Lee County Board Of County Commissioners
Agenda Item Summary

Blue Sheet No. 20060035

1. ACTION REQUESTED/PURPOSE:

Approve the Pop Ash Creek Preserve (PACP) Land Stewardship Plan.

2. WHAT ACTION ACCOMPLISHES:

Approving of the PACP Plan establishes guidelines for restoration and public use facilities at PACP.

3. MANAGEMENT RECOMMENDATION: Approve the plan so Land Stewardship staff can begin implementation.

4. Departmental Category: 11 C11B		**5. Meeting Date:** 01-31-2006
6. Agenda:	**7. Requirement/Purpose:** *(specify)*	**8. Request Initiated:**
X **Consent**	___ **Statute**	**Commissioner**
___ **Administrative**	___ **Ordinance**	**Department** Parks & Recreation
___ **Appeals**	___ **Admin. Code**	**Division**
___ **Public**	X **Other**	**By:** John Yarbrough, Director
___ **Walk-On**		John Yarbrough

9. Background:

A Land Stewardship Plan is necessary for appropriate and planned restoration, management and public use facility development of any Conservation 20/20 Preserve. The CLASAC (Conservation Lands Acquisition and Stewardship Advisory Committee) unanimously passed a motion on December 8, 2005, accepting the Pop Ash Creek Preserve Land Stewardship Plan.

The plan was available for public review on the internet, as well as at the North Fort Myers Public Library. A public meeting was held December 16, 2005 with many neighbors and horseback riders attending. Attached is a summary of all comments received with responses by staff, and also all original comments have been provided.

10. Review for Scheduling:

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P.W. Director
					Analyst	Risk	Grants	Mgr.	
dy 1-12-06				1/13/06	1/17/06	HM	1/19/06	1/17/06	

11. Commission Action:

___Approved
___Deferred
___Denied
___Other

RECEIVED BY COUNTY ADMIN: 1:13:06 4:50
COUNTY ADMIN FORWARDED TO:

Rec. by CoAtty
Date: 1/3/06
Time: 4:35pm
Forwarded To: CO. Mgr 1-13-06

Summary of Public Comments Received on the Pop Ash Creek Preserve Land Stewardship Plan

The second draft of the **Pop Ash Creek Preserve (PACP) Land Stewardship Plan** was available for public comment from November 22nd through December 16th, 2005. The plan was made available to the public through the Parks and Recreation website and at the North Ft. Myers Public Library. Citizens were informed of the plan through a combination of public service announcements on both radio and television, articles in both the North Ft. Myers Neighbor and the News Press, a legal advertisement in the News Press, posters at Lawhawns and Pam's Feed (both located less than 3 miles south of the Preserve) and a mailing sent to residents in the surrounding Bayshore Community.

A public meeting was held on December 16, 2005, at 6:30 P.M. at the Bayshore Fire Department. A brief presentation was provided and included background on the Preserve, proposed management activities and a timeline to complete these activities. Lee County Parks and Recreation staff received several written responses during the public comment period in addition to verbal comments during the meeting. In the following, the issues raised during the public comment period are summarized. Copies of all original comments are included with this document.

Any questions on this summary should be directed to:

Cathy Olson
Land Stewardship Supervisor
Conservation 20/20
Lee County Parks & Recreation
3410 Palm Beach Boulevard
Ft. Myers, FL 33916
colson@leegov.com

- Of primary concern was to provide parking for horse trailers in addition to the proposed parking for hiking, birding and fishing.

  Land Stewardship staff altered the plan to increase the parking area to provide a loop so that at least two horse trailers could park at the Preserve. They will also research other recommendations provided by the attendees of the public meeting including: not paving the parking loop for safety reason and, utilizing a gate system similar to SWFWMD's R.G. Griffin Reserve in DeSoto County which provides equestrian access on land with an active cattle lease.

- There was some interest in providing an additional access gate in the southwest corner of the Preserve.

  Since there was not particularly strong support at the meeting, staff will wait until closer to the time line proposed in the plan. At that time, they will survey members of the Bayshore community to see if there is a strong enough interest to warrant the expense. This will also allow staff to monitor road expansion projects in the area. As if at some point Nalle Grade Road is widened, there would likely be safety concerns for people riding their horses to the Preserve instead of trailering them.

- There was concern for the long delay until the parking area and other recreation amenities are created.

  There are numerous projects for both restoration and creation of public use facilities already scheduled. Staff has taken into consideration these schedules when creating the timeline for PACP. A couple of citizens attending the meeting expressed an interest in helping with a fundraiser. Land Stewardship staff will be happy to work with groups further on this idea or perhaps jointly applying for a grant.

- Some concern was expressed on letting visitors know about the numerous ponds available for fishing.

  There will be a map available at the trailhead, which will include an aerial of the Preserve. Additionally, the Conservation 20/20 brochure does include PACP as one of the natural areas that permits fishing

- There was concern expressed on the safety, particularly for younger people fishing in the ponds since they often have a fairly steep drop off.

  Staff acknowledges the use of the ponds as fishing holes. The ponds will not be advertised as fishing ponds until the slopes have been reworked. Staff will provide the safety concern comments to the engineers who are working on the North Fort Myers Surface Water Master Plan. These ponds may be able to be reworked to provide drainage benefits to the County and provide additional safer fishing opportunities.

- There were a couple of people who attended the meeting that felt staff could have better advertised the meeting.

  Staff went to great lengths to advertise the meeting and also took effort to schedule it late enough in the evening that people had time to arrive after work. One area that could have improved on was having a sign posted at the Preserve. This was because there was another preserve, Powell Creek, which was having a public meeting early the following week. Staff will be ordering two extra signs so there will not be conflicts in the future.

The following comments were received via email and then cut and pasted directly into this document:

I read the management plan start to finish. Awesome!

A few comments:
- I don't know whether you had intended to remove my name entirely, but it appears in there. Maybe it would be better to publish the public letter that Shelby issues?
- I would guess that some of the non-local equestrians are going to ask about horse trailer parking in the proposed parking lot. It might best be addressed by saying that a small parking lot has been proposed, and that it would hold five cars or two vehicles with horse trailers (or something like that). I honestly don't think that the non-locals will trailer their horses there, but it will appease them.
- Of course, you can count on my support and whatever support I can wrangle from Caloosa Saddle Club.
- There wasn't anything in there about the previous issues with ATVs in the southwest corner, before it was fenced. Da you want to state that there previously were issues in that area before it was fenced?
- I'm sure that you know that there are at least a few gators in there. You spoke briefly about allowing them to be captured. I'm sure that no one around here will have issues with that.
- I very much like how you included the equestrian access in the southwest corner. Personally, I would love it!
- You may wish to state that the equestrian usage and cattle grazing have presented no conflicts or issues.

Again, awesome!!!

Jo

TO WHOM IT MAY CONCERN:

I AM UNABLE TO PULL UP THE PDF FILE FOR THE POPASH CREEK PRESERVE, BUT I CAN PULL UP THE FILES FOR THE OTHER PRESERVES. I SHOULD LIKE TO READ THE STEWARDSHIP PLAN BEFORE I ATTEND THE MEETING ON DEC. 16 TH.

I AM DELIGHTED THAT THE PLAN WILL CONTINUE TO ALLOW HORSEBACK RIDING, HOWEVER ACCESS TO THE PRESERVE IS LIMITED TO THE BRAVE FEW WHO ARE WILLING TO RIDE THEIR HORSES DOWN NALLE GRADE ROAD. THE ROAD IS NARROW WITH NO SHOULDER AND DEEP DITCHES ON BOTH SIDES. VEHICLES ARE ALLOWED TO TRAVEL 45 M.P.H. AND OFTEN TRAVEL FASTER.

I LIVE APPROXIMATELY ONE HALF MILE FROM THE PRESERVE AND AM UNABLE TO USE IT DUE TO THE ABOVE CONDITIONS. I WOULD BE WILLING TO TRAILER MY HORSES TO THE PRESERVE BUT WOULD NEED SOME KIND OF TRAILER PARKING OFF THE MAIN ROAD TO MAKE IT SAFE.

I DO HOPE SOME KIND OF PLAN FOR TRAILER PARKING IS IN THE WORKS, SO MANY MORE HORSEMEN CAN ENJOY THE PRESERVE. THE AREA HAS HAD FILL PUT IN AND ALREADY HAS DIRT ROADS RUNNING THROUGH IT, SO PUTTING IN TRAILER PARKING WOULD NOT BE DESTROYING PRISTINE AREAS. PLEASE CONSIDER THIS IDEA FOR INCREASED ACCESS FOR ALL LEE COUNTY HORSE PEOPLE.

SINCERELY,
CHRIS OLSEN

Conservation 20/20 Land Stewardship Plan
Pop Ash Creek Preserve Comment Card

Comments: PROVIDE ACCESS PARKING FOR CARS / TRUCK TRAILER NOT ONLY HORSES BUT ALSO HIKERS AND FISHING, THIS WILL ALLOW A SAFE ACCESS FOR ALL USES.

Name (optional): Affiliation (optional):

Conservation 20/20 Land Stewardship Plan
Pop Ash Creek Preserve Comment Card

Comments:

We would like to see the proposed gate installed on the southwest corner. It would enable equestrians from Skipper Lane and Lori Lane, to access the preserve locally. Also, the addition of rangers has been great!

Name (optional): Jo Harder Affiliation (optional): local resident

Discover LEE COUNTY Parks & Recreation

Conservation 20/20 Land Stewardship Plan
Pop Ash Creek Preserve Comment Card

CAPRA

Comments:

The Parking area on the SE corner NEEDS to have ample parking for a few trailers & other use parking as well. The small gate on West end is also good, but may encourage more parking on road shoulder.

Name (optional): JEFF HARDER

Affiliation (optional):

Discover LEE COUNTY Parks & Recreation

Conservation 20/20 Land Stewardship Plan
Pop Ash Creek Preserve Comment Card

CAPRA

Comments: PLEASE SEND ME THE LETTER TO SIGN SO I CAN GET THE CODE FOR POPASH PRESERVE.

1-2 HORSE TRAILERS CAN USE THE GRAVEL BASE THAT IS ALREADY THERE FOR PARKING. JUST MOVE THE FENCE SO THE PARKING AREA IS OUTSIDE THE RIDING AREA.

Name (optional): CHRIS OLSEN

Affiliation (optional):

eqwsacres@msn.com

Conservation 20/20 Land Stewardship Plan
Pop Ash Creek Preserve Comment Card

Comments: Please put an equestrian parking. Keep up the good work!

Name (optional): Affiliation (optional):

Conservation 20/20 Land Stewardship Plan
Pop Ash Creek Preserve Comment Card

Comments: PARKING IS A MUST.

Name (optional): JAYNE GAYLE 543 6343 Affiliation (optional): OALOOSA SADDLE CLUB

Pop Ash Creek Preserve

Land Stewardship Plan

2nd DRAFT - November 2005

Discover
LEE COUNTY
Parks & Recreation

Commission for Accreditation of Park and Recreation Agencies
CAPRA
ACCREDITED

Prepared by the Land Stewardship Section
Lee County Department of Parks and Recreation

Approved by the Lee County Board of County Commissioners: **(Date)**

Acknowledgements

We would like to thank the following individuals for their assistance in the development of this document: Roger Clark, Cathy Olson, the Lee County Land Stewardship staff and Michael Weston (Division of Forestry) for carefully reviewing the Pop Ash Creek Preserve (PACP) draft land stewardship plan and providing constructive criticism; members of the Management Sub-Committee of the Conservation Lands Acquisition and Stewardship Advisory Committee were also helpful in providing valuable suggestions regarding land management issues; various staff within several Lee County Departments for helping with the reproduction of the plan and assistance with advertising and implementing the public meeting; Jo Harder, member of the Caloosa Saddle Club, for providing her valuable time and equestrian related insight; Scott Carter for passing on his historical information regarding the Preserve and surrounding area.

Laura Wewerka
Sherry Furnari

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LIST OF EXHIBITS

Vision Statement

It is the vision of the Lee County Parks and Recreation Department and the Conservation 20/20 Program to conserve, protect and restore Pop Ash Creek Preserve to a productive, functional and viable ecosystem. The flatwoods will no longer have patches of dense sapling melaleucas and other invasive exotic plants. The channelized Popash Creek, for which the Preserve was named, as well as the other ditches and borrow ponds will be restored to become more natural systems with better wildlife habitat and increased hydrologic functionality. The Creek will follow the former channel and to have sufficient water to maintain flow year round. Maintaining the upland ecosystems with prescribed fire and removing all invasive exotic plants will become ultimate objectives for the management of this Preserve. Finally, the Preserve will provide rustic hiking, birding and fishing opportunities for the residents of Lee County as well as provide horseback riding opportunities for the residents of the Bayshore Community without needing to trailer to one of the nearby more developed preserves.

I. EXECUTIVE SUMMARY

Pop Ash Creek Preserve (PACP) is located in northern Lee County adjacent to the Lee-Charlotte County boundary line, 3 miles north of Bayshore Road and less than 4 miles east of I-75. The 307.5 acre Preserve was acquired in 2003 through the Conservation 20/20 (C20/20) Program for $1,561,846. The Conservation 20/20 Program was established in 1996 after Lee County voters approved a referendum that increased property taxes by up to .5 mil for the purpose of purchasing and protecting environmentally sensitive lands.

PACP lies on the boundary between two lithostratigraphic units, the Tamiami Formation and the Tertiary-Quaternary Sediments. Lithostratigraphic units are differentiated by the conditions under which they were formed and are formed during a specific interval of geologic time. The southern third of the Preserve is located on the Tamiami Formation, which was created during the Pliocene Epoch between 5.3 and 1.8 million years ago. The Tamiami Formation contains a mix of fine to coarse-grained sand, sandy clay, fossiliferous sand and fossiliferous limestone. During the excavation of the borrow pit lakes in the late 1970's, numerous mounds of spoil were placed near the area. Those piles still remain and consist almost entirely of marine fossils. The rest of the Preserve was created during the Pleistocene Epoch between 1.8 million to 10,000 years ago. This period is also known as the Ice Age, where huge ice sheets formed across Canada and the northern United States. Natural elevations at PACP range from 25' at the north end and slope in a general southwesterly direction to 22' at the south end of the Preserve along Nalle Grade Road.

Four different soil types are found at the Preserve. All of the soil types are nearly level and poorly drained with moderate to rapid permeability at the surface. The majority of the Preserve (77%) consists of Pineda Fine Sand, which is found in hydric areas of the Preserve. The man-made soil, Matlacha Gravelly Fine Sand, is found on over 20% of the Preserve and was brought in during the 1970's. All of the soil types have severe limitations on urban development due to either the high water table or sandy soils. The Preserve mainly consists of wet or mesic flatwoods, blackwater stream (Popash Creek), several borrow pit ponds and other disturbed communities.

Historically, PACP contained various wetland ecosystems that were part of the Popash Creek Watershed. These ecosystems have been impacted by numerous alterations that affect the Preserve's hydroperiod and southerly sheet flow across the property. Impacts include borrow pits, a canal, ditches and their associated berms. A primary consideration for acquiring PACP was the potential for additional flood management and/or water storage for this flood prone area, which has historically been inundated with heavy sheet flow from Charlotte County rains.

Pop Ash Creek Preserve has undergone alterations for many years and for several reasons. Intense logging of slash pine in the late nineteenth century through the 1930's virtually eliminated all virgin stands of the southern mixed forest in south Florida including areas of the Preserve. An historical aerial from 1944 identified several agricultural fields and the existing Nalle and Nalle Grade Roads as dirt trails. By 1958, the Florida Power & Light (FPL) powerline was completed. A mosquito control ditch was constructed during the 1960's along the Preserve's western boundary. During the 1970's and early 1980's, an extensive amount of work was performed to create lakes, install ditches, alter Popash Creek's flow way and elevate areas by bringing in fill dirt for a failed waterfront mobile home community (Chateau Estates). A caretaker occupied a mobile home in the southeastern corner of the site from the middle 1970's until 2000. Cattle grazing has been a long-term practice on this parcel and continues to this day with an active cattle lease.

In October 2005, Lee County Division of Natural Resources hired a consultant to develop the North Fort Myers Surface Water Master Plan, which covers the area between U. S. Highway 41 and State Road 31 in the North Fort Myers area. These plans, which include the Bayshore Community, will provide suggestions for water storage and drainage within several watersheds. Land Stewardship staff will have input on projects that will affect water storage or flow on Conservation 20/20 Preserves.

There are four recorded easements on the property. The first is a 330 foot FPL power line easement through the northeastern portion of the Preserve. A second easement is a 25 foot road easement along the eastern boundary and contains a portion of Nalle Road. A third easement is a 25 foot road easement along the southern boundary and contains a portion of Nalle Grade Road. In August 2003, the last easement was approved for the Permanent Access Easement Grant, which allows C20/20 staff to utilize the FPL roadway easement through an adjacent property owner's parcel

In January 2004, five months after C20/20 acquired the property, the Lee County BOCC authorized equestrian use until a stewardship plan was written to evaluate appropriate public usage for the Preserve. During this time, public access was also granted to individuals for low-impact hiking and birding activities. Public access and resource-based recreation activities at the Preserve will focus on horseback riding, hiking, bird watching, fishing and nature study. Additionally, the Preserve will continue to be closed on Wednesdays for cattle ranching activities. There are over 6 miles of existing trails that are quite obvious and at this time are not proposed to be marked so that visitors can enjoy a more uncluttered "wilderness experience" without viewing lots of signs. Parks and Recreation staff has had a tremendous problem with vandalism at Nalle Grade Park, which is located less than one mile to the southwest. For this reason, Land Stewardship staff plans to avoid installing signs or other amenities unless absolutely necessary. Additional recommended amenities will include an

unpaved trailhead area (large enough to accommodate up to five cars and two vehicles with horse trailers), a mailbox for trail maps, an added trail section (to connect two existing trails) and a possible second equestrian access point and gate.

The goal of this land stewardship plan is to identify Preserve resources, develop strategies to protect those resources and implement restoration activities to restore PACP to a productive, functional and viable ecosystem while insuring the Preserve will be managed in accordance with Lee County Parks and Recreation's Land Stewardship Operations Manual. Restoration and management activities at PACP will focus on control of invasive exotic plant and animal species, restoring hydrologic components, maintaining upland ecosystems with prescribed fire, enhancing wildlife habitat and improving public access and resource-based recreational opportunities. A Management Action Plan that outlines restoration and stewardship goals has been developed. This plan outlines these goals and strategies, explains how to accomplish these goals, and provides a timetable for completion. This land stewardship plan will be revised in ten years.

II. INTRODUCTION

Pop Ash Creek Preserve (PACP) was acquired as a single parcel in the summer of 2003 through Lee County's Conservation 20/20 (C20/20) program for just over 1.56 million dollars. The Preserve totals 307.5 acres and is located on the northwest corner of the Nalle Road and Nalle Grade Road intersection (Figure 1 & 2) in North Ft. Myers. The site consists primarily of a mixture of wet and mesic pine flatwoods communities with a blackwater stream (Popash Creek) on the northern portion of the Preserve. There are a number of man-made modifications throughout the Preserve that have altered the natural ecosystems.

Historic aerials (Figures 3-5) show human influences since the 1940's with row crops on the Preserve and dirt roads on 3 boundaries. Otherwise, Popash Creek ran through the Preserve from north to south as part of a larger area that transferred sheetflow from Charlotte County. By the late 1950's, this sheetflow had obviously been altered with additional roads and canals and by the early 80's the creek has been completely diverted in the southern portion of PACP. The borrow ponds that were dug in the 1970's dominate the southern third of the Preserve and are a dramatic change to this once natural area.

Land stewardship challenges for the site include invasive exotic plant control, modifications to the borrow ponds and ditches to improve their value for wildlife while providing flood protection and water storage for residents in the community, reintroduction of fire and in some portions of the preserve, mechanical thinning of pines and the reduction of dense shrubby mid-story. In coordination with the

active cattle lease, a balance of safe resource-based recreation opportunities will be provided during restoration activities.

The purpose of this stewardship plan is to define conservation goals for PACP that will address the above concerns. It will serve as a guide for the Lee County Department of Parks and Recreation to use best management practices to ensure proper stewardship and protection of the Preserve. A significant amount of field surveys were conducted along with reviewing scientific literature and historical records to understand how the Preserve functions in the ecosystem, what wildlife and plants are found within its boundaries and how it has been impacted by people. This allows the plan to serve the purpose as a reference guide for those interested in learning more about the Preserve and some of the land stewardship efforts in the Lee County.

The main stewardship goal for PACP is to rapidly address the invasive exotic cogon grass (*Imperata cylindrica*) and Guinea grass (*Panicum maximum)* growing in the southern portion of the Preserve and the numerous melaleuca (*Melaleuca quinquenervia*) seedlings before they reach maturity. By controlling these highly invasive species at this stage, the costs of restoration will be reduced and the threat, particularly with the grasses, of an explosive increase from a wildfire or pubic use will be minimized.

Figure 1: Location Map

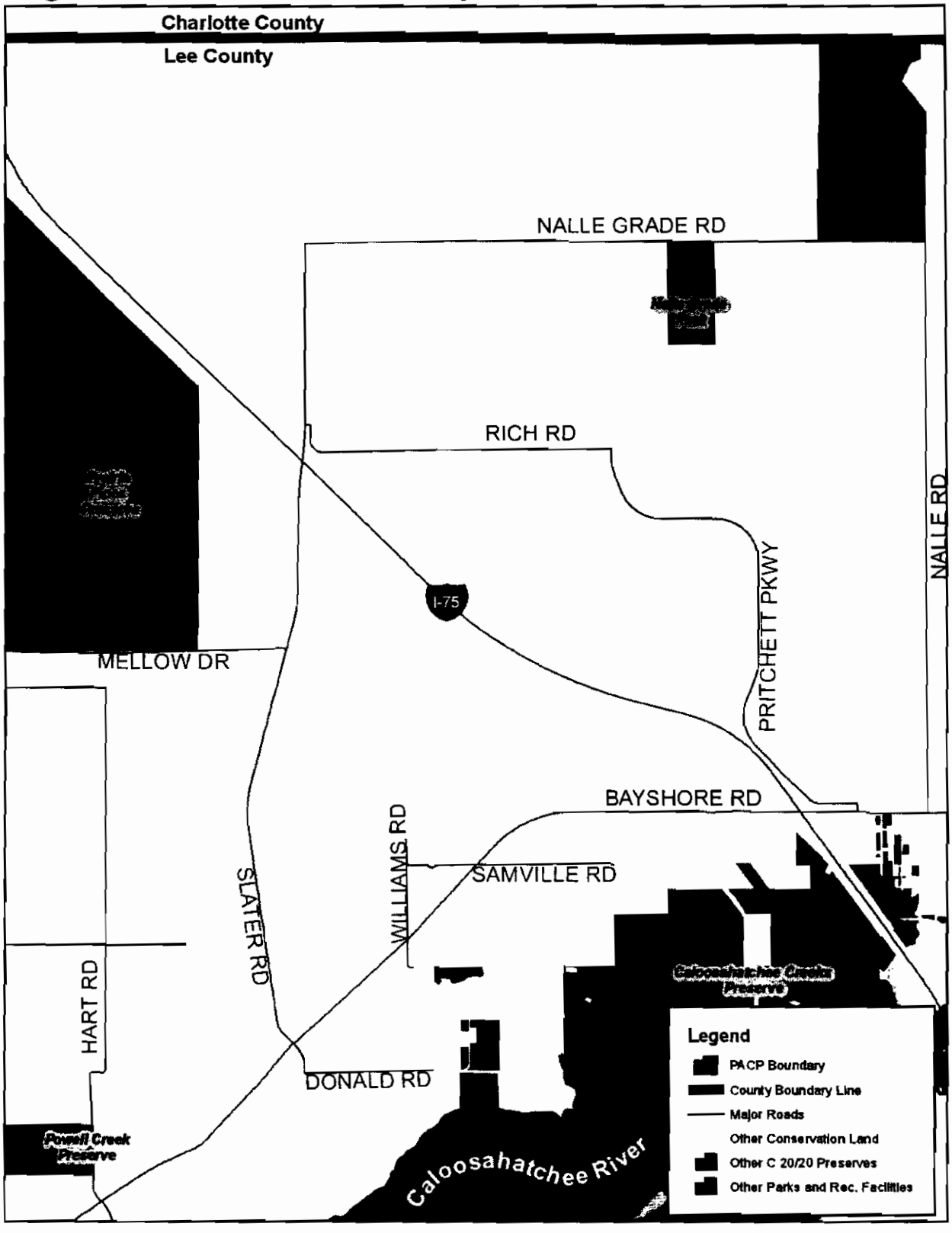


Figure 2: 2005 Aerial Photograph

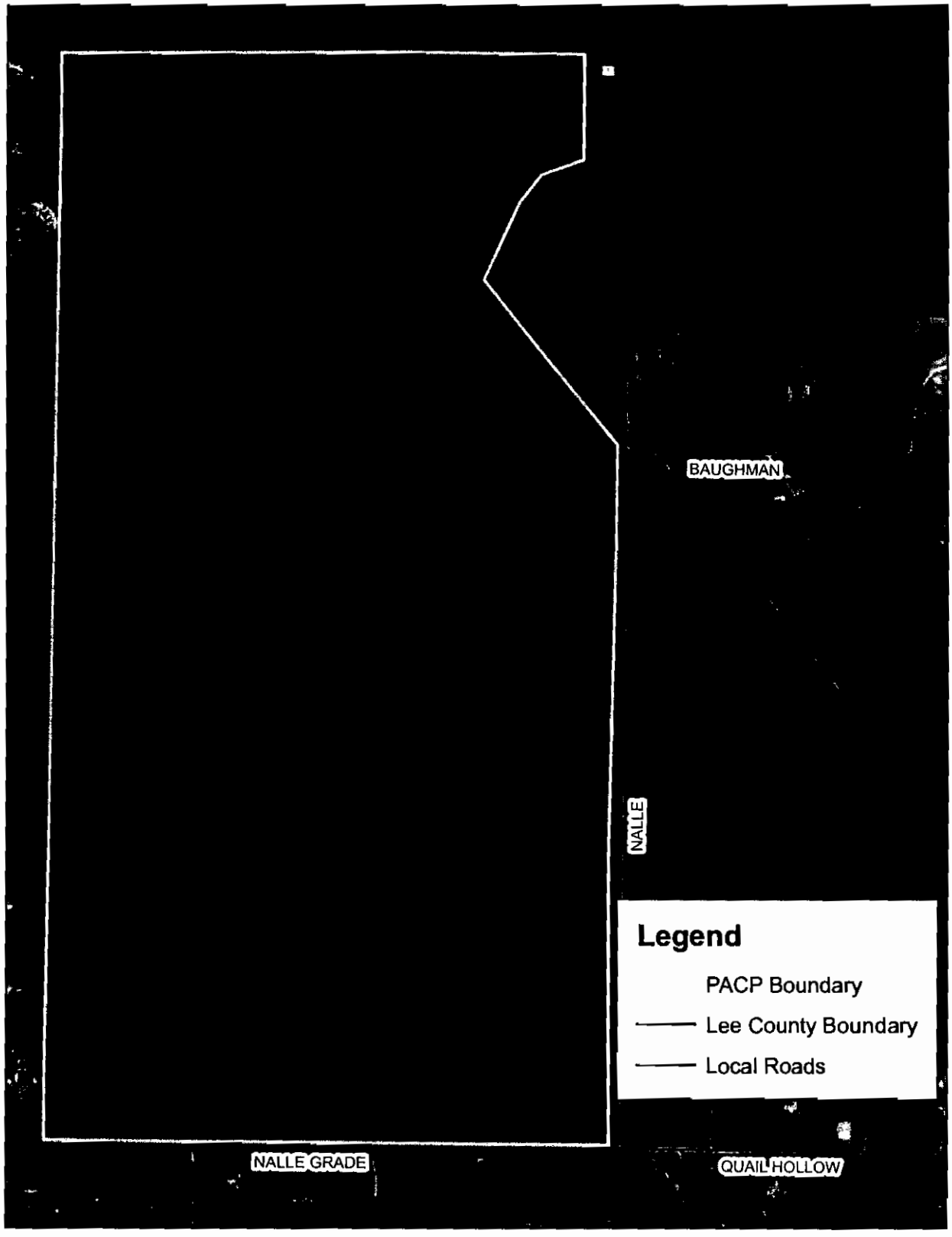
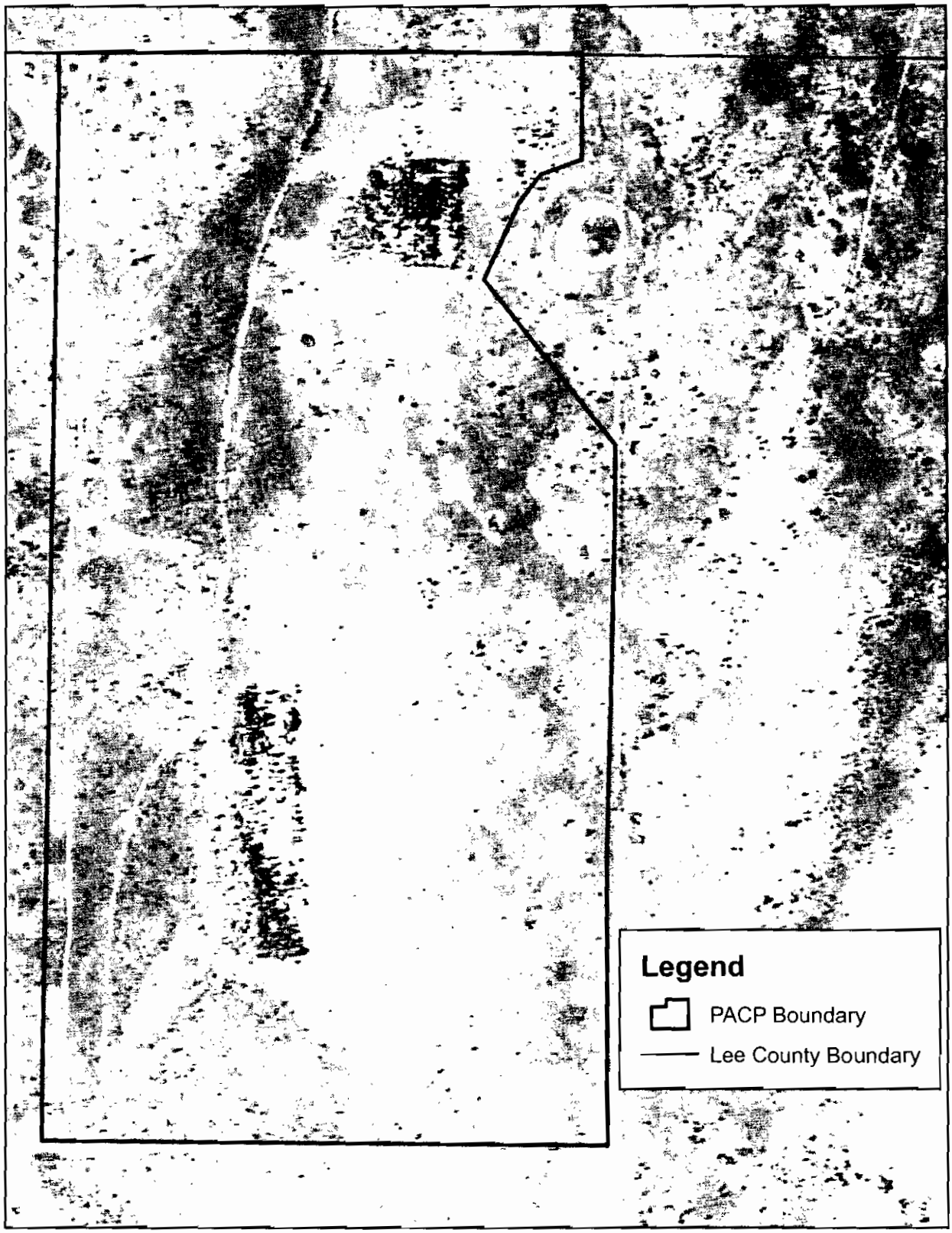


