Helen and Allan Cruickshank Sanctuary Management Plan

Prepared by:

Steve McGuffey
Brevard County
Environmentally Endangered Lands Program
Parks and Recreation Department
91 East Dr.
Melbourne, Florida 32904

January 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)	**App. A**
4. The legal description and acreage of the property.	**5**
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.	**1**
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.	**N/A**
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;	**6-8**
B. Archaeological and historical resources*;	**12**
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;	**8**
D. Fish and wildlife and their habitat;	**8-12**
E. State and federally listed endangered or threatened species and their habitat;	**12-13, App. I-L**
F. Beaches and dunes;	**N/A**
G. Swamps, marshes and other wetlands;	**8,11**
H. Mineral resources, such as oil, gas and phosphate;	**N/A**
I. Unique natural features, such as coral reefs, natural springs, caverns, large sinkholes, virgin timber stands, scenic vistas, and natural rivers and streams; and	**6**
J. Outstanding native landscapes containing relatively unaltered flora, fauna, and geological conditions.	**N/A**
11. A description of actions the agency plans , to locate and identify unknown resources such as surveys of unkhnown archeological and historical resources.	**14**
12. The identification of resources on the property that are listed in the Florida Natural Areas Inventory. *Include letter from FNAI or consultant, where appropriate.*	**App. M**
13. A description of past uses, including any unauthorized uses of the property. (Example #4)	**14-16**
14. A detailed description of existing and planned use(s) of the property. (Example #5)	**18**
15. A description of alternative or multiple uses of the property considered by the managing agency and an explanation of why such uses were not adopted.	**1, 18**
16. A detailed assessment of the impact of planned uses on the renewable and non-renewable resources of the property and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to mitigate damage caused by such uses.	**18, 22**
17. A description of management needs and problems for the property.	**18-26**
18. Identification of adjacent land uses that conflict with the planned use of the property, if any.	**N/A**
19. A description of legislative or executive directives that constrain the use of such property.	**N/A**
20. A finding regarding whether each planned use complies with the State Lands Management Plan adopted by the Trustees on March 17, 1981, and incorporated herein by reference, particularly whether such uses represent "balanced public utilization", specific agency statutory authority, and other legislative or executive constraints.	**5**
21. An assessment as to whether the property, or any portion, should be declared surplus.	**5**
22. Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. **Clearly defined map of parcels can be used.**	**N/A**
23. A description of the management responsibilities of each agency and how such responsibilities will be coordinated, including a provision that requires that the managing agency consult with the Division of Archives, History and Records Management before taking actions that may adversely affect archaeological or historic resources. (Example #6)	**1, 14**
24. A statement concerning the extent of public involvement and local government participation in the development of the plan, if any, including a summary of comments and concerns expressed. (Example #7)	**1, App. P**

Management Plan Compliance Checklist - Natural Resource Lands	
Requirements	**Page Numbers**
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.	**App. O**
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.	**18-26**
27. The management plan shall provide for the conservation of soil and water resources and for the control and prevention of soil erosion.	**9**
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.	**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.	**N/A**
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.	**N/A**
31. A physical description of the land.	**5-6**
32. A desired outcome	**1**
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.	**8-12, 14, 18,19**
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.	**23-26**
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.	**23-26**
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).	**27**
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;*	**24-27**
(B) Public access and recreational opportunities;	**24, 26, 27**
(C) Hydrological preservation and restoration;	**24**
(D) Sustainable forest management;	**N/A**
(E) Exotic and invasive species maintenance and control;	**24-25**
(F) Capital facilities and infrastructure;	**26**
(G) Cultural and historical resources;	**26**
(H) Imperiled species habitat maintenance, enhancement, restoration, or population restoration	**25**
253.036 Forest Management. —	

Management Plan Compliance Checklist - Natural Resource Lands	
Requirements	**Page Numbers**
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)	**N/A**
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.**	**N/A**
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**.	**N/A**
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.**	**N/A**
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.	**N/A**
36. Summary of Advisory Group Meeting should be provided to DSL/OES.	**N/A**
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.	**18-23**
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.	**19-23**
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.**	**23-27**
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.*	**27**
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.*	**27**
38. A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	**1**
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.*	**N/A**
Other Requirements	
40. This checklist table at front of plan (pursuant to request of ARC and consensus agreement of managing agencies.)	**I,ii,iii**
41. Accomplishments (implementation) from last plan (format variable by agency)	**N/A**
42. FNAI-based natural community maps (may differ from FNAI in some cases)	**App. C,M**
43. Fire management plans (either by inclusion or reference)(259.032)	**17**
44. A statement regarding imcompatible uses [ref. Ch. 253.034 (9)]	**N/A**
45. Cultural resources, including maps of all sites except Native American sites*	**App. N**
46. **Arthropod control plan**	**12, App. T**

HELEN AND ALLAN CRUICKSHANK SANCTUARY MANAGEMENT PLAN

TABLE OF CONTENTS

Page

I. EXECUTIVE SUMMARY…….....1

II. INTRODUCTION……2

III. SITE DESCRIPTION AND LOCATION……...5

IV. NATURAL RESOURCE DESCRIPTIONS……5

A. Physical Resources……5

a. Climate……...5

b. Geology……..6

c. Topography…… 6

d. Soils…….….. 6

e. Hydrology…… 8

B. Biological Resources……. 8

a. Ecosystem Function……...8

b. Flora…….. 9

c. Fauna……..11

d. Designated Species……12

e. Biological Diversity……...13

C. Cultural…….. 13

a. Archaeological……13

b. Historical……14

c. Land Use History……... 14

d. Public Interest……14

V. FACTORS INFLUENCING MANAGEMENT……..14

A. Natural Trends……...14

B. Human Induced Trends…… 15

C. External Influences……16

D. Legal Obligations and Constraints…… 16

E. Management Constraints……16

a. Fire…….17

b. Exotic Control……...18
F. Public Access and Passive Recreation……...18
VI. MANAGEMENT ACTION PLANS……...19
A. Goals……. 19
B. Strategies and Actions……...20
VII. PROJECTED TIME TABLE FOR IMPLEMENTATION……24
VIII. FINANCIAL CONSIDERATIONS…… 27
IX. BIBLIOGRAPHY……28

APPENDICES

A. Site Map
B. Burn Units Map
C. Vegetation Map
D. Topography Map
E. Soils Map
F. Historical Aerial Map
G. Gopher Tortoise Survey Map
H. Proposed Stormwater Design
I. Plant Species
J. Avian Species
K. Herptile Species
L. Mammal Species
M. Florida Natural Areas Inventory Element Occurrences
N. Division of Historical Resources Documentation Review
O. Letter from The City of Rockledge
P. Public Comments
Q. SMC Minutes
R. Stipulation Letter to Transportation and Engineering
S. REAC Minutes
T. Arthropod Plan
U. Ownership Map

I. EXECUTIVE SUMMARY

The Helen and Allan Cruickshank Sanctuary (Cruickshank) is part of the 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 ecosystem functions" (Brevard County EEL, 1997). The program also establishes a network of public land to provide passive recreation and environmental education programs to Brevard County residents and visitors. Acquired by the EEL Program in 1994, the Helen and Allan Cruickshank Sanctuary consists of 160 acres in Rockledge (Central Brevard County), Florida. It is situated 1/2 mile West of U.S. Highway 1, located along Barnes Boulevard. At the August 15, 1995 EEL Program Selection and Management Committee (SMC) meeting, the Committee approved unanimously a suggestion from the City of Rockledge to name the sanctuary in memory of the Cruickshank family. Helen and Allan were both avid birders and members of the Audubon Society. Allan was instrumental in convincing NASA to turn over areas of the Kennedy Space Center not used by the space program to the U.S. Fish and Wildlife Service as part of the Merritt Island National Wildlife Refuge. Allan was an accomplished bird photographer and his photographs can be seen in a handful of books published by himself and his wife Helen.

The State of Florida reimbursed the County for 50% of the purchase price. This land is titled to the State of Florida and Brevard County is designated as the land management agency under lease agreement # 4263. As part of the management plan review process the plan was available for public review and comment for 30 days and has been reviewed by the City of Rockledge for compliance with their local comprehensive plan. Comments from the review period are included in the appendix of this plan and have been incorporated into the plan where appropriate. The EEL Program Selection and Management Committee then reviews the plan and recommends approval of the plan during one of the SMC regularly scheduled meetings. The plan then will require review and approval from the Brevard County BOCC before going to the Acquisition and Restoration Council (ARC). ARC is responsible for reviewing all management plans for State-owned lands.

The Cruickshank Sanctuary contains a wide diversity of natural habitats, including scrubby flatwoods, mesic flatwoods, sand pine scrub, oak scrub and depression marsh. Protected wildlife species noted on site include the Florida scrub-jay (*Aphelocoma coerulescens*) and the gopher tortoise (*Gopherus polyphemus*). The primary management goals for this Sanctuary 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 also important management goals. The property was previously designated for the Central Region Management and Education Center, but on July 9, 2002, the County Commission directed the EEL Program to develop the Central Region Management and Education Center at the Pine Island Conservation Area. Currently there are no further plans to develop a center for regional management at the Cruickshank Sanctuary. Due to the small area of the site, the presence of the Florida

scrub-jay, and the high quality of the habitats it is recommended that the site be reclassified as a Category 2 site, which would have minimal capital improvement. Improvements to Category 2 sites might include nature trails, interpretive signs along nature trails, and some limited facilities such as small parking area, kiosks, overlooks and boardwalks. The original management plan for the site (The Helen & Allan Cruickshank Sanctuary Site Development Report & Land Management Plan, prepared by Kha Le-Huu & Partners in 1999) included the development of an education center on site. This management plan is a revision to this original management plan, and portions of the Kha Le-Huu plan are incorporated herein.

The Helen and Allan Cruickshank Sanctuary will be managed as a part of the Central Mainland Regional Management area. Public access will encourage awareness of the County's natural and cultural assets, foster a greater understanding of the balance between access and non-consumptive use of the site's resources, and promote environmental stewardship, benefiting both the local community and the EEL referendum goals.

II. INTRODUCTION

In a 1990 and 2004 referenda, Brevard County voters approved the Environmentally Endangered Lands (EEL) Program. The Program 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 through acquisition and management. 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."

The Program established a conceptual framework and funding mechanism to implement an EEL sanctuary network in Brevard County. The EEL Program 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:

- Barrier Island Ecosystem Center
  Regional Management Center for South Beaches

- Enchanted Forest Sanctuary
  Regional Management Center for North Mainland

- Pine Island Conservation Area
  Regional Management Center for Central Mainland

- Malabar Scrub Sanctuary
  Regional Management Center for South Mainland

These centers provide strategically located hubs for implementing the countywide conservation, passive recreation and environmental education goals of the EEL Program. These sites are proposed for varied public access and development of environmental education/land management centers.

As outlined in the Sanctuary Management Manual (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 systems 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 *Sanctuary Management Manual* of the EEL Program establishes a general framework for management of specific sites and establishes ten Principles of Conservation summarized, 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 conservation principles, this management plan provides specific goals, strategies and actions to guide management of the Helen and Allan Cruickshank Sanctuary in terms of the objectives of the EEL Program. The plan is divided into the following 10 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 as well as a description of 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, special concern species, and biological diversity), and cultural (archeological, historical, land-use history, 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 timeframe 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* include supplemental information.

Uses planned for the Cruickshank Sanctuary 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 ArticleVIII, 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 The City of Rockledge, Florida, as approved and adopted. The letter confirming compliance is contained in **Appendix O**.

III. SITE DESCRIPTION AND LOCATION

The Helen and Allan Cruickshank Sanctuary consists of 160 acres in Rockledge (Central Brevard County), Florida (Section 22, Township 25 South, Range 36 East). Parcel #'s 25-36-22-00-00008.0-0000.0, 36-22-00-00001.0-0000.0, 36-22-00-00755.0-0000.0, 36-22-00-00754.0-0000.0, 36-22-00-00751.0-0000.0. A map showing State and County ownership of the parcels is included as **Appendix U**. It is situated 1/2 mile West of U.S. Highway 1, located along Barnes Boulevard. Other natural areas in proximity to the site include the Indian River Lagoon to the east and the Viera Conservation Easement to the south. This sanctuary contains a wide diversity of natural habitats, including scrubby flatwoods, mesic flatwoods, sand pine scrub, oak scrub and depression marsh. The site is surrounded by residential and commercial development creating an "island" effect to the site. Access to the site is from Barnes Boulevard where visitors will find a parking area, informational kiosk and bike rack. There is a one mile hiking trail that will take visitors through a variety of habitat types found on the sanctuary. Cruickshank will be open to the public during daylight hours. Included in **Appendix A** is a site map showing the location of the site and access point. There are no portions of the Sanctuary that should be declared surplus.

IV. NATURAL RESOURCE DESCRIPTIONS

This section provides descriptions of natural resources, including physical resources (climate, geology, topography, soils and hydrology), biological resources (ecosystem

function, flora, fauna, special concern species, and biological diversity), and cultural resource information (archeological, historical, land-use history, and public interest).

A. Physical Resources

a. Climate

The Cruickshank Sanctuary 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 and Indian River Lagoon.

There are reliable rainfall records from Titusville that span approximately 100 years, and average 53.8 inches/year. Wet and dry seasons are typically well defined, with the wet season occurring between May and October and the dry season between November and April. Annual and seasonal rainfall is subject to large variation in both amount and distribution. During spring and summer, Brevard County experiences numerous thunderstorms often coupled with frequent lightning strikes.

Prevailing winds are generally from the north to northeast during the dry season (November-April) and from the east-southeast during the wet season (May-October). Weather patterns such as cold fronts and thunderstorms will affect local wind direction depending upon the time of year.

Short term events such as hurricanes and wildfires are common in Florida and can have great impacts on the composition and distribution of species and natural communities in Florida, and Brevard County is no exception.

b. Geology

Since the late Oligocene, Florida has been a continuous peninsula, comprised of numerous ecosystems. The most ancient terrestrial systems are probably the mesic forests and the xeric oak/scrubby ecosystems. Scrub ridges that are present throughout Florida and Brevard County remained high and dry during historical water level fluctuations that dramatically shaped the composition of the state's rich scrub biota (Myers, 1990).

The Cruickshank Sanctuary 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 relict 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, and is 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. Formations of the Atlantic Coastal Ridge is associated with Pamlico time (ca. 140,000-120,000 years before present) when the sea level was about 30 feet higher than present (Schmalzer et al. 1999).

Most of Florida's major lakes, bayheads, and swamps are newly formed since the Wisconsinan glacial stage. This implies that these wetland systems have been repopulated during the last several thousand years in a manner comparable to island colonization (Webb, 1990).

c. Topography

The Cruickshank Sanctuary has a sand ridge running north-south along the powerline easement, bisecting the north east portion of the site with elevations of 25' to 30' NGVD. Elevations of 20' to 25' NGVD occur in the flatwoods areas, and 25' to 30' NGVD in the disturbed area in the northeast corner of the site, based upon the USGS Topographic Survey map (see **Appendix D**).

d. Soils

The soils within the Cruickshank Sanctuary are shown in **Appendix E** and are defined by the Natural Resource Conservation Service as follows:

Anclote sand (An)
Immokalee sand (Im)
Myakka sand (Mk)
Myakka sand, ponded (Mp)
Paola fine sand, 0 to 5% slopes (PfB)
Paola fine sand, 5 to 12% slopes (PfD)
Pomello sand (Ps)
Quartzipsamments, smoothed (Qr)
Satellite sand (Sa)
St. Lucie fine sand (SfB)

The following descriptions are generic and not specific to Cruickshank Sanctuary.

Anclote sand (An) is a nearly level, very poorly drained sandy soil. This soil type is characteristic of broad areas on flood plains, in marshy depressions in the flatwoods, and in poorly defined drainage ways. Most of these areas are vegetated by herbaceous communities (primarily grasses), and some are covered with thick stands of hardwoods.

Immokalee sand (Im) is a nearly level, poorly drained sandy soil. This soil type is characteristic of broad areas in flatwoods, on low ridges between sloughs, and in low narrow areas between sand ridges and lakes and ponds. Natural vegetation is primarily pine flatwoods, saw palmetto, gallberry, and wiregrass.

Myakka sand (Mk) is a nearly level, poorly drained sandy soil. This soil type is characteristic of broad areas in flatwoods, in depressions, and in areas between sand ridges and ponds and sloughs. Natural vegetation is primarily pine flatwoods, saw palmetto, gallberry, and wiregrass.

Myakka sand, ponded (Mp) is a nearly level, poorly drained sandy soil. This soil type is characteristic of depressions in flatwoods. Natural vegetation is primarily maidencane or St. Johns wort, although water-tolerant trees are found in some areas, and water lilies and flags are found in deeper standing water.

Paola fine sand, 0 to 5% slopes (PfB) is a nearly level to gently sloping, excessively drained sandy soil found on the sides and tops of ridges. Most areas of this soil type are vegetated by sand pine with a sparse understory of saw palmetto, rosemary and prickly pear cactus. It is classified as an aquifer recharge soil.

Paola fine sand, 5 to 12% slopes (PfD) is a nearly level to strong sloping, excessively drained sandy soil found on the sides and tops of high ridges. Most areas of this soil type are vegetated by sand pine with a sparse understory of saw palmetto, rosemary and prickly pear cactus. It is classified as an aquifer recharge soil.

Pomello sand (Ps) is a nearly level, moderately well-drained sandy soil found on broad low ridges and low knolls in the flatwoods. Natural vegetation characteristics of these soils consists of long-leaf pine with an undergrowth of live oak, saw palmetto, and grasses. It is classified as an aquifer recharge soil.

Quartzipsamments, smoothed (Qr) are nearly level to steep sandy soils that have been reworked by earth moving equipment. Many areas are former sloughs, marshes or shallow ponds that have been filled, or are high ridges that have been scraped down and re-contoured.

Satellite sand (Sa) is a nearly level, somewhat poorly drained sandy soil on broad low ridges in the flatwoods. Natural vegetation is primarily pine flatwoods, scattered scrub live oak, and an understory of saw palmetto, gallberry, runner oak and wiregrass.

St. Lucie fine sand, 0-5 percent slopes (SfB) is an excessively drained sandy soil on high dunelike ridges and isolated knolls. The water table is below a depth of 10 feet. Natural vegetation is of sand pine and an understory of scattered saw palmetto, rosemary and cactus.

e. Hydrology

Hydrologic features on the site include depression marsh systems in the pine flatwoods, a ditch in the southern portion of the property, a small pond in the northeast corner, and the ditches that form the northern boundary and portions of the western and southern

boundaries of the site. During high water levels in the ditches there is overflow into areas of the sanctuary. This is occurring along the western boundary of the site where a marsh is connected to the ditch through a breach in the ditch berm. This is likely causing an alteration in the marsh hydrology. The isolated depression marshes within the Sanctuary interior typically maintain water levels at or above the surface for long periods throughout the year.

B. Biological Resources

Protection of the natural resources within the Cruickshank Sanctuary depends upon five key management issues: Reintroduction of a fire regime, restoration of altered plant communities, removal of exotic vegetation, limitation of recreational impacts and monitoring all these above items.

Proper management of the Cruickshank Sanctuary is essential for the protection of the Florida scrub-jay population in the central area of Brevard County. The site contains a diverse assemblage of natural communities and associated species. This association of habitats on site represents a natural mosaic typical of coastal Florida.

a. Ecosystem Function

This property is a mixture of flatwoods (mesic and scrubby) and scrub. The uniqueness of this property comes not in the component communities that make up the 160-acre tract but in the combination of these communities into a mosaic. Protection and management of this property lies in the management of vegetative succession. Flatwoods communities are a result of the mixing of two powerful elements, fire and water. The biodiversity of this tract will be maintained and improved through the careful application of fire and hydrological restoration. Aerials from 1943 illustrate that the depression marshes have not changed significantly in comparison to modern aerials. Their persistence is vital for the wildlife dependent upon their existence for their breeding and foraging needs.

b. Flora

This section describes the plant communities identified within the Cruickshank Sanctuary. The vegetative communities are described using the Florida Natural Areas Inventory's Guide to The Natural Communities of Florida. A list of plant species encountered was recorded for the study site and is included in **Appendix I**.

Upland Communities

Mesic Flatwoods

This community is the dominant plant assemblage on the Sanctuary, and is the most widespread plant community in the State of Florida. An open canopy forest of widely spaced pine trees with little or no understory and a dense ground cover of herbs and shrubs characterize mesic flatwoods. Typical understory vegetation consists of saw

palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), and grasses. A portion of this habitat has been altered due to the interruption of historic fire frequencies. A return to a more natural fire regime is necessary for all of the mesic flatwoods on property.

Fetterbush and gallberry are often dominant shrubs in this ecosystem, but in many stages of mesic flatwoods, saw palmetto can be dominant. The height of the shrub layer accurately reflects the period since the last fire event. Occasionally pawpaw (*Asimina reticulata*), tar flower (*Befaria racemosa*), and redbay (*Persea borbonia*) are present. Ground cover contains yellow-star grass (*Hypoxis juncea*), pennyroyal (*Piloblephis rigida*), and big yellow milkwort (*Polygala rugelii*).

Mesic flatwoods occur on relatively flat, moderately to poorly drained terrain. The soils typically consist of 1-3 feet of acidic sands overlying an organic hardpan or clay like subsoil. The hardpan substantially reduces the percolation of water below and above its surface. During the rainy seasons, water frequently stands on the hardpan's surface and briefly inundates much of the flatwoods; while during the drier seasons, ground water is unobtainable for many plants whose roots fail to penetrate the hardpan. Thus, many plants are under the stress of water saturation during the wet seasons, and under the stress of dehydration during the dry seasons.

Another important physical factor in mesic flatwoods is fire, which likely occurred every 1 to 8 years during the pre-Columbian times. Nearly all plants and animals inhabiting this community are adapted to periodic fires; several species actually depend on fire for their continued existence. Without frequent fires, mesic flatwoods will undergo an increase in tree density, with con-commitment decrease in understory/herbaceous coverage. There are documented structural changes with decrease in fire frequency and the suitability of the habitat for flatwoods species (both animal and plant) may decline without an actual change in dominant species. Additionally, the dense layer of litter that accumulates on unburned sites can eliminate the reproduction of pines that require a mineral soil substrate for proper germination. Thus, the integrity of the mesic flatwoods community is dependent upon frequent fires. Mesic flatwoods often grade into wet flatwoods, dry prairie, or scrubby flatwoods, depending upon elevation.

