida and is a major feature of the mainland of Brevard County, made of both single and multiple relict beach ridges. These ridges appear to have formed along an erosional rather than prograding shoreline, and in most places contain little carbonates. Formation of the Atlantic Coastal Ridge is associated with Pamlico time (ca. 140,000 – 120,000 years before present) (Schmalzer et al. 1999).

c. Topography

IMSS has variable topography, with elevations ranging from 20' to 35'± National Geodetic Vertical Datum (NGVD) based upon the USGS Topographic Quadrangle map (Figure 3). The highest elevation at IMSS is the Indian Burial Mound.

d. Soils

The soil types within the IMSS, as defined by the Natural Resource Conservation Service (formerly the Soil Conservation Service), (Figure 4) are as follows:

Anclote sand (*An*) is a nearly level, very poorly drained sandy soil. This soil type is characteristic of broad areas on flood plains, marshy depressions in the flatwoods, and poorly defined drainage ways. In most years, the water table is within a depth of 10 inches for more than 6 months. In dry seasons, it is deeper but seldom below a depth of 40 inches. Anclote sand is an aquifer recharge soil.

Astatula fine sand, dark surface (*As*)* is a nearly level to gently sloping, excessively drained, sandy soil on high undulating ridges. The water table is below 10 feet at all times.

Astatula-urban land complex (*At*) is a nearly level to gently sloping soil that was formerly Astatula fine sand, dark surface, but now much of it has been altered for use as building sites or covered with pavement or buildings.

Canaveral-urban land complex (*Cc*) consists of Canaveral sand and Urban land. Shells make up 10 to 80 percent of the fill material. The percentage of sand and shells varies from place to place. The sand is fine to coarse. Most areas of this complex are artificially drained. In wet seasons the water table is between depths of 40 to 60 inches, and the rest of the year it is below a depth of 60 inches.

Myakka sand (*Mk*) is a nearly level, poorly drained sandy soil in broad areas in flatwoods and in areas between sand ridges and sloughs and ponds. In most years, the water table is within a depth of 10 inches for 1 to 4 months and between 10 and 40 inches for more than six months. In dry seasons, it is below a depth of 40 inches. The soil is flooded for two to seven days once every 1 to 5 years.

Paola fine sand, 0 to 5 percent slopes (*PfB*)* is an excessively drained soil on ridges. The water table is below a depth of 10 feet. Paola fine sand, 0 to 5 percent slopes is an aquifer recharge soil.

Pomello sand (*Ps*)* is a nearly level, moderately well drained sandy soil on broad low ridges and low knolls. The water table is 30 to 40 inches below the surface for 2 to 4 months in most years and between 40 and 60 inches for more than 6 months. During dry periods, it is below 60 inches for short periods. Pomello sand is an aquifer recharge soil.

Figure 3: Indian Mound Station Sanctuary Topographic Map

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: USGS Topographic Quadrangle

Legend

Sanctuary Boundary

Elevation (NGVD)

- **20**
- **25**
- **30**
- **35**

N
W E
S

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Natural Resource Conservation Service

Legend

- Sanctuary Boundary

Soil Type

- An
- As*
- At
- Cc
- Mk
- PfB*
- Ps*
- Qr
- SfB*
- Sw

N
W E
S

Quartzipsamments smoothed (*Qr*) are nearly level to steep sandy soils that have been reworked and shaped by earthmoving equipment. Permeability is variable but generally is very rapid. The water table is generally within a depth of 50 inches in filled area.

St. Lucie fine sand, 0 to 5 percent slopes (*SfB*)* is an excessively drained sandy soil on high dune like ridges and isolated knolls. The water table is below a depth of 10 feet.

Swamp (*Sw*) consists of nearly level, poorly drained and very poorly drained areas of soils that have a dense cover of wetland hardwoods, cypress trees, vines, and shrubs. Swamp is in poorly defined drainage ways, in depressions, and in large bay heads. It is flooded with freshwater most of the time.

(Source: Soil Survey of Brevard County, Florida, 1974)
Note: * denotes a soil with aquifer recharge characteristics

Soil disturbing activities will be limited to maintaining firelines and hiking trails. On areas that have been disturbed prior to acquisition, assessments will be made to determine if soil erosion is occurring, and, if so, the appropriate measures to stop or control the effects of the erosion.

e. Hydrology

IMSS lies within Community Panel Number 115, of the FEMA maps dated April 1989 (Appendix C). The FEMA map shows two areas of flood zone A. Flood zone A means that no base elevation has been determined. The map also indicates an area of flood zone X. Flood zone X is an area that is determined to be outside the 500-year flood plain. The property is not located within an Aquatic Preserve, designated as an Area of Critical State Concern or under review for such a designation.

It is unknown to what extent the hydrologic regime of IMSS has been altered as a result of roads, ditches, tramway and residential development. Residential development borders the west, southwest, and northeast across Parrish Road. Parrish Road separates the sanctuary from undeveloped parcels to the north and probably altered the natural hydrology between the north and south sides of the road. Additionally, two old ditches transect the Sanctuary from north to south.

B. Biological Resources

a. Ecosystem Function

The preservation of IMSS ecosystem function depends on the enhancement of its natural communities, which will result in an increase of species viability. Restoration of the natural communities is mainly dependent upon the reintroduction of an adequate fire regime and the restoration of the natural hydroperiod. At IMSS, management actions include restoration of the natural communities, enhancement of habitat for gopher tortoises and Florida Scrub-Jays (*Aphelocoma coerulescens*), removal of invasive exotic species and implementation of prescribed fire. The IMSS Fire Management Plan

(Appendix D) identifies each fire dependant ecosystem with a specific fire regime, the location of each fire unit and fireline and the pre-burn treatment necessary for each unit before the implementation of prescribed burn.

IMSS is approximately ten miles north northwest of the Enchanted Forest Sanctuary, a ±471.31 acre conservation area purchased by the EEL Program. These properties along with Dicerandra Scrub Sanctuary, South Lake Conservation Area, Scottsmoor Flatwoods Sanctuary, Fox Lake Sanctuary, Indian River Sanctuary, North Buck Lake Scrub Sanctuary and Buck Lake Conservation Area, and other Florida Forever Board of Trustees projects in the vicinity, help to form a conservation corridor within the urban areas of North Brevard County.

IMSS consists primarily of scrubby flatwoods, oak-saw palmetto scrub and floodplain swamp. The Department of Environmental Protection considers all surface waters on IMSS, including isolated wetlands, as Class III waters (Rule 62-302.400(12) (b) 5., FAC). The site does not include any Outstanding Florida Waters (Rule 62-302.700, Florida Administrative Code) (Appendix E). In addition, a timber assessment has been prepared by a qualified professional forester for the feasibility of managing timber resources for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices (Appendix F).

b. Flora

This section describes the preliminary plant communities identified within IMSS. The vegetative communities are described using the Florida Natural Areas Inventory's *Guide to the Natural Communities of Florida* (2010) as shown in Figure 5. A complete floristic inventory has not been conducted for this conservation area. A preliminary list of the exotic plant species found on site is listed in the Management Constraints section of this management plan. A preliminary plant inventory conducted in October 2004 is included in Appendix G. In addition, a yearlong floristic survey was completed in June 2010 by EEL Program staff and volunteers with assistance by members of the Florida Native Plant Society Sea Rocket Chapter can also be found in Appendix G.

Aside from being a valuable upland community and aquifer recharge area, this site is important in the preservation of designated plant and animal species. The site provides a significant area of unaltered flora and fauna, free from development.

Historical aerial photographs were reviewed to determine changes to vegetative community type and structure, as well as human-induced changes over the past fifty years. Historical aerial photographs from 1943, 1958, 1969, 1972, 1983, 1993, and 2009 are provided as Figures 6, 7, 8, 9, 10, 11 and 12, respectively. The natural community component of this property is rather diverse with excellent examples of the natural community transitions typical of this Atlantic Coastal Ridge system. Aerial photographs from 1943 to the present were examined to determine what changes have occurred within these plant communities. One major difference is that some of the fire-dependent ecosystems (oak-saw palmetto scrub and scrubby flatwoods) were historically more open with less tree cover than which currently exists.

Figure 5: Indian Mound Station Sanctuary Natural Communities

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Brevard County Natural Resources, 2002. Natural communities classification were converted from FLUCCS, 1985 to FNAI, 1990 classification.

Legend

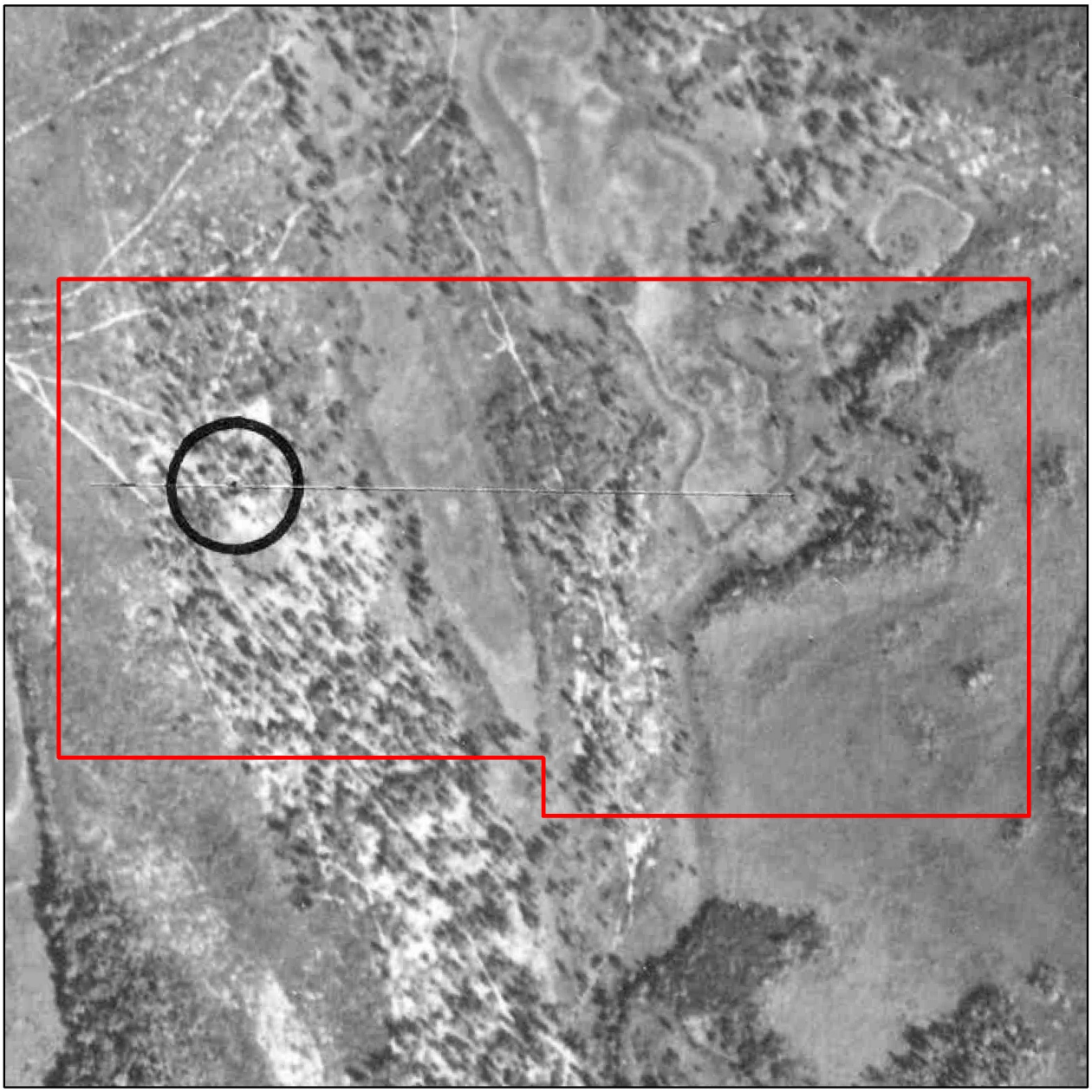
- Sanctuary Boundary

Natural Communities

- Floodplain marsh
- Floodplain swamp
- Hydric flatwoods
- Oak-saw palmetto scrub
- Scrubby flatwoods

N
W E
S

Figure 6: Indian Mound Station Sanctuary
1943 Aerial



0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

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Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerial Photography Archive Collection

Figure 7: Indian Mound Station Sanctuary
1958 Aerial

0 250 500 1,000 Feet

Legend

Sanctuary Boundary

N
W E
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Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Figure 8: Indian Mound Station Sanctuary
1969 Aerial

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Figure 9: Indian Mound Station Sanctuary
1972 Aerial

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Figure 10: Indian Mound Station Sanctuary 1983 Aerial

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Figure 11: Indian Mound Station Sanctuary 1993 Aerial

0 250 500 1,000 Feet

Legend

Sanctuary Boundary

N
W E
S

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Figure 12: Indian Mound Station Sanctuary 2009 Aerial

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

N
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S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

In the 1943 aerial, vegetation was less dense, sandy patches and dirt trails are visible within the present boundary (Figure 6). Prior to the installation of roads, ditches and human development, two floodplain marshes existed east of the Indian Mound as seen in the 1943 aerial. These marshes were drained by 1958, probably for development (Figure 7) by the installation of two ditches running northwest to southeast.

According to the historical aerial photographs, IMSS appeared to be undisturbed until around 1958. Roads and or firebreaks were installed along the entire north and western boundaries including a portion of the southern boundary (Figure 7).Vegetation clearing occurred in the north-northeast corner of the Sanctuary as shown on the 1958 aerial (Figure 7) for the construction of a housing development and Parrish Road seen on the 1969 aerial (Figure 8). By 1983 (Figure 10), right-of-ways for future development were cleared southeast of the property and by 2009, a housing development was constructed on the southeastern side of the property and hydrological alteration and fire suppression probably resulted in the depletion of the first marsh east of the Indian Mound being replaced by a hydric flatwoods community (Figure 12).

Upland Communities

Oak-Saw Palmetto Scrub (G2/S2)* – This community accounts for 33 acres of the site and is characterized by an open to closed canopy of sand pines with an understory of scrub oaks, shrubs, and saw palmetto. Typical understory plants include: Chapman's oak, myrtle oak, sand live oak, fetterbush, rusty lyonia (*Lyonia ferruginea*), gallberry (*Ilex glabra*), winged sumac (*Rhus copallinum*), grapevine (*Vitis rotundifolia*), greenbrier (*Smilax auriculata*), cat greenbriar (*Smilax glauca*), persimmon (*Diospyros virginiana*), shiny blueberry (*Vaccinium myrsinites*), blackroot (*Pterocaulon pycnostachyum*), Hercules's club (*Zanthoxylum clava-herculis*), beautyberry (*Callicarpa americana*), pawpaw (*Asimina reticulata*), scrub hickory (*Carya floridana*), gopher apple (*Licania michauxii*), partridge pea (*Chamaecrista fasiculata*), Chapman's goldenrod (*Solidago odora* var. *chapmanii*), Elliott's milkpea (*Galactia elliottii*), tarflower (*Bejaria racemosa*), pokeweed (*Phytolacca americana*), wire grass and tread softly (*Cnidoscolus stimulosus*). Some areas within the oak-saw palmetto scrub, located in the eastern portion of the Sanctuary, grade into a xeric hammock composed of a closed canopy of scrub oaks with an understory of saw palmetto.

Due to fire suppression, ground cover (especially grasses) is almost nonexistent. Although sand pines occur within the entire oak-saw palmetto scrub community, denser strands are located on the northwest corner and west of the floodplain swamp on the southern side of the property. Sand pines most likely invaded this community as a result of the 20-50 year fire suppression. According to Schmalzer et al. (1999), 26% of the remaining scrub in Brevard County Atlantic Coastal ridge scrub is sand pine over an oak understory.

Reintroduction of fire and a specific fire regime needs to be implemented within this community. An increase in fire frequency will eventually exclude or reduce sand pines, which do not sprout, and reproduce only from seed. Scrub oaks on the other hand will

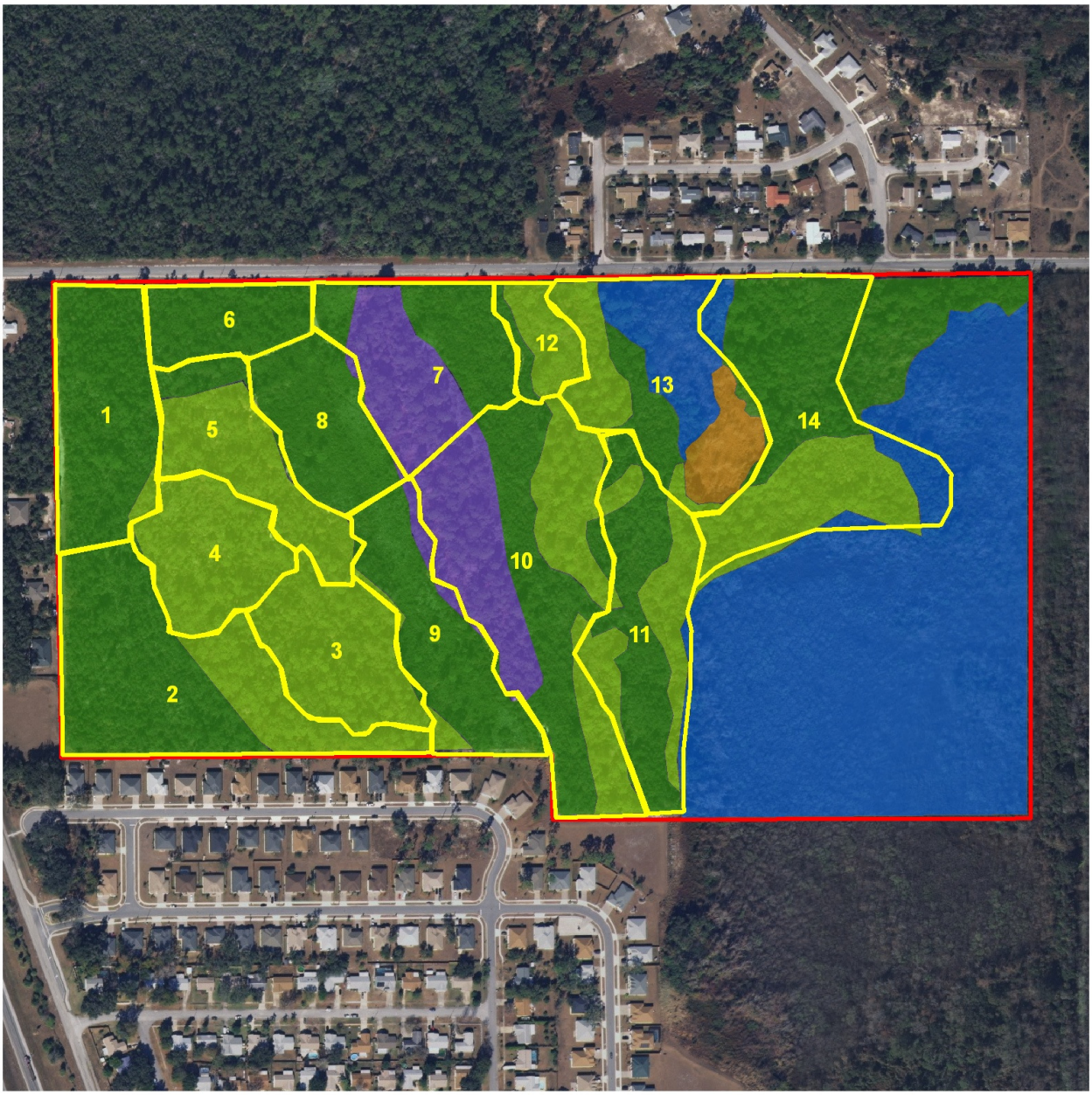
resprout after fire at intermediate (5-10 years) frequencies (Schmalzer and Hinkle 1992a, 1992b). Saw palmetto grows more rapidly after fire and initially dominates the > 0.5 m layer in mixed stands but is temporary, as the scrub oaks will overtop saw palmetto with time (Schmalzer 2003). Scientific literature suggests that growth in long-unburned scrub is greater after initial chopping and burning compared to regularly burned scrub. Openings created by burning piled fuels do persist compared to openings in scrub burned without fuel piles which closed by 50% in seven years (Schmalzer and Adrian 2001). Therefore, this portion of the scrub community will have to be burned on a shorter return interval when a fire regime is reintroduced.

The use of mechanical reduction prior to prescribed burning can damage saw-palmetto rhizomes, which are normally unharmed by fire. This may lead to a long-term decline in saw palmetto cover since saw palmetto grows slowly (Schmalzer and Adrian 2001, Schmalzer et al. 2003). Saw palmettos are a very important component of the oak-saw palmetto scrub community. A combination of one-time mechanical treatment and frequent fire coupled with monitoring of regrowth will allow for the restoration of the IMSS oak-saw palmetto scrub habitat.

Scrubby Flatwoods (G2/S2?) – This community makes up 22 acres of the site. Scrubby flatwoods occurs adjacent to oak-saw palmetto scrub communities and consists of an open canopy of slash pine, longleaf pine and sand pine. The sand pine canopy varies from open to closed with an understory that includes the same species as the oak-saw palmetto scrub community. As with the oak-saw palmetto scrub community, few openings were observed, which suggests that fire should be reintroduced on a shorter return interval.

Mechanical treatment of oak-saw palmetto scrub and scrubby flatwoods occurred in July 2009 in units 1, 2, 3, 4, 5 and 6 (Figure 13). Mechanical treatment included the reduction of the understory and sand pines; excluding all longleaf and slash pines with a diameter at breast height (dbh) of 8 inches or greater. Further reduction of the understory including sand pines, overgrown scrub oaks, and cabbage palms located within 100 feet of firelines occurred in July 2010 for units 8 and 9 and again in August 2010 for units 7, 10, 11, 12, 13, 15 and part of 14 (Figure 13). Trees or snags identified as hazardous for fire or recreation were also removed. All longleaf and slash pines with a dbh of 8 inches or greater were retained. In the event that Florida Scrub-Jays colonize the site, timbering of longleaf and slash pine to two trees per acre will commence. A selective thinning of 50% of the longleaf and slash pine canopy within 660 feet of the Bald Eagle Nest (Figure 14) will occur retaining the largest pines for use as potential roost or nest trees. Due to heavy fuel loads, mechanical reduction will be necessary up to 50 feet from the nest tree. Hand reduction may be performed within 50 feet of the nest tree to insure the nest remains undisturbed. In September 2010, a 12 foot wide fireline was installed 50 feet from the base of the nest tree to decrease the threat of fire destroying the nest, causing a crown fire, or having fire climb the nest tree. The nest tree may also be watered down prior to prescribe fire for further protection. All mechanical reduction within the 660 foot nest buffer will be implemented either outside of nesting season (May 16-September 30) or after securing a permit from the Florida Wildlife Conservation Commission.

Figure 13: Indian Mound Station Sanctuary Unit Reduction Map



0 250 500 1,000 Feet

Map updated on 10/14/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Brevard County Natural Resources, 2002. Natural communities classification were converted from FLUCCS, 1985 to FNAI, 1990 classification.

Legend

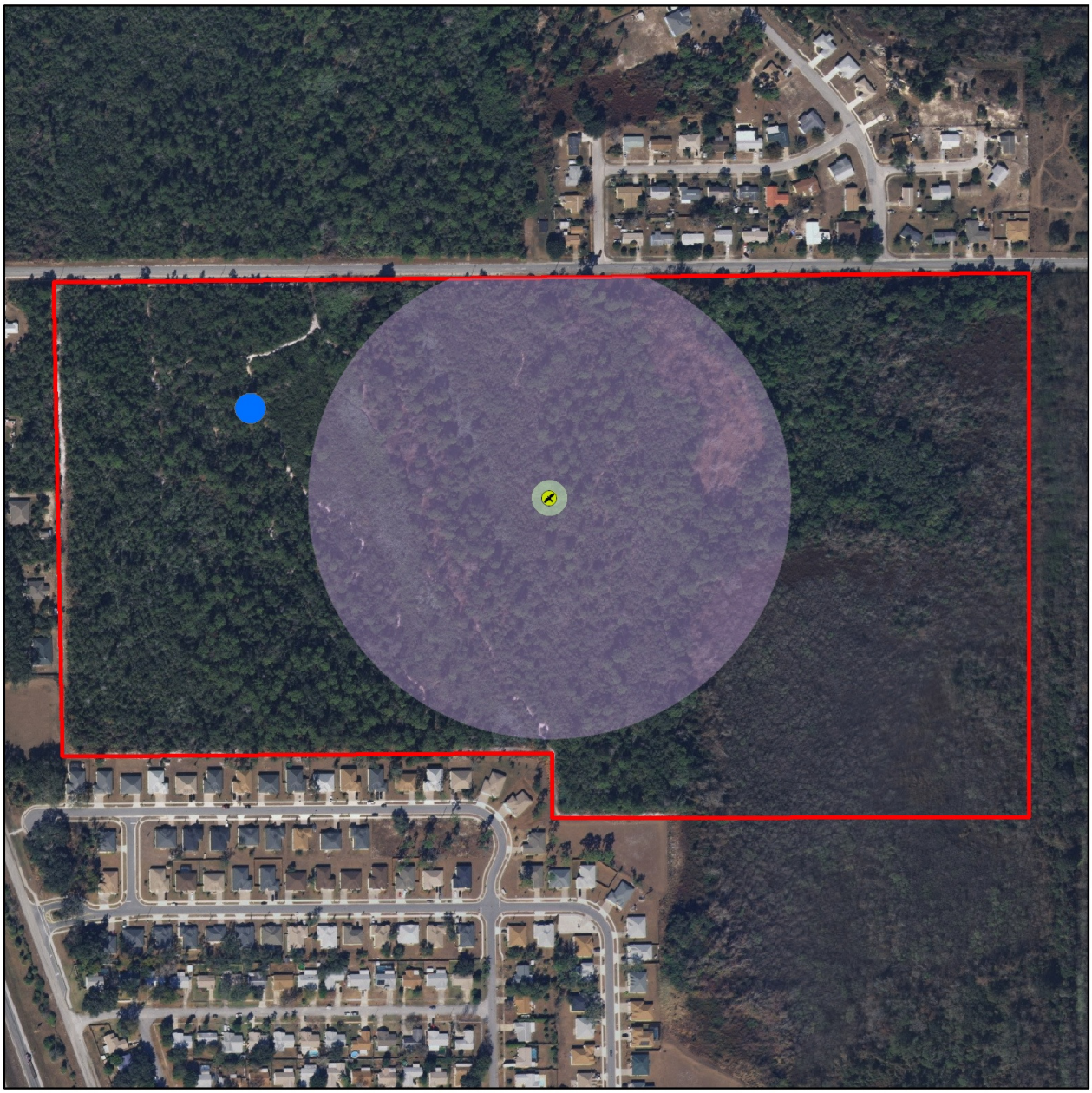
- Sanctuary Boundary
- Fire Units

Natural Communities

- Floodplain marsh
- Floodplain swamp
- Hydric flatwoods
- Oak-saw palmetto scrub
- Scrubby flatwoods

N W E S

Figure 14: Indian Mound Station Sanctuary Eagle Nest Buffer



0 250 500 1,000 Feet

Map updated on 09/29/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Legend

- Sanctuary Boundary
- Indian Mound
- Bald Eagle Nest
- 50' Buffer
- 660' Buffer

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In preparation for the safe application of fire, a 30 foot reduction of the edges is anticipated for any unit prior to the application of prescribed fire.

Hydric Flatwoods (G4/S4) – Based on the 1943 aerial (Figure 6), this community was historically a floodplain marsh composed of herbaceous species. As the result of hydrological alteration and fire suppression the original floodplain marsh has developed into a hydric flatwoods community. It now consists of an open to closed canopy of slash pine and cabbage palm with a few red maples and an understory of wax myrtle, red root, dahoon holly, bracken fern, red bay, peppervine (*Ampelopsis arborea*), golden polypody (*Phlebodium aureum*), persimmon, buttonbush, royal fern and sand blackberry. Implementation of prescribed fire and hydrological restoration are essential to restore this 6-acre community to its natural state. In an effort to restore the natural hydroperiod, the ditch was filled on the south side of the property.

Wetland Communities

Floodplain Swamp (G4/S4) – Floodplain swamp accounts for 23 acres of IMSS. The floodplain swamp is located along the northern boundary of IMSS (Figure 5) and consists of a canopy of red maple with no understory and little groundcover. Groundcover plants include pickerelweed (*Pontederia cordata*), Virginia chain fern, royal fern, dotted smartweed (*Polygonum punctatum*) and sawgrass (*Cladium jamaicense*).

Most of the northern edge of the floodplain swamp located in the southeastern portion of the Sanctuary consists of the same vegetative community as described above, with the addition of wax myrtle, sand blackberry, eastern poison ivy (*Toxicodendron radicans*), red bay, cabbage palm and loblolly bay (*Gordonia lasianthus*). The remaining portion is composed of a canopy of Carolina willow, buttonbush and primrose willow. Groundcover consists of swamp fern, royal fern, sand blackberry and bluestem.

Floodplain Marsh (G3/S3) – Floodplain marshes are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains, mainly in Central Florida and along the St. Johns, Kissimmee and Myakka rivers, on sandy alluvial soils with considerable peat accumulation (FNAI 2010). The floodplain marsh at IMSS (1 acre) is mostly composed of herbaceous plant species including Virginia chain fern, bluestem, dogfennel (*Eupatorium capillifolium*), narrowfruit horned beaksedge (*Rhynchospora inundata*), bunched beaksedge (*Rhynchospora microcephala*) rosy camphorweed (*Pluchea rosea*), St. Johns wort (*Hypericum* spp.), West Indian meadowbeauty (*Rhexia cubensis*), tall pinebarren milkwort (*Polygala cymosa*), and maidencane. Shrub and tree species include red maple, wax myrtle, loblolly bay, primrose willow and buttonbush.

* Key: Florida Natural Areas Inventory (FNAI) natural community designations assigns two ranks for each natural community (element): G = global element rank, S = state element rank. Numbers represent: 1 = critically imperiled because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of vulnerability to extinction; 2 = imperiled because of rarity (6-20 occurrences or less than 3,000 individuals) or because of vulnerability to extinction; 3 = either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction because of other factors; 4 = apparently secure (may be rare in parts of range); 5 = demonstrably secure; #? Tentative rank; G?/S? not yet ranked (temporary).

c. Fauna

No comprehensive faunal surveys have been initiated for IMSS. However, the natural community heterogeneity characterizing the site provides suitable habitat conditions for use of a broad range of species. EEL program staff with the assistance of the Florida Audubon Society will conduct a formal yearlong bird survey at IMSS. Additional surveys will be necessary to assess the various species of mammals and reptiles present at IMSS.

In accordance with Florida Statues Section 388.4111, all environmentally sensitive and biologically highly productive lands are required to submit an arthropod control plan. Brevard County Mosquito Control has developed an arthropod control plan (Appendix H) suitable for the EEL Program including IMSS.

d. Designated Species

A primary goal of this management plan is to develop and implement strategies to enhance conservation of threatened, endangered, or endemic species. The following is information on existing listed species or species that may occur at IMSS.

Plants

One of the initial management goals will be to conduct plant surveys to establish species presence, location and photographic documentation to detail the extent of coverage of any designated species. The location of designated species will be considered during the creation of public access trails and during other management efforts, including exotic plant removal and prescribed fires. A formal yearlong plant survey began in June 2009 at IMSS in which no designated species was documented. Continued efforts to remove invasive exotics plants and the use of prescribed fire will allow for the natural progression of native species.

Animals

The USFWS and the State of Florida under the auspices of the Florida Fish and Wildlife Conservation Commission (FWC) also compile lists of protected wildlife species considered to be under possible threat of extinction. These species are categorized as either endangered or threatened. The FWC utilizes an additional category “Species of Special Concern” (SSC) for several animal species, which may ultimately be listed as endangered or threatened. This classification provides the SSC listed animal with a particular level of protection that varies from species to species.