Figure 3: Historical Aerial - 1944



Pop Ash Creek Preserve

N
W E
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0 255 510 1,020 1,530 2,040
Feet

S:\esri\C2020 ArcView\Pop Ash Creek Preserve\ management plan\1944.mxd

Map Prepared On 08/02/05 by sfurnari@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

Figure 4: Historical Aerial - 1953

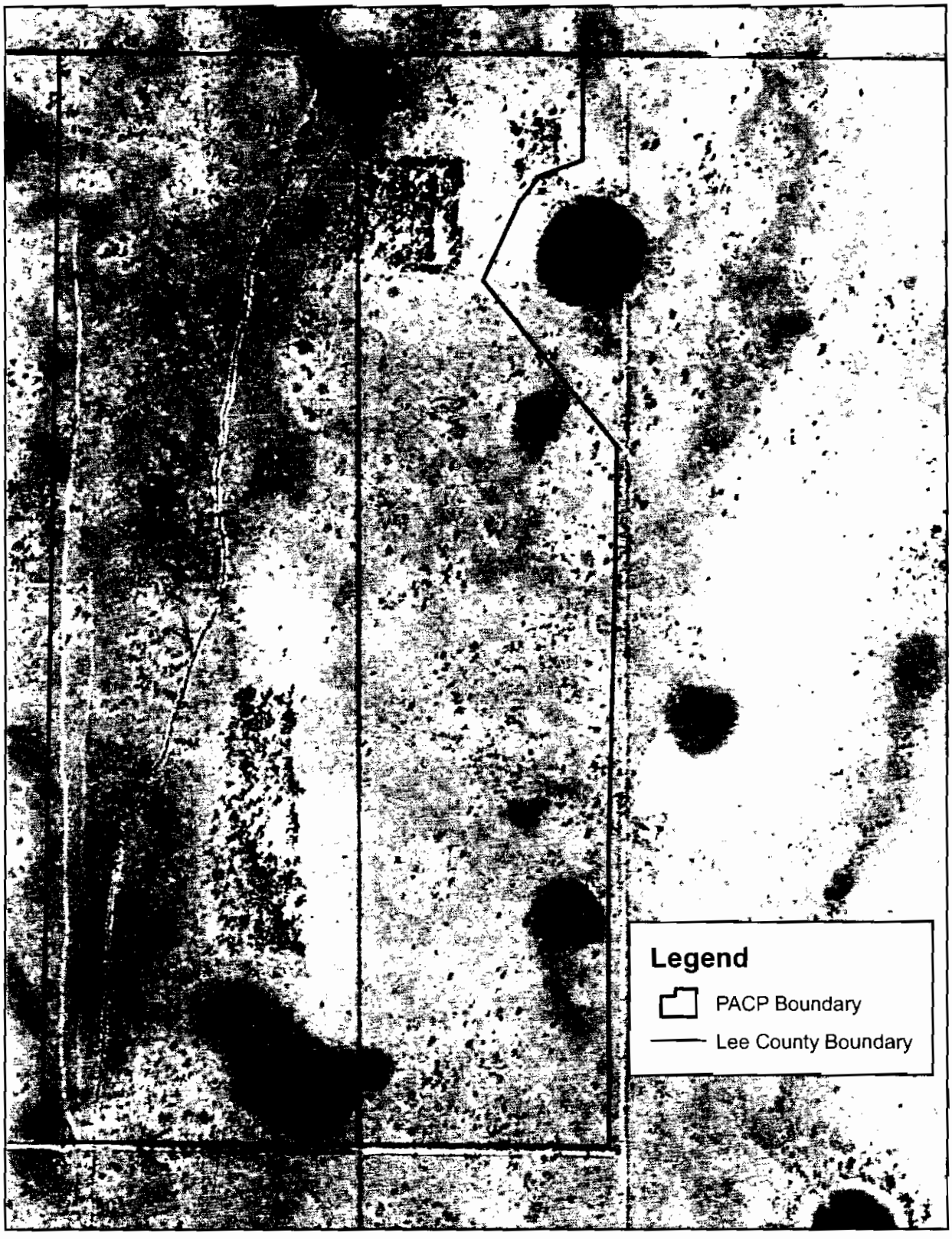
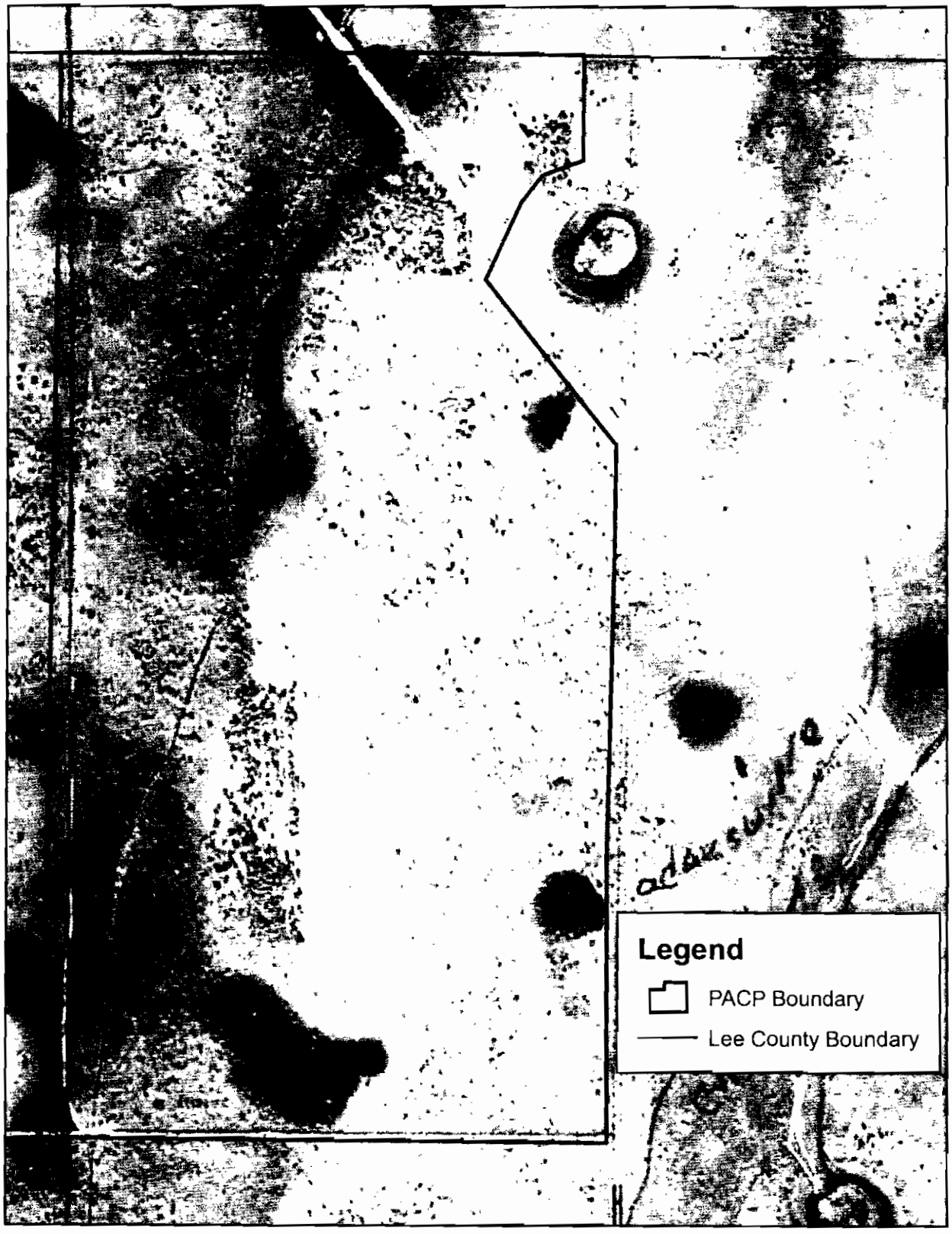


Figure 5: Historical Aerial - 1958



III. LOCATION AND SITE DESCRIPTION

Pop Ash Creek Preserve is located at 9451 Nalle Grade Road, North Fort Myers, in northern Lee County about 3 miles north of Bayshore Road and less than 4 miles east of I-75. It is in the western half of Section 03, Township 43 South, Range 25 East. The site is bordered by Nalle Grade Road to the south, Nalle Road to the east, Lee-Charlotte County boundary line to the north and a drainage canal adjacent to numerous five acre ranchettes to the west.

The Preserve consists of both human-altered and natural plant communities that are mostly wet or mesic flatwoods and a portion of a blackwater stream (Popash Creek). Along the northern portion of Popash Creek, which was previously dredged, a lone pop ash tree (*Fraxinus caroliniana*) survives adjacent to larger Carolina willow (*Salix caroliniana*) and Brazilian pepper (*Schinus terebinthifolius*) trees. Past land uses and hydrologic modifications have disturbed about 90% of the Preserve.

IV. NATURAL RESOURCES DESCRIPTION

A. Physical Resources

i. Climate

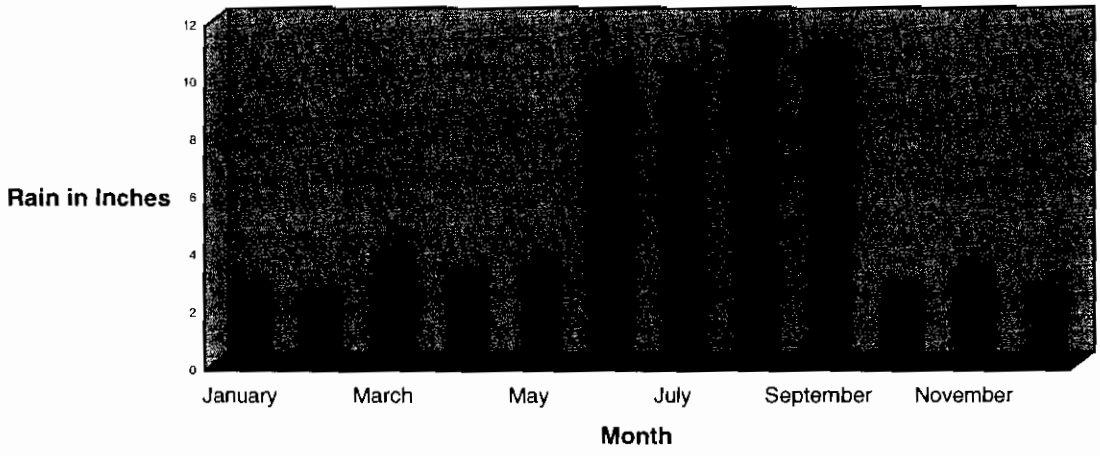
Southwest Florida has a humid, sub-tropical climate due to its maritime influence from the Caribbean Sea and the Gulf of Mexico. The mild temperatures encourage winter residents and tourists to visit the area. Temperate climate influences are exerted as well, with infrequent but significant freezes occurring in December and January (FCC 2005). These freezes prevent some of the more tropical plants from becoming established and occasionally damage the subtropical vegetation. Cold fronts regularly push cool, sometimes moist weather from the southeastern U.S. to southwest Florida during the winter. These cold fronts also encourage migratory birds to utilize the Preserve as either a stop-off point on a longer voyage, or as a winter roosting and feeding area. Table 1 shows the average high and low temperatures for Fort Myers, Florida compiled by the Southeast Regional Climate Center from 1931 to 2004.

Table 1: Average High and Low Temperatures for Fort Myers, 1931 - 2004

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High temperature (°F)	74.7	76.1	79.8	84.2	88.7	90.6	91.1	91.4	89.7	85.7	80.2	76.0
Low temperature (°F)	53.5	54.7	58.4	62.4	67.5	72.4	74.1	74.5	73.9	68.3	60.4	55.1

The graphic below depicts the rainfall data collected by Lee County Division of Natural Resources on a daily basis from the North Reservoir rain gauge, located near the Bayshore Road and Samville Road intersection in North Fort Myers, which is approximately 3.5 miles southwest of the Preserve boundary. Average annual rainfall over the last fourteen years was 65.85 inches, slightly higher than the average rainfall for the entire county (64.76 inches).

Average Rainfall 1991-2005



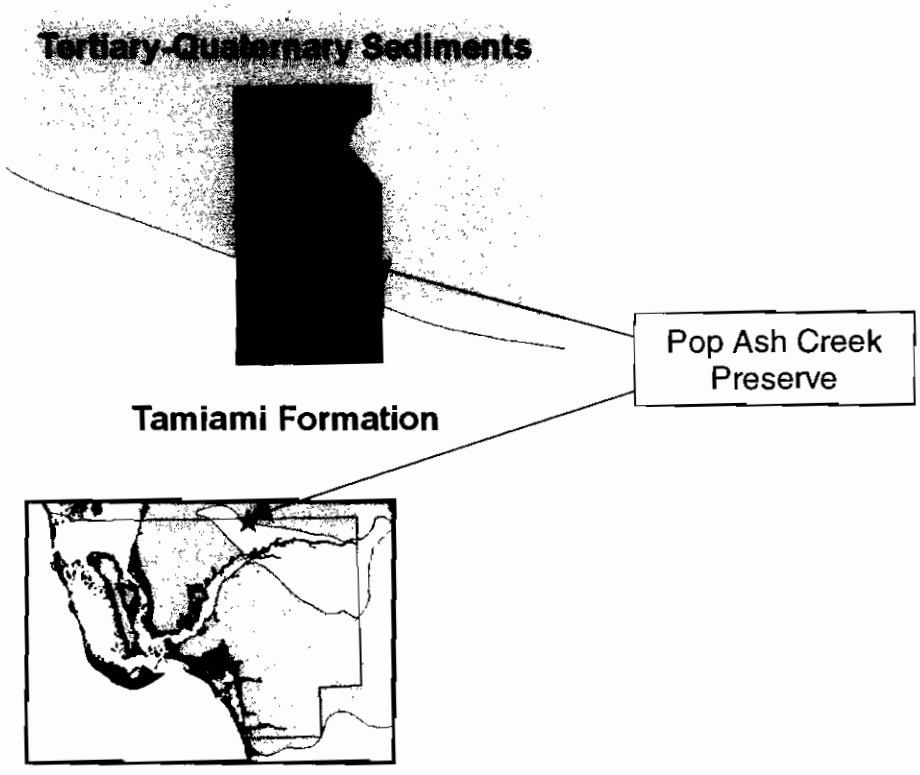
Occasionally, major hurricanes pass through southwest Florida impacting natural ecosystems and man-made infrastructure. Although these effects are believed by many to be short-term, long-term consequences may result in plant canopy restructuring, invasive plant introduction and/or further dispersal and increased wildfire severity to habitats from increased fuel loads (dead vegetation). The effect of hurricanes on natural systems is compounded by the already present human impacts. During 2004, three tropical systems (Charley, Frances and Jeanne) passed over Lee County bringing tropical storm force winds for Charley and hurricane force winds for the other two (see Appendix A map). As a result, numerous pine and melaleuca trees fell across the informal trail system and perimeter fences. An increase in Old World climbing fern was also discovered a few months after the storm, possibly spread from the storms of 2004.

ii. Geology

For millions of years, the Florida Platform was submerged in the ocean. Sediments accumulated upon it and hardened into sedimentary rock. Thirty-five (35) million years ago, portions of Florida rose above the surface and for the next 12 million years it alternated between emersion and submergence. From 23 million years ago to the present, at least a small portion of the Florida Platform was always above the ocean surface.

As for Pop Ash Creek Preserve, it lies on the boundary between two lithostratigraphic units, the Tamiami Formation and the Tertiary-Quaternary Sediments (Figure 6). Lithostratigraphic units are differentiated by the conditions under which they were formed and are formed during a specific interval of geologic time.

Figure 6: Lithostratigraphic Units



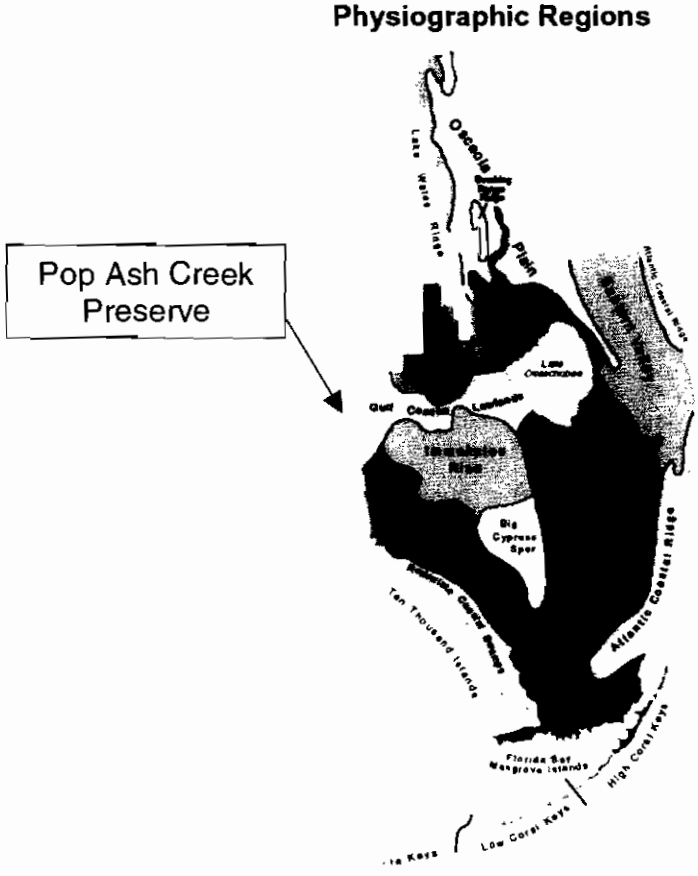
The southern third of the Preserve is located on the Tamiami Formation, which was created during the Pliocene Epoch between 5.3 and 1.8 million years ago. The Tamiami Formation contains a mix of fine to coarse-grained sand, sandy clay, fossiliferous sand and fossiliferous limestone. Phosphate is present throughout as are fossils, particularly barnacles, mollusks, corals, sea urchins, and smaller marine life. During the excavation of the borrow pit lakes in the late 1970's, numerous mounds of spoil were placed near the area. Those piles still remain and consist almost entirely of marine fossils.

The rest of the Preserve was created during the Pleistocene Epoch between 1.8 million to 10,000 years ago. This period is also known as the Ice Age, where huge ice sheets formed across Canada and the northern United States. When these ice sheets were formed, they consumed large quantities of seawater, dropping the current sea level 300 or more feet, which greatly increased the land area of Florida. As the glaciers shrank, sea levels rose, and the Florida

peninsula was again flooded. During the peak warm periods, sea level reached 150 feet above the current sea level. The waves and currents during these high sea level periods reworked the sediments and formed a series of geological units (Caloosahatchee, Ft. Thompson, Anastasia, Miami Limestone and Key Largo Limestone). Each of these geological units is characterized by its unique compositions. However, throughout much of Lee County, including the area where PACP is located, the Caloosahatchee and Fort Thompson units are somewhat indistinct and have been lumped together as undifferentiated Tertiary/Quaternary Sediments. This unit consists of a quartz sand blanket covering limestone and clay. Fossils, including mollusks and corals, are very common and usually in excellent condition (Missimer & Scott 2001).

Southwest Florida can be divided into ten major physiographic provinces (Figure 7, Map from: SFWMDb 2000). These are broad-scale subdivisions based on physical geography features such as terrain texture, rock type and geologic structure and history. Pop Ash Creek Preserve lies within the Gulf Coastal Lowlands.

Figure 7: Physiographic Regions



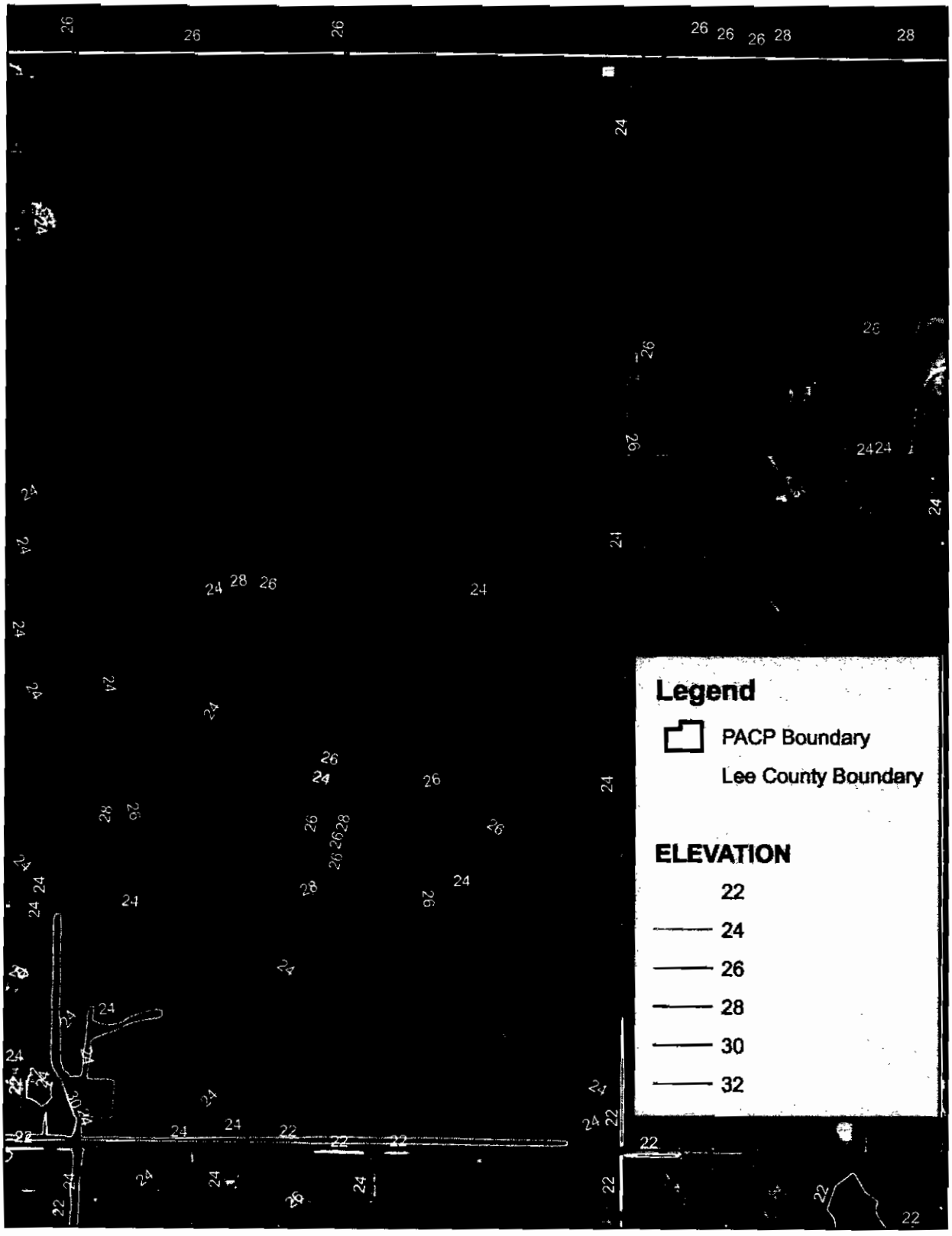
The Gulf Coastal Lowlands are found in northwest Lee County as well as most of Charlotte and Sarasota Counties to the north. This region is characterized as a gently southwestward sloping plain composed of deposited sediments. These sediments are aligned parallel to the coastline, which indicates they were formed by marine forces.

iii. Topography

Lee County is located within the Coastal Lowlands of Florida that extend around the coastal periphery of the state where elevations are generally below 100 feet (Stubbs, 1940; Cooke, 1945).

Natural elevations at PACP range from 25' at the north end and slope in a general southwesterly direction to 22' at the south end of the Preserve along Nalle Grade Road (Figure 8). Man-made topographic features including ditches, berms and spoil piles associated with mosquito and drainage ditches, Florida Power and Light (FPL) power line, and excavated ponds (borrow pits) range from 26' to 32'.

Figure 8: Topography



iv. Soils

The Soil Survey of Lee County, Florida (Henderson 1984) was designed for a diverse group of clients to be able to comprehend soil behavior, physical and chemical properties, land use limitations, potential impacts, and protection of the environment.

There are four (4) different soil types found at Pop Ash Creek Preserve (Figure 9 and Table 2). A common relationship for all of these soil types is that their slopes' range from 0-2%. Slope is "the inclination of the land surface from the horizon." Essentially, PACP is fundamentally level. Table 2 and the descriptions below have been organized to quickly provide conservation managers with pertinent soils information for understanding restrictions and/or results regarding future habitat restoration and probable recreational plan limitations and expense.

There are eight (8) generalized range site categories in Lee County, three (3) of which are found on PACP. Man-made areas are not included in range site categories. Note that these categories are not Florida Natural Areas Inventory (FNAI) natural plant community designations, but rather they are used to group soil types and where they might occur. The 3 identified on the Preserve are:

- South Florida Flatwoods - Nearly level areas with scattered to numerous pine trees, saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), and other woody plants.
- Slough - Open grassland where nearly level areas act as broad natural drainage courses in the flatwoods. Potential plant community is dominated by blue maidencane, chalky bluestem (*Andropogon virginicus var. glaucus*), and blue joint panicum (*Panicum tenerum*).
- Freshwater marshes and ponds - Open grassland marshes or ponds (depressions) with the potential to produce significant amounts of various grasses, sedges, and rushes. Water fluctuates throughout the year.

Wetland classifications are used to identify locations that may retain water for an indeterminate amount of time.