Scrubby Flatwoods

Scrubby flatwoods occur on higher soil elevations than mesic flatwoods. An open canopy of widely scattered pine trees with a sparse shrubby understory and areas of barren white sand characterize scrubby flatwoods. Fire is an important component of this habitats' overall health, and should be introduced in a rotational pattern to impose a mosaic formation within the community to insure long-term scrub-jay fecundity. Myrtle oak (*Quercus myrtifolia*) is the dominant oak species with a shrub layer of saw palmetto, fetterbush, and rusty lyonia (*Lyonia furruginea*) present. Wiregrass (*Aristida spp*.), shiny blueberry (*Vaccinium myrsinites*), dwarf huckleberry (*Gaylussacia dumosa*), lupine (*Lupinus diffusus*), and ground lichens are present.

Ruderal

A disturbed area colonized to some extent by plants that do not constitute the naturally occurring community characterizes this community. Many times opportunistic non-native species will be the first to appear. In the case of the Cruickshank Sanctuary, there is a disturbed area in the northeast portion of the site where past sand mining operations took place as well as soil disturbance from ATV use, and this has led to the recruitment of Brazilian pepper (*Schinus terebinthifolius*) and other exotics. The removal of the Brazilian pepper and restoration of the natural community is an important management concern. This area is, however, valuable habitat for the State-listed plant, *Chamaesyce cumulicola*, which has extensively colonized the open habitat found here.

Scrub

Several types of scrub have been identified in Brevard County (Schmalzer et al. 1999), and this community type occurs within portions of the site. Sand pine scrub is the dominant type within Cruickshank and is defined by a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the understory. The ground cover is generally very sparse and is dominated by ground lichens or rarely herbs. Open patches of barren sand are common. Typical plants include sand pine (*Pinus clausa*), sand live oak (*Quercus geminata*), saw palmetto, rusty lyonia, ground lichens, and stagger bush (*Lyonia spp*.). Oak scrub, also found on the site, is dominated by scrub oaks and saw palmetto. The loose sands in scrub drain rapidly, creating very xeric conditions for which the plants have evolved water conservation strategies. This community is essentially maintained by hot, fast burning fires, which allow for the regeneration of the scrub community that might otherwise succeed to xeric hammock. At Cruickshank, the majority of the sand pines were removed in a timbering operation in 2003 and the proposed more frequent fire regime may result in reduced coverage by sand pine and a transition to scrubby flatwoods or oak scrub. As of 2009 all of the scrub habitat has had the vegetation mechanically reduced and pine canopy thinned using heavy equipment. This habitat restoration will benefit the Florida scrub-jay by providing a vegetation height and structure necessary for their survival.

Wetland Communities

Wet Flatwoods

This pine flatwoods community is found primarily on the western portion of the site. These flatwoods are dominated by slash pine (*Pinus elliottii*), gallberry, wax myrtle (*Myrica cerifera*), St. Johnswort (*Hypericum spp*.), and redroot (*Lachnanthes caroliniana*). This community lies lower in elevation than the rest of the surrounding flatwoods systems, and tends to accumulate runoff from other areas. This community is associated by sheet flow from the depression marsh communities located north and south of this community in the western portion of the site.

Depression Marshes

Depression marshes are the seasonally wet ponds scattered throughout the mesic flatwoods. They are characterized as shallow depressions in sand substrate with herbaceous vegetation often in concentric bands. These wetlands are essential for the conservation of many of the site's amphibians and provide breeding grounds for sandhill cranes (*Grus canadensis*). Fire is important in maintaining this community type by restricting invasion by shrubs and trees and reducing peat formation. They are ringed by dense saw palmetto with sandweed (*Hypericum fasciculatum*) as the dominant species. Sphagnum moss occurs in some. Redroot, pipeworts (*Eriocaulon* sp.) are present. This represents a natural community fast disappearing to development in Brevard County.

c. Fauna

EEL staff members have conducted surveys of gopher tortoise burrows (see **Appendix G**). Other general surveys will be initiated with the assistance of local universities, volunteers, and local environmental groups.

Insects

General insect surveys will include the use of year-long methods, such as Malaise and pitfall traps. These quantifiable methods of surveying will document any listed insect species and provide a survey of insects through the seasons.

In accordance with Florida Statues Section 388.4111, all environmentally sensitive and biologically highly productive lands are required to submit an arthropod control plan. The Brevard County Mosquito Control Department has provided an arthropod control plan that identifies current procedures for managing mosquito populations in Brevard County (see **Appendix T**). However, this plan will be reviewed within the next year in an effort to be more site-specific for each individual property within the EEL sanctuary network.

Birds

Birds observed in the Cruickshank Sanctuary are listed in **Appendix J**. There is a need for a more extensive species survey. The site exhibits interesting bird habitat characteristics as it is the territory of a group of Florida scrub-jays. There are ospreys nesting in the Sanctuary and bald eagles (*Haliaeetus leucocephalus*) have also been observed on this site.

Reptiles and Amphibians

There is a need for more extensive species surveys, especially in the depression marsh and pond, which probably support a wide variety of frogs and other amphibians. A list of herptiles is shown in **Appendix K**.

Mammals

There is a need for more extensive mammal surveys, especially for small rodents. A small mammal survey using Sherman traps is planned for the near future. A list of mammals observed is shown in **Appendix L**.

d. Designated Species

Plants

The US Fish and Wildlife Service (USFWS) and the State of Florida, under the auspices of the Florida Department of Agriculture and Consumer Services (FDACS), compile lists of protected plant species. The USFWS classifies protected plant plants as either endangered or threatened. The FDACS lists plants that are considered state endangered/threatened and/or commercially exploited. A survey for rare scrub plants has been conducted at Cruickshank (Schmalzer and Foster 2005). The single largest known population of *Chamaesyce cumulicola* in Brevard County (n=17 site; ~ 2,200 individuals) has been documented on site, as well as a small population (n= ~30 individuals) of *Conradina grandiflora*. More recently *Lechea cernua* was found on site (Schmalzer 2009).

Animals

The USFWS and the State of Florida under the auspices of the Florida Fish and Wildlife Conservation Commission (FWC) also compile lists of wildlife species considered to be under the possible threat of extinction. These species are categorized as either endangered or threatened. The FWC utilizes an additional category called, "species of special concern (SSC)", for several animal species that 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.

Reptiles and Amphibians

There is a significant population of gopher tortoises throughout the property. The gopher tortoise is currently listed as Threatened (T) by the FWC and is under review by the USFWS.

Birds

Cruickshank Sanctuary and the adjacent Viera Conservation Area are important polygons in linking Florida scrub-jay populations between north and south Brevard (Breininger et al. 2001). The Sanctuary was thought to have important potential conservation value to Florida scrub-jays when acquired. In 2003 two scrub-jays where seen on property adjacent to the site and no jays where seen occupying the Sanctuary. The scrub habitat was severely degraded and overgrown from lack of fire. Scrub that remains unburned for an extended period declines in habitat value for the Florida scrub-jay (Breininger and Carter 2003). An optimal Florida scrub-jay territory is a mosaic of medium-height oaks (1.2–1.7 m) and shorter scrub with open sandy areas (Woolfenden and Fitzpatrick, 1984). Scrub restoration efforts began with a tree thinning process in 2003 with the assistance of the Division of Forestry. Later in 2004, the first controlled burn was completed. Almost immediately following the burn, the scrub-jays that had inhabited the adjacent property began to move onto the area that was burned. Beginning in 2006 staff began implementing habitat restoration on the remainder of the site. These areas have been mechanically reduced, timbered, and prescribed burned. The goal was to reduce the overall vegetation height, thin the pine canopy and re-introduce a fire regime. Since the restoration there are now approximately 30 individual birds occupying 6 scrub-jay

territories. The scrub-jays that reside on this site are successfully reproducing and the population has been increasing each year since they were first observed in 2004. Individual birds are being color banded in cooperation with Dave Breininger. The banding will help to identify birds to specific families and territories. Breininger and co-workers are currently monitoring jay populations on this and adjacent sites, and the EEL Program will receive continuous input from this group on the status of the population and recommendations on management enhancements.

In order to continue to provide suitable scrub-jay habitat it will be necessary to conduct prescribed burns on the property and to periodically reduce canopy height in overgrown scrub patches. The Florida scrub-jay is listed as Threatened by the FWC and also by USFWS. Bald eagles have also been observed on the property.

e. Biological Diversity

The Cruickshank Sanctuary exhibits a diverse plant community reflected by the complex diversity of soil types and hydrological regimes. The maintenance and protection of this diversity will rely on the reintroduction of fire. No surveys have been performed on the property specifically designed to measure biological diversity, (both richness and evenness) and surveys of this type should be done. Sampling protocols exist for all floral and fauna groups, and should be explored for their usefulness. Quantitative information on the abundance of species will enable the land manager to make informed decisions on such issues as public access and usage.

C. Cultural

a. Archaeological

The State of Florida Division of Historical Resources lists no archaeologically significant sites within the Cruickshank Sanctuary. A letter of response from DHR is provided in **Appendix N**. If significant archaeological sites are discovered, policies will be implemented that will serve to protect these sites from disturbance. EEL staff will consult with the Division of Archives, History, and Records Management before taking actions that may adversely affect archaeological resources.

b. Historical

There is no evidence of a homestead or other occupation of the site. Oral history indicates that this site may have been used for turpentine collection, and the typical “cat face” scars resulting from this operation have been noted on some pines in the Cruickshank Sanctuary. Prior to public acquisition of the site, the property consisted of several parcels privately owned by multiple individuals. The County acquired the property by purchase in 1994. EEL staff will consult with the Division of Archives, History, and Records Management before taking actions that may adversely affect historical resources.

c. Land-Use History

The property has likely been used for turpentine collection, grazing and farming in the past. More recently, sand-mining operations have occurred on the northern portion of the site, which remains disturbed. Borrow operations in the north east portion of the site along the powerline easement appear to have commenced between 1969 and 1975, and ceased prior to 1980.

The County acquired the Helen and Allan Cruickshank Sanctuary property through purchase from two separate owners in 1994. The State provided 50% reimbursement for the purchase. An adjacent parcel was purchased in 2007 adding an additional 11.6 acres to the Sanctuary.

d. Public Interest

In the past the property was a popular off-roading site particularly for all-terrain vehicle (ATVs) users. Because of their very damaging impact on the environment, the use of off-road vehicles such as ATVs, is not authorized on EEL Sanctuaries. A fence has been constructed around the property, partly in an effort to enforce this policy. The EEL Program encourages passive recreational use within Cruickshank Sanctuary.

V. FACTORS INFLUENCING MANAGEMENT

A. Natural Trends

The main natural trends influencing the diversity of this site are fire frequency, hydroperiod and water quality. In the absence of fire, invasion by native and non-native woody species occurs rapidly. Within the Cruickshank Sanctuary, the natural fire regime must be re-established and maintained to insure the continuation of the flora and fauna unique to these pyrogenic natural communities. Alteration of the natural topography and drainage patterns has already occurred, so monitoring future changes in vegetation patterns is important. Migration of Florida scrub-jays also is a natural trend that is affected by human-induced trends. Continual communication with local scrub jay experts will insure that the jay population as a whole (throughout the County) is correctly managed.

B. Human-Induced Trends

Human influences on-site include:

<u>Fire suppression/alteration of natural cycles</u>
Naturally occurring fires have been suppressed during recent times mainly for public safety and the protection of structures. Management activities such as these tend to result in plant and animal compositions that are different than what might have existed under more natural regimes. A more natural cycle under the prescribed burn plan will address this problem.

Invasion of exotic species

Cogon grass (*Imperata cylindrica*) is located along the southeastern portion of the site. It will spread via grass mowers, rhizomes and wind, and should be treated immediately upon discovery. Other problematic species include Brazilian pepper, rosary pea (*Abrus precatorius*), melaleuca (*Melaleuca quinquenervia*) and lygodium (*Lygodium microphyllum*).

Small roads/trails that run through property

These will be used as firebreaks and hiking trails.

Florida Power and Light Utility Line

A FPL easement runs through the length of the property along the eastern portion of the site. The easement is mowed or chopped on an annual basis by FPL. This easement creates a break in the vegetation between the northeastern portion of the site and the remainder of the Sanctuary.

Hydroperiod alterations

Man made ditches and canals border much of the property. These alterations have likely caused changes to drainage patterns and ground water levels in the site. In February, 2006 the EEL Program was notified that Brevard County Transportation Engineering (TE) was devising a project to improve drainage along Barnes Blvd., on the south side of Cruickshank Sanctuary. The plan is to route drainage from the roadway via a proposed easement into a 10 acre stormwater pond located on the old "drive-in theatre" property (now acquired by the County) west of the Sanctuary (see **Appendix H**). From this pond, the water would flow into the old ditch system on the north and west sides of the Sanctuary, thence into the canal running E-W north of the Sanctuary. Maintenance access for the existing ditch system, which has not been maintained for decades, is via the Sanctuary at any point, an undesirable feature. To accommodate the anticipated water flow in the new system, TE recommended both deepening and widening the old ditch system throughout much of its length. A 50 foot maintenance easement would also be required, so that equipment could periodically clean-out the ditch, thus allowing abandonment of the old maintenance access (see **Appendix H**). The proposed impact to Sanctuary property is 2.11 ac., encompassed within the ditch footprint or the required maintenance easement. The existing EEL fence along the ditch would have to be removed, as well as much of the vegetation that was left between the fence and the existing ditch, left to serve as a 'screen' between Chelsea Park and the Sanctuary. After multiple meetings with TE and the designated engineering firm and input from the SMC, the SMC has given approval to the project. The SMC minutes are included in **Appendix Q**. The final details of compensation, mitigation (plantings, etc.), legal agreements and final engineering are being worked out. A letter of stipulation between EEL's and TE is included in **Appendix R**. Since the State holds title to the Sanctuary, this project will have to be approved during the final management plan approval at the ARC meeting.

Sand mining operations

Past sand mining operations had occurred in the northern portion of the site. This has led to a change in topography and plant composition in the area. Restoration efforts in this

area may include regrading and replanting of native species. This area is potentially valuable gopher tortoise habitat, and tortoises are colonizing the area as it has naturally revegetated. This area has been colonized by *Chamaesyce cumulicola* (Schmalzer and Foster 2005) and *Lechea cernua* (Schmalzer communication 2009).

C. External Influences

There is evidence that access by foot for the purposes of hiking has been occurring along the western boundary of the Sanctuary for many years. Off-road vehicles have also entered the site along the northern boundary by cutting the fence. The EEL Program has responded to this by replacing fence sections where necessary, making sure that boundary signs are replaced when damaged or stolen, and meeting regularly with local law enforcement to review specific problems.

Other external influences beyond our control include the introduction of exotic species by wind and animal dispersed seeds and spores.

D. Legal Obligations and Constraints

Florida Power and Light
FPL maintains an easement through the eastside of the site running north-south. FPL requires access through the Sanctuary to maintain these lines. The gate at the north access point will have a FPL lock for them to access the site. During prescribed fires FPL will need to be notified.

Florida Division of Forestry (DOF)
The Florida DOF issues permits for prescribed fires to land mangers that possess certified burn numbers. It will be necessary to obtain authorization from DOF for any prescribed fires conducted in the Sanctuary.

E. Management Constraints

a. Fire

Utilizing prescribed fire within the sanctuary will benefit ecosystems, and 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

- 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 great detail the overall fire objectives of the EEL Program, lists equipment needed to perform prescribed fires, outlines fire's effects on natural communities and Threatened and Endangered species found within the Sanctuary network and contains copies of all necessary paperwork needed to perform prescribed fires.

The Cruickshank Sanctuary has been broken up into Burn Units that allow the EEL Program to safely conduct prescribed fires and to allow for the natural heterogeneity inherent in more natural fires to be created. These Units were chosen based on existing roads/trails. A map of the burn units is provided in **Appendix B**. To date all five units have been prescribed burned and the Sanctuary is now in a maintenance burn rotation.

b. Exotic Control

Plants

Invasive, exotic and/or nuisance plants have the potential to displace native species and to significantly alter natural ecosystem function. Five plants are of concern; Brazilian pepper, cogon grass, melaleuca, rosary pea and lygodium are continuously being eradicated within the Sanctuary's borders. Long-term monitoring will be needed to insure that these invasive exotics are kept at very low levels on-site. The site has had initial treatment of all exotics and is in now in a maintenance stage. Staff performs periodic maintenance spraying of any regrowth seen.

Animals

There are currently no problems with exotic animals on site. Feral hogs have been problematic on many EEL sanctuaries and management should watch for signs of hog impacts at the Cruickshank Sanctuary.

F. Public Access and Passive Recreation

Public access and opportunities for passive recreation will be provided at the Cruickshank Sanctuary 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 encouraged include hiking and nature observation.

The Environmentally Endangered Lands Program Recreation and Education Advisory Committee (REAC) oversees the recreational plan of the EEL Program's sanctuaries. REAC met on February 8, 2007 and again on May 10, 2007 to discuss and vote on the recreational opportunities allowable for the Cruickshank Sanctuary. The meeting minutes are included in **Appendix S**. The following activities are in accord with the REAC recommendations for the Sanctuary.

1) Parking and Public Access
A small shell rock parking area was constructed in 2008 at the south entrance off of Barnes Blvd. Currently public access is available with two pedestrian walkthroughs located at the northeast and south gates, designed to allow access to hikers. An informational kiosk has been added at the south entrance to inform visitors about the site and provide an informational brochure with trail map.

2) Hiking
Hiking trails follow existing firebreaks, roads and trails and have been located to give visitors the opportunity to experience the diverse habitats within the Sanctuary. These hiking trails bring visitors through the diverse habitats of the Cruickshank Sanctuary, from wet flatwoods to oak scrub. Informative signs have been placed along the trails, and any research or restoration projects that are ongoing will be included in the signage. The marked hiking trail is approximately one mile long.

3) Bird Watching
Birding is a passive recreational activity that should be encouraged at the Sanctuary. Specific bird watching sites may be established along the hiking trails. Scrub-jays, ospreys and bald eagles have been documented on the site.

4) Bicycling
The current approved recreation plan does not permit biking. Future consideration may be given to the creation of a bike trail as part of a linear trail system along the powerline easement or existing fire breaks.

5) Hunting
No hunting will be allowed within the sanctuary.

VI. MANAGEMENT ACTION PLANS

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

A. Goals

The Sanctuary Management Manual of the EEL Program provides the following management goals for all the Sanctuaries within the EEL Program.

- Conservation of ecosystem function

- Conservation of natural (native) communities
- Conservation of species (including endemic, rare, threatened and endangered species)
- Restoration of wetlands, wetland/upland ecotones and natural hydroperiod.
- Restoration of altered or disturbed uplands, including those altered by fire exclusion or suppression.
- Collection of data to refine and improve management
- Documentation of significant archeological and historic sites
- General upkeep and security of the property
- Documentation of historic public use
- Opportunities for multiple uses and compatibility
- Provision of public access and responsible public use
- Provision of environmental education programs
- Assessment of carrying capacity of natural resources with public use

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 the Cruickshank Sanctuary.

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.

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;
- Research the connection of on-site natural resources with adjacent resources;
- Research hydrologic patterns on and off-site;
- Focus natural community restoration efforts on enhancing native diversity;
- Investigate the historic hydroperiod and restore natural hydrologic patterns.

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

- Collect data to analyze the existing community interfaces;
- Protect communities from deleterious impacts deriving from external influences;
- Restore/enhance natural communities where and as possible.

Strategy 4: Restore degraded, disturbed, or altered wetlands.

Actions:

- Establish baseline conditions within wetlands;
- Use native plants for restoration efforts;
- Consult local experts and current literature regarding best scientific methods for wetland restoration
- Prioritize the wetland 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 hydrologic flood, etc.);
- Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan, as necessary.

Strategy 5: Restore degraded, disturbed, or altered uplands.

- 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;
- Use native plants for restoration efforts;
- 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.

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

- Identify natural communities that require prescribed fire management;
- Document listed species within Sanctuary that require fire for their propagation;
- Identify and evaluate individual proposed burn management units;
- Identify the goal of the application of fire to each proposed burn unit;
- Identify and plan perimeter and internal fire breaks;
- Write prescriptions for each unit;
- Incorporate all of the above into a Sanctuary-specific fire management plan to be attached to this plan as an Appendix;
- Develop and implement a public education campaign including programs and literature regarding the need for prescribed fires;
- Secure the necessary permits from the State Division of Forestry;
- 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.

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, designated 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, vegetation reduction for scrub jay habitat);
- 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;
- Implement a scrub jay banding program to monitor and track birds occurring in the sanctuary

Strategy 8: Survey for archaeological and historic sites within the Sanctuary.

Actions:
- 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.

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;
- 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;

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

Actions:
- Establish baseline vegetation monitoring transects to provide data regarding existing conditions prior to development;
- 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.

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 outdoor exhibits, signs and printed materials;
- 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;

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;
- Include multiple benefits of natural community restoration efforts in education program.

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

Actions:

- Contract with outside contractors or with Brevard County Parks and Recreation for maintenance of parking areas, fire breaks, boardwalks, bridges, 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 time frame 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 Cruickshank Sanctuary.