Florida Scrub-Jay

The Florida Scrub-Jay is a listed species by the USFWS and FWC. In July 2007, a Scrub-Jay survey was conducted at IMSS by EEL staff and volunteers. No Florida Scrub-Jays were reported on the Sanctuary during the survey. A review of the 1943 and 1958 aerials revealed a habitat conducive for Florida Scrub-Jays. Translocation of Scrub-Jays from

other areas will be considered a low priority due to the small size of IMSS and only if it complies with all Federal and State regulations as well as with the EEL Program Species Translocation Policy, including SMC approval.

Eastern Indigo Snake

Indigo snakes (*Drymarchon corais couperi*) have not been seen on the property. The USFWS and FWC list the Indigo snake as a threatened species. It is uncertain whether there is a stable breeding population of indigo snakes in the area. Indigo snakes require large home ranges (370 to 2,500 acres) in order to maintain a stable population (Tennant 1997). Impacts from dogs, humans and roads cause habitat fragmentation and reduce indigo snake populations. Research by Breininger et al. (2004) suggested that the indigo snake population is greatly influenced by habitat fragmentation because indigo snakes readily enter urban areas and cross roads. This study recommends the protection of the indigo snake population in large upland ecosystem conservation lands that connect to other conservation land, while trying to keep the amount of roads and urban areas in the immediate vicinity low (Breininger et al. 2004). According to FNAI (Appendix I), IMSS is likely to have Eastern Indigo Snake. Indigo snakes have been spotted at Buck Lake Conservation Area and South Lake Conservation Area.

Gopher Tortoise

Gopher tortoises (*Gopherus polyphemus*) have been documented on site as they utilize flatwoods as well as scrub habitat (Breininger et al. 1994). The Florida Fish and Wildlife Conservation Commission changed the status of the gopher tortoise from Species of Special Concern to Threatened in September 2007. Managing the oak-saw palmetto scrub, scrubby flatwoods and reintroducing prescribed fire will enhance the habitats by opening up the understory, thereby increasing the amount of open habitat for foraging and colonization. A comprehensive gopher tortoise survey was completed on the Sanctuary in 2008. A total of 94 gopher tortoise burrows were located within the oak-saw palmetto scrub and scrubby flatwoods located on the property; 83 burrows were reported active and 11 abandoned.

Bald Eagle

Bald Eagles (*Haliaeetus leucocephalus*) have been documented by FNAI (Appendix I) and FWC. George Goodman Consulting, Inc. (2006) reported two nests; one inactive (BE046a) and one active (BE046b). The nest (BE046b) has been reported active by the Florida Fish and Wildlife Conservation Commission in 2008 and was substantial in size at ± 4 feet wide by ± 4 feet deep in December of 2005 (Figure 14). The USFWS removed the Bald Eagle from the list of federally endangered and threatened species in August 2007. Although no longer protected under the Endangered Species Act, the level of protection has not changed and will continue to be federally protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. In Florida, it continues to be protected under the state's newly enacted Bald Eagle rule, F.A.C. 68A-16.002.

e. Biological Diversity

Although data collection has begun to assess the Sanctuary's biological diversity, the compilation and statistical analysis have been limited. Additional data will be collected to assess the biological diversity for richness (the number of species found with a particular community) and evenness (the distribution of individuals among species) so data collected can form a baseline which future monitoring efforts can be compared. Methodologies will need to be established for all of the relevant taxonomic groups with researchers and staff assigned to address this particular need.

C. Cultural Resources

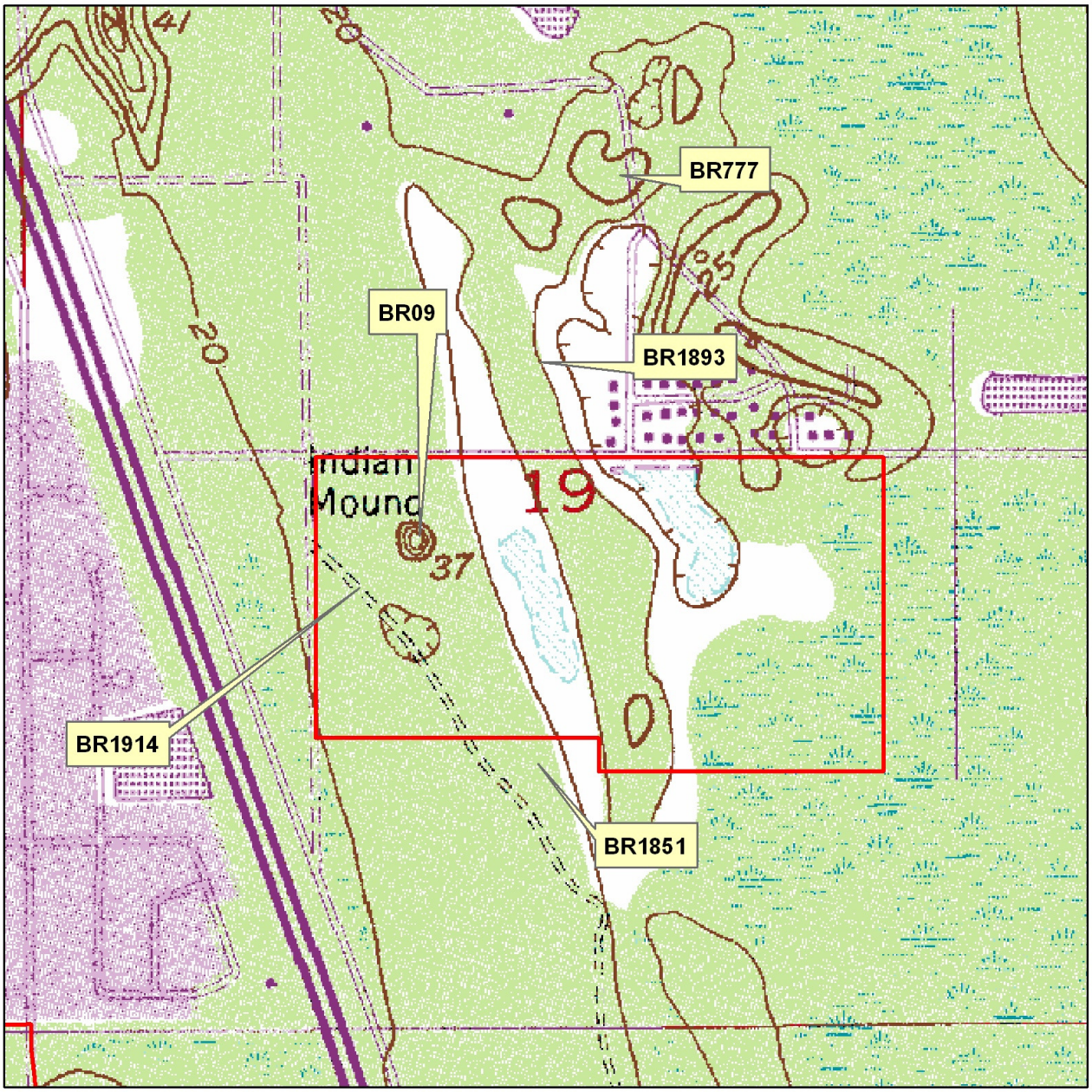
a. Archaeological

According to the Florida Division of Historical Resources (Appendices J and K), surveys by Thomas Penders & Associates in 2005 (Penders 2005a, 2005b, 2005c) reported two archeological sites located within the Sanctuary; an Indian Burial Mound (BR09), and the St. Johns and Indian River Railroad (BR1914) (Figure 15).

The Indian Burial Mound on the property has been surveyed by various archeologists over the past 200 years. Potsherds were observed during a 2003 surface survey of the mound. Due to their association with the burial mound, they were identified and reburied in the mound. A field identification of potsherds indicated three types: Sand-Tempered Plain, St. Johns Plain, and Glades Plain. No potsherds or other artifacts were observed off the mound. Thomas Penders & Associates (2005a, 2005b, and 2005c) suggests that the mound has a known Malabar I (3000 BP – 750 AD) component but whether it is actually Malabar II (750-1565 AD) is more problematic. Analysis of the pottery (St. Johns Plain and Sand-Tempered Plain) observed on the mound suggests a Malabar I component. Authenticating Malabar II artifacts can only be determined by radiocarbon dating and/or a closer examination of the artifacts previously excavated and reburied from the mound. Recent findings at a nearby Sams Site (8 BR 1872) and at the Shields Site in Jacksonville, also bring into question the ceramic types and their affiliation with Malabar II or St Johns II (Penders 2006, personal communication). The Malabar II affiliation was based upon 19th century rumors of the existence of silver coins removed by looters. If these rumors are true, the Native American Ais tribe would have occupied the area throughout these periods. If the rumors are fabricated, it is more likely that ancestors of the Ais tribe occupied this area.

Based on available information, it can be surmised that the burial mound contained the remains of separate interment activities over time. The lowest burials were fragmented bone associated with charcoal and no artifacts. The upper burials that were excavated suggest interments with grave goods. The absence of artifacts within close proximity to the mound in the subject property raises the question of the location of the associated

Figure 15: Indian Mound Station Sanctuary Archeological Sites



0 375 750 1,500 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Penders, T. E. 2005c, A Preservation Plan for Indian Mound Station (8 RR 9) Hersch South 85-acre Parcel, Titusville, Brevard County, Florida. Prepared for Gen Development, Inc. 17 p.

habitation site. Thomas Penders & Associates suggests that the Holder Park Site (8 BR 777) and the Timmy Site (8 BR 1893) are associated with the mound and are the likely candidate for the habitation site. Unfortunately, most of the area within Holder Park was excavated for baseball fields while the area south of the park is now occupied with single-family residences. The Holder Park site is located within 400 m (0.25-mi) of the mound. St. Johns Plain and Sand-Tempered Plain potsherds were found at Indian Mound Station (8 BR 9), Holder Park Site (8 BR 777), and the Timmy Site (8 BR 1893). These sites extend into the north and northeast portions of the site north of Parrish Rd. and constitute an ephemeral deposit of what was a larger village site.

St. Johns and Indian River Railroad

During the 1860's, plans were drawn up to link the St. Johns River to Titusville with the construction of the St. Johns and Indian River Railroad (SJ&IRR). The plan called for the creation of a narrow gauge railway (or tramway), beginning at Salt Lake and ending at the Indian River in Titusville. It was later expanded to include a spur from Lake Harney where the two lines met at the site of the Indian Mound Station Burial Mound. This railroad served as the main link for passengers and freight from the St. Johns River to the Indian River and eventually to the south end of Brevard County.

Thomas Penders & Associates compared historic maps, historical aerial photographs, and 2005 aerial photographs (Penders 2005a) in an attempt to locate the trail most likely to be the SJ&IRR bed. Three separate surface surveys were conducted and the trail considered to be the railroad grade was identified (Figure 16). A total of 8 judgmental shovel tests were placed in the western portion of the property along the suspected location of the SJ&IRR. In addition, a metal detector sweep of the suspected grade was conducted. Shovel testing, surface reconnaissance, and the metal detector survey failed to locate any cultural material associated with the railroad but the grade was still observed along the trail. Two shovel tests contained concrete blocks, mortar fragments, glass, metal cans, and a fragment of a 45-rpm record which dates the material to at least 40 years old. A site visit was conducted in April 2010 with Thomas Penders in an attempt to locate the tramway after the application of prescribed fire. Figure 16 identifies a portion of the possible location of the tramway within the site.

b. Historical

The history of the area ranges from the Indian burial sites (6,000 BC) located several miles to the south at Windover, to the development of the space industry at Cape Canaveral during the 1950's, 1960's, and 1970's. In 1982, the Windover Development found one of the best-preserved indigenous burial sites discovered with skeletal remains approximately 8,000 years old. The Ais Indians would later occupy the region around Titusville (Shoffner et al. 1995).

According to Rouse (1951) and Penders (2005a, 2005b), the Indian Burial Mound located within the Sanctuary was built by the Ais Indians (Indian River Culture). However, the

Figure 16: Indian Mound Station Sanctuary Tramway

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

Tramway

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Archeological and Historical Conservancy, Inc. (2003) reported that the burial mound was erected by St. Johns River Culture.

Ais Indians (1000BC – 1500 AD)

The first people to inhabit Florida arrived about 12,000 years ago, from the central and southern areas of North America, at the end of the last ice age. During this time, much of North America was still covered by glaciers. Sea level was 200 feet below its current level and much of the earth's water was stored in glaciers (Brown 1994). The Ais (pronounced "eyes") Indians were known to inhabit Brevard County in the 16th century during the exploration and colonization of Florida by Europeans. The Ais Indians did not exhibit the traditional nomadic existence of other Native Americans, as the semi-tropical climate provided for their needs without requiring them to travel great distances.

Turn of the Century to Present

During the late 1800's and early 1900's, naturalists were the primary visitors to Brevard County. Notable scientists came to this species-rich, semi-tropical region to collect specimens for natural history museums. These specimens included rare bird life such as the now extinct Carolina parakeet (*Conuopsis carolinensis*).

During the early 1900's, people came to Brevard County from around the country via the Florida East Coast Railway. There was an increase in settlement and development of towns brought about by the creation of railroads and canals. The increase in population was also the result of the 1916 Drainage Acts of Florida and the establishment of Mosquito Control measures beginning in 1927. The Drainage Acts altered natural drainage patterns that permanently lowered water tables in areas where standing water naturally existed for six or more months each year. The introduction of mosquito control (pesticide spraying) lowered the mosquito population to acceptable levels for human settlement (Barille 1988; Woodward-Clyde Consultants 1994).

Throughout the 1920s, improved roads such as Dixie Highway (U.S.1) brought more cars and people to Brevard County. In 1921, a bridge was erected over the Indian River Lagoon connecting the barrier island with the main land for the development of hotels and casinos. Once air conditioning was introduced, Florida quickly became known as the residential and tourist destination it remains today.

c. Land-Acquisition History

The EEL Program purchased 85 acres of IMSS in April 2006 from the Parrish Holder Corporation. The Sanctuary is composed of three connected parcels (21-35-19-00-00500.0-0000.00, 21-35-19-00-00752.0-0000.00, and 21-35-19-00-00753.0-0000.00). As part of the EEL Program goal towards long-term protection of essential natural resources, open space, green space, wildlife corridors and maintenance of natural ecosystems functions; acquisition of the proposed property (Figure 17) would further protect wildlife

Figure 17: Indian Mound Station Sanctuary Potential Acquisition

0 250 500 1,000 Feet

Map updated on 04/28/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.
Source: Florida Aerail Photography Archive Collection

Legend

- Sanctuary Boundary
- Proposed Acquisition
- Indian Mound
- Gate

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and other natural resources in and around IMSS. If the additional property is purchased, the IMSS management plan will be amended to reflect the new Sanctuary boundary.

d. Public Interest

IMSS has been periodically affected by all-terrain vehicles (ATV's), illegal hunting and trash dumping. Boundary signs were posted alongside the entire fence of the Sanctuary. The EEL Program encourages passive recreation use within the IMSS in the form of hiking, nature observation and archeological education.

V. FACTORS INFLUENCING MANAGEMENT

Part V includes the information regarding natural and human-induced trends, external influences, legal obligations, and constraints, management constraints, and public access and passive recreational activities.

A. Natural Trends

Global trends, like sea level rise and global warming, are potential threats that can alter ecosystem function and biological diversity but are difficult to assess. Natural trends associated with stochastic events (fire, flood, drought, freeze) are unpredictable but their occurrence can be documented through historic records and natural systems are usually able to respond and recover from such events. Altering natural stochastic events can negatively influence the biological and natural characteristics of the site, impacting resource values or management strategies. The primary variable that influences the formation and succession of Florida's vegetative communities is fire. If natural fires are not present, or are suppressed by man, less-fire-adapted species including invasive species can invade and alter the natural successional path of the community. In scrubby flatwoods, structural changes (height, growth, density) occur more rapidly than changes in species composition.

In systems such as scrub communities, lack of fire can profoundly affect the value and usability of the community for endemic as well as listed plant and animal species. To occur naturally, scrub fires require drier and hotter conditions than do for example the flatwoods community (Myers and Ewel 1990). Land management practices developed for IMSS must consider the re-introduction of a "natural" fire regime through the use of prescribed fire. Using prescribed fire as a management tool ensures that the natural ecological processes are restored and protected.

Another factor affecting the communities within the IMSS is hydroperiod. Changes in hydroperiod have the potential to significantly alter community structure. A decrease in hydroperiod could allow the invasion of nuisance or non-native species, while an increase in hydroperiod could surpass the inundation tolerances of the species present. The natural hydrologic regime and periodicity of the IMSS was previously altered by the construction of two ditches through both of the floodplain marshes, originally located within the Sanctuary as well as the residential areas located on the eastern, southern and northern boundaries. One of the two existing ditches was backfilled at one end in an effort to

"plug" the ditch while the other ditch has nearly filled in naturally. Any other alterations in hydroperiod are likely to occur outside the boundary of IMSS. Understanding the natural hydroperiod is particularly critical for the preservation of the floodplain marsh and floodplain swamp located on the western portion of the Sanctuary and is also important for restoring the hydric flatwoods located east of the Indian Burial Mound (Figure 6).

B. Human-Induced Trends

a. Indian Burial Mound

Years of erosion have altered the appearance (Figure 18) of the Indian Burial Mound. The rate of erosion has significantly increased over the last twenty years as off-road vehicles have destroyed much of the vegetation responsible for stabilizing the mound. The displacement of sand by erosional forces has begun to expose skeletal remains buried within the mound. Thomas Penders & Associates has recommended that the burial mound be re-stabilized and all restoration of the mound be monitored by a professional archaeologist (2005c). If any skeletal remains are discovered, all work will cease and the State Archaeologist along with Tom Penders will be notified. Thomas Penders & Associates suggests using the following methodology for mound restoration and stabilization, which can also be found in Appendix L:

1. Removal of any and all trash by hand currently located on the mound.
2. Removal of any exotic species of vegetation by hand.
3. Fill in the looter's pit(s) located on the mound with fill.
4. Cover any areas void of vegetation with chain link fencing to hinder and prohibit looting of the mound but allow for vegetative growth.
5. Bring in fill similar to the existing soil to cover the chain link fence. A minimum of one feet of fill soil should cover the fencing. This will be performed with the use of a small front-end loader on the mound. The front-end loader will only drive on the newly deposited fill.
6. In the event of a one-time treatment of mechanical reduction within the vicinity of the mound, a 30-foot natural undisturbed buffer will be left.
7. A fence will be constructed around the perimeter of the mound 30 feet from the base of the mound to restrict public access and prevent anthropogenic damages.
8. Plant grasses and or native vegetation (including Spanish Bayonets or cacti to hinder potential looters).
9. In the event of a prescribed fire, permission has been granted by Tom Penders & Associates and the State Archeologist Ryan Wheeler, to burn the vegetation on the Indian Burial Mound without the use of heavy equipment or vehicles on the mound (Appendix M).

In August 2009, the EEL Program was able to construct a perimeter fence solely around the base of the Burial Mound. Additionally, chain link fence was laid out over any areas void of vegetation on the mound and wired together to create one continuous piece of fence (Figure 19). In 2010, 88 tons of fill was deposited on the mound to fill in looter pits and cover the chain link fencing.

Figure 18: Indian Mound Station Sanctuary Indian Burial Mound

Picture 1: Indian Mound in 1920's
(Photo Source Small 1928)

Picture 2: Indian Mound 2006
(Photo Credit Maureen Parent 2006)

Figure 19: Indian Mound Station Sanctuary Indian Burial Mound

Picture 3: Indian Mound During Restoration August 2009
(Photo Credit EEL Program 2009)

Picture 4: Indian Mound Post Restoration March 2010
(Photo Credit EEL Program 2010)

b. Fire Suppression

The natural fire cycle has been suppressed due to the close proximity of residential and agricultural areas. Fire suppression tends to result in plant and animal compositions that are different from what might have existed under more natural regimes. For example, several areas in the oak-saw palmetto scrub community located in the northwest portion of IMSS are grading into xeric hammock due to the absence of fire. A more natural cycle under the prescribed burn plan will address this problem. The scrubby flatwoods and oak-saw palmetto scrub communities are so overgrown that mechanical reduction will be required before any prescribe burn can occur. Mechanical treatment of oak-saw palmetto scrub and scrubby flatwoods community occurred in July 2009 in units 1, 2, 3, 4, 5 and 6 (Figure 13). Further reduction of the understory including sand pines, overgrown scrub oaks, and cabbage palms located within 100 feet of firelines occurred in July 2010 for units 8 and 9 and again in August 2010 for units 11, 12, 13, 15 and part of 7, 10 and 14. The EEL Program, with the assistance of DOF and Brevard County Fire Rescue was able to safely reintroduce fire into units 1, 2, 3, 4, 5 and 6 in February and March 2010 and again in September 2010 for units 7, 8, 13 and a portion of 14. The land management activities planned for scrubby flatwoods and oak-saw palmetto scrub communities at IMSS will follow the scrub management guidelines developed for peninsular Florida by Kent and Kindell (2009) and approved by the SMC.

c. Hydroperiod Alteration

The two ditches that transect the site are affecting the natural hydroperiod of the Sanctuary. More investigation is required to provide information on whether these ditches are also draining the adjacent residential areas. Restoration efforts will be bound by certain limitations such as the economic feasibility, potential flood impact on the adjacent residential areas, potential for success, and the assurance of a sound scientific basis for the restoration. The area proposed for restoration will be analyzed in the context of the vegetative community intended to be re-established, so as to ensure that the restoration is consistent with the principles set forth by the EEL Program and the primary goal of maintaining biological diversity. One of the two existing ditches was backfilled at one end in an effort to “plug” the ditch while the other ditch has nearly filled in naturally. Any other alterations in hydroperiod are likely to occur outside the boundary of IMSS. Upon completion, natural recruitment of native species will be monitored and any encroachment of exotic invasive species will be treated.

d. Trails and Firebreaks

An extensive web of trails is present at IMSS. All of the existing foot trails will be used as firebreaks. However, the trail that currently passes directly over the Indian Burial Mound will be permanently closed to allow for the re-growth of natural vegetation.

The management goals set forth in Section V (Management Action Plan) provide strategies and actions for reduction of human-induced impacts and restoration and enhancement of natural resources. As part of the management plan implementation,

methodologies for assessing carrying capacity of the natural resources on the site will be developed. In addition, strategies for visitor impacts analysis that consider species-level, natural community-level and ecosystem-level human influences will be developed and implemented.

C. External Influences

The Sanctuary boundary has been fenced and posted since December of 2006. Public access will be limited to a single walk-through gate located along Parrish Road. EEL Program staff, County staff and volunteers have removed trash during several workdays, and only minor signs of new littering (mainly yard trash) were noticed since the initial clean up events. Letters were sent to neighboring residents notifying them of the presence and purpose of the Sanctuary in their community and alerting them to planned management activities.

D. Legal Obligations and Constraints

The following is a list of possible legal constraints to management and public access.

a. Division of Forestry

The Florida Division of Forestry (DOF) issues permits for prescribed burns for land management to Land Managers with certified burn numbers. These certifications will be secured by the EEL Program Fire Manager prior to all prescribed burns.

b. Easements

No easements are recorded for IMSS.

c. Right of Ways

No Right of Ways are recorded for IMSS

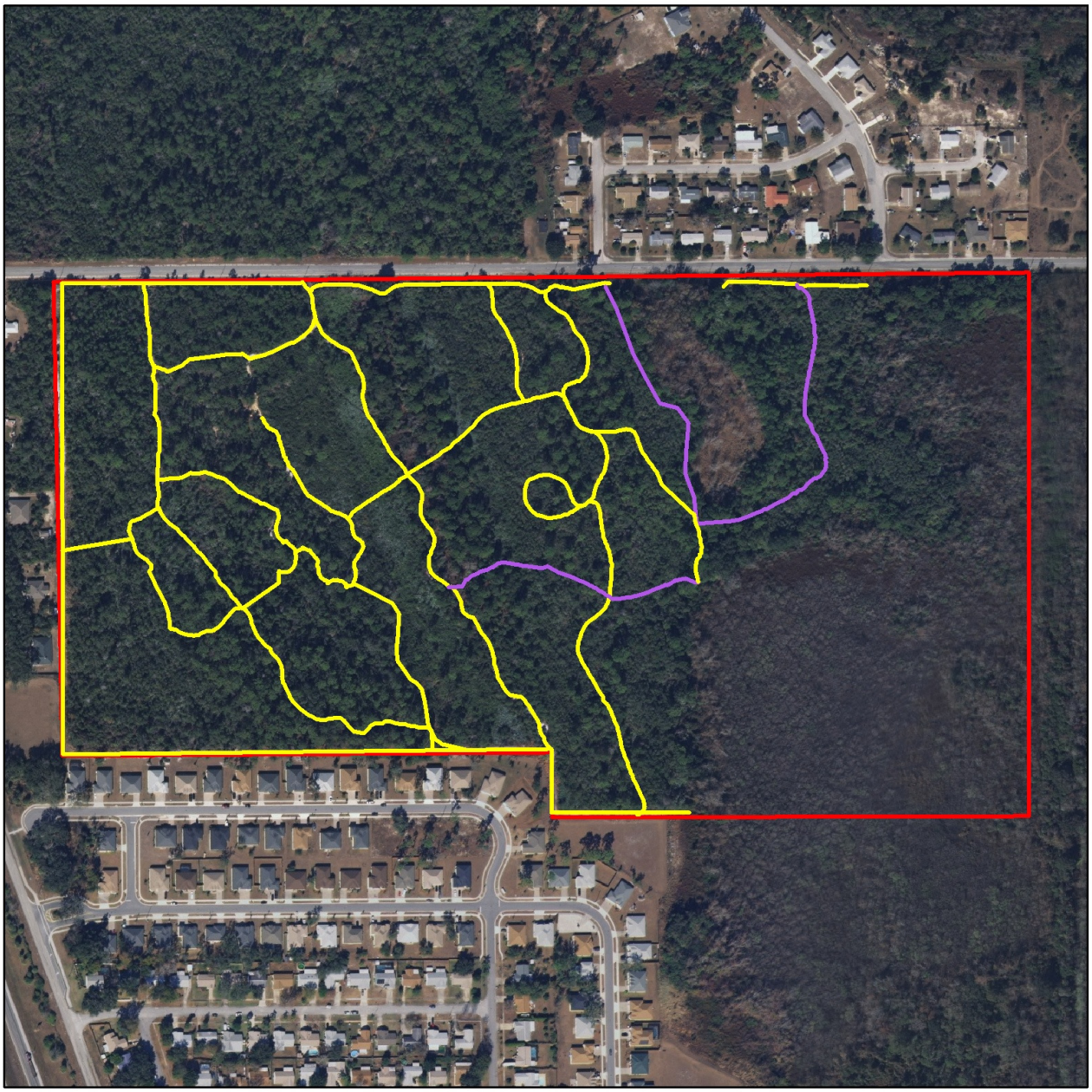
E. Management Constraints

Potential management constraints and challenges are associated with site security, limited on-site presence and proximity of residential homes. There are no conflicts with any adjacent lands that would restrict the planned use of the property; however, the following is a description of major management issues and constraints associated with IMSS.

a. Fire

Natural communities within IMSS were evaluated to determine any constraints prohibiting the use of prescribed burning posed by natural site conditions and adjacent land uses. Existing and temporary firelines within the Sanctuary are shown on Figure 20.

Figure 20: Indian Mound Station Sanctuary Existing and Temporary Firelines



0 250 500 1,000 Feet

Map updated on 09/29/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Legend

- Sanctuary Boundary
- Existing Fireline
- Temporary Fireline

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Reinstating a fire regime is critical in the oak-saw palmetto scrub, scrubby flatwoods and floodplain marsh communities.

The Fire Management Plan (Appendix D) includes the habitat maintenance and restoration goals of the EEL Program and provides a detailed approach to conducting prescribed burns. The development of this plan involves local and state experts on prescribed burning, including DOF, The Nature Conservancy, USFWS, the County's Public Safety Department, Brevard County Fire Rescue, and City Fire Departments. In 2006 and 2009, a portion of the firelines needed along the perimeter of IMSS was installed. In September 2010, DOF installed the remaining proposed firelines within IMSS to safely apply prescribed fire. In addition, temporary firelines were also installed to allow for easy access during mop-up and to avoid a muck fire in wetland area (Figure 20). The temporary firelines will not be maintained once the units undergo the initial fire; allowing vegetation to naturally recruit back to the original state. In preparation for prescribed fire, vegetation along the edge of firelines may be reduced and ignition stripes created within the fire unit to help carry fire. Permission has been granted by the State Archaeologist to include the Indian Burial Mound within the prescribed burn area (Appendix M).

b. Exotic Species

Exotic, non-indigenous, non-native, and alien species are all terms used to describe plants and animals of foreign origin. Some exotic species can become invasive when they harm, displace or outcompete native species while altering native ecosystem function.

Plants

A list of exotic plant species identified thus far is provided in Table 1. IMSS does not support a large number of invasive exotics. However, invasive exotics currently present in the Sanctuary should be treated and monitored to avoid spreading. Air potato (*Dioscorea bulbifera*) is the dominant nuisance plant associated with IMSS. Two patches located on the northeastern and southwestern portion of the Sanctuary was treated weekly in the summer of 2010 to prevent further expansion. Chinese tallow tree (*Sapium sebiferum*) and Chinaberry (*Melia azedarach*) are also cause for concern within the Sanctuary. EEL Program staff began treating Guinea grass (*Panicum maximum*) in May 2009 and will continue treatment throughout the year to ensure its eradication. It should also be noted that a detailed inventory of exotic/invasive/nuisance plants has not been conducted, and other exotic species are likely to exist on-site.

EEL Program staff, in cooperation with the local Florida Native Plant Society Chapters and other volunteer groups, will prepare an inventory of the exotic and/or invasive plant species found within IMSS and develop strategies to remove the species or control their coverage. The EEL Program is currently developing a comprehensive treatment and monitoring program to ensure the long-term removal of these species from the IMSS.

Table 1: Exotic Plants Species List – IMSS– July 2007

Scientific Name	Common Name	Category *
Cinnamomum camphora	Camphor tree	**I**
Dioscorea bulbifera	Air potato	**I**
Lantana camara	Lantana	**I**
Sapium sebiferum	Chinese tallow tree	**I**
Schinus terebinthifolius	Brazilian pepper	**I**
Melia azedarach	Chinaberry	**II**
Panicum maximum	Guinea grass	**II**
Sphagneticola tribolata	Creeping oxeyes	**II**
Broussonetia papyrifera	Paper mulberry	**E**
Enterolobium contortisiliquum	Earpod tree	**E**

Category * (FEPPC 2009)
I - Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.
II - Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These species may become ranked Category I, if ecological damage is demonstrated.
E- Exotics that are not or not yet in classified in any other Category

Animals

Exotic animal species also have the potential to adversely affect ecosystem function and to significantly alter population levels of native animals through predation or displacement. The fire ant (*Solenopsis invicta*) and the nine-banded armadillo (*Dasypus novemcinctus*) have become common throughout Central Florida. There is evidence of feral hogs (*Sus scrofa*) on the property. Feral hogs can cause significant harm to vegetation and soils due to their rooting (Engeman et al. 2004, 2007; Jolley et al. 2010). Due to the nature and location of this conservation area, feral cats and feral dogs could be present in the vicinity of the site and could pose a significant threat to the wildlife. Any feral cats and dogs found on the property will be trapped and taken to the local animal shelter.

A list of non-indigenous animal species has not been collected. An investigation into the levels and impacts of these species needs to be conducted prior to the establishment of a control strategy.

F. Public access and Passive Recreation

Public access and opportunities for passive recreation will be provided at IMSS pursuant to public use and recreational policies of the EEL Program Sanctuary Management Manual adopted by Brevard County Board of County Commissioners. It has been

determined that passive recreational activities best support the EEL Program goals. The EEL Program Sanctuary Management Manual (SMM) defines passive recreation as follows:

> "A recreational type of use, level of use and combination of uses that do not, individually or collectively, degrade the resource values, biological diversity, and aesthetic or environmental qualities of a site."