- S-Slough (sheet flow): A broad nearly level, poorly defined drainage way that is subject to sheet-flow during the rainy season.
- P-Ponding: Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms. There are three hydrologic soil groups found on the Preserve:

- B - Soils having a moderate infiltration rate (low to moderate runoff potential) when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. Moderate rate of water transmission.
- C - Soils having a slow infiltration rate (moderate to high runoff potential) when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. Slow rate of water transmission.
- D - Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist mainly of clays that have a high shrink-well potential, soils that have a permanent high water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. Very slow rate of water transmission.

Note that some of the soil types are shown as having dual hydrologic groups, such as B/D. A B/D listing means that under natural conditions the soil belongs to D, but by artificial methods the water table can be lowered sufficiently so that the soil fits in B. The Preserve has been impacted by an extensive level of hydrological alterations through a series of berms, ditching, FPL right-of-way, roadways, and borrow pits. Since there are different degrees of drainage or water table control, an onsite evaluation would be needed to determine the exact hydrologic group of the soil at each particular impacted location.

Soil permeability is defined as "the quality of the soil that enables water to move downward through the profile." Permeability is measured as the number of inches per hour that water moves downward through the soil. The water table columns indicate the amount of time water may be present at specified depth ranges. Terms describing permeability are below:

Very slow	< 0.06 inch
Slow	0.06 – 0.2 inch
Moderately slow	0.2 – 0.6 inch
Moderate	0.6 – 2.0 inches
Moderately rapid	2.0 – 6.0 inches
Rapid	6.0 – 20 inches
Very rapid	> 20 inches

Soils affect the type, quality and quantity of food and cover for wildlife. Wildlife diversity and abundance are also influenced by distribution of food, cover, and water. Wildlife habitat may be created or improved by planting appropriate vegetation, maintaining existing plant communities and promoting the natural establishment of desired vegetation. The soils of Lee County occur in 4 different habitat types:

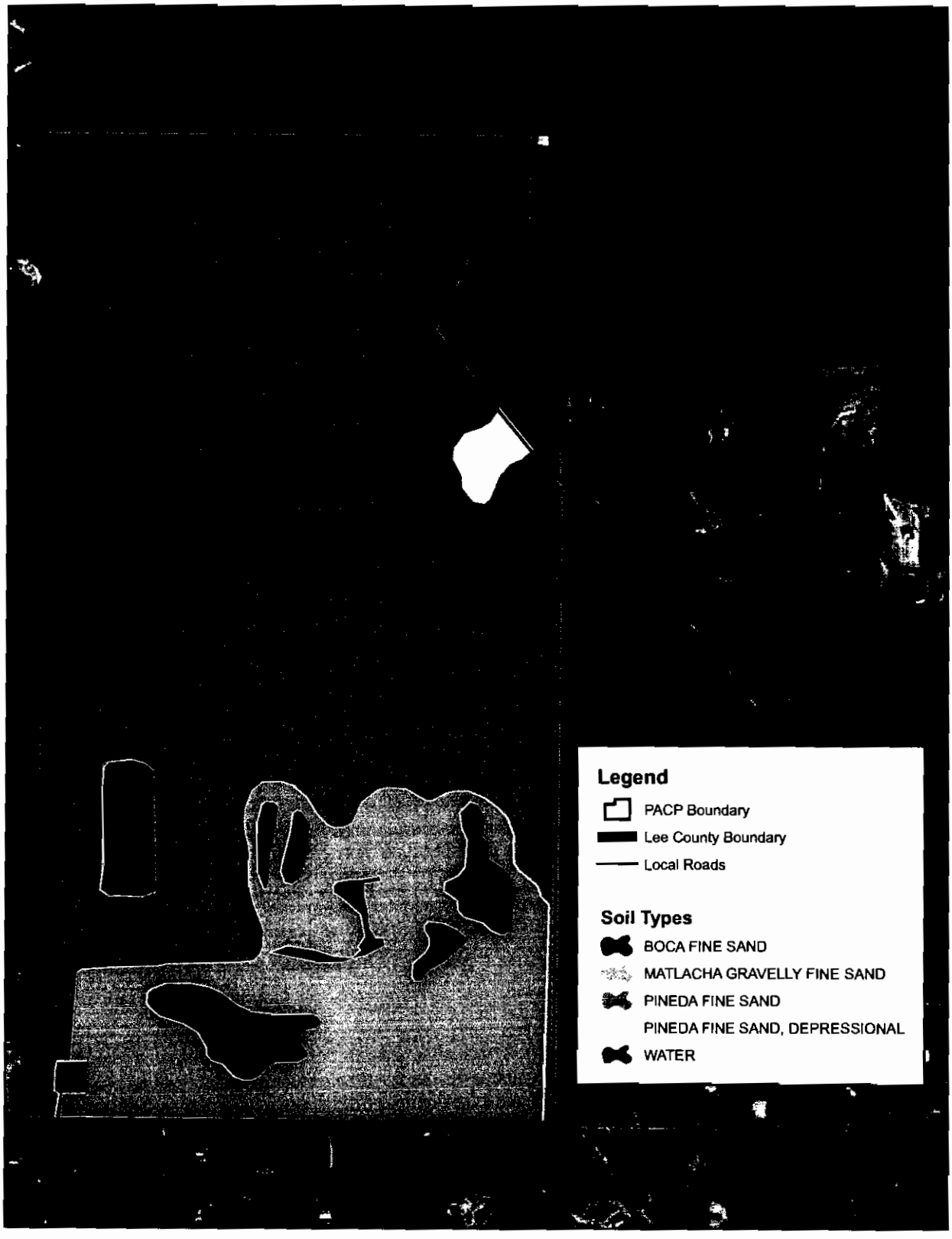
- Openland: Cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. Wildlife attracted includes quail, sandhill cranes, hawks, various birds, and rabbits.
- Woodland: Deciduous plants, coniferous plants, grasses, legumes, and wild herbaceous plants. Wildlife attracted includes wild turkeys, thrushes, woodpeckers, squirrels, foxes, raccoons, deer, snakes, frogs, and bobcats.
- Wetland: Open, marshy or swampy shallow water areas. Wildlife attracted includes ducks, ibis, egrets, herons, shorebirds, snakes, frogs, alligators, and otters.
- Rangeland: Shrubs and wild herbaceous plants. Wildlife attracted includes deer, quail, opossums, and various birds.

The potential of the soil for wildlife habitat is rated as:

- Good - Easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected.
- Fair - Established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.
- Poor - Limitations are severe as habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive.
- Very poor - Restrictions are very severe and unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.
- -- Soil was not rated.

Staff considers soil limitations that affect their suitability for recreational development. Although the Soil Survey of Lee County has other categories under recreation, these are not under consideration for this Preserve. The soils within the Preserve have all been identified as having severe limitations. Severe means "that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures." In particular, paths and trails for "hiking and horseback riding should require little or no cutting and filling" plus "should not be subject to flooding more than once a year during the period of use." Except for the man-made Matlacha soil series, the soil types at PACP are fairly sensitive and restrictive and considerations by the impacts of hiking or management trails are addressed.

Figure 9: Soil Types



N
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Pop Ash Creek Preserve

0 290 580 1,160 1,740 2,320 Feet

S:\esri\C2020 ArcView\Pop Ash Creek Preserve\management plan\soils.mxd

Map Prepared On 08/02/05 by sfurnari@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

Table 2: Soil Types

Soil Types	Map Symbol	Total Acres	% of Preserv	*cal Attributes* tat for wildlife in-- nd Wetland	Rangeland	Limitations for Recreational Paths & Trails
Boca Fine Sand	13	0.06	0.02	fair	good	Severe: wetness, too sandy
Matlacha Gravelly Fine Sand	69	61.98	21.44	--	--	Severe: too sandy
Pineda Fine Sand	26	224.7	77.72	fair	--	Severe: wetness, too sandy

Color Key:
Dry
Wet
Wetter

(1) S - Slough (sheet flow): A broad nearl
rainy season.
P - Ponding: Standing water on soils ir

(2) * Water table is above the surface of soi
B - Soils having a moderate infiltration
thoroughly wet.
C - Soils having a slow infiltration rate
thoroughly wet.
D - Soils having a very slow infiltration
thoroughly wet.

v. Hydrologic Components and Watershed

Pop Ash Creek Preserve is within the north-central portion of the South Florida Water Management District's (SFWMD) Lower West Coast Region (LWCR). Within a subset of the combined LWCR and Lower East Coast Region, PACP falls within the 1,400 square-mile Caloosahatchee Basin (SFWMDa 2000). The Preserve lies within the Popash Creek Watershed (PCW); its namesake, which covers approximately 15 square-miles (Figure 10). PCW is approximately 12 miles long by 2 miles wide (at its' widest point). PCW originates in Charlotte County and eventually empties freshwater into the Caloosahatchee River, just west of I-75. Most locations near the Preserve have been developed for agriculture, single-family, mobile homes, small ranchettes with horse stables and other rural uses. One source stated, "Several areas have numerous small ponds for tropical freshwater fish culture (aquarium trade)" (JEI et al. 1992). This may account for staff's observation of African Jewel cichlids (*Hemichromis letourneauxi*) within the Preserve's flowing waterways and man-made ponds while sampling fish species with Breder traps.

There are numerous hydrological alterations that affect the Preserve's hydroperiod and southerly sheet flow across the property. Impacts include borrow pits, a canal, ditches and their associated berms. A portion of Popash Creek was incorporated into a rectangular pond (Figure 11). The most northern ditch (a) is just off the northern property line and west of the FPL power line. A second larger ditch or canal (b), reportedly installed for mosquito control measures (WRS 2003), is located partially on the Preserve along the western boundary. A third ditch (c), approximately 1000' in length, connects into a smaller fourth ditch (d) that drains additional overflowing water into a remnant portion of Popash Creek (e), which now empties into the middle ditch. This fifth ditch (f) dissects the Preserve through the middle running east/west. A sixth ditch (g) runs along most of the eastern boundary of the property along the FPL power line road and Nalle Road. This ditch allows run-off to flow into either ditch "f" or the final seventh ditch (h), which runs between the southern boundary of the Preserve and Nalle Grade Road. All of these ditches channel the run-off to historical portions of Popash Creek (far southwestern corner), which then eventually flows into the Caloosahatchee River.

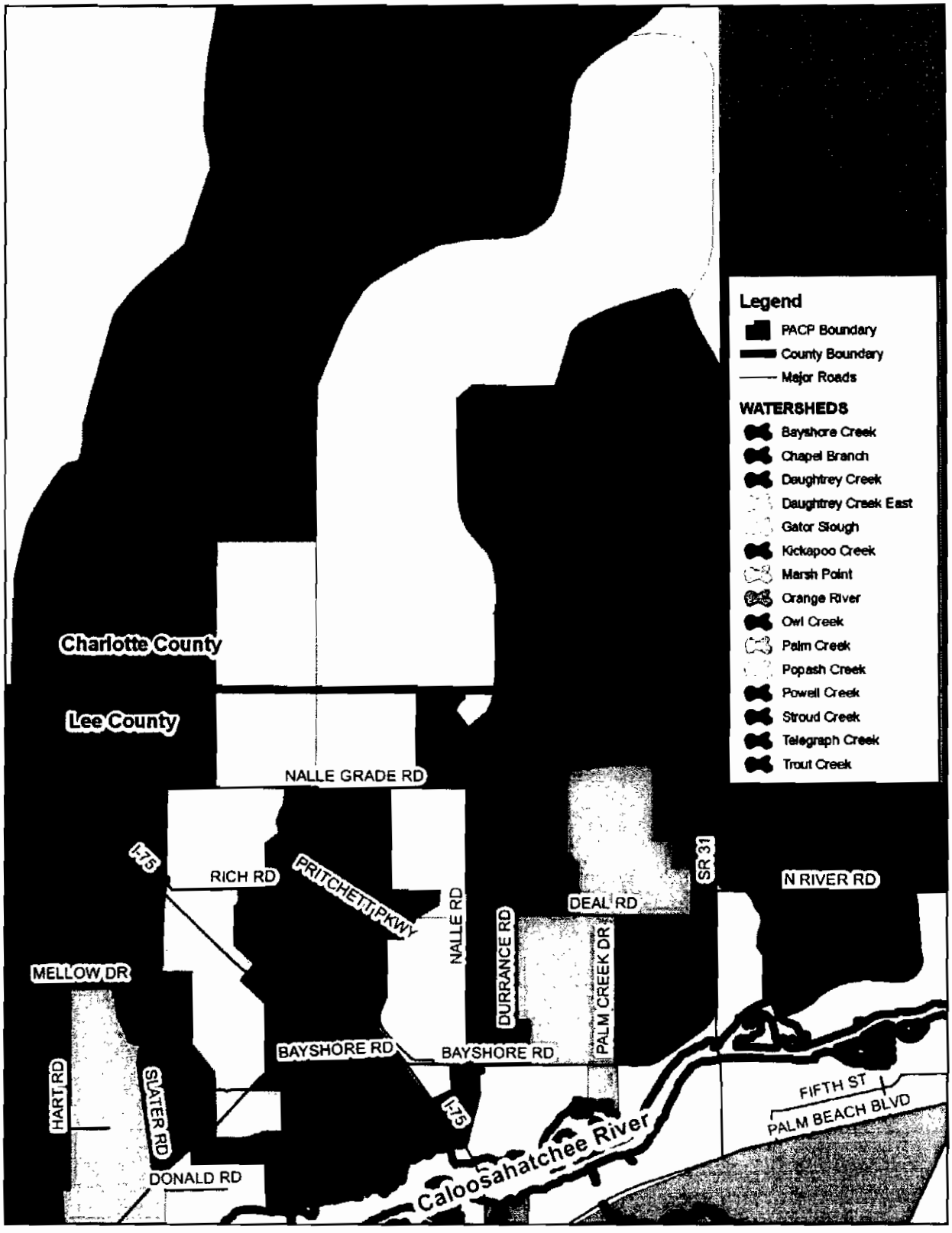
Additional impacts include remnant borrow pits (man-made ponds) in the southern portion of the Preserve from a failed mobile-home community. These man-made ponds range from 2.5 to 23 feet in depth (measured August 11, 2005 at their deepest point) and < 1 to 5.3 acres in size. Most of the southern larger ponds have interconnected ditches that directs water outflow to the southwestern square pond and then out to Popash Creek. Although Land Stewardship staff did not utilize high-tech water quality equipment, a simple pH kit measured pH levels from < 7.2 to 8.0. More neutral levels (near 7.0) were in the creek and some of

the "discharging" ponds, while the highest reading was at the most turbid pond, which additionally doesn't permit any water flow. Since the nearly identical ponds (originally constructed as two percolation ponds in the central area) were similar in size, depth, and shape, Land Stewardship staff wanted to further investigate why one pond was much clearer than the other. Staff enlisted the assistance of a Lee County Hyacinth Control District representative, who conducted a water quality evaluation of these ponds. The scientific data and conclusion are detailed within a report found in Appendix I.

A primary consideration for acquiring PACP was the potential for additional flood management and/or water storage for this flood prone area, which has historically been inundated with heavy sheet flow from Charlotte County rains. The Lee County Natural Resources Division has hired a consultant for the North Fort Myers Surface Water Master Plan. This plan will cover areas north of the Caloosahatchee River, between U.S. 41 and S.R. 31. Land Stewardship staff will coordinate with Natural Resources staff during the planning stages.

At a minimum, Land Stewardship staff recommends that at relevant man-made ponds, the removal of spoil berms, creation of littoral shelves to remove the "drastic" drop-off edges and planting native wetland plants. These enhancement measures would create more suitable wildlife foraging and habitat areas as well as improve safety for visitors and/or their horses.

Figure 10: Watershed



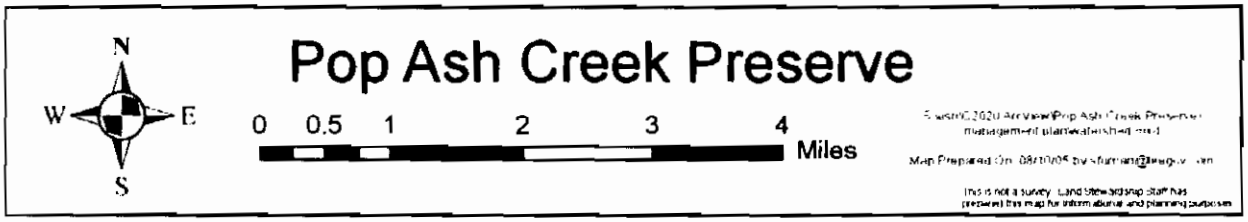
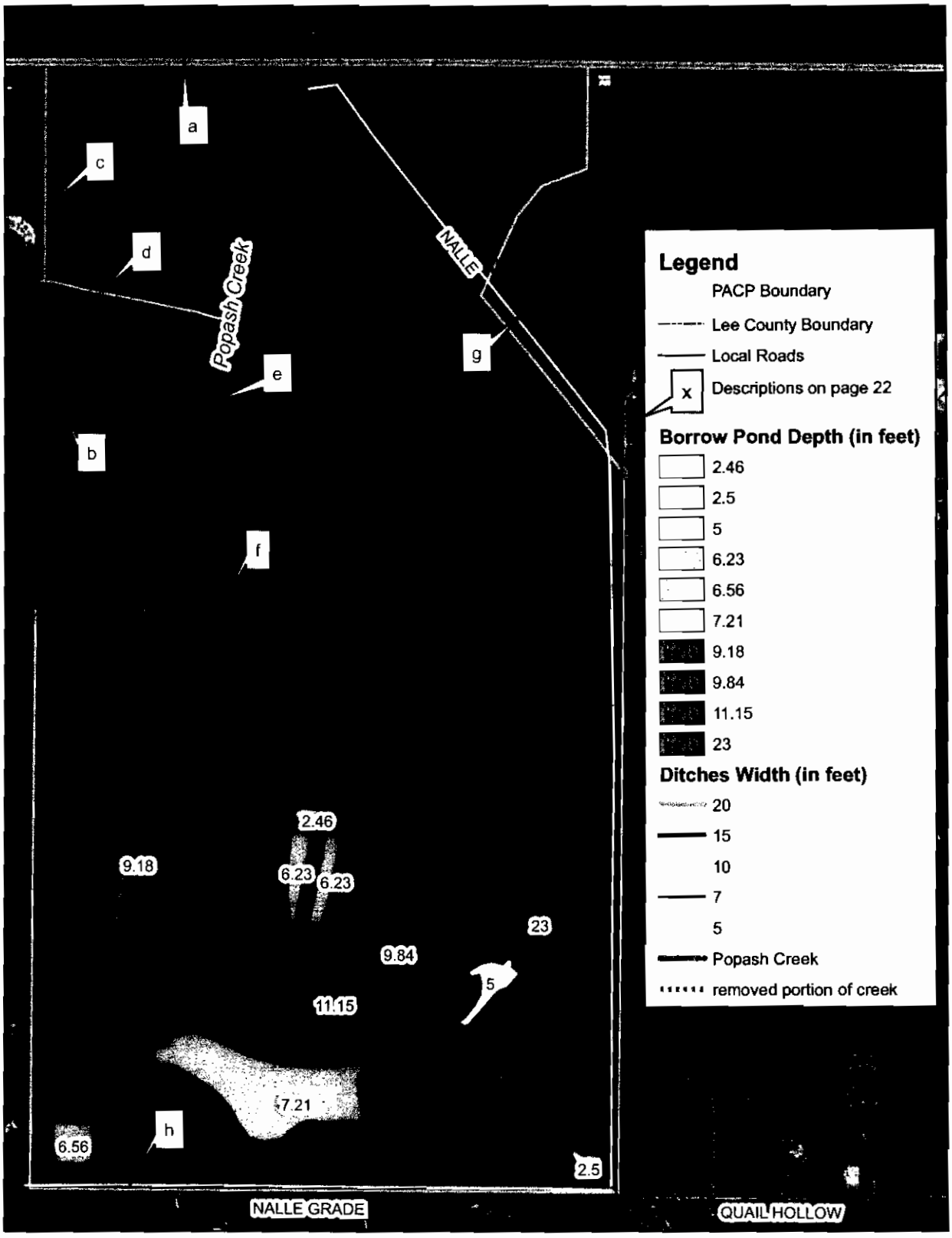
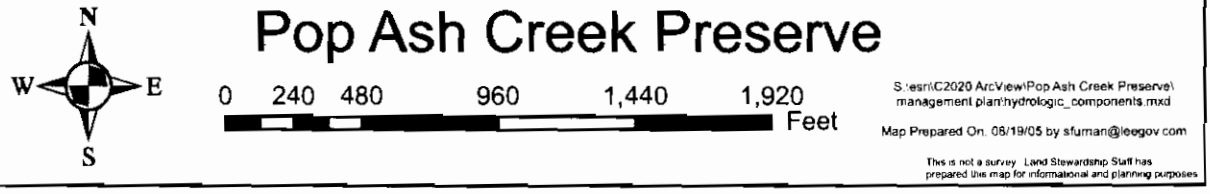


Figure 11: Hydrologic Components





B. Biological Resources

i. Ecosystem Function

Pine flatwoods serve as important habitat for a variety of birds, small mammals, numerous reptiles and amphibians and some large mammals including white-tailed deer (*Odocoileus virginianus*). Although many have not been documented at the Preserve, there are a number of rare wildlife species that primarily occur in the flatwoods. There are also numerous rare plants, including some endemic species, which are exclusively found in pine flatwoods. During a severe flood, the flatwoods serve as a water storage area to help protect adjacent landowners from flooding (Tiner 1998). Fire is an important part of pine flatwoods. Florida has more thunderstorm days per year than anywhere else in the country and in turn one of the highest frequencies of lightning strikes of any region in the United States. Fire shapes ecosystem processes in the flatwoods including creation of soil conditions suitable for germination of seeds of some species, turnover of litter, humus and nutrients, reduction of competition from hardwoods and increasing the hardiness of some species (Myers and Ewel 1990). Following exotic plant removal, fire will be a critical management tool at PACP.

Although Popash Creek and the other wetland communities at the Preserve have been highly altered, they still provide habitat and foraging opportunities for some species including American alligators (*Alligator mississippiensis*), frogs, osprey (*Pandion haliaetus*), belted kingfishers (*Ceryle alcyon*) and a variety of water birds. As restoration takes place, these communities will provide more opportunities for additional species.

ii. Natural Plant Communities

Pop Ash Creek Preserve consists of several plant communities, the majority of which consist of either wet or mesic flatwoods. Figure 12 shows the plant communities found at PACP. More detailed maps (Figures 18 & 19), illustrating density of pines, melaleuca and Brazilian pepper can be found in the Management Action Plan. Some plant communities are defined using the Guide to the Natural Communities of Florida (1990) prepared by FNAI and the Florida Department of Natural Resources (FDNR), while others that have undergone extensive disturbance are described using terms that best describe the disturbed communities as determined by Land Stewardship staff. The following are descriptions of the dominant plants and characteristic animals found within each community. A list of plant species identified during site inspections to PACP can be found in Appendix B. This list will be updated seasonally to identify plants in their inflorescence phase.

Wet Flatwoods Community – 189.9 acres, 62% coverage

Wet flatwoods occur throughout the Preserve. Although Figure 12 has set boundary limits for this community, there are often small patches (>1 acre) more characteristic of a drier mesic flatwoods, particularly in the center of the Preserve. Wet flatwoods occur on relatively flat, poorly drained terrain and water frequently stands on the surface for 1 or more months of the year. Many plants here are under the stress of water saturation during the wet season and under the stress of dehydration during the dry season (FNAI 1990). Wet flatwoods, or hydric flatwoods, at PACP show great variation of tree and shrub density. In addition to south Florida slash pines (*Pinus elliottii var. densa*), some of the more common plants documented in these communities include wax myrtle (*Myrica cerifera*), coastalplain St. John's-wort (*Hypericum brachyphyllum*), yelloweyed grass (*Xyris sp.*) and Tracy's beaksedge (*Rhynchospora tracyi*).

Animals documented utilizing this plant community at PACP include great-crested flycatchers (*Myiarchus crinitus*), blue-gray gnatcatchers (*Poloiptila caerulea*) and squirrel treefrogs (*Hyla squirella*).

Natural fire regimes for this plant community range from every 3-10 years. Without a regular fire, wet flatwoods will succeed into hardwood-dominated forests whose closed canopy would gradually eliminate the groundcover herbs and shrubs. Lack of fire will allow pine needle drape and the height of flammable understory shrubs to increase, which will increase the probability of a catastrophic canopy fire.

Mesic Flatwoods Community – 52.5 acres, 17% coverage

The mesic flatwoods community is primarily found in the northeast quarter of the Preserve, with smaller areas in the northwest and southeast. Synonyms for this plant community include pine flatwoods and pine savannahs. Mesic flatwoods occur on relatively flat, moderately to poorly drained soils. Standing water is common for brief periods during the rainy season. Mesic flatwoods are characterized as having an open canopy with widely spaced pine trees and a dense ground cover of herbs and shrubs. Typical plants growing in these communities at PACP include south Florida slash pine, saw palmetto, chalky bluestem, and tall elephantsfoot (*Elephantopus elatus*). The pine density of this plant community varies dramatically from very sparse to an almost completely closed in canopy.

A few animals that have been documented utilizing mesic flatwoods at the Preserve include the red-bellied woodpecker (*Melanerpes carolinus*), barred owl (*Strix varia*) and gray squirrel (*Sciurus caroliniensis*).

Historically, natural fire probably burned in these communities every 1-8 years (FNAI 1990). Without frequent fires mesic flatwoods will succeed into hardwood-dominated forests whose closed canopy will gradually eliminate the groundcover of herbs and shrubs. On the other hand, too frequent or too hot fires would eliminate pine recruitment and eventually transform the mesic flatwoods into palmetto prairie. The variety of pine density at PACP is due to past management practices, particularly mowing and tree harvesting.

Wet Prairie Community – 5.5 acres, 2% coverage

There are two small wet prairies that are dominated by exotic vegetation. One is located on the southwest side of the power line easement and is dominated by melaleuca. The other is located in the southwest quarter of the Preserve and it has less melaleuca, but a thick mat of torpedograss (*Panicum repens*). A healthy wet prairie consists of a treeless plain with a ground cover of grasses and herbs including maidencane (*Panicum hemitomon*), knotted spikerush (*Eleocharis interstincta*), starrush whitetop (*Rhynchospora colorata*) and grassy arrowhead (*Sagittaria graminea*).

Wildlife documented at PACP includes Florida cricket frogs (*Acris gryllus dorsalis*), killdeer (*Charadrius vociferus*) and Seminole killifish (*Fundulus seminolis*).

Hydric Hammock Community – 2.9 acres, >1% coverage

Southwest of the power line easement is a small area characteristic of a hydric hammock community created by historic human disturbances. This community is a well-developed hardwood and cabbage palm hammock with a variable understory dominated by palmettos and ferns. Plants found in this community at the Preserve include laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), saw palmetto, swamp fern (*Blechnum serrulatum*) and grape vine (*Vitis rotundifolia*).

Hydric hammocks are generally saturated, although only inundated for short periods, following heavy rains. The normal hydroperiod is seldom over 60 days per year. Because of their generally saturated soils and the sparse herbaceous cover, hydric hammocks rarely burn.

Normal hydrological regimes must be maintained in hydric hammock. If the water table is lowered, hydric hammocks will gradually change to more mesic conditions. If the hammock is flooded, many trees will die and eventually be replaced by more hydrophytic species.

Blackwater Stream Community – 1.1 acres, >1% coverage

Popash Creek, which the Preserve was named after, is characterized by FNAI as a blackwater stream. It runs north/south on the northern half of the Preserve before becoming channelized. These streams are the most widely distributed and numerous riverine systems in the southeast Coastal Plain. They are created from broad areas that collect rainfall that is slowly discharged into the stream. The water is tea-colored from the tannins and organic matter collected during this upstream drainage.

Plants growing within the stream include smartweed (*Polygonum spp.*), swamp dock (*Rumex verticillatus*) and creeping primrosewillow (*Ludwigia repens*). The vegetation growing along the banks of Popash Creek vary from thick clumps of invasive exotics such as melaleuca and Brazilian pepper and native shrubs: Carolina willow, myrsine (*Rapanea punctata*) and wax myrtle. There are also many areas where the adjacent flatwoods community grows to the edge of the stream.

A few animals that have been documented utilizing the stream and bank vegetation including green treefrogs (*Hyla cinerea*) and Carolina wrens (*Thryothorus ludovicianus*).

In addition to the other invasive exotics, Old World climbing fern (*Lygodium microphyllum*) has been documented growing on the bank.

Borrow Pond – 17.5 acres, 6% coverage

There have been numerous excavations dug in the southern portion of the Preserve. Although not natural communities, they provide habitat for numerous wildlife species including American alligators, anhinga (*Anhinga anhinga*) and Florida softshell turtle (*Apalone ferox*). Vegetation within the ponds varies, depending on the water depth. The deeper ones, or those with steep slopes have little vegetation.