ACTION	**ACTIVITY TIMELINE**
Strategy 1: Document historic public use	
Collect historic information (aerials, historic photos, interviews) regarding the types of activities that have occurred on-site	Short-term
Evaluate how historic public use impacted the site's natural resources	Short-term
Consider historic public use patterns in planning future public uses	Short-term
Strategy 2: Protect, maintain, and restore native diversity, ecological patterns, and the processes that maintain diversity	
Research and monitor baseline conditions of natural systems	Immediate
Research the connection of on-site natural resources with adjacent resources	Immediate
Research hydrologic patterns on and off-site	Immediate
Research native species' movement patterns on and off-site	Immediate
Focus natural community restoration efforts on enhancing native diversity	Short-Term
Investigate the historic hydroperiod and restore natural hydrologic patterns	Long-Term
Strategy 3: Ensure that natural upland-wetland interfaces are protected and enhanced	
Collect data to analyze the existing community interfaces	Immediate
Protect communities from deleterious impacts deriving from external influences	On-going
Restore/enhance natural communities where possible.	On-going
Strategy 4: Restore degraded, disturbed, or altered wetlands	
Establish baseline conditions within wetlands	Immediate
Use native plants for restoration efforts	Short-term
Consult local experts and current literature regarding best scientific methods for wetland restoration	Immediate

Prioritize the wetland communities in need of restoration based upon ease of accomplishment, expected habitat value yield, or financial considerations;	Immediate
Assess possible impacts of proposed restoration on adjacent communities and offsite properties	Immediate
Implement the selected restoration activities (remove exotic species, restore natural hydrologic flood, etc.)	Short-term
Monitor the effects of the restoration activities, evaluate the success of the restoration projects	On-going

Strategy 5: Restore degraded, disturbed or altered uplands

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	Immediate
Use native plants for restoration efforts	Short-term
Assess possible impacts of proposed restoration on adjacent communities and off-site properties	Immediate
Implement the selected restoration activities (remove exotic species, mechanical reduction, etc.)	Short-Term
Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan as necessary	On-going

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

Identify natural communities that require prescribed fire management	Immediate
Document listed species within the Sanctuary that require fire for their propagation	Immediate
Identify and evaluate individual proposed burn management units	Immediate
Identify the goal of the application of fire to each proposed burn unit	Immediate
Identify and plan perimeter and internal fire breaks	Immediate
Write prescriptions for each unit	Immediate
Incorporate all of the above into a Sanctuary-specific fire management plan	Short-Term
Develop and implement public education campaign including programs and literature regarding the need for periodic controlled burns	Short-Term
Secure the necessary permits from the State Division of Forestry	Immediate
Begin prescribed fire management program	Immediate
Monitor the effects of the fire management activities, evaluate the success of the program, and revise the program strategies 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	Immediate

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	Immediate
Periodically update these baseline survey data to determine possible changes in designated species distribution or density	Short-Term
Review management plans for consistency with USFWS and FFWCC guidance concerning listed species	Short-Term
Implement habitat restoration activities for listed species	Short-Term
Establish periodic monitoring of habitat suitability, species population levels, diversity levels, and exotic/nuisance species, as a means of evaluating the success of management strategies	On-Going

Strategy 8: Survey for archaeological and historic sites

Contact the State Division of Historic Resources to conduct a Phase I survey of the site	Immediate
Review available maps and historic records for indications of past usage of the site	Immediate
Map all archaeological and historic sites for future reference	Immediate

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
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
Construct hiking trails in accordance with the USDA Forest Service "Standard Specifications for the Construction of Trails"	Short-Term

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

Establish baseline vegetation monitoring transects to provide data regarding existing conditions prior to development	Short-Term
Establish a methodology and record keeping system to document public use	Short-Term
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	On-Going

are too sensitive for the level of use originally planned	

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 outdoor exhibits, signs and printed materials	On-Going
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

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	On-Going
Include multiple benefits of natural community restoration efforts in education program	On-Going

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

Employ a land manager to oversee maintenance and security activities	Immediate
Secure contractors or funding for maintenance of parking areas, fire breaks, boardwalks, bridges, benches, etc.	Immediate
Coordinate daily maintenance tasks using staff and volunteers	On-Going

VIII. FINANCIAL CONSIDERATIONS

The following is a breakdown of the general costs estimated for the annual operations of the Cruickshank Sanctuary, as well as past expenditures on capital improvements. Staff is also responsible for the management of the Central Region properties.

Annual Management

25% of Staff Salaries (2009)

Land Manager (f.t.)	$15,000
Assistant Land Manager (f.t.)	$9,000
Land Management Technician (f.t)	$6,250
Intern (p.t.)	$3,000

Management Activities $10,000
(prescribed fire, exotic control, fence repair)

The Central Region is currently staffed with a land manager, assistant land manager and a land management technician. A part-time intern position is also part of the central region staff.

In addition to the on-going maintenance and operations costs, past and proposed capital expenditures are listed below.

Capital Improvement

Perimeter fencing	$35,000.00 (installed)
Kiosks	$1,000.00 (one installed)
Gates	$1,000.00 (2 installed)
Parking area	$30,000.00 (installed)
Signage	$7,000.00 (installed)

Any of these costs might be adjusted depending upon the availability of assistance through grant programs and cooperative ventures with non-profit and private groups.

IX. BIBLIOGRAPHY

Breininger, D., B. Toland, D. Oddy, M. Legare, J. Elseroad and G. Carter. 2001. Biological criteria for the recovery of the Florida Scrub Jay populations on public lands in Brevard and Indian River County. Annual report to USFWS, Jacksonville, Florida. Dynamac Corporation, Kennedy Space Center, Florida. 90p.

Breininger, D.R. and G.M. Carter. 2003. Territory quality transitions and source-sink dynamics in a Florida Scrub-Jay population. Ecological Applications 13:516-529.

Brevard County Environmentally Endangered Lands Program. 1997. Sanctuary Management Manual. Adopted by the Board of County Commissioners on September 23, 1997. 60 p.

Florida Natural Areas Inventory and Florida Department of Natural Resources. Guide to the Natural Communities of Florida. February 1990.

Kha Le-Huu & Partners 1999. Helen & Allan Cruickshank Sanctuary Site Development Report & Land Management Plan. For the Brevard County Environmentally Endangered Lands Program.

Myers, R.L. 1990. Scrub and high pine. Pages 150-193 in R.L. Myers and J.J. Ewell, editors. Ecosystems of Florida. University of Central Florida Press, Orlando, Florida.

Schmalzer, P.A., S.R. Boyle and H.M. Swain. 1999. Scrub ecosystems of Brevard County, Florida: a regional characterization. Florida Scientist 62(1): 13-47.

Schmalzer, P.A. and T.E. Foster. 2005. Multi-species scrub plant survey in Brevard County, Florida, for occurrence of Federally listed endangered or threatened scrub plant species. Final report to Brevard County Natural Resources Management Office. Dynamac Corporation, Kennedy Space Center, Florida. 79 p.

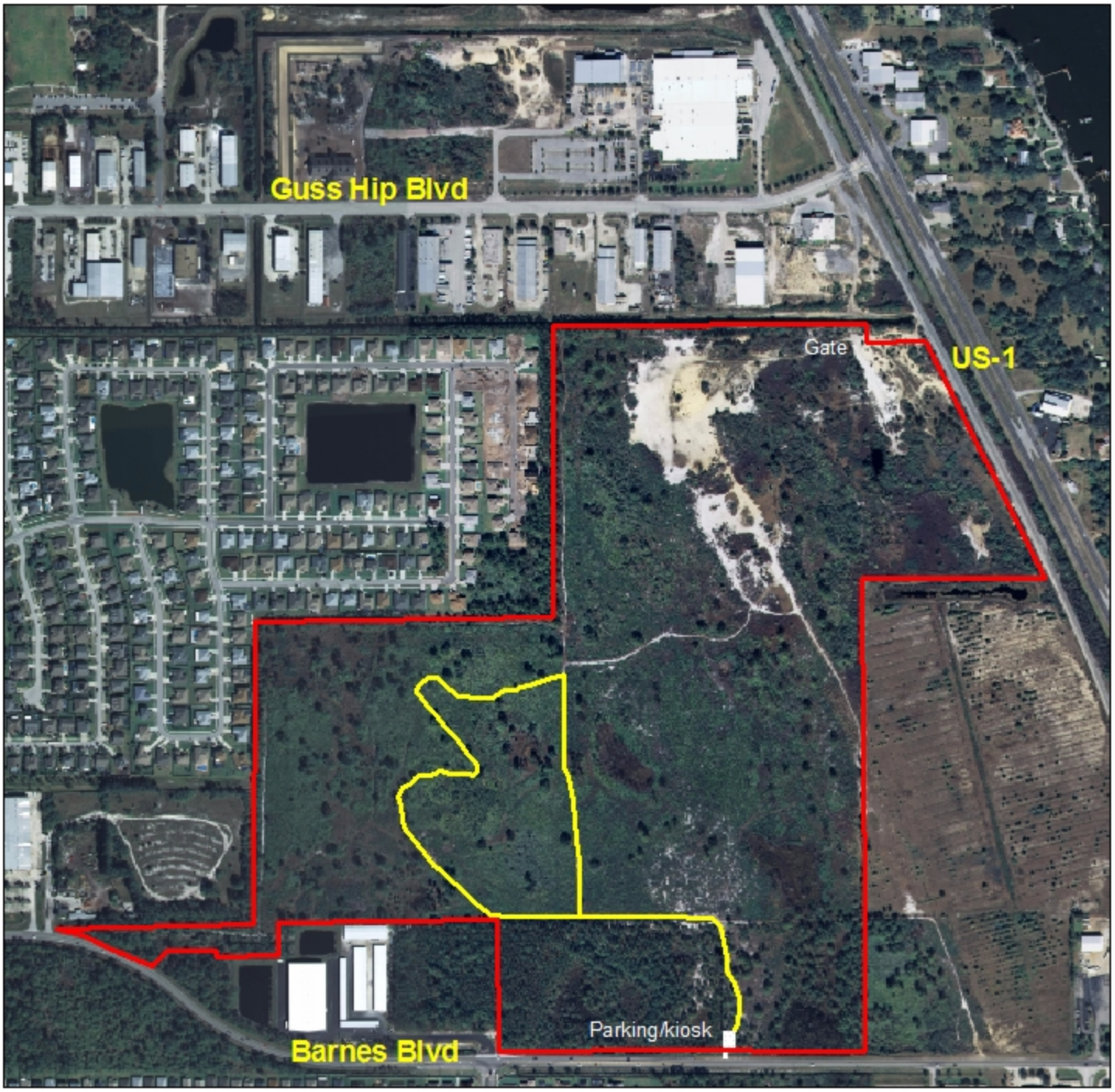
Schmocker, G.K., D.W. Sharp and B.C. Hagemeyer. 1990. Three Initial Climatological Studies for WFO Melbourne, Florida: A First Step in the Preparation for Future Operations. NOAA Technical Memorandum NWS SR-132. Scientific Service, Southern Region. Fort Worth, Texas.

U.S. Department of Agriculture. Soil Survey of Brevard County, Florida November 1974.

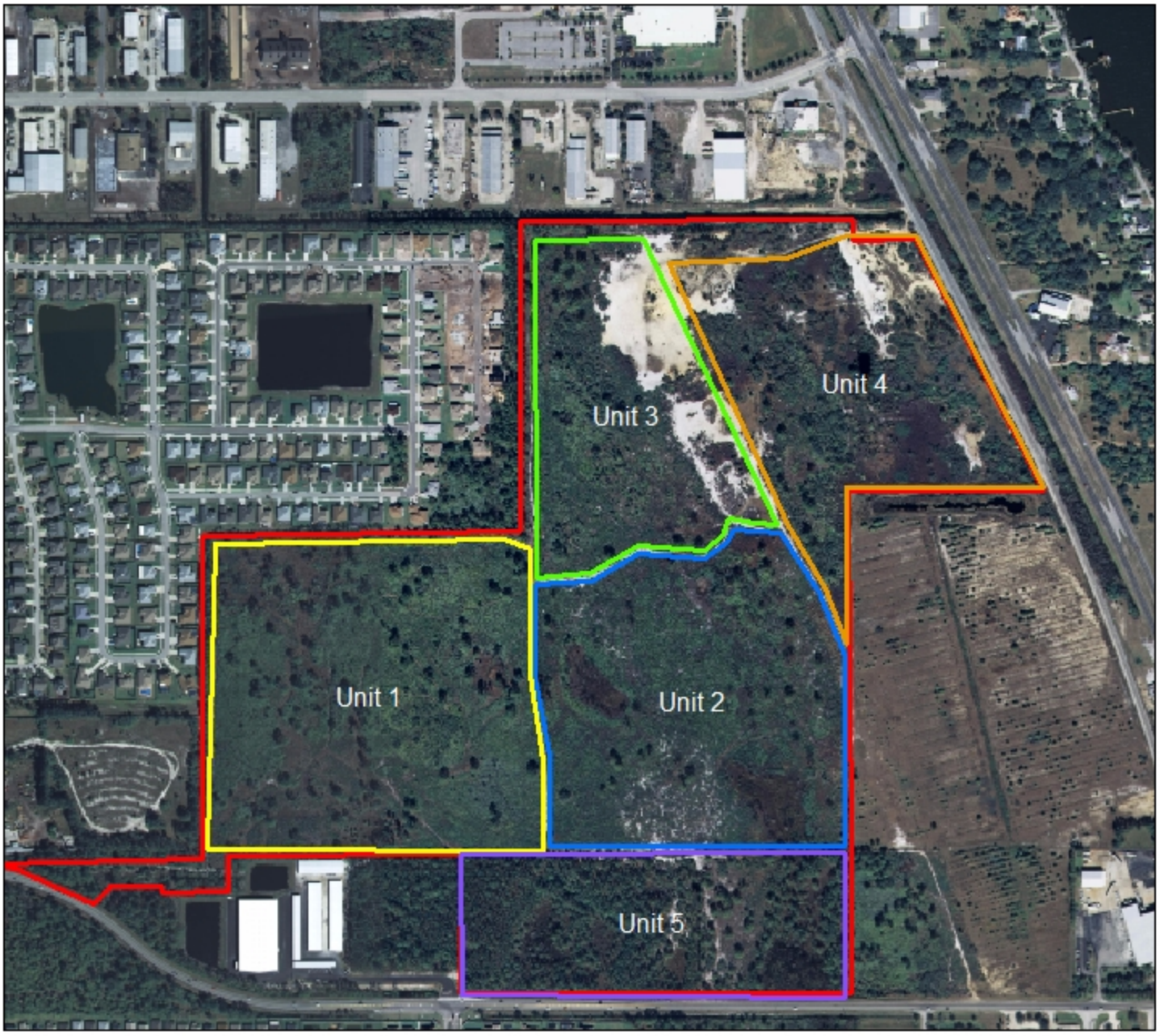
Webb, S.D. 1990. Historical biogeography. Pages 70-100 in R.L. Myers and J.J. Ewell, editors. Ecosystems of Florida. University of Central Florida Press, Orlando, Florida.

Woolfenden, G.E., Fitzpatrick, J.W., 1984. The Florida Scrub Jay: Demography of a Cooperative-Breeding Bird. Princeton University Press, Princeton, New Jersey.

Appendix A: Site Map



Appendix B: Burn Units



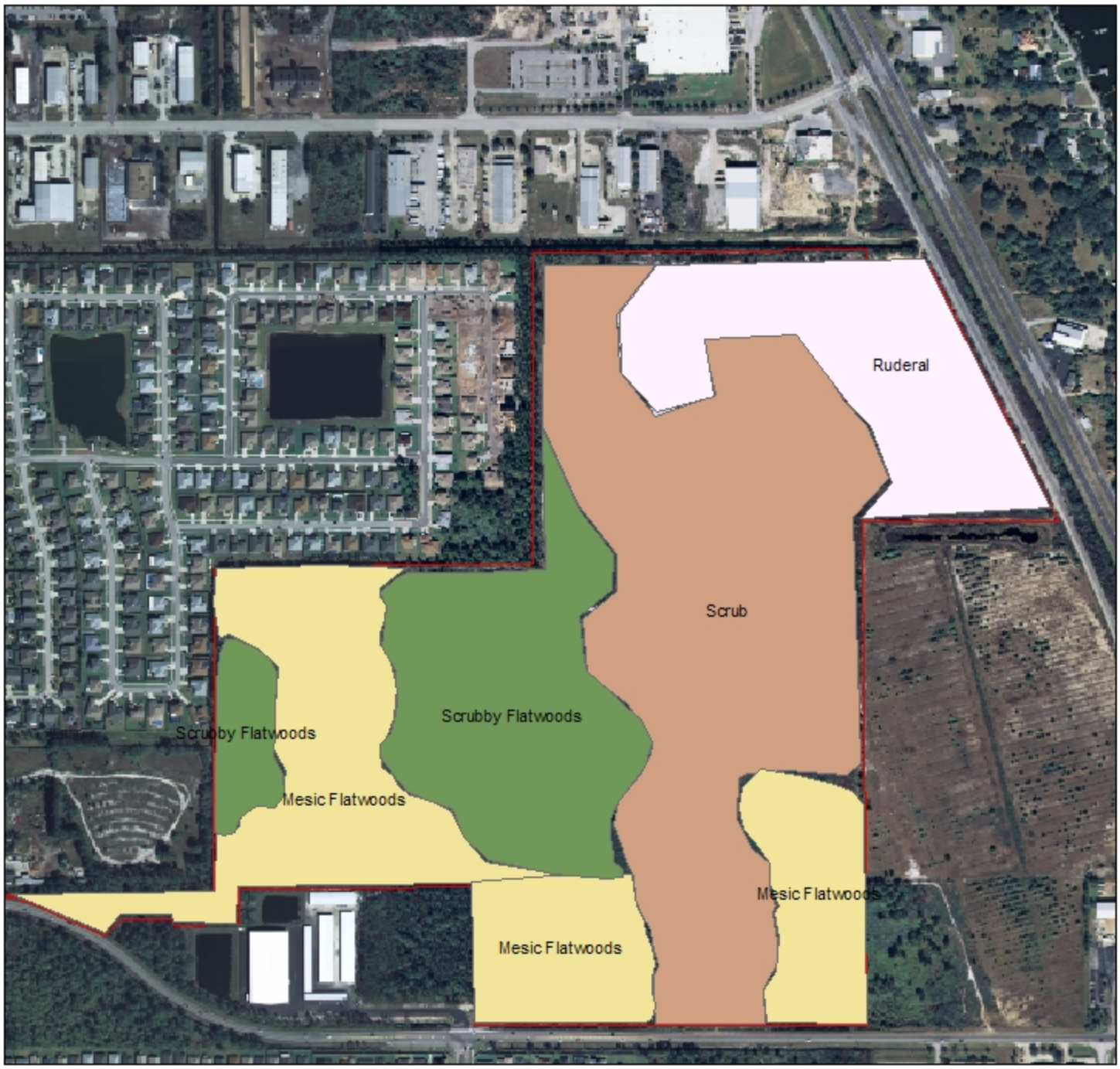
0 0.2 0.4 0.8 Miles

Legend

- Unit 1
- Unit 2
- Unit 3
- Unit 4
- Unit 5
- Cruickshankboundary

N

Appendix C: Vegetation Map



0 0.2 0.4 0.8 Miles

Legend

- Mesic Flatwoods
- Ruderal
- Scrub
- Scrubby Flatwoods
- Cruickshankboundary

N

Appendix D: Site Topography

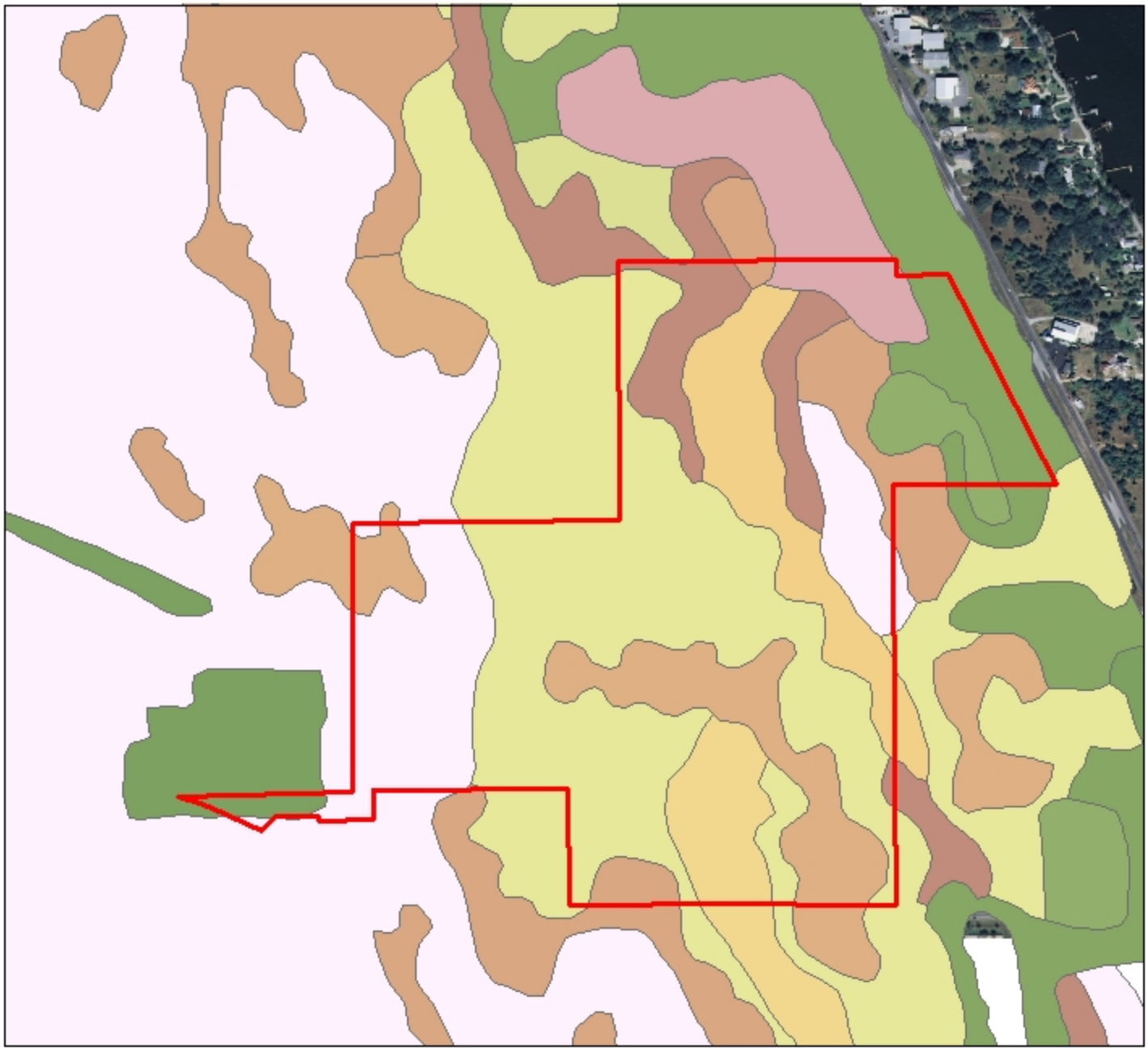
0 0.2 0.4 0.8 Miles

Legend

- Cruickshankboundary
- 5
- 10
- 15
- 20
- 25
- 30

N

Appendix E: Soils Map



0 0.25 0.5 1 Miles

Legend

- Cruickshankboundary
- Anclote sand- depressional
- Immokalee sand
- Myakka sand
- Myakka sand- depressional
- Paola fine sand- 0 to 5 percent slopes
- Paola fine sand- 5 to 12 percent slopes
- Pomello sand
- Quartzipsamments- smoothed
- Satellite sand
- St. Lucie fine sand- 0 to 5 percent slopes
- Udorthents- steep
- Urbanland