This site is proposed as a "Category 2 site" within the EEL Program and as such, minimal capital improvements will be allowed on-site. Activities that will be permitted include hiking, bicycling, nature observation and archeological education. Some of the firebreaks may also be used for these activities unless otherwise posted. Staff retains the ability to close off trails due to seasonal conditions, for management activities, or if unacceptable impacts result from use. No other alternative or multiple uses are being considered other than passive recreation, as they do not fit in with the EEL program goals.

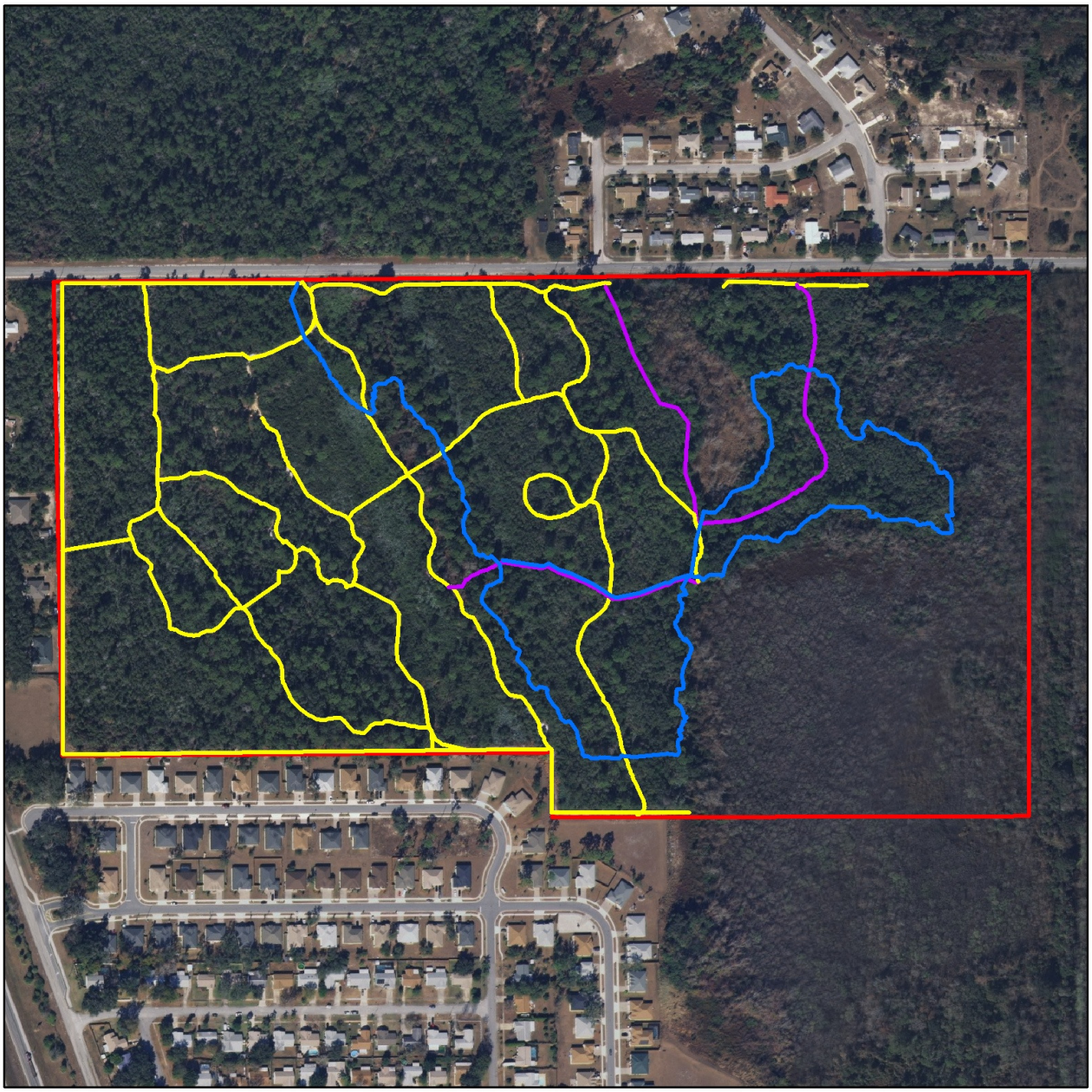
By necessity, firebreaks are sometimes also used as recreational trails on EEL sites. This minimizes the amount of habitat removed in order to properly manage for conservation while still providing public access. These dual-use trails are periodically impacted by maintenance and prescribed fire activities which include vehicle traffic, disking or tilling by tractor, and mechanically reducing adjacent vegetation. While staff attempts to minimize the extent and duration of impacts that may hinder recreational use, well-maintained firebreaks are vital to public safety, and effective conservation management. At IMSS, the 1.3 mile proposed trail will not serve as a dual use firebreak unless the prescribed fire escapes containment. Perimeter firebreaks will be regularly disked to maintain a mineral soil fireline. Firebreaks and recreational hiking trails and are shown on Figure 21.

On October 12, 2006, a meeting was held in Melbourne, FL with the EEL Program Recreation and Education Advisory Committee (REAC). Minutes from this meeting can be found in Appendix N. The IMSS public access plan was delayed until restoration of the Indian Mound was completed and if the EEL Program was able to acquire the proposed parcel north of Parrish Rd.

In 2009, the EEL Program decided to move forward with the public access plan on the basis that the proposed parcel would not be purchased and included within the public access plan. On September 23, 2009, a public stakeholder meeting was held at the Enchanted Forest Sanctuary in Titusville, FL to present the IMSS recreational assessment prepared by EEL Program staff. IMSS stakeholders included neighbors, bikers, hikers, birders, equine enthusiasts, tourists, Native Americans and historical societies. Minutes from the meeting can be found in Appendix N.

On October 8, 2009, a meeting was held in Viera, FL with REAC. The IMSS public access plan described above was presented to REAC, and the committee members moved to support the plan by a majority vote. On May 13, 2010, an additional meeting was held in Melbourne, FL with REAC because some members had expressed concerns towards

Figure 21: Indian Mound Station Sanctuary Public Access



0 250 500 1,000 Feet

Map updated on 09/29/2010 for
Indian Mound Station Sanctuary Management Plan .

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Legend

- Sanctuary Boundary
- Existing Fireline
- Temporary Fireline
- Proposed Trail

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dual use trails and firebreaks. The EEL Program revisited the proposed trail system and identified a single use trail that will be impacted only where the trail crosses existing firelines. The new proposed trail was presented to REAC (May 2010) and the committee members unanimously moved to support the plan (Appendix N).

This management plan was available for a 30-day public review from November 1, 2010 through December 1, 2010. All identified stakeholders were notified of the 30-day public review and the draft management plan was available at several local libraries (Appendix M), the EEL Office, the Enchanted Forest Sanctuary, and the EEL Program website.

a. Hiking

Hiking trails will be designed to give visitors an opportunity to experience the diverse habitats within the Sanctuary. These hiking trails will allow visitors through the diverse habitats of IMSS from oak-saw palmetto scrub to floodplain swamp. Hiking will be encouraged on the designated trail system (Figure 19) and allowed on firelines located throughout the property with the exception of perimeter lines adjacent to houses.

b. Bird Watching

Birding is a passive recreational activity that will be encouraged at the Sanctuary.

c. Archeological Education

The Indian Burial Mound and the tramway can be incorporated into the north region, EEL education program. Guided hikes and guest speakers opportunities can be made available.

d. Hunting

Hunting will not be allowed within the sanctuary.

e. Bicycling

Bicycling will be permitted on the designated trail and firelines located throughout the property with the exception of perimeter lines adjacent to houses.

VI. MANAGEMENT ACTIONS PLAN

The following is a comprehensive outline of the goals, strategies, and actions necessary to manage IMSS.

A. Goals

The *Sanctuary Management Manual* of the EEL Program provides the following management goals for IMSS.

- Documentation of historic public use
- Conservation of ecosystem function
- Conservation of natural (native) communities
- Conservation of species (including endemic, rare, threatened and endangered species)
- Documentation of significant archeological and historic sites
- Provision of public access and responsible public use
- Assessment of carrying capacity of natural resources with public use
- Provision of environmental education programs
- Opportunities for multiple uses and compatibility
- General upkeep and security of the property

B. Strategies and Actions

The following is an outline of the specific management strategies and actions that are needed to meet the management goals for IMSS.

GOAL: DOCUMENTATION OF HISTORIC PUBLIC USE

Strategy 1: Document historic public use

Actions:
- Collect historic information (such as aerials, historic photos, interviews with previous landowners) regarding the types of activities that have occurred on-site;
- Evaluate how historic public use impacted the site's natural resources;
- Consider historic public use patterns in planning future public uses;
- Map all existing trails using GIS/GPS.

GOAL: CONSERVATION OF ECOSYSTEM FUNCTION

Strategy 2: Protect, maintain, and restore native diversity, ecological patterns, and the processes that maintain diversity.

Actions:
- Research and monitor baseline conditions of natural systems;
- Install 4 baseline vegetation monitoring transects;
- Research the connection of on-site natural resources with adjacent resources;
- Research hydrologic patterns on and off-site;
- Restore natural communities to improve efforts on enhancing native diversity;
- Investigate the historic hydroperiod;
- Install one photopoint in each habitat within IMSS.

Strategy 3: Ensure that natural upland-wetland interfaces are protected and enhanced.

Actions:
- Collect data to analyze the public access on the natural resources;
- Protect communities from deleterious impacts deriving from external influences;
- Restore/enhance natural communities where and as possible.

GOAL: CONSERVATION OF NATURAL (NATIVE) COMMUNITIES

Strategy 4: Restore degraded, disturbed, or altered wetlands within the IMSS.

Actions:
- Establish baseline conditions within wetlands;
- Consult local experts and current literature regarding best scientific methods for wetland restoration;
- Use native plants for restoration efforts (if needed);
- Prioritize the wetland communities in need of restoration based upon ease of accomplishment, expected habitat value yield, or financial considerations;
- Use off-site mitigation projects to fund on-site wetland restoration;
- Assess possible impacts of proposed restoration on adjacent communities and offsite properties;
- Implement the selected restoration activities (i.e., remove exotic species, restore natural hydrologic flood, etc.);
- Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan, as necessary;
- Manage invasive exotic plant species at a maintenance level (0-5%), continue to periodically treat FLEPPC cat. 1 & 2 invasive exotic plant species.

Strategy 5: Restore degraded, disturbed, or altered uplands within the IMSS.

Actions:
- Establish baseline conditions within the upland communities;
- Consult local experts and current literature regarding best scientific methods for upland restoration;
- Prioritize the upland communities in need of restoration based upon ease of accomplishment, expected habitat value yield, or financial considerations;
- Assess possible impacts of proposed restoration on adjacent communities and offsite properties;
- Implement the selected restoration activities (i.e., remove exotic species, restore natural disturbance regime, replant native species, etc.);
- Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan, as necessary;
- Manage invasive exotic plant species at a maintenance level (0-5%), continue to periodically treat FLEPPC cat. 1 & 2 invasive exotic plant species;
- Restore 45 acres of scrub and scrubby flatwoods.

Strategy 6: Design and implement a "natural" fire management program.

Actions:

- Identify natural communities that require prescribed fire management;
- Identify and evaluate individual proposed burn management units;
- Identify the goal of the application of fire to each proposed burn unit;
- Document listed species within each burn unit;
- Identify and plan perimeter and internal fire breaks;
- Create a site-specific Fire Management Plan;
- Develop and implement public education campaign including programs and literature regarding the need for periodic controlled burns;
- Meet with local HOA's to help educate neighbors to the prescribed fire program;
- Secure the necessary permits from the State Division of Forestry and other agencies;
- Mechanical reduction of overgrown vegetation when necessary before fire implementation;
- Begin prescribed fire management program;
- Monitor the effects of the fire management activities, evaluate the success of the program, and revise the program strategies as needed;
- Reintroduce and continue prescribed fire to fire adapted communities every 3-5 years or as needed.

GOAL: CONSERVATION OF SPECIES (INCLUDING ENDEMIC, RARE, THREATENED AND ENDANGERED)

Strategy 7: Protect on-site populations of endemic, rare, threatened and endangered species through the utilization of existing habitat management and species recovery plans.

Actions:

- Develop a methodology and work plan to accomplish the identification of designated plant and animal species;
- Survey for, and identify listed/protected plant and animal species;
- Plot the location of identified designated species within and/or adjacent to the sanctuary for use in the implementation, or re-distribution, of amenities or site improvements;
- Periodically update these baseline survey data to determine possible changes in designated species distribution or density;
- Review management plans for consistency with USFWS and FFWCC guidance concerning listed species;
- Implement habitat restoration activities for listed species (i.e., removal of exotic/nuisance species, restoration of ecosystem function);
- Establish periodic monitoring of habitat suitability (where indices are available for a given species), species population levels, diversity levels, and exotic/nuisance species, as a means of evaluating the success of management strategies;
- Map gopher tortoise burrows post burns or once every five years.

GOAL: DOCUMENTATION AND RESTORATION OF SIGNIFICANT ARCHAEOLOGICAL AND HISTORIC SITES

Strategy 8: Document and restore the Indian Burial Mound

Actions:
- Work with the State Archaeologist to develop a restoration strategy for the Indian Burial Mound;
- Implement the restoration strategy;
- Contact the State Division of Historic Resources to conduct a Phase I survey of the site;
- Review available maps and historic records for indications of past usage of the site;
- Map all archaeological and historic sites for future reference.

GOAL: PROVISION FOR PUBLIC ACCESS AND RESPONSIBLE PUBLIC USE

Strategy 9: Establish and enforce specific policies and management techniques for public access and responsible public use.

Actions:
- Plan appropriate public facilities by examining the site's natural and cultural resources and reviewing public input;
- Perform public access site assessment;
- Install boundary fence and post with EEL Program signage;
- Evaluate design and proposed public facilities for consistency with ADA guidelines;
- Establish social and environmental carrying capacities for proposed public facilities;
- Use daily or seasonal quotas, restricted access or limited parking to enforce established carrying capacities;
- Coordinate recreational use with the ecological burning strategies of the EEL Program;
- Minimize unauthorized trail expansion by establishing sufficient trails, constructing handrails, and the development of written guidelines;
- Install informational kiosks at the Sanctuary entrance and educational signage along approved trails.

GOAL: ASSESSMENT OF CARRYING CAPACITY OF NATURAL RESOURCES WITH PUBLIC USE

Strategy 10: Establish a monitoring program to assess effects of public usage on natural resources.

Actions:
- Establish and monitor 5 vegetation monitoring transects;
- Establish a methodology and record keeping system to document public use;
- Conduct regular monitoring to assess impacts of public use on natural habitats;

- Conduct regular "walk-throughs" over frequently used sites to assess the need for changes in routing/user types, or user intensity;
- Re-route users from sensitive areas or popular sites on a regular or as-needed basis;
- Re-align public use to avoid areas which observations or data indicate are too sensitive for the level of use originally planned.

GOAL: PROVISION OF ENVIRONMENTAL EDUCATION PROGRAMS

Strategy 11: Develop a plan to provide on-going environmental education programs to Brevard County residents and visitors.

Actions:
- Determine target audiences and types of programming best suited to those groups;
- Design and develop indoor and outdoor exhibits, signs and printed materials;
- Provide a trail brochure for visitors to the Sanctuary;
- Include educators, friends groups and other organizations in the design, development and delivery of programs;
- Develop and coordinate a docent program to assist in program delivery;
- Develop and provide training and site specific informational materials for use by docents and other educators;
- Develop criteria and process of evaluation for program review and refinement;
- Coordinate outreach and on-site programs for school-aged children with school board and area schools;
- Provide a "special collection" of books and other materials specifically related to the environmental and cultural character of the Sanctuary.

GOAL: OPPORTUNITIES FOR MULTIPLE USES AND COMPATIBILITY

Strategy 12: Provide opportunities for multiple use and compatibility when practical.

Actions:
- Use fire breaks for multi-use recreation trails when not needed for resource management;
- Reroute trails, where possible off firebreaks to provide improved public access;
- Include multiple benefits of natural community restoration efforts in education program.

GOAL: GENERAL UPKEEP AND SECURITY OF THE PROPERTY

Strategy 13: Secure and maintain the Sanctuary to the highest degree possible using EEL staff, Parks and Recreation staff, contract employees and volunteers.

Actions:
- Install perimeter fencing and or signs clearly marking the site's boundary;
- Contract with outside contractors or with Brevard County, Parks and Recreation for maintenance of parking areas, fire breaks, trails, boardwalks, bridges, benches etc.;

- Coordinate daily maintenance tasks using staff and volunteers.

VII. PROJECTED TIMETABLE FOR IMPLEMENTATION

Part VII recommends a timeline for management plan implementation. The timeline has been divided into immediate, short-term and long-term time frames. Immediate is defined as within one year of the adoption of this management plan, short term is 1 to 5 years, and long-term is more than 5 years. Some actions are also defined as on-going, if the activity is required for the on-going maintenance of the Sanctuary.

ACTION	**ACTIVITY TIMELINE**
Strategy 1: Document historic public use	
Collect historic information (such as aerials, historic photos, interviews with previous landowners) regarding the types of activities that have occurred on-site	Completed
Evaluate how historic public use impacted the site's natural resources	Completed
Consider historic public use patterns in planning future public uses	Completed
Map all existing trails using GIS/GPS	Completed
Strategy 2: Protect, maintain, and restore native diversity, ecological patterns, and the processes that maintain diversity	
Research and monitor baseline conditions of natural systems	On-Going
Install 4 baseline vegetation monitoring transects	Short-Term
Research the connection of on-site natural resources with adjacent resources	On-Going
Research hydrologic patterns on and off-site	Short-Term
Restore natural communities to improve efforts on enhancing native diversity	Short-Term
Investigate the historic hydroperiod	Short-Term
Install one photopoint in each habitat within IMSS	Short-Term
Strategy 3: Ensure that natural upland-wetland interfaces are protected and enhanced	
Collect data to analyze the public access on the natural resources	Short-Term
Protect communities from deleterious impacts deriving from external influences	On-Going
Restore/enhance natural communities where and as possible	On-Going
Strategy 4: Restore degraded, disturbed, or altered wetlands within IMSS	
Establish baseline conditions within wetlands	Immediate
Consult local experts and current literature regarding best scientific methods for wetland restoration	Immediate
Use native plants for restoration efforts (if needed)	Immediate
Prioritize the wetland communities in need of restoration based upon ease of accomplishment, expected habitat value yield, or financial considerations	Immediate
Use off-site mitigation projects to fund on-site wetland restoration	Short-Term

Assess possible impacts of proposed restoration on adjacent communities and offsite properties	Immediate
Implement the selected restoration activities (i.e., remove exotic species, restore natural hydrologic flood, etc.)	On-Going
Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan, as necessary	On-Going
Manage invasive exotic plant species at a maintenance level (0-5%), continue to periodically treat FLEPPC cat. 1 & 2 invasive exotic plant species	On-Going

Strategy 5: Restore degraded, disturbed or altered uplands within IMSS

Establish baseline conditions within the upland communities	Immediate
Consult local experts and current literature regarding best scientific methods for upland restoration	Immediate
Prioritize the upland communities in need of restoration based upon ease of accomplishment, expected habitat value yield, or financial considerations	On-Going
Assess possible impacts of proposed restoration on adjacent communities and offsite properties	On-Going
Implement the selected restoration activities (i.e., remove exotic species, restore natural disturbance regime, replant native species, etc.)	On-Going
Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan, as necessary	Shot-Term
Manage invasive exotic plant species at a maintenance level (0-5%), continue to periodically treat FLEPPC cat. 1 & 2 invasive exotic plant species	On-going
Restore 45 acres of scrub and scrubby flatwoods	On-Going

Strategy 6: Design and implement a "natural" fire management program

Identify natural communities that require prescribed fire management	Completed
Identify and evaluate individual proposed burn management units	Completed
Identify the goal of the application of fire to each proposed burn unit	Completed
Document listed species within each burn unit	Completed
Identify and plan perimeter and internal fire breaks	Completed
Create a site-specific Fire Management Plan	Completed
Develop and implement public education campaign including programs and literature regarding the need for periodic controlled burns	On-Going
Meet with local HOA's to help educate neighbors to the prescribed fire program	Completed
Secure the necessary permits from the State Division of Forestry and other agencies	On-Going
Mechanical reduction of overgrown vegetation when necessary before fire implementation	Completed
Implement prescribed fire management program	On-Going
Monitor the effects of the fire management activities, evaluate the success of the program, and revise the program strategies as needed	On-Going

Reintroduce and continue prescribed fire to fire adapted communities every 3-5 years or as needed	On-Going

Strategy 7: Protect on-site populations of endemic, rare, threatened and endangered species through the utilization of existing habitat management and species recovery plans

Develop a methodology and work plan to accomplish the identification of designated plant and animal species	On-Going
Survey for, and identify listed/protected plant and animal species	On-Going
Plot the location of identified designated species within and/or adjacent to the sanctuary for use in the implementation, or re-distribution, of amenities or site improvements	On-Going
Periodically update these baseline survey data to determine possible changes in designated species distribution or density	On-Going
Review management plans for consistency with USFWS and FFWCC guidance concerning listed species	Short-Term
Implement habitat restoration activities for listed species (i.e., removal of exotic/nuisance species, restoration of ecosystem function)	On-Going
Establish periodic monitoring of habitat suitability (where indices are available for a given species), species population levels, diversity levels, and exotic/nuisance species, as a means of evaluating the success of management strategies	On-Going
Map gopher tortoise burrows post burns or once every five years	On-Going

Strategy 8: Document and restore the Indian Burial Mound

Work with the State Archaeologist to develop a restoration strategy for the Indian Burial Mound	Completed
Implement the restoration strategy	Completed
Contact the State Division of Historic Resources to conduct a Phase I survey of the site	Completed
Review available maps and historic records for indications of past usage of the site	Completed
Map all archaeological and historic sites for future reference	Completed

Strategy 9: Establish and enforce specific policies and management techniques for public access and responsible public use

Plan appropriate public facilities by examining the site's natural and cultural resources and reviewing public input	Immediate
Perform public access site assessment	Completed
Install boundary fence and post with EEL Program signage	Short-Term
Evaluate design and proposed public facilities for consistency with ADA guidelines	Short-Term
Establish social and environmental carrying capacities for proposed public facilities	Short-Term
Use daily or seasonal quotas, restricted access or limited parking to enforce established carrying capacities	Short-Term
Coordinate recreational use with the ecological burning strategies of the EEL Program	Short-Term

Minimize unauthorized trail expansion by establishing sufficient trails, constructing handrails, and the development of written guidelines	Short-Term
Install informational kiosks at the Sanctuary entrance and educational signage along approved trails	Short-Term

Strategy 10: Establish a monitoring program to assess effects of public usage on natural resources

Establish and monitor 5 vegetation monitoring transects	Short-Term
Establish a methodology and record keeping system to document public use	On-Going
Conduct regular monitoring to assess impacts of public use on natural habitats	On-Going
Conduct regular "walk-throughs" over frequently used sites to assess the need for changes in routing/user types, or user intensity	On-Going
Re-route users from sensitive areas or popular sites on a regular or as-needed basis	On-Going
Re-align public use to avoid areas which observations or data indicate are too sensitive for the level of use originally planned	On-Going

Strategy 11: Develop a plan to provide on-going environmental education programs to Brevard County residents and visitors

Determine target audiences and types of programming best suited to those groups	Short-Term
Design and develop indoor and outdoor exhibits, signs and printed materials	Short-Term
Provide a trail brochure for visitors to the Sanctuary	Immediate
Include educators, friends groups and other organizations in the design, development and delivery of programs	Short-Term
Develop and coordinate a docent program to assist in program delivery	Short-Term
Develop and provide training and site specific informational materials for use by docents and other educators	Short-Term
Develop criteria and process of evaluation for program review and refinement	Short-Term
Coordinate outreach and on-site programs for school-aged children with school board and area schools	Long-Term
Provide a "special collection" of books and other materials specifically related to the environmental and cultural character of the Sanctuary	Long-Term

Strategy 12: Provide opportunities for multiple use and compatibility when practical

Use fire breaks for multi-use recreation trails when not needed for resource management	Short-term
Reroute trails, where possible off firebreaks to provide improved public access	Short-term
Include multiple benefits of natural community restoration efforts in education program	Short-Term

Strategy 13: Secure and maintain the Sanctuary to the highest degree possible using EEL staff, EEL Interns, Parks and Recreation staff, contract employees and volunteers

Install perimeter fencing and or signs clearly marking the site's boundary	Complete
Contract with outside contractors or with Brevard County, Parks and Recreation for maintenance of parking areas, fire breaks, trails, boardwalks, bridges, benches etc.	On-Going
Coordinate daily maintenance tasks using staff and volunteers	On-going

VIII. FINANCIAL CONSIDERATIONS

The Brevard County EEL Program receives land acquisition and management revenues from ad valorem revenues collected pursuant to the 1990 and 2004 voter-approved EEL Referendums. The EEL Program allocates bond funds to capital land acquisition and one-time capital expenditures. Ad valorem revenues collected during each fiscal year that are not required for bond debt services can be used for any legal purpose within the EEL Program pursuant to §200.181 and §125.013 of the Florida Statutes. The EEL Program will collect ad valorem revenues from the 1990 referendum until the Year 2011 and from the 2004 referendum until 2024, the sunset dates of the ad valorem collections, respectively.

Based on financial projections, the EEL Program shall annually appropriate a portion of the EEL Program ad valorem millage not required for bond debt services to fund annual EEL Program capital and non-capital expenditures. Specific appropriations for the IMSS property will be made each fiscal year as part of this overall annual budget process. The EEL Program budget will be reviewed and adopted annually as part of the Brevard County budget process and as authorized by the Board of County Commissioners. After 2024, the Board of County Commissioners will consider other funding options and financial resources to address the long-term management responsibilities of the EEL Program.

A Land Manager has been hired to oversee maintenance, security and resource management for the IMSS and other properties within the North Region Management Area. An Assistant Land Manager and two Land Management Technicians will assist the Land Manager with maintenance, security, and resource management for all properties in the north region. A Naturalist will design and develop interpretive signage based on the Sanctuaries natural resources, historical and archeological resources. The Fire Manager will be responsible for all fire related activities during ignition and mop-up of a prescribed fire. The cost estimate for personnel assumes that volunteers will be utilized to assist with maintenance and research. The maintenance and operations cost includes estimates for travel activities, office supplies, repair and maintenance services, printing and training. The cost estimate for resource management includes activities such as research and monitoring contracts, developing and implementing the prescribed burn program, environmental education programs and exotic species removal.

The following is a breakdown of the general costs estimated for annual management operations of IMSS for the 2010-2011 fiscal year:

Staff Salaries/ Benefits* (Staff also responsible for other North Region sites.)

Land Manager (f.t.)	$2,947.74 (incl. benefits)
Fire Manager (f.t.)	$3,200.00 (incl. benefits)
Assistant Land Manager (f.t.)	$2,400.00 (incl. benefits)
Naturalist (f.t.)	$4,911.35 (incl. benefits)
Two Land Management Technicians (f.t.)	$4,982.00 (incl. benefits)
Management Activities	$3,482.63

(Exotic treatment, fire management, trails, environmental education, boundary maintenance, etc.)

Total	**$21,923.72**

In addition to the on-going maintenance and operation costs estimate, EEL Staff had the following capital start-up costs for IMSS, which are outlined below.

Capital Improvement

Completed Projects	
Boundary Fencing and Firebreak Installation (2006)	$44,745.66
Boundary Signs (20 @ $8 each)	$160.00
Mechanical Reduction (July 2009)	$11,585.00
Mechanical Reduction (August 2010)	$9,240.00
Future Projects	
Kiosks and Trail Signs	$1,500.00
Parking Lot	$1,500.00

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X. APPENDICES

Appendix A: Letter of Compliance

Appendix B: Legal Description

Appendix C: FEMA map

Appendix D: Fire Management Plan

Appendix E: Surface Water Quality Classification

Appendix F: Timber Assessment

Appendix G: Preliminary Plant Surveys

Appendix H: Arthropod Plan

Appendix I: Florida Natural Areas Inventory

Appendix J: Florida Master Site File

Appendix K: Management Procedures for Archeological and Historical Sites and Properties on State- Owned or Controlled Lands

Appendix L: Indian Burial Mound Restoration

Appendix M: Indian Burial Mound Controlled Burn

Appendix N: Public Meeting Minutes

Appendix A:
Letter of Compliance

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

INTER-OFFICE MEMORANDUM

TO: Michael Wielenga
North Region Assistant Land Manager
Environmentally Endangered Lands Program

FROM: Robin M. Sobrino, AICP
Director, Planning & Zoning Office

DATE: March 25, 2009

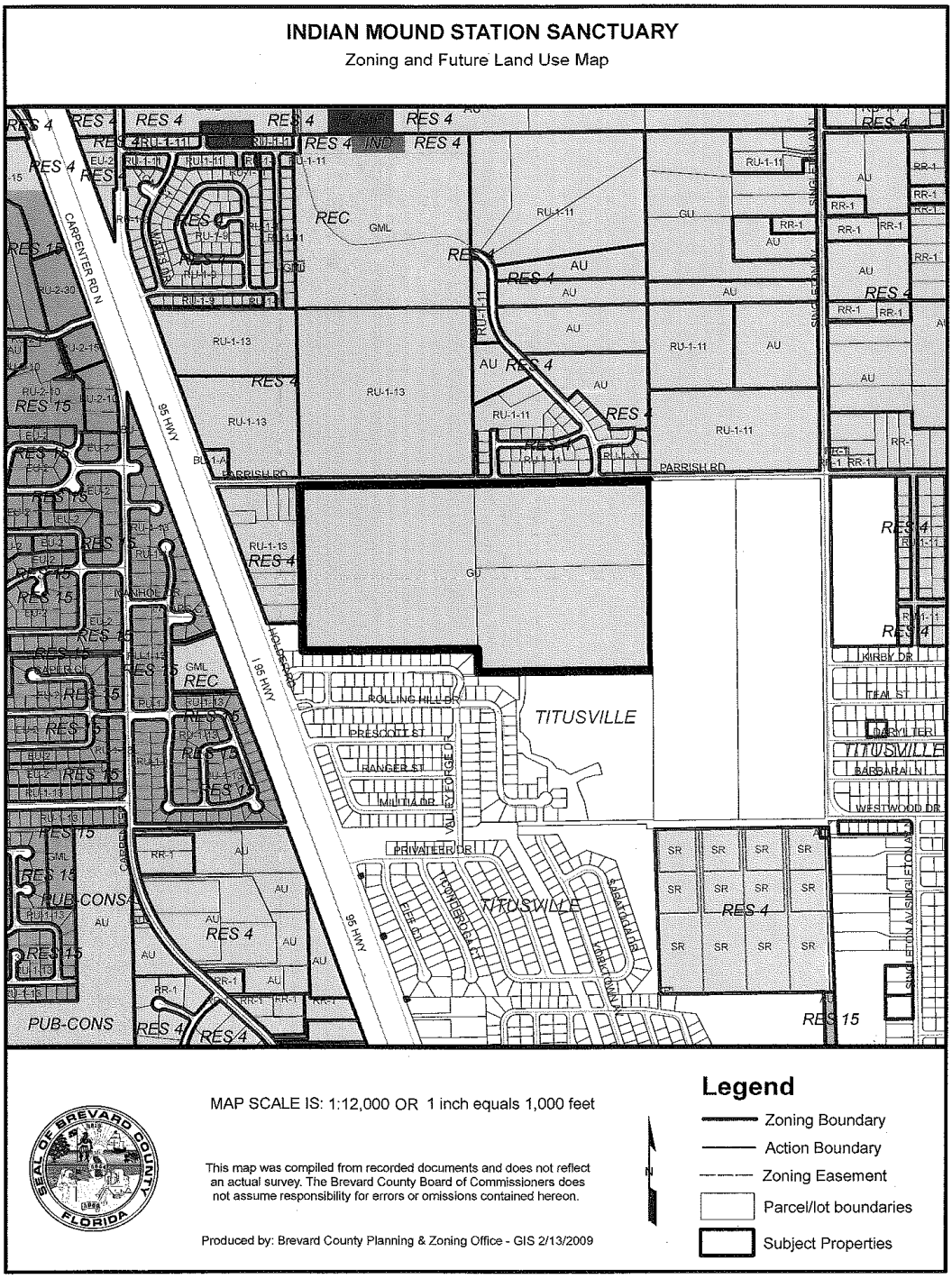
SUBJECT: Indian Mound Station Sanctuary

The subject property (see attached legal description) is situated within the unincorporated area of Brevard County. The Future Land Use Map designates the property as Residential 4 (residential use of up to 4 units per acre). The property is zoned GU (General Use).