Berm - Upland – 8.6 acres, 3% coverage

Surrounding some of the borrow ponds in the southern portion of the Preserve are disturbed areas dominated by plants associated with upland communities. Plants growing in this area include slash pine, saw palmetto, sabal palm, pinebarren goldenrod (*Solidago fistulosa*) and rose natalgrass (*Rhynchelytrum repens*).

Aquatic Power line Easement – 6.8 acres, 2% coverage

The ditches, located on both sides of the power line easement, hold fairly deep water for unnaturally long periods from the historic sheetflow to the area.

Eventually, this area drains into Popash Creek. Plants growing in this created wetland include bulltongue arrowhead (*Sagittaria lancifolia*), spatterdock (*Nuphar advena*) and alligatorweed (*Alternanthera philoxeroides*).

A few animals that have been documented utilizing this area include great egrets (*Ardea alba*), green herons (*Butorides virescens*) and Florida gar (*Lepisosteus platyrhincus*).

Ruderal – 5.9 acres, 2% coverage

The southeastern corner of PACP has had a lot of historic disturbance (see Land Use History section). The soils are man-made and the majority of the plants are those that are typically found in disturbed areas such as beggerticks (*Bidens alba*), dogfennel (*Eupatorium capillifolium*), cogon grass, Guinea grass and creeping oxeye (*Sphagneticola trilobata*).

Melaleuca – 4.2 acres, 1% coverage

There are thick melaleuca monocultures adjacent to a couple of the borrow ponds and the southern portion of Popash Creek. Wildlife found in these stands includes the melaleuca psyllid (*Boreioglycaspis melaleucae*) and melaleuca weevil (*Oxyops vitiosa*).

Ditch – 3.1 acres, 1% coverage

Ditches have been created throughout the Preserve (see Hydrologic Components and Watershed section for more details). The types of plants found in these areas vary depending on the water width, depth and rate of flow. They include smartweed, arrowhead, maidencane, torpedograss and broadleaf cattail (*Typha latifolia*).

Brazilian Pepper/Willow – 2.2 acres, >1% coverage

Dense Brazilian pepper/Carolina willow thickets are associated with spoil areas adjacent to the easternmost borrow ponds on the southern portion of the Preserve.

Cogon Grass – 1.5 acres, >1% coverage

Three large patches of cogon grass are growing adjacent to two of the borrow ponds. There are smaller patches of this highly invasive exotic throughout the Preserve.

Spoil Piles - Exotics – 1.3 acres, >1% coverage

The spoil piles, discussed in the Geology section and located on the southern portion of the Preserve, are covered with various weeds and invasive exotics including Brazilian pepper, melaleuca and Chinese ladder brake fern (*Pteris vittata*).

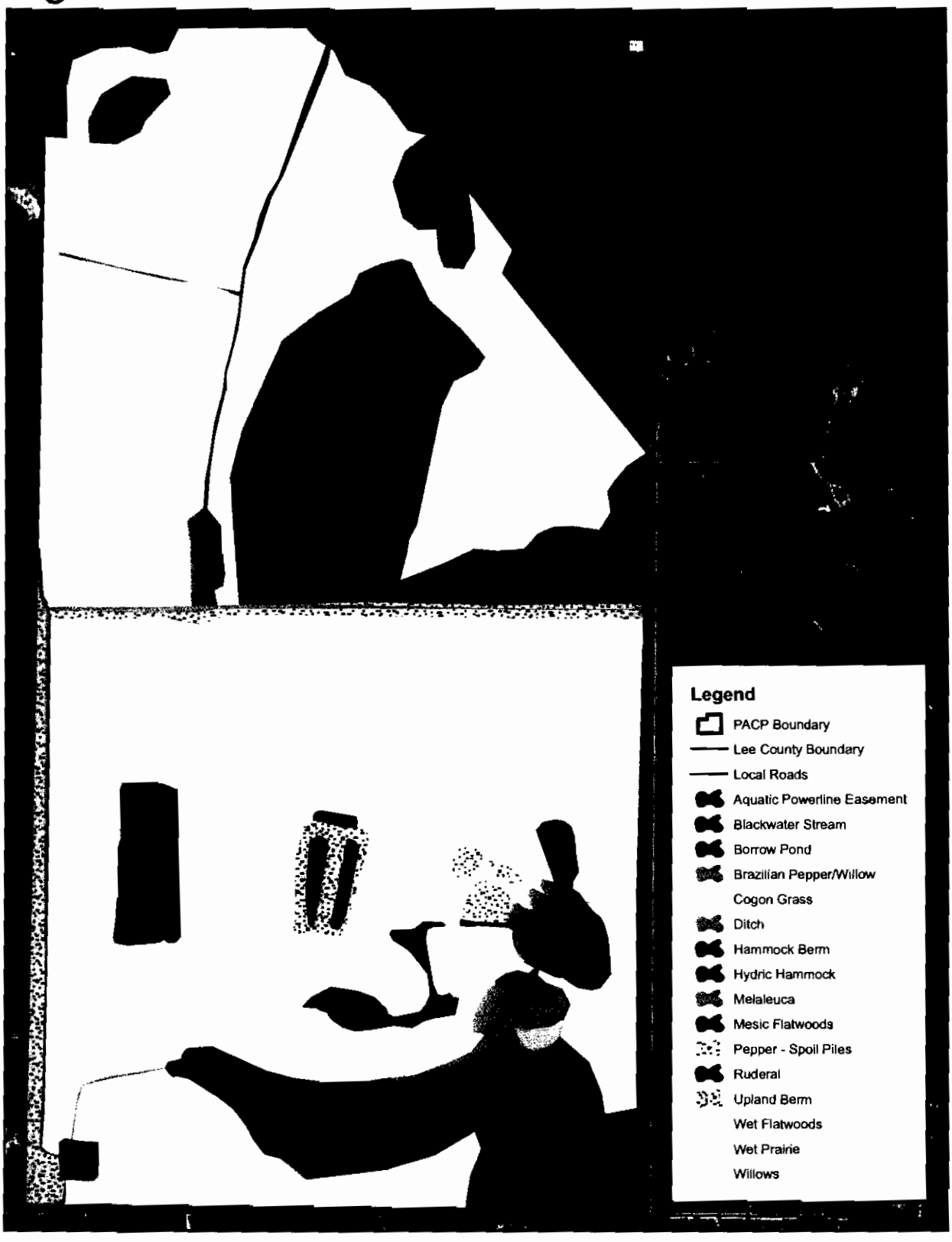
Berm - Hammock – 1.1 acres, >1% coverage

Surrounding some of the borrow ponds in the southern portion of PACP are disturbed areas dominated by plants associated with hammock communities. Plants growing in this area include laurel oaks, Brazilian pepper, wild Boston fern (*Nephrolepis exaltata*) and golden polypody (*Phebodium aureum*).

Willow – Cattle Well – .2 acres, >1% coverage

There is what appears to be a remnant cattle well that has succeeded into a small willow head in the southern portion of the Preserve.

Figure 12: Plant Communities



Pop Ash Creek Preserve

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Feet

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Map Prepared On. 09/23/05 by iwewerka@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

iii. Fauna

PACP has a large diversity of fauna. To date, only a few listed wildlife species have been recorded. See Appendix C for a list of wildlife documented at the Preserve. Wildlife species were recorded during site inspections. Future wildlife sightings will continue to be recorded during site inspections, classes, and possibly by Lee County Bird Patrol volunteers. Several exotic wildlife species have been documented at the Preserve (Table 3). Of primary concern is the feral hog (*Sus scrufa*). Damage from the hogs, such as soil disturbance and vegetation damage, is apparent in the understory of the hammock berm and wet flatwoods.

Table 3: Exotic Wildlife at Pop Ash Creek Preserve

Scientific Name	**Common Name**
Anolis sagrei	brown anole
Eleutherodactylus planirostris planirostris	greenhouse frog
Osteopilus septentrionalis	Cuban treefrog
Hemichromis letourneauxi	Letourneaux's jewel cichlid
Sus scrufa	feral hog

Wildlife management at the Preserve will focus on providing optimal habitat for native species. Restoration of the disturbed areas, control of invasive exotic plants and application of prescribed fire will be critical restoration components to provide habitat for wildlife. Pop Ash Creek Preserve is part of a countywide quarterly site inspection program for all Conservation 20/20 Preserves. A copy of the site inspection form is available in the Land Stewardship Operations Manual (LSOM). These inspections allow staff to monitor for any impacts and/or changes to each preserve and include lists of all animal sightings and new plant species that are found. If, during these inspections staff finds FNAI listed species, they will be reported using the appropriate forms.

iv. Designated Species

There are a variety of designated animal (Table 4) and plant species found at Pop Ash Creek Preserve. Although all native plant and animal species found at the Preserve have some protection due to the preservation of this property, certain species need additional attention. For stewardship purposes, all plants and animals listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Agriculture and Consumer Services (FDACS), the Institute of Regional Conservation (IRC) and Florida Natural Areas Inventory will be given special consideration.

Typically, designated species will benefit from proper management of the biological communities in which they occur. However, some species may require additional measures to ensure their protection. Management practices likely to benefit wildlife at the Preserve include exotic plant control, prescribed burning, trash removal, wildlife monitoring, feral animal control, restricting trails in certain areas and enforcement of no littering, no weapons and no motorized vehicles regulations.

Table 4: Designated Wildlife Found at PACP and Their Designated Status

Scientific Name	Common Name	USFWS	FWC	FNAI	Occurrence
REPTILES					
Alligator mississippiensis	American alligator	T (S/A)	SSC	G5/S4	confirmed
BIRDS					
Egretta caerulea	little blue heron		SSC	G5/S4	confirmed
Egretta tricolor	tricolored heron		SSC	G5/S4	confirmed
Egretta thula	snowy egret		SSC	G5/S3	confirmed
Eudocimus albus	white ibis		SSC	G5/S4	confirmed
Mycteria americana	wood stork	E	E	G4/S2	confirmed
Halieetus leucocephalus	bald eagle	T	T	G4/S3	confirmed
MAMMALS					
Sciurus niger shermani	Sherman's fox squirrel		SSC	G5T3/S3	expected

KEY

USFWS – U.S. Fish & Wildlife Service	**FNAI** – Florida Natural Areas Inventory
FWC – Florida Fish & Wildlife Conservation Commission	
	G – Global rarity of the species
E – Endangered	**S** – State rarity of the species
T – Threatened	**T** – Subspecies of special population
T S/A – Threatened due to Similarity of Appearance	
SSC – Species of Special Concern	**1** – Critically imperiled
	2 – Imperiled
	3 – Rare, restricted or otherwise vulnerable to extinction
	4 – Apparently secure
	5 – Demonstrateably secure

The following is a brief summary of each designated wildlife species explaining why they are in decline. Unless stated otherwise, the reasons for the species decline and the management recommendations were obtained from Hipes et al. (2001).

American Alligator

American alligators have recovered dramatically from overhunting since the 1960's. There are even some populations large enough to support limited harvests. Pollution and destruction of wetlands are currently the main threat to this species. Removing invasive exotic plants (particularly melaleuca) and creating littoral zones along the borrow pit lakes will benefit these species.

Wading Birds

The little blue heron's *(Egretta caerulea)*, tricolored heron's *(Egretta tricolor)* and the snowy egret's (*Egretta thula*) declines are due to loss of freshwater wetlands and alteration of their natural hydroperiod. Similar to the herons listed above, the white ibis *(Eudocimus albus)* is declining throughout their range, probably due to the reduction and degradation of wetlands as well as human disturbances to their rookeries. Removing invasive exotic plants and creating littoral zones along the borrow pit lakes will benefit these species.

Wood Stork

Wood storks *(Mycteria americana)* are extremely sensitive to water levels in freshwater wetlands, since they require high concentrations of fish in fairly shallow water for foraging. Unnaturally high water levels during nesting seasons and extended droughts are both threats that wood storks face. Management recommendations at PACP for the protection of this species will be the same as for other wading birds listed above. In addition, since wood storks require shallow, concentrated ephemeral ponds, the littoral zones will also have "fish traps" added to the design, since the current wetland areas (borrow ponds and ditches) do not provide this type of habitat. Future hydrologic improvements to the Preserve, as determined with the North Fort Myers Surface Water Master Plan, will be designed to create additional forage areas for the storks where possible.

Bald Eagle

Bald eagle (*Haliaeetus leucocephalus*) numbers have steadily increased in Florida after a low of 120 active nests in 1973. Still, loss of habitat and human disturbance due to development is a primary concern for this species. At this time, bald eagles have occasionally been spotted on the Preserve, but no nesting activity has been observed.

Sherman's Fox Squirrel

The Sherman's fox squirrel (*Sciurus niger shermani*) is in decline throughout its range primarily due to loss and degradation of habitat. Although fox squirrels have not been documented utilizing Pop Ash Creek Preserve, several squirrel nests have been observed and could possibly be utilized by fox squirrels. Much of the fox squirrel's pine-oak habitat has been converted to agriculture and development. Additionally, regular burn regimes of 2-5 years during the growing season (April-July) are critical to maintain their habitat with an open canopy with minimal understory. Exotic plant removal/control and the implementation of regular prescribed burning will improve the habitat for this species.

Table 5 outlines some specific management and restoration activities at the Preserve that will be taken to protect the species listed above. If additional listed species are documented on the Preserve they will be added to the list in Appendix C. If either eagle or fox squirrel nests are discovered on the Preserve, a map will be created, for staff use only, to assist with planning for restoration and recreation activities.

Table 5: Management Recommendations for Designated Wildlife Species

SPECIES		Restoration Activities			Management Recommendations
Scientific Name	Common Name	Exotic Control	Borrow Pond Restoration	Prescribed Fire	Mark Nest Location
Alligator mississippiensis	American alligator	x	x		x
Egretta caerulea	little blue heron	x	x		
Egretta tricolor	tricolored heron	x	x		
Egretta thula	snowy egret	x	x		
Eudocimus albus	white ibis	x	x		
Mycteria americana	wood stork	x	x		
Haliaeetus leucocephalus	bald eagle	x			x
Sciurus niger shermani	Sherman's fox squirrel	x		x	x

In addition to designated wildlife, Pop Ash Creek Preserve provides habitat for several designated plant species (Table 6). Only one, giant airplant (*Tillandsia utriculata*) is protected by the State of Florida. Threats to these plants include illegal collecting, habitat destruction and the non-indigenous Mexican bromeliad weevil (*Metamasius callizona)* (Save 2004). Now listed as Endangered, they were once considered common before the arrival of the weevil in Florida. Currently, scientists are researching biological control agents for the exotic weevil. Staff will follow the research developments and work with scientists in the future if it is determined that these insects are affecting epiphytes and the United States Department of Agriculture (USDA) is in need of release sites.

The majority of the designated plant species at PACP have been listed by IRC, which is not a regulatory agency. However, the scientists working for this Institute have conducted a tremendous amount of field work and research documenting plants occurring in conservation areas in the 10 southernmost counties of Florida. This initial floristic inventory allowed the IRC to rank plant species to indicate how rare/common these plants are in protected areas. At PACP, several Rare and Imperiled plants occur. Rare plants are defined as being either very rare and local throughout its range in south Florida (21-100 occurrences, or less than 10,000 individuals), or found locally in a restricted range. IRC only ranks as rare those taxa with fewer than 100,000 individuals. Imperiled plants are those that are imperiled in south Florida because of rarity (6-20 occurrences, or less than 3,000 individuals) or because of vulnerability to extinction due to some natural or human factor. IRC only ranks those taxa as imperiled that have fewer than 10,000 individuals.

In their book, Rare Plants of South Florida: Their History, Conservation and Restoration, the authors provide an entire chapter of recommendations to help restore south Florida's rare plant diversity (Gann 2002). Several of these recommendations, particularly those that protect plants on the Preserve and relate to stewardship practices, will be followed. More information on the specifics techniques used will be discussed in the Management Action Plan. The following list highlights those recommendations by IRC that will be incorporated into the management of PACP:

- Restrict recreational activities such as off-road vehicle use and equestrian to avoid impacts to rare plant populations.
- Insure that park improvements and management activities do not needlessly threaten or destroy rare plant populations.
- Prevent illegal poaching of rare plants.
- Prosecute poachers to the fullest extent of the law.
- Implement an ongoing exotic pest plant control program.
- Educate exotic plant control crews about the rare plants to ensure they avoid non-target damage.

- Trap wild hogs, which can completely destroy the above ground vegetation and disturb all the soil in an area where they are feeding.
- Initiate prescribed fire in communities that are fire adapted since fire as a management tool is extremely critical for the protection of many rare plants.
- Divide the site so the entire area is not burned during the same year will also help protect these communities.

Table 6 lists all rare plant species that have been documented at the Preserve.

Table 6: Designated Plants Found at PACP and Their Designated Status

Scientific Name	Common Name	USFWS	FDA	IRC	FNAI
Aletris lutea	yellow colicroot			R	
Amphicarpum muhlenbergianum	blue maidencane			R	
Andropogon virginicus	broomsedge bluestem			I	
Andropogon virginicus var. glaucus	chalky bluestem			R	
Cirsium nuttallii	Nuttall's thistle			I	
Elephantopus elatus	tall elephantsfoot			R	
Eriocaulon compressum	flattened pipewort			R	
Eriocaulon decangulare	tenangle pipewort			R	
Eryngium yuccifolium	button rattlesnakemaster			R	
Eupatorium leptophyllum	falsefennel			R	
Flaveria floridana	Florida yellowtops			I	
Habenaria quinqueseta	longhorn false reinorchid			R	
Hydrocotyle verticillata	whorled marshpennywort			R	
Hypericum brachyphyllum	coastalplain St. John's-wort			R	
Hypericum reductum	Atlantic St. John's-wort			R	
Hypoxis juncea	fringed yellow stargrass			R	
Lachnocaulon anceps	whitehead bogbutton			R	
Ludwigia maritima	seaside primrosewillow			R	
Physostegia purpurea	false dragonhead			I	
Piloblephis rigida	wild pennyroyal			R	
Proserpinaca palustris	marsh mermaidweed			R	
Proserpinaca pectinata	combleaf mermaidweed			R	
Rhexia mariana	pale meadowbeauty			R	

Table 6: Designated Plants Found at PACP and Their Designated Status (continued)

Scientific Name	**Common Name**	**USFWS**	**FDA**	**IRC**	**FNAI**
Rhynchospora microcarpa	southern beakrush			R	
Rhynchospora tracyi	Tracy's beaksedge			R	
Sagittaria graminea	grassy arrowhead			R	
Solidago fistulosa	pinebarren goldenrod			R	
Stillingia aquatica	corkwood			R	
Tillandsia utriculata	Giant wild-pine		E		
Typha latifolia	broadleaf cattail			R	
Utricularia cornuta	horned bladderwort			R	
Utricularia foliosa	leafy bladderwort			R	
Vernonia blodgettii	Florida ironweed			R	
Viola lanceloata	bog white violet			I	
Vitis aestivalis	summer grape			I	

KEY

USFWS – U.S. Fish & Wildlife Service	**FNAI** – Florida Natural Areas Inventory
FDA – Florida Department of Agriculture and Consumer Services	
	G – Global rarity of the species
E – Endangered	**S** – State rarity of the species
T – Threatened	**T** – Subspecies of special population
CE – Commercially Exploited	
	1 – Critically imperiled
IRC – Institute for Regional Conservation	**2** – Imperiled
	3 – Rare, restricted or otherwise vulnerable to extinction
CI – Critically Imperiled	**4** – Apparently secure
I – Imperiled	**5** – Demonstrateably secure
R – Rare	

v. Biological Diversity

Biodiversity at Pop Ash Creek Preserve varies with the community, but should increase significantly after several management activities have been put into practice (i.e. invasive exotic plant removal, hydrological restoration, prescribed fire). The plant communities range from dry spoil areas that are never flooded, to the several man-made ponds that always contain water, and the blackwater stream (Popash Creek) that usually contains water. Slash pines, Carolina willows, Brazilian pepper and melaleuca trees occur along the banks of the remnant creek. The protection of the native plants and improvement of hydrologic components across the landscape and through the natural creek will enhance the overall biodiversity of the Preserve.

Many wildlife species inhabit PACP. Currently 135 plant species (23 exotic) and 64 animal species (5 exotic) have been documented. Sixteen of the 23 exotic plant species (70%) are on the Florida Exotic Pest Plant Council's 2005 List of Invasive Species (FLEPPCa 2005). After invasive plant removal work, the number of overall plant species may actually decrease. However once restoration and on-going stewardship activities have been integrated, the flora and fauna species numbers will likely expand. Staff will compare the species number and composition in the ten-year revision of this land stewardship plan.

The integrity and diversity of PACP must be protected when and where possible. Land Stewardship staff will perform the following actions in this regard:

- Control invasive exotic vegetation followed by annual maintenance to provide more suitable habitat for native aquatic and terrestrial species.
- Maintain boundaries with fencing and signs to eliminate illegal access to the Preserve and protect fragile ecosystems.
- Remove any debris and prevent future dumping on site.
- Improve hydrologic flow and create littoral shelves on some of the numerous borrow pit ponds.
- Implement a prescribed fire program to closely mimic the natural fire regimes for different plant communities to increase plant diversity and insure the canopies remain open.
- Control invasive exotic animal populations to reduce their impacts on the herbaceous plants, native animals and soils.
- Conduct on-going species surveys through volunteers and staff to help catalogue and monitor the diversity that is present.

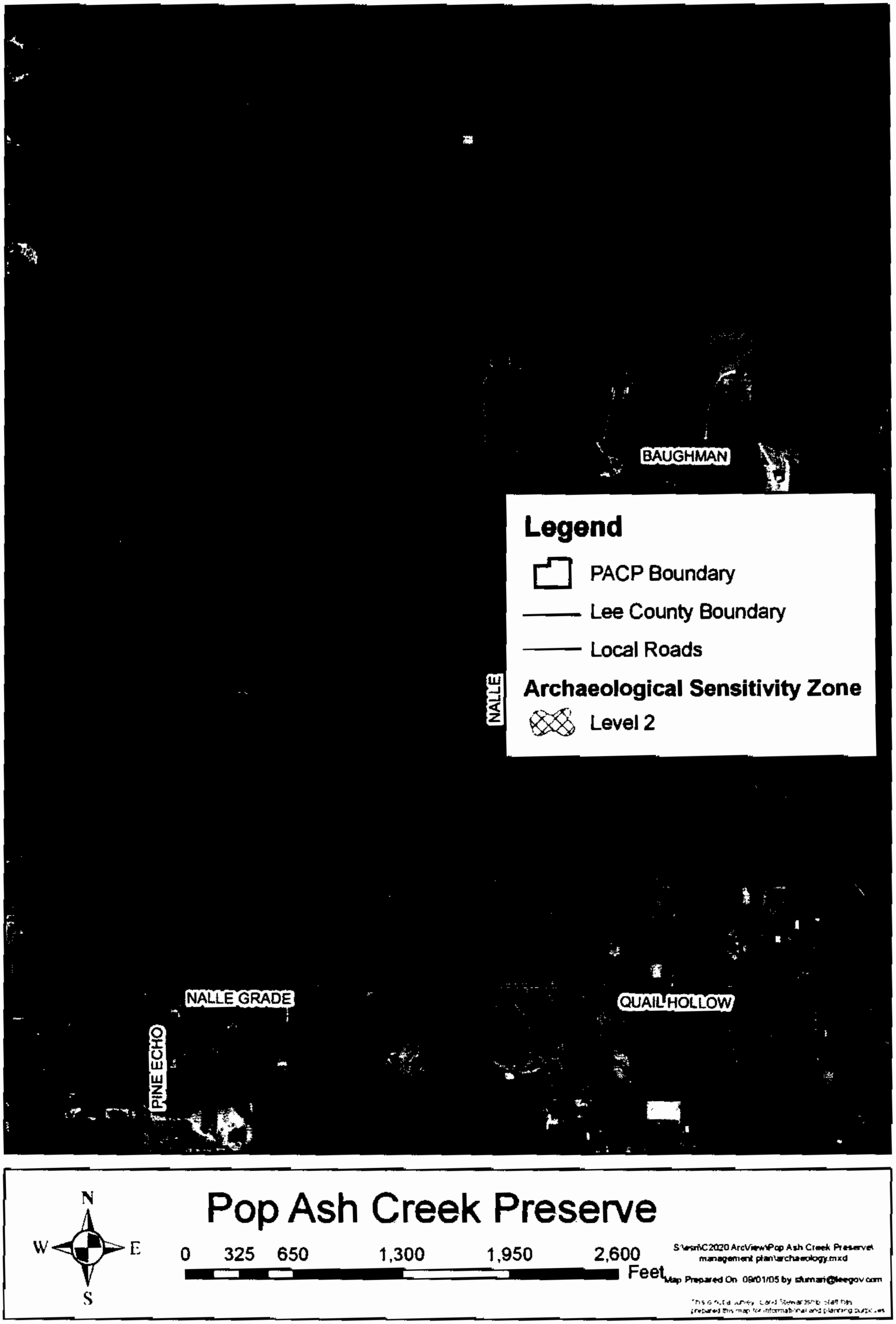
C. Cultural Resources

i. Archaeological Features

In 1987, Piper Archaeological Research, Inc. (PARI) conducted an archaeological site inventory of Lee County. They were able to identify an additional 53 sites increasing the total number of known archaeological sites in Lee County to 204. PARI created a site predictive model and archaeological sensitivity map for the county that highlighted potential areas likely to contain additional archaeological sites. Approximately one-fifth of Pop Ash Creek Preserve lies within the study's "Sensitivity Level 2" area (Figure 13). The study defines this level as "areas that contain known archaeological sites that have not been assessed for significance and/or conform to the site predictive model in such a way that there is a high likelihood that unrecorded sites of potential significance are present. If these areas are to be impacted, then they should be subjected to a cultural resource assessment survey by a qualified professional archaeologist in order to 1) determine the presence of any archaeological sites in the impact area and/or 2) assess the significance of these sites" (Austin 1987).

Although there has already been considerable soil disturbance on PACP with the creation of many ditches and man-made ponds (borrow pits), the majority of disturbance has been confined to the southern portion of the site, which was not within the Sensitivity Level 2 area. A professional archaeologist will be hired to conduct a survey of the area to be impacted, if restoration projects require any major soil disturbance. If evidence of shell middens or other artifacts are found in the area, the Division of Historical Resources (DHR) will be immediately contacted and protection procedures will comply with the provision of Chapter 267, Florida Statutes, Sections 267.061 2(a) and (b). Collection of artifacts and/or any disturbance of the archaeological site will be prohibited unless prior authorization has been obtained from the DHR. Any potential site will be managed in coordination with recommendations from the DHR and, if necessary, the site will be kept confidential with periodic monitoring for impacts. If any significant archaeological resources are found and confidentiality is not found to be necessary, they may be incorporated into the public education program.

Figure 13: Archaeological Features



ii. Land Use History

Over the last 100 years, ecosystem manipulation on Pop Ash Creek Preserve has occurred. Intense logging of slash pine in the late nineteenth century through the 1930's virtually eliminated all virgin stands of the southern mixed forest in south Florida. According to interpretations based on aerial photography dating back to 1944 (Figure 3), land use may have included agricultural activities. Three patches of abandoned row crop farming are evident on the parcel. These activities likely reduced slash pine densities throughout the Preserve and explains the lack of old growth pine trees found on the site. Besides the original flow way of Popash Creek, the photograph also illustrates Nalle and Nalle Grade Roads as dirt trails. The 1953 aerial photograph doesn't show any major changes, except additional vegetation growth within the disturbed patches (Figure 4). The FPL power line had been completed by 1958 in the northeast corner (Figure 5).

The stumps of the logged slash pines were removed from many properties in the region during the 1960's and 1970's. This activity, referred to as "stumping," was conducted to extract turpentine from the wood. Stumping created depressions in the soil, which created a microhabitat where soil moisture is higher for longer periods than adjacent habitats, allowing different plant species to occur.

Additional activities were derived from either historical aerial photography from 1966 until 2002, from speaking with the prior property owner (Carter 2005), or from the Phase I Environmental Site Assessment report (WRS 2003). In 1966, a mosquito control ditch was installed along ¾ of the western boundary and ½ of the northern boundary, west of FPL power line easement. Evidence of stumping and the dredging of Popash Creek were also observed on the aerials.

"Several lakes were constructed on the southern portion of the site in an attempt to construct a waterfront mobile home community (Chateau Estates) during the early 1970's" (WRS 2003). During 1970, the south central lake was under excavation in the largest onsite seasonal wetland and a welcome center mobile home appears in the southeast corner. In 1972, the southeast portion of the Preserve was landscaped near the welcome center. Segments of the community's sign remain to this day. The development began to take shape with evidence of a construction trailer located north of the south central lake. By 1975, additional lakes were constructed along with two percolation ponds in the central area, and two years later the middle ditch (east of creek) was constructed.