N

Appendix F: 1943 Aerial

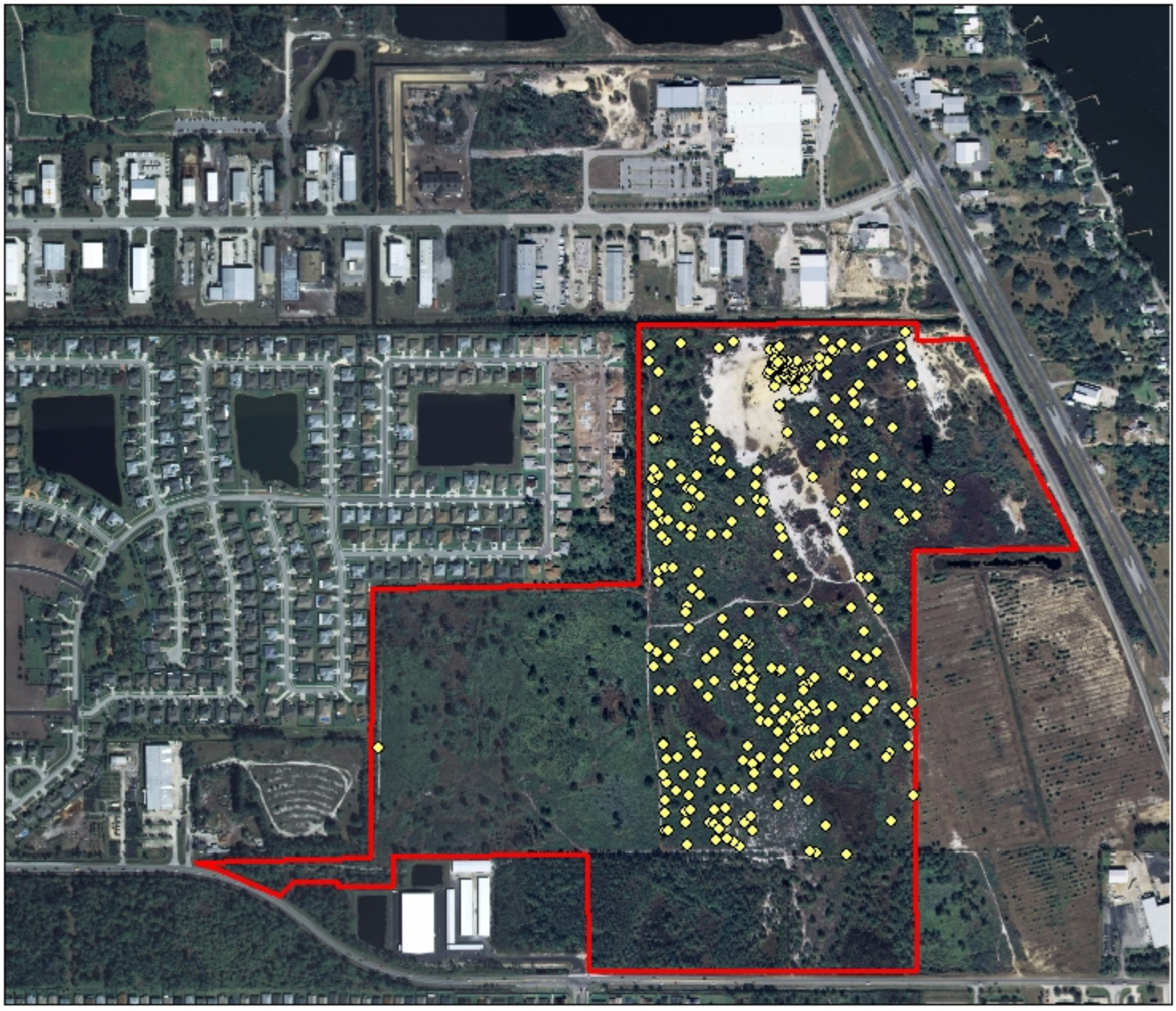
0 0.2 0.4 0.8 Miles

N

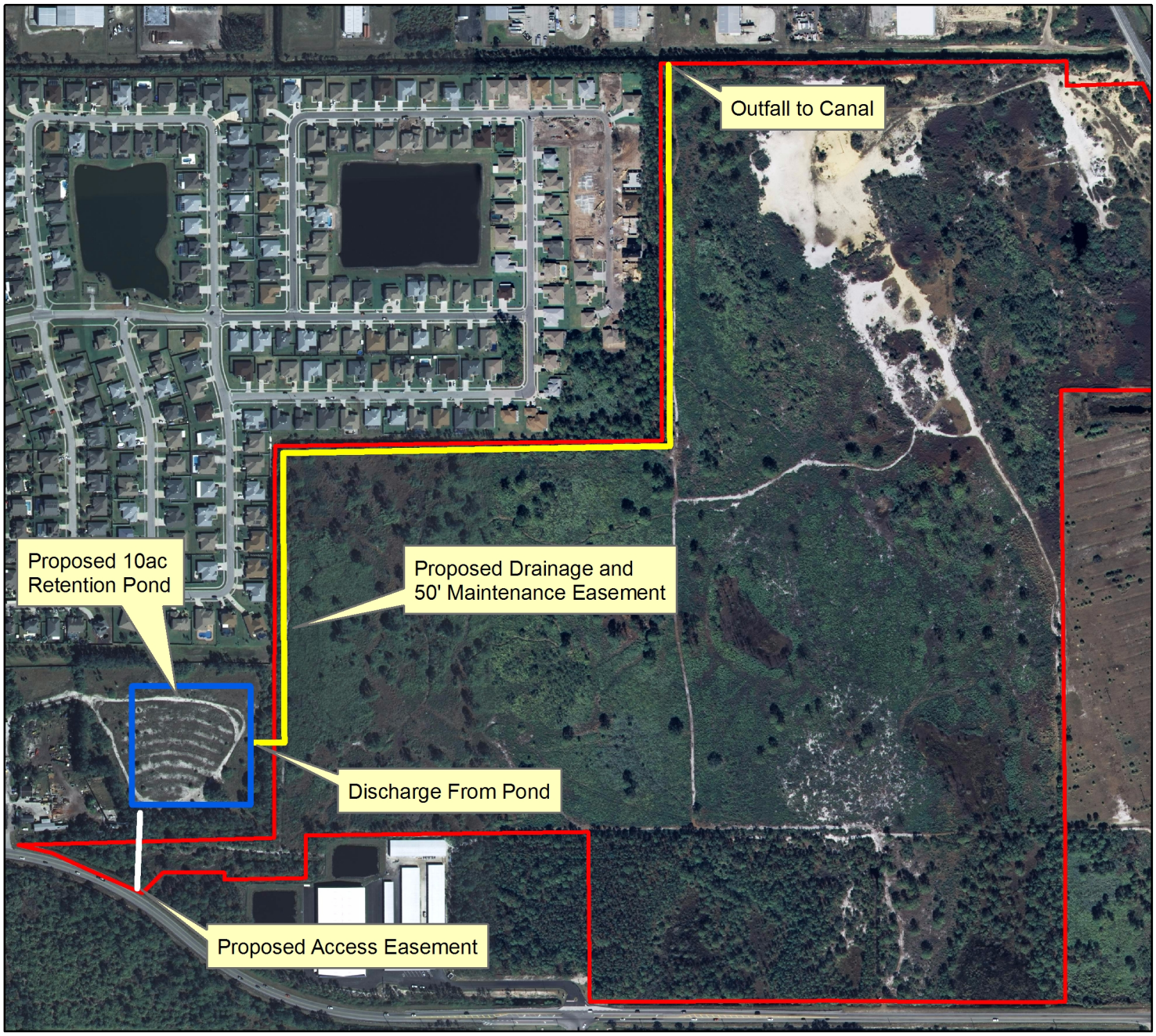
Legend

Cruickshankboundary

Appendix G: Gopher Tortoise Burrows



Appendix H: Proposed Stormwater Design



0 0.125 0.25 0.5 Miles

N

Legend

Maintenance_Easement

Cruickshankboundary

APPENDIX I

Cruickshank Sanctuary Observed Plant Species (listed by Family)

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
AGAVACEAE			
Adam's needle	*Yucca filamentosa*		
ALISMATACEAE			
Duck potato	*Sagittaria lancifolia*		
AMARANTHACEAE			
Globe amaranth	*Gomphrena serrata*		
ANACARDIACEAE			
Winged sumac	*Rhus copallina*		
Brazilian pepper	*Schinus terebinthifolius*		
Poison ivy	*Toxicodendron radicans*		
ANNONACEAE			
Pawpaw	*Asimina reticulata*		
APOCYNACEAE			
Cutiss' milkweed	*Asclepias curtissii*	E	
Savannah milkweed	*Asclepias pedicellata*		
Madagascar periwinkle	*Catharanthus roseus*		
AQUIFOLIACEAE			
Carolina holly	*Ilex ambigua*		
Dahoon holly	*Ilex cassine*		
Gallberry / Inkberry	*Ilex glabra*		
ARECACEAE			
Cabbage palm	*Sabal palmetto*		
Saw palmetto	*Serenoa repens*		
ASTERACEAE			
Common ragweed	*Ambrosia artemisiifolia*		
Coastalplain honeycombhead	*Baccharis angustifloia*		
Sea myrtle / Groundsel tree	*Baccharis halimifolia*		
Beggartick	*Bidens alba* var. *radiata*		
Yellow buttons	*Balduina angustifolia*		
Vanilla plant	*Carphephorus odoratissimus*		
Golden aster	*Chrysopsis scabrella*		
Florida tasselflower	*Emilia fosbergii*		
Dogfennel	*Eupatorium capillifolium*		
Mohr's throughwort	*Eupatorium mohrii*		
Slender flattop goldenrod	*Euthamia caroliniana*		
Flat-topped goldenrod	*Euthamia minor*		
Cudweed	*Gamocheata falcata*		

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
Blazing star	*Liatris spp.*		
Roserush	*Lygodesmia aphylla*		
Palafox	*Palafoxia feayi*		
Coastalplain palafox	*Palafoxia integrifolia*		
Grass-leafed aster	*Pityopsis graminifolia*		
Camphorweed	*Pluchea spp.*		
Blackroot	*Pterocaulon pycnostachyum*		
Goldenrod	*Solidago spp.*		
Sowthistle	*Sonchus sp.*		
Coatbuttons	*Tridax procumbens*		
AZOLLACEAE			
Mosquito fern	*Azolla caroliniana*		
BLECHNACEAE			
Swamp fern	*Blechnum serrulatum*		
Virginia chain fern	*Woodwardia virginica*		
BROMELIACEAE			
Ball moss	*Tillandsia recurvata*		
CACTACEAE			
Prickly-pear cactus	*Opuntia humifusa*		
CARYOPHYLLACEAE			
Wire plant	*Stipulicida setacea*		
CHRYSOBALANACEAE			
Gopher apple	*Licania michauxii*		
CISTACEAE			
Frostweed	*Helianthemum corymbosum*		
Florida scrub frostweed	*Helianthemum nashii*		
Nodding pinweed	*Lechea cernua.*	T	
Thymeleaf pinweed	*Lechea minor*		
Pineland pinweed	*Lechea sessiliflora*		
Piedmont pinweed	*Lechea torreyi*		
CLADONIACEAE			
Deer moss	*Cladina spp.*		
British soldier lichen	*Cladonia spp.*		
CLUSIACEAE			
St. John’s-wort	*Hypericum cistifolium*		
St. John’s-wort	*Hypericum fasciculatum*		
St. John’s-wort	*Hypericum hypericoides*		
St. John’s-wort	*Hypericum mutilum*		
St. John’s-wort	*Hypericum reductum*		
St. John’s-wort	*Hypericum tetrapetalum*		
COMMELINACEAE			

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
Roseling	*Cuthbertia ornata*		
CYPERACEAE			
Capillary hairsedge	*Bulbostylis ciliatifolia*		
Ware's hairsedge	*Bulbostylis warei*		
Pinebarren flatsedge	*Cyperus retrorsus*		
Fimbry	*Fimbristylis spp.*		
Umbrellasedge	*Fuirena sp.*		
Starrush whitetop	*Rhynchospora colorata*		
Fascicled beaksedge	*Rhynchospora fascicularis*		
Beak rush	*Rhynchospora megalocarpa*		
Tall nutgrass	*Scleria triglomerata*		
DENNSTAEDITACEAE			
Bracken	*Pteridium aquilinum*		
EBENACEAE			
Persimmon	*Diospyros virginiana*		
EMPETRACEAE			
Rosemary	*Ceratiola ericoides*		
ERICACEAE			
Tarflower	*Bejaria racemosa*		
Dwarf huckleberry	*Gaylussacia dumosa*		
Coastalplain staggerbush	*Lyonia fruticosa*		
Rusty lyonia	*Lyonia ferruginea*		
Fetterbush	*Lyonia lucida*		
Blueberry	*Vaccinium darrowii*		
Shiny blueberry	*Vaccinium myrsinites*		
EUPHORBIACEAE			
Sprge	*Chamaesyce spp.*	E *C. cumulicola*	
Tread softly	*Cnidoscolus stimulosus*		
Painted-leaf	*Poinsettia cyathophora*		
FABACEAE			
Rosary pea	*Abrus precatorius*		
Woman's-tongue	*Albizia lebbeck*		
Sensitive pea	*Chamaecrista nictitans*		
Rabbit-bells	*Crotalaria rotundifolia*		
Feay's prairieclover	*Dalea feayi*		
Stick-tight	*Desmodium viridiflorum*		
Elliot's milkpea	*Galactia elliottii*		
Sky-blue lupine	*Lupinus diffusus*		
Sensitive briar	*Mimosa quadrivalvis*		
Wild bean	*Phaseolus polystachios*		
Snout bean	*Rhynchosia cinerea*		

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
Snout bean	*Rhynchosia difformis*		
Goat's-rue	*Tephrosia virginiana*		
FAGACEAE			
Chapman's oak	*Quercus chapmanii*		
Elliot's oak	*Quercus elliotii*		
Sand live oak	*Quercus geminata*		
Turkey oak	*Quercus laevis*		
Laurel oak / Diamond oak	*Quercus laurifolia*		
Dwarf live oak	*Quercus minima*		
Myrtle oak	*Quercus myrtifolia*		
GENTIANACEAE			
Largeflower rosegentian	*Sabatia grandiflora*		
HAEMODORACEAE			
Bloodroot	*Lachnanthes caroliniana*		
HYPOXIDACEAE			
Fringed yellow stargrass	*Hypoxis juncea*		
IRIDACEAE			
Jeweled blue-eyed grass	*Sisyrinchium xerophyllum*		
JUGLANDACEAE			
Scrub hickory	*Carya floridana*		
Pignut hickory	*Carya glabra*		
LAMIACEAE			
American beautyberry	*Callicarpa americana*		
Large-flowered rosemary	*Conradina grandiflora*	T	
Pennyroyal	*Piloblephis rigida*		
LAURACEAE			
Love vine	*Cassytha filiformis*		
Lancewood	*Ocotea coriacea*		
Redbay	*Persea borbonia*		
LYGODIACEAE			
Japanese climbing fern	*Lygodium japonicum*		
Old world climbing fern	*Lygodium microphyllum*		
MELASTOMATACEAE			
Pale meadow beauty	*Rhexia mariana*		
MELIACEAE			
Chinaberry	*Melia azedarach*		
MORACEAE			
Strangler fig	*Ficus aurea*		
MYRICACEAE			
Wax myrtle	*Myrica cerifera*		
MYRTACEAE			
Melaleuca / Cajeput	*Melaleuca quinquenervia*		
OLACACEAE			

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
Tallowwood / Hog plum	*Ximenia americana*		
ONAGRACEAE			
Southern gaura	*Gaura angustifolia*		
Primrose willow	*Ludwigia peruviana*		
OROBANCHACEAE			
Piedmont blacksenna	*Seymeria pectinata*		
OSMUNDACEAE			
Cinnamon fern	*Osmunda cinnamomea*	C	
Royal fern	*Osmunda regalis*	C	
PASSIFLORACEAE			
Purple passionflower	*Passiflora incarnata*		
PINACEAE			
Sand pine	*Pinus clausa*		
Slash pine	*Pinus elliottii* var. *densa*		
Longleaf pine	*Pinus palustris*		
POACEAE			
Bushy bluestem	*Andropogon glomeratus*		
Hairy bluestem	*Andropogon longiberbis*		
Bluestem	*Andropogon sp.*		
Broomsedge	*Andropogon virginicus* var. *glaucus*		
Bottlebrush threeawn	*Aristida spiciformis*		
Wiregrass	*Aristida stricta var. beyrichiana*		
Sandspur	*Cenchrus spp.*		
Durban crowfootgrass	*Dactyloctenium aegyptium*		
Hemlock witchgrass	*Dichanthelium potoricense*		
Witchgrass	*Dichanthelium spp.*		
Thalia lovegrass	*Eragrostis atrovirens*		
Carolina lovegrass	*Eragrostis pectinacea*		
Pinewood fingergrass	*Eustachys petraea*		
Guinea grass	*Panicum maximum*		
Torpedo grass	*Panicum repens*		
	Rhynchelytrum repens		
Yellow bristlegrass	*Setaria parviflora*		
Sand cordgrass	*Spartina bakeri*		
Perennial sandgrass	*Triplasis americana*		
POLYGALACEAE			
Tall milkwort	*Polygala cymosa*		
Wild batchelor’s button	*Polygala nana*		
Short milkwort	*Polygala ramosa*		
Yellow batchelor’s button	*Polygala rugelii*		
POLYGONACEAE			

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
Wireweed	*Polygonella gracilis*		
Jointweed	*Polygonella polygama*		
POLYPODIACEAE			
Golden polypody	*Phlebodium aureum*		
PTERIDACEAE			
Bracken	*Pteridium aquilinum*		
ROSACEAE			
Sand blackberry	*Rubus cuneifolius*		
RUBIACEAE			
Mexican clover	*Richardia brasiliensis*		
Mexican clover	*Richardia grandiflora*		
False buttonweed	*Spermacoce prostrata*		
RUTACEAE			
Hercules club	*Zanthoxylum clava-herculis*		
SALICACEAE			
Carolina willow	*Salix caroliniana*		
SAPOTACEAE			
Tough bully	*Sideroxylon tenax*		
SCROPHULARIACEAE			
Seymeria	*Seymeria pectinata*		
SELAGINELLACEAE			
Sand spikemoss	*Selaginella arenicola*		
SMILACACEAE			
Greenbrier	*Smilax auriculata*		
SOLANACEAE			
Walter’s groundcherry	*Physalis walteri*		
TETRACHONDRACEAE			
Rustweed	*Polypremum procumbens*		
THELYPTERIDACEAE			
Marsh fern	*Thelypteris palustris*		
URTICACEAE			
False nettle / Bog hemp	*Boehmeria cylindrica*		
VERBENACEAE			
Shrub verbena	*Lantana camara*		
VERONICACEAE			
Canadian toadflax	*Linaria canadensis*		
Moistbank pimpernel	*Lindernia dubia*		
VIOLACEAE			
Bog white violet	*Viola lanceolata*		
VISCACEAE			
Oak mistletoe	*Phoradendron leucarpum*		
VITACEAE			

COMMON NAME	SCIENTIFIC NAME	PROTECTION STATUS	
		FDACS	USFWS
Muscadine grape	*Vitis rotundifolia*		
VITTARIACEAE			
Shoestring fern	*Vittaria lineata*		
XYRIDACEAE			
Yellow-eyed grass	*Xyris spp.*		

Notes:
Plant surveys provided by P. Schmalzer, S. Kennedy, J. Tear, K. Weichman, T. MacClendon, P. Lowery, W. Lowery, E. Magurk, M. Steuart, L. Pernas-Giz, C. Herbert, and Kha Le-Huu & Partners. List updated March 15 and 21, 2009.