Per Section 62-1255 of the Zoning Regulations (*Establishment of Zoning Classifications and consistency with the Comprehensive Plan*), GU zoning is consistent with the Residential 4 land use designation. Section 62-1331 of the Zoning Regulations governing the GU zoning classification states that parks and public recreational facilities are permitted uses.

If you have any questions, please do not hesitate to contact me.

attachment


INDIAN MOUNDSTATION SANCTUARY
Zoning and Future Land Use Map
CARPENTER RD N
95 HWY
195 HWY
HOLDEN CORP
PARRISH RD
ROLLING HILL DR
PRESCOTT ST
RANGER ST
MILITIA DR
VALLEY FORGE CT
PRIVATEER DR
FLEET CT
TICONDEROGA CT
SARATOGA DR
CONSTITUTION AVE
KIRBY DR
TEAL ST
BARBARA LN
WESTWOOD DR
TITUSVILLE
RES 4
RES 15
REC
GML
IND
PUB-CONS
GU
AU
RR-1
RU-1-11
RU-1-13
SR
MAP SCALE IS: 1:12,000 OR 1 inch equals 1,000 feet
This map was compiled from recorded documents and does not reflect an actual survey. The Brevard County Board of Commissioners does not assume responsibility for errors or omissions contained hereon.
Produced by: Brevard County Planning & Zoning Office - GIS 2/13/2009
SEAL OF BREVARD COUNTY FLORIDA
Legend
Zoning Boundary
Action Boundary
Zoning Easement
Parcel/lot boundaries
Subject Properties

Appendix B:
Legal Description

LEGAL DESCRIPTION: (PARCEL "A")

THE SOUTH 1/2 OF THE NW 1/4 OF THE SE 1/4 AND THE N 1/2 OF THE SW 1/4 OF THE SE 1/4, LESS AND EXCEPT THE SOUTH 487 FEET OF SECTION 19, TOWNSHIP 21 SOUTH, RANGE 35 EAST, BREVARD COUNTY, FLORIDA.

AND

THE NORTH 1/2 OF THE NW 1/4 OF THE SE 1/4 OF SECTION 19, TOWNSHIP 21 SOUTH, RANGE 35 EAST, BREVARD COUNTY, FLORIDA.

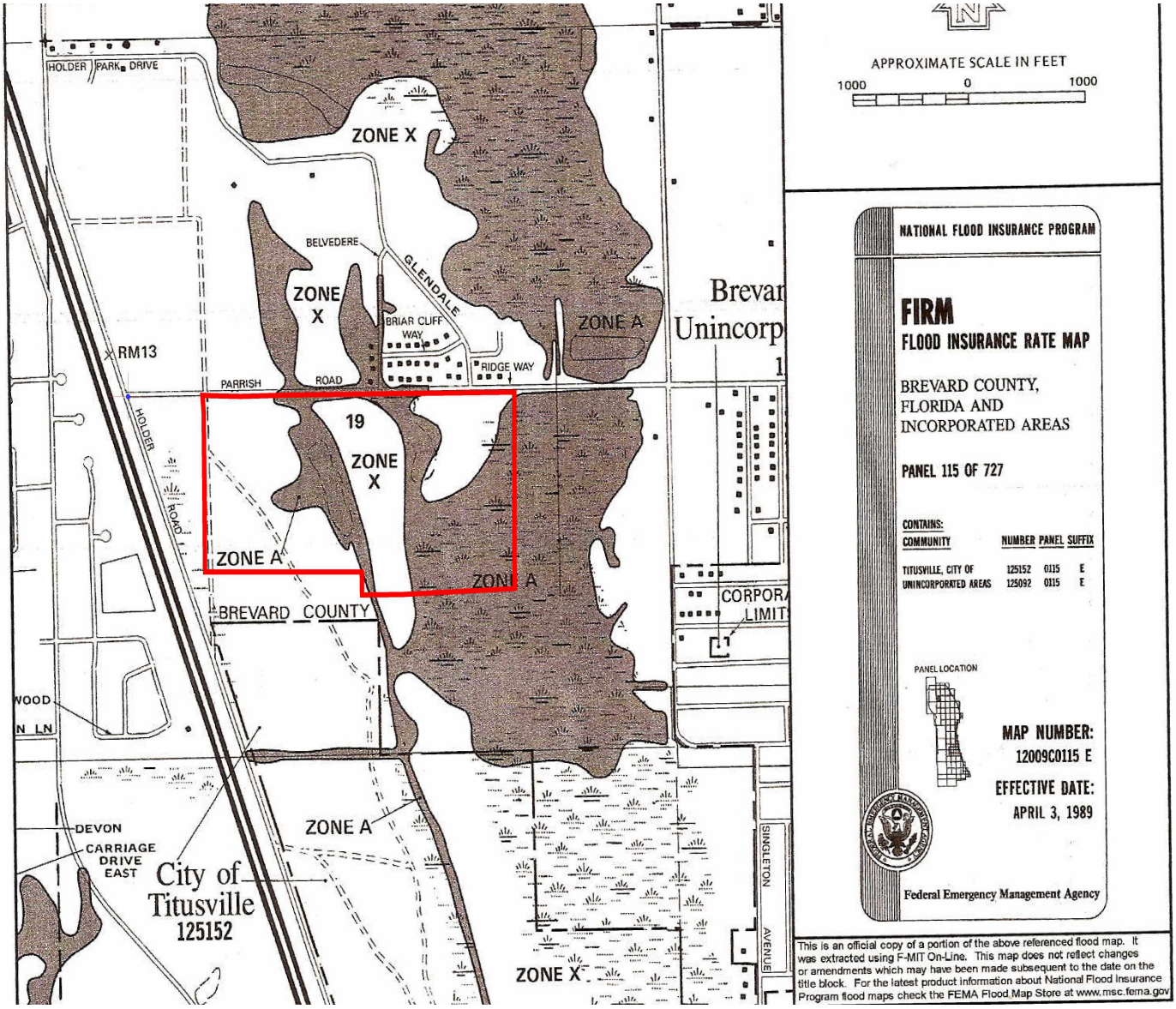
AND

THE NE 1/4 OF THE SW 1/4 OF SECTION 19, TOWNSHIP 21 SOUTH, RANGE 35 EAST, BREVARD COUNTY, FLORIDA.

ALL OF THE ABOVE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A PARCEL OF LAND BEING A PORTION OF THE SOUTH ONE-HALF OF SECTION 19, TOWNSHIP 21 SOUTH, RANGE 35 EAST, BREVARD COUNTY, FLORIDA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCE AT THE SOUTHEAST CORNER OF THE NORTHEAST ONE-QUARTER OF SECTION 19, TOWNSHIP 21 SOUTH, RANGE 35 EAST; THENCE S 89°33'06" W, ALONG THE NORTH LINE OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 19, A DISTANCE OF 1334.71 FEET; THENCE S 00°54'01" E, A DISTANCE OF 33.00 FEET TO THE SOUTH RIGHT OF WAY LINE OF PARRISH ROAD AS PRESENTLY OCCUPIED AND THE POINT OF BEGINNING OF THE HERIN DESCRIBED PARCEL; THENCE S 00°54'01" E, ALONG THE EAST LINE OF THE NORTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER AND THE EAST LINE OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 19, A DISTANCE OF 1474.02 FEET TO THE NORTH LINE OF THE OAKS AT MEADOW WOODS, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 53, PAGES 26-28, PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA; THENCE S 89°33'17" W ALONG SAID NORTH LINE OF THE OAKS AT MEADOW WOODS FOR THE NEXT THREE COURSES; THENCE S 89°33'17" W, A DISTANCE OF 1330.52 FEET; THENCE N 01°03'20" W 177.64 FEET; THENCE S 89°33'48" W 1335.56 FEET TO THE WEST LINE OF THE NORTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER; THENCE N 00°58'20" W ALONG SAID WEST LINE 1296.03 FEET TO THE SOUTH RIGHT OF WAY OF PARRISH ROAD (A 66 FOOT WIDE PUBLIC RIGHT OF WAY); THENCE N 89°33'06" E, ALONG THE SOUTH RIGHT OF WAY OF SAID PARRISH ROAD, A DISTANCE OF 2668.18 FEET TO THE POINT OF BEGINNING. CONTAINING 84.80 ACRES MORE OR LESS.

Appendix C:
FEMA map



Appendix D
Fire Management Plan

Indian Mound Station Sanctuary Fire Management Plan

As part of the EEL Sanctuary Management Plan, the Indian Mound Station Sanctuary (IMSS) Fire Management Plan outlines natural communities within the Sanctuary that respond favorably to the application of fire. The EEL Program is tasked with protecting the rich biological diversity of the IMSS by actively managing acquired land. It is widely recognized that prescribed fire, applied in established frequencies typical of each ecosystem, is an important land management tool to promote biodiversity and reintroduce fire to dependant ecosystems. Prescribed fire also has the added benefit of lowering and maintaining fuel loads, thus mitigating the behavior and effects of wildfires that start in or outside of the Sanctuary.

Utilizing prescribed fire within the IMSS will benefit ecosystems, individual plants and animals that have evolved under the influences of this natural process in Florida. The EEL Program's prescribed fire goals include:

- Restore or preserve fire-adapted communities with the reintroduction of fire
- Maximize biological diversity by the creation and maintenance of a vegetation mosaic
- Manage Threatened and Endangered species
- Provide educational opportunities
- Reduce fire hazards by managing fuels and fire
- Conduct safe prescribed fires while minimizing impacts to adjacent communities
- Actively encourage cooperation between all parties with a vested interest in prescribed fire

The EEL Program Fire Management Manual is a separate document which addresses in detail the overall fire objectives of the EEL Program and contains information necessary to perform prescribed fires. It outlines fire's effects on natural communities including Threatened and Endangered species found within the Sanctuary network and describes equipment used to perform prescribed fires. This document is a site-specific Fire Management Plan bridging the EEL Program Fire Management Manual and the Unit-specific Burn Prescriptions. This site-specific plan includes:

- Sanctuary Fire Management Goals
- Burn Unit Descriptions, Fire Regime
- Fire History and Map
- Species of Special Concern
- Archaeological, Cultural and Historic Resources
- Fire Sensitive Areas
- Smoke Management Issues
- Public Notification

- Wildfire Policy
- Cooperation with Other Agencies
- Fireline Maintenance
- Fire Effects Monitoring and Photo point Location

The IMSS is broken up into burn units that will allow the EEL Program to safely conduct prescribed fires and to allow for the natural heterogeneity inherent in more natural fires to be created. The units were chosen based on existing roads/trails and natural fire barriers, with careful consideration of fuel loads and smoke management issues related to the close proximity of roads, major highways, and residential areas.

IMSS Fire-Dependent Ecosystems

The mosaic of wetland and upland communities within the IMSS reflects a combination of differences in soil type, historical fire effects, and anthropogenic influences. The EEL Program will strive to preserve this mosaic by placing the fire-dependent upland communities on specific fire-return intervals, while protecting sensitive wetlands during times of drought. In general, vegetation in scrub and flatwoods communities has increased in density given the reduced frequency of fire in the Sanctuary. Sand pines invade the scrub and flatwoods ecosystems in the absence of fire, increasing the potential for a wildfire to be of high intensity when it occurs.

Establishment of a prescribed fire regime requires careful planning because of the wildland-urban interface at IMSS. Smoke management and public safety issues must be adequately addressed in order to safely burn. Consequently, IMSS burn units will be of relatively small acreage and will be burned in a series of compartments in order to efficiently control the prescribed fire and manage smoke. Mechanical fuel reduction efforts will initially prepare the site for controlled burning and mitigate the threat of spreading from the Sanctuary into the neighboring subdivision. Natural barriers, existing trails, newly installed perimeter fire lines and the addition of a few fire lines should be adequate to accomplish the fire management objectives. Prescribed wind direction and atmospheric dispersion will be closely evaluated for each burn unit, with the post-burn forecast requiring a nighttime dispersion adequate to mitigate any residual smoke.

Intense wildfires occurring in North Brevard County and throughout east central Florida in June and July 1998 emphasizes the ongoing need to manage for wildfire in pyrogenic communities. The wildfire burned 38,000 acres and destroyed 36 homes and businesses before firefighting efforts and the return of a normal summer rainfall pattern reduced the threat. The EEL program should continue to maintain firebreaks and mitigate wildland fuels to provide an adequate buffer between the vegetation and adjacent homes.

Oak-Saw Palmetto Scrub

The 32.5 +/- acres of oak-saw palmetto scrub that exists on the peninsular coastal sand ridge is found in IMSS on the relic dune system associated with the most recent Pleistocene shoreline. Soils consist of very well drained, deep, white sands that occur on

sand ridges along former shorelines. The soils are nutrient-poor and relatively infertile, yet oak scrub has developed adaptations to the stressful environment. This scrub community, encompassing the bulk of the fire-maintained vegetation of the sanctuary, is characterized by an open to closed canopy of sand pines and longleaf pine with areas of scrub oak, shrubs, and saw palmetto. However, observations in this vegetative-type community indicate that sand pines and some hardwood species may eventually dominate upland habitats when fire is suppressed, especially on isolated, narrow sand ridges. There is evidence that a wild fire occurred within a small portion of the Sanctuary's scrub vegetation at least 10 years ago, but based on observations of the thick duff layer and lack of burn scars, large scale fire has not occurred in the past 25 years. This has led to a substantial accumulation of biofuel, increasing the risk of an intense wildfire. Burn units should be placed on an adequate fire return interval in an effort to maintain a more open scrub structure.

The scrub ridge at IMSS is a pyrogenic ecosystem maintained by high intensity fire, which naturally occurs after a fire-free period to provide fuel accumulation. Sand pines are killed outright by fire, with regeneration and aggressive recruitment occurring following fire-induced seed release from closed cones. Scrub oak and most shrubs will simply resprout following fire, while a few species, notably rosemary, regenerate from seeds stored in the soil.

In times of normal rainfall, the floodplain marsh and floodplain swamp ecosystems inside the Sanctuary resist carrying fire and provide additional natural firebreaks. Under ideal conditions, fire will burn naturally into the edges of these areas where canopy shading and moist ground cover would abolish the fire. This would establish a well-defined natural ecotone between habitats. Hydrological alteration coupled with fire suppression resulted in hardwood encroachment within the Sanctuary's wetland communities.

Oak-saw palmetto scrub natural fire regime is not precisely established, but is believed to be less than the sand pine scrub (20-40 or more) and more than sandhill (2-5 years) (Schmalzer and Hinkle, 1992). Optimally, Scrub-Jay oak scrub habitat should be burned on an interval of 5-10 years. This frequent burning provides the short shrubs and the open spaces Scrub-Jays need to survive. Schmalzer and Adrian (2001), and Schmalzer et al. (2003), indicated that long-unburned sites grow rapidly after the first fire and/or mechanical treatment, thus the fire return interval is shorter than under natural conditions.

Animals that utilize scrub and scrubby pine flatwoods ecosystems include the Florida Scrub-Jay, gopher tortoise and the Eastern indigo snake. Maintaining these areas at the IMSS with prescribed fire will encourage a healthy habitat for expanding the gopher tortoise population and encourage recruitment and reestablishment of Scrub-Jays in areas with a historic occurrence. The Florida Scrub-Jay is ranked as Threatened by the US Fish and Wildlife Service and by the Florida Fish and Wildlife Conservation Commission. In June of 2006, the Florida Fish and Wildlife Conservation Commission modified the status of the gopher tortoise from Species of Special Concern to Threatened. This change took effect in 2007.

Scrubby Flatwoods

The 22 +/- acres of scrubby flatwoods found on the western and central portions of the Indian Mound Station Scrub Sanctuary is essentially a mix of pine flatwoods and scrub communities. The Sanctuary's scrubby flatwoods represents an ecotone between flatwoods and scrub habitats and contains the second highest acreage of fire-maintained vegetation. Since the ecotone covers large areas in parts of Florida, it is recognized as a separate association. The pine canopy is open with scattered pines and a shrub understory ranging from sparse to thick. Scrubby flatwoods occur on flat, well drained terrain that normally does not flood or hold standing water for very long following significant rain events. Soils consist of several feet of sand that tends to have open patches of bare soil. The upper meter or so of soil is well drained and the water table, although not as deep as in the sandhills or scrub, is rarely near the surface.

The scrubby flatwoods is a pyrogenic ecosystem maintained naturally by moderate intensity fire, with a more frequent return interval than scrub given the near continuous nature of fuels. Fire frequently passed through scrubby flatwoods every 5-15 years in a spotty manner, leaving a mosaic of lightly burned, intensely burned, and unburned areas, though strong winds during drought conditions appreciably increase burn coverage and intensity. A moderate-intensity fire occurring during normal rainfall conditions on a return interval of 5-8 years will insure a burn mosaic mimicking naturally occurring fire, though even hot fires do little to alter the vegetation pattern because scrub oaks and most shrubs simply resprout following the fire, rapidly restoring the community to its preburn composition. Fire exclusion in this association results in the subsequent invasion of sand pine and various scrub shrubs.

Hydric Flatwoods

The 5.5 +/- acres of wet flatwoods found in the center of the IMSS are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either thick shrubby understory and sparse ground cover, or a sparse understory and a dense ground cover of hydrophytic herbs and shrubs. Several variations exist between these extremes. Wet flatwoods occur on relatively flat, poorly drained terrain. During the rainy season water frequently stands on the surface, inundating the hydric flatwoods for one or more months per year. During the drier seasons, ground water is less accessible for many plants whose roots fail to penetrate the hardpan. Thus, many plants are under the stress of water saturation during the wet season, and under the stress of dehydration during the dry seasons.

Fire is another important physical factor in wet flatwoods. Natural fires probably occurred every 2 to 4 years during pre-Columbian times. Nearly all plants and animals inhabiting this community are adapted to periodic fires, and several species depend on fires for their continued existence. Without frequent fires, wet flatwoods succeed into hardwood dominated forests whose closed canopy would essentially eliminate the ground cover herbs and shrubs. In fact, much of the variation in community structure is probably associated with fire frequency. While this community type is not as common as the scrubby and mesic flatwoods sites in the Sanctuary and portions of it have been drained

and fire suppressed in the past, some of the areas within this community have naturally regenerated as previous drainage alterations followed. It is important that management efforts strive to restore the wet flatwoods to a more natural hydrology and fire regime in the future.

Floodplain Swamp

Floodplain swamp incorporates roughly 23 +/- acres of the IMSS and is found in two locations on the eastern half of the Sanctuary. One small 2 +/- acre pocket is adjacent to Parrish Road on the north boundary and a second larger block extends along most of the east side of the Sanctuary, the entire southeast corner and a large area of the south side near the northeast corner of the residential area. Floodplain swamps occur on flooded soils in low spots and are inundated most of the year. Soils and hydroperiods determine species composition and community structure. These swamps are usually too wet to support fire under normal conditions, with the exception of periods of prolonged drought followed by dry windy weather which could allow a fire's running head to gain enough momentum to carry into and partially through the drought conditioned swamp.

Floodplain Marsh

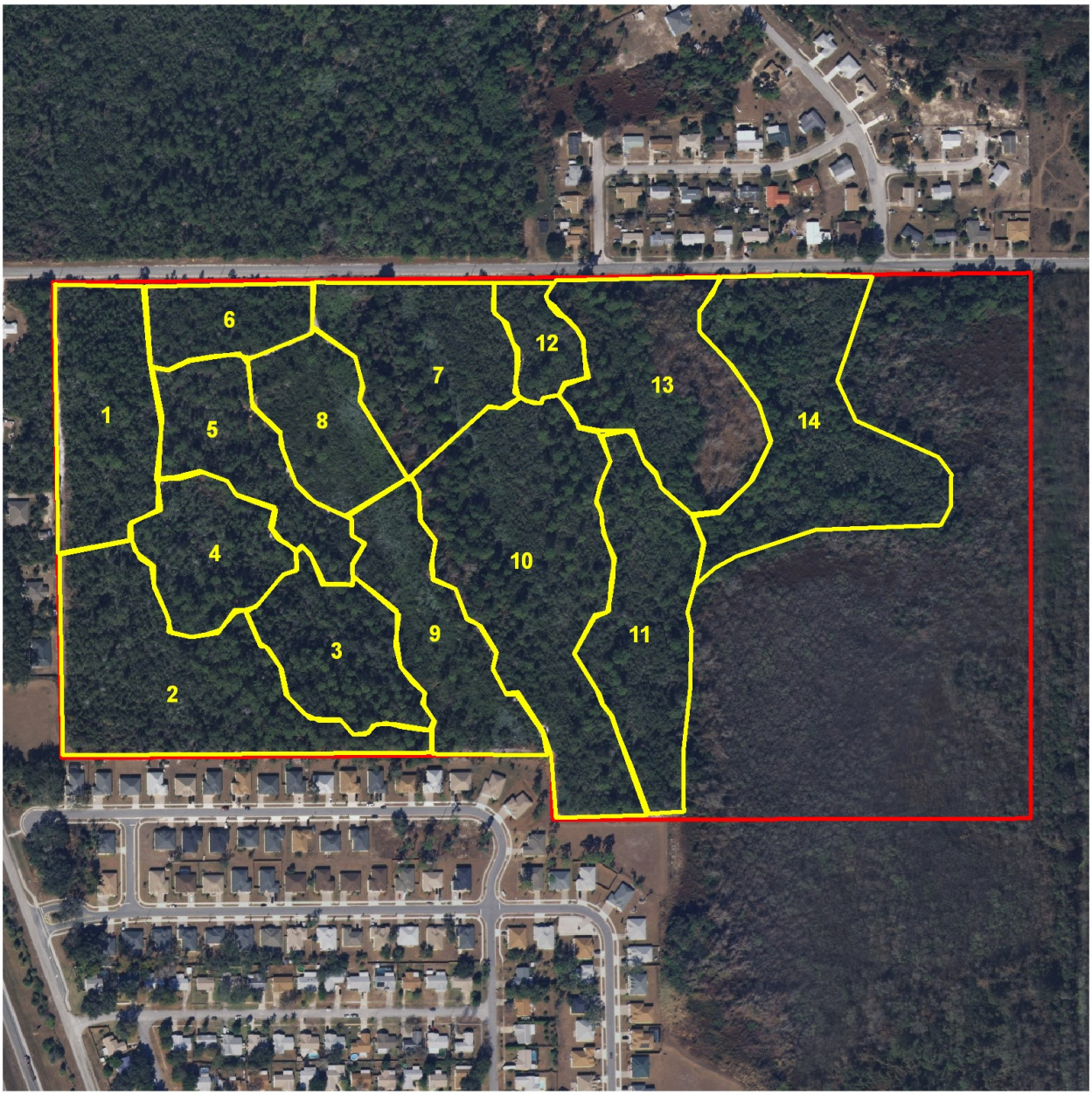
A small 1 +/- acre floodplain marsh is located near the center of the IMSS in association with floodplain swamp. The marsh is partially drained by a small ditch running to the southwest, affecting the hydrology by draining the marsh during wet periods. The ditch is overgrown with wax myrtle and large trees, reducing the impact on the otherwise undisturbed isolated marsh. The rounded marsh is dominated by herbaceous species. Small marshes dry out during periods of low rainfall, and are often maintained by fire during drier periods. As a result, they burn more frequently and completely than larger marshes.

IMSS Scrub Sanctuary Burn Unit Descriptions, Fire Regimes

Figure A shows the location of each fire unit at IMSS

Unit 1, 4.2 acres
In the northwestern section of the IMSS, this scrub ecosystem is an irregular-shaped rectangle oriented north to south with Parrish Road anchoring the northern boundary and several private residences bordering portions of the west boundary, with Unit 2 adjacent to the south. The vegetation in the unit consists mostly of overgrown sand pine scrub with some hardwood and exotic plant encroachment from the absence of fire. A 15-foot wide strip of vegetation along the perimeter of the unit adjacent to the private residences and Parrish Road was cleared in the spring of 2007 to provide an adequate fire break to help reduce the risk of wildfire and to facilitate safely applying prescribed fire to the unit in the future. Vegetation within the unit underwent reduction, preparing it for prescribed burning to re-establish a natural fire regime. Existing internal trails and the perimeter firelines were widened and disked just prior to burning in February 2010 using a high-intensity backing/flanking fire to mimic naturally occurring catastrophic or stand-replacing fires facilitated by the severe burning conditions often found when scrub burns.

Figure A: Indian Mound Station Sanctuary Fire Units



0 250 500 1,000 Feet

Map updated on 10/14/2010 for
Indian Mound Station Sanctuary Management Plan .

Legend

Sanctuary Boundary

Fire Units

N
W E
S

Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

Source: Florida Aerail Photography Archive Collection

Unit 2, 6.8 acres
The southwestern section of the Sanctuary consists of a combination of scrub and scrubby flatwoods. Located south of Unit 1, burn Unit 2 is an irregular shaped triangle oriented in a northwest to southeast fashion with a portion of the northern boundary shared with Units 1 and 4, the eastern boundary shared with Unit 3, and the southern and western boundaries bordered by a residential development. Vegetation in the western 2/3^{rds} of the unit consists of a several varieties of pine scattered throughout, with an understory of overgrown scrub and significant hardwood encroachment in places. The remaining eastern 1/3 of the unit is scrubby flatwoods. The desired fire return interval in this unit is 4-7 years. The vegetation was mechanically reduced to prepare the heavy fuel load for safely carrying fire, and then burned in March 2010.

Unit 3, 3.3 acres
This unit is an irregularly shaped pentagon located on the south-central part of the Sanctuary, just east of and sharing a boundary with Unit 2, with a residential subdivision on the south side, and Units 4, 5, and 9 on the north and east sides. Vegetation is predominantly scrubby flatwoods and consists of scattered to thick pine with an overhead scrub understory. The vegetation was mechanically reduced to prepare the heavy fuel load for safely carrying fire, and then burned in March 2010.

Unit 4, 3.0 acres
This unit, located in the west-central portion of the Sanctuary, is an irregular shaped square surrounded by Units 1, 2, 3, and 5. Unit 4 is scrubby flatwoods by the drainage canal. The vegetation in the unit is mostly scrubby flatwoods, with an overgrown structure similar to adjacent Unit 3. Vegetation within the unit underwent reduction and was burned in February 2010 using a high-intensity backing/flanking fire to mimic naturally occurring catastrophic or stand-replacing fires facilitated by the severe burning conditions often found when scrub burns.

Unit 5, 3.3 acres
Also located in the west-central part of the Sanctuary just north of Unit 4, this elongated unit bordered by existing trails is oriented in a northwest-southeast fashion and is a “finger” of scrubby flatwoods surrounded by six other scrub units. Vegetation within the unit underwent reduction and was burned in February 2010 using a high-intensity backing/flanking fire to mimic naturally occurring catastrophic or stand-replacing fires facilitated by the severe burning conditions often found when scrub burns.

Unit 6, 2.0 acres
Located in the north section of the Sanctuary, this scrub ecosystem is an irregular-shaped hexagon lying just west of the access gate, with Parrish Road anchoring the northern boundary and Units 1, 5, 7, and 8 bordering the remaining sides. The vegetation in the unit consists mostly of overgrown scrub with some hardwood encroachment from the absence of fire. A 15-foot wide strip of vegetation along the perimeter of the unit adjacent to Parrish Road was cleared in the spring of 2007 to provide an adequate fire break to help reduce the risk of wildfire and to facilitate safely applying prescribed fire to the unit. Existing internal trails and the perimeter firelines were widened and disked just prior to

burning in February 2010 using a high-intensity backing/flanking fire to mimic naturally occurring catastrophic or stand-replacing fires facilitated by the severe burning conditions often found when scrub burns.

Unit 7, 4.4 acres
Located in the north-central section of the Sanctuary to the east of the access gate and Unit 6, vegetation in this unit is comprised equally of scrub (west side) and hydric flatwoods (east side). The un-even sided box-shaped unit is located just west of the access gate, with Parrish Road anchoring the northern boundary and Units 6, 8, 10 and 13 bordering the remaining sides. Unit 7 has a fairly well-defined transition line (visible on aerial photos and topographic maps) running northwest to southeast down the middle of the unit between the scrub ridge and hydric flatwoods natural communities. A 15-foot wide strip of vegetation along the perimeter of the unit adjacent to Parrish Road was cleared in the spring of 2007 to provide an adequate fire break to help reduce the risk of wildfire and to facilitate safely applying prescribed fire to the unit. The vegetation was mechanically reduced to prepare the heavy fuel load for safely carrying fire, and then burned in September 2010.

Unit 8, 2.9 acres
Also located in the north-central part of the Sanctuary between Units 5 and 7, this elongated rectangular-shaped unit bordered by existing trails on three sides is oriented in a northwest-southeast fashion and is primarily overgrown oak-saw palmetto scrub with some scrubby flatwoods on the west side. Units 6 and 9 border the northwest and southeast sides of the unit.

Unit 9, 3.8 acres
Located in the south-central part of the Sanctuary between Units 3 and 10, this elongated rectangular-shaped unit, bordered by existing trails on two sides and a subdivision on the south line, is oriented in a northwest-southeast fashion and is primarily overgrown oak-saw palmetto scrub with some scrubby flatwoods fringing the west side. Unit 8 borders the northwest side of the unit. While the existing internal trails will be adequate fire breaks when widened or disked just prior to burning, the new fire line separating Units 7 and 10 will need to be extended southwest to Unit 5 to divide Units 8 and 9 into two nearly equal-sized compartments to facilitate fire control and smoke management. The vegetation in the entire unit was mechanically reduced to lower fuel height to manageable levels for fireline operations. This unit should be burned following downwind Units 10 and 11, though under normal moisture conditions the hydric flatwoods in Unit 10 along the east side of Unit 9 will inhibit or slow fire.

Unit 10, 8.8 acres
Located in the central part of the Sanctuary and bordered by six other units, Unit 10 is one of the largest units, consisting equally of three natural communities. The unit's irregularly shaped triangle consists of hydric flatwoods on the western 1/3rd, a saw palmetto scrub finger running north to south down the middle 1/3rd, and scrubby flatwoods on the eastern 1/3rd. While the existing internal trails on the majority of the east and west sides will be adequate fire breaks when widened or disked just prior to burning,

a new fireline will need to be installed in the south tip of the unit providing a shared line with the much smaller burn Unit 11, just above the south boundary's exterior fire line. Portions of Unit 10 were mechanically reduced to safely facilitate prescribed fire.

Unit 11, 4.8 acres

Located on the east side of the Sanctuary's burnable acreage, Unit 12 is bordered on the south side by a short section of the easternmost extension of the south boundary's exterior fireline (shared with an open/common area on the northeast corner of the residential subdivision), on the east by the floodplain swamp, and on the west and north sides by Units 10, 11, 14 and 15. Vegetation in the unit, elongated north to south, consists of scrubby flatwoods and oak-saw palmetto scrub running down the center of the entire length of the unit, flanked on both the east and west sides by thin strips of scrubby flatwoods. While the existing trails on the entire west side, shared with Units 10 and 11, and a portion of the north side's fireline shared with Unit 14 will provide adequate fire breaks when widened or disked just prior to burning, and a new fireline was installed extending from the dead-end trail on the north side southeastward into the floodplain swamp. The vegetation was mechanically reduced to prepare the heavy fuel load for safely carrying fire, and a plow line was installed along a portion of the east side to allow the northern half of the unit to be burned under drought conditions in September 2010. Given the location of the unit on the east side of the Sanctuary and the downwind adjacent swamp providing a good natural firebreak under normal moisture conditions, in the future the unit may be safely burned with a lesser amount of mechanical reduction, primarily on the extreme south end of the unit, and the floodplain swamp portion of the southern half of the unit will not need a plow line if moisture conditions in the swamp are adequate to stop fire. A prescribed wind direction of due west will encourage head fire to run across the unit into the swamp, mimicking naturally occurring fire and softening the transition between ecotones.