By 1980, most of the southern section of the site was cleared and filled. Small disturbed patches of vegetation in north and south portions had been removed. The southern section of Popash Creek was removed and a rectangular lake was

excavated along the old creek bed. In addition, a square lake in the southwest portion of the site was present, the last ¼ of the western ditch was completed along the boundary, and the middle ditch (west of creek) was completed. By 1986, the welcome center and another mobile home were removed.

A caretaker occupied a mobile home in the southeastern corner of the site from the middle 1970's until 2000. In 1990, a mobile home appeared in the southeast corner and by 2000 it had been removed.

The last owners held the property for nearly ten years and requested a rezoning for a soil excavation mine. The project had much opposition from neighbors and was dropped. During this time period, the owners continued to graze cattle and mowed the aggressive melaleuca trees that began overtaking the northern flatwoods. Most of the northern section was included in a prescribed burn two years prior to C20/20 acquisition (Carter 2005).

In January 2004, five months after C20/20 acquired the property, the Lee County Board of County Commissioners (BOCC) authorized equestrian use until a stewardship plan was written to evaluate appropriate public usage for the Preserve. During this time, public access was also granted to individuals for low-impact hiking and birding activities.

Cattle grazing has been a long-term practice on this parcel and continues to this day with an active cattle lease. Thus far, the land sharing arrangement between equestrian and cattle has been working (Carter 2005).

iii. Public Interest

Pop Ash Creek Preserve has had strong public interest since it was first nominated to the program in 2001. During the two-tiered review process, which every nominated parcel is evaluated, County Staff received 104 letters and had 75 people attend the Conservation Lands Acquisition and Stewardship Advisory Committee (CLASAC) to discuss the property. The majority of these contacts identified themselves as members of the "Bayshore Community." They supported the C20/20 property purchase for a nature preserve, wildlife refuge and for water management and sheetflow protection. Many of the residents also wanted the property to provide hiking and equestrian trails.

Commissioner Andrew Coy was interested in examining the Preserve's potential to help alleviate the flooding problems in the area. Land Stewardship and Natural Resources staff met and developed and implemented an invasive exotic plant removal plan for the plants growing on the channelized bank of Popash Creek located on the west boundary as well as the ditch that bisects the preserve from west to east. The removal of thick exotic plants as well as some debris has definitely improved water flow in the area. According to Roland Ottolini, Director

of Lee County Natural Resources, "much of the area's flooding problem is the result of private roads and under sized culverts" (Ruane 2003).

V. FACTORS INFLUENCING MANAGEMENT

A. Natural Trends and Disturbances

Natural trends and disturbances influencing native communities and stewardship at PACP include hurricanes, flooding, wildfire, occasional freezes and the cycling of wet and dry seasons. Implementation of the Management Action Plan will take these factors and their influence on projects at the Preserve into consideration. For example, a tropical storm or hurricane could damage large amounts of vegetation. It may be necessary to remove or mulch downed vegetation following a hurricane if it increases the chance of negative impacts to wildlife habitat or public safety from a wildfire.

Wildfires caused by lightning strikes are natural occurrences in Florida. The Florida Division of Forestry (DOF) – Caloosahatchee District - and Lee County Department of Parks and Recreation are developing a wildland firefighting protocol for County preserves. The DOF was provided a map of the Preserve showing the locations of gates, firebreaks and water sources. The DOF will utilize existing firebreaks to contain wildfires at PACP whenever possible. No new firebreaks, such as plow lines, will be created unless there is potential for the wildfire to harm property outside the Preserve boundary. If a wildfire is within the burn unit(s) prescription and when DOF resources are available, DOF may elect to sit and wait onsite for the fire to burn out. This agreement between DOF and the County will protect PACP from the potential damage associated with emergency firefighting equipment. Land Stewardship staff will lead periodic site visits in order to familiarize DOF with PACP and current management efforts. A comprehensive C20/20 fire management plan, to be completed in 2005, will be used to plan activities and responses that will help decrease the impact of catastrophic wildfires on the Preserve and neighboring lands. Fire lines on the perimeter of the Preserve, as well as those created once burn units are established, will be kept clear of debris and disked a minimum of once a year during the onset of the dry (wildfire) season.

Management (invasive exotic plant control, prescribed burning, etc.) of PACP is influenced by seasonal floodings. The LSOM's exotic plant prescription form will be used to define the conditions for control activities. The use of heavy equipment will be limited to the dry season for the majority of the site. The timing of prescribed burns will also be influenced by seasonal rain, weather and wind patterns.

B. Internal Influences

There are numerous human influences that have impacted PACP. Several of these operations were created to either capture or expel one natural element: water. Hydrological impacts include drainage and flood control measures, the creation of local roadways and utility infrastructures and a failed mobile home development.

A large canal and several ditches were dug to drain water from on-site and adjacent properties for mosquito and flood control prevention. Additionally, these flowway systems remove water from local roads and the extreme sheet flow received from Charlotte County during heavy rains. Most of these ditches and borrow ponds restrict or prevent natural sheet flow from occurring and also affect on-site water table levels.

Many invasive exotic plants (mainly melaleuca, Brazilian pepper and cogon grass) disrupt the functionality and limit the biodiversity of the Preserve. Initial exotic plant removal efforts along with follow-up maintenance will greatly enhance the natural plant communities and wildlife habitats.

Several locations at PACP have dense slash pine populations that will require mechanical thinning to re-establish healthier pine flatwoods communities and to be able to reintroduce a fire regime. After restoration projects are completed in Management Units that contain fire dependent communities, a prescribed fire management program will be implemented. This will aid conservation measures by inhibiting exotic plant regrowth and return an essential fire regime for all fire dependent plants and animals for long-term sustainability. Implementing an appropriate fire regime within the landscape will help prevent the sometimes-devastating effects of wildfires and possibly avoid the need for DOF to intervene with bulldozers and plows and the consequential plow lines.

Exotic animals can have a detrimental effect on native flora and fauna. For example, feral hogs consume ground-nesting bird eggs and disturb soil and sensitive vegetation during rutting activities, which can provide optimal substrate for invasive exotic plant growth. Exotic fish and amphibians can compete with native fauna for habitat and food. A range of removal methods will be considered for problematic invasive exotic animals found on the Preserve.

Besides the introduced soils, installed borrow ponds and their associated spoil piles and berms, there are several debris items that remain from the failed waterfront mobile home community: an electric power pole, homestead foundation and community sign. Additional trash noted from past and current users: metal items, tires, fishing line, discarded fence wire, child's fort in the woods and household waste.

The last internal influence includes several locations with interior fencing and a gate. One section of fencing and gate stretches from east to west along the middle ditch, which divide the Preserve into northern and southern sections. The other fencing is in the southwestern portions of the Preserve. The internal fencing allows the rancher to restrict cattle to smaller grazing units and keep them out of the deep ditches and a severely sloped borrow pit pond. Once cattle operations end, the interior fencing will be removed.

C. External Influences

PACP is located within the Bayshore Community, an area designated by the Lee County BOCC as one of the 22 planning communities designed to capture the unique character of this area of the county. The Bayshore Community is predominantly a rural, residential area of single-family homes on large acreages, small horse farms, citrus groves and plant nurseries interspersed by some larger cattle grazing operations. Both the citizens of this community and the BOCC have the shared goal of protecting this area's environmental resources, protecting the existing agricultural and equestrian activities and retaining the atmosphere and character of the area (Lee Plan 2004). Because of this mandate, changes in the area surrounding Pop Ash Creek Preserve seem unlikely as commercial activities are not permitted in the immediate area and rezoning for either industrial or mining will not be permitted. Additionally, the Land Use surrounding the Preserve is Density Reduction Groundwater Resource (DRGR), only allowing 1 development unit for every 10 acres.

There is potential for Del Prado Boulevard to extend to the east of I-75 in the future. According to the Lee Plan, the existing Nalle Grade Road alignment, which marks the south boundary of the Preserve, must be considered as a possibility for this road extension. This would dramatically increase the traffic near, and resulting noise at the Preserve.

A third external influence relates to the tremendous amount of sheet flow from Charlotte County that enters the Preserve each rainy season. Most of the Preserve is wet during the summer months and both stewardship activities and recreation will be reduced during this time to minimize disturbance to the submerged soils.

There have been occasional problems with illegal public use of the Preserve, including off-road vehicles (ORVs), littering, campfires and wildlife poaching. These problems have been reduced with the placement of two large signs on the southern boundary, as well as additional fencing which closed off the borrow pond located in the southwest corner. The cattle rancher who holds a lease for grazing in the Preserve is responsible for maintaining the boundary fence, which helps to reduce additional illegal access. Land Stewardship staff also has a good relationship with several neighbors who help watch the Preserve and alert staff

when they notice questionable activities. Protecting the boundaries from dumping, hunting and vehicular access will always be a priority for the Preserve.

D. Legal Obligations and Constraints

i. Permitting

Land stewardship activities at Pop Ash Creek Preserve may involve obtaining permits from several regulatory agencies. Any proposed hydrologic improvements to the site may require obtaining permits from the Florida Department of Environmental Protection (FDEP), the U.S. Army Corps of Engineers (USACOE) and SFWMD. A permit from the Lee County Department of Transportation (LDOT) may be required if the proposed culvert is installed for equestrian access at the southwest corner of the Preserve. Prescribed fire will be used in one of the experimental test plots for controlling smaller melaleuca trees and obtaining a DOF burn permit will be necessary. In general, once invasive exotic plants have been removed and controlled in the upland portions of the Preserve and fuel loads have been reduced, prescribed fire will be used as a management tool, requiring burn authorization from the Florida Division of Forestry.

ii. Other Legal Constraints

The 1991/1992 Lee County Surface Water Management Master Plan recommended cleaning tributaries of the Caloosahatchee River for optimum performance of outfalls and flood prevention. Starting in 2002, Lee County Division of Natural Resources (DNR) received funding from SFWMD for Caloosahatchee River Tributaries Maintenance. SFWMD provided $50,000 for the fiscal year October 2002 – September 2003. Starting September 2003, $200,000 per year was issued for maintenance and will continue through the fiscal year starting October 2006. In 2004, two major segments of the Preserve's canal/ditch system received invasive exotic plant and other debris removal work by a DNR contractor. Since DNR is tasked with maintaining the county's tributaries, Land Stewardship staff will coordinate with DNR representatives concerning future restoration activities along these waterways.

All Lee County cattle leases expire each September to simplify coordination between the parties. In September 2005, the existing cattle lease was renewed for another year (Appendix D) for the entire Preserve. As a consideration of the Cattle Lease Agreement, this lease may be terminated with a 30-day written notice to the Licensee. At this Preserve, the Licensee has been very respectful to prevent harmful environmental impacts by limiting the number of cattle, their duration or exclusion in seasonally hydric locations, and maintaining fence lines. This cattleman was instrumental in working with staff to define an equitable arrangement between cattle and equestrian uses. Land Stewardship staff

recommends that the lease continue on a yearly basis with the above 30-day consideration.

In January 2004, the BOCC authorized, on an interim basis, equestrian use at specific parks and preserves after modifications were made to Lee County Ordinance No. 01-06. Since this time, the "Permission for equestrian use of the Pop Ash Creek Preserve" letter was used to give authorization to the local equestrian community (individuals and Caloosa Saddle Club members) to ride their horses on the Preserve. The letter stipulated nine conditions that riders had to agree and adhere to for continued use. Refer to Public Access and Resource-Based Recreation section for the recommended equestrian plan.

There are four recorded easements on the property (see Appendix E). The first one is a 330 foot FPL power line easement through the northeastern portion of the Preserve. A second easement is a 25 foot road easement along the eastern boundary and contains a portion of Nalle Road. A third easement is a 25 foot road easement along the southern boundary and contains a portion of Nalle Grade Road. In August 2003, the last easement was approved for the Permanent Access Easement Grant, which allows C20/20 staff to utilize the FPL roadway easement through an adjacent property owner's parcel (Appendix F).

iii. Relationship to Other Plans

Lee County Division of Natural Resources hired a consultant in October 2005 to develop the North Fort Myers Surface Water Master Plan, which covers the area between U. S. Highway 41 and State Road 31 in the North Fort Myers area, which includes the Bayshore Community. These plans will provide suggestions for water storage and drainage within several watersheds. Land Stewardship staff will have input on projects that will affect water storage or flow on Conservation 20/20 Preserves.

The Lee Plan, Lee County's comprehensive plan, is designed to depict Lee County as it will appear in the year 2020. Several themes have been identified as having "great importance as Lee County approaches the planning horizon." These themes are:

- The growth patterns of the County will continue to be dictated by the Future Land Use map.
- The continued protection of the County's natural resource base.
- The diversification of the County's traditional economic base.
- The expansion of cultural, educational and recreational opportunities.
- A significant expansion in the County's physical and social infrastructure.

The entire Lee Plan can be found on the Internet at: http://www.lee-county.com/dcd1/Leeplan /Leeplan.pdf. The four chapters that affect the management of PACP are **Chapter II – Future Land Use, Chapter IV –**

Community Facilities and Services, Chapter V – Parks, Recreation and Open Space and **Chapter VII – Conservation and Coastal Management.**

Chapter II, Policy 1.4.6 states that Conservation Lands included uplands and wetlands that are owned and used for long-range conservation purposes. Upland and wetland conservation lands will be shown as separate categories on the FLUM. Upland conservation lands will be subject to the provisions of this policy. Wetland conservation lands will be subject to the provisions of both the Wetlands category described in Objective 1.5 and the Conservation Lands category described in this policy. The most stringent provisions of either category will apply to wetland conservation lands. Conservation lands will include all public lands required to be used for conservation purposes by some type of legal mechanism such as statutory requirements, funding and/or grant conditions, and mitigation preserve areas required for land development approvals. Conservation Lands may include such uses as wildlife preserves; wetland and upland mitigation areas and banks; natural resource based parks; ancillary uses for environmental research and education, historic and cultural preservation, and natural resource based parks (such as signage, trailhead facilities, caretaker quarters, interpretive kiosks, research centers, and quarters and other associated support services); and water conservation lands such as aquifer recharge areas, flow ways, flood prone areas, and well fields. Conservation 20/20 lands designated as conservation are also subject to more stringent use provisions of the 2020 Program or the 2020 ordinances. (Added by Ordinance No. 98-09, Amended by Ordinance No. 02-02)

Chapter II, Policy 20.2.3 provides that, if a need to extend Del Prado Boulevard east of I-75 through the Bayshore Community is demonstrated, the corridor evaluation must include alternatives to using the existing Nalle Grade Road alignment. The evaluation will address (but not be limited to) access, safety and community character issues. Alternatives will be presented at evening public workshops within the Bayshore Community. (Added by Ordinance No. 03-02)

Chapter II, Objective 20.4: PARKS AND RECREATION provides that the county will explore, with the support of the residents of Bayshore, the feasibility of establishing an equestrian park as the primary recreation facility for this community. (Added by ordinance No. 03-02)

Chapter II, Policy 20.4.1 provides the support the Bayshore residents may include assistance with development and maintenance of such a recreation facility. (Added by Ordinance No. 03-02)

Chapter IV, Policy 59.1.5 provides the county will, through appropriate land use and engineering regulations, continue to control the introduction of obstructions or impediments within floodways. (Amended by Ordinance No. 94-30, 00-22)

Chapter IV, Policy 59.1.6 provides that the county will, through appropriate regulations, continue to provide standards for construction of artificial drainage ways compatible with natural flow ways and otherwise provide for the reduction of the risk of flood damage to new development. (Amended by Ordinance No. 94-30, 00-22)

Chapter IV, Policy 60.1.4 provides that the county will examine steps necessary to restore principal flow-way systems, if feasible, to assure the continued environmental function, value, and use of natural surface water flow-ways and associated wetland systems. (Amended by Ordinance No. 00-22)

Chapter V provides that Land Stewardship staff will ensure that any public use facilities and recreational opportunities will comply with **Goal 85: Park Planning and Design**, which requires that parks and recreation sites are planned, designed, and constructed to comply with the best professional standards of design, landscaping, planning, and environmental concern. Staff will also work to meet **Goal 86: Environmental and Historic Programs, Objective 86.1** to provide information and education programs regarding its cultural history and its environment at appropriate facilities. (Amended by Ordinance No. 94-30, 00- 22)

Chapter VII, Objective 104.1: ENVIRONMENTALLY CRITICAL AREAS provides that within the coastal planning area, the county will manage and regulate, on an ongoing basis, environmentally critical areas to conserve and enhance their natural functions. Environmentally critical areas include wetlands (as defined in Goal 114) and Rare and Unique upland habitats. Rare and Unique upland habitats include, but are not limited to: sand scrub (320); coastal scrub (322); those pine flatwoods (411) which can be categorized as "mature" due to the absence of severe impacts caused by logging, drainage, and exotic infestation; slash pine/midstory oak (412); tropical hardwood (426); live oak hammock (427); and cabbage palm hammock (428). The numbered references are to the Florida Land Use Cover and Forms Classification System (FLUCFCS) Level III (FDOT, 1985). (See also Policy 113.1.4.) The digitization of the 1989 baseline coastal vegetation mapping (including wetlands and rare and unique uplands, as defined above) will be completed by 1996. (Amended by Ordinance No. 94-30, 00-22)

Chapter VII, Goal 107: RESOURCE PROTECTION provides to manage the county's wetland and upland ecosystems so as to maintain and enhance native habitats, floral and faunal species diversity, water quality, and natural surface water characteristics. **Objective 107.1: RESOURCE MANAGEMENT PLAN** provides the county will continue to implement a resource management program that ensures the long-term protection and enhancement of the natural upland and wetland habitats through the retention of interconnected, functioning, and maintainable hydroecological systems where the remaining wetlands and uplands function as a productive unit resembling the original landscape. (Amended by Ordinance No. 94-30, 00-22) Under **Policy 107.1.1.4e** the county

(or other appropriate agency) will prepare a management plan for each acquired site for the long term maintenance and enhancement of its health and environmental integrity.

Chapter VII, Objective 107.3: WILDLIFE provides the county will maintain and enhance the fish and wildlife diversity and distribution within Lee County for the benefit of a balanced ecological system. (Amended by Ordinance No. 94-30) **Policy 107.3.1:** encourages upland preservation in and around preserved wetlands to provide habitat diversity, enhance edge effect, and promote wildlife conservation. Initiating a prescribed fire regime and removing invasive exotics will follow this policy.

Chapter VII, Objective 107.4: ENDANGERED AND THREATENED SPECIES IN GENERAL provides Lee County will continue to protect habitats of endangered and threatened species and species of special concern in order to maintain or enhance existing population numbers and distributions of listed species. **Policy 107.4.1** states to identify, inventory, and protect flora and fauna indicated as endangered, threatened, or species of special concern in the "Official Lists of Endangered and Potentially Endangered Fauna and Flora of Florida," Florida Fish and Wildlife Conservation Commission (FWC), as periodically updated. Lee County's Protected Species regulations will be enforced to protect habitat of those listed species found in Lee County that are vulnerable to development.

Chapter VII, Goal 114: WETLANDS provides that the county maintains and enforces a regulatory program for development in wetlands that is cost-effective, complements federal and state permitting processes, and protects the fragile ecological characteristics of wetland systems. (Amended by Ordinance No. 94-30) **Objective 114.1** provides that the natural functions of wetlands and wetland systems will be protected and conserved through the enforcement of the county's wetland protection regulations and the goals, objectives, and policies in this plan. "Wetlands" include all of those lands, whether shown on the Future Land Use Map or not, that are identified as wetlands in accordance with F.S. 373.019(17) through the use of the unified state delineation methodology described in FAC Chapter 17-340, as ratified and amended by F.S. 373.4211. (Amended by Ordinance No. 94-30, 00-22)

E. Management Constraints

The principle stewardship constraints for PACP include limited funding, the brief dry season for stewardship activities and conducting land stewardship activities concurrently with present and future recreational use. Although C20/20 has a management fund, it is inadequate to fulfill the restoration activities for this and the other preserves. Efforts to obtain additional funding through grants and/or monies budgeted for mitigation of County infrastructure projects will be pursued.

These funds will be used to supplement the operations budget to meet the restoration goals in a timely manner.

Large portions of Pop Ash Creek Preserve are wet most of the year. January though April are typically the driest months. Stewardship activities will typically need to be conducted in these months. If access is necessary for management when water levels are high, vehicles such as all terrain vehicles (ATVs) will be used if necessary, otherwise staff will utilize a canoe or travel on foot.

When potentially dangerous restoration activities are being conducted, such as work utilizing heavy equipment or conducting prescribed burns, signs will be installed at the entrance and on the trail near the management activity to warn the public that the area is temporarily closed. During prescribed fires, the entire Preserve will be closed to the public.

F. Public Access and Resource-Based Recreation

Currently, there is a mix of public utilization at PACP. Problems have been minimal, but there are a few concerns. Since Lee County purchased the Preserve, evidence of turtle poaching and ORV use has been documented. The Parks and Recreation Ordinance, 02-12 (http://www.lee-county.com/ordinances/PDF/2002/02-12.pdf) prohibits both of these activities. These activities mainly took place on the southwest corner of the Preserve and once a fence was constructed those activities appear to have stopped. The borrow pond located in this corner has become a popular fishing spot. Although the Ordinance does allow fishing, no parking is provided. Land Stewardship staff does not recommend this area for fishing because of concerns for the safety of the people and their vehicles since the only access is a narrow strip of grass adjacent to a large roadside ditch. There is also considerable trash left by some of the visitors, including alcoholic beverage containers. Both littering and alcohol consumption are not permitted at any Lee County Park or Preserve. A final concern with this area is the number of Florida gar and other fish species that are caught and tossed up on the bank to die and rot. This practice is both inhumane and leaves a very smelly mess for other visitors.

Public recreation is not typically encouraged on preserves with active cattle leases. This is primarily due to concerns from the cattle ranchers who worry about their cattle being disturbed and possibly chased. The current cattle lease has been beneficial to this Preserve. As part of the agreement, the cattleman must maintain fences and gates to the Preserve. This practice has in all likelihood reduced illegal activities such as ORV usage and illegal dumping on the Preserve, which County staff has problems with in both parks and other preserves in the immediate area. He has also mowed along the boundary fence lines, making access for Land Stewardship staff easier as well as creating a cleared area in case of wildfire. Additionally, there has not been any evidence of

the cattle tearing up wetlands, spreading exotics such as tropical soda apple (*Solanum viarum*) or overgrazing. For these reasons, Land Stewardship staff has elected to continue with the cattle lease for PACP at this time.

Since January 2004, Land Stewardship staff has created a unique partnership with the licensed cattleman and local equestrians to allow limited public use while retaining the cattle lease. It was first set up as a 6-month trial period and has since been renewed twice. Riders who wish to access the Preserve must contact either Land Stewardship staff or the Caloosa Saddle Club. They are given an agreement letter that outlines the several established rules that were designed to protect the equestrians as well as the cattle. Appendix G illustrates the most recent agreement letter. After the rider signs the agreement and returns it to the Parks and Recreation Department, they are given the combination to the equestrian gate, located at the southeast corner of PACP. There is also an unlocked gate for hikers at the same location.

Currently there is no parking area, so visitors are primarily local residents that are able to walk or ride to this entrance. There are already existing trails, created at the same time as the borrow ponds as well as trails along all of the fence lines. These 6+ miles of trails provide excellent access to much of the Preserve. Only one additional trail section will be created after exotic plant removal is conducted. The trail will connect the two trails near the northern boundary. Some of the trails will need to be closed seasonally (such as the northern half of the Preserve, which is much wetter and will be closed each year during the wet season) or occasionally during certain restoration activities. The entire Preserve will be closed during prescribed fires and portions of the Preserve will be closed when heavy equipment is used for exotic plant removal. Additionally, the Preserve will continue to be closed on Wednesdays for cattle ranching activities. There will be a kiosk at the entrance to the Preserve that will alert visitors of any current or upcoming trail closures as well as a general warning that the trails may not be accessible depending on the weather conditions. The 16 foot cattle gate, which divides the northern and southern portions of PACP, will be posted as closed during the wet season, a sign will also be posted advising visitors to keep it closed and a latch will be installed to help ensure it is securely fastened. If problems arise with the cattle gate not being kept shut, equestrian and hiking gates, like those installed at the entrance, will be installed adjacent to the cattle gate.

The equestrian and pedestrian accesses will continue to be gated. The existing trails on the Preserve are quite obvious and at this time are not proposed to be marked so that visitors can enjoy a more uncluttered "wilderness experience" without viewing lots of signs. This strategy has worked well with visitors since PACP was acquired and will be evaluated on a yearly basis. Signs will be posted on the south side of the power line easement reminding visitors not to cross over to the other side as has been negotiated with the cattle rancher and existing FPL easement. A map of the Preserve (overlaid on a black and white aerial) will be

provided in a mailbox at the entrance. Staff will attempt to find a volunteer in the community that is willing to keep the mailbox stocked with maps. If trail markers become necessary, blazes will be painted on trees and supplemented with occasional posts. Parks and Recreation staff has had a tremendous problem with vandalism at Nalle Grade Park, which is less than one mile down the road. For this reason, Land Stewardship staff plans to avoid installing signs or other amenities unless absolutely necessary.

Equestrian access to the Preserve has not created any problems since its inception in January 2004. Once this plan has been approved by the BOCC, a sign will be posted at the equestrian gate providing potential equestrian riders with contact information so they can have access to the Preserve. After some initial exotic plant control, Land Stewardship staff plans to experiment with removing the lock and allow riders access without signing the agreement form. A sign will be posted at the gate, which will let horseback riders know what rules they must follow. These are the same rules that riders agree to when signing the agreement form. They include:

- Access is not granted to for-profit businesses that rent horses.
- Preserve hours are from dawn to dusk, Thursday through Tuesday. The Preserve is closed on Wednesdays for cattle operations.
- All horseback riders must stay south of the power lines and on existing trails.
- Parking is not provided for horse trailers and parking is not allowed on the road shoulder.
- The entrance gates must remain unobstructed at all times.

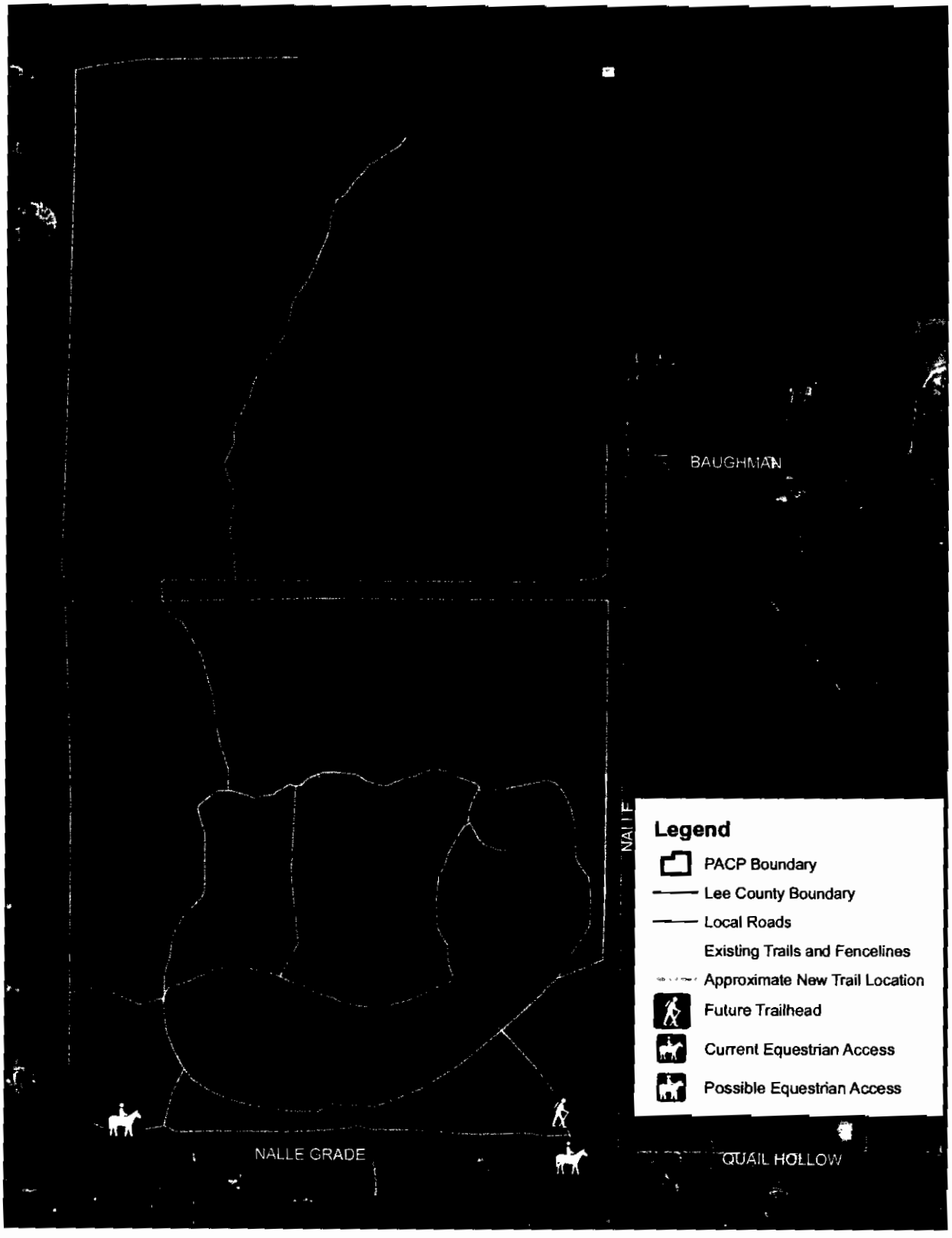
If either Land Stewardship staff or the cattleman observes re-occurring problems with allowing riders access without signing the agreement form, the lock will be re-installed and a sign providing contact information on how to obtain access will replace the sign with the rules. Land Stewardship staff has received a request to install an additional equestrian gate near the southwest corner of the Preserve. This would require installing a culvert on the north side of Nalle Grade Road. Staff will request input from the community during the public review period of this Stewardship Plan to see if an entrance at this corner would be more accessible than at the southeast corner. If this would be the preferred access area, then staff will pursue a grant or other source of funding.