FDACS: Florida Department of Agriculture and Consumer Services
USFWS: U.S. Fish and Wildlife Service
E: Endangered
T: Threatened
C: Commercially Exploited

Appendix J

Cruickshank Sanctuary Observed Avian Species (listed by Family)

COMMON NAME	SCIENTIFIC NAME	PROTECTED STATUS	
		FFWCC	USFWS
ACCIPITRIDAE			
Sharp-shinned hawk	*Accipiter striatus*		
Red-tailed hawk	*Buteo jamaicensis*		
Bald eagle	*Haliaeetus leucocephalus*	T	T
Osprey	*Pandion haliaetus*	SSC	
ALCEDINIDAE			
Belted kingfisher	*Ceryle alcyon*		
ANHINGIDAE			
Anhinga	*Anhinga anhinga*		
APODIDAE			
Chimney swift	*Chaetura pelagica*		
ARDEIDAE			

COMMON NAME	SCIENTIFIC NAME	PROTECTED STATUS	
		FFWCC	USFWS
Great blue heron	*Ardea herodias*		
Cattle egret	*Bubulcuc ibis*		
Great egret	*Casmerodius albus*		
Little blue heron	*Egretta caerulea*	SSC	
Snowy egret	*Egretta thula*	SSC	
Tricolored heron	*Egretta tricolor*	SSC	
CERTHIIDAE			
Carolina wren	*Thryothorus ludovicianus*		
CHARADRIIDAE			
Killdeer	*Charadrius vociferus*		
CICONIIDAE			
Turkey vulture	*Cathartes aura*		
Black vulture	*Coragyps atratus*		
COLUMBIDAE			
Rock dove	*Columba livia*		
Common ground dove	*Columbina passerina*		
Mourning dove	*Zenaida macroura*		
CORVIDAE			
Florida scrub-jay	*Aphelocoma coerulescens*	T	T
Blue jay	*Cyanocitta cristata*		
FALCONIDAE			
American kestrel	*Falco sparverius*	var. *paulus,* T	
FRINGILLIDAE			
Red-winged blackbird	*Agelaius phoeniceus*		
Bachman's sparrow	*Aimophila aestivalis*		
Grasshopper sparrow	*Ammodramus savannarum*	var. *floridanus,* E	var. *floridanus,* E
Northern cardinal	*Cardinalis cardinalis*		
Yellow-rumped warbler	*Dendroica coronata*		
Prairie warbler	*Dendroica discolor*		
Palm warbler	*Dendroica palmarum*		
Common yellowthroat	*Geothlypis trichas*		
Eastern towhee	*Pipilo erythropthalmus*		
Boat-tailed grackle	*Quiscalus major*		
Common grackle	*Quiscalus quiscula*		
HIRUNDINIDAE			
Barn swallow	*Hirundo rustica*		
LANIIDAE			
Loggerhead shrike	*Lanius ludovicianus*		
LARIDAE			
Laughing Gull	*Larus atricilla*		
PICIDAE			
Pileated woodpecker	*Dryocopus pileatus*		
Red-bellied woodpecker	*Melanerpes carolinus*		

COMMON NAME	SCIENTIFIC NAME	PROTECTED STATUS	
		FFWCC	USFWS
Downy woodpecker	*Picoides pubescens*		
STRIGIDAE			
Great horned owl	*Bubo virginianus*		
STURNIDAE			
Gray catbird	*Dumetella carolinensis*		
Northern mockingbird	*Mimus polyglottos*		
European starling	*Sturnus vulgaris*		
TYRANNIDAE			
Great-crested flycatcher	*Myiarchus crinitus*		
VIREONIDAE			
White-eyed vireo	*Vireo griseus*		

Notes:

FFWCC: Florida Fish and Wildlife Conservation Commission
USFWS: U.S. Fish and Wildlife Service
E: Endangered
T: Threatened
SSC: Species of Special Concern

Appendix K

Cruickshank Sanctuary Observed Herptile Species (listed by Family)

COMMON NAME	SCIENTIFIC NAME	PROTECTED STATUS	
		FFWCC	USFWS
ALLIGATORIDAE			
Alligator	*Alligator mississippiensis*	SSC	T(s/a)
COLUBRIDAE			
Southern black racer	*Coluber constrictor priapus*		
Eastern indigo snake	*Drymarchon corais couperi*	T	T
Rough green snake	*Opheodrys aestivus*		
EMYDIDAE			
Florida box turtle	*Terrapene carolina bauri*		
HYLIDAE			
Green treefrog	*Hyla cinerea*		

Pinewoods treefrog	*Hyla femoralis*		
Squirrel treefrog	*Hyla squirrela*		
PHRYNOSOMATIDAE			
Scrub lizard	*Sceloporus woodi*		
POLYCHRIDAE			
Carolina anole	*Anolis carolinensis carolinensis*		
RANIDAE			
Southern leopard frog	*Rana sphenocephala utricularia*		
SCINCIDAE			
Southern five-lined skink	*Eumeces inexpectatus*		
TEIIDAE			
Six-lined racerunner	*Cnemidophorus sexlineatus sexlineatus*		
TESTUDINIDAE			
Gopher tortoise	*Gopherus polyphemus*	T	

Notes:

FFWCC: Florida Fish and Wildlife Conservation Commission
USFWS: U.S. Fish and Wildlife Service
T: Threatened
T(S/A): Threatened due to similarity in appearance
SSC: Species of Special Concern

Appendix L

Cruickshank Sanctuary Observed Mammal Species (listed by Order)

COMMON NAME	**SCIENTIFIC NAME**	**PROTECTED STATUS**	
		FFWCC	**USFWS**
CARNIVORA			
River otter	*Lutra canadensis*		
Bobcat	*Lynx rufus*		
Raccoon	*Procyon lotor*		
INSECTIVORA			
Red bat	*Lasiurus borealis*		
Hoary bat	*Lasiurus cinerius cinerius*		

Little brown bat	*Myotis lucifugus*		
Southeastern big-eared bat	*Plecotus rafinesquei*		
LAGOMORPHA			
Eastern cottontail rabbit	*Sylvilagus floridanus*		
Marsh rabbit	*Sylvilagus palustris*		
MARSUPALIA			
Opossum	*Didelphis marsupialis*		
RODENTIA			
Eastern gray squirrel	*Sciurus carolinensis*		
XENARTHRA			
Nine-banded armadillo	*Dasypus novemcinctus*		

Notes:

FFWCC: Florida Fish and Wildlife Conservation Commission (01/29/2004)
USFWS: U.S. Fish and Wildlife Service (04/28/2006)

APPENDIX M

Florida Natural Areas Inventory Element Occurrences

FLORIDA Natural Areas INVENTORY

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

May 31, 2006

Steve McGuffey
Brevard County
Environmentally Endangered Lands Program
5560 North US Highway 1
Melbourne, FL 32940

Dear Mr. McGuffey:

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:	Helen and Allen Cruickshank Sanctuary
Date Received:	May 25, 2006
Location:	Township 25 S, Range 36 E, Sections 15, 22, & 23 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

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.

Managed Areas

Portions of the site appear to be located within the Helen and Allen Cruickshank 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

Helen and Allen Cruickshank Sanctuary

Site boundaries are appoximate.

Brevard County

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

FLORIDA Natural Areas INVENTORY

Element Occurrences

- Animals
- Plants
- Communities
- Other

Point Indicates General Vicinity of Element

U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96

FL Fish & Wildlife Cons. Comm. Breeding Bird Atlas Project 1986-91center point of 10 sq mi survey block

Conservation Lands

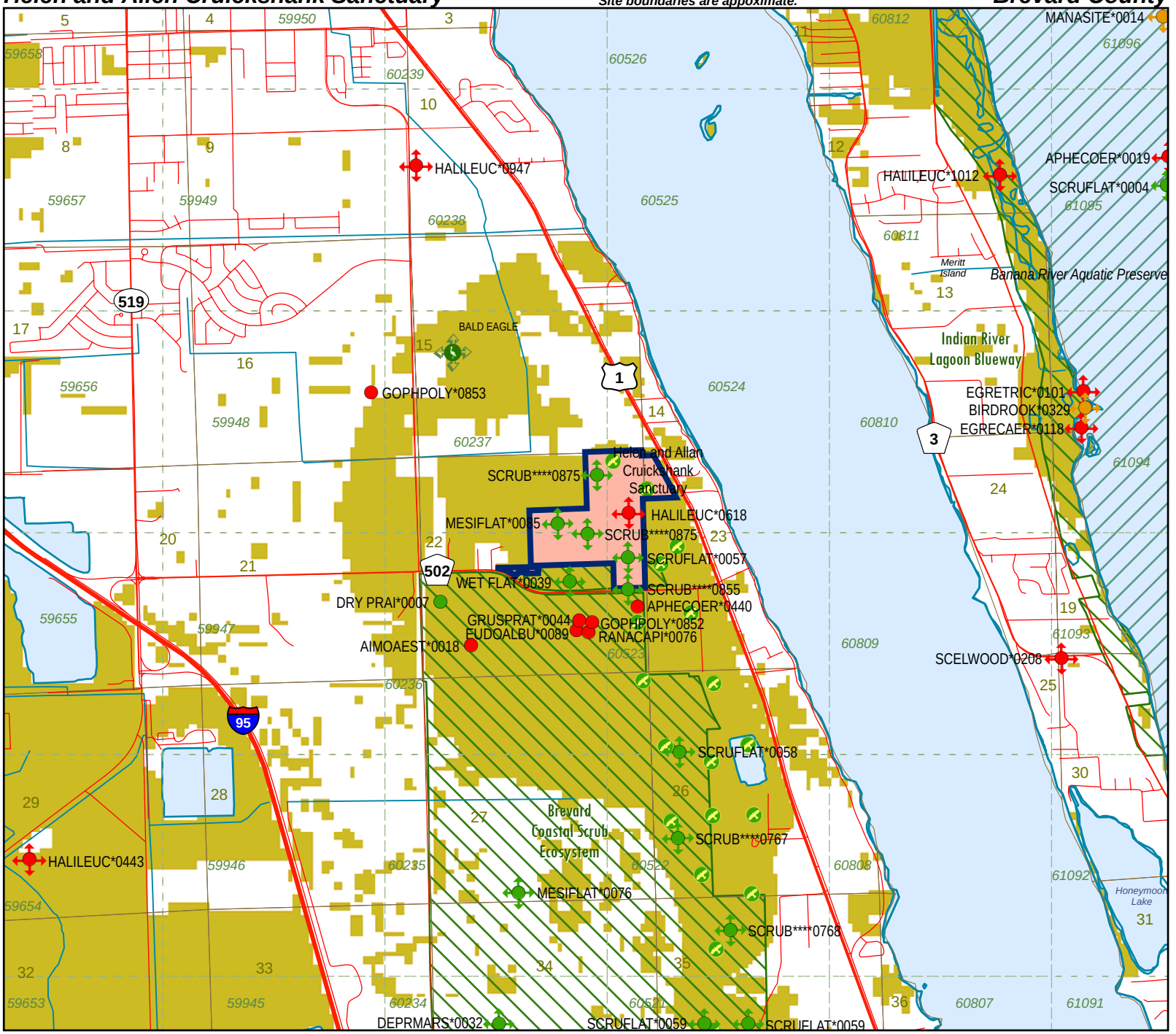
- Federal
- State
- Local
- Private
- State Aquatic Preserves

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
- Water



0 0.5 1 2 Miles

NOTE
Map should not be interpreted without accompanying documents.

Map produced by JAG
Map Date: 31 MAY 2006

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

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
EGRECAER*0118	Egretta caerulea	Little Blue Heron	G5	S4	N	LS	1978-05	COLONY SITE IS MANGROVES ALONG EDGE OF RIVER. HABITAT SURROUNDING COLONY IS MARSH GRASSES AND WATER. NESTING SUBSTRATE IS MANGROVES OVER WATER. LESS THAN 0.8 KM FROM HUMAN DISTURBANCE (U82NES01).	SPECIES PRESENT 1978-05 (50 NESTING PAIRS). NOT OBSERVED 1989-04-26.
HALILEUC*0947	Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT	1990-03-19	No general description given	1990/03/19: J.A. Hovis, GFC. Reported by W. Biggs, BBA, 10/88. Not in BE database. Reportedly successful in 1987-88. Reported to John White 3/19/90.
MANASITE*0014	Manatee aggregation site		GNR	SNR	N	N	1988	LARGE COASTAL RIVER.	UP TO 72 MANATEES HAVE BEEN COUNTED USING THIS SITE.
SCRUFLAT*0004	Scrubby flatwoods		G3	S3	N	N	1981-05-18	OPEN SLASH PINE SCRUB [=SCRUBBY FLATWOODS]	OCCURRENCE AT SITE
EGRETRIC*0101	Egretta tricolor	Tricolored Heron	G5	S4	N	LS	1978-05	COLONY SITE IS MANGROVES ALONG EDGE OF RIVER. HABITAT SURROUNDING COLONY IS MARSH GRASSES AND WATER. NESTING SUBSTRATE IS MANGROVES OVER WATER. LESS THAN 0.8 KM FROM HUMAN DISTURBANCE (U82NES01).	SPECIES PRESENT 1978-05 (50 NESTING PAIRS). NOT OBSERVED 1989-04-26.
BIRDROOK*0329	Bird Rookery		GNR	SNR	N	N	1978-05	COLONY SITE IS MANGROVES ALONG EDGE OF RIVER. HABITAT SURROUNDING COLONY IS MARSH GRASSES AND WATER. NESTING SUBSTRATE IS MANGROVES OVER WATER. LESS THAN 0.8 KM FROM HUMAN DISTURBANCE (U82NES01).	MULTI-SPECIES ROOKERY, 3 SPECIES. 600 NESTING PAIRS 1978-05; VACANT 1989-04-26. CATTLE EGRET PRESENT 1978-05 (500 NESTING PAIRS); LITTLE BLUE HERON PRESENT 1978-05 (50 NESTING PAIRS); TRICOLORED HERON PRESENT 1978-05 (50 NESTING PAIRS).
APHECOER*0019	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1989-12-01	OPEN SLASH PINE SCRUB [=SCRUBBY FLATWOODS]	1981-05-18: 2 SCRUB JAYS (1 EACH LOCATION) (U81COX01). 1989-12-01: 8 SCRUB JAYS REPORTED U91SNO01; SNODGRASS ET AL. ESTIMATED RECORDS 13 AND 47 TO CONSTITUTE A SMALL POPULATION OF 0-5 FAMILY GROUPS DURING A 1991 INVENTORY.
SCELWOOD*0208	Sceloporus woodi	Florida Scrub Lizard	G3	S3	N	N	ZZ	No general description given	SPEC. (UI-40748) COLL. BY W. WHITFIELD, UNDATED.

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

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
MESIFLAT*0076	Mesic flatwoods		G4	S4	N	N	2004	Mesic Flatwoods grading into Depression marshes.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-19) (U05FNA02FLUS). Excellent quality mesic flatwoods. Understory of saw palmetto with a variety of ericad shrubs and bracken ferns and an occasio
DEPRMARS*0032	Depression marsh		G4	S4	N	N	1992-06-19	Depression Marsh grading into Mesic Flatwoods/Scrubby Flatwoods.	Extensive, high quality depression marsh. Although it is being drained, impounded and surrounded by development, it still has a good diversity of species including sand coralgrass and bushy bluestem at the periphery and mixed yellow bachelor's buttons, m
GOPHPOLY*0852	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	1991-12-14	Scrubby Flatwoods, Sand pine Scrub and Mesic Flatwoods interspersed with Wet Prairie.	U93DEF01 reports ca. 25 burrows in an approximately 320 acre area.
EUDOALBU*0089	Eudocimus albus	White Ibis	G5	S4	N	LS	1991-12-14	Mesic Flatwoods grading into a Basin Marsh.	U93DEF01 reports the presence of this EO, but gives no other data. Presumably a foraging site.
APHECOER*0440	Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT	1991	SCRUBBY FLATWOODS.	1985-11-01: 9 JAYS REPORTED; 1989-11-28: 4 JAYS REPORTED; 1991-07-26: 2 JUVENILE JAYS REPORTED; 1991-08-21: 3 ADULT JAYS REPORTED (U91SNO01); SNODGRASS ET AL. ESTIMATED RECORD(S) (12, 14, 15, 16, 48, 49, 50, 52, 53) TO CONSTITUTE A LARGE POPULATION OF >3
RANACAPI*0076	Rana capito	Gopher Frog	G3	S3	N	LS	1991-12-14	Mesic Flatwoods grading into a Basin Marsh.	U93DEF01 reports the presence of this EO, but gives no other data.
GOPHPOLY*0853	Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS	1991-12-14	U93DEF01 designates this area as a medium density residential area.	U93DEF01 reports the occurrence of this EO, but gives no data other than the presence of ca. 6 burrows.
GRUSPRAT*0044	Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	LT	1991-12-14	Mesic Flatwoods grading into a Basin Marsh.	U93DEF01 reports the presence of this EO, but gives no other data. Presumably a foraging site.
AIMOAEST*0018	Aimophila aestivalis	Bachman's Sparrow	G3	S3	N	N	1991-12-14	Dry Prairie.	U93DEF01 reports the presence of this EO, but gives no other data.
DRY PRAI*0007	Dry prairie		G2	S2	N	N	1993-01-07	Dry prairie.	U93DEF01 reports the presence of dry prairie but gives no other data.
HALILEUC*1012	Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000, 1999;(U03FWC01FLUS)

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

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
SCRUB****0768	Scrub		G2	S2	N	N	2004	Xeric Oak dominated Scrub grading into Scrubby Flatwoods.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-19) (U05FNA02FLUS). The low (15-20 feet) canopy is composed of a dense growth of various scrub oaks including myrtle oak, sand live oak, and Chapm
SCRUB****0875	Scrub		G2	S2	N	N	2004	Sand pine scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1993-01-07) (U05FNA02FLUS). U93DEF01 reports the presence of sand pine scrub but gives no other data.
WET FLAT*0039	Wet flatwoods		G4	S4	N	N	2004	Wet Flatwoods.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1993-01-07) (U05FNA02FLUS). U93DEF01 reports the presence of wet flatwoods but gives not other data.
SCRUB****0855	Scrub		G2	S2	N	N	2004	Oak dominated scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1993-01-07) (U05FNA02FLUS). U93DEF01 reports the presence of scrub but gives no other data.
SCRUFLAT*0058	Scrubby flatwoods		G3	S3	N	N	2004	Scrubby Flatwoods integrading repeatedy with oak scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-19) (U05FNA02FLUS). High quality Scrubby Flatwoods with a scattered slash pine overstory and a dense ericad and mixed scrub oak component understo
SCRUB****0767	Scrub		G2	S2	N	N	2004	Xeric Oak dominated Scrub grading into Scrubby Flatwoods.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-19) (U05FNA02FLUS). The low (15-20 feet) canopy is composed of a dense growth of various scrub oaks including myrtle oak, sand live oak, and Chapm
MESIFLAT*0085	Mesic flatwoods		G4	S4	N	N	2004	Mesic Flatwoods.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1993-01-07) (U05FNA02FLUS). U93DEF01 reports the presence of mesic flatwoods but gives no other data.

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

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
SCRUFLAT*0057	Scrubby flatwoods		G3	S3	N	N	2004	SCRUBBY FLATWOODS INTERGRADING REPEATEDLY WITH OAK SCRUB.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-19) (U05FNA02FLUS). HIGH QUALITY SCRUBBY FLATWOODS WITH A SCATTERED SLASH PINE OVERSTORY AND A DENSE ERICAD AND MIXED SCRUB OAK COMPONENT UNDERSTO
SCRUFLAT*0059	Scrubby flatwoods		G3	S3	N	N	2004	Scrubby Flatwoods integrading repeatedly with oak scrub.	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1992-06-19) (U05FNA02FLUS). High quality Scrubby Flatwoods with a scattered slash pine overstory and a dense ericad and mixed scrub oak component understo
HALILEUC*0443	Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT	2003	overgrazed pasture (U97GFC02FLUS).	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: ACTIVE, PRODUCED 0 YOUNG; 1994: PRODUCED 2 YOUNG; 1993: PRODUCED 1 YOUNG; 1992: ACTIVE, PRODUCED 0 YOUNG; 1988-1987: ACTIVE, PRODUCED 0 YOUNG. 1
HALILEUC*0618	Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT	1994	SCRUB/SCRUBBY FLATWOODS.	Nest status 1999-2003: Unknown/not assessed - 2003, 2002, 2001, 2000, 1999; Status 1995-98: Inactive - 1998, 1997, 1996, 1995; (U03FWC01FLUS). Previous data (note different format) NEST; 1995: GREAT HORNED OWL; 1994: ACTIVE, PRODUCED 0 YOUNG; 1993: NOT A

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

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 60236					
Documented					
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	LS
Eudocimus albus	White Ibis	G5	S4	N	LS
Rana capito	Gopher Frog	G3	S3	N	LS
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	LT
Aimophila aestivalis	Bachman's Sparrow	G3	S3	N	N
Dry prairie		G2	S2	N	N
Wet flatwoods		G4	S4	N	N
Likely					
Mesic flatwoods		G4	S4	N	N
Scrub		G2	S2	N	N
Scrubby flatwoods		G3	S3	N	N
Mycteria americana	Wood Stork	G4	S2	LE	LE
Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT
Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT
Matrix Unit ID: 60237					
Likely					
Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT
Scrub		G2	S2	N	N
Mesic flatwoods		G4	S4	N	N
Scrubby flatwoods		G3	S3	N	N
Mycteria americana	Wood Stork	G4	S2	LE	LE
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	LT
Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT
Matrix Unit ID: 60523					
Documented					
Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT
Likely					
Mesic flatwoods		G4	S4	N	N
Scrub		G2	S2	N	N
Scrubby flatwoods		G3	S3	N	N
Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	LT
Mycteria americana	Wood Stork	G4	S2	LE	LE
Trichechus manatus	Manatee	G2	S2	LE	LE
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	LT
Matrix Unit ID: 60524					
Likely					
Mesic flatwoods		G4	S4	N	N
Scrubby flatwoods		G3	S3	N	N
Haliaeetus leucocephalus	Bald Eagle	G4	S3	LT,PDL	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.

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

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana	Wood Stork	G4	S2	LE	LE
Trichechus manatus	Manatee	G2	S2	LE	LE
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	LT
Aphelocoma coerulescens	Florida Scrub-jay	G2	S2	LT	LT
Potential from any/all selected units					
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	G3T3	S1	C	LS
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
Cladonia perforata	Perforate Reindeer Lichen	G1	S1	LE	LE
Conradina brevifolia	Short-leaved Rosemary	G2Q	S2	LE	LE
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Ctenogobius stigmaturus	Spottail Goby	G2	S2	N	N
Dicerandra immaculata	Lakela's Mint	G1	S1	LE	LE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	LT	LT
Eretmochelys imbricata	Hawksbill	G3	S1	LE	LE
Glandularia maritima	Coastal Vervain	G3	S3	N	LE
Gymnopogon chapmanianus	Chapman's Skeletongrass	G3	S3	N	N
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
Linum carteri var. smallii	Carter's Large-flowered Flax	G2T2	S2	N	LE
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Panicum abscissum	Cutthroat Grass	G3	S3	N	LE
Picoides borealis	Red-cockaded Woodpecker	G3	S2	LE	LS
Platanthera integra	Yellow Fringeless Orchid	G3G4	S3	N	LE
Podomys floridanus	Florida Mouse	G3	S3	N	LS
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Rana capito	Gopher Frog	G3	S3	N	LS
Sceloporus woodi	Florida Scrub Lizard	G3	S3	N	N
Schizachyrium niveum	Scrub Bluestem	G1	S1	N	LE
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	LS
Scrub		G2	S2	N	N
Warea carteri	Carter's Warea	G3	S3	LE	LE

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.

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 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 An experimental population of a species otherwise Listed as an Endangered Species in the List of Endangered and Threatened Wildlife and Plants.

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. Taxa for which the USFWS currently has substantial information on hand or in possession to support the biological appropriateness of proposing to list the species as endangered or threatened.

PS Partial listing status (species is listed for only a portion of its geographic range).

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

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

Animals (Florida Fish and Wildlife Conservation Commission- FFWCC)

LE Listed as Endangered Species by the FGFWFC. 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 FGFWFC. 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* (for Florida black bear) indicates that LT status does not apply in Baker and Columbia counties and in the Apalachicola National Forest.

LS Listed as Species of Special Concern by the FGFWFC. 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.

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.

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.

CE Listed as a Commercially Exploited Plant in the Preservation of Native Flora of Florida Act. Defined as species native to state which are subject to being removed in significant numbers from native habitats in the state and sold or transported for sale.

PC Proposed by the FDACS for listing as Commercially Exploited Plants.

(LT) Listed threatened as a member of a larger group but not specifically listed by species name.

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

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

FLORIDA Natural Areas INVENTORY

Brevard Coastal Scrub Ecosystem

Brevard County

Group A: Full Fee
Group A: Small Holdings

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 (Not GIS Acreage)	**48,387**
Acres Acquired	**19,323****
at a Cost of	**$38,407,488****
Acres Remaining	**29,064**
with Estimated (Tax Assessed) Value of	**$50,695,754**

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

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.

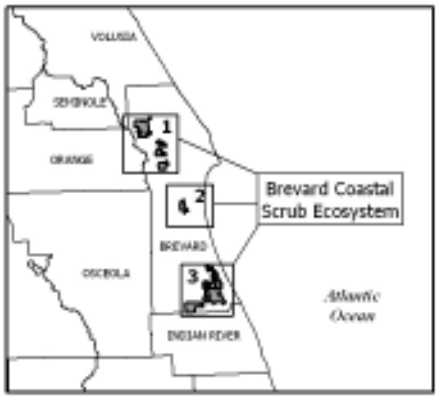
Long-range plans for this project, beginning approximately one year after acquisition is completed, will be directed towards biodiversity protection, exotic species removal, wetland restoration and enhancement, and the maintenance of links between upland, wetland and estuarine areas. Management will 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.