Unit 12, 1.2 acres

Located in the north-central section of the Sanctuary to the east of Unit 7, vegetation in this unit is comprised of scrubby flatwoods with some hardwood encroachment. The un-even sided nearly square-shaped unit is located across the road from a residential area to the north, with Parrish Road anchoring the northern boundary and Units 7, 10 and 14 bordering the remaining sides. Existing trails on the west, south and portions of the east sides were widened and disked just prior to burning. The vegetation was mechanically reduced to prepare the heavy fuel load for safely carrying fire and a plow line was installed to allow the unit to be burned under drought conditions in September 2010. In the future, the floodplain swamp portion of downwind Unit 14 will not need to be burned in advance of this unit if moisture conditions in the swamp are adequate to stop fire. Given the small size of the unit and a prescribed wind direction of due west, head fire running through the unit into the swamp will mimic naturally occurring fire and soften the transition between ecotones.

Unit 13, 5.5 acres

Located in the northeast section of the Sanctuary between Units 13 and 15, vegetation in this unit is comprised primarily of floodplain swamp with oak-saw palmetto scrub flanking portions of the east and west sides. The un-even sided rectangular-shaped unit is located across the road from a residential area to the north, with Parrish Road anchoring the northern boundary and Units 10, 12, 13 and 15 bordering the remaining sides. Unit 14 has a poorly-defined transition with the surrounding ecotones, and near the southeast corner is Unit 15's one-acre floodplain marsh which is down slope from the swamp. Downwind Unit 15 should be burned in advance of burning other units even if moisture conditions in the floodplain marsh are adequate to stop fire. The backing fire employed to burn Unit 15 should provide a good transition between the Unit 15's scrub and the floodplain marsh of this unit.

Unit 14, 7.0 acres
Located in the northeast section of the Sanctuary's burnable acreage between the floodplain swamp of Unit 14 and the scrub found in Unit 16, vegetation in this unit is comprised roughly equally of oak-saw palmetto scrub in the north half and scrubby flatwoods in the south half. The irregular-shaped unit, one of the larger units in the Sanctuary, is located across the road from a residential area to the north, with the Parrish Road exterior fireline anchoring the northern boundary, the large floodplain swamp along most the south and east sides, and Units 12, 14 and 16 bordering the remaining area. An additional fire access line was installed through the center of Unit 14 to provide vehicular access and an adequate firebreak. Mechanical reduction was completed to facilitate safe burning and smoke management. The unit may be burned on a west or northwest wind direction, effectively running head fire into the swamp and filtering the smoke in the large uninhabited downwind area.

IMSS-Specific Fire Issues

Fire History

There is no documentation of prescribe fire occurring in any of the IMSS Burn Units. Burn scars on some trees in a small area near the center of the Sanctuary indicate that wildfire occurred in a limited area within the past 15 years.

Protected species

The Florida Scrub-Jay and the Eastern indigo snake are not currently documented on the property. All fire management activities within the IMSS will be based upon the recommendations from the EEL Program Fire Manual, enhancing the habitat for the long-term survival of these species on-site.

Archaeological, Cultural and Historic Resources

There is an Indian Mound in the northwestern portion of the Sanctuary. Permission has been granted by the State Archaeologist (Appendix L) to burn the vegetation atop of this

archaeological resource. Fire vehicles and other equipment should avoid driving on the mound to prevent further damage to the area.

Fire Sensitive Areas

There are several small/isolated fire sensitive wetland areas inside the Sanctuary, and fire vehicles should avoid driving on the interior edges due to the potential impact on scattered gopher tortoise burrows. There is an active eagle's nest in a tall pine tree in one of the Sanctuary's burn units. Prescribed fire will be excluded from burning around the tree by the disked break circling the nest site.

Smoke Management Issues

Due to the close proximity of Interstate 95 just to the west, adjacent Parrish Road to the north, and the residential areas to the north and south, most of the IMSS units will be burned with a westerly or southwesterly wind component. Units on the east side of the Sanctuary may be burned with an easterly component under good to excellent dispersion, avoiding potentially impacting the four-lane highway during or post-burn.

Public Notification

In addition to the general list in the EEL Fire Manual, these additional contacts need to be notified as part of the fire planning process:
Brevard County Fire/Rescue (321) 633-2056
Titusville Sheriff's office (321) 264-5201
Florida Power & Light
Subdivision Homeowners Association

Wildfire Policy

The first responders to a wildfire within the IMSS will likely be from Brevard County Fire rescue. They will contact the FDOF and the EEL Program when they are responding to the wildfire. The EEL Program will respond to the wildfire primarily to provide access and local knowledge of the site and will assist with suppression efforts within the standard IC system as EEL equipment and trained staff can safely allow.

Cooperation with Other Agencies

As with other EEL sites, Brevard County Fire/Rescue and the FDOF will be involved in prescribed fire planning and implementation in the IMSS. Other partners may include The Nature Conservancy Fire Strike Team, Merritt Island Nation Wildlife Refuge Fire Operations and the Sebastian River Preserve SRA Fire Team.

Fireline Maintenance

The firebreaks for the IMSS are displayed in the Burn Unit maps included in the Fire Management Plan. All firebreaks should be inspected and maintained throughout the year and mowed, disked or plowed in advance of prescribed fire activity or when needed for the line to hold against wildfire. In readying the IMSS for fire, the perimeter firebreaks/hiking trails will be cleared of vegetation, down to mineral soil, to a minimum width of 30 feet. Mechanical reduction of fuels will also be conducted in the burn units if it is deemed necessary by the EEL Fire Manager or other fire agency personnel.

Fire Effects monitoring and Photo point Location

Photo points will be maintained by the EEL Program staff as a means to monitor both short-term and long-term post-fire effects. These photo points, placed in each distinct community, will monitor vegetative response to fire as well as other management practices. The EEL Fire Manager may photo-document pre and post burn fuels to determine the impact of fire intensity and frequency on vegetation structure and fuel loads.

References:

Schmalzer, P.A. and C. R. Hinkle. 1992. Recovery of Oak-Saw Palmetto Scrub after Fire. Castanea 53:158-173.

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Schmalzer, P.A. T. E. Foster, and F.W. Adrian. 2003. Responses of long-unburned scrub on the Merritt Island/Cape Canaveral barrier island complex to cutting and burning. In: Proceedings of the Second International Wildland Fire Ecology and Fire Management Congress, American Meteorological Society, Published on CDROM and at http://www.ametsoc.org.

Appendix E
Surface Water Quality Classification

Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

February 5, 2009

Michael Wielenga
North Region Assistant Land Manager
Brevard County Environmentally Endangered Lands Program
Parks & Recreation Department
444 Columbia Blvd.
Titusville, FL 32780

RE: Land Use Plan for Indian Mound Station Sanctuary

Dear Mr. Wielenga:

Thank you for your inquiry regarding the surface water quality classifications on and near Indian Mound Station Sanctuary in Brevard County. There are no Outstanding Florida Waters (OFW) located on or immediately adjacent to the site (Rule 62-302.700, Florida Administrative Code (FAC)). Any surface waters on or immediately adjacent to these parcels are classified as Class III waters (Rule 62-302.400(12)(b)5., FAC), which is the statewide default classification.

If you have any questions or need additional information, please feel free to contact me at the letterhead address (mail station 6511), by phone at 850/245-8429, or via E-mail at Eric.Shaw@dep.state.fl.us.

Sincerely,

Eric R. Shaw
Environmental Manager
Standards and Assessments Section

"More Protection, Less Process"
www.dep.state.fl.us

Appendix F
Timber Assessment

BREVARD COUNTY ENVIRONMENTALLY ENDANGERED LANDS PROGRAM PROPERTIES
TIMBER MANAGEMENT ASSESSMENT

Prepared by James Roberts
State Lands Silviculturist
and
John T. Marshall
Region 5, Other Public Lands Forester
Florida Division of Forestry
February 2007

Purpose

This document is intended to fulfill the timber assessment requirements for public lands in the state of Florida as required in section 253.036, Florida Statutes. It is being written for portions of the Brevard County Environmentally Endangered Lands (EEL) Program properties in Brevard County, Florida. The goal of this assessment is to evaluate the potential and feasibility of utilizing silvicultural techniques to help managers with their timber resources being managed for conservation and revenue generating purposes on the Brevard County EEL Program's property.

Forest Resource Background and History

The Brevard County Environmentally Endangered Lands Program was established in 1990 after citizens voted to increase their taxes to help purchase and maintain environmentally sensitive lands within the county. The initial length of this taxing period is for 20 years. Matching funds have been provided by the State of Florida through the Preservation 2000 and Florida Forever Acts for these types of purchases as well. The Brevard EEL Program also partners with other conservation and preservation organizations such as the St. Johns River Water Management District and the North American Wetlands Conservation Act to help with the purchase and management of sensitive lands.

Approximately 18,000 acres of environmentally sensitive lands across the county have been purchased since this time and are being managed under the EEL Program. This assessment will only cover a portion of these lands in the inland portion of the county. The properties included are the Helen and Allan Cruickshank Sanctuary, Malabar Scrub, Jordan Scrub, Micco Scrub, Grant Flatwoods Sanctuaries, Turkey Creek Sanctuary, Pine Island Conservation Area, Enchanted Forest Sanctuary, Dicerandra Scrub Sanctuary, North Buck Lake Scrub Sanctuary, Indian Mound Station Sanctuary, South Lake Conservation Area and Tico Scrub Sanctuary.

The Valkaria Scrub Sanctuary is also included and currently comprises approximately 7394 acres. This area was subdivided and sold as residential type lots. The EEL Program is in the acquisition phase on this property and due to the numerous landowners, the property is not all contiguous at this time. Present and future goals include purchasing as many of the lots as possible to secure this property into one manageable tract. It is difficult to discern the boundaries on the ground since no physical lot boundaries are evident. Only with the use of GIS is it possible to overlay boundary lines with aerial photography and distinguish community types and property boundaries. The management options offered in this assessment may not be feasible at this time on all the property of the sanctuary. When more acquisitions are made and larger, more

manageable blocks are created and defined, these options should prove valuable to the EEL Program resource managers.

Development in this part of the state is steadily increasing. These properties were purchased to protect and preserve environmentally sensitive lands and the plants and animals associated with them. They also provide educational opportunities and recreation.

Past land uses of much of the property in Brevard County has included naval stores operations and cattle grazing. The EEL Program properties have probably included both at some time in the past. Prescribed burning was an important part of both. Forage production and brush control was dependent on frequent fires. Historically, fire has always been part of the Florida ecosystem and many communities are dependant on fire to maintain their diversity. Lightning caused, low intensity fires burned frequently. Small shrubs and many hardwood species were kept from overtaking the pine forest because of frequent fires. Burning techniques have been revised over the years and more growing season burns are attempted as weather permits. If heavy fuel loads are allowed to accumulate, winter or cool season fuel reduction burns should be done first to minimize timber mortality before growing season burns are attempted again.

Management Goals and Objectives

The Brevard County EEL Program lands are acquired in an attempt to help preserve and restore diminishing natural communities. Their mission statement and primary management objective is to protect and preserve the biological diversity on these lands. These tracts are called sanctuaries and provide for conservation of natural resources, education, and recreation.

Ecological Trends

Human disturbances such as drainage, urbanization, and land use changes such as mining and crop production have occurred throughout the state causing the degradation or loss of many natural communities. Frequent fire that helped create and maintain many natural communities in Florida has been altered or removed. This has allowed an increase of both endemic and non-endemic plants to these once fire dependant communities. Timber management can be useful aid in the restoration of these sites by eliminating the overcrowding of naturally occurring trees and removing the species that are not typically found in these community types. By removing this additional fuel load, prescribed fire can be reintroduced safely to mimic the natural fire cycles that once existed. Timber management can also help develop multi-aged structures in stands that help maintain dynamic ecosystems. Opening the overstory will also increase the amount of sunlight reaching the forest floor, aiding in natural groundcover recovery and maintenance.

Timber Resources and Management Options

The majority of the timber resources on the EEL Program property that would benefit from silvicultural treatments exist in the pine flatwoods. Mesic, wet, and scrubby flatwoods all fall into this general category. Slash and longleaf pine are the dominant overstory species that currently exist with an understory of palmetto, gallberry, wiregrass, scrub oaks and other understory grasses and woody plants.

General Timber Management Guidelines

Basal Area (BA) is a common measurement used to identify stand density. The basal area is measured on a tree four and one half feet above the ground, identified as diameter at breast height or DBH, and is expressed in square feet ($ft.^2$). The BA is the total measure of the cross sectional area in square feet of the stems of trees occupying space on one acre of land. Fewer large diameter trees are needed to equal the same BA as many small diameter trees. For example, 509 evenly distributed six inch diameter trees over one acre has a BA of 100 $ft.^2$. Only 127 twelve inch diameter trees, evenly spaced on one acre, are needed to create the same 100 $ft.^2$ of BA.

Basal area can also be correlated to crown coverage. Basal areas around 50 square feet per acre of mature, healthy trees can help prescribed burning efforts by increasing the fuel dispersion and loads with needle cast. This needle cast should allow prescribed fires to carry across areas while still allowing adequate sunlight to reach the forest floor to maintain native grasses.

Current Timber Resources

The Brevard County EEL Program Lands encompass many thousands of acres. Identifying and defining individual stands and treatments for each stand is not the goal of this assessment. Detailed stand descriptions would be necessary to help plan for long term timber management on these sites. While timber management is not the primary goal for these properties, many of the silvicultural recommendations can be implemented along with preservation activities to maintain or restore these areas to their once natural condition.

The following are general descriptions and management recommendations. The diversity of the EEL Programs land and the management objectives for each will be the ultimate guiding principal. Areas with populations of gopher tortoises can sustain higher BA's than those being managed for scrub jays but less than some of the wetter flatwoods sites.

Natural Pine:
All of these areas have been harvested or have burned hot enough to reduce the standing timber to an unmerchantable volume. They all appear to have supported stands of large timber at one time, but the lack of any forestry type management in the past has converted these forest to fire-climax communities composed mainly of saw-palmetto that are fire hazards. The one exception is the North Buck Lake Scrub Sanctuary that has a fair stand of young sand pine. Saw-palmetto responds to fire by resprouting immediately and can return to preburn levels in as little as 1 year. This makes it very hard to regenerate a stand of trees because the seedlings have a hard time getting through the saw palmetto and if they do they stand a good chance burning up because of the volume of fuel produced by the saw-palmetto. If a forest community is desired, burning alone will not restore these communities to their original forested state. Saw-palmetto flourishes **in** full sun light but is also somewhat tolerant of shade**.** A complete overstory of trees creates shade and slows the growth. Shade with prescribe fire seems to keep it in check but some mechanical removal will be required to get the trees established.

Planted Pine:
There are 205 acres of planted pine in the Micco Scrub Sanctuary. It appears to be north Florida slash pine planted in an area that should have been planted in south Florida slash or longleaf. It was an old field, pasture, or had some heavy site preparation before it was planted as there is very little saw palmetto in the understory. The rows of trees were planted with about 8 feet between rows which is very close at today's standards. When the basal area reaches 100 this area should be thinned. This could be done by removing every other row, every third row, or every third row and thinning in between, depending on the desired remaining stand.

In under stocked areas, longleaf pine can be planted if sites are suitable. This species is more adapted to fire and is longer lived than the other southern pines. A "rule of thumb" is that if palmetto is dominant, longleaf can be planted. If gallberry dominates, then it is probably too wet for longleaf and slash pine should be planted.

Access

Adequate access is a necessity for land management activities. Law enforcement patrol, prescribed burning activities and fire suppression are but a few of the activities that benefit from improved road access. Most of the EEL Program's land is adjacent to a paved road of some sort. Internal access to some of the properties is limited by weather. Low areas become very wet and high areas become excessively dry depending on the season. Parts of the road system would need improvements to facilitate movement of

heavy equipment for restoration or maintenance purposes. Widening current roads, installing culverts or low water crossings, or capping soft roads with shell, rock or clay are some of the possibilities for needed upgrades.

Economics

It is difficult to predict with any certainty the amount of revenue that can be derived through timber harvests on the Brevard County Environmentally Endangered Lands. Brevard County is approximately 100 miles to the nearest major wood processing facilities in Palatka, Florida. Market conditions, harvest prescriptions, product mix, logging conditions and distance to manufacturing facilities are factors in stumpage prices. Even though economics are hard to predict, they should be analyzed before making any management decisions.

Summary

There are approximately 10,000 acres in the EEL Program with current or future potential for timber management. Exclusive timber management would not meet the objectives for which this property was purchased, however, silviculture is a valuable tool to help restore and maintain native ecosystems, increase diversity and improve wildlife habitat. It is possible to manage nearly all of the sandhill, mesic flatwood, scrubby flatwood, and ruderal areas in order to retain their natural appearance and produce revenue from timber harvests. Currently a market does exist for timber products in the Brevard County area.

Road access within would need to be improved in some areas to allow for silvicultural activities**.** Public roads and highways to the park need to be monitored for weight restrictions on bridges.

Appendix G:
Preliminary Plant Survey

Adapted from the July 7, 2003 Indian Mound site visit report by Paul. A. Schmalzer, Ph.D.

Family	Genus	Species	Common Name
Anacardiaceae	Rhus	copallinum	Winged sumac
Annonaceae	Asimina	sp.	Paw paw
Annonaceae	Asimina	obovata	Bigflower pawpaw
Aquifoliaceae	Ilex	glabra	Gallberry
Asteraceae	Solidago	sp.	Goldenrod
Asteraceae	Carphephorus	sp.	Chaffhead
Asteraceae	Pterocaulon	pycnostachyum	Blackroot
Asteraceae	Pityopsis	graminifolia	Silkgrass
Bignonaceae	Campsis	radicans	Trumpet creeper
Bromeliaceae	Tillandsia	recurvata	Ball moss
Chrysobalanaceae	Licania	michauxii	Gopher apple
Commelinaceae	Callisia	ornata	Florida scrub roseling
Cyperaceae	Cyperus	retrorsus	Pinebarren flatsedge
Dioscoreaceae	Dioscorea	sp.	Wild yam
Ebenaceae	Diospyros	virginiana	Persimmon
Ericaceae	Lyonia	ferruginea	Rusty lyonia
Ericaceae	Lyonia	lucida	Shiny lyonia
Ericaceae	Vaccinium	stamineum	Deerberry
Ericaceae	Bejaria	racemosa	tarflower
Ericaceae	Vaccinium	myrsinites	Shiny blueberry
Euphorbiaceae	Stillingia	sylvatica	Queensdelight
Fabaceae	Chamaecrista	sp.	Sensitive pea
Fabaceae	Enterolobium	contortisiliquum	Earpod tree
Fabaceae	Clitoria	mariana	Atlantic pigeonwings
Fabaceae	Lupinus	diffusus	Lupine
Fagaceae	Quercus	myrtifolia	Myrtle oak
Fagaceae	Quercus	geminata	Sand live oak
Fagaceae	Quercus	chapmanii	Chapman oak
Fagaceae	Quercus	laurifolia	Laurel oak
Juglandaceae	Carya	floridana	Scrub hickory
Lamiaceae	Callicarpa	americana	Beautyberry
Lauraceae	Persea	borbonia	Red bay
Lauraceae	Cinnamomum	camphora	Camphortree
Moraceae	Broussonetia	papyrifera	Paper mulberry
Myricaceae	Myrica	cerifera	Wax myrtle
Olacaceae	Ximenia	americana	tallowood
Orobanchaceae	Seymeria	pectinata	Piedmont blacksenna
Phytolaccaceae	Phytolacca	americana	American pokeweed
Pinaceae	Pinus	clausa	Sand pine
Pinaceae	Pinus	elliottii	Slash pine
Pinaceae	Pinus	palustris	Longleaf pine
Poaceae	Aristida	stricta	Wiregrass
Smilacaceae	Smilax	auriculata	Greenbriar
Vitaceae	Vitis	rotundifolia	Muscadine grape

Appendix H
Arthropod Plan

CHARLES H. BRONSON
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.
Telephone: (850) 922-7011

For use in documenting an Arthropod control plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein.

Name of Designated Land: Brevard County EELS Program – Sites include the following impoundments: From C-2 North, C-2 South, C-2A, Jefferson Marsh area, Crystal Lakes area, to Honest Johns Area.

Specific sites include:

1. Ocean Ridge Sanctuary
2. Coconut Point
3. Hog Point Cove
4. Washburn Cove
5. Maritime Hammock area
6. Barrier Island Sanctuary
7. Hardwood Hammock
8. 1000 Islands
9. Capron Ridge area
10. Crane Creek
11. Cruickshank
12. Dicerandra Scrub
13. Enchanted Forest
14. Fox Lake
15. Grant Flatwoods
16. Indian Mound
17. Indian River Sanctuary
18. Johnson (Hall Road)
19. Jordan Scrub Sanctuary
20. Kabboord
21. Kings Park
22. Malabar Scrub Sanctuary
23. Micco Scrub Sanctuary
24. North Buck Lake Scrub Sanctuary
25. Pine Island Conservation Area
26. Scottsmoor Flatwoods Sanctuary
27. Southlake Conservation Area
28. Sykes Creek

Is Control Work Necessary: ☒ Yes ☐ No

Location: Brevard County Florida

Land Management Agency: Environmentally Endangered Lands Program
Mike Knight, Program Manager
91 East Drive
Melbourne, FL 32904

Are Arthropod Surveillance Activities Necessary? ☒ Yes ☐ No
If "Yes", please explain:

According to the Florida Administrative Code 5E-13 surveillance shall be conducted to determine the species and numbers of both pestiferous and disease bearing arthropods. Our surveillance program provides information as to species and amounts of mosquitoes which may require larviciding.

DACS-13668 07/08

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08 / 25 / 09
Environmentally Endangered Lands Program

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

☒ Landing Rate Counts	☒ Light Traps	☒ Sentinel Chickens
☒ Citizen Complaints	☒ Larval Dips	☐ Other

If "Other", please explain:

Arthropod Species for Which Control is Proposed: *Aedes taeniorhynchus*
Aedes sollicitans
Culex nigripalpus (ground treatment only)
Culex salinarius

Proposed Larval Control:

Number of dips per site:	3+ per location at specific site.
Proposed larval monitoring procedure:	When 10% or more of the dips are positive for mosquito larvae, control action will typically be taken
Are post treatment counts being obtained:	☒ Yes ☐ No

Biological Control of Larvae:

Might predacious fish be stocked:	☒ Yes ☐ No
Other biological controls that might be used:	

Material to be Used for Larviciding Applications:

(Please Check All That Apply:)

☒ Bti (*Bacillus thuringiensis israeliensis)*
☒ Bs (*Bacillus sphaericus*)
☒ Methoprene
☒ Non-Petroleum Surface Film
☐ Other, please specify:

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Please specify the following for each larvacide:

Chemical or Common name: BTI (=VectoBac)
Bs (= Vectolex)

☒ Ground ☒ Aerial

Rate of application: 12 lb-18lb/acre = VectoBac

Method of application: liquid by hand or granular by air.

Proposed Adult Mosquito Control:

Aerial adulticiding ☒ Yes ☐ No

Ground adulticiding ☒ Yes ☐ No

Please specify the following for each adulticide: N/A

Chemical or common name: Dibrom/ Permethrin

Rate of application: 0.6 oz/acre (Dibrom), 0.5 oz/acre (Permethrin)

Method of application: Ultra low volume

Adult mosquito control will be conducted only if requested, or if populations are above background.

Proposed Modifications for Public Health Emergency Control:
BMCD may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture.

Proposed Notification Procedure for Control Activities: Approval of this plan is intended as notification.

Records:

Are records being kept in accordance with Chapter 388, F.S.:
☒ Yes ☐ No

Records Location: In District office Titusville.

How long are records maintained: 5+ Years

Vegetation Modification: ☒ Yes ☐ No

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?
Minor trail trimming for surveillance and for ground larviciding will be done as needed.
Some herbiciding with AquaStar, Reward or Rodeo for control of *exotic* vegetation will be carried out only as needed.

Proposed Land Modifications: ☐ Yes ☒ No

Is any land modification, *i.e.*, rotary ditching, proposed: ☐ Yes ☒ No

Include proposed operational schedules for water fluctuations: Impoundments managed under RIM program (Rotational Impoundment Management), controlling water levels in impoundments from June-Oct. (sometimes as early as May), depending on water level in Indian River Lagoon system. Impoundments open to the lagoon during other months of year.

List any periodic restrictions, as applicable, for example peak fish spawning times: NA

Proposed Modification of Aquatic Vegetation: ☐ Yes ☒ No

Land Manager Comments:

Arthropod Control Agency Comments:

Signature of Lands Manager or Representative Date

Signature of Mosquito Control Department Director Date 8/12/09

Signature of Mosquito Control District Director Date 8/12/09

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Appendix I:
IMSS Florida Natural Areas Inventory

FLORIDA Natural Areas INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

July 30, 2007

Xavier De Seguin Des Hons
Brevard County
Division of Parks and Recreation
444 Columbia Boulevard
Titusville, FL 32780

Dear Mr. De Seguin Des Hons:

Thank you for your request for information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project:	Indian Mound Station Sanctuary
Date Received:	July 18, 2007
Location:	Township 21 S, Range 35 E, Section 19 Brevard County

Based on the information available, this site appears to be located on or very near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare species within a small area. Additional consideration should be given to avoid and/or mitigate impacts to these natural resources, and to design land uses that are compatible with these resources.

Element Occurrences

A search of our maps and database indicates that currently we have several Element Occurrences mapped within the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The Element Occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, Element Occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed

Florida Resources and Environmental Analysis Center
Institute of Science and Public Affairs
The Florida State University

Tracking Florida's Biodiversity

Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on landcover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the most rare species tracked by the Inventory, including all federally listed species.

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Florida Scrub-jay Survey – U.S. Fish and Wildlife Service

This survey was conducted by staff and associates of the Archbold Biological Station from 1992 to 1996. An attempt was made to record all scrub-jay (*Aphelocoma coerulescens*) groups, although most federal lands were not officially surveyed. Each map point represents one or more groups.

This data layer indicates that there are potential scrub-jay populations on or very near your site. For additional information:

J.W. Fitzpatrick, G.E. Woolfenden and M.T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub-jay (*Aphelocoma coerulescens coerulescens*). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program [Florida Fish and Wildlife Conservation Commission] Technical Report No. 8. Tallahassee, FL. 49 pp.

Managed Areas

Portions of the site appear to be located within the Indian Mound Station Sanctuary, managed by Brevard County.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

Land Acquisition Projects

This site appears to be located within the Brevard Coastal Scrub Ecosystem Florida Forever BOT Project, which is part of the State of Florida's Conservation and Recreation Lands land acquisition program. A description of this project is enclosed. For more information on this Florida Forever Project, contact the Florida Department of Environmental Protection, Division of State Lands.

Florida Forever Board of Trustees (BOT) projects are proposed and acquired through the Florida Department of Environmental Protection, Division of State Lands. The state has no regulatory authority over these lands until they are purchased.

The Inventory always recommends that professionals familiar with Florida's flora and fauna should conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

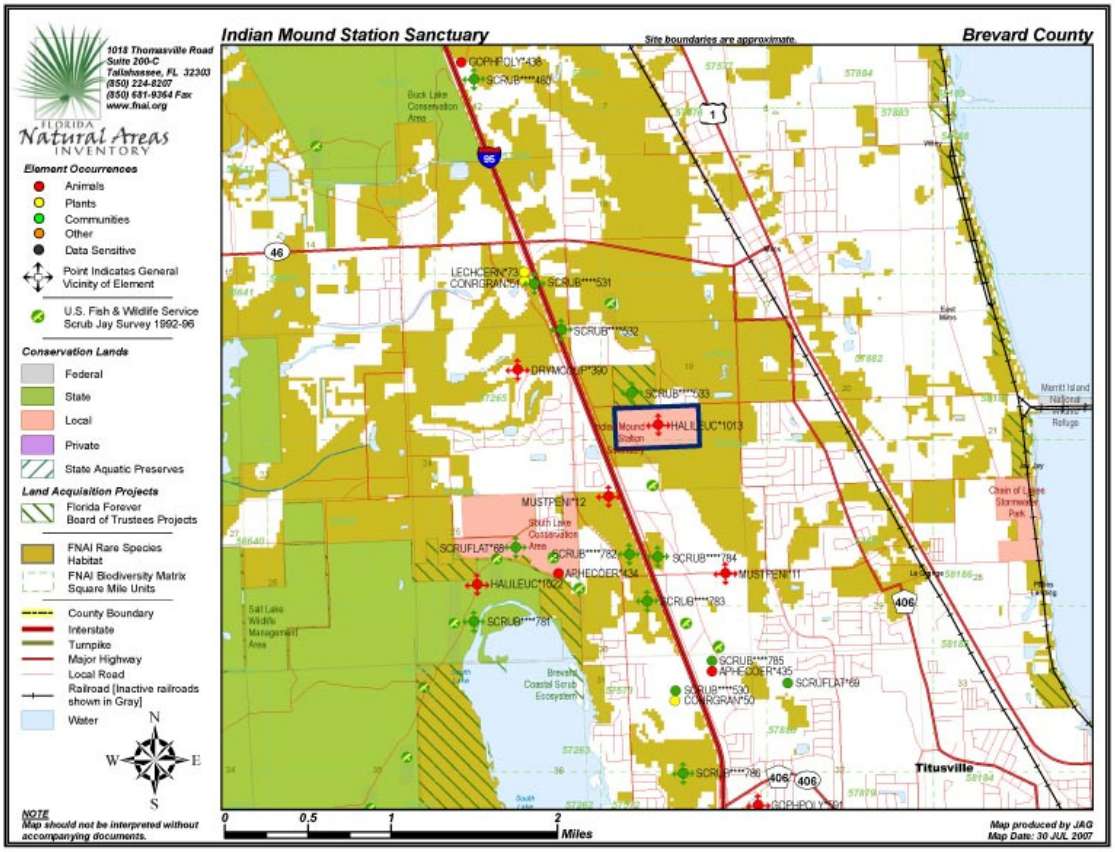
Thank you for your use of FNAI services. If I can be of further assistance, please give me a call at (850) 224-8207.