Eventually an unpaved area, large enough to accommodate up to 5 cars and 2 vehicles with horse trailers, will be constructed in the southeast corner of the Preserve. This area was cleared and filled prior to C20/20 acquisition of the Property. This trailhead area will be fenced off to prevent vehicular access into the Preserve as well as preventing the cows from escaping. Horseback riders and hikers will enter the Preserve through the same type of gate system that is currently installed. A sign will be installed at the trailhead welcoming visitors to the Preserve, stating the rules, alerting visitors to the cattle lease and providing

suggestions as to what hikers should do if they encounter horseback riders. The Preserve will be open on Wednesdays for cattle grazing only, while the other six days are open to horseback riders and hikers (Thursday through Tuesday). Fishing will be allowed in the borrow ponds unless there are problems with littering or other inappropriate activities. Visitors will be warned that the unlocked equestrian gate and fishing are subject to revocation. The trails will remain primitive. Staff will explore avenues for providing reasonable accessibility for visitors with disabilities. Prairie Pines Preserve, another Conservation 20/20 acquisition, is within 9 miles and will provide parking for several trailers and has over 20 miles of equestrian trails. PACP's small size, sensitive plant communities and lack of staff make the Preserve not conducive for expanding the equestrian or additional recreational opportunities.

Figure 14 shows the existing trails and access point, as well as the proposed trailhead and possible additional equestrian entrance.

Figure 14: Master Site Plan



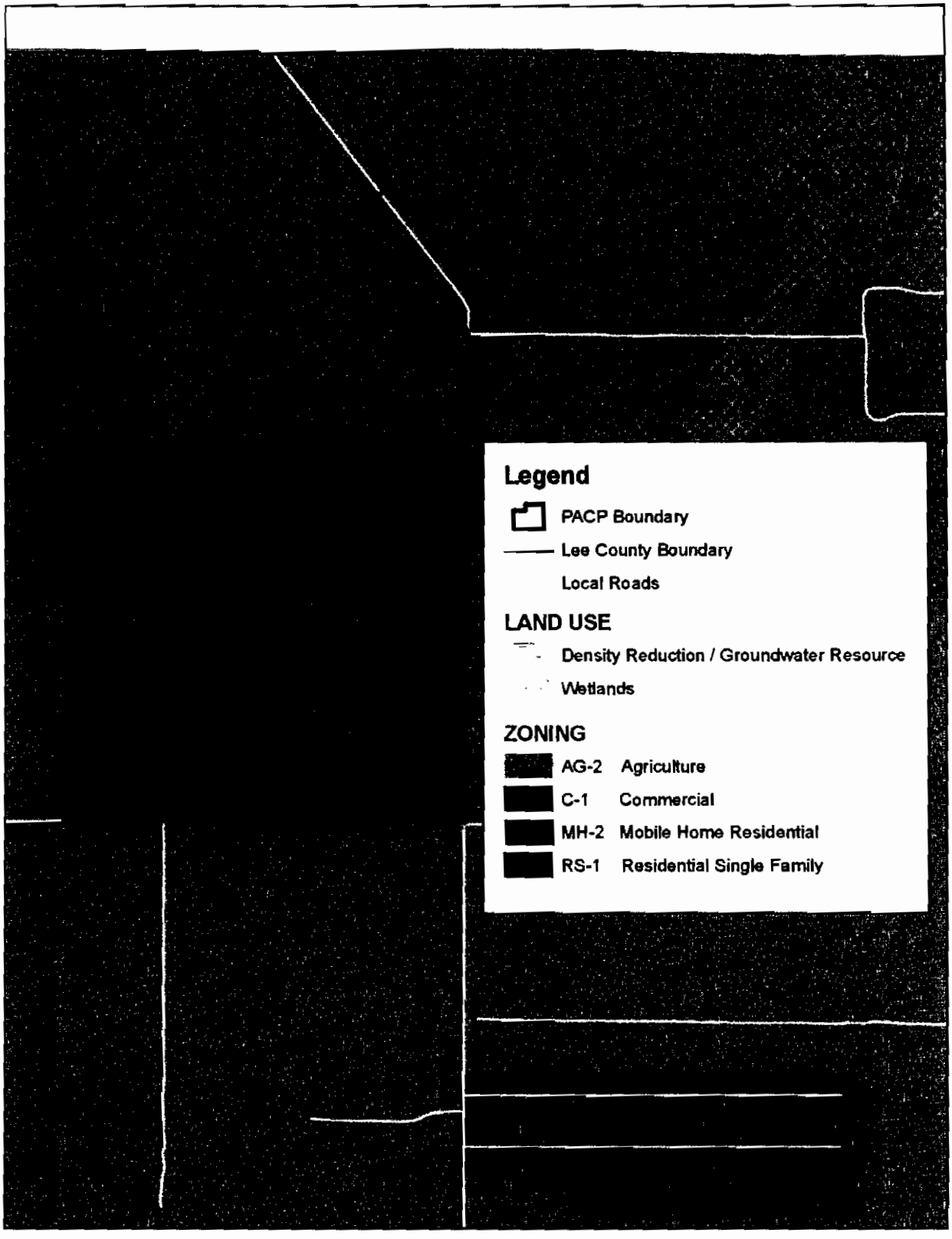
G. Acquisition

Pop Ash Creek Preserve was purchased through C20/20 in August 2003 for $1,561,846 after being nominated to the program in the fall of 2001 by Chateau Estates Land Trust and Pri-Car, a Florida General Partnership.

The existing land use for the Preserve is "Density Reduction / Groundwater Resource." This land use category was created in 1991 in an agreement between the Florida Department of Community Affairs and Lee County in an effort to protect the recharge capabilities of the surficial and ground water aquifers. This land use restricts development to 1 unit per 10 acres. PACP is zoned as agriculture "Ag-2" for the northern portion and mobile home "MH-2" and commercial "C-1" in the southern portion. The commercial designation is a small < 3-acre piece in the southwestern area (Figure 15). The STRAP numbers for the property are 03-43-25-00-00001.0010 and 03-43-25-00-00004.0000. Land Stewardship staff recommends that the zoning be changed to "Environmentally Critical" once hydrological improvements are completed and future land use be changed to "Conservation Lands" for this 307.5-acre Preserve.

An additional 120-acre property adjacent to the Preserve, nomination 208, was nominated to the C20/20 program (Figure 16) in 2001. It was withdrawn in the spring of 2004 because the Division of County Lands and the landowner were not able to reach an agreement on the price.

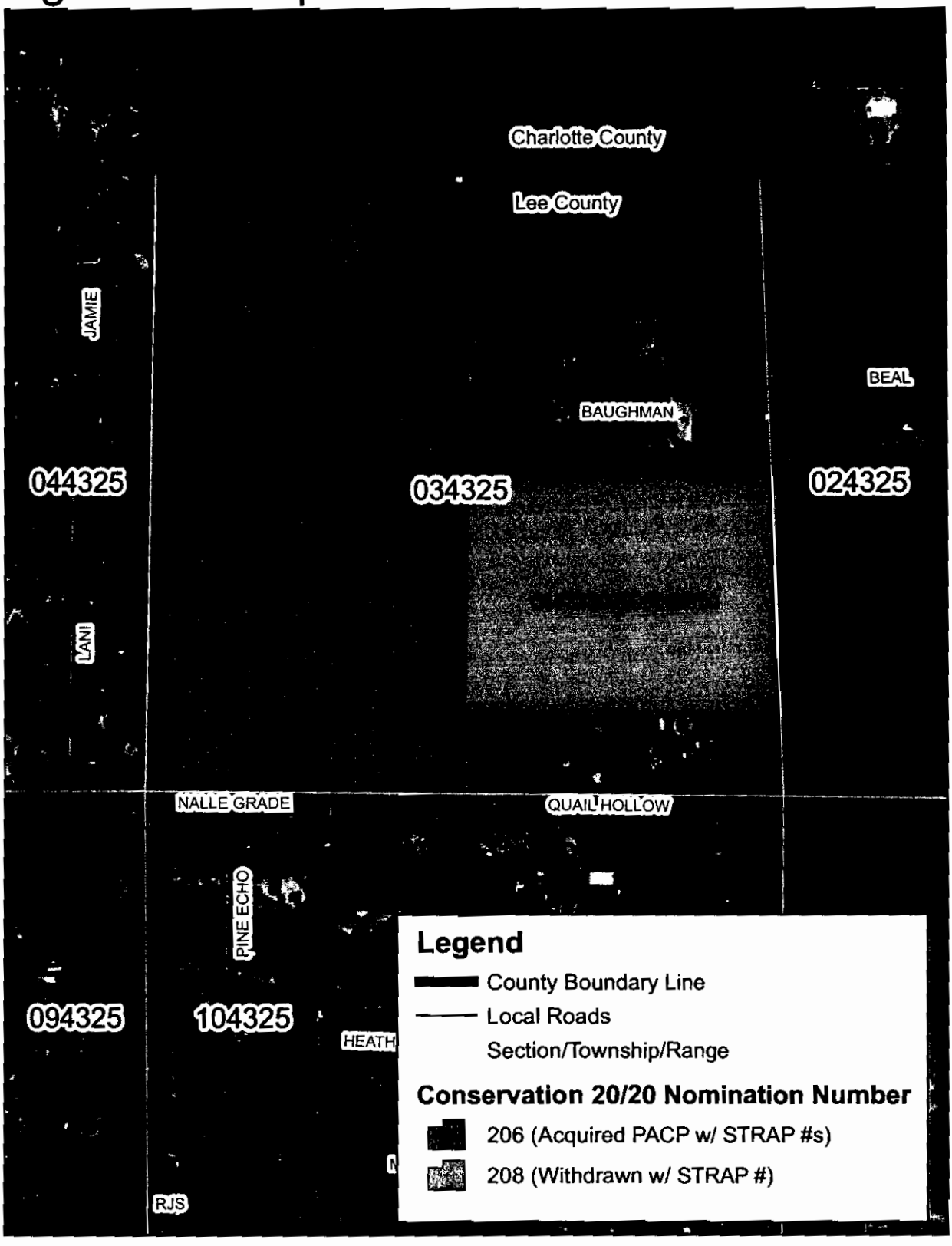
Figure 15: Land Use & Zoning

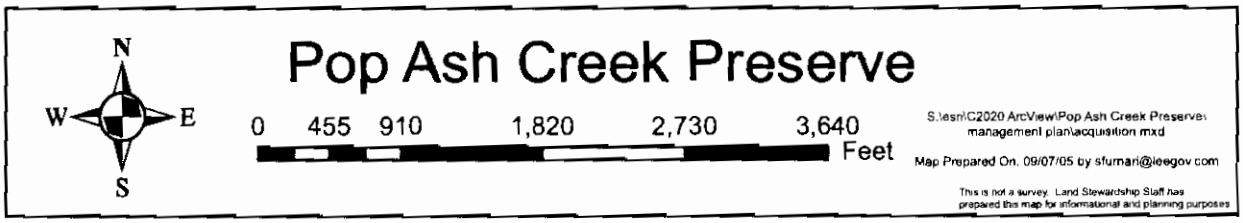


Pop Ash Creek Preserve

0 362.5 725 1,450 2,175 2,900 Feet

Figure 16: Acquisition and Nomination





VI. MANAGEMENT ACTION PLAN

A. Management Unit Descriptions

The Pop Ash Creek Preserve has been divided into seven (7) Management Units (MU) to better organize and achieve management goals. Figure 17 delineates the units that were created based on human-altered elements such as existing ditches, trails, a dredged section of Popash Creek, and the FPL easement.

- Management Unit 1
  Management Unit 1 is 14.3 acres and is located in the northeastern corner of the Preserve. The unit is bordered by Lee-Charlotte County boundary line to the north, private property to the east and south and MU 2 and the FPL easement to the west. This unit contains mesic flatwoods (9 acres) and most of the aquatic power line easement (5 acres). Stewardship activities will focus on exotic plant removal, thinning dense slash pines, debris removal and prescribed fire.

- Management Unit 2
  Management Unit 2 is 75.9 acres in the northern portion of the Preserve. This unit is bordered by the Lee-Charlotte County boundary line to the north, MUs 3 & 4 to the west, MU 5 to the south, and to the east is MU 1, private property, portions of Nalle Road and the FPL easement. This unit contains mesic flatwoods (33 acres), wet flatwoods (32 acres), wet prairie (3 acres), hydric hammock (3 acres), melaleuca monoculture (.5 acre), the eastern edge of the blackwater stream, the remainder of the aquatic power line easement (1 acre) and a portion of a drainage ditch. Stewardship activities will focus on exotic plant removal, prescribed fire and hydrological improvements. After exotic plants have been removed, a new trail will be added that connects two trails, which end near the eastern boundary line. This will complete a trail loop in the northern portion of the Preserve for equestrian and hikers to use.

- Management Unit 3
  Management Unit 3 is 27.9 acres and is located in the northwestern corner of the Preserve. This unit is bordered by the Lee County boundary line to the north, private property and the drainage canal to the west, MU 4 to the south and MU 2 to the east. This unit contains wet flatwoods (23 acres), mesic flatwoods (4 acres), portions of ditches and western edge of the blackwater stream. Stewardship activities will focus on exotic plant removal, prescribed fire and hydrological improvements.

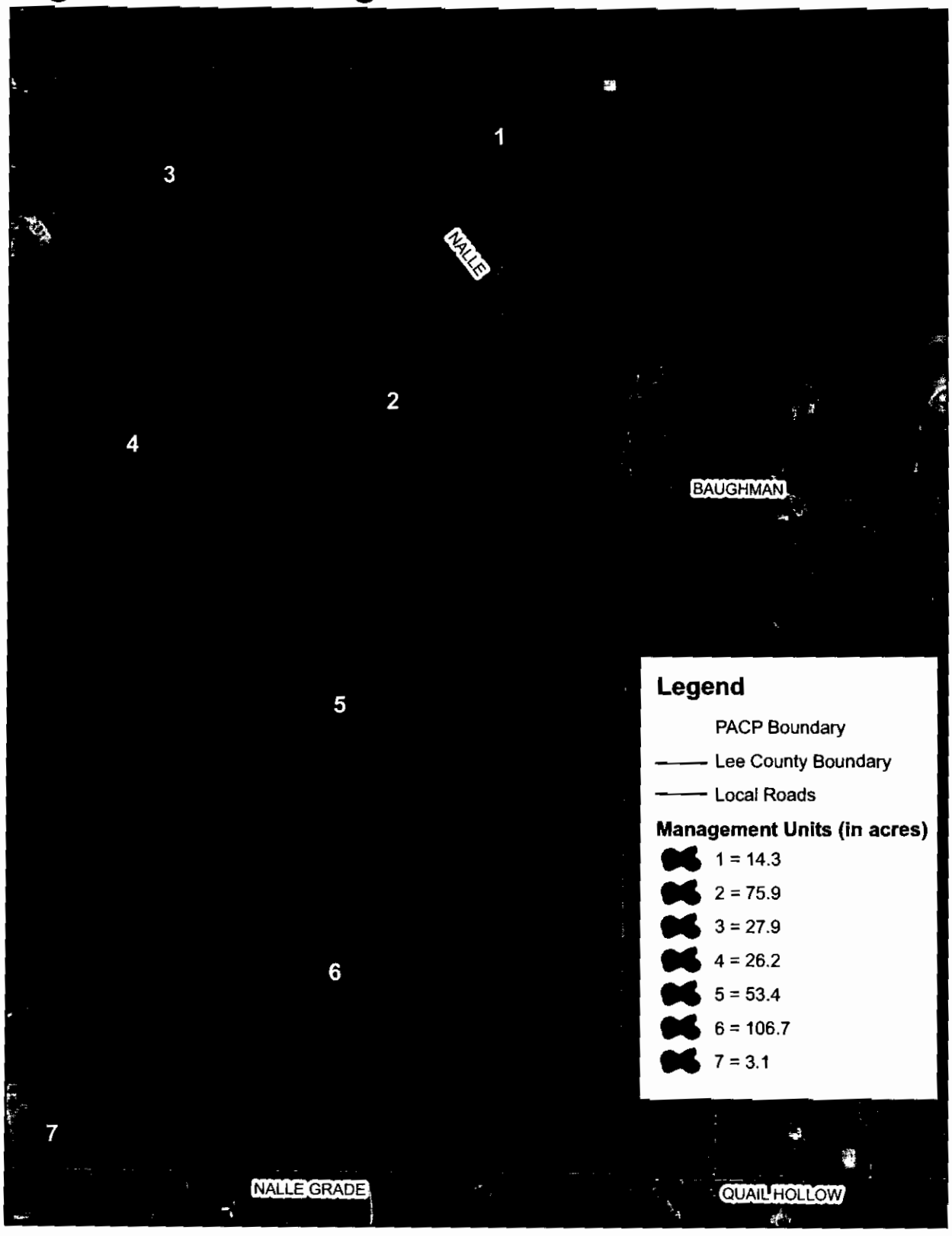
- Management Unit 4
  Management Unit 4 is 26.2 acres and is located in the northern portion of the Preserve. This unit is bordered by the private property and the drainage canal to the west, MU 5 to the south, MU 3 to the north and MU 2 to the east. This unit contains wet flatwoods (25 acres), a dense melaleuca monoculture (.5 acre), and portions of the western edge of the blackwater stream and drainage ditch. Stewardship activities will focus on exotic plant removal, prescribed fire and hydrological improvements.

- Management Unit 5
  Management Unit 5 is 53.4 acres and is located in the central portion of the Preserve. This unit is bordered by the MU 7 and drainage canal to the west, MUs 2 & 4 and a drainage ditch to the north, Nalle Road and private property to the east and MU 6 to the south. This unit contains wet flatwoods (50 acres), upland berm (2 acres) and the associated portions of the drainage canal and ditch. Stewardship activities will focus on exotic plant removal, thinning dense slash pines and prescribed fire.

- Management Unit 6
  Management Unit 6 is 106.7 acres and is located in the southern portion of the Preserve. This unit is bordered by MU 5 to the north, MU 7 and drainage canal to the west, Nalle Grade Road and private property to the south and Nalle Road to the east. This unit contains wet flatwoods (63 acres), borrow ponds (18 acres), mesic flatwoods (6 acres), ruderal (6 acres), melaleuca monoculture (3 acres), wet prairie (2 acres), Brazilian pepper/willow (2 acres), upland berm (2 acres), cogon grass (2 acres), Brazilian pepper - spoil piles (1 acre), hammock berm (1 acre) and portions of ditches. This unit is the most disturbed of all the management units containing several human-altered areas, introduced man-made soils, borrow pits, trash and several ditches and canal. Stewardship activities will focus on exotic plant removal, hydrological restoration, thinning dense slash pine trees, prescribed fire, debris removal and improving public access elements.

- Management Unit 7
  Management Unit 7 is 3.1 acres located in the southwestern corner of the Preserve. This unit is bordered by private property to the west, a portion of the drainage canal and MUs 5 & 6 to the east, MU 4 to the north and Nalle Grade Road to the south. This unit only contains impacted areas such as a portion of the drainage canal and its associated upland berm. Stewardship activities will focus on exotic plant removal and hydrological improvements.

Figure 17: Management Units



B. Goals and Strategies

While the following are our long-term goals for the Preserve, funding is currently not available to conduct all of these activities. Grants and/or monies budgeted for mitigation of any governmental infrastructure projects in Lee County will be used to supplement our operations budget to meet our goals in a timely manner.

Natural Resource Management

- ✓ Exotic plant control and maintenance
- ✓ Hydrologic restoration
- ✓ Prescribed fire management
- ✓ Tree thinning
- ✓ Monitor and protect listed species
- ✓ Exotic animal removal

Overall Protection

- ✓ Debris removal and prevention of dumping
- ✓ Boundary sign installation
- ✓ Change land use category to Conservation Lands
- ✓ Change zoning category to Environmentally Critical

Public Use

- ✓ Formal entrance area and trailhead
- ✓ Possible additional equestrian gate
- ✓ Added trail section

Volunteers

- ✓ Assist volunteer group

The following is a description of how each of these goals will be carried out, the success criteria used to measure accomplishment of each goal and a projected timetable outlining when and in which units each activity will take place.

Natural Resource Management

Exotic plant control and maintenance

The most current Florida Exotic Pest Plant Council's List of Invasive Species will be consulted in determining the invasive exotic plants to be controlled in each management unit. The goal is to remove/control these exotic species, followed with semi-annual or as needed treatments of resprouts and new seedlings. This goal will bring the entire Preserve to a maintenance level, defined as less than 5% invasive exotic plant coverage.

Prior to each invasive exotic plant control project at PACP, a Prescription Form (located in the LSOM) will be filled out by Land Stewardship staff, reviewed by the contractor(s) and filed appropriately. All contractors involved in these projects will be required to fill out the Daily Report Control Form (located in the LSOM) and filed appropriately by staff.

- Concentrated cogon grass and Guinea grass infestations:

  Because of the potential for these invasive grasses to take over large areas in a short amount of time, staff will be taking a proactive approach to controlling these species as soon as possible. The methodologies described are what are currently working at Caloosahatchee Regional Park. Land Stewardship staff may adjust this recommended treatment depending on results at PACP or new methods discovered by other land managers. The larger grass patches (both species) will be mowed monthly. Herbicide will be applied three (3) times a year, when the grass has grown approximately six (6) inches after a mowing. The timing of the spraying will be at the beginning of the wet season, at the beginning of winter when the grasses are sending their reserves down to the roots and once during the dry season after several days of cold weather. The scattered small clumps of Guinea grass will be dug up by hand, utilizing Department of Corrections (DOC) crews, day laborers, volunteers or Land Stewardship staff during workdays. Shading the Guinea grass with other plantings has also been effective for some land managers. After one year of herbicide treatments, staff will experiment with native plantings of thick shrubby vegetation in areas where there is less grass.

- Flatwoods primarily dominated by seedling melaleuca:

  PACP has 84.3 acres where the primary invasive plant species is seedling/sapling melaleuca (Figure 18). Land Stewardship staff would like to get these areas under maintenance control before they become mature seed-bearing plants in the most cost-effective and efficient way possible. If weather and site conditions permit, staff will conduct a prescribed burn in the winter of 2005/2006 or at the next possible opportunity in an area that only has young melaleuca. According to the Melaleuca Management Plan (FLEPPCb 1999), virtually all seedlings less than six (6) months old and over 90% of seedlings less than two (2) years old can be killed by fire. Other methods that will be experimented with will include:

    - Mowing, followed by burning after some regrowth of melaleuca.
    - Utilizing experimental loppers that automatically apply herbicide.

- Utilizing DOC crews, day laborers and/or contractors to apply foliar or cut stump methods.
- Land Stewardship staff workdays in the areas where the melaleuca is sparse.

If possible, each of these methods will be used in at least three replicate plots of at least 1 acre. Staff will keep simple records of the financial costs and staff time used to treat the areas. Monitoring for success will consist of establishing a photo point, or, if assistance from an FGCU student or intern a more quantifiable method will be established. Regardless of method, notes will be taken on the approximate success of melaleuca mortality as well as noting non-target damage to other plants. Other invasive exotic plants growing in these same areas will be treated at the same time using the most appropriate methods and herbicides.

- Other upland areas with light to moderate infestations:

  In areas where invasive plants are sporadic and below 50% of the vegetation cover, hand removal will be utilized for control. The specific methodology will depend on stem size, plant type and season, but generally the stem will be cut near the ground and the stump will be sprayed with appropriate herbicide, or a foliar application made to the entire plant (particularly with grasses and broadleaf plants). Hand pulling will be utilized when possible with appropriate species in order to minimize herbicide use. Some locations may receive basal bark treatment, for example small clusters of Brazilian pepper that are not adjacent to the trails. Cut stems may be piled to facilitate future burning, chipping or removal from site. No replanting will be needed due to significant presence of native vegetation and the native seed bank.

- Other upland areas with moderate to heavy infestations:

  In areas where the exotics occur as monotypic stands or are higher than 50% of the vegetation cover the use of heavy equipment will be utilized in appropriate habitats and during suitable season. Heavy equipment and timing will be chosen so that soil disturbance and compaction are minimized. Mulching equipment will be used in the majority of these areas. Follow-up treatment of these areas will consist of an application of an appropriate herbicide mixture to the foliage of any resprouts or seedlings. Staff will also experiment with the Wet Blade ™ system in certain areas that have thick melaleuca that is less than 2" in diameter. To remove the invasive exotics growing on the banks of Popash Creek and the various ditches, a feller buncher or similar equipment will be used on the melaleuca and hand crews will cut down the smaller invasive exotics. The vegetative debris will then be stacked and burned in the adjacent flatwoods. Finally, the exotic plants growing outside the fence line,

adjacent to Nalle Road, will need to be removed with a combination of hand crews and heavy equipment. Either a feller buncher or cherry picker will be used in combination with hand crews. The vegetative debris may either be mulched or cut up and hauled away or brought onto the Preserve for burning. Staff will analyze which option is most cost effective at the time of the work. It will be critical that care is taken to maintain the fence in good repair because of the cattle lease. Land Stewardship staff will work to coordinate where the cattle are grazing to minimize the possibility of any cattle being released when heavy equipment is being used. Figure 18 illustrates where the different heavy equipment areas are proposed. Land Stewardship staff will evaluate the need for replanting on a case-by-case basis.

- Wetlands with heavy infestations:

  At suitable locations, some lightweight equipment may be utilized during dry, winter periods or hand crews will need to hike in on foot and either foliar, girdle, or cut-stump treat the exotics with the appropriate herbicide. Follow-up treatments will need to be conducted on an annual basis. Where feasible or necessary, biomass may be removed from wetland sites to be piled & burned and/or mulched.