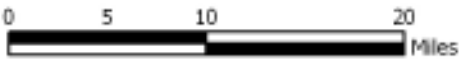
Continued on Page 70

65

BREVARD COASTAL SCRUB ECOSYSTEM: OVERVIEW

BREVARD COUNTY





DECEMBER 2003

FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. Steve McGuffey
Brevard County Parks and Recreation Department
Environmentally Endangered Lands Program
5560 North U.S. Highway 1
Melbourne, Florida 32940

September 23, 2004

RE: DHR Project File Number: 2004-8896
Received by DHR September 1, 2004
Environmentally Endangered Lands Program Land Management Plan
Helen and Allan Cruickshank Sanctuary
Brevard County

Dear Mr. McGuffey:

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 area, and also to determine the potential for such resources, which are presently unrecorded to be located within it.

A review of the Florida Master Site File and our files indicates that there is a low probability of significant archaeological or historical sites being located on this property. However, if fortuitous finds or unexpected discoveries, such as prehistoric or historic artifacts, including pottery or ceramics, stone tools or metal implements, or other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. Brevard County or other designee, should contact Ms. Susan Harp, Historic Preservation Planner, at Florida Department of State, Division of Historical Resources, Review and Compliance Section at (850) 245-6333 or (800) 847-7278. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources.

In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.

We have enclosed for your use a copy of Management Procedures for Archaeological and Historic Sites and Properties on State-Owned or Controlled Lands. This document should be referred to where appropriate in your land management plan, and attached to it.

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

❒ Director's Office (850) 245-6300 • FAX: 245-6435
❒ Archaeological Research (850) 245-6444 • FAX: 245-6436
☑ Historic Preservation (850) 245-6333 • FAX: 245-6437
❒ Historical Museums (850) 245-6400 • FAX: 245-6433
❒ Palm Beach Regional Office (561) 279-1475 • FAX: 279-1476
❒ St. Augustine Regional Office (904) 825-5045 • FAX: 825-5044
❒ Tampa Regional Office (813) 272-3843 • FAX: 272-2340

(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

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail *sedwards@dos.state.fl.us*, or at 850-245-6333 or 800-847-7278.

Sincerely,

Laura A. Kammerer

for Frederick Gaske, Director, and
State Historic Preservation Officer

Enclosure

FLORIDA DEPARTMENT OF STATE
DIVISION OF HISTORICAL RESOURCES

MANAGEMENT PROCEDURES

FOR

ARCHAEOLOGICAL AND HISTORICAL SITES AND PROPERTIES

ON STATE - OWNED OR CONTROLLED LANDS

(revised August, 1995)

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

❒ Director's Office
(850) 245-6300 • FAX: 245-6435

❒ Archaeological Research
(850) 245-6444 • FAX: 245-6436

❒ Historic Preservation
(850) 245-6333 • FAX: 245-6437

❒ Historical Museums
(850) 245-6400 • FAX: 245-6433

❒ Palm Beach Regional Office
(561) 279-1475 • FAX: 279-1476

❒ St. Augustine Regional Office
(904) 825-5045 • FAX: 825-5044

❒ Tampa Regional Office
(813) 272-3843 • FAX: 272-2340

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 267.061(3), 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.

APPENDIX O

Letter from The City of Rockledge

CITY OF ROCKLEDGE

CITY HALL
1600 Huntington Lane
Rockledge, FL 32955
Telephone: 321-690-3978
Fax: 321-690-3987

BUILDING DIVISION
1600 Huntington Lane
Rockledge, FL 32955
Telephone: 321-690-3984
Fax: 321-690-6481

FIRE & EMERGENCY SERVICES DEPT.
1800 Rockledge Blvd.
Rockledge, FL 32955
Telephone: 321-690-3968
Fax: 321-634-3592

POLICE DEPT.
123 Barton Boulevard
Rockledge, FL 32955
Telephone: 321-690-3988
Fax: 321-690-3996

PUBLIC WORKS DEPT.
1400 N. Garden Road
Rockledge, FL 32955
Telephone: 321-690-3961
Fax: 321-690-3965

WASTEWATER TREATMENT & WATER RECLAMATION DEPT.
1700 Jack Oates Blvd.
Rockledge, FL 32955
Telephone: 321-690-3975
Fax: 321-690-3998

June 10, 2009

Steve McGuffey
Central Region Assistance Land Manager
Environmentally Endangered lands Program
91 East Drive
Melbourne, Florida 32904

Dear Mr. McGuffey:

Thank you for allowing the City of Rockledge to comment on your revisions to the Helen and Allen Cruickshank Sanctuary management plan. The City applauds the EEL program on the steps you have taken to reintroduce the native vegetation of the area, with the controlled burns and thinning of existing trees on the property.

Rockledge believes the original plan dated (October 28, 1999), which included a visitor/education center, greenhouse/nursery, walking/hiking trails and bicycle trails is the best plan submitted to date. When property is purchased with taxpayer funds those properties need to be opened to the public with the intent of providing passive exercise and a positive learning environment. The existing informational kiosk is a sub-standard attempt to meet the educational component of your management plan.

The EEL's purchase of this property has already helped the City meet some of the goals, objectives and policies of the city's adopted Comprehensive Plan. This can be seen within our Conservation Element (the air quality will not be degraded if the property would have been developed as Industrial). Objective 6.3 encourages the purchase of property for the protection of habitat and species. Objective 6.4 directs the city to preserve natural vegetative habitats and park siting (where possible preserve natural communities in the design). Goal 7 under our Recreational and Open Space Element ensures that residents have full access to recreational facilities, which includes bicycle paths and trails. This property helps the City of Rockledge meet our open space requirements for the residents of Rockledge and Brevard County.

It is the City's understanding that Scrub Jays see bird watchers as a bigger threat than bicyclist, because they appear to be stalking the birds as a predator would in the wild. We would strongly suggest that bicycling be included in this draft of your management plan. We would not encourage any type of motorized vehicles on this site, except for maintenance and rehabilitation purposes only. We would also strongly suggest that some type of learning center be developed on this site. The City of Rockledge will gladly entertain ideas of partnering with the EEL program to provide a better park experience, provided funding can be found.

Sincerely,

Don Griffin

Don R. Griffin
Planning Director

RECEIVED
06/11/09
Environmentally Endangered Lands Program

CITY OF ROCKLEDGE

1600 Huntington Lane
Rockledge, FL 32955-2660

P.O. Box 560488
Rockledge, FL 32956-0488

Telephone 407 / 690-3978 • Fax 407 / 690-3987

Betsi Beatty Moist
City Clerk

September 26, 1995

Duane DeFreese
EEL Program Coordinator
Brevard County Government Center
2725 St. Johns Street, Building B
Melbourne, Florida 32940

Dear Dr. DeFreese:

I am pleased to transmit herewith a copy of Resolution #95-349 adopted by the Rockledge City Council at its regular meeting on September 20, 1995. The resolution adopts the designation of *CRUICKSHANK SCRUB SANCTUARY* for the lands within the Rockledge Scrub Core Area.

Your submittal of this resolution to the Brevard County Board of County Commissioners for formal adoption of this designation is hereby gratefully acknowledged. If I may be of any further assistance, please contact me at your convenience.

Sincerely,

CITY OF ROCKLEDGE

Betsi Beatty Moist

Betsi Beatty Moist
City Clerk and
Public Relations Officer

B²M:
Enclosure

cc: Don R. Griffin
Development & Grants Coordinator

RESOLUTION NO. 95-349

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROCKLEDGE, BREVARD COUNTY, FLORIDA, ADOPTING THE NAME OF "CRUICKSHANK SCRUB SANCTUARY" FOR THE LANDS WITHIN THE ROCKLEDGE SCRUB CORE AREA OF THE SCRUB JAY REFUGIA CARL PROJECT ACQUIRED BY THE BREVARD COUNTY ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM AS WELL AS ANY ADDITIONAL PROPERTIES PURCHASED CONTIGUOUS TO THE ROCKLEDGE SCRUB CORE AREA.

WHEREAS, Brevard County's Environmentally Endangered Lands (EEL) Program acquired land within the Rockledge Scrub core area of the Scrub Jay Refugia CARL Project; and

WHEREAS, approximately 140.8 acres have been purchased to date; and

WHEREAS, the CARL Project intends to purchase another 40.93 acres for said area; and

WHEREAS, the EEL Program's selection committee accepted the recommendation made by the Rocklege City staff to name the property after Allen and Helen Cruickshank, nationally noted naturalists and residents of Rockledge, Florida; and

WHEREAS, the selection committee unanimously voted to recommend the name Cruickshank Scrub Sanctuary and such sanctuary would encompass the acquired property as well as any additional properties contiguous to the Rockledge Scrub core area; and

WHEREAS, once adopted herein by the City Council of the City of Rockledge, the staff of Brevard County's Environmentally Endangered Lands Program will request the Board of County Commissioners of Brevard County, Florida, to formally adopt the name Cruickshank Scrub Sanctuary;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY

OF ROCKLEDGE, FLORIDA, that it declares the land as set forth on Exhibit "A" as the Cruickshank Scrub Sanctuary and further provides that said name shall encompass any additional properties purchased contiguous to the Rockledge Scrub core area as shown on Exhibit "A".

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Rockledge, Florida, this 20th day of September, 1995.

John J. Oates
Mayor, City of Rockledge, Florida

Steven G. Anderson
Chairman, Rockledge City Council

ATTEST:
Betsi Beatty Moist
City Clerk

This is to certify that the foregoing is a true and correct copy of the original document.

Witness my hand and official seal this 26th day of September, 1995.

CITY OF ROCKLEDGE

Betsi Beatty Moist
Betsi Beatty Moist
City Clerk

APPENDIX P

Public Comments

From: Dan Gallagher <maypop@earthlink.net>
To: "D. Scott Taylor"
Subject: mangent plan
Date: Oct 27, 2006 10:18 PM

dear Scott Cruikshank Sanctuary Manangment Plan

Since there is a fire break around this area. Is it to be 10 to 15 wide.Am i correct about this with. Why not use this as bike and hiking trails. With trail with this wide the conflict between hiker and biker would give room for both party room to pass each other. Since this low use area. Why no let both parties use this area. The fire brake is around the out side prinenter is the area i am talking abou . I agree with the plan that the city rockledge has suggested as an different plan to yours.

thank
you
Daniel GALLAGHER
1525 SOUTH FISKE BLVD
APT 106
ROCKLEDGE FL 32955

Daniel Gallagher

APPENDIX Q

SMC Minutes

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
SELECTION & MANAGEMENT COMMITTEE (SMC)
July 31, 2007
Attendance List

SELECTION & MANAGEMENT COMMITTEE MEMBERS
Mark Bush
Dave Breininger
Ross Hinkle
Randy Parkinson
Paul Schmalzer

EEL PROGRAM STAFF
Jenny Ashbury
Laura Clark
Mike Knight
Sandy Mickey
Scott Taylor

THE NATURE CONSERVANCY
Anne Mayer
Rebecca Perry

GUESTS
Karen Andreas, Florida Council of Bromeliad Societies
Teresa Cooper, University of Florida
John Denninghoff, Brevard County Transportation Engineering
Dave Dingley, District IV Commission Office
Howard Frank, University of Florida
Susan Gosselin, Brevard County Natural Resources Management Office
Joe Mayer, Bussen-Mayer Engineering
Mary Sphar, Citizen
Susan Yonce, District 4 Commission Office

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
SELECTION & MANAGEMENT COMMITTEE (SMC)
July 31, 2007
Meeting Minutes

CALL TO ORDER:
Ross Hinkle, Chairman, called the meeting to order at 1:03 PM.

SPECIAL SESSION:
Request for Ditch Maintenance Access Easement at Cruickshank Sanctuary

Public Comment
None

Mike Knight, EEL Program Manager, explained that the first part of the meeting would be dedicated to a Special Session regarding the request from the Brevard County Transportation/Engineering Department (TE) for a ditch maintenance access easement at Cruickshank Sanctuary in Rockledge.

Mike stated that questions had previously been compiled regarding the request and that a response had been provided. He stated that John Denninghoff, Director of TE and Joe Mayer, of Bussen-Mayer Engineering, were at the meeting to address any outstanding issues or concerns so that the Transportation/Engineering Department could move the item forward to the Board of County Commissioners (Board) with a clear understanding of the Selection and Management Committee's (SMC) position.

Paul Schmalzer stated that he had questions related to the document received on July 27th and he requested clarification of how the items should be revisited.

Randy Parkinson asked that everyone keep in mind that the SMC had just received the latest set of information on Friday and stated that while he was able to do a quick review of the summary, he had not had time to check the report thoroughly.

Joe Mayer stated that the figure changes in the document were very minor from what had been included in the original document.

Randy expressed the SMC's appreciation for John and Joe's attendance at the meeting to address the SMC's questions and concerns.

Mike clarified that at the last meeting statements were made that indicated that the easement being requested by TE was already in place. He explained that, at the request of the SMC, staff had asked the County Survey Department to review the surveys and legal descriptions. Their review confirmed that some of the areas that were being requested as easement were existing easement (shown on red on the map), but that some were not (shown as blue).

Mike explained that another question that has been raised is: If the ditches are not on EEL Program property, why is the EEL Program being asked to provide the access easements?

Mike explained that his understanding was that a mistake had been made in the past between the City of Rockledge and the subdivision's developer, because clear delineation was not provided for where the ditch would be accessed from, since the ditch was not part of the subdivision's drainage system. As a result, the properties immediately adjacent to the side of the ditch opposite from the Sanctuary have been developed as back yards and now include fences, swimming pools, and sheds, etc..

Additional discussion ensued, including:

- Paul Schmalzer asked if the figures in the document of July 27th represented the total impact to the Sanctuary.
    - Clarification was provided that it did, with two exceptions:
        - Language in the new easement would clarify that the old easement would be removed, with some sections vacated.
        - The TE Department would not be maintaining a section of the old easement located in the southeastern corner of the Sanctuary.
- Clarification was provided that the areas on the map with both blue and red lines represented sections where TE was requesting that the existing easement be expanded.
- Clarification was provided that a culvert would be placed across Barnes Blvd. for a maintenance access road and that TE would be providing the fence and gate for the road.
- The maintenance access road will generally be 10 feet wide, and a little wider at the corners.
- TE plans to vacate the portion of the existing easement near the area they are restoring.
- Scott Taylor asked about the schedule for maintenance of the ditch.
    - John clarified:
        - Mowing: typically 4 – 6 times per year, no more, could be less.
        - Cleaning – bringing in trucks and grade-all: depends on how well vegetation takes root, but ordinarily every 2 to 4 years.
- Ross Hinkle asked for clarification of the impact to the water table.
    - John stated that estimates under the most aggressive assumptions provide for a draw down of approximately 2 feet and Joe stated the impact should not reach more than 300 feet from the ditch.
    - Scott expressed concern that when the maintenance road in the low lying area was built up for equipment access that flooding could occur in the low lying area north of the planned retention pond.
    - Joe Mayer confirmed that the road will be built up a couple of feet in the low lying area.
    - Barrier and/or control structures will be installed to control the flow of water to protect that area. The activity will require permitting and regulation by St. Johns River Water Management District (SJRWMD).
- Mike asked if the project would be held to SJRWMD regulations as part of the permit.
    - Joe explained that 5 years of monitoring was required under the permit.

    - John stated that a biologist is required to review the area twice a year for the first two years and then once a year. He stated that TE is typically proactive during the monitoring and if a problem is encountered, they will begin corrective action without waiting for direction from SJRWMD to do so.

- Mike asked for clarification on determining the best material for the underground barrier relative to effectiveness, but also ease of use and considerations for changing it, if necessary.
    - Joe stated his suggestion would be to ask SJWRMD for their recommendation but that the limerock barrier would be easier to change.

- Clarification was provided that the language of the new easement would specifically identify areas of access and the general terms of the old easement would be removed.

- Mike provided clarification that if the ditch maintenance access easement was granted, the EEL Program would receive compensation, and staff would coordinate the arrangements.

- Ross stated that he felt that any time a decision was made regarding an activity that would impact a Sanctuary, the decision should not set a precedent for that activity at other Sanctuaries. He stated that in an rapidly urbanizing area, conservation land becomes a target for utility rights of ways, storm-water drainage, and recreation activities, and that he felt the SMC would use a very conservative approach to requests of this type.

- Dave Breininger stated that a 5 year monitoring period seemed short.

- John stated that SJRWMD required 5 years to determine that plantings would be successful and that in his experience 3 years was usually enough time to make that determination.

- Paul mentioned that a lot of the SJRWMD guidelines were relative to plantings as part of wetlands permitting, but that the concern here was related to the hydrologic effects over time to the intact sanctuary and that those may not play out over 5 years.

- Mike stated a recommendation for a longer time frame could be made.

- Scott suggested that perhaps the monitoring could be done in house by county staff.

- Paul agreed that was a good idea and that it made sense to do it in house for continuity.

- Mike stated that staff would be doing an inventory of all existing ditches on EEL Program property to identify where the easements were and to look at adjacent landowners when appropriate.

- Scott expressed concerns that access for ditch maintenance should have been granted through Chelsea Park and that access still might be available through the preservation parcel. He also asked if it was possible to still access the ditch behind the existing homes.

- John explained that even if the ditch could be accessed from behind the existing homes, it wasn't feasible.

- John explained that this project would:
    - Provide some treatment for water that is currently draining to the Lagoon without treatment.

    - Deal with flood waters that are now rising high enough to cause flooding in structures and roadways.
    - Work with the planned road project.

- Clarification was provided that paspalum is available as a sod and that it would be much preferred by the SMC to bahaia, which is an exotic plant, to stabilize the sides of the ditch.
- Joe stated he was agreeable to placing whatever the SMC wanted, but that he had concerns that it might not hold the sides of the ditch well.
- John stated that he also had concerns about planting something that was very expensive and then having to come back and replant if the first planting did not take hold. He also stated that perhaps bahia could be planted on the bottom with something else on the top and that he was open to trying a new idea.
- Mark asked if bahia could be seeded with a native planting.
- Mike clarified that the fire line would have to be maintained as mineral soil.
- John explained that 80% of the water that ran through the ditch would go through the retention pond first and that would reduce some of the sediments that would accumulate at the bottom of the ditch.
- Mike explained that it was important that mowing and ditch cleaning equipment be cleaned to reduce the spread of invasive exotic plant species.
- John stated if he was in charge of TE, and the EEL Program had the appropriate equipment, he would be willing to allow the EEL Program to do the mowing and to reimburse the Program for its expenses.
- John stated that in areas where they didn't have to clear trees, the trees would help stabilize the banks.
- Mark and Randy emphasized the need to educate the homeowners if TE would be removing their screen of trees so the homeowners would know what to expect.
- John clarified that there would be an open house on this project and that he was considering a separate open house for the homeowners in the Chelsea Park neighborhood.
- Mike stated that he would like for the development of the trail head for the Cruickshank Sanctuary off Barnes Blvd. to be incorporated as part of the mitigation for the project, if possible.
- Paul stated that the compensation description needed to be clarified.
- John stated that he was willing to provide financial compensation for the project, which could be used for the trail head, if that was best for the Program, as long as someone else was responsible for the trail head design.
- Mike reminded the group that the State would be involved with the compensation structure as the land is in State title.
- Mike clarified that a recommendation from the SMC needed to be received before the easement request could proceed to the Board and to the State.

- Randy stated that comments of the meeting would be noted, but that the details of the agreement would need to be worked out.
- Mike confirmed that comments would be revised until there was a clear understanding of the issues to be negotiated.
- Randy asked if Scott Taylor, the Land Manager for the Central Region, had anything that hadn't been addressed sufficiently, or would need to be worked into the recommendation.
- Scott stated that the issues had been addressed.

Public Comment
None

MOTION ONE:
Randy Parkinson moved to approve a recommendation to support the Cruickshank Ditch Maintenance Access Easement Request, as long as discussion continues on items in question and staff works to negotiate appropriate compensation.
Mark Bush seconded the motion.
The motion carried unanimously.

Clarification was provided that when TE holds the open houses, the EEL Program would be notified so the information could be relayed to the SMC.

MINUTES:

The June 27, 2007 minutes were presented for approval. Ross asked for comments to the June draft minutes. Paul Schmalzer noted the following:

- Page 6 - Borenstein Property: This property is in the SR 528 megapargel area which is proposed as an amendment to the BCSE Project. The EEL Program has not made acquisitions in the area, but there are lands acquired by USFWS for the Dusky Seaside Sparrow.
- Page 6 – MLCI David Lee Property, last paragraph: Two sentences from the site visit report are run together. It should read: "These properties are within the Brevard Coastal Scrub Florida Forever Project. They were added to this project because they offered connectivity between two major conservation areas. There is the potential to restore these sites to flatwoods and wetlands over time. The process would take time and resources. Maintaining a mowing or perhaps grazing regime to keep Brazilian pepper from colonizing the pastures may be necessary until restoration could be accomplished."
- Page 7 – Morris Property: Typo "0" before "during".
- Page 7 – Wells Property: This property is near Grissom Parkway within the existing BCSE megaparcel site.
- Page 8 – Hunter's Brooke: 7th paragraph. Capitalize "Conservation" in Seminole Ranch Conservation Area.

The minutes will be amended as noted.

MOTION TWO:
Paul Schmalzer moved to approve the June 27, 2007 minutes as amended.
Randy Parkinson seconded the motion.
The motion carried unanimously.

ADMINISTRATIVE REVIEW:

The Administrative Review was reviewed.

Mike provided a draft resolution that staff had prepared regarding the Board's support of Florida Forever funding and the creation of a successor program. He asked the Selection and Management Committee (SMC) if they would be in favor of making a motion in support of the resolution that could be included when this item is presented to the Board of County Commissioners (Board).

MOTION THREE:
Paul Schmalzer moved to approve an expression of support from the SMC regarding the resolution for continuation of the Florida Forever Program.
Dave Breininger seconded the motion.
The motion carried unanimously.

SMC REPORTS

REAC Mtg Update

The next REAC meeting will be held on August 9, 2007.

Other SMC Reports

None.

STAFF REPORTS:

Prescribed Fire – Dean Vanderbleek

Dean Vanderbleek, EEL Program Fire Manager gave a presentation on recent prescribed fires including:

- February 19, 2007: 314 acres - Micco Scrub Sanctuary
- February 23, 2007: 5 acres – Maritime Hammock Sanctuary
- March 6, 2007: 5 acres – Maritime Hammock Sanctuary
- March 7, 2007: 10.5 acres – Enchanted Forest Sanctuary
- March 29, 2007: 15 acres – Cruickshank Sanctuary
- April 24, 2007: 25 acres – Coconut Point Sanctuary
- June 25, 2007: 3 acres – Sterling Forest
- June 27, 2007: 135 acres – Pine Island Conservation Area

Mike invited the group to view the new tractor and explained that staff would be going through training on its operation.