Sincerely,

Jason A. Griffin

Jason A. Griffin
Data Services Coordinator

encl


Indian Mound Station Sanctuary
Site boundaries are approximate.
Brevard County
1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
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FLORIDA
Natural Areas
INVENTORY
Element Occurrences
Animals
Plants
Communities
Other
Data Sensitive
Point Indicates General Vicinity of Element
U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96
Conservation Lands
Federal
State
Local
Private
State Aquatic Preserves
Land Acquisition Projects
Florida Forever Board of Trustees Projects
FNAI Rare Species Habitat
FNAI Biodiversity Matrix Square Mile Units
County Boundary
Interstate
Turnpike
Major Highway
Local Road
Railroad [Inactive railroads shown in Gray]
Water
N
W
E
S
NOTE
Map should not be interpreted without accompanying documents.
0
0.5
1
2
Miles
Map produced by JAG
Map Date: 30 JUL 2007
Buck Lake Conservation Area
Salt Lake Wildlife Management Area
South Lake Conservation Area
Brevard Coastal Scrub Ecosystem
Merritt Island National Wildlife Refuge
Titusville
GOPHPOLY*436
SCRUB****480
LECHCERN*73
CONRGRAN*51
SCRUB****531
SCRUB****532
DRYMCORI*390
SCRUB****533
HALIEUC*1013
MUSTPEN*12
SCRUFLAT*68
SCRUB****782
SCRUB****784
ARHECOER*434
MUSTPEN*11
HALIEUC*1062
SCRUB****783
SCRUB****781
SCRUB****785
ARHECOER*435
SCRUFLAT*69
SCRUB****530
CONRGRAN*50
SCRUB****780
GOPHPOLY*581
95
1
46
406

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Florida Natural Areas Inventory

ELEMENT OCCURRENCES DOCUMENTED ON OR NEAR
PROJECT SITE

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
DRYMCOUP*390	Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT	1989-07-15	GOLF COURSE, HARDWOOD HAMMOCK.	1 INDIVIDUAL CA. 7 FEET LONG.
MUSTPENI*11	Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N	1972-12-28	No general description given	1972-12-28: J.C. Bryant, observation. Skin. Univ. Central Fla. No. LME-7307.
CONRGRAN*51	Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT	1983-09-01	SAND PINE SCRUB ON PAOLA FINE SAND. SITE OCCUPIES A LOW DUNE LINE. MODERATELY DENSE UNDERSTORY DOMINATED BY OAKS (LIVE, CHAPMAN AND MYRTLE).	ONE LARGE PLANT IN FLOWER (F83STO17).
LECHCERN*73	Lechea cernua	Nodding Pinweed	G3	S3	N	LT	1983-09-01	1983-09-01: SAND PINE SCRUB ON PAOLA FINE SAND. SITE OCCUPIES A LOW DUNE LINE. MODERATELY DENSE UNDERSTORY DOMINATED BY OAKS (LIVE, CHAPMAN AND MYRTLE)(F83STO17FLUS).	LESS THAN 5 INDIVIDUALS IN FLOWER AND FRUITING (F83STO17FLUS).
CONRGRAN*50	Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT	1983-09-01	SAND PINE SCRUB ON PAOLA FINE SAND. DUNE RIDGES PRESENT. UNDERSTORY MADE UP OF OAKS, PALMETTO, VACCINIUM AND XIMENIA.	MORE THAN 50 PLANTS (F83STO16).
SCRUFLAT*69	Scrubby flatwoods		G3	S3	N	N	1991	SCRUBBY FLATWOODS WITH SUBDIVISION TO EAST AND WETLANDS TO WEST.	EO PRESENT ON SITE.
SCRUB****530	Scrub		G2	S2	N	N	1991	SAND PINE SCRUB ON PAOLA FINE SAND. DUNE RIDGES PRESENT. UNDERSTORY MADE UP OF OAKS, PALMETTO, VACCINIUM AND XIMENIA (U88CHR01). THIS SITE IS PART OF A ONCE EXTENSIVE DUNE SYSTEM THAT RUNS NORTH-SOUTH NEAR MIMS. THE SOIL IS CLASSIFIED AS PAOLA FINE SAND	SAND PINES RANGE FROM 40-50 CM D6H SIZE.
SCRUB****785	Scrub		G2	S2	N	N	1991	SAND PINE SCRUB.	EO PRESENT ON SITE.

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Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
GOPHPOLY*438	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	1983-09-01	SAND PINE SCRUB, YELLOW SAND. THIS SITE IS LOCATED ON THE FIRST DUNE LINE THAT I-95 CROSSES AS ONE PROCEEDS NORTH FROM THE INTERSECTION WITH SR 46. THE SOIL IS PAOLA FINE SAND AND APPEARS YELLOW AT THE SURFACE. ALSO, ANTS WERE BRINGING UP YELLOW SAND. TH	No EO data given
APHECOER*435	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1991-08-13	Sand Pine Scrub.	1991-01-04: Six Scrub Jays Reported; 1991-07-20: 3 adults and one juvenile reported; 1991-08-13: 10 adults reported (U91SNC01); Snodgrass et al. estimated this record to constitute a small population of 0-5 family groups during 1991 inventory.
GOPHPOLY*591	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	ZZ	No general description given	2 SPEC. (AMNH 66111-12), COLLECTED BY A.B. KLOTA, DATE N/A.
MUSTPENI*12	Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N	1978	Scrub	1978: A. Love, GFC, observation. Killed by car accident. Car left road and hit animal which was in vegetation near road shoulder.
APHECOER*434	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1991-08-13	Several small (10-15 acre) parcels of Oak Scrub/Sand Pine Scrub and Scrubby Flatwoods.	1991-08-13: Two adults and one juvenile reported (U91SNC01); Snodgrass et al. estimated this record to constitute a medium population of 6-30 family groups during 1991 inventory.
HALILEUC*1013	Haliaeetus leucocephalus	Bald Eagle	G5	S3	LT,PDL	LT	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000, 1999;(U03FWC01FLUS)
HALILEUC*1022	Haliaeetus leucocephalus	Bald Eagle	G5	S3	LT,PDL	LT	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001; Unknown status or not assessed, 2000, 1999;(U03FWC01FLUS)

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PROJECT SITE

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
SCRUB****533	Scrub		G2	S2	N	N	2004	SAND PINE SCRUB ON ST LUCIE FINE SAND. THICK UNDERSTORY DOMINATED BY OAKS (MYRTLE, CHAPMAN AND LIVE). F83STO21 REPORTS SMALL OPENINGS OCCUR IN UNDERSTORY WHERE WIREGRASS AND A VARIETY OF HERBS APPEAR.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1983-09-01) (U05FNA02FLUS). SAND PINE ARE THINLY STOCKED WITH CANOPY COVER AT ABOUT 20%.
SCRUB****786	Scrub		G2	S2	N	N	2004	SAND PINE SCRUB THAT IS COMPLETELY SURROUNDED BY DEVELOPMENT.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991) (U05FNA02FLUS). EO PRESENT ON SITE.
SCRUFLAT*68	Scrubby flatwoods		G3	S3	N	N	2004	Scrubby Flatwoods grading to the south into oak scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991) (U05FNA02FLUS). EO present.
SCRUB****783	Scrub		G2	S2	N	N	2004	Sand Pine Scrub/Oak Scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991) (U05FNA02FLUS). Ca. 90% Sand Pine Scrub and 10% Oak Scrub.
SCRUB****784	Scrub		G2	S2	N	N	2004	Sand Pine Scrub/Oak Scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991) (U05FNA02FLUS). Ca. 80% Sand Pine Scrub and 20% Oak Scrub.
SCRUB****782	Scrub		G2	S2	N	N	2004	Sand Pine Scrub/Oak Scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991) (U05FNA02FLUS). Ca. 70% Sand Pine Scrub and 30% Oak Scrub.
SCRUB****531	Scrub		G2	S2	N	N	2004	SAND PINE SCRUB ON PAOLA FINE SAND. SITE OCCUPIES A LOW DUNE LINE. MODERATELY DENSE UNDERSTORY DOMINATED BY OAKS (LIVE, CHAPMAN AND MYRTLE). F83STO17 REPORTS FEW LICHENS AND LEAF LITTER GROUNDCOVER.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1983-09-01) (U05FNA02FLUS). SAND PINES ARE MIXED SIZES RANGING UP TO 35 CM DBH.

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Florida Natural Areas Inventory

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PROJECT SITE

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
SCRUB****781	Scrub		G2	S2	N	N	2004	1996-05-13: sand pine scrub - young pine, diverse, nice structure (F96JOH02FLUS). 1991: Oak Scrub/Sand Pine Scrub (U91SNO01FLUS).	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1991) (U05FNA02FLUS). 1996-05-13: scrub at north end of South Lake - scattered clumps of young (10-15 years) sand pines with oak understory grown to short
SCRUB****480	Scrub		G2	S2	N	N	2004	SAND PINE SCRUB, YELLOW SAND. THIS SITE IS LOCATED ON THE FIRST DUNE LINE THAT I-95 CROSSES AS ONE PROCEEDS NORTH FROM THE INTERSECTION WITH SR 46. THE SOIL IS PAOLA FINE SAND AND APPEARS YELLOW AT THE SURFACE. ALSO, ANTS WERE BRINGING UP YELLOW SAND. TH	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1963-09-01) (U05FNA02FLUS).
SCRUB****532	Scrub		G2	S2	N	N	2004	ISOLATED SAND PINE SCRUB SITE. UNDERSTORY CONTAINS MYRTLE OAK, CHAPMAN AND LIVE OAK, SAW PALMETTO AND JUNIPERUS SILICOICDA.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1963-07-26) (U05FNA02FLUS). SAND PINES RANGE IN SIZE TO 30-40 DBH.

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Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 57574					
Documented					
Haliaeetus leucocephalus	Bald Eagle	G5	S3	LT,PDL	LT
Scrub		G2	S2	N	N
Scrub		G2	S2	N	N
Likely					
Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycteria americana	Wood Stork	G4	S2	LE	LE
Scrub		G2	S2	N	N
Matrix Unit ID: 57575					
Documented					
Haliaeetus leucocephalus	Bald Eagle	G5	S3	LT,PDL	LT
Likely					
Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycteria americana	Wood Stork	G4	S2	LE	LE
Scrub		G2	S2	N	N
Potential from any/all selected units					
Aimophila aestivalis	Bachman's Sparrow	G3	S3	N	N
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	LS
Calamovilfa curtissii	Curtiss' Sandgrass	G3	S3	N	LT
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Chamaesyce cumulicola	Sand-dune Spurge	G2	S2	N	LE
Conradina brevifolia	Short-leaved Rosemary	G2Q	S2	LE	LE
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Deeringothamnus pulchellus	Beautiful Pawpaw	G1	S1	LE	LE
Dicerandra thinicola	Titusville Balm	G1Q	S1	N	LE
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	LT
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Lechea divaricata	Pine Pinweed	G2	S2	N	LE
Mesic flatwoods		G4	S4	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

GLOBAL AND STATE RANKS

Florida Natural Areas Inventory (FNAI) defines an **element** as any rare or exemplary component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. FNAI assigns two ranks to each element found in Florida: the **global rank**, which is based on an element's worldwide status, and the **state rank**, which is based on the status of the element within Florida. Element ranks are based on many factors, including estimated number of occurrences, estimated abundance (for species and populations) or area (for natural communities), estimated number of adequately protected occurrences, range, threats, and ecological fragility.

GLOBAL RANK DEFINITIONS

G1	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2	Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3	Either very rare and local throughout its range (21-100 occurrences or less than 10,0000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4	Apparently secure globally (may be rare in parts of range).
G5	Demonstrably secure globally.
G#?	Tentative rank (e.g., G2?)
G#G#	Range of rank; insufficient data to assign specific global rank (e.g., G2G3)
G#T#	Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
G#Q	Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
G#T#Q	Same as above, but validity as subspecies or variety is questioned.
GH	Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
GNA	Ranking is not applicable because element is not a suitable target for conservation (e.g. as for hybrid species)
GNR	Not yet ranked (temporary)
GNRTNR	Neither the full species nor the taxonomic subgroup has yet been ranked (temporary)
GX	Believed to be extinct throughout range
GXC	Extirpated from the wild but still known from captivity/cultivation
GU	Unrankable. Due to lack of information, no rank or range can be assigned (e.g., GUT2).

STATE RANK DEFINITIONS

Definition parallels global element rank: substitute "S" for "G" in above global ranks, and "in Florida" for "globally" in above global rank definitions.

FEDERAL AND STATE LEGAL STATUSES (U.S. Fish and Wildlife Service – USFWS) PROVIDED BY FNAI FOR INFORMATION ONLY.

For official definitions and lists of protected species, consult the relevant state or federal agency.

FEDERAL LEGAL STATUS

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

LE	Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species which is in danger of extinction throughout all or a significant portion of its range.
LE,XN	A non essential experimental population of a species otherwise Listed as an Endangered Species in the List of Endangered and Threatened Wildlife and Plants. LE,XN for Grus americana (Whooping crane), Federally listed as XN (Non essential experimental population) refers to the Florida experimental population only. Federal listing elsewhere for Grus americana is LE.
PE	Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
LT	Listed as Threatened Species, defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
LT,PDL	Species currently listed Threatened but has been proposed for delisting.
PT	Proposed for listing as Threatened Species.
C	Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants, Category 1. Federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
SAT	Threatened due to similarity of appearance to a threatened species.
SC	Species of Concern, species is not currently listed but is of management concern to USFWS.
N	Not currently listed, nor currently being considered for addition to the List of Endangered and Threatened Wildlife and Plants.

FLORIDA LEGAL STATUSES (Florida Fish and Wildlife Conservation Commission – FFWCC/ Florida Department of Agriculture and Consumer Services – FDACS)

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission - FFWCC, 1 August 1997, and subsequent updates.

LE	Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.
LT	Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
LT*	Indicates that a species has LT status only in selected portions of its range in Florida. LT* for Ursus americanus floridanus (Florida black bear) indicates that LT status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. LT* for Neovison vison pop. 1 (Southern mink, South Florida population) state listed as Threatened refers to the Everglades population only (Note: species formerly listed as Mustela vison mink pop. 1. Also, priorly listed as Mustela evergladensis).
LS	Listed as Species of Special Concern by the FFWCC, defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification,

environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

LS* Indicates that a species has LS status only in selected portions of its range in Florida. LS* for Pandion haliaetus (Osprey) state listed as LS (Species of Special Concern) in Monroe County only.

PE Proposed for listing as Endangered.

PT Proposed for listing as Threatened.

PS Proposed for listing as a Species of Special Concern.

N Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or please visit: http://DOACS.State.FL.US/PI/Images/Rule05b.pdf

LE Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.

PE Proposed by the FDACS for listing as Endangered Plants.

LT Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered. LT* indicates that a species has LT status only in selected portions of its range in Florida.

PT Proposed by the FDACS for listing as Threatened Plants.

N Not currently listed, nor currently being considered for listing.

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FLORIDA
Natural Areas
INVENTORY

Tracking Florida's Biodiversity

Brevard Coastal Scrub Ecosystem

Group A: Full Fee
Group A: Small Holdings

Brevard County

Purpose for State Acquisition
The strip of coastal scrub that once paralleled the Indian River in Brevard County is now a set of small fragments surrounded by housing developments. The Brevard Coastal Scrub Ecosystem project will preserve a few of the best fragments, thus helping to ensure the survival of the endangered scrub jay and scrub itself in the county, and providing areas where the public can learn about and appreciate this unique landscape.

Manager
Brevard County will manage the original six sites, and the Fish and Wildlife Conservation Commission (FWC) will manage the six sites added in 1996.

General Description
Theproject includes twenty areas considered essential to the preservation of scrub, mesic and scrubby flatwoods, floodplain marsh and marsh lake along the Atlantic Coastal Ridge and St. John's River marshes. Acquisition and management of these core areas are imperative for the survival of the Florida Scrub Jay on the East Coast of Florida. The tracts comprising this project also support several rare vertebrates and at least eight rare plant species, including a very rare mint. All of the tracts in the project are surrounded by development and several peripheral areas are already being destroyed. The rapid encroachment of housing developments is likely to completely eliminate any unprotected scrub and adjacent flatwoods communities of Brevard County in the very near future. No archaeological sites are known from the project.

Full Fee FNAI Elements	
Scrub mint	G1/S1
Coastal hoary-pea	G1T1/S1
SCRUB	G2/S2
Pine pinweed	G2/S2
Wild coco	G2G3/S2
Sand butterfly pea	G2G3Q/S2S3
Hay scented fern	G4/S1
FLOODPLAIN MARSH	G3?/S2
32 elements known from project	

Small Holdings FNAI Elements	
SCRUB	G2/S2
Florida scrub-jay	G3/S3
Curtiss' milkweed	G3/S3
Large-flowered rosemary	G3/S3
SCRUBBY FLATWOODS	G3/S3
WET FLATWOODS	G3/S3
Bald eagle	G4/S3
DEPRESSION MARSH	G4?/S3
12 elements known from project	

Public Use
This project is designated as a wildlife and environmental area with limited public use, including picnicking and environmental education.

Acquisition Planning
On 12/10/1992, the Land Acquisition Advisory Council (LAAC) added the Scrub Jay Refugia project to the Conservation and Recreation Lands (CARL) Priority list. This fee-simple acquisition consisted of approximately 8,178 acres, several hundred parcels and landowners, and a taxable value of $53,319,683. Brevard County sponsored the project that contained 5 sites: Tico (± 2,421 acres, Grand Central a major owner, Brevard County has acquired 52 acres); Valkaria (± 2,764 acres with multiple owners, County has acquired 155 acres); Rockledge (± 2,591 acres, three major owners: Barge & Tabacchi, Duda, and Grand Central, the remainder is subdivided, County has acquired 141 acres); Condev (52 acres, two owners: Nelson and SR 405 Ltd); South Babcock (529 acres, multiple owners).

Placed on list	**1993***
Project Area (GIS Acreage)	**47,322**
Acres Acquired	**18,722****
at a Cost of	**$48,368,823****
Acres Remaining	**28,600**
with Estimated (Tax Assessed) Value of	**$49,886,409**

*Original project
** Includes acreage acquired by Brevard County & SJRWMD, Full Fee and Small Holdings

Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings

On 7/23/1993, the LAAC approved a fee-simple, 179-acre addition (AKA Rockledge Scrub Sanctuary) to the project boundary. It was sponsored by the South Florida Water Management District (SFWMD), consisted of 6 landowners (T. Barge & M. Tabacchi, L.R. Pierce Trust, N. Schopke & M. Tabacchi, TCM Investment, Inc., A.L. & M. Jacoboski , and Florida Power & Light Co.), and a taxable value of $3,600,000.

On 3/9/1994, the LAAC approved a fee-simple, 1,322-acre addition (AKA Micco Scrub) to the project boundary. The addition was sponsored by Brevard County, consisted of one landowner, Kentucky Central Life Ins. Co., and a taxable value of $1,500,120. Brevard County has acquired this site.

On 7/14/1995, the LAAC approved a fee-simple, 1,410-acre addition to the project boundary. The addition consisted of four sites: Dicerandra Scrub, 44 acres, Malabar Scrub Sanctuary, 395 acres, Canova Beach Scrub, 138 acres, and Jordan Blvd, 833 acres. Brevard County sponsored this addition that consisted of multiple landowners, and a taxable value of $13,283,659. The County has acquired the Malabar and the Dicerandra Scrub sites.

In 1996, the LAAC combined the Coastal Scrub Ecosystem Initiative (CSEI) project with the Scrub Jay Refugia project bringing the new total acres to 27,745 with a TAV of $86,847,875, and on 12/5/1996 renamed it Brevard Coastal Scrub Ecosystem. The CSEI consisted of 6 sites: Fox/South Lake Complex - 9,189 acres; Titusville Wellfield - 972 acres; Grissom Parkway - 2,962 acres; Wickham Road - 822 acres; Micco Expansion - 1,833 acres; and Ten Mile Ridge - 529 acres, totaling 16,307 acres with a TAV of $40,780,060.

On 12/3/1998, the Land Acquisition Management Advisory Council (LAMAC) approved the transfer of the Valkaria, South Babcock, Ten Mile Ridge, and Grissom Parkway sites to the Mega-Multiparcel list. In 2001 this list was renamed Small Holdings.

On 12/19/00, the ARC approved a fee-simple, ± 9,528-acre addition to the project boundary. The addition consisted of two sites: Malabar Expansion – 959.85 acres (Bargain/Shared) and Valkaria/Micco Expansion – 4,144.48 acres (Bargain/Shared) & 4,739.48 acres (Mega/Multiparcel). Sponsored by the Brevard County EEL Program, it consisted of 2,250 landowners, and a taxable value of $23,819,800. The following sites were deleted from the project due to development/improvement, habitat fragmentation or isolation: Canova Beach - 152.34 acres; Condev – 52.52 acres; and Wickham Road Complex – 809.62 acres; & Rockledge (select properties) – 860 acres. The total TAV for these sites was approximately $35,952,477.

On 5/17/2001, the ARC approved a fee-simple, ± 3,529-acre addition to the project boundary. The addition, sponsored by the Office of Coastal and Aquatic Managed Areas (CAMA), consisted of eleven landowners, and a taxable value of $3,456,290.

On 4/25/2002, the ARC approved a fee-simple, 112-acre addition to the project boundary. The addition, sponsored by The Nature Conservancy (TNC) for Brevard County, consisted of two sites (10 Mile Ridge Expansion – 62 acres and Valkario/Micco Expansion – 50 acres), multiple landowners, and a taxable value of $199,070

On 12/5/2003, the ARC approved a fee-simple, 7,444-acre addition to the project boundary. The addition, sponsored by the Brevard County EEL Program, consisted of three landowners, Bernard Hersch – 112.25 acres; OLC, Inc/Campbell – 5,229.94 acres; and Babcock, LLC – 2,091.81 acres, and a taxable value of $2,808,217.

On 12/5/2002, ARC moved this project to Group A of the 2003 Florida Forever Priority list.

Coordination

Brevard County is an acquisition partner and has committed $10 million towards the acquisition of the project and $2.6 million for site management. The Nature Conservancy is under contract to the county to provide assistance with acquisition of the county's projects.

Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings

Management Policy Statement

The primary goals of management of the Brevard Coastal Scrub Ecosystem project are: to conserve and protect environmentally unique and irreplaceable lands that contain native, relatively unaltered flora and fauna representing a natural area unique to, or scarce within, a region of this state or a larger geographic area; and to conserve and protect significant habitat for native species or endangered and threatened species.

Management Prospectus

Qualifications for state designation Scrub on the Atlantic Coastal Ridge is one of the most endangered natural upland communities in North America. This unique scrub, with its many rare plants and animals, qualifies the Brevard Coastal Scrub Ecosystem project as a wildlife and environmental area.

Manager Brevard County proposes to manage the six original sites of the Brevard Coastal Scrub Ecosystem Project. The Fish and Wildlife Conservation Commission will manage the six sites added in 1996.

Conditions affecting intensity of management The Brevard Coastal Scrub Ecosystem Project includes low-need, moderate-need and high-need tracts. All sites are fire-maintained communities with an immediate need for fire management.

Timetable for implementing management and provisions for security and protection of infrastructure The Brevard County EEL Program is preparing a Conceptual Natural Areas Management Manual for all sanctuary sites. Once these sites are acquired, the EEL Program will work with local, state and federal agencies to develop a Comprehensive Management Plan for long-term management. Initial management activities in this project will focus on site security, burn management, determination of status of listed species, location of a core area for resource protection, identification of passive recreation areas, and the development of innovative environmental education programs.

A management plan will be developed and implemented approximately one year after the completion of this multi-parcel acquisition project, or site-specific management plans will be developed as management units are acquired. The plan will detail how each of the FNAI special elements on each site will be protected and, when necessary, restored. Fire management will be a vital component of each plan.

Long-range plans for this project, beginning approximately one year after acquisition is completed, will be directed towards biodiversity protection, exotic species removal, wetland restoration and enhancement, and the maintenance of links between upland, wetland and estuarine areas. Management will protect biological diversity and listed species. Specific areas will be fenced as needed. Property signs will have appropriate language to enable protection of the property. Unnecessary roads and other disturbances will be identified as areas for restoration. Firebreaks will be cleared where necessary. Infrastructure development will be confined to already disturbed areas and will be low-impact.

(Continued on Page 74)

Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings

BREVARD COASTAL SCRUB ECOSYSTEM: OVERVIEW

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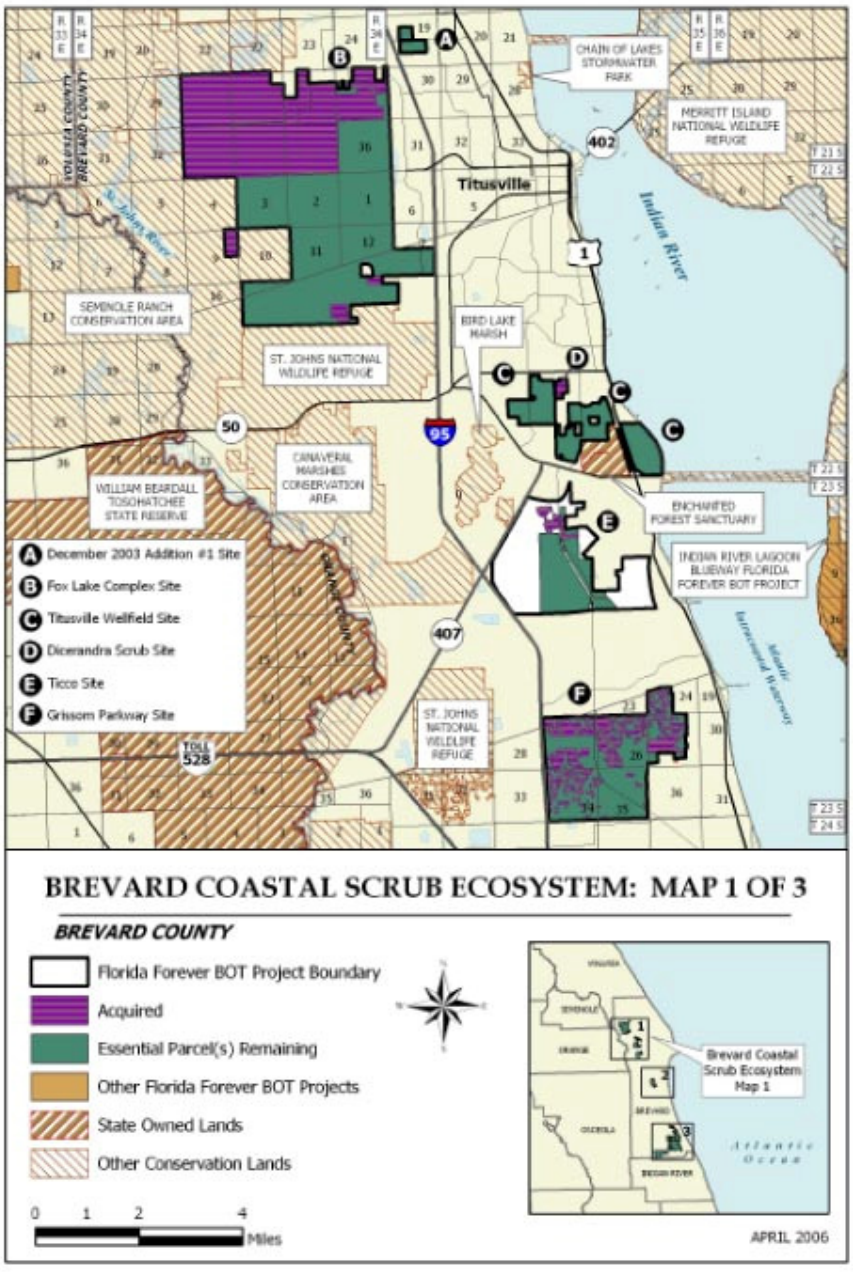
Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings



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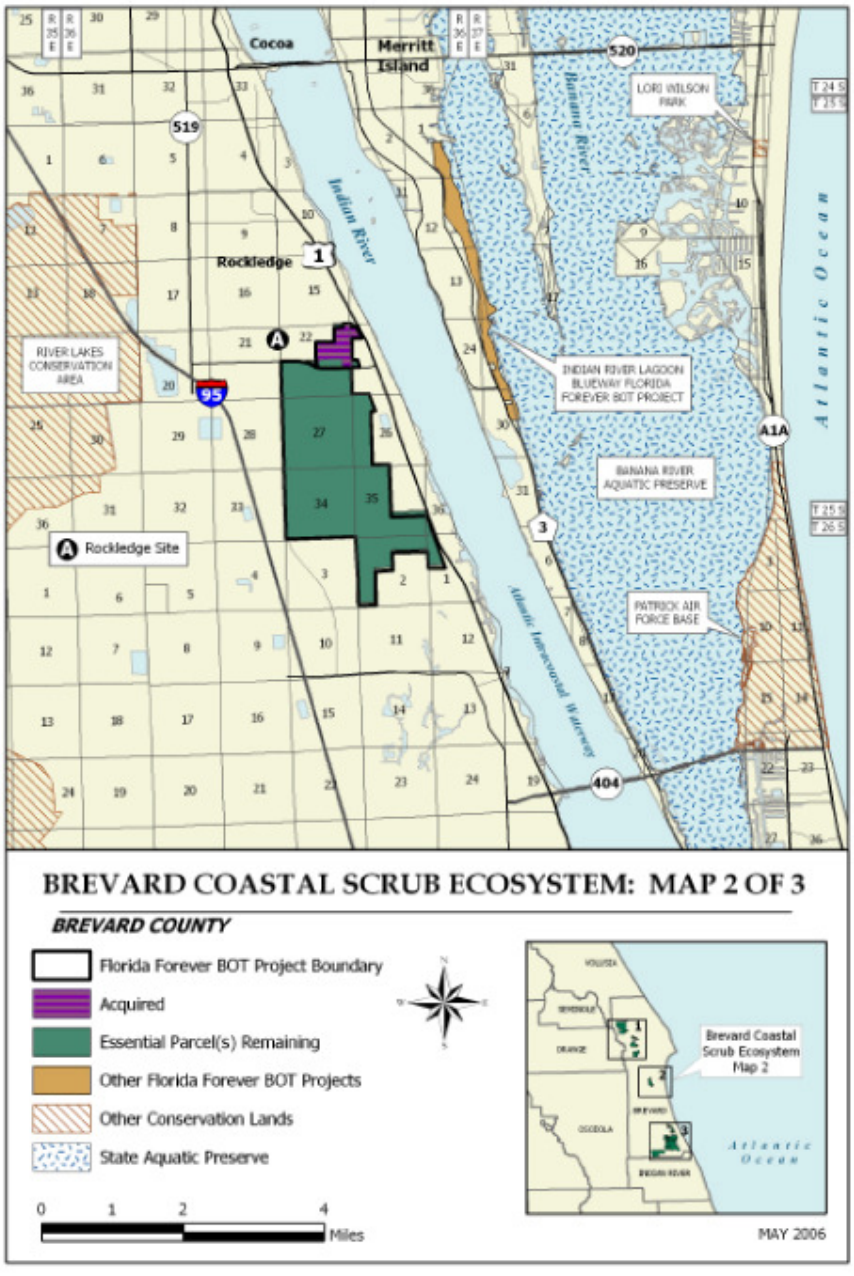
Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings



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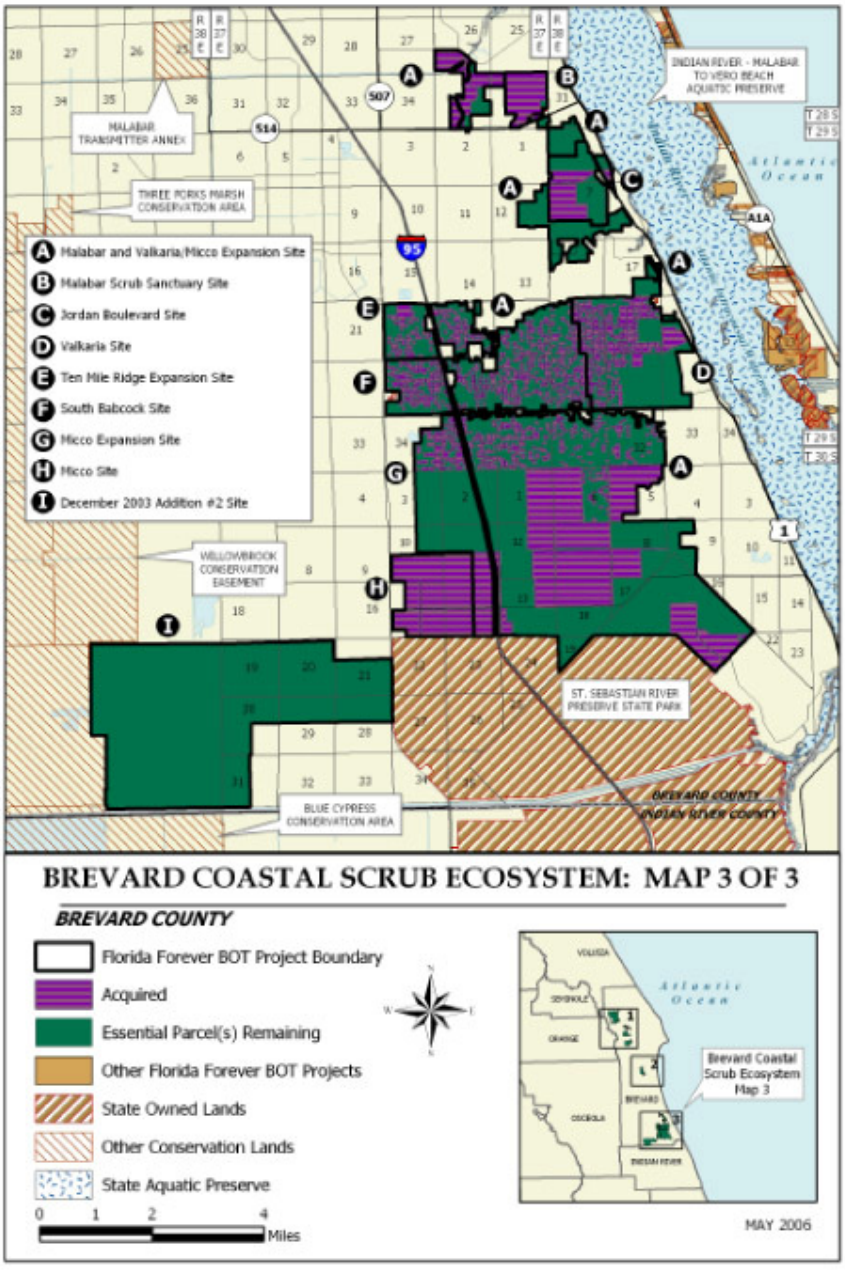
Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings



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Brevard Coastal Scrub Ecosystem - Group A/Full Fee Small Holdings

Revenue-generating potential No significant revenue sources are anticipated at this time. Mitigation agreements with USFWS have generated some funds for management within the Valkaria Core area. Implementation and funding of the Scrub Conservation and Development Plan provide a potential source of management funds for these sites. Timber might be sold on some sites where habitat restoration requires thinning

Cooperators in management activities Brevard County will require support from the USFWS and other agencies (The Nature Conservancy, Division of Forestry, FWC, and others) to implement a quality management program for scrub communities. The EEL Selection Committee will aggressively seek matching funds for site management, development of environmental education programs, and for necessary research and monitoring.