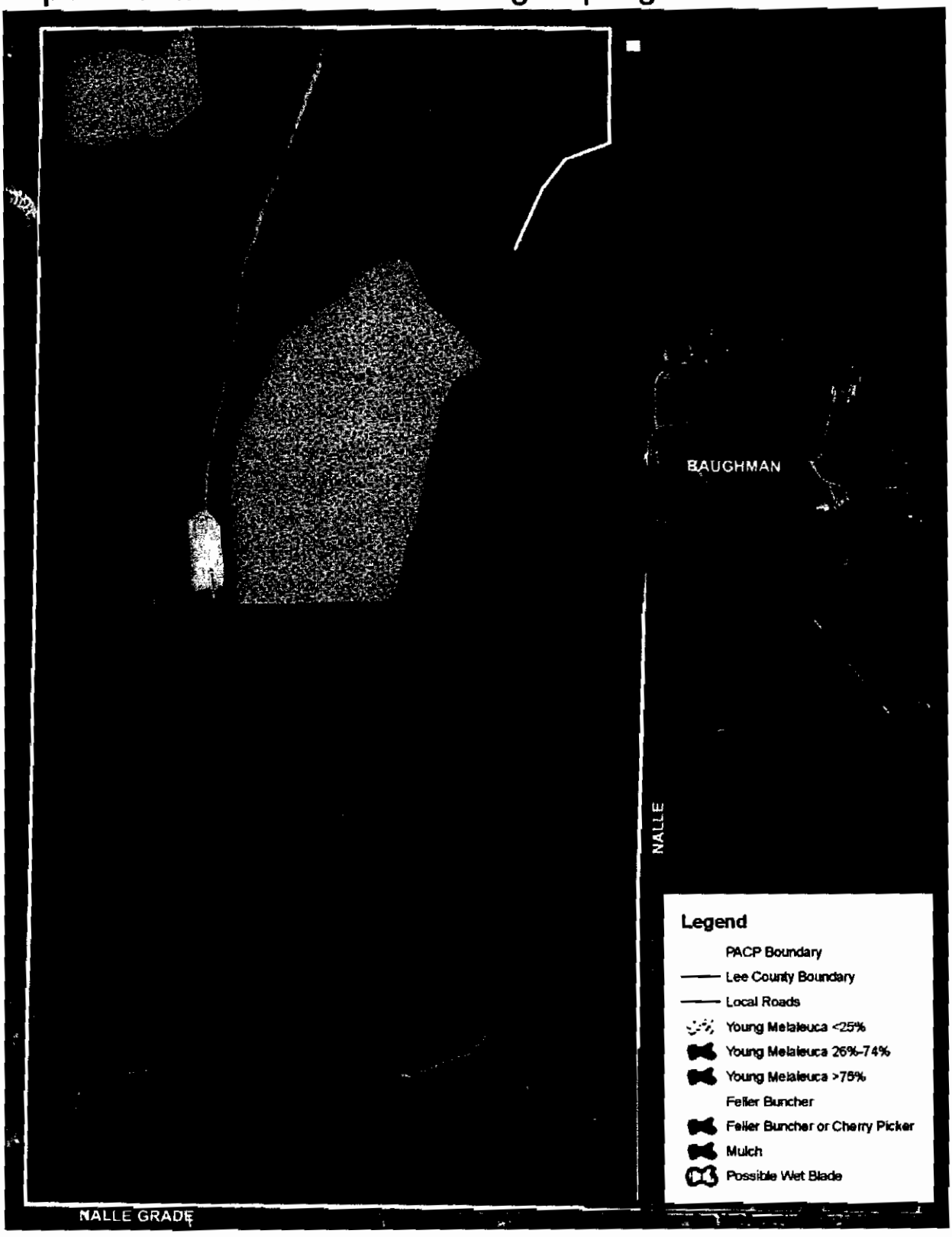
- Wetlands with light to moderate infestations:

  Hand crews will need to hike in on foot and either foliar, girdle, or cut-stump treat the exotics with the appropriate herbicide. Follow-up treatments will be conducted on an annual basis.

- Old World climbing fern:

  Small patches of this exotic fern have been observed in several areas throughout the Preserve, but most are concentrated along the larger ditches and Popash Creek. For this reason, Land Stewardship staff will ensure that during one of the quarterly site inspections they bring a canoe and herbicide and search for patches of this species, which will be treated with a foliar method. If staff observes a dramatic increase in the presence of this species, additional workdays will be scheduled. The remaining patches will be treated during the scheduled exotic treatments on the Preserve.

Figure 18: Proposed Heavy Equipment and Experimental Melaleuca Seedling/Sapling Areas



Hydrologic restoration

As previously mentioned, Lee County DNR has contracted a North Fort Myers Surface Water Master Plan to be conducted. Until this plan is completed, hydrologic restoration will not be conducted at PACP. Land Stewardship staff will be active with the development of this plan hoping to implement the following restoration projects into the entire plan:

- Creating gradual slopes, littoral zones and fish trap areas within the borrow ponds to increase foraging for wood storks and other wildlife.
- Plug, or completely fill in ditches "c" and "d" on the northwest side of the Preserve to slow down drainage to the adjacent wet flatwoods in the area (Figure 11).
- Level the berms associated with ditches "f" and "g" so that more sheetflow can travel through the Preserve instead of being directed into ditches and out through canals. Not only will this improve the natural sheetflow, but it will also allow for more natural percolation of some of the water into the ground as well as filter the water as it flows through the vegetation.

Staff will explore the possibility of restoring the southern portion of Popash Creek, which was eliminated around 1980, and will work to resolve the erosion that currently occurs from overflow of the existing creek on the extreme southwestern side.

Prescribed fire management

A prescribed fire program will be implemented to closely mimic the natural fire regimes for the different plant communities to increase plant diversity and insure the canopies remain open. Once restoration projects are completed in management units that contain fire dependent communities, a prescribed fire management program should be implemented after the creation of appropriate fire lines/breaks. The timing of prescribed burning will be influenced by seasonal rain and wind patterns. The Conservation 20/20 Burn Team Coordinator is coordinating with the DOF and FWC to develop a C20/20-wide Fire Management Plan that will apply to all Preserves.

Pine tree thinning

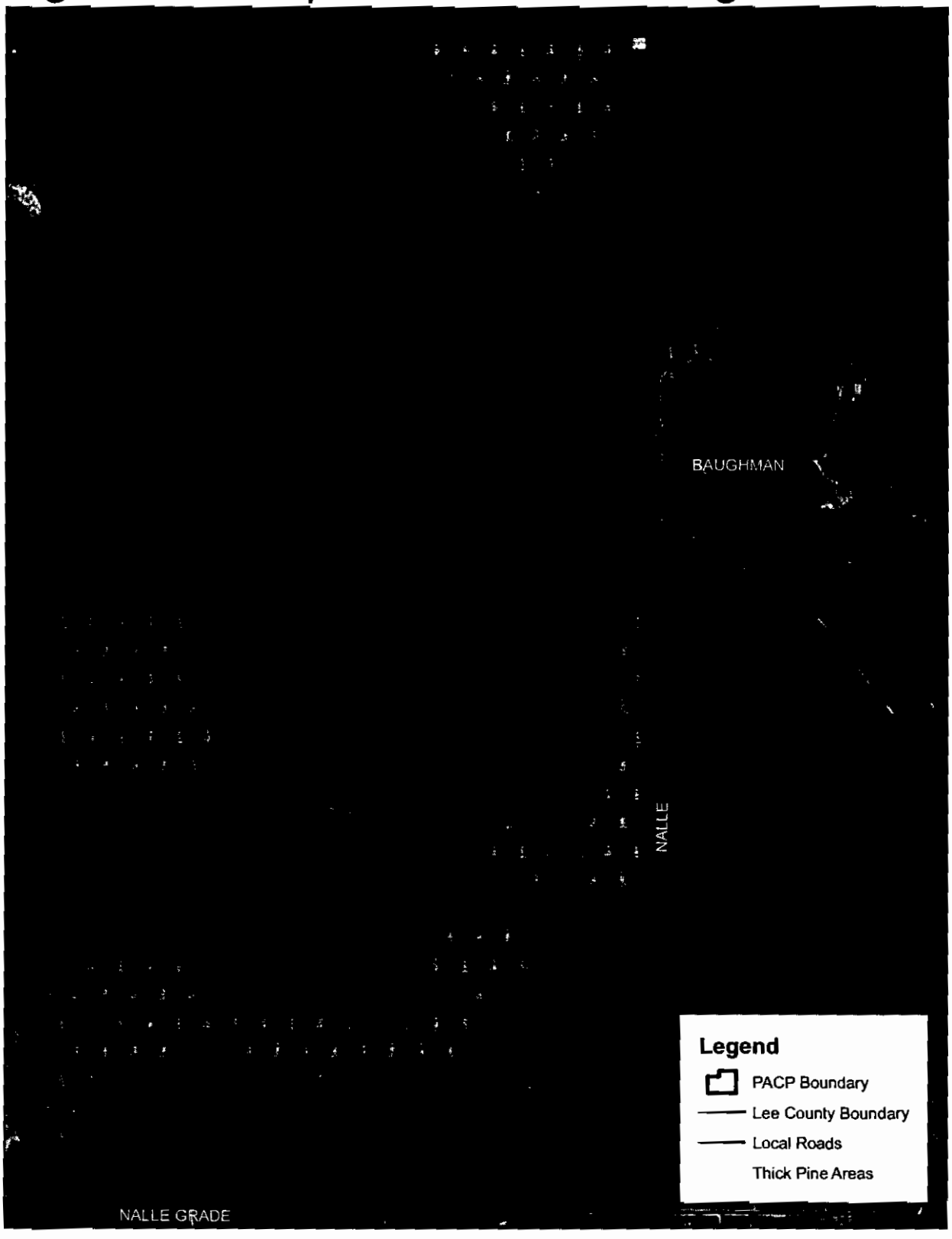
The following recommendations for some of the pine flatwoods areas at Pop Ash Creek Preserve were made utilizing the standards and recommendations by Butch Mallett, Senior Forester, Florida DOF for Estero Bay State Buffer Preserve in 2002.

Healthy flatwoods communities are characterized by open, uneven-aged pine stands that allow a considerable amount of sunlight to reach the forest floor. The sunlight allows for a ground cover of a mixture of grasses, herbaceous plants, scattered saw palmetto and dried pine needles that allow low intensity lightning started fires. Fire would burn through the dried grasses and needles to expose bare mineral soil. The bare ground, combined with light shading from the scattered pines was ideal for the germination of pine trees, wiregrass and many other flatwoods plants.

At PACP, there are five (5) areas, totaling 43.4 acres that contain pine trees, which, through lack of fire or other disturbances, currently have an even-aged dense stand with a closed canopy and very little germination of young pines (Figure 19). Land Stewardship staff measured the basal area (BA) of the pines in these areas and determined that they were over 100 square feet per acre (100+ BA). It is recommended that the pines be reduced to between 40-60 BA, which will allow for enough pine needles to carry a fire while providing increase sunlight for plant diversity on the forest floor.

Staff will seek assistance through DOF for tree selection, keeping in mind that the goal of the thinning is ecological and not economic based. Many, but not all of the weak and diseased trees will be removed, since snags can serve as valuable wildlife habitat. Additional thinning will take place in clusters, to create openings for new pines and other plants to germinate. Staff will explore the possibility of selling the pines to a contractor to be used for fence posts and/or mulch. Proceeds from any timber sales will be placed in the C20/20 management budget.

Figure 19: Proposed Pine Thinning Areas



N
W E
S

Pop Ash Creek Preserve

0 225 450 900 1,350 1,800 Feet

S:\esri\C2020 ArcView\Pop Ash Creek Preserve\ management plan\Pine_Thinning.mxd

Map Prepared On. 10/03/05 by lwewerka@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes

Monitor and protect listed species

As discussed in the Designated Species section, there are several listed species that have been documented utilizing the Preserve. For the most part, these species will benefit from restoration activities, such as hydrologic improvements and the removal of invasive exotic plants. During restoration activities, efforts will be made to minimize any negative impact to listed species.

PACP is part of a countywide quarterly site inspection program conducted for all Conservation 20/20 Preserves. A copy of the site inspection form is available in the Land Stewardship Operations Manual. These inspections allow staff to monitor for any impacts and/or changes to each preserve and includes lists of all animal sightings and new plant species that are found. If, during these inspections, staff finds FNAI listed species, they will be reported using the appropriate forms.

Exotic animal removal

The exotic species Land Stewardship staff is primarily concerned with is feral hogs. Currently, the only acceptable method of hog removal on Conservation 20/20 Preserves is trapping. A hog-trapping program will be implemented for the Preserve. Removing all hogs is an unreasonable goal; therefore a removal program will need to be continuous on a long-term basis.

Staff will investigate the feasibility of controlling other exotic species listed in Table 3. If practical, a methodology will be established and implemented.

Overall Protection

Debris removal and prevent dumping

Debris removal will be an ongoing project at PACP. During quarterly site inspections, small objects that are encountered will be removed. Conservation 20/20 Rangers will also assist with removing small items when they are on patrol at the Preserve. There is existing debris (see Internal Influences section) present in Management Units 1, 6 and 7 that will need to be removed with the help of several staff members. If necessary, additional debris clean-ups will be organized with the Parks and Recreation Land Stewardship staff, C20/20 Rangers and volunteers.

Land Stewardship staff recognizes that new debris may be dumped in the Preserve periodically and depending on the nature of this debris it will be dealt with accordingly.

Boundary sign installation

Boundary signs will be installed to further protect the Preserve. Missing or damaged signs will be replaced. C20/20 Rangers will check for boundary signs during the patrols and replace them immediately if possible or report the problem to the C20/20 Supervisor. Boundary signs will be placed every 200-300' along roadsides and 500' elsewhere.

Change land use and zoning categories

PACP is scheduled to have the land use category changed from DRGR to Conservation Lands during a regularly scheduled amendment change. Staff will coordinate with Lee County Division of Planning representatives to discuss the zoning of PACP. Ideally, the zoning will be changed to "Environmentally Critical" from "Mobile Home 2" and "Commercial". At this time, PACP is not as high a priority for zoning changes as other C20/20 Preserves.

Public Use

Future amenities

A sign with contact information for equestrian access will be posted within one (1) month of BOCC approving this Stewardship Plan. Other amenities discussed in the recreation section of this plan, including small trailhead area, trailhead signage, additional equestrian access and trail connector will be coordinated with additional funding and exotic plant removal efforts.

Volunteers

Assist volunteer group

The LSOM identifies the Land Stewardship Volunteer Program's mission statement as:

> *To aid in the management and preservation of Lee County resource-based public parks and preserves and to provide volunteers with rewarding experiences in nature.*

If there is interest from the community to form a volunteer group, staff will work with them to assist with the many diverse stewardship activities that will be associated with this Preserve, such as trail maintenance, wildlife monitoring, and other land stewardship projects.

The following "Prioritized Projected Timetable for Implementation" is based on obtaining necessary funding for numerous land stewardship projects. Implementation of these goals may be delayed due to changes in staff, extreme

weather conditions or a change in priorities on properties managed by Lee County.

VII. PROJECTED TIMETABLE FOR IMPLEMENTATION

Prioritized Projected Timetable for Implementation of the Management Action Plan (December 2005 – September 2010)

Natural Resource Management																				
Exotic Plants																				
Initial Exotic Plant Control									2	2	3		4	5	1		6	7		
Hydrology																				
Hydrologic Restoration – ponds																	X			
Hydrologic Restoration – other Ditches & Berms																	X	X		
Fire																				
Prescribed Fire Management Plan	X																			
Create additional fire breaks																		X		
Brush Reduction – pine tree thinning																		X		
Implementation of Rx Plan																			X	
Maintenance (On-going/Annual)																				
Follow Up exotic plant treatment													2	3			4, 2	5, 3	1	
Exotic animal removal																X				X
Trail system - mow	X		X		X		X		X		X		X		X		X		X	
Fire breaks - mow/disk	X				X				X				X				X			
Photo point monitoring surveys								X				X				X				X
Overall Protection																				
Debris removal – General	On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Boundary sign installation		X																		
Change zoning and land use categories															X					

Public Use																				
Create trailhead area																		X		
Add trail section & sign																		X		
Create trail map & add mailbox																	X	→		
Possible additional equestrian gate (will require a culvert)																		X		
Volunteers																				
Assist volunteer group														X						

Numbers correspond to Management Units and details on each management activity are found in the Management Action Plan.

Timetable based on obtaining necessary funding for numerous land stewardship projects. Implementation of these goals may be delayed due to changes in staff, extreme weather conditions or a change in priorities on properties managed by Lee County.

VIII. FINANCIAL CONSIDERATIONS

There is a management fund established in perpetuity for all Conservation 20/20 preserves. Monies from this fund will be available for all aspects of restoration projects and management in perpetuity. However, monies will be supplemented through grants from agencies such as SFWMD, FDEP and USFWS as well as pursuing mitigation opportunities from Lee County and other public entities. Projected costs and funding sources are listed in Appendix H.

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X. APPENDICES

Appendix A: 2004 Tropical Systems Map

Appendix B: Plant Sightings

Appendix C: Wildlife Sightings

Appendix D: 2005 Cattle Lease Renewal Letter & Original Contract

Appendix E: Recorded Easements Map

Appendix F: Permanent Access Easement Grant

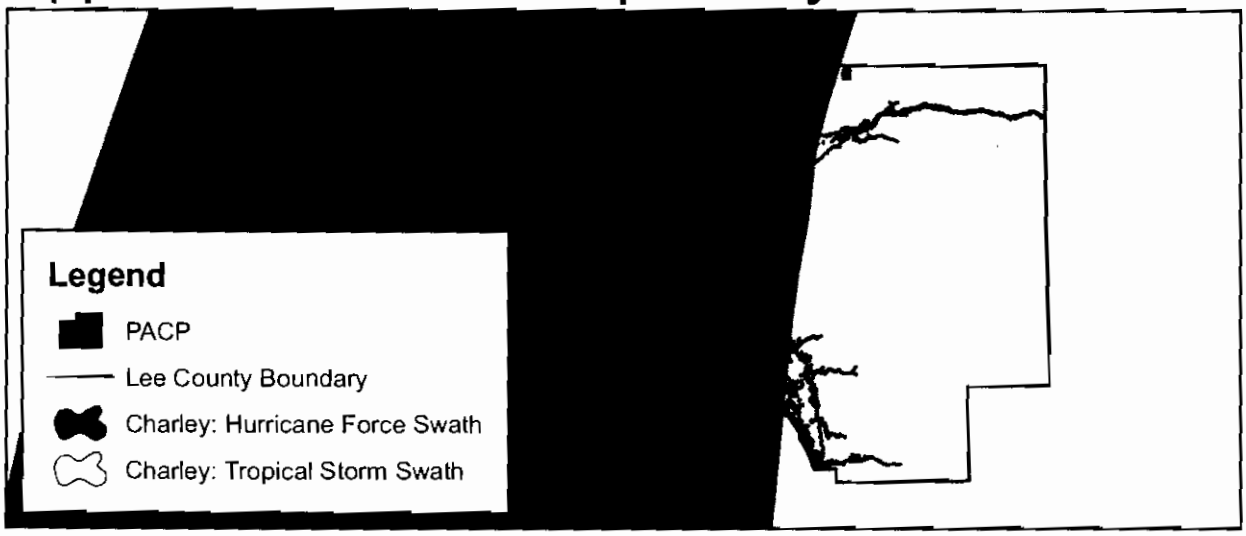
Appendix G: Equestrian Access Agreement Letter

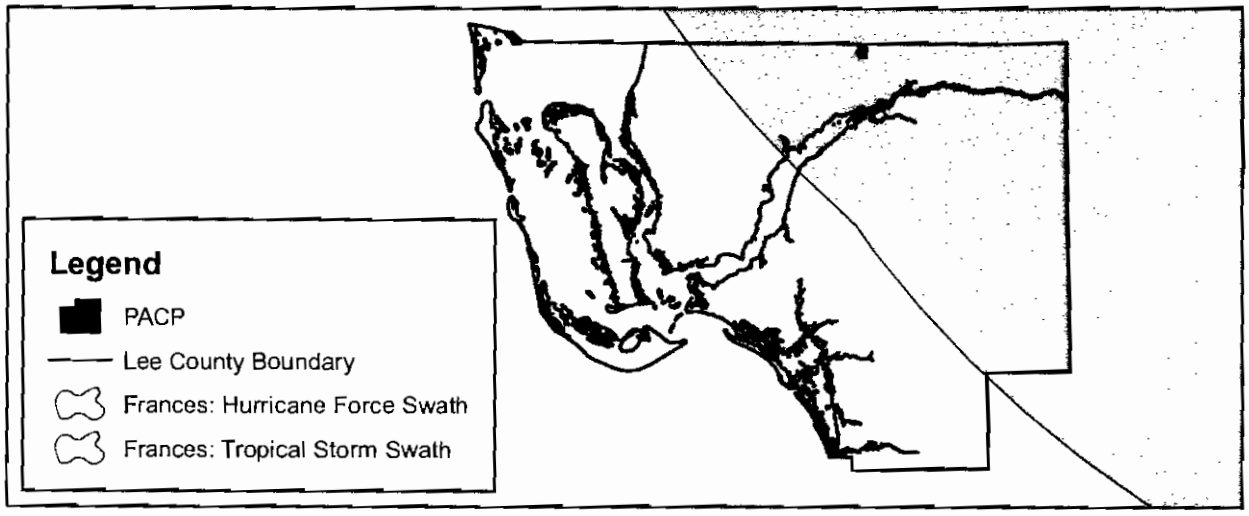
Appendix H: Projected Costs and Funding Sources

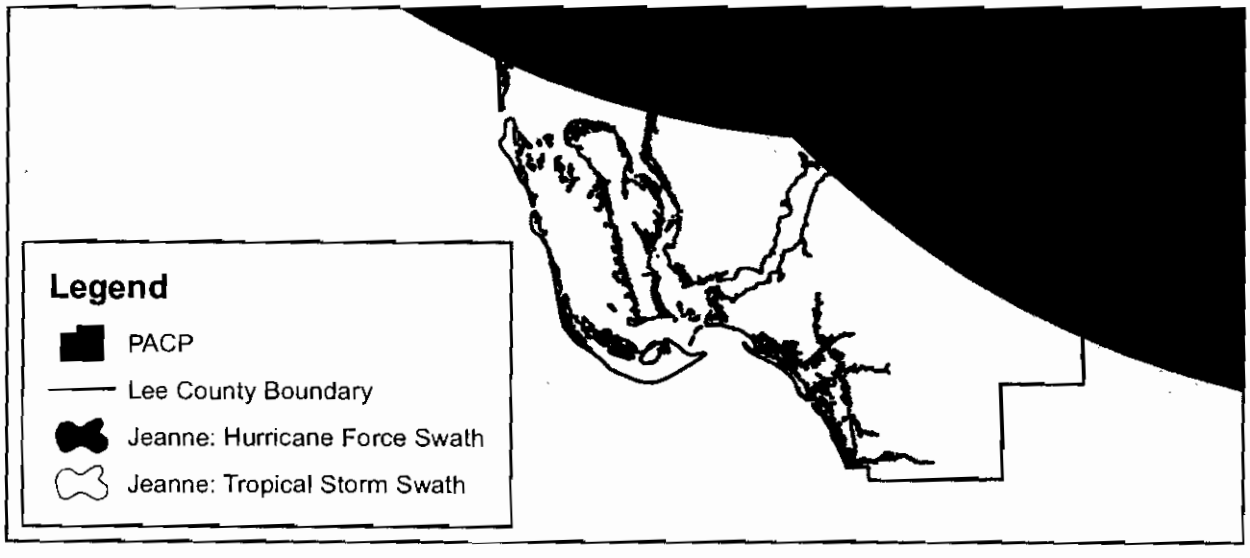
Appendix I: Report of an evaluation of two ponds at the Pop Ash Creek Preserve

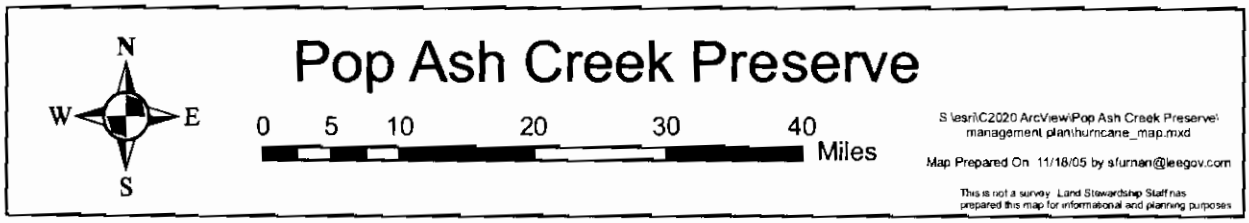
Appendix A: 2004 Tropical Systems Map

Appendix A: 2004 Tropical Systems









Appendix B: Plant Sightings

Appendix B: Plant Sightings at Pop Ash Creek Preserve

Common and scientific names for this list were obtained from Wunderlin & Hansen, 2003

Scientific Name	Common Name	Native/Exotic	EPPC
Family: Blechnaceae (min-sorus fern)			
Blechnum serrulatum	swamp fern	native	
Family: Nephrolepidaceae (sword fern)			
Nephrolepis exaltata	wild Boston fern	native	
Family: Polypodiaceae (polypod)			
Phlebodium aureum	golden polypody	native	
Family: Pteridaceae (brake fern)			
Pteris vittata	Chinese ladder brake fern	exotic	
Family: Schizaeaceae (curly-grass)			
Lygodium microphyllum	Old World climbing fern	exotic	I
Family: Pinaceae (pine)			
Pinus elliottii	south Florida slash pine	native	
Family: Agavaceae (agave)			
Yucca aloifolia	Spanish bayonet	native	
Family: Alismataceae (water plantain)			
Sagittaria graminea	grassy arrowhead	native	
Sagittaria lancifolia	bulltongue arrowhead	native	
Family: Amaryllidaceae (amaryllis)			
Crinum americanum	string-lily	native	
Family: Arecaceae (palm)			
Sabal palmetto	cabbage palm	native	
Serenoa repens	saw palmetto	native	
Family: Bromeliaceae (pineapple)			
Tillandsia paucifolia	potbelly airplant	native	
Tillandsia recurvata	ballmoss	native	
Tillandsia usneoides	Spanish moss	native	
Tillandsia utriculata	giant airplant	native	
Family: Cyperaceae (sedge)			
Cladium jamaicense	Jamaica swamp sawgrass	native	
Cyperus sp.	flatsedge	depends on species	
Eleocharis interstincta	knotted spikerush	native	
Fimbristylis sp.	fimbry	depends on species	
Rhynchospora colorata	starrush whitetop	native	
Rhynchospora latifolia	giant whitetop	native	
Rhynchospora microcarpa	southern beakrush	native	
Rhynchospora tracyi	Tracy's beaksedge	native	
Scleria sp.	nutrush	native	
Family: Eriocaulaceae (pipewort)			
Eriocaulon compressum	flattened pipewort	native	
Eriocaulon decangulare	tenangle pipewort	native	
Lachnocaulon anceps	whitehead bogbutton	native	
Family: Haemodoraceae (bloodwort)			
Lachnanthes caroliana	Carolina redroot	native	
Family: Hypoxidaceae (yellow stargrass)			
Hypoxis juncea	fringed yellow stargrass	native	
Family: Liliaceae (lily)			
Lilium catesbaei	Catesby's lily	native	

Appendix B: Plant Sightings at Pop Ash Creek Preserve (continued)

Scientific Name	Common Name	Native/Exotic	EPPC
Family: Marantaceae (arrowroot)			
Thalia geniculata	alligatorflag	native	
Family: Nartheciaceae (bog asphodel)			
Aletris lutea	yellow colicroot	native	
Family: Orchidaceae (orchid)			
Eulophia alta	wild coco	native	
Habenaria floribunda	toothpedal false reinorchid	native	
Habenaria quinqueseta	longhorn false reinorchid	native	
Family: Poaceae (grass)			
Amphicarpum muhlenbergianum	blue maidencane	native	
Andropogon viginicus	broomsedge bluestem	native	
Andropogon virginicus var. *glaucus*	chalky bluestem	native	
Aristida spiciformis	bottlebrush threeawn	native	
Eustachys petraea	pinewoods fingergrass	native	
Imperata cylindrica	cogon grass	exotic	I
Panicum hemitomon	maidencane	native	
Panicum maximum	Guinea grass	exotic	II
Panicum repens	torpedo grass	exotic	I
Rhynchelytrum repens	rose natalgrass	exotic	I
Family: Pontederiaceae (pickerelweed)			
Pontederia cordata	pickerelweed	native	
Family: Ruscaceae (butcher's broom)			
Sansevieria hyacinthoides	bowstring hemp	exotic	II
Family: Smilacaceae (smilax)			
Smilaax auriculata	earleaf greenbrier	native	
Family: Typhaceae (cattail)			
Typha latifolia	broadleaf cattail	native	
Family: Xyridaceae (yelloweyed grass)			
Xyris sp.	yelloweyed grass	depends on species	
Family: Amaranthaceae (amaranth)			
Alternanthera philoxeroides	alligatorweed	native	
Family: Anacardiaceae (cashew)			
Rhus copallinum	winged sumac	native	
Schinus terebinthifolius	Brazilian pepper	exotic	I
Family: Annonaceae (custard-apple)			
Asimina reticulata	netted pawpaw	native	
Family: Apiaceae (carrot)			
Eryngium yuccifolium	button rattlesnakemaster	native	
Oxypolis filiformis subsp. *Filiformis*	water cowbane	native	
Family: Apocynaceae (dogbane)			
Catharanthus roseus	Madagascar periwinkle	exotic	
Family: Aquifoliaceae (holly)			
Ilex glabra	gallberry	native	
Family: Araliaceae (ginseng)			
Hydrocotyle verticillata	whorled marshpennywort	native	

Appendix B: Plant Sightings at Pop Ash Creek Preserve (continued)