Dean explained that he was considering reducing the size of some burn units as he felt it would enhance prescribed fire application.

Dave Breininger stressed the importance of prescribed burns and suggested sanctuaries be considered on an individual basis.

Paul stated he agreed with Dave's comments.

Central Region Update – Scott Taylor
Scott Taylor provided information on recent events in the Central Region:

- Prescribed Fires at Central Region Sanctuaries.
- Renovations continue at the Sams House at PICA on Merritt Island.
- Scouts have installed trail signs at Cruickshank Sanctuary in Rockledge.
- BIPM grant for removal of invasive, exotic species at Thousand Islands.
- Request for ditch maintenance access easement at Cruickshank Sanctuary.
- Staff working on establishing contractors for removal of exotic species.
- Discussion continues regarding the Exotic Species Strategic Plan for the Thousand Islands.
- Storm-water Project at PICA will go out to bid soon.
- Scrub Jays at Cruickshank Sanctuary.
- Scout troop adopted PICA.
- Working with Katrina Morrell for exhibit ideas at PICA.
- Restoration at PICA.

THE NATURE CONSERVANCY:

Rebecca Perry from The Nature Conservancy (TNC) provided an update on acquisition activities:

- Maytown Flatwoods Area
  - Ag Ventures - Negotiations are continuing.
- Hunter's Brook – Waiting on appraisal.
- North Buck Lake Area
  - Jefferys - Closing completed.
  - Taylor - Closing completed.
  - White - Closing completed.
- Ft. McCauley/Scottsmoor Partners – Angela Klug continuing negotiations.
- North Indian River Lagoon
  - Gaizo – Board accepted assignment of option.
- North Region
  - Vero Pittsburg Partners, LLC – Closing completed.
  - Veronica Estates/Lawhon – Board will consider option agreement today.
- Central Region
  - Joyce Johnson – Closing expected soon.
  - Schopke/Barge – Board accepted assignment of option.
  - Boyd & DiChristopher – Information received from owners regarding sovereign land. Keith Fountain will be meeting with owners when he comes back from vacation.
- South Area
  - Micco Eastern Holding – Internal Revenue Service will appoint disposition contractor who will notify TNC when they can look at this property. Information expected this week. There will be a bid process for this property.

Paul Schmalzer asked for an update on the megaparcel areas.

Rebecca explained that TNC staff recently met with the Department of Environmental Protection (DEP) and that she had followed up regarding appraisals but that TNC has not received information on small holdings, or clarification on whether or not the State would accept County appraisals for reimbursement purposes. Funding is very limited. This will be brought back to the SMC for review.

Mike stated that he and Jenny Ashbury met recently on this topic to discuss possible strategies, and that they would be discussing options with Keith before reporting back to the SMC.

Rebecca explained that a list of properties for reimbursements had been provided to DEP.

The SMC requested clarification regarding the reimbursement process and status for each of the properties in State approved projects that have been purchased by the EEL Program.

Ross stated that the EEL Program wants to be first in line when funding becomes available.

Mike stated that representatives from DEP have visited Brevard County recently and that there was some confusion regarding the purpose of the visit. He said that staff will report back to the SMC regarding the status of reimbursements and boundary amendments.

Paul mentioned that funding was also a topic that needed to be discussed.

AGENDA ITEMS:

Consideration of Evil Weevil Control

Information was provided previously to the SMC regarding a proposed project for the release of a parasitic fly at the Enchanted Forest Sanctuary in the hopes that the fly will reduce the number of invasive, exotic bromeliad weevils that have established a population at the Forest and are causing a significant amount of damage. The project has received all required permits and the SMC previously reviewed the EEL Program application.

Howard Frank, an entomologist specializing in biological control from the University of Florida, and Teresa Cooper, who completed her Master's degree there, provided additional information on the anticipated project that will allow for the release and monitoring of a specialized fly which should only target the problem weevil, and the fly's effects on the weevil population at the Forest.

Howard pointed out that one of the most frequently asked questions about this type of project relates to concerns that the insect would spread to a point where it could become a problem. He stated that he authored a paper covering all insect release projects in Florida since 1899 and that of the 59 cases where insects have been imported and become established, none have caused non-target effects.

Teresa explained that there would be four releases of the specialized flies in the vicinity of weevil larvae with close monitoring to determine the impact of the fly on the larvae. The project is expected to last one year. This project is also being tested in other places in Florida.

Karen Andreas of the Florida Council of Bromeliad Societies spoke of her support for the project and the importance of limiting the spread of the weevil to protect the native bromeliads. She provided information on a seed bank they are establishing to try to ensure bromeliad diversity.

MOTION FOUR:
Paul Schmalzer moved to approve the proposed release of the parasitic fly as an experimental project in the Enchanted Forest Sanctuary.

Mark Bush seconded the motion.
The motion carried unanimously.

Request for Land Exchange: P&R Dept. W.W. James Parks / Vero-Pittsburg Partners LLC Property

Mike explained that the Parks & Recreation Department (P&R) is expanding their facilities at W. W. James Park north of the Enchanted Forest Sanctuary and are hoping to work with the EEL Program to minimize impact to natural areas and to keep the impact in the disturbed zones as much as possible. The SMC reviewed three preliminary proposals for a possible land swap with P&R at the June 27, 2007 meeting. A site visit was scheduled to the area as a result of that meeting.

Paul Schmalzer reviewed the report from the July 13th site visit. All three of the proposals involve a 10+ acre parcel which is located directly south of the existing ball fields. One involves a 4+ acre parcel along Sisson Road.

The northern two-thirds of the 10+ acre parcel are disturbed while the southern third supports a high quality mesic hammock. There was apparently a small coquina pit in part of the southern third of the 10+ acre parcel, but native species have revegetated the disturbed area.

The 4-acre parcel along Sisson Road is predominately mesic hammock with a small area of willow or hardwood swamp along Sisson Road. This area is intact natural communities in good habitat condition. It also borders and protects a depression marsh.

The site visit report indicates the northern 2/3 of the 10-acre parcel could be considered for exchange, but the southern 1/3 of the 10-acre parcel and the 4-acre parcel along Sisson Road should not be considered for exchange. The report also recommends evaluation of the area for use by gopher tortoises be completed prior to finalizing the exchange proposal.

P&R will come back to the SMC with two options. One option will be to expand only on the existing P&R property, and the other option will consider a possible swap of property with the EEL Program. Consideration will be given to whether or not the proposed trade provides a net conservation benefit.

Additional information will be provided.

Request for Land Exchange: TICO Airport Property

The SMC reviewed a map of a land exchange request received from the Titusville-Cocoa (TICO) Airport Authority. Mike stated that he has explained to the airport staff that any land exchange with the EEL Program must have a net conservation benefit. Mike previously reviewed the request and said that he did not feel the proposal had a net conservation benefit, but that he had told the Airport staff that he would present the information to the SMC for their consideration.

Dave Breininger stated that he agreed with Mike's overview, and that while it was good to consolidate properties, the proposed exchange did not offer a net conservation benefit.

The Airport Authority has proposed a 1:1 exchange of 52 acres that they own located south of Perimeter Road and east of Grissom Parkway. Natural communities on the Airport Authority land include sand pine scrub, oak scrub, scrubby flatwoods, mesic flatwoods, and depression marsh. Most of this area is well drained but included are several acres of depression marsh on very

poorly drained St. Johns, ponded soil. Small areas of flatwoods soils may also be included. This site has been unburned for a long time, reducing the current habitat value for Florida Scrub-Jays. It could be restored through combinations of mechanical cutting and prescribed burning. The depression marsh is being invaded by wetland shrubs as a result of fire exclusion or hydrologic alteration. The flora of the site is predominately native, and the exotics present are located primarily along the Grissom Parkway right of way.

The Airport Authority land is environmentally sensitive and could be suitable land as Florida Scrub-Jay habitat with restoration. However, the current, proposed exchange does not provide a significant net conservation benefit. The total area of the lands proposed for exchange is the same. The Airport Authority land is not all scrub, but includes several acres of a depression marsh. Theses marshes are important communities but do not substitute directly for scrub.

MOTION FIVE:
Paul Schmalzer moved to decline the land exchange as proposed by TICO Airport as it did not offer a net conservation gain.
Mark Bush seconded the motion.

Public Comment
Mary Sphar asked of the EEL Program was held to the State standards regarding proposed land exchanges.

Clarification was provided that none of the properties in this proposal were State owned, so State standards would not be a consideration in this situation, but that there was a requirement for a net conservation benefit for any properties being considered for exchange by the EEL Program.

The motion carried unanimously.

Review of Veronica Estates/Lawhon Property Acquisition
Mike provided information on the 206± acre Veronica Estates/Lawhon property in the Grissom megaparcel area. He stated that during the recent follow-up audit there was a request for a 2nd Majority Vote date for this property. He clarified that staff had realized that when the Grissom megaparcel area was added to the Brevard Coastal Scrub Ecosystem (BCSE) Project in 1996, the Program had been operating under the original Land Acquisition Manual (LAM) which did not include a requirement for a 2nd Majority Vote. The LAM was revised in 1997 to include requirements for 1st and 2nd Majority Votes during the acquisition process.

Mike said that a 1st Majority vote was documented in 1996 when the Boundary Amendment to the BCSE was approved and that confirmation of a 2nd Majority Vote was being requested today.

Mike requested that the SMC provide confirmation that there has always been the intent to move forward with the acquisition of this property and that the SMC review the acquisition information for approval to move the acquisition to the Board.

Paul commented that there have been requests for confirmation on other properties and with the determination that some should no longer be pursued, due to fragmentation or change in habitat.

Randy Parkinson asked if there were concerns with mixing the new requirements language with the old requirements language.

Ross stated that confirming a 2nd Majority vote at this time would serve as confirmation that the property should be pursued.

MOTION SIX:
Paul Schmalzer moved to approve a 2nd Majority vote for the Veronica Estates/Lawhon property.
Randy Parkinson seconded the motion, for the purpose of discussion.
The motion carried unanimously.

Mike stated that he felt the wording of the 2nd Majority vote was fine and that in the future, if confirmation of an existing 2nd Majority Vote could not be provided for a property, it would be reconfirmed.

MOTION SEVEN:
Paul Schmalzer moved to approve submitting the Veronica Estates/Lawhon property contract to the Board.
Mark Bush seconded the motion.

Public Comment
None

The motion carried unanimously.

NEXT MEETING:

ADJOURNED:
The meeting was adjourned at 5:07 PM.

SUMMARY OF MEETING MOTIONS:
- Motion to approve a recommendation to support the Cruickshank Ditch Maintenance Access Easement Request, as long as discussion continues on items in question and staff works to negotiate appropriate compensation.
- Motion to approve the June 27, 2007 minutes as amended.
- Motion to approve an expression of support from the SMC regarding the resolution for continuation of the Florida Forever Program.
- Motion to approve the proposed release of the parasitic fly as an experimental project in the Enchanted Forest Sanctuary.
- Motion to decline the land exchange as proposed by TICO Airport as it did not offer a net conservation gain.
- Motion to approve a 2nd Majority Vote for the Veronica Estates/Lawhon property.
- Motion to approve submitting the Veronica Estates/Lawhon property contract to the Board.

APPENDIX R

Stipulation Letter to Transportation and Engineering

BREVARD COUNTY
BOARD OF COUNTY COMMISSIONERS

INTER-OFFICE MEMORANDUM

To: John Denninghoff
Transportation Engineering (TE) Director

From: Mike Knight
EEL Program Manager

cc: Joe Mayer, Bussen-Mayer Engineering

Ref: Request for Drainage Easement at Cruickshank Sanctuary

As follow up to the EEL Selection and Management Committee's approval of the drainage ditch expansion and maintenance easement on the Cruickshank Sanctuary, I would like to clarify the following conditions of this recommendation to the Board and the State of Florida Division of State Lands.

The EEL Selection and Management Committee has the responsibility to ensure that all uses of the lands purchased under the EEL bond referendum are consistent with the goals of the referendum. This is critical to the process not only to protect the site resources but to also guard against the perception that the conservation goals of the EEL Referendum will be sacrificed. Where possible other community needs may be integrated with the conservation goals of EEL~~S~~, but that has to be determined on a site by site basis with very careful scrutiny of the objectives of EEL~~S~~. I have greatly appreciated your patience in working closely with staff and the EEL/SMC in this review process, in which the SMC could adequately evaluate~~d~~ the potential impacts to the sanctuary property.

1. It is understood that SJRWMD and EEL land management staff will be directly involved with the decision making related to the permitting parameters for the onsite (sanctuary) wetlands. This should include review and input into the following:
    a. Wetland barrier systems (synthetic or lime-rock)
    b. Wetland restoration (exotic removal, planted species and structure.
    c. Determination of the wetland "ordinary high water line".
    d. Monitoring strategies. To include monitoring of the on-site water table to determine that interior site wetlands that are theoretically outside the "zone of influence" are not being impacted by the project. All monitoring will be the responsibility of the Transportation Engineering Department.

2. It is understood from the Bussen-Mayer Report dated July 27, 2007 that the calculated impact to the site is limited to the following:
    a. 0.44 acre impact at the extreme southwest corner of the sanctuary for the inflow ditch from Barnes Blvd. to the East Pond.
    b. 0.03 acre impact in order to widen the ditch at its primary receiving point.
    c. 1.64 acre impact for a 20-foot wide access and maintenance easement immediately adjacent to the ditch, for all three legs of the ditch (roughly coinciding with the existing fire-break / dirt access road).

3. The EEL Program Referendum and the State would need to be fairly compensated for the value of the easement and the loss of the existing fence. Approval will be needed through the State of Florida Division of State Lands. The EEL Program is willing to consider off-setting the compensation in exchange for construction of a trailhead and parking area off of Barnes Blvd. for enhanced public access to the sanctuary. The EEL Program will prepare a cost estimate and plans for the development of the trailhead for consideration. It is also understood that in exchange for the easement, the current loosely written maintenance easement language will be revised to reflect the specific legal description of the easement and designate the legal access point for the easement, so there is no confusion in the future. The access to the easement for ditch maintenance needs to be clearly designated from the storm-water pond area only. In addition, there will be an access point from Barnes Boulevard at the point where the ditch meets Barnes Boulevard. Access from this location will be limited to the maintenance road along the ditch bank.

4. It is understood that the use of bahia sod will be limited to the ditch slope. The top and toe of the slope would be planted with native vegetation to reduce the risk of the bahia encroaching into the sanctuary. No other exotic species may be planted on-site. In addition, EEL staff will have an opportunity to review the planting plan for the ditch slopes.

5. A plan should be developed to retain pockets of trees along the ditch bank to help maintain the existing vegetative buffer behind homes while allowing for access for periodic maintenance of the ditch. EEL staff needs to be involved in the identification of these tree pockets prior to clearing of the vegetation.

6. Prior to the project moving forward, the Chelsea Park neighbors need to be informed, and the Transportation Engineering Department needs to take the lead on such notification. EEL staff will be available for any public meetings associated with the project.

7. Ditch maintenance should include the removal of invasive, exotic species that are a potential ecological threat to the sanctuary property. Species such as *Lygodium* and *Melaleuca* are a serious threat to the ecological management of the site. The management of exotic vegetation that encroaches into the ditch system must be the responsibility of the Transportation Engineering Department and the Road and

Bridge Department. It is not uncommon for *Lygodium* (Climbing Fern) and Cogon Grass to invade ditch systems that are maintained with mowing equipment. Since this ditch system has not been maintained during the history of management by the EEL Program, it is very likely that the mowing equipment will become a vector for these invasive species. Examples of this currently exist on other EEL managed properties within ditches around the County. A schedule for mowing and maintenance should be developed, including ample notification to EEL Staff that it will be taking place. A description of the type of maintenance should also be included for consideration.

It is understood that the maintenance access road will also serve as the perimeter fire line for the sanctuary, and that there will be no filling or stabilization required except adjacent to the wetland area at the north end of the first leg of the ditch. Provisions must be made at this location to prevent 'damming' of water and overflooding by the elevated roadway: i.e. a control structure must be installed for spillover at the correct elevation. It is also understood that the fire line will be disked and or tilled regularly (by the EEL Program) to maintain a mineral soil fire line. This routine maintenance will cause the road to be in somewhat of a rough condition to prevent the spread of fire. The EEL Program will notify the Road and Bridge Department prior to fire line maintenance activities so as not to interfere with any planned ditch mowing or maintenance activities.

Please let me know if you have further questions.

Thanks

APPENDIX S

REAC Minutes

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
February 8, 2007
Attendance List

RECREATION AND EDUCATION ADVISORY COMMITTEE MEMBERS

Bob Champaigne
Jim Durocher
Murray Hann
Karen Hill
Mark Nathan
Eve Owens
Beverly Pinyerd
Paul Saia

SUB-COMMITTEE MEMBERS

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

EEL PROGRAM STAFF

Laura Clark
Brad Manley
Scott Taylor

GUESTS

Shirril Adams
David Gallagher
Don Griffin

ENVIRONMENTALLY ENDANGERED LANDS PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
February 8, 2007
Meeting Minutes

CALL TO ORDER:

Murray Hann called the meeting to order at 6:04 PM.

PUBLIC COMMENT:

None.

ADDITIONAL DISCUSSION:

Murray asked if anyone would mind a change in the order of the minutes so that Scott Taylor could do his presentation early in the meeting. No concerns were received.

AGENDA ITEMS

Helen and Allan Cruickshank Sanctuary Proposed Public Access Plan

Scott Taylor, Central Region Land Manager gave a presentation on the Cruickshank Sanctuary proposed public access plan including:

- The 140 acre Cruickshank Sanctuary is located in a rapidly urbanizing landscape and it is important to remember that it is an ecological island.
- The EEL Program has attempted to purchase addition land in the area, but has not been successful.
- The original plans to provide an Education and Management Center at the Cruickshank Sanctuary were changed at the direction of the Board of County Commissioners in an effort to make the best use of available funds and existing properties.
- There is an access point with a small parking area on Barnes Blvd.
- Hiking trails and fire breaks currently exist on the property. Fire breaks on this site can be used as hiking trails.
- The Sanctuary has a lot of sugar sand and is quite flooded during the rainy season.
- There are several wetland areas in the Cruickshank Sanctuary.
- The property is divided into four burn units and has received aggressive management to restore the original scrub habitat where possible. Two units have been burned with no complaints from citizens. Staff continues to educate the public on the importance of prescribed fire.
- There are trail markers on this site.
- Current passive recreational opportunities on this site include hiking and bird watching, but not biking.

- Brevard County Storm Water Utilities Department is requesting permission to use this Sanctuary as part of a storm water project.
- An Eagle Scout trail project was recently completed on site.
- Fencing has reduced much of the previous inappropriate use of this site.
- Six families of Florida Scrub Jays, which have been absent from the area for several years, have moved into this site as a result of the land management efforts.
- This sanctuary contains the largest population of a rare plant, commonly called the Sand Mat, in Brevard County.

ADDDITIONAL DISCUSSION AND PUBLIC COMMENT:

Brad Manley explained that he had recently visited the Cruickshank Sanctuary to get current information on trail conditions and sanctuary habitat. Brad provided his opinion that the sand in the trails was very soft, and would not provide a positive bike riding experience. He stated that he felt that if the EEL Program indicated that biking was available at a particular sanctuary, then an opportunity for a positive experience should be available.

Murray Hann said that several people had expressed concerns to him regarding the plans to not offer mountain biking at this location and suggested that the trails be available for use when appropriate, and closed when wet.

Paul Schmalzer said that this was a small site and mountain biking would have greater impacts than hiking.

Jim Durocher said that he was an off road biker and gave his opinion that bikers and hikers don't always mix well. He expressed his concern that some folks might go off the trails in the small sanctuary.

Scott stated that in his experience bikers were usually good stewards of the land, but that biking needed to be allowed only where it was appropriate.

Beverly Pinyerd stated her feeling that the Cruickshank Sanctuary was the only EEL Program site on the Central Brevard mainland, and that there were lots of places in the County where people could ride bikes. She said that she felt it was important that this site be preserved as much as possible.

Paul Schmalzer stated that conservation was the primary goal of the EEL Program.

Mark Nathan stressed the importance of protecting the natural resource.

Don Griffin, from the City of Rockledge said that he was the original presenter of this property to the EEL Program for consideration of acquisition. He said he was pleased with the original plans for a Management and Education Center on site and very disappointed with the change in plans. He suggested a cooperative effort between the City and the EEL Program on future projects.

Barbara Meyer said that the Commission had approved a linear trail in Brevard County.

Murray Hann said that if it wasn't a fun trail, only a few people would want to use it, and he didn't think allowing mountain biking would cause a negative impact to the habitat.

Jim Durocher stated that he felt the primary Mission of the program was not being considered.

Motion One
Eve Owens moved that the REAC Committee request staff to reconsider biking at the Cruickshank Sanctuary, based on environmental impacts, previous commissioner's request, a request from the City of Rockledge, and requests from citizens.
Paul Saia seconded the motion.
Four members voted to approve the motion and four members voted to decline the motion.
The motion failed.

Eve mentioned that she had one more motion for the Committee to consider.

Motion Two
Eve Owens moved to support that the REAC Committee should encourage the EEL Program Staff to work with the City of Rockledge and Brevard County regarding possible opportunities for a cooperative effort relative to plans for the Sky View Drive In property before the Cruickshank Sanctuary Management Plan was finalized.
Mark Nathan seconded the motion.
The motion carried by a vote of 6 to 2, with Beverly Pinyerd and Bob Champaigne voting no.

Clarification was provided by REAC committee members that maps of conservation lands in Brevard County would be beneficial during their decision making.

PUBLIC COMMENT
Comment was received from a citizen who said that tax payer monies had been used to purchase EEL Program property. She spoke of her support for balancing passive recreation with conservation goals and stated she was representing a group of approximately 30 kayakers who would like to request that the EEL Program's citizen advisory committees reconsider allowing access to the Mellon (Hog Point Cove) property in the South Beach region as she felt that it was the only access option for the members of her group when traveling across the Indian River to A1A.

Brad stated that there were additional access opportunities at other EEL Program sites nearby and that staff was willing to meet with her to discuss the issue further and to clarify the alternatives. He asked that this be done prior to any formal request to one of the citizen advisory committees.

Paul Schmalzer confirmed that the SMC would direct staff to gather this type of information before an issue of this type could be presented for consideration by the SMC.