Management costs and sources of revenue An interagency partnership among the participating agencies provides opportunities for revenue sharing. The Brevard County EEL Program proposed to set aside $2.6 million dollars from their excess ad valorem revenues to begin a management endowment for the EEL Program sanctuary network. The EEL Program will work to increase funds for management to be consistent with or exceed State management appropriations.

Management Cost Summary

Category Source of Funds	1994/95 County	1995/96 County	1996/97 County/Grant
Salary	$0	$3,500	$8,750
OPS	$0	$0	$35,000
Expense	$500	$1,000	$0
OCO	$0	$0	$60,000
FCO	$0	$125,700	$120,000
TOTAL	$500	$130,200	$213,750

Appendix J:
Florida Master Site File

JUN-05-2006 10:27 P.05

FLORIDA DEPARTMENT OF STATE
Sue M. Cobb
Secretary of State
DIVISION OF HISTORICAL RESOURCES

June 5, 2006

Judy Gregoire
Brevard County EEL
Enchanted Forest Sanctuary
444 Columbia Blvd.
Titusville, FL 32780
FAX: 321-264-5190

In response to your inquiry of June 2, 2006, the Florida Master Site File lists five previously recorded archaeological sites and no standing structures in the following parcels of Brevard County:

T21S, R35E, Section 19

In interpreting the results of our search, please remember the following points:

- **Areas which have not been completely surveyed, such as yours, may contain unrecorded archaeological sites or historical structures.**
- **While many of our records relate to historically significant properties, the entry of an archaeological site or an historical structure on the Florida Master Site File does not necessarily mean that the structure is significant.**
- **Since vandalism is common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.**
- **As you may know, federal and state laws require formal environmental review for some projects. Record searches by the staff of the Florida Master Site File do not constitute such a review. If your project falls under these laws, you should contact the Compliance Review Section of the Bureau of Historic Preservation at 850-245-6333 or at this address.**

If you have any further questions concerning the Florida Master Site File, please contact us as below.

Sincerely,
Celeste Ivory

Celeste Ivory
Archaeological Data Analyst, Florida Master Site File
Division of Historical Resources
R. A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

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State SunCom. 205-6440
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Web: *http://www dos.state.fl.us/dhr/msf/*

FLORIDA DEPARTMENT OF STATE
Sue M. Cobb
Secretary of State
DIVISION OF HISTORICAL RESOURCES

June 23, 2006

Ms. Judy Gregoire
North Area Land Manager
Environmentally Endangered Lands Program
444 Columbia Boulevard
Titusville, Florida 32780

Re: Request for Land Management Information for Four Parcels
Brevard County / DHR Project File Nos. 2006-4520; -4521; -4523; & -4524

Dear Ms. Gregoire:

In accordance with this agency's responsibilities under Sections 253.034(5) and 259.032(3)(h), *Florida Statutes*, we have reviewed the information in the Florida Master Site File to determine whether any historic properties are recorded in the referenced management areas, and also to determine the potential for unrecorded resources to be present.

Tico Scrub Sanctuary – DHR Project No. 2006-4520

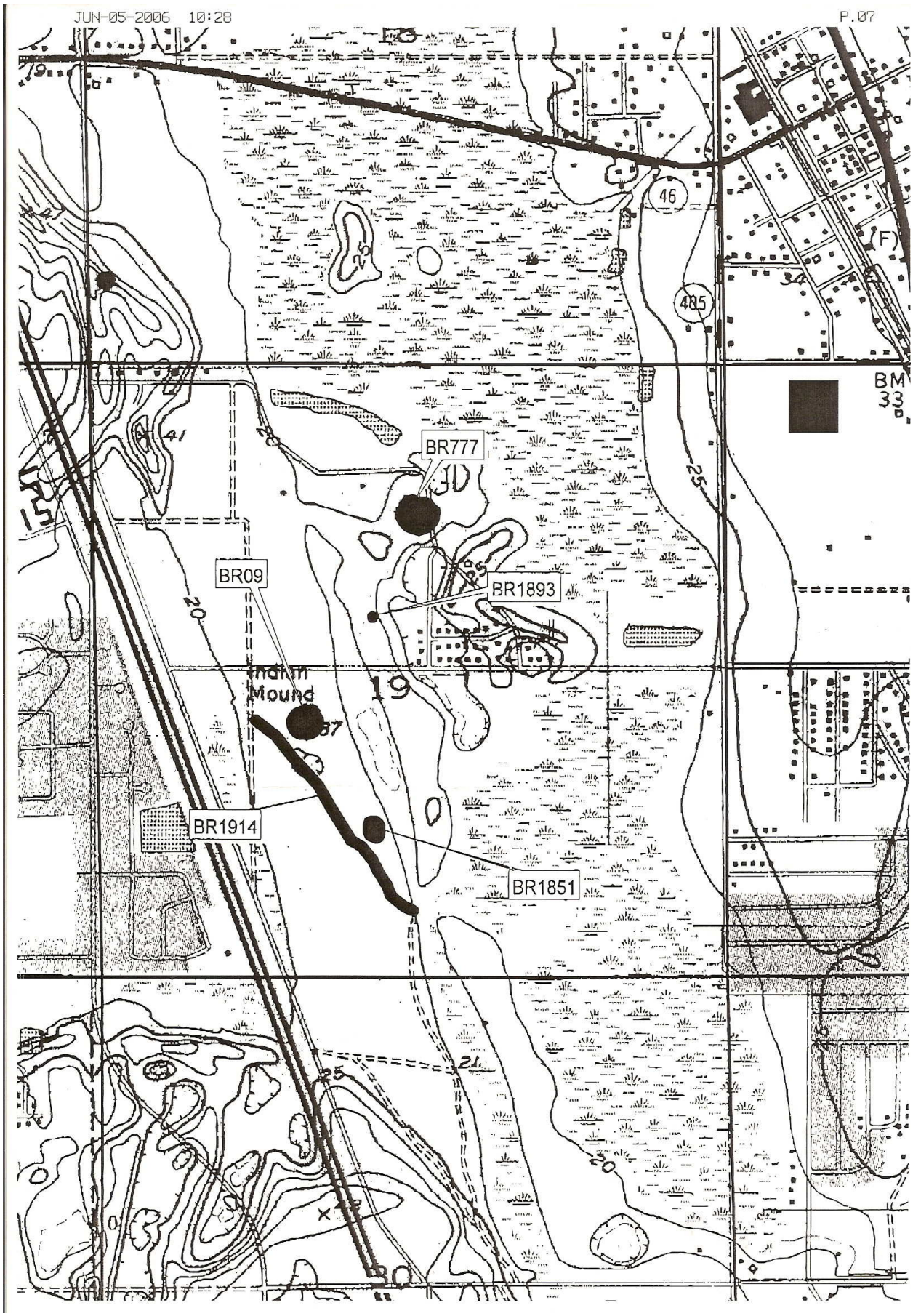
A review of the Florida Master Site File (FMSF) indicates that there are no known sites within this project area. Furthermore, this property is not located within an area deemed as a high probability area to encounter significant archaeological resources. We note that the parcels are designated for conservation and passive recreation, and there will be no land clearing or construction activities.

Indian Mound Station Sanctuary – DHR Project No. 2006-4521

A review of the FMSF indicates that there are recorded sites within this project area, 8BR9 and a portion of site 8BR1914. From the information submitted, it does not appear that site 8BR1851 is within the Sanctuary. These recorded sites should be protected and preserved. We note that the parcels are designated for conservation and passive recreation, and there will be no land clearing or construction activities.

500 S. Bronough Street • Tallahassee, FL 32399-0250 • http://www.flheritage.com

❒ Director's Office (850) 245-6300 • FAX: 245-6436
❒ Archaeological Research (850) 245-6444 • FAX: 245-6452
✓ Historic Preservation (850) 245-6333 • FAX: 245-6437
❒ Historical Museums (850) 245-6400 • FAX: 245-6433
❒ Southeast Regional Office (954) 467-4990 • FAX: 467-4991
❒ Northeast Regional Office (904) 825-5045 • FAX: 825-5044
❒ Central Florida Regional Office (813) 272-3843 • FAX: 272-2340


JUN-05-2006 10:28
P.07
46
485
BM
33
BR777
BR09
BR1893
Indian
Mound
BR1914
BR1851

CULTURAL RESOURCES REPORT

SITEID	FORMNO	T-R-S	CR	SITENAME	NRLIST	SURVEY	LOCATION	OTHER
BR00009	200505	21S/35E/19	AR	INDIAN MOUND STATION	Eligib	11640 Map: MIMS		Culture: MAL1, MAL2
BR00777	200503	21S/35E/19	AR	HOLDER PARK SITE		11248 Map: MIMS		Sitetype: LAND, MDBU Culture: MAJ1, MAJ2
BR01851	200303	21S/35E/19	AR	SCATTERED KITCHEN		8725 Map: MIMS		Sitetype: CAMP, LAND, SCAR Culture: AMER
BR01893	200503	21S/35E/19	AR	TIMMY SITE		11248 Map: MIMS		Sitetype: SCAR Culture: MAJ1
BR01914	200505	21S/35E/19	AR	ST JOHNS & INDIAN RIVER RAILROAD (TRAMWA	Eligib	11640 Map: MIMS		Sitetype: LAND Culture: 19TH Sitetype: LAND, ROAD

5 site(s) evaluated; 5 form(s) evaluated.
Print date: 6/5/2006 9:12:48 AM

JUN-05-2006 10:28 P.06

Appendix K:
Management Procedures for Archaeological and Historical Sites and Properties on State- Owned or Controlled Lands

MANAGEMENT PROCEDURES FOR
ARCHAEOLOGICAL AND HISTORICAL SITES AND PROPERTIES
ON STATE - OWNED OR CONTROLLED LANDS
(revised August, 1995)

A. GENERAL DISCUSSION

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources". They have several essential characteristics which must be recognized in a management program.

- First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

- Secondly, sites are unique because individually they represent the tangible remains of events which occurred at a specific time and place.

- Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

- Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but also equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context - the vertical and horizontal relationships - cannot. Historic structures also contain a wealth of cultural (socio-economic) data which can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features which must be considered in land management decisions.

B. STATUTORY AUTHORITY

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(5), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.:

The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's quality of life, economy, and cultural environment. It is therefore declared to be state policy to:

1. *Provide leadership in the preservation of the state's historic resources; [and]*
2. *Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...*

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.031, F.S., include the following:

1. Cooperate with federal and state agencies, local governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the *National Register of Historic Places* and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.
7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.
8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.
9. Establish guidelines for state agency responsibilities under subsection (2).

Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the *National Register of Historic Places*. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.

2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way which adversely affects the character, form, integrity, or other qualities which contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.

3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.

4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources which are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.

5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.

6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32,F.A.C.

Another Florida Statute affecting land management decisions is **Chapter 872**, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial sites is a felony.

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled lands obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites which are state-owned or controlled, where the basis of management is to provide for land uses that are minimally destructive of resource values.

It should be noted that while many archaeological and historical sites are already recorded within state-owned or controlled-lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

The generalized management policy recommended by the Division of Historical Resources includes the following:

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)

2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.

3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.

4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological sites is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the

other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.

6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).

7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the *National Register of Historic Places* and other significant buildings. The Division recommends that the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* [Revised 1990]).

Division of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.

2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.

3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.

4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.

5. Land managers will update information on recorded sites and properties.

6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures which the land managers may report:

   A. Historic Sites

      (1) Type of structure (dwelling, church, factory, etc.).

      (2) Known or estimated age or construction date for each structure and addition.

      (3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).

      (4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.

      (5) Specific features including location, number and appearance of:

         (a) Important decorative elements;
         (b) Interior features contributing to the character of the building;

(c) Number, type, and location of outbuildings, as well as date(s) of construction;
(d) Notation if property has been moved;
(e) Notation of known alterations to building.

B. Archaeological Sites

(1) Site location (written narrative and mapped location).
(2) Cultural affiliation and period.
(3) Site type (midden, burial mound, artifact scatter, building rubble, etc.)
(4) Threats to site (deterioration, vandalism, etc.).
(5) Site size (acreage, square meters, etc.).
(6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
(7) Description of surrounding environment.

7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notify the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division is a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Susan M. Harp
Historic Preservation Planner
Telephone (850) 245-6333
Suncom 205-6333
FAX (850) 245-6437

Compliance Review Section
Bureau of Historic Preservation
Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Appendix L:
Indian Mound Restoration Plan

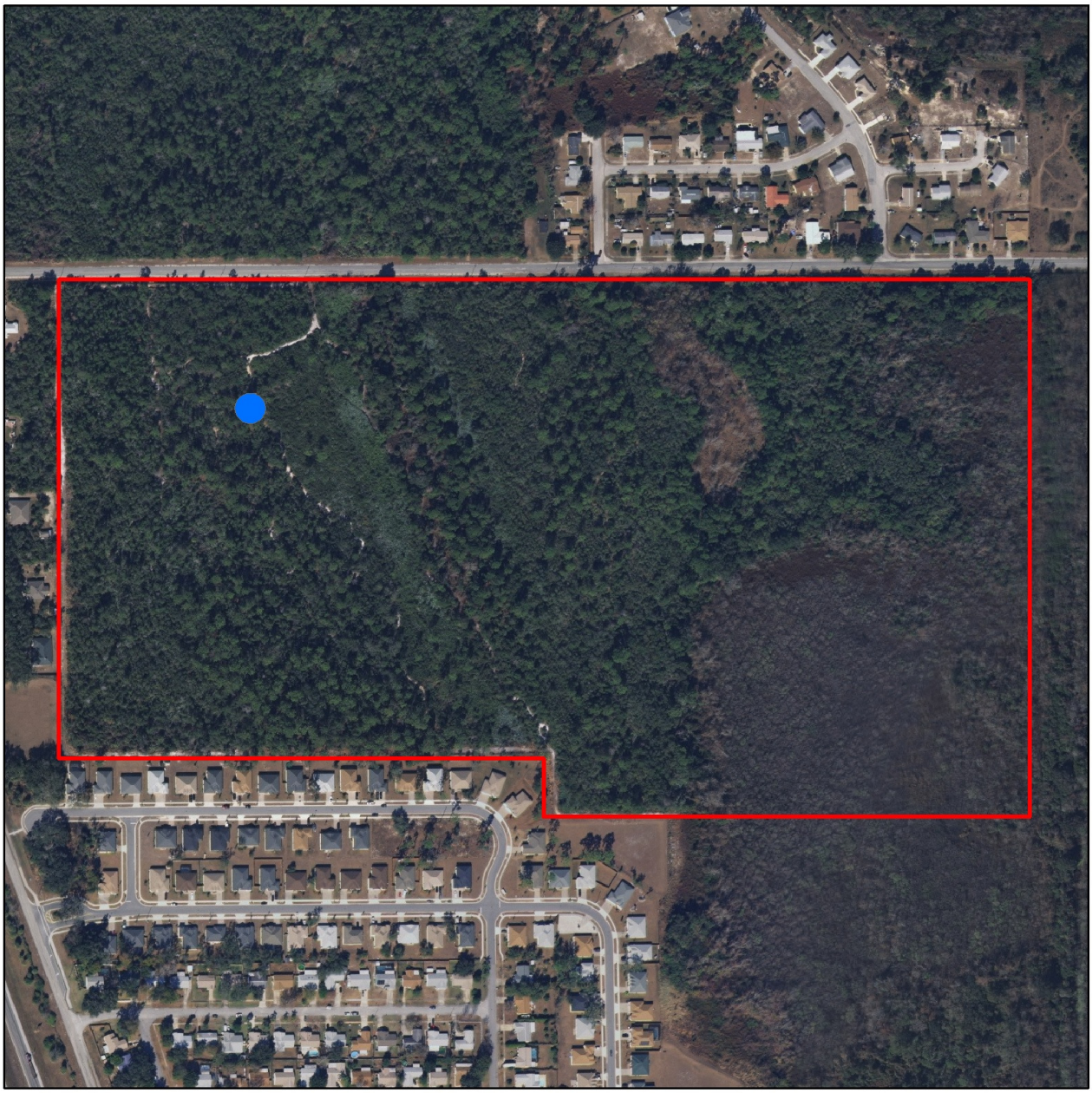
Indian Burial Mound Restoration Plan

Indian Mound Station Sanctuary (IMSS) is an 85-acre site located east of I-95 in Titusville, Brevard County, Florida (Figure 1). IMSS is part of a sanctuary network established by the Environmentally Endangered Lands (EEL) Program in Brevard County. The Florida Master Site File Florida Division of Historical Resources (Appendix), and surveys by Thomas Penders & Associates in 2005 reported an archeological site located within the Sanctuary, an Indian Burial Mound (BR09) as seen in Figure 1 (Penders, 2005a 2005b 2005c). The Indian Mound on the property has been surveyed by various archeologists over the past 200 years. Potsherds were observed during a 2003 surface survey of the mound. Due to their association with the burial mound, they were identified and reburied in the mound.

Years of erosion have altered the appearance of the Indian Burial Mound. The rate of erosion has significantly increased over the last twenty years as off-road vehicles have destroyed some of the vegetation responsible for stabilizing the mound. The displacement of sand by erosional forces has begun to expose skeletal remains buried within the mound. Thomas Penders & Associates has recommended that the burial mound be re-stabilized and all restoration of the mound be monitored by a professional archaeologist (2005c). If any skeletal remains are discovered, all work will cease and the State Archaeologist along with Tom Penders will be notified. Thomas Penders & Associates suggests using the following methodology for the mound restoration and stabilization:

1. Removal of any and all trash by hand currently located on the mound.
2. Removal of any exotic species of vegetation by hand.
3. Fill in the looter's pit(s) located on the mound with fill.
4. Cover any areas void of vegetation with chain link fencing to hinder and prohibit looting of the mound but allow for vegetative growth.
5. Bring in fill similar to the existing soil to cover the chain link fence. A minimum of two feet of fill soil should cover the fencing. This should be performed without the use of heavy equipment on the mound.
6. In the event of a one-time treatment of mechanical reduction within the vicinity of the mound, a 30-foot natural undisturbed buffer will be left.
7. A fence will be constructed around the perimeter of the mound 30 feet from the base of the mound to restrict public access and prevent anthropogenic damages.
8. Plant grasses and or native vegetation (including Spanish Bayonets or cacti to hinder potential looters).
9. In the event of a prescribe fire, permission has been granted by Tom Penders & Associates and the State Archeologist Ryan Wheeler, to burn the vegetation on the Indian Burial Mound without the use of heavy equipment or vehicles on the mound.

Figure 1: Indian Mound Station Sanctuary
Indian Mound



Disclaimer: Calculated acreages indicated on the map are based solely on secondary mapping sources. No warranties or representations of accuracy are expressed or implied.

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Penders, T. E. 2005a. A Cultural Resources Assessment Survey of the Hersch North 85-acre Tract, Titusville, Brevard County, FL. Prepared for Gen Development, Inc. 50 p.

Penders, T. E. 2005b. A Cultural Resources Assessment Survey of the Hersch South 85 Acre Tract, Titusville, Brevard County, FL. Prepared for Gen Development, Inc. 60 p.

Penders, T. E. 2005c, A Preservation Plan for Indian Mound Station (8 RR 9) Hersch South 85-acre Parcel, Titusville, Brevard County, Florida. Prepared for Gen Development, Inc. 17 p.

Appendix M:
Indian Burial Mound Controlled Burn

----- Original Message -----
From: Wheeler, Ryan J.
To: Penders
Sent: Tuesday, December 02, 2008 2:22 PM
Subject: RE: Indian Mound Station

Hi Tom: Thanks for your message. Controlled burn is okay as long as they don't scrape the site with heavy equipment, cut firebreaks with equipment, other ground disturbance, etc. Your monitoring plan sounds good, too. Hope this is helpful. Best wishes, Ryan

Ryan J. Wheeler, Ph.D.
State Archaeologist and Chief,
Bureau of Archaeological Research

B. Calvin Jones Center for Archaeology at the Governor Martin House
1001 de Soto Park Drive, Tallahassee, FL 32301
Phone: 850.245.6301
FAX: 850.245.6452
E-mail: rjwheeler@dos.state.fl.us

From: The Penders [mailto:penders]
Sent: Tuesday, December 02, 2008 12:23 PM
To: Wheeler, Ryan J.
Subject: Indian Mound Station

Ryan,

I received a call last week. The EELs folks want to do a controlled burn at the Indian Mound Station Site (8 BR 9 I think).

So they plan on doing the burning themselves at this point and would like an "official" answer it is ok as long as there is no ground disturbance. Just so you know the fire load is pretty bad. If there was a forest fire houses on 2 sides would probably burn as well.

Appendix N:
Public Meeting Minutes

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
October 12, 2006
Attendance List

RECREATION AND EDUCATION ADVISORY COMMITTEE MEMBERS
Bob Champaigne
Murray Hann
Karen Hill
Mark Nathan
Eve Owens
Beverly Pinyerd
Paul Saia
Dorn Whitmore

SUB-COMMITTEE MEMBERS
Paul Schmalzer, Selection and Management Committee

EEL PROGRAM STAFF
Laura Clark
Xavier de Seguin des Hons
Judy Gregoire
Brad Manley

GUESTS
Susan Gosselin, Brevard County Natural Resources Management Office
William Riley, Citizen

ENVIRONMENTALLY ENDANGERED LANDS PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
October 12, 2006
Meeting Minutes
(Approved February 8th 2007)

CALL TO ORDER:

Murray Hann called the meeting to order at 6:07 PM.

PUBLIC COMMENT:

None.

MINUTES:

The August 10, 2006 minutes Recreation and Education Advisory (REAC) Committee were presented for approval.

Murray asked for comments to the August minutes.

MOTION ONE:
Dorn Whitmore moved to approve the August 10, 2006 minutes as presented.
Karen Hill seconded the motion.
The motion carried unanimously.

ADMINISTRATIVE REVIEW:
The Administrative Review was reviewed.

OLD BUSINESS:

Status update on past REAC Motions
Brad provided a review of past motions made by the Committee, along with an update on each item.

Additional Discussion

Concerns were expressed regarding feral hogs on properties in the South Region. Clarification was provided that these hogs are considered undesirable on EEL Program properties and that staff was working with the Parks and Recreation Department to develop a feral hog policy.

Clarification was also provided that while firebreaks can sometimes serve as trails, not all firebreaks are suitable for trail use.

NEW BUSINESS:

Election of Chairman and Vice-Chairman
Officers of the REAC committee serve a one-year term. The group discussed potential candidates for the coming year.

MOTION TWO:
Eve Owens moved to nominate Murray Hann as Chairman for the 2006-2007 term.
Paul Saia seconded the motion.
The motion carried unanimously.

MOTION THREE:
Dorn Whitmore nominated Bob Champaign as Vice-Chairman for the 2006-2007 term.
Eve Owens seconded the motion.
The motion carried unanimously.

North Region Sanctuaries Overview
Judy Gregoire, Land Manager provided an overview of sanctuaries in the North Region and explained that she would be reviewing an Access Plan for the South Lake Conservation Area (SCLA) and Public Access Site Assessments for the TICO Scrub and Indian Mound Station Sanctuaries.

South Lake Conservation Area

Judy reviewed the South Lake Conservation Area (IMSS) Proposed Public Access Plan. This 155± acre site in northern Titusville was acquired by the EEL Program in 1999 and consists mainly of scrub and scrubby flatwoods with several depression marshes. The site is north of Dairy Road, and west of Carpenter Road, with adjacent residential properties. Because the site is a Florida Scrub-jay mitigation donation, US. Fish and Wildlife Service reviews all management plans, including public access. There has been some concern expressed by neighbors about the possibility of increased traffic, crime and loss of privacy; for these reasons, the advertised public trail head with parking will be located at the opposite side of the site, and trails will be routed away from the homes. Neighbors were invited to attend a public stakeholder meeting held on September 27, 2006. The neighbors that attended seemed to be satisfied with the plan.

Protected species that may inhabit this site once habitat restoration has been completed include: Gopher tortoises, Indigo Snakes, Scrub-Jays and Bald eagles.

Components of the Public Access Plan include:
Parking area on Lancaster Road (west)
Walk through gate on Lancaster Road (east)
1.67 miles of hiking and biking trails
Core Conservation Area
Educational interpretive signs
Potential future connection(s) with the Salt Lake Wildlife Management area and/or the Greater Titusville Eco-Heritage Trail.

Other upcoming goals for the South Lake Conservation Area include:
Guided Hikes
Volunteer Workdays
Exotic plant species removal
Prescribed Fire
Mechanical vegetation reduction
Fire line maintenance
Prescribed fire implemented in various burn units

MOTION FOUR:
Eve Owens moved to support the South Lake Conservation Area Public Access Plan as presented.
Karen Hill seconded the motion.
The motion carried unanimously.

Indian Mound Station Sanctuary – Review of Public Access Site Assessment

The Indian Mound Station Sanctuary was acquired by the EEL Program in 2006. It is within the Brevard Coastal Scrub Ecosystem Project boundary and is included in a Florida Communities Trust grant application. Public access plans for this 85-acre site, which is located east of I-95 and south of Holder Park in Titusville, are contingent on the acquisition of additional property that is planned to the north of the Sanctuary.

Natural communities on this site include: dry prairie, floodplain marsh and floodplain swamp, hydric hammock, scrub, scrubby flatwoods, upland mixed forest, wet prairie and xeric hammock.

Protected species that may inhabit this site once habitat restoration has been completed include: Gopher tortoises, Indigo Snakes, Scrub-Jays and Bald eagles.

Historical elements of this site include a documented Indian Burial Mound (8 BR 9) and the St. Johns and Indian River Railway/Tramway (8 BR 1914).

Plans to restore and provide protection for the mound were discussed. These plans will be reviewed by a Florida State Archeologist prior to implementation.

The Public Access Plan, when developed, will include:
Complete mound restoration plan and secure mound from further desecration
Parking area at Holder Park
Hiking along existing trails throughout both parcels
Interpretive signs including information on both the biological and historical features of the site

Other upcoming goals for the Indian Mound Station Sanctuary include:
Guided hikes
Site security
EEL Program staff workdays
Prescribed Fire

MOTION FIVE:
Karen Hill moved to support a delay consideration of a Public Access Plan for the Indian Mound Station Sanctuary until restorations of the Indian Mound and sanctuary habitat are complete.
Bob Champaigne seconded the motion.
The motion carried unanimously.

TICO Scrub Sanctuary – Review of Public Access Site Assessment

Judy provided information on 3 parcels totaling 52± acres along Grissom Parkway near TICO Airport which were acquired by the EEL Program in 1994.

Natural communities include: floodplain swamp, scrub, and scrubby flatwoods.

No recreation plan is proposed at this time due to the size and location of the three parcels. Any recreation plan will be dependent upon the acquisition of the additional parcels.

Upcoming goals for the TICO Scrub Sanctuary include mechanical vegetation reduction and prescribed fire implementation in various burn units.

MOTION SIX

Eve Owens moved to support a delay consideration of a public access plan for the TICO Scrub Sanctuary until additional properties in the adjacent area could be acquired.

Beverly Pinyerd seconded the motion.

The motion carried unanimously.

Discussion of upcoming Proposed Public Access Plans and Committee Schedule

Brad provided a brief overview of the status of EEL Program public access assessment plans and an explanation of the anticipated time that would be required before the plans could be presented to the REAC Committee for their input.

It was determined that staff would convene the next meeting when information was ready for review.

Public Comment

William Riley spoke of his concerns related to public access to EEL Program in the South Region.

ADJOURNED:

The meeting was adjourned at 7:50 PM.

SUMMARY OF MEETING MOTIONS:

- Motion to approve the August 10, 2006 minutes.
- Motion to elect Murray Hann as Chairman for the 2006-2007 term.
- Motion to elect Bob Champaigne as Vice-Chairman for the 2006-2007 term.
- Motion to support the South Lake Conservation Area Public Access plan as presented.
- Motion to support delay in considering a Public Access Plan for the Indian Mound Station Sanctuary until the mound and habitat restorations could be completed.
- Motion to support delay in considering a Public Access Plan for the TICO Scrub Sanctuary until additional acquisition can be completed

ENVIRONMENTALLY ENDANGERED LANDS PROGRAM
Indian Mound Station Sanctuary
Conceptual Public Access Plan Public Meeting
September 23, 2009
Minutes

CALL TO ORDER:

Xavier de Seguin des Hons, EEL Program North Region Land Manager welcomed the group and called the meeting to order at 6:03 PM.

PRESENTATION:

Xavier presented an overview of the EEL Program and the Conceptual Indian Mound Station Sanctuary Public Access Plan, and he explained that the purpose of the meeting was to receive input from the public regarding plans for the Sanctuary.

EEL Program and Management Plan Process Overview

- EEL Program's Mission: To Protect and Preserve Biodiversity through Responsible Stewardship of Brevard County's Natural Resources.
- EEL Program's Vision: The EEL Program acquires, protects and maintains environmentally endangered lands guided by scientific principles for conservation and the best available practices for resources stewardship and ecosystem management. The EEL Program protects the rich biological diversity of Brevard County for future generations. The EEL Program provides passive recreation and environmental education opportunities to Brevard's citizens and visitors without detracting from the primary conservation goals of the program. The EEL Program encourages active citizen participation and community involvement.
- Four Management Regions
  - North: 5,348 acres
    - 9 sanctuaries, 1 Management and Education Center
  - Central: 3,002 acres
  - South: 6,695 acres
  - South Beach: 328 acres
- Land Management
  - Prescribed Fire
  - Control of invasive exotic plant and animal species
  - Planting native vegetation
  - Property includes an Indian burial bound which has been affected by looting and vandalism in previous years. Tom Penders, a local archaeologist is working with the EEL Program to fence and secure the mound in order to protect it from further harm.
  - The site is currently fenced.
  - Most of the public access since the site was acquired in 2006 has been from citizen volunteers during public work days to remove trash from the site.
- Public Access
  - When the property was purchased in 2006, consideration was given to attempting to purchase additional property located between this site and the

Parks & Recreation Department's Holder Park in order to expand the property in conservation and to provide a convenient access point to the Sanctuary. That acquisition was not completed. Current plans are to move the Parrish Road fire line gate inside the sanctuary property and create a small, crushed shell parking lot (8 cars maximum). The new gate will be a walk through gate which will allow people and bikes to pass through, but not cars.

- Management Plan approval Process
  - Interim Management Plan drafted by EEL Program Staff within 3 months of acquisition
    - Approved by Selection and Management Committee
  - Public Access Site Assessment completed by Staff
  - Conceptual Public Access Plan
    - Drafted by Staff
    - Reviewed at public meeting
    - Reviewed by Recreation and Education Advisory Committee
    - Becomes part of formal Management Plan
  - Management Plan drafted by Staff
    - SMC review
    - 30 day public review
    - Selection and Management Committee approval
    - Board of County Commissioners approval
    - State of Florida Acquisition and Restoration Council approval (if property was purchased in partnership with the State.)