Scientific Name	Common Name	Native/Exotic	EPPC
Family: Asteraceae (aster)			
Ambrosia artemisiifolia	common ragweed	native	
Baccharis halimifolia	groundsel tree	native	
Bidens alba	beggerticks	native	
Chaptalia tomentosa	pineland daisy	native	
Cirsium horridulum	purple thistle	native	
Cirsium nuttallii	Nuttall's thistle	native	
Conyza canadensis	Canadian horseweed	native	
Coreopsis leavenworthii	Leavenworth's tickseed	native	
Elephantopus elatus	tall elephantsfoot	native	
Emilia fosbergii	Florida tasselflower	exotic	
Erigeron quercifolius	oakleaf fleabane	native	
Eupatorium capillifolium	dogfennel	native	
Eupatorium leptophyllum	falsefennel	native	
Eupatorium mikanioides	semaphore thoroughwort	native	
Euthamia caroliniana	slender flattop goldenrod	native	
Flaveria floridana	Florida yellowtops	native	
Liatris sp.	gayfeather	native	
Mikania scandens	climbing hempvine	native	
Pityopsis ssp.	silkgrass	native	
Pluchea odorata	sweetscent	native	
Pluchea rosea	rosy camphorweed	native	
Solidago fistulosa	pinebarren goldenrod	native	
Solidago stricta	wand goldenrod	native	
Sphagneticola trilobata	creeping oxeye	exotic	II
Vernonia angustifolia	tall ironweed	native	
Vernonia blodgettii	Florida ironweed	native	
Family: Bignoniaceae (trumpet creeper)			
Campsis radicans	trumpet creeper	native	
Family: Casuarinaceae (sheoak)			
Casuarina equisetifolia	Australian pine	exotic	I
Family: Chrysobalanaceae (coco plum)			
Licania michauxii	gopher apple	native	
Family: Clusiaceae (mangosteen)			
Hypericum brachyphyllum	coastalplain St. John's-wort	native	
Hypericum cistifolium	roundpod St. John's-wort	native	
Hypericum reductum	Atlantic St. John's-wort	native	
Hypericum tetrapetalum	fourpedal St. John's-wort	native	
Family: Combretaceae (combretum)			
Terminalia catappa	West Indian almond	exotic	II
Family: Droseraceae (sundew)			
Drosera ssp.	sundew	native	
Family: Ebenaceae (ebony)			
Diospyros virginiana	common persimmon	native	
Family: Ericaceae (heath)			
Lyonia lucida	fetterbush	native	
Vaccinium myrsinites	shiny blueberry	native	

Appendix B: Plant Sightings at Pop Ash Creek Preserve (continued)

Scientific Name	Common Name	Native/Exotic	EPPC
Family: Euphorbiaceae (spurge)			
Stillingia aquatica	corkwood	native	
Family: Fabaceae (pea)			
Acacia auriculiformis	earleaf acacia	exotic	I
Albizia lebbeck	woman's tongue	exotic	I
Chamaecrista fasciculata	partridge pea	native	
Family: Fagaceae (beech)			
Quercus laurifolia	laurel oak	native	
Quercus virginiana	live oak	native	
Family: Gentianaceae (gentian)			
Sabatia stellaris	rose-of-plymouth	native	
Family: Haloragaceae (watermilfoil)			
Proserpinaca palustris	marsh mermaidweed	native	
Proserpinaca pectinata	combleaf mermaidweed	native	
Family: Lamiaceae (mint)			
Hyptis alata	musky mint	native	
Physostegia purpurea	eastern false dragonhead	native	
Piloblephis rigida	wild pennyroyal	native	
Family: Lauraceae (laurel)			
Cassytha filiformis	love vine	native	
Family: Lentibulariaceae (bladderwort)			
Utricularia cornuta	horned bladderwort	native	
Utricularia foliosa	leafy bladderwort	native	
Family: Linaceae (flax)			
Linum sp.	flax	depends on species	
Family: Lythraceae (loosestrife)			
Lythrum alatum	winged loosestrife	native	
Family: Malvaceae (mallow)			
Melochia corchorifolia	chocolateweed	exotic	
Urena lobata	Caesar's weed	exotic	II
Family: Melastomataceae (melastome)			
Rhexia cubensis	West Indian meadowbeauty	native	
Rhexia nuttallii	Nuttall's meadowbeauty	native	
Family: Myricaceae (bayberry)			
Myrica cerifera	wax myrtle	native	
Family: Myrsinaceae (myrsine)			
Rapanea punctata	myrsine	native	
Family: Myrtaceae (myrtle)			
Eugenia uniflora	Surinam cherry	exotic	I
Eucalyptus sp.	eucalyptus	exotic	
Eucalyptus torelliana	Torrell's eucalyptus	exotic	
Melaleuca quinquenervia	punktree	exotic	I
Syzygium cumini	Java plum	exotic	I
Family: Nymphaeaceae (waterlily)			
Nuphar advena	spatterdock	native	
Family: Oleaceae (olive)			
Fraxinus caroliniana	pop ash	native	

Appendix B: Plant Sightings at Pop Ash Creek Preserve (continued)

Scientific Name	Common Name	Native/Exotic	EPPC
Family: Onagraceae (eveningprimrose)			
Gaura angustifolia	southern beeblossom	native	
Ludwigia maritima	seaside primrosewillow	native	
Ludwigia octovalvis	Mexican primrosewillow	native	
Ludwigia peruviana	Peruvian primrosewillow	exotic	
Ludwigia repens	creeping primrosewillow	native	
Family: Orobanchaceae (broomrape)			
Buchnera americana	American bluehearts	native	
Family: Passifloraceae (passionflower)			
Passiflora suberosa	corkystem passionflower	native	
Family: Polygalaceae (milkwort)			
Polygala grandiflora	showy milkwort	native	
Family: Polygonaceae (buckwheat)			
Polygonum hydropiperoides	swamp smartweed	native	
Rumex verticillatus	swamp dock	native	
Family: Rubiaceae (madder)			
Diodia virginiana	Virginia buttonweed	native	
Ixora coccinea	scarlet jungleflame	exotic	
Richardia brasiliensis	tropical Mexican clover	exotic	
Family: Salicaceae (willow)			
Salix caroliniana	Carolina willow	native	
Family: Sapindaceae (soapberry)			
Cupaniopsis anacardioides	carrotwood	exotic	I
Family: Simaroubaceae (quassia)			
Leitneria floridana	corkwood	native	
Family: Urticaceae (nettle)			
Boehmeria cylindrica	false nettle	native	
Family: Verbenaceae (vervain)			
Callicarpa americana	American beautyberry	native	
Phyla nodiflora	capeweed	native	
Family: Veronicaceae (speedwell)			
Scoparia dulcis	sweetbroom	native	
Family: Violaceae (violet)			
Viola lanceolata	bog white violet	native	
Family: Vitaceae (grape)			
Parthenocissus quinquefolia	Virginia creeper	native	
Vitis aestivalis	summer grape	native	
Vitis rotundifolia	muscadine	native	

Appendix C: Wildlife Sightings

Appendix C: Wildlife Sightings at Pop Ash Creek Preserve

Scientific Name	Common Name	Designated Status	
		FWC	FWS
Fishes			
Family: Cyprinodontidae			
Jordanella floridae	American flagfish		
Family: Poecilidae (livebearers)			
Gambusia affinis	western mosquitofish		
Family: Fundulidae (topminnows and killifish)			
Lucania goodei	bluefin killifish		
Fundulus chrysotus	golden topminnow		
Fundulus seminolis	Seminole killifish		
Family: Cichlidae (cichlids)			
Hemichromis letourneauxi	Letourneaux's jewel cichlid *		
Family: Lepisosteidae (gar fish)			
Lepisosteus platyrhincus	Florida gar		
Amphibians			
Family: Leptodactylidae (tropical frogs)			
Eleutherodactylus planirostris planirostris	greenhouse frog *		
Family: Bufonidae (toads)			
Bufo terrestris	southern toad		
Bufo quercicus	oak toad		
Family: Hylidae (treefrogs)			
Hyla cinerea	green treefrog		
Hyla squirella	squirrel treefrog		
Osteopilus septentrionalis	Cuban treefrog *		
Family: Microhylidae (narrowmouth toads)			
Gastrophryne carolinensis	eastern narrowmouth toad		
Family: Ranidae (true frogs)			
Rana grylio	pig frog		
Rana utricularia	southern leopard frog		
Reptiles			
Family: Alligatoridae (alligator and caimans)			
Alligator mississippiensis	American alligator	SSC	T S/A
Family: Emydidae (box and water turtles)			
Pseudemys floridana peninsularis	peninsula cooter		
Family: Trionychidae (softshell turtles)			
Apalone ferox	Florida softshell		
Family: Polychrotidae (anoles)			
Anolis carolinensis	green anole		
Anolis sagrei	brown anole *		
Family: Teiidae (whiptails)			
Cnemidophorus sexlineatus sexlineatus	six-lined racerunner		
Family: Colubridae (colubrids)			
Coluber constrictor priapus	southern black racer		
Nerodia fasciata pictiventris	Florida water snake		
Birds			
Family: Phalacrocoracidae (cormorants)			
Phalacrocorax auritus	double-crested cormorant		
Family: Anhingidae (anhingas or darters)			
Anhinga anhinga	anhinga		

Appendix C: Wildlife Sightings at Pop Ash Creek Preserve (continued)

Scientific Name	Common Name	Designated Status	
		FWC	FWS
Birds (continued)			
Family: Ardeidae (herons, egerts, bitterns)			
Ardea herodius	great blue heron		
Egretta caerulea	little blue heron	SSC	
Butorides virescens	green heron		
Egretta tricolor	tricolored heron	SSC	
Ardea alba	great egret		
Egretta thula	snowy egret	SSC	
Family: Threskiornithidae (ibises and spoonbills)			
Eudocimus albus	white ibis	SSC	
Family: Ciconiidae (storks)			
Mycteria americana	wood stork	E	E
Family: Cathartidae (new world vultures)			
Cathartes aura	turkey vulture		
Coragyps atratus	black vulture		
Family: Accipitridae			
Subfamily: Buteoninae			
Buteo lineatus	red-shouldered hawk		
Haliaeetus leucocephalus	bald eagle	T	T
Family: Pandionidae (ospreys)			
Pandion haliaetus	osprey		
Family: Charadriidae (plovers)			
Charadrius vociferus	killdeer		
Family: Columbidae (pigeons and doves)			
Zenaida macroura	mourning dove		
Columbina passerina	common ground-dove		
Family: Strigidae (true owls)			
Strix varia	barred owl		
Family: Alcedinidae (kingfishers)			
Ceryle alcyon	belted kingfisher		
Family: Picidae (woodpeckers)			
Dryocopus pileatus	pileated woodpecker		
Melanerpes carolinus	red-bellied woodpecker		
Sphyrapicus varius	yellow-bellied sapsucker		
Picoides pubescens	downy woodpecker		
Family: Tyrannidae (tyrant flycatcher)			
Myiarchus crinitus	great-crested flycatcher		
Family: Hirundinidae (swallows)			
Tachycineta bicolor	tree swallow		
Family: Troglodytidae (wrens)			
Thryothorus ludovicianus	Carolina wren		
Family: Sylviidae			
Subfamily: Polioptilinae (gnatcatchers)			
Poloiptila caerulea	blue-gray gnatcatcher		
Family: Turdidae (thrushes)			
Turdus migratorius	American robin		

Appendix C: Wildlife Sightings at Pop Ash Creek Preserve (continued)

Scientific Name	Common Name	Designated Status	
		FWC	FWS
Birds (continued)			
Family: Mimidae (mockingbirds and thrashers)			
Dumetella carolinensis	gray catbird		
Mimus polyglottos	northern mockingbird		
Family: Corvidae (crows, jays, etc.)			
Cyanocitta cristata	blue jay		
Corvus brachyrhyncos	American crow		
Family: Parulidae (wood-warblers)			
Dendroica coronata	yellow-rumped warbler		
Geothlypis trichas	common yellowthroat		
Families: Fringillidae, Emberizidae, Cardinalidae (grosbeaks, finches, sparrows, buntings)			
Cardinalis cardinalis	northern cardinal		
Pipilo erythrophthalmus	eastern towhee		
Family: Icteridae (blackbirds, orioles, etc.)			
Quiscalus major	boat-tailed grackle		
Quiscalus quiscula	common grackle		
Agelaius phoeniceus	red-winged blackbird		
Mammals			
Family: Dasypodidae (armadillos)			
Dasypus novemcinctus	nine-banded armadillo		
Family: Procyonidae (raccoons)			
Procyon lotor	northern raccoon		
Family: Suidae (pigs)			
Sus scrofa	feral pig *		
Family: Sciuridae (squirrels)			
Sciurus carolinensis	eastern gray squirrel		
Insects and Spiders			
Family: Araneidae (orb weavers)			
Nephila clavipes	golden-silk spider		
Family: Curculionidae (weevils)			
Oxyops vitiosa	melaleuca weevil *		
Family: Psyllidae (psyllids)			
Boreioglycaspis melaleucae	melaleuca psyllid *		
Crustaceans			
Family: Cambaridae (crayfish)			
Cambaridae camburus	crayfish		

KEY:

FWC= Florida Fish & Wildlife Conservation Commission
FWS= U.S. Fish & Wildlife Service

E= Endangered
T= Threatened
SSC= Species of Special Concern

*** = Non-native**

Appendix D: 2005 Cattle Lease Renewal Letter & Original Contract

LEE COUNTY
PARKS AND RECREATION
WWW.LEEPARKS.ORG

August 25 2005

PRI-CAR
PO Box 3648
North Fort Myers, Fl. 33918

RE: Cattle Lease Renewal
Account Site #: 206
Located at:: Popash Creek

Dear Scott Carter,

According to our records, your one year license for Cattle Grazing with Lee County Parks and Recreation, is up for renewal. If you plan on renewing your License, please remit $160.00 by September 15, 2005. If you decline, please call me at (239) 461-7456.

Please make check payable to B.O.C.C (Board of County Commissioners) and send to: Jim Green
Lee County Parks and Recreation
3410 Palm Beach Blvd.
Ft. Myers, Fl. 33916

Thank you for your prompt response. If you have any question or concerns, please call me at (239) 461-7456. Or you can e-mail me at greenjh@leegov.com.

Sincerely,

Jim Green

Jim Green
Contracts Coordinator
Parks and Recreation

Date/Site/Lic. Holder/amount

LICENSE FOR CATTLE GRAZING

This Agreement made this 15th day of August, 2003, by and between LEE COUNTY, a political subdivision of the State of Florida, c/o John Yarbrough, Director of Parks and Recreation , 3410 Palm Beach Blvd. Fort Myers, Florida 33916, Telephone 239-461-7400, hereinafter called the Licensor, and PRI-CAR, a Florida General Partnership, whose address is P.O. Box 3648, North Fort Myers FL 33918, Telephone 239-453-4004, hereinafter called the Licensee:

WITNESSETH:

Licensor, in consideration of the fees paid, the covenants and agreements herein to be kept and performed by the Licensee, does hereby grant to the Licensee a license solely for the grazing of cattle on licensor's lands as described as follows, to wit:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

In further consideration of this Agreement, the parties agree as follows:

1. Licensee agrees to pay Licensor the total sum of (One Hundred Sixty) Dollars ($160.00) per year for the term of this license to use the described property solely for cattle grazing.
2. This License is not assignable to any other party.
3. This License shall extend for an initial term of one (1) year, which at the expiration of such term may be renewable upon the concurrence of both parties, and/or may be revocable by the Licensor by giving the Licensee thirty (30) days written notice to remove the cattle from the premises.
4. Licensee will not use the described lands for any other purpose other than cattle grazing.

5. Licensee will maintain the existing five (5)-strand barbed wire fence around the perimeter of the property during the term of this license. The fence shall remain the property of the Licensor.

6. Licensee agrees to keep the fence in an excellent state of repair at all times during the term of this Agreement.

7. It is mutually agreed that this Agreement may be canceled upon forty-eight (48) hours verbal notice to the Licensee if any of licensee's cattle are not kept within the confines of the property described in Exhibit "A".

8. Licensee covenants and agrees to file an annual personal property tax return with the County of Lee, State of Florida, as required by law.

9. All section corners, quarter corners, and other survey monuments lying in the premises will be properly flagged by the Licensor. Licensee agrees to bear any survey costs for the resetting of these monuments in the event they are disturbed by the Licensee in any way.

10. Licensee hereby indemnifies and releases the Licensor from any and all claims for damages to both persons and property as the result of the cattle grazing, and will hold Licensor harmless from all such damages during the term of this Agreement to include all reasonable fees, costs and expenses from any resulting litigation in any forum as the result of such damage as claimed or brought by third parties.

11. Licensee must obtain written approval from Anik Smith, Conservation 2020 Land Stewardship Supervisor, prior to performing any land clearing, controlled burns, fertilizing, exotic removal, chopping, chemical spraying, or other land management activities.

Signed and sealed the date above written.

ATTEST:
CHARLIE GREEN,
CLERK OF COURTS

By: _____
Deputy Clerk

LICENSOR:
LEE COUNTY BOARD OF
COUNTY COMMISSIONERS

By: _____
John Yarbrough, Director
Parks and Recreation

BOARD OF COUNTY COMMISSIONERS SEAL LEE COUNTY, FLORIDA

APPROVED AS TO FORM BY:

_____
Office of the County Attorney

LICENSEE:
PRI-CAR, A Florida General Partnership

_____
Scott Carter, General Partner

_____
Witness
Richard W. Winesett
Printed Name

_____
Witness
TERESA L. MANN
Printed Name

STATE OF FLORIDA) ss:
COUNTY OF LEE)

The foregoing instrument was acknowledged before me this 19th day of August, 2003, by Richard H. Pritchett and Scott M. Carter, as Managing General Partners of PRI-CAR, A Florida General Partnership, who [ ] is personally known to me or [ ] has produced _____ as identification and did (did not) take an oath.

_____
Notary Public

RICHARD W. WINESETT
MY COMMISSION # DD 017144
EXPIRES: May 14, 2005
Bonded Thru Notary Public Underwriters

_____
(Print Name)

My Commission Expires:

EXHIBIT A

DESCRIPTION:

A TRACT OR PARCEL OF LAND LYING IN THE SOUTHWEST QUARTER AND PART OF THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 43 SOUTH, RANGE 25 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

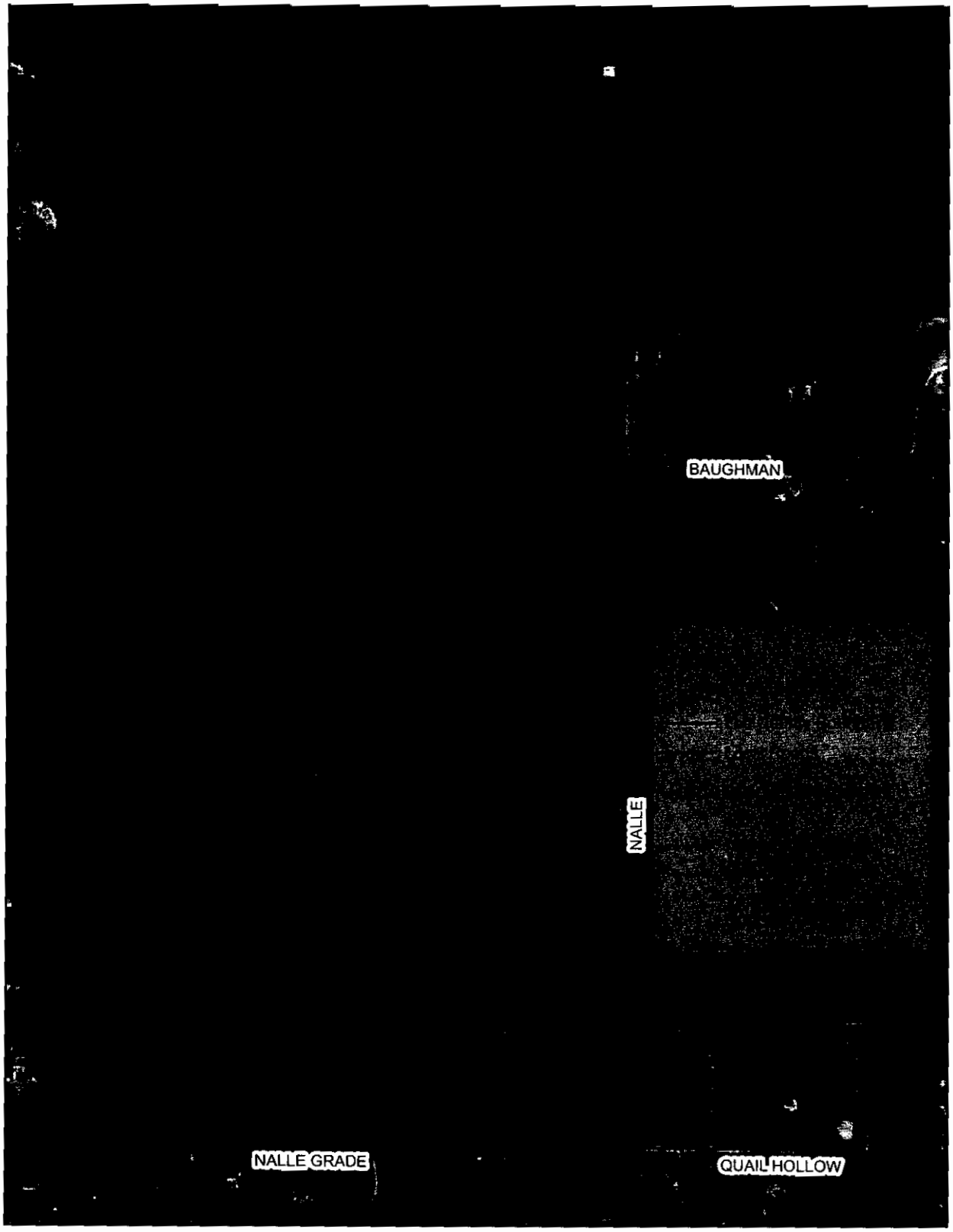
COMMENCING AT THE NORTH QUARTER CORNER OF SECTION 3, TOWNSHIP 43 SOUTH, RANGE 25 EAST, RUN S00°36'21" W, ALONG THE EAST LINE OF SAID NORTHWEST QUARTER, ALSO BEING THE CENTERLINE OF NALLE ROAD, AS DESCRIBED IN COUNTY COMMISSION MINUTES BOOK 5, PAGE 678, A DISTANCE OF 1908.04 FEET TO THE POINT OF BEGINNING;
FROM SAID POINT OF BEGINNING, RUN N37°56'42" W, PARALLEL WITH AND 60 FEET SOUTHWESTERLY OF THE SOUTH LINE OF A FLORIDA POWER AND LIGHT EASEMENT, AS DESCRIBED IN OFFICIAL RECORD BOOK 636, PAGE 379 PUBLIC RECORDS OF LEE COUNTY, A DISTANCE OF 1018.01 FEET; THENCE RUN N24°45'16" E A DISTANCE OF 414.49 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT; THENCE RUN ALONG SAID CURVE, HAVING A RADIUS OF 325.00 FEET AN INTERIOR ANGLE OF 64°40'16", A CHORD BEARING OF N57°05'23"E, A CHORD LENGTH OF 347.67 FEET, A DISTANCE OF 366.83 FEET TO A POINT OF NON-TANGENCY; THENCE RUN N00°36'21"E, PARALLEL WITH AND 175 FEET WESTERLY OF THE EAST LINE OF SAID NORTHWEST QUARTER, A DISTANCE OF 539.70 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID NORTHWEST QUARTER; THENCE RUN S89°56'49"W, ALONG SAID NORTH LINE, A DISTANCE OF 2473.13 FEET TO THE NORTHWEST CORNER OF SAID NORTHWEST QUARTER: THENCE RUN S01°46'58"W, ALONG THE WEST LINE OF SAID NORTHWEST QUARTER, A DISTANCE OF 2543.79 FEET TO THE WEST QUARTER CORNER OF SAID SECTION: THENCE RUN S00°34'58"W, ALONG THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 3, A DISTANCE OF 2661.21 FEET TO THE SOUTHWEST CORNER OF SAID SOUTHWEST QUARTER; THENCE RUN S89°36'11"E, ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER, A DISTANCE OF 2699.31 FEET TO THE SOUTH QUARTER CORNER OF SAID SECTION; THENCE RUN N00°36'10"E, ALONG THE EAST LINE OF SAID SOUTHWEST QUARTER, A DISTANCE OF 2657.79 FEET TO THE CENTER OF SAID SECTION; THENCE RUN N00°36'21"E, ALONG THE EAST LINE OF SAID NORTHWEST QUARTER, A DISTANCE OF 659.25 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 307.45 ACRES MORE OR LESS.

SUBJECT TO THE ROAD EASEMENT FOR NALLE ROAD OVER AND ACROSS THE EASTERLY 25 FEET THEREOF, ACCORDING TO COUNTY COMMISSION MINUTES BOOK 5, PAGE 678, PUBLIC RECORDS OF LEE COUNTY.
SUBJECT TO THE ROAD EASEMENT FOR NALLE GRADE ROAD OVER AND ACROSS THE SOUTHERLY 25 FEET THEREOF, ACCORDING TO COUNTY COMMISSION MINUTES BOOK 5, PAGE 628 PUBLIC RECORDS OF LEE COUNTY. SUBJECT TO THE FLORIDA POWER AND LIGHT EASEMENT ACCORDING TO OFFICIAL RECORD BOOK 636, PAGE 379, PUBLIC RECORDS OF LEE COUNTY.
SUBJECT TO EASEMENTS, RESTRICTIONS, RESERVATIONS AND RIGHTS-OF-WAY OF RECORD.

Appendix E: Recorded Easements Map

Appendix E: Recorded Easements



N
W E
S

Pop Ash Creek Preserve

0 255 510 1,020 1,530 2,040 Feet

S:\esri\C2020 ArcView\Pop Ash Creek Preserve\ management plan\Recorded_easements.mxd

Map Prepared On. 09/30/05 by sfurnari@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes

Appendix F: Permanent Access Easement Grant

This instrument prepared by
Division of County Lands
P. O. Box 398
Ft. Myers, Florida 33902-0398

Project: Conservation Land & Program, Project No. 8800
STRAP No.: 03-43-25-00-00001.0000

PERMANENT ACCESS EASEMENT GRANT

This document, made and entered into between Lee County, a political subdivision of the State of Florida, Owner, whose address is P.O. Box 398, Fort Myers, Florida 33902-0398, hereinafter "Grantor", and PRICAR, A Florida General Partnership, and Scott M. Carter, Post Office Box 2148, Fort Myers, Florida 33902, hereinafter "Grantee".

WITNESSETH:

1. For good and valuable consideration, receipt of which is hereby acknowledged, Grantor does hereby grant to Grantee, and its successors in ownership to their adjacent properties, a permanent access easement for the purpose of providing access to Grantee's adjacent properties, so that Grantee's, employees and their representatives, vehicles, and equipment will have ingress and egress along the powerline road (graded). Provided, however, that Grantor retains the right to maintain a gate across such easement on Grantor's property and to keep the gate locked, and to change the lock and the key and/or combination so long as Grantor provides a key and/or the combination to such lock to Grantee in advance so that it always has the means to open the gate for access. The key and/or combination shall be provided by Grantor to such office as Grantee shall designate from time to time in writing.

   The access easement is situated in Lee County, Florida, more particularly described in Exhibit "A" attached hereto and incorporated herein,

2. Any damage to Grantor's property or permitted improvements thereon as the result of such access to the adjacent property will be restored by the Grantee to the condition in which it existed prior to the damage. Grantee shall have the right (but not the obligation) to provide routine maintenance for the roadway and its bank and the ditches, culverts and other facilities on the easement parcel and to keep them clear of debris and functional.

3. Grantor covenants that subject to existing easements, if any, for public highways or roads, railroads, laterals, ditches, pipelines, electrical transmission or distribution lines, telephone and cable television lines covering the land herein described, Grantor is lawfully seized and possessed of the described real property (Exhibit "A), having good and lawful right and power to convey it, and that the property is free and clear of all liens and encumbrances, except as recorded in the public records, and accordingly, Grantor will forever warrant and defend the title and terms to this easement and the quiet possession thereof against all claims and demands of all other entities.

4. The easement, rights and privileges granted herein are non-exclusive, and Grantor reserves the right to convey similar rights and easements to other persons, except those rights and easements that may interfere with and prevent the use by Grantee of the easement. Grantor also retains, reserves, and will continue to enjoy use of the property for purposes that do not interfere with or prevent the use by 'Grantee of the easement.

5. The easement area will be jointly utilized by both parties for access purposes to adjacent lands.

6. This instrument will be binding upon the parties hereto, their successors and assigns.

Permanent Access Easement Grant
Project Conservation Lands Program, Project No. 8800
STRAP No.: 03-43-25-00-00001 0000

IN WITNESS WHEREOF the COUNTY has caused these presents to be executed in its name by its Board of County Commissioners acting by the Chair or Vice Chair of said Board, this 15th day of August 2003.

CHARLIE GREEN, CLERK

BY: _____ 08/15/03
DEPUTY CLERK (DATE)

LEE COUNTY, FLORIDA, BY ITS
BOARD OF COUNTY COMMISSIONERS