Members of the REAC Committee expressed their interest in hearing the woman's concerns after she was able to meet with Brad.

Murray asked Brad if he could be available immediately after the meeting to meet with the 3 citizens who attended the meeting relative to this topic. Brad confirmed he would be available and explained that he would like to get everyone's e-mail address, if possible, to assist in notifications for future meetings when this might be discussed.

The citizens thanked the members of the REAC Committee for their time and volunteer efforts.

MINUTES:

The October 12, 2006 and January 27, 2007 minutes were presented for approval.

Murray asked for comments to the October minutes.

MOTION THREE:
Eve Owens moved to approve the October 12, 2006 minutes as presented
Karen Hill seconded the motion.
The motion passed unanimously.

Murray asked for comments to the January minutes.

MOTION FOUR:
Karen Hill moved to approve the January 12, 2007 minutes as presented.
Bob Champaigne seconded the motion.
The motion carried unanimously.

NEXT MEETING:

It was determined that the next meeting would be held on May 10, 2007

ADJOURNED:

The meeting was adjourned at 8:10 PM.

SUMMARY OF MEETING MOTIONS:

- Motion to request staff reconsider biking at the Cruickshank Sanctuary, based on environmental impacts, previous commissioner's request, a request from the City of Rockledge and requests form citizens. The motion failed.
- Motion to support that the REAC Committee should encourage the EEL Program staff to work with the City of Rockledge and Brevard County regarding possible opportunities for a cooperative effort relative to plans for the Sky View Drive in property before the Cruickshank Sanctuary Management Plan was finalized.
- Motion to approve the October 12, 2006 minutes as presented.
- Motion to approve the January 12, 2007 minutes as presented.

ENVIRONMENTALLY ENDANGERED LANDS (EEL) PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
May 10, 2007
Attendance List

RECREATION AND EDUCATION ADVISORY COMMITTEE MEMBERS

Bob Champaigne
Jim Durocher
Murray Hann
Karen Hill
Eve Owens
Mark Nathan
Beverly Pinyerd
Paul Saia

SUB-COMMITTEE MEMBERS

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

EEL PROGRAM STAFF

Xavier DeSeguin des Hons
Brad Manley
Judy Gregoire
Mike Knight

GUESTS

Susan Gosselin, Brevard County Natural Resources Management Office
Suzanne Valencia, citizen

ENVIRONMENTALLY ENDANGERED LANDS PROGRAM
RECREATION AND EDUCATION ADVISORY COMMITTEE
May 10, 2007
Meeting Minutes

CALL TO ORDER:

Murray Hann called the meeting to order at 6:05 PM.

PUBLIC COMMENT:

None.

ADDITIONAL DISCUSSION:

Mike Knight, EEL Program Manager, provided information on recent issues involved with the request for a paved linear trail as part of the Management Plan for the Malabar Scrub Sanctuary. He clarified that the REAC Committee had moved to support the public access portion of the plan as presented by staff, which included a paved linear trail placed on an existing dirt fire break which runs along the east side of the sanctuary, near Marie Street. Mike explained that the EEL Program's Selection and Management Committee (SMC) passed a motion approving the Management Plan, but with the caveat that the paved, linear trail be located on the existing, four lane concrete road that runs through the middle of the sanctuary. He also explained that staff made a recommendation to the Board of County Commissioners (Board) to locate the trail on the east side of the sanctuary, instead of on the existing concrete road. During the Board meeting, Commissioners Scarborough and Nelson expressed their desire to have the item tabled for further consideration. There was a final vote by the Board of 4 to 1 to approve the Management plan as presented by staff, with Commissioner Nelson voting no.

Eve Owens stated that her motion to approve the public access portion of the plan had been made with the understanding that the SMC would be supportive of the plan. Mike clarified that it was his opinion that even if the issue came back before the EEL Program's REAC and SMC committees, for additional review, it would have ended up in the Board room anyway. He expressed his opinion regarding the need to revise the EEL Program's Sanctuary Management Manual (SMM) to provide greater clarification on the approval process for Management Plans.

Clarification was provided that the joint meeting between the REAC and SMC which had been planned for both committees was cancelled because initial input from the SMC indicated the concept of the paved trail would be considered favorably.

Mike explained that the primary reason for Staff's recommendation to locate the trail on the east boundary fire line was because there was a long history of inconsistent communications regarding the trail that contributed to the current alignment of the trail.

Paul Schmalzer clarified that the EEL Program's Land Acquisition Manual (LAM) clearly stated that the Board can either approve or disapprove an acquisition that is recommended by the SMC, but they can not buy something that has not been recommended by the SMC

and followed the established land acquisition process which includes SMC final approval of the contract terms and authority to submit to the Board. Paul said that this process came from the 1990 EEL Program referendum. He explained there was a very similar referendum in 1989 without a science based advisory committee to make decisions which did not pass.

Mike stated that was a good point and that we needed to make sure that the same type of language was in place from a Management Plan standpoint.

Barbara Meyer stated that she had been involved in the process from the beginning and that she wanted to clarify that there were times direction was received by County Administration and it was important not to think that previous Program Managers were acting on their own.

Murray Hann stated his opinion that he felt that it was appropriate for the Board to make this type of decision and that in future years, people would look back and wonder why the issue was so controversial.

Paul Schmalzer stated that neither Duane nor Anne had brought the issue of a request for a paved linear trail to the SMC in the past and that he did not know if they had been directed to do so, or not, and, that he had a great deal of respect for them both, but, not taking that information to the SMC had been an error in judgment, as neither of them had the expertise to make that decision on their own without consulting the SMC.

Paul Saia said that he had a copy of the Resolution that formed the REAC Committee at the meeting and, not to minimize the REAC group, that REAC was an advisory committee to the SMC, which was staffed by professionals. He said that it was a good idea to have a sounding board for citizen's input.

Mike stated that one of the reasons the REAC Committee had been brought to life was to facilitate the exchange of information. He said that now the Program was working with a clean slate and that what happened in this case would not be representative of issues in the future. He said that in the future when trails are considered for the south part of the County, and those things start to come up, the Program can go through the process the way it was meant to be done.

Paul Saia asked if there was concern that management of new acquisitions would be an issue due to the possible budget cutbacks.

Mike explained that it was anticipated that some of the management activities would be shifted to staff, but that it was expected that what was needed could still be accomplished.

MINUTES:

The March 24, 2007 minutes were presented for approval.

Murray asked for comments to the March 2007 minutes.

MOTION ONE:
Eve Owens moved to approve the March 24, 2007 minutes as presented.
Bob Champaigne seconded the motion.
The motion carried unanimously.

ADMINISTRATIVE REVIEW:

Status update on past REAC motions – Brad Manley

Brad Manley reviewed each of the previous motions from the REAC Committee relative to public access plans and provided an update for the status of each.

- November 2005: Jordan Scrub Sanctuary
  Update: The management plan for the Jordan Scrub Sanctuary has been approved by the Brevard County Commissioners. Staff worked with a volunteer Americorps team to complete and sign the trail system. One section north of the larger pond was re-routed around a wetland. At the southern end of the property, the blue trail was re-routed, utilizing an old fence line, and old, existing trails. This separates the trail from the fireline which will run along the southern fence line. This provides a better quality trail that will not be subject to management activities associated with the fire line. This is the section of trail that could possibly be used as an unpaved connection to the South Brevard Linear Trail if it follows Marie St. south of Malabar Road.
- January 2006: Dicerandra Scrub Sanctuary
  Update: Management plan has been approved by SMC and BOCC.
- January 2006: Micco Scrub Sanctuary
  Update: Simplified trail system has been redesigned and mapped by staff.
- August 2006: South Beaches
  - Maritime Hammock Sanctuary Trail
    Update: Staff worked with an Americorps team to essentially complete the trail extension and construct two foot bridges. The trail will be opened when native plantings in the restoration area have had time to become established.
  - Barrier Island Sanctuary Trail
    Update: Staff worked with an Americorps team to complete the trail on the east side of A1A and connect the ADA boardwalk to Bonsteel Park.
- March 2007 Malabar Scrub Sanctuary
  Update:
  - *March 2007 - REAC endorsed the plan based on input from the SMC.*
  - *April 2007 - SMC passed a motion recommending the trail be sited along the existing concrete boulevard in order to minimize disturbance to the Sanctuary.*
  - *May 2007 – After taking input from staff, committee recommendations, and Citizens, BOCC approved the Management Plan including the paved linear trail as recommended by staff.*
  - *The partnering entities involved in the project have begun the planning process.*

REAC REPORTS

Eve thanked the EEL Program staff for their assistance with the ribbon cutting ceremony for the Palm Bay Boundary Canal Trail in April.

AGENDA ITEMS

North Buck Lake Scrub Sanctuary Proposed Public Access Plan

Judy Gregoire, Land Manager for the EEL Program's North Region, provided information on the Public Access Plan for the North Buck Lake Scrub Sanctuary. This 165± acre sanctuary was purchased in 2001. It is adjacent to the 9,000± acre Buck Lake Conservation Area (BLCA) which was purchased by the EEL Program in partnership with the St. Johns River Water Management District. As part of the planning process for the North Buck Lake Scrub Sanctuary, stakeholders were identified and invited to a recreation assessment public meeting which was held on April 3, 2007. Comments from the public have been received and documented. The recreational plan (as presented at the public meeting) includes:

- Parking area at the end of Cinnamon Teal Drive
  - Walk through gate for hikers, bikers, and horseback riders (no horse trailer parking)
  - Equestrian trailer parking available at BLCA off SR 46 in Mims.
  - Walk through gate on the southern boundary provides access to BLCA.
- 2.3 miles of hiking, biking and horseback riding trails
  - Trails double as fire breaks
  - Effects of multiple uses on trails will be monitored
- Core Conservation Area (marked with boundary signs)
- Boundary fire lines will be identified as non-hiking areas
- Education interpretive signs
  - At parking area
  - Along trails
  - Kiosk at BLCA walk through to identify the legal activities on each side of the fence.

Judy also provided updated information on properties which are adjacent to the North Buck Lake Sanctuary that are under consideration for acquisition.

Comments received at the Public Meeting included:

Paul Schmalzer confirmed the presence of a rare plant *Lechea divaricata* at the North Buck Lake Sanctuary.

- Concerns from neighbors that heavy equipment needed to construct the trailhead parking area would damage the concrete roadway, which is already cracked and damaged.

  Clarification was provided that road impact assessments would be done prior to any work being done.

- Concerns from neighbors that the trailhead would attract inappropriate use in the form of late-night partiers, etc.

  Clarification was provided that inappropriate use tends to decline as areas are fenced and use will be monitored.

- The primary concern expressed by the neighbors in attendance was that traffic to the trailhead would pass by their homes.

  Staff has researched options for placing the trailhead at either Hog Valley Road or on Cinnamon Teal Drive including:

  - *<u>Hog Valley Road Trailhead</u>*

    Pros

    - *Sufficient space for parking exists with careful planning to allow firebreak access.*
    - *The substrate is more solid than Cinnamon Teal Drive – possibly easier to construct parking.*
    - *The route to the trailhead is more direct by two less turns.*
    - *Traffic would flow past approximately three homes.*

    Cons

    - *The trailhead would be across the street from at least two homes and would be in view of their front windows/yards. (View is currently woods, EEL Program fence and gate)*
    - *Not close to the center of the trail system – is at the western end.*
    - *Extension of the paved road required.*
    - *Possibly creating a more welcoming area for inappropriate use.*

  - *<u>Cinnamon Teal Road Trailhead</u>*

    Pros

    - *Larger, more disturbed location for parking.*
    - *Good firebreak access could be readily configured.*
    - *There is buffer of several vacant lots between the trailhead and homes – neighbor's view would not change.*
    - *Assuming pending acquisitions of adjacent lots are accomplished (high probability) there may be options to site the trailhead without extending the paved road.*
    - *Close to the hub of the trail system, allowing access to loops of various lengths.*

    Cons

    - *The driving route to the trailhead is less direct by two turns. Traffic would flow past approximately seven homes.*
    - *More potential for damage to roadway by construction traffic.*

Judy explained that other upcoming goals for the North Buck Lake Scrub Sanctuary Include:

- Guided Hikes
- Volunteer Workdays
- Surveys for plants and animals
- Prescribed fire

Eve asked if there was data related to current use of the sanctuary.

Judy explained that they do not have formal documentation of use, but there appears to be a few visitors a week. Fence repairs due to inappropriate activity on the site are still

required several times monthly. It is anticipated that as the sanctuary gets a designated trail head and receives more visitors, the inappropriate use will be reduced.

Clarification was provided that restroom or other fixed buildings are not anticipated for this sanctuary and that this site would be a good alternative for citizens who wanted to visit a nature sanctuary in the area that was not impacted by the seasonal hunting at Buck Lake Conservation Area.

MOTION TWO
Bob Champaigne moved to support the North Buck Lake Sanctuary Conceptual Public Access Plan as presented by staff.
Paul Saia seconded the motion.
The motion carried unanimously.

Helen and Allan Cruickshank Sanctuary Proposed Public Access Plan

Brad explained that Scott Taylor, Land Manager for the EEL Program's Central Region was not able to attend the meeting, but that the group would be revisiting a request for bike use as part of the proposed recreation plan for the Cruickshank Sanctuary. He stated that when the REAC Committee had previously reviewed the proposed public access plan, there was a motion for staff to reconsider bike trails, which did not pass because it received a split vote of 4 to 4. Subsequently, staff reevaluated the request anyway because the point of the REAC Committee is to receive public input. He explained that some of the things that were evaluated were environmental impact to endangered plant and animal species, and what type of volume might be expected. The original determination to not include biking as an approved activity at the Cruickshank Sanctuary was largely based on the fact that the trails are frequently wet and consist mainly of sugar sand, which does not usually provide for a pleasurable biking experience. Also some of the trails are placed along fire breaks and when the fire breaks are maintained, they are returned to mineral soil making biking difficult.

The Cruickshank Sanctuary is a140± acre sanctuary located on the north side of Barnes Blvd. in Rockledge. It is a Category 2 site which provides for minimal improvement with simple trail heads. Brad showed the group pictures of a Florida Scrub-jay and a young Gopher Tortoise which were taken at the Sanctuary. He reported that although Scrub-jays had disappeared from this location in the past, it is estimated that 6 families have returned to the area as a result of restoration efforts.

Bob Champaign stated that he had voted against allowing bike trails at Cruickshank at the previous meeting, but that he might be agreeable to allowing biking if it was not advertised as a suggested activity.

Murray stated that he had received e-mails from a couple of citizens who lived in the area in support of bike use on the sanctuary.

Beverly Pinyerd stated that she lived near the Cruickshank Sanctuary and that it was the only EEL Program sanctuary in the Central Brevard mainland area. She said that civilization has run native animals out of almost every other place in the area as a result of high density and overdevelopment. She expressed her concern related to possible impacts to the sanctuary as a result of the possible widening of Barnes Blvd. to four lanes. She said

that she had visited the Cruickshank recently and had been pleased to see that Scrub-jays have returned to the area. She expressed her opinion that Cruickshank was a good place to go birding, but that the general area was becoming too populated and that she was absolutely against biking at that location.

Mark Nathan stated that he had visited Cruickshank since the last meeting and that after further consideration he would not be supportive of bike trails, a hardened parking area or restrooms as it was a small site with existing populations of endangered animals and plants. He expressed the importance of the EEL Program's vision of a place for wildlife, and native plants and animals, and his feeling was that our footprint there should be small because it was first and foremost a wildlife area.

Jim Durocher stated that he had voted against allowing bikes at Cruickshank last time and that he had also visited the property since the last meeting to gain additional information. He stated that he agreed with Beverly and Mark that the sanctuary was too small to allow bikes and that someone might walk the trail one time and enjoy it, but a biker would have to go around the small trail several times to get any exercise. Jim also said that the area was an island of protected land in the middle of thousands of people and expressed his concern that large bike groups might use the sanctuary, which could result in a negative impact. He said that it was his opinion that no biking should be allowed there.

Paul Saia said that the Cruickshank Sanctuary was one of the only areas in District IV that had been purchased by the EEL Program and expressed his support for additional acquisition in this area.

Paul Schmalzer stated that the Program had been trying to purchase additional property in this area for a long time, but that it was difficult to compete with the speculative development market. He reminded the group that the EEL Program is a willing-seller program.

Brad provided overview information on the anticipated County Storm Water Project and Request for a Maintenance Easement at the Cruickshank Sanctuary.

Paul Saia said that he did not think that bikes were appropriate for the Cruickshank Sanctuary at this time, but that the City of Rockledge had expressed a desire for a possible cooperative effort in recreational planning in the future and he suggested that information on this possibility be included in any motion that was made.

Clarification was provided that if circumstances change, it would be possible to consider an amendment to the Management Plan in the future.

Beverly expressed her pleasure with the trails and signage that have recently been completed as part of an Eagle Scott project. Brad informed the group that all the interpretive signs put up by the Scouts had recently been destroyed by vandals but that staff had plans to replace the signage.

MOTION THREE
Mark Nathan moved to support the Cruickshank recreation plan as originally presented by staff, for hiking only, with educational information on site and parking limited to a soft surface.
Beverly Pinyerd seconded the motion.

Discussion

General discussion ensued.

Murray clarified that there was a motion on the table that had been seconded, and asked for a vote.

The motion passed, with 5 positive votes, Murray Hann and Eve Owens voting no, and Karen Hill abstaining.

Murray stated that he had voted no because he is aware of citizens who use this location as a biking destination.

Eve stated that she had voted no because she felt that the Program had not heard from all the stakeholders.

Paul Saia stated that his vote was not anti-bike, but that he felt that at the present time, there were many pending issues that could impact the sanctuary and that if things settled down, perhaps the issue could be reevaluated.

Thousand Islands Sanctuary Proposed Public Access Plan

Brad provided overview information on the Thousand Islands property in Cocoa Beach. The EEL Program is involved with two general areas. The Crawford property has been acquired. A second ownership is under contract.

These properties are being purchased through a cooperative effort between the EEL Program, the City of Cocoa Beach, the St. Johns River Water Management District, the Conservation Fund, and a Florida Communities Trust (FCT) Grant. In order to submit the paperwork for the FCT grant, a preliminary Management Plan must be in place. This plan has a recreational component. Brad explained that the REAC Committee was being requested to review the preliminary recreational component of the Management Plan, so that the FCT grant could be submitted, with the understanding that a more detailed plan would be reviewed in the future, along with a possible field trip to the site. Jim Durocher offered assistance with the field trip.

Brad reviewed the tentative recreation plan:

- Clear/treat exotics: re-vegetate with native species.
- Ramp Road Park in Cocoa Beach will be the center of launch activity.
- Fourth Street Park in Cocoa Beach will have opportunities for trails and connectivity to Ramp Road with, with a possible overlook.
- Activities on/around the Thousand Islands may include:
    - Kayak and canoe trails
    - Landings
    - Overlooks
    - Hiking trails

MOTION FOUR
Eve Owens moved to support the concept for the recreational component of the Thousand Islands Management Plan with the understanding that it will come back to the Committee for detailed review at a later date.
Mark Nathan seconded the motion.
The motion carried unanimously.

COMMITTEE MEMBER COMMENTS

None.

PUBLIC COMMENT

None.

NEXT MEETING:

The group discussed a date for the next meeting. Brad explained that an August 9, 2007 date would put the committee on schedule for a quarterly meeting. It was determined that the next meeting should be held at the Viera Government Center.

MOTION FIVE
Paul Saia moved to schedule the next REAC Committee meeting for August 9, 2007.
Eve Owens seconded the motion.
The motion carried unanimously.

ADJOURNED:

The meeting was adjourned at 8:30 PM.

SUMMARY OF MEETING MOTIONS:

- **Motion to approve the March 24, 2007 minutes as presented.**
- **Motion to support the North Buck Lake Scrub Sanctuary Public Access Plan as presented by staff.**
- **Motion to support the Cruickshank Sanctuary recreation plan as originally presented by staff, with hiking only, education information on site, and parking limited to a soft surface.**
- **Motion to support the concept for the recreational component of the Thousand Island Management Plan, with the understanding that it will come back to the Committee for a detailed review at a later date.**
- **Motion to hold the next meeting on August 9, 2007.**

APPENDIX T

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 and adulticiding.

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 (Altosid)
☒ Non-Petroleum Surface Film
☐ Other, please specify:

Please specify the following for each larvacide:

Chemical or Common name: BTI =VectoBac, Bs = Vectolex, (S) methoprene = Altosid

☒ Ground ☒ Aerial

Appplication rate/s must be according to applicable, site specific label rates and conditions for each product; for example:

Rate/s of application: 12 lb-18lb/acre = VectoBac (BTI) Granules

5lb-20lb/acre = Vectolex (BS) Granules

2.5lbs-10lb/acre = Altosid pellets [(s) methoprene]

7-21.5lb/acre = Agnique MMF G (non-petroleum surface film)

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 population controls are determined by Brevard Mosquito Control District (BMCD) thresholds that are legally based, including: Florida Administrative Code 5E-13.036 requirements, with adult landing rate surveillance counts in surrounding urban areas, triggering at 3 mosquitoes per minute and for surrounding rural areas, triggering at 5-7 per minute . Also, aerial application of adulticides within the areas defined as “Beaches and Bay shores” (areas within 1,500 feet landward of high tide mark), require a three-fold confirmed increase to adult mosquito population backgrounds in order to commence adulticide applications.

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

The Brevard Mosquito Control District policy is to operate all managed impoundments, when possible, on a Rotational Impoundment Management (RIM) program. RIM, essentially, is elevating the water levels inside the impoundment to an elevation adequate to inundate the high marsh areas during mosquito breeding seasons. This action eliminates the egg laying sites for the salt marsh mosquito and controls mosquito breeding in an environmentally friendly manner. This elevated water level number is ~1.50 feet above mean sea level. This water level elevation action takes place from approximately May 15th through October 15th. This activity requires yearly pumping and constant monitoring of water levels within the impoundment network. The impoundments are left open, to decrease water elevations, during other yearly times.

Chronologically, the Brevard Mosquito Control District activities are as follows:

- January- Mowing the deck and bush hogging the side growth.
- January through May- Repairing storm damage if any. Larviciding as necessary.
- May 15th- All boards in, culverts and flaps closed. Begin pumping if Lagoon level is adequate. (>.5 ft mean sea level).
- May 15th through October 15th- Pump in order to maintain 1.3-1.5 ft mean sea level inside impoundment. Larvicide as necessary (helicopter monitoring). Monitor culverts for tampering three days per week.
- June- Mow deck and bush hog side growth.
- October 15th- Pumping stops. Boards removed and flap gates opened."

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

Signature of Mosquito Control District Director Date

Appendix U: Ownership Map