Indian Mound Station Sanctuary

- Approximately 85 acres
- Acquired by the EEL Program in 2006
- East of I-95, and south of Parrish Road in Titusville
- Resources Identified
  - Protected Species: Gopher tortoise, Bald eagle
  - Ecosystems: Scrub, Scrubby flatwoods, Floodplain marsh, Floodplain Swamp
  - Existing Trails
- Stakeholders Identified
  - Sanctuary neighbors
  - Hikers
  - Birders
  - Nature Lovers
  - Bicyclists
  - Native American community
  - Archaeology group
- Recreation Plan
  - Parking area inside the Sanctuary, along Parrish Road
  - Walk through gate on Parrish Road
  - 1.06 miles of hiking and biking trails
  - Educational interpretive signs along the trail at the Indian Burial Mound, and potentially at the old Tramway railroad.

PUBLIC COMMENT:

- Concerns were expressed regarding the possible use of firebreaks adjacent to neighboring properties as trails, due to the potential for loss of privacy and possible security issues.
- Clarification was provided by staff that these concerns were understandable and will be taken into consideration. In the past the Program has usually been able to move trail locations, or close some firebreaks to hikers when this type concern has been received.
- Concerns were received regarding the possible increase of illegal activity occurring in the area when the site is opened for public access.
- Clarification was provided that EEL Program staff will check on the site, as funding resources allow, and that citizens have the option of contacting EEL Program staff at the Enchanted Forest Sanctuary in Titusville, or contacting local law enforcement, if there are specific concerns or events that require follow up.
- Clarification was also provided that historically, when legal and appropriate use of properties purchased by the Program becomes established, inappropriate activity levels drop significantly.
- A question was received as to why the Program didn't concentrate hiking trails on the large tract of land recently purchased in the north part of the County, instead of on this site.
- Clarification was provided that the EEL Program guidelines provide for passive recreational opportunities on properties, without detracting from the conservation goals of the Program.
- Concerns were received regarding the number of trees that were removed from the site during part of the habitat restoration process.
- Clarification was provided that a large part of this sanctuary had historically been scrub habitat, which requires large open areas with few trees, and that fire was a normal part of natural scrub habitat. The site had been so overgrown that it would not have been safe to burn the site without mechanical reduction of the existing high fuel load. In addition, some of the trees that were removed were taken down during the establishment of the fire line, which is created to protect neighboring homes.
- Concerns were expressed regarding possible injury of wildlife on the site during the prescribed fires.
- Clarification was provided that it is understood that sometimes existing wildlife can be hurt during prescribed fires, but that the overall improvement to the natural area allows for greater populations to become established. Care is taken to avoid injury to existing wildlife as much as possible.
- Concerns were received that the site would not grow back to the same level of density for a long time.

- Clarification was provided that scrub habitat regenerates quickly, and that although the natural area would not look the same as it had before, it would still be a natural area, and it would be better habitat for the plants and animals that had historically been there. Additional clarification was provided that that the area no longer contains the high fuel load which could be very destructive in the event of a wildfire.

- Concerns were expressed that some residents did not feel that sufficient notice had been given to sanctuary neighbors regarding plans for habitat management and prescribed fire.
- Clarification was provided that all homeowners who lived directly adjacent to the sanctuary have been sent notification regarding the January 31st public meeting and that staff had unsuccessfully attempted to locate a homeowners association. Citizens in attendance at the meeting provided the homeowners association contact information. In the future, staff will work to establish signs on site, and hold neighborhood informational meetings so that folks can become more informed.

- Concerns were received that some areas of the Sanctuary received significant clearing and removal of vegetation and others did not.
- Clarification was provided that there are different types of habitat on the Indian Mound Station Sanctuary and that the Scrub and Scrubby flatwoods require a more extensive tree removal than the Floodplain marsh or Floodplain swamp areas. There is also an eagle's nest in the scrubby flatwoods, and habitat restoration of that area will need to be scheduled outside of the eagle's nesting season.

- A question was received as to why some of the trees that appeared to be burned were left standing and not cut down.
- Clarification was provided that they were not cut down because some of the burned trees will eventually die, but some will not, and that this is normal for this type of habitat management. Additional clarification was provided that the dead trees have a biological benefit to insects and other plants and animals. Additional clarification was provided that the scrub oaks that do come back will not be allowed to grow as tall as they were previously, because historically fire frequency in scrub habitat prevented the majority of oaks to reach such height.

- A suggestion was received to place signs around the Sanctuary borders ahead of time that explained the site would be receiving habitat management as part of the habitat restoration process.
- Clarification was provided that there are a few signs of this type, but that it would be very beneficial if there were more signs, and if there was additional information provided to the public prior to future management activities of this type at other sites.

- Clarification was provided that reducing the fuel load on this site, to ensure the safety of neighboring homes, was one of the first priorities in the management process.

- A concern was received regarding air quality during future prescribed fires.

- Clarification was provided that citizens could sign up for a prescribed fire notification list and they would receive advance notice of planned prescribed fires.
- Clarification was requested as to whether or not the Board of County Commissioners had formally approved the prescribed fire at the Indian Mound Station Sanctuary before it was done.
- Clarification was provided that staff had obtained all required permits through the County's Natural Resources Department in order to conduct the prescribed fire and that formal approval from the Board was not part of the permitting process.
- Citizens asked if they could be notified when a prescribed fire was planned.
- Clarification was provided that citizens could sign up for a prescribed fire notification list and they could receive a few days advance notice of planned prescribed fires.
- A question was received asking if fire trucks would be on hand for future prescribed fires.
- Clarification was provided that fire and brush trucks, and a tractor plow are available if it is determined they are needed during prescribed fires and that the EEL Program works with the Florida Division of Forestry as well as county and local fire fighters during prescribed fires.
- A question was received regarding the type of surface of the trails and if they could be used by bicycles.
- Clarification was provided that the internal trails would be mowed and that hiking and biking would be allowed on site. External firebreaks/trails will be disked routinely and internal firebreaks/trails will be disked prior to future prescribed fires, which are scheduled to be done approximately every 3-5 years.
- A question was received regarding the name of the Indians who lived in the area and whether or not they should be involved.
- Clarification was provided that the site was being restored and protected with the help of an archaeologist and that it is thought that the Ais tribe who formerly occupied this area were no longer in existence.
- A request was received to send a map of the public access trails to the local homeowner's association.
- Staff will send the map.
- Clarification was provided that there has been documented history of the Indian Burial Mound being damaged in the past and that the EEL Program plans to protect the grave site.

- Clarification was provided that this site was originally brought to the attention of the EEL Program by citizens who felt the site had biological and cultural value and felt it should be protected.

- Concerns were expressed by some of the homeowners in attendance that when they purchased their homes, they were told that the land behind their houses would never change.
- Clarification was provided that this was an unfortunate situation, but that the information had been inaccurate, and that it had not come from the EEL Program.

- Additional concerns were received regarding the possible increase of illegal activity occurring in the area when the site is opened for public access.
- Clarification was provided that EEL Program staff will check on the site, as funding resources allow, and that citizens have the option of contacting EEL Program staff at the Enchanted Forest Sanctuary in Titusville, or contacting local law enforcement, if there are specific concerns or events that require follow up, and that historically, when legal and appropriate use of properties purchased by the Program becomes established, inappropriate activity levels drop significantly.

- A comment was received from a citizen in attendance at the meeting that he had first hand knowledge that scrub oaks would come back after being cut down or burned.
- Clarification was provided that in the future, when the vegetation does come back, it will be kept to a lower height which will provide better habitat for the scrub species in the area, and be safer to the neighboring homes.

- Information on the EEL Program's South Lake Conservation Area which received previous mechanical treatment and prescribed fire was provided as an example of how the habitat will recover as it is restored.

- Information was provided on the *Scrub Management Guidelines for Peninsular Florida: Using the Scrub-Jay as an Umbrella Species* which was prepared by environmental scientists and approved by the Selection and Management Committee and copies of the document were offered to anyone who requested one.

- Information on the next stage of management activities was provided. It is anticipated that management activities for at least a portion of the scrub and scrubby flatwoods remaining in the sanctuary is planned during the next year.

- Aerial photos of the Indian Mound Sanctuary from 1943, 1958, 1972 and 2006 and photos of the South Land Sanctuary from 1943, 2006, 2008-2009 were displayed to provide information on the open, sandy scrub habitats that existed prior to the time when Brevard County started becoming developed.

- Clarification was provided that staff would be willing to work with the neighborhood homeowners' association to provide information regarding future plans for the Indian Mound Station Sanctuary.

- Clarification was provided that during transition stages of restoration, the landscape can appear to be severely damaged, but that the purpose of the EEL Program referendum is to increase biodiversity, not take it away, and that the Program's goal is to make the site far more biologically diverse than it is now.

- Citizens expressed their appreciation for staff's willingness to contact folks prior to future prescribed fires and to provide additional information to the community regarding future plans for the sanctuary.

- Clarification was provided that minutes of the meeting would be prepared and posted to the EEL Program's web site and that additional opportunities for public input would be advertised as part of the Management Plan development process.

ADJOURNED:

The meeting was adjourned at 8:30 PM.

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
October 8, 2009
Attendance List

RECREATION AND EDUCATION ADVISORY COMMITTEE MEMBERS
Bob Champaigne
Thomas Dunkerton
Jim Durocher
Murray Hann
Jim Heath
Mark Nathan
Beverly Pinyerd
Ayn Samuelson
Doug Sphar

SUB-COMMITTEE MEMBERS
Barbara Meyer, Brevard County, Bicycle/Pedestrian Trail Program Coordinator
Paul Schmalzer, Selection and Management Committee

EEL PROGRAM STAFF
Brad Manley
Michael Wielenga

GUESTS
None

"Protecting and Preserving Biological Diversity
Through Responsible Stewardship of Brevard County's Natural Resources"
October 8, 2009
Approved February 18, 2010

ENVIRONMENTALLY ENDANGERED LANDS PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
October 8, 2009
Meeting Minutes

CALL TO ORDER:
Murray Hann, Chairman, called the meeting to order at 6:05 PM.

PUBLIC COMMENT:
None.

Additional Discussion
Jim Durocher requested an update regarding the plans for the Pioneer Trail on Merritt Island, which the REAC committee had visited in May.

Barbara Meyer stated the trail has been fully funded with stimulus money and that it is anticipated construction will begin in January 2010. She provided clarification that the funding has come from Transportation, and it will not provide amenities for canoe/kayaking enhancements, but it is expected that Parks and Recreation Department staff will be applying for grants to support canoe/kayaking activity in the future. She also confirmed that the main parking and trail head will be located at Kings Park; there will be limited parking with a small trail head off Hall Road; and that staff is working with the design engineers to ensure that future plans for canoe/kayaking activity are taken into consideration as the design and construction moves forward.

MINUTES:
Murray asked for comments to the May 14, 2009 REAC minutes. No comments or questions were received.

MOTION ONE
Doug Sphar moved to approve the May 14, 2009 minutes as presented
Mark Nathan seconded the motion.
The motion carried unanimously.

ADMINISTRATIVE REVIEW:
Brad Manley, EEL Program Volunteer and Public Access Coordinator, provided information on recent events at several EEL Program Sanctuaries:

Thousand Islands Conservation Area, Cocoa Beach
Staff has been working on the removal of invasive, exotic Australian pine and Brazilian pepper trees at 4th Street and on the Crawford parcel as part of the restoration project. In addition, with the assistance of volunteers, over a hundred native plants have been planted at each of these locations. The City of Cocoa Beach is assisting with arrangements for watering the new plantings.

Additional Discussion
Jim Durocher stated that citizens are forming a "Friends of the Thousand Islands" support group and that he will be one of the original board members.

A concern was received regarding pet litter at the 4th Street site. Staff is reviewing options.

Sams House, Pine Island Conservation Area, Merritt Island
The group reviewed a photographic history on the restoration effort at the Sams House which will become the Management and Education Center for the EEL Program's Central Region. A smaller historic building, which is one of the oldest buildings in Brevard County, is also being restored at this site. Additional information on the archaeological dig at the Sams homestead site which was coordinated by Tom Penders, a local archaeologist, and Scott Taylor, the EEL Program's Central Region Land Manager was also provided.

Events Calendars

- Enchanted Forest Sanctuary
  - Deadheaders group work on butterfly gardens
  - Stories for children
  - Junior bird watching
  - Friends of Enchanted Forest
  - Lunch Learning Programs
  - Oyster Mats
  - Music
  - Photography
  - Forest Festival scheduled for November 7th
- Barrier Island Center
  - Beach clean ups
  - Energy conservation programs
  - Art projects from items which can be recycled
  - Films

Florida Native Plant Hikes – Lead by Paul Schmalzer

- Salt Lake Sanctuary
- Dicerandra Scrub Sanctuary

Windover Archaeological Site Update
The State of Florida is considering purchase of the Windover burial pond archaeological site in Titusville and has asked the EEL Program to consider management of the site. EEL Program staff are working with site neighbors to ensure their concerns regarding possible EEL Program management of the site are taken into consideration during this process.

Additional Discussion
Murray requested that the REAC Committee be provided with information on land management and restoration activities so that they could have a better understanding of the long term benefits. He expressed his feeling that if citizens could become educated in this

regard, it would help them understand the over all process and realize that the land would recover, as he was beginning to understand.

Brad confirmed that the EEL Program has on-going programs to help provide citizens with information on Prescribed Fire and other land management activities.

Paul Schmalzer explained that in long unburned areas, scrub oaks can become large trees instead of shrubs and they become fire resistant and will not top kill. He explained that habitat quality for the Florida Scrub-Jays and other scrub dependent species begins to decline when the shrubs exceed more than about 2 meters and the herb layer that some scrub species depends on gets shaded out by the larger oaks. The open sandy patches characteristic of scrub habitat disappear in overgrown areas. In long unburned scrub, the fuel load must also be reduced in order to have a safe controlled burn, so some of the larger trees and underbrush is sometimes removed mechanically, before a site is burned. Paul stated his understanding that a site which has received mechanical reduction, or one which received mechanical reduction and is then burned, can appear very severe at first, and he agreed that educating the public on these topics is very beneficial. He also confirmed that although some sites require mechanical treatment before a controlled burn, additional mechanical reduction is not generally required because the future controlled burns will reduce vegetation sufficiently. In addition, scrub plants have part of their biomass underground and it is their nature to recover quickly after frequent fires, which were a part of the Florida landscape before the state became developed and natural fires were suppressed.

Brad stated that if the group was interested in additional information, staff could do a presentation on the topic.

Bob Champaigne suggested consideration of a field trip.

Barbara Meyer expressed her support of education on the benefits of prescribed fire.

Ayn Samuelson suggested consideration of storyboards in the kiosks when a site was going to receive mechanical reduction and prescribed fire.

Brad confirmed that information of this type is located at the Enchanted Forest in Titusville, and the Cruickshank Sanctuary in Rockledge.

Murray asked for clarification of the restoration plans for the Malabar Scrub Sanctuary West property and stated that he and other trail advocates use that site on an almost daily basis. He stated advance notice to trail users for any planned management activity there would be beneficial.

Additional information will be provided in the future.

AGENDA ITEMS:

Indian Mound Station Sanctuary (IMSS) – Revised Public Access Plan

Michael Wielenga, the North Region's Assistant Land Manager provided an overview of the revised Public Access Plan for the Indian Mound Station Sanctuary:

- North Region has 9 sanctuaries, including the Category I Enchanted Forest Sanctuary which includes the North Region's Management and Education Center.

- Eight of the nine sanctuaries are open to the public. The exception is the Indian Mound Station Sanctuary where EEL Program staff members are currently in the process of securing the Indian burial mound to protect it from further looting and vandalism. The site is also currently undergoing land management activities as part of a scrub habitat restoration project.
- The IMSS is comprised of approximately 85 acres of varying habitats, and includes a large amount of very overgrown scrub. The site is divided into 16 burn units. As a comparison the 2,500± acre Fox Lake Sanctuary is divided into 17 burn units. The high number of burn units for the IMSS is required due to the urban interface and the sanctuary's close proximity to both I-95 and US 1.
- The REAC Committee reviewed information on the IMSS in October of 2006. At that time, the Committee moved to support a delay of consideration of a Public Access Plan until restoration of the mound and sanctuary habitat could be completed.
- Previous plans to expand the footprint of the IMSS to provide a location for a parking area and a trail connection to Holder Park have not come to fruition. As a result, it is anticipated that a small parking area will be designated off Parrish Road, once the site is open to the pubic. It is possible that the site could be expanded some time in the future, if it remains undeveloped, but at the present time, other properties with stronger conservation value are higher up on the SMC's acquisition priority listing due to funding restraints.
- A public stakeholder's meeting was held for the IMSS in September 2009. The location of a trail which would have run close to neighboring homes has been moved as result of input provided by citizens at that meeting and staff is working on ways to increase the notification of neighborhood citizens prior to the implementation of land management activities.
- Photos from the 1943 aerials indicate the IMSS site historically included a great deal of sugar sand.
- There are plans to utilize native vegetation to assist in the protection of the mound.
- Additional steps in the Management Plan Approval process include 30 day public review, approval by SMC, approval by BOCC, and approval by State (for any property where the State provides partnership funding). This site is within the Brevard Coastal Scrub Ecosystem Project footprint, and may be eligible for 50% partnership funding some time in the future, if the State receives additional Florida Forever funding.
- Goals for this site include guided hikes, site security, invasive exotic plant removal, and trash removal after prescribed fire.

General discussion ensued throughout the presentation. The following items were noted:

- Murray Hann expressed concerns regarding the plan for all trails to be located on firebreaks for this sanctuary.

- Clarification was provided that fire lines are required in order to burn a site safely and that fire lines which need to be disked to mineral soil (instead of being mowed) do become unusable for a time after they are disked.
- Paul Schmalzer stated that he is aware of hikers who frequently use firebreaks as trails without complaint.
- Murray expressed concerns regarding fire line maintenance activity which has occurred in the past at the Malabar Scrub Sanctuary.
- Murray expressed concern that at some sanctuaries, fire breaks were wider than he felt they needed to be.
- Murray provided clarification that some of the previous Public Access Plan presentations to the REAC Committee included information on trails, but not for firebreaks.
- Murray suggested consideration of instructing personnel using heavy equipment to maintain the fire lines to leave a 3 foot undisturbed barrier which could be used as a trail on one side of all fire breaks.
- Doug Sphar requested consideration of providing information on planned trails and planned fire breaks as an overlay when the REAC committee reviews future public access plans.
- Brad agreed to research this request.
- Barbara Meyer stated her opinion that walking a sugar sand trail in the heat was unbearable and that trails placed on fire lines were doomed to fail.
- Jim Durocher expressed his feeling that the main reason he would want to hike a sugar sand trail in the hot summer months would be because it lead to another area which was more enjoyable to hike.
- Beverly Pinyerd stated she had just returned from visiting Africa and if you want to go there to see the plants and animals, you have to accept the natural setting.
- Clarification was provided that the primary purpose of an EEL Program sanctuary is the protection of biodiversity and that biodiversity, and safety, have a higher priority than passive recreation.
- Murray suggested consideration of a motion which requested that the Land Manager and the Fire Boss consider a plan that, to the largest extent feasible within the guidelines of the EEL Program, separated the trail and fire break systems.
- Ayn Samuelson expressed her support for Murray's statement.
- Mark Nathan reminded the group that Florida landscapes used to burn frequently, as a result of lightning, but that urban development has brought on fire suppression and he spoke of the benefits of prescribed fire to natural habitats.

- Mark Nathan agreed that a shaded trail is more pleasant to hike during the hot summer months.
- Barbara Meyer said that she is familiar with the manner in which the Mother's Day wildfires affected south Brevard County and that she knows that when a natural area has received prescribed burns, the surrounding neighborhoods are safer.
- Murray expressed concern regarding the unexpected change to natural areas if citizens are not aware that restoration efforts are planned for a site.
- Clarification was provided that staff is currently working on ways to increase the information regarding planned management activities to the public.
- Paul Schmalzer reminded the group of the additional impact that would result on the small site if a trail system was created in addition to the 16 fire units.
- Murray suggested consideration of running the fire lines on an X Y axis across the site.
- Clarification was provided that fire lines need to be placed according to the habitat boundaries and other natural lines.
- Clarification was provided that there are no plans for biking at this site.
- Michael Wielenga explained that the South Lake Conservation Area (SLCA) is approximately a mile and a half from the IMSS. He stated that SLCA contains trails that are maintained with a mower and hiking opportunities are available there.
- Doug Sphar reminded the group that monitoring for the trail system would be an adaptive process.

MOTION TWO

- **Jim Durocher moved to revisit the Indian Mound Station Sanctuary Public Access Plan, with conservation being the primary goal, and to ask staff to have the Fire Manager and the Land Manager meet to see if they could come up with some better ideas for the trails.**
    - **Ayn Samuelson seconded the motion.**
    - **Four members voted to support the motion. Five members voted in opposition. The motion failed.**

MOTION THREE

- **Bob Champaigne moved to accept the Indian Mound Station Sanctuary Public Access Plan as presented by Staff.**
    - **Beverly Pinyerd seconded the motion.**
    - **The motion carried with a majority of members voting to support the Plan.**
- Brad Manley stated that staff's intent was to receive input on the proposed plan and that it was apparent there were outstanding issues which needed to be addressed.
- Mark Nathan stated he felt that receiving additional information on the benefits of prescribed fire and habitat restoration would be very helpful.

- Murray asked if there were any other committee member comments. No additional comments were received.
- Brad stated that staff would schedule additional discussion on the Indian Mound Station Sanctuary Public Access Plan.

NEXT MEETING:
To be determined.

ADJOURNED:
The meeting was adjourned at 8:20 PM.

SUMMARY OF MEETING MOTIONS:

- **Motion to approve the May 14, 2009 minutes as presented.**
  - Motion passed.

- **Motion to revisit the Indian Mound Station Sanctuary Public Access Plan, with conservation being the primary goal, and to ask staff to have the Fire Manager and the Land Manager meet to see if they could come up with some better ideas for the trails.**
  - Motion failed.

- **Motion to approve the Indian Mound Station Sanctuary Public Access Plan as presented by staff.**
  - Motion carried with a majority of members voting to support the Plan.

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE (REAC)
May 13, 2010
Attendance List
DRAFT

RECREATION AND EDUCATION ADVISORY COMMITTEE MEMBERS
Bob Champaigne
Jim Durocher
Murray Hann
Mark Nathan
Doug Sphar

SUB-COMMITTEE MEMBERS
Paul Schmalzer, Selection and Management Committee

EEL PROGRAM STAFF
Laura Clark
Brad Manley

GUESTS
None

"Protecting and Preserving Biological Diversity
Through Responsible Stewardship of Brevard County's Natural Resources"
May 13, 2010
DRAFT

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
May 13, 2010
Meeting Minutes
DRAFT

CALL TO ORDER:
Doug Sphar, Chairman, called the meeting to order at 6:25 PM. Clarification was provided that a quorum was not present at the time the meeting was called to order.

MINUTES:
Approval of the February 18, and April 24, 2010 minutes was delayed until later in the meeting.

ADMINISTRATIVE REVIEW:
Brad Manley, EEL Program Public Access Coordinator, provided update information on the Thousand Islands Conservation Area in Cocoa Beach:

- Cooperative efforts continue with the City of Cocoa Beach.
- Habitat restoration, including the removal of invasive, exotic Australian pine trees is going well.
- Public access plans include:
  - Soft canoe launch, with waterway signs at decision points.
  - Paddling and Hiking Trails.
  - Possible boardwalk.

Additional Discussion
During the update, the group shared information on the Diamondback terrapin which lives exclusively in brackish water habitats like tidal marshes, estuaries and lagoons.

Comments received from the group include:

- Consideration should be given to protection of beaches used by horseshoe crabs.
- Consideration should be given to the size and number of waterway directional sign to ensure that there isn't a significant negative impact to the adventure of the canoe/kayak trip.

An additional member of the Committee joined the group and confirmation was provided that a quorum was in attendance.

MINUTES
February 18, 2010 REAC Minutes
Doug Sphar called for comments to the February minutes.

MOTION ONE
Murray Hann moved to approve the February 18, 2010 minutes as presented.

Additional Discussion
Paul Schmalzer provided information on a typographical error on the 4th paragraph on page 5. The sentence will be corrected as follows: "The primary objective of the land

acquisition ~~land~~ plan is the acquisition of environmentally endangered lands for preservation/conservation."

Paul also stated that he believed that it would be beneficial to provide information which clarified that although the original Jordan Scrub Sanctuary Management Plan had been approved by the State, an update is in progress as a result of the acquisition of the Coastal Jewel site and donation of Cochran property.

Murray moved to revise his motion to move for approval of the February 18, 2010 minutes, as amended by the correction and clarification provided by Paul.

Jim Durocher seconded the motion.
The motion carried unanimously.

April 24, 2010 Field Trip Field Trip Minutes
The April 24, 2010 minutes for the REAC Committee's Field Trip to the Indian Mound Station Sanctuary were presented for approval.

Doug expressed the group's appreciation for their trip to the Sanctuary which allowed them to obtain a greater understanding of the site.

Clarification was provided that the field trip minutes are generally presented in a different format from the general meeting minutes because the meetings are structured differently and that no votes or decisions take place during the meeting.

MOTION TWO
Muray Hann moved to approve the April 24, 2010 minutes as presented.
Jim Durocher seconded the motion.
The motion carried unanimously.

REAC Reports
Murray provided an informative overview of the book Wilderness Warrior: Theodore Roosevelt and the Crusade for America by Douglas Brinkley, along with his recommendation that it was very enjoyable reading.

Doug stated that it was his understanding that the Procedures Committee would be recommending that the Board add an additional voting member to the REAC Committee to represent eco-tourism, rather than increasing the size of the Selection and Management Committee.

Additional Discussion
Several committee members expressed concerns regarding the continuous absences of some of the members.

MOTION THREE
Murray Hann made a motion to inform the appropriate Commissioners that some of their appointees are not showing up for meetings.

Mark Nathan seconded the motion.

Additional Discussion
The group discussed the need for all REAC members to participate in the Committee by attending meetings as often as possible, along with possible options for ensuring that REAC members who agree to serve on the Committee take an active role.

Jim Durocher stated that he is supportive of having additional criteria requirements for REAC members and that he has expressed this feeling to the Procedures Committee.

It was determined that staff will contact each of the REAC members who have not been attending meetings and have not contact staff to explain their absences, to determine if they wish to continue to serve on the Committee. Additional information will be provided at the next meeting regarding meeting attendance guidelines.

The motion was tabled until the next meeting.

AGENDA ITEMS:

Indian Mound Station Sanctuary Public Access Plan Revisions

Xavier de Seguin des Hons, North Region Land Manager, explained that during the REAC's original October 12, 2006 review of the Indian Mound Station Sanctuary (IMSS) they had voted to support a delay in consideration of a public access plan until restorations of the Indian Mound and sanctuary habitat could be completed. This work has been progressing well and on September 23, 2009 a Public Access Plan Public Meeting was held to provide information to citizens regarding plans for the site and to accept comments from citizens and other stakeholders.

The Plan was presented to the REAC on October 8, 2009 where several concerns were received, although the Plan did receive a vote of support from the Committee near the end of the meeting. Clarification was provided on October 8th that staff's intent for that meeting was to receive input on the proposed plan and that it was apparent there were outstanding issues which needed to be addressed. Since that time, staff has worked to address these concerns.

Xavier provided update information for the IMSS Public Access Plan:

- The Plan only relates to the footprint of the existing Sanctuary. Acquisition of property to the north, which has been under consideration by the SMC, has not been one of the Program's highest priorities.
- Restoration of the Indian Mound is almost complete:
  - Mound is fenced at the base.
  - Approximately 6 inches of dirt has been placed on the top of the mound to protect it.
  - A chain link fence has been laid down on the ground at the top of the mound to assist in keeping the area secure.
  - It is anticipated that an additional 6 inches of dirt will be added to the top of the mound when additional free dirt becomes available.
  - Most of the restoration work on the mound has been accomplished at minimal cost to the EEL Program because the dirt was provided free of charge by Brevard County Road and Bridge and because EEL staff provided all the labor for the dirt installation as well as the construction of the fence.
  - Tom Penders, archaeologist, has been assisting with the protection of the mound. Tom has assisted as a volunteer at the Pine Island Conservation Area as well.
- Habitat Restoration
  - Proceeding very well, but there are still some overgrown areas that need work.

  - The Department of Forestry will be assisting with fireline installation at no charge to the Program.
- Category 2 site
  - The site contains an active eagle's nest.
  - Restoration activities will work around the required buffer for the nest.
- Trails
  - Previous plans for trails to be located on fire lines have been revised. All areas previously identified for joint use as trails/fire lines will become fire lines only. New trails are being established.
  - Staff has attempted to locate the new trails in areas that will stay shady as much as possible.
  - A 1.2 mile trail is planned. Passive recreation opportunities will include hiking and biking, but not horseback riding as this is a small site and there will not be any place to park a horse trailer.
  - Part of the trail will be located within the ecotone (transition area between two adjacent but different plant communities) between the scrubby area and the wetlands.
  - The public access plan is an adaptive process and areas will be monitored for impacts to the natural habitat.
- Firelines
  - Firelines will provide for small fire units as this is a small site located within an urban area.
  - There are currently some heavy fuel loads on this site and additional chopping will be required to burn the site safely.
- Parking
  - There are plans for a small parking lot which could accommodate 6-8 cars.

Additional Discussion
Xavier asked the group if there were any questions or comments.

Murray stated that he felt staff had been receptive to statements made by committee members during the last review of plans for this sanctuary and he felt the revised plan was a good compromise.

MOTION FOUR
Murray Hann moved to support the revised Indian Mound Station Sanctuary as presented.
Bob Champaigne seconded the motion.
The motion carried unanimously.

NEXT MEETING
Date to be determined

ADJOURNED:
The meeting was adjourned at 8:32 PM.

SUMMARY OF MEETING MOTIONS:

- Motion to approve the February 18, 2010 minutes as amended.
- Motion to approve the April 24, 2010 minutes as amended.
- Motion to inform the appropriate Commissioners that some of their appointees are not showing up for meetings. This motion was tabled until the next meeting.
- Motion to support the revised Indian Mound Station Sanctuary as presented by staff.

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

INTER-OFFICE MEMORANDUM

TO: Beth Doud
Reference Desk
Scootsmoor/Mims Library

FROM: Xavier de Seguin des Hons
North Region Land Manager
Environmentally Endangered Lands Program
Enchanted Forest Sanctuary
444 Columbia Blvd
Titusville, FL 32780
321-264-5185
Fax # 321-264-5190
Xavier.deseguin@brevardparks.com

DATE: October 20, 2010

RE: EEL Program Draft Management Plan for Review

Enclosed is the Brevard County Environmentally Endangered Lands (EEL) Program's draft management plan for the Indian Mound Station Sanctuary. The management plan review process calls for a 30-day public review.

Please hold the draft management plan at the Reference Desk until 5:00 PM on November 30, 2010. After that time, please feel free to dispose of the draft document in your recycling containers. Please let me know if you have any questions about the management plan review process or about the EEL Program. Thank you for your assistance with this important aspect of land management.

Stakeholders have received the following information to alert them to the review process:

> The Brevard County Environmentally Endangered Lands (EEL) Program is inviting the public to review the draft Land Management Plan for the Indian Mound Station Sanctuary. Copies are available to review at the Central Brevard, Titusville, and Mims/Scottsmoor Libraries, at the Enchanted Forest Sanctuary, and the at EEL Program Office at 91 East Drive in Melbourne, FL. The plan is also available on-line at www.eelbrevard.com.
> If you choose, you can provide public comment before November 30, 2010 to the EEL Program by submitting written comments to:
>
> Xavier de Seguin des Hons
> Fax # - 321-264-5190
> E-mail – xavier.deseguin@brevardparks.com
> For questions, please call 321-264-5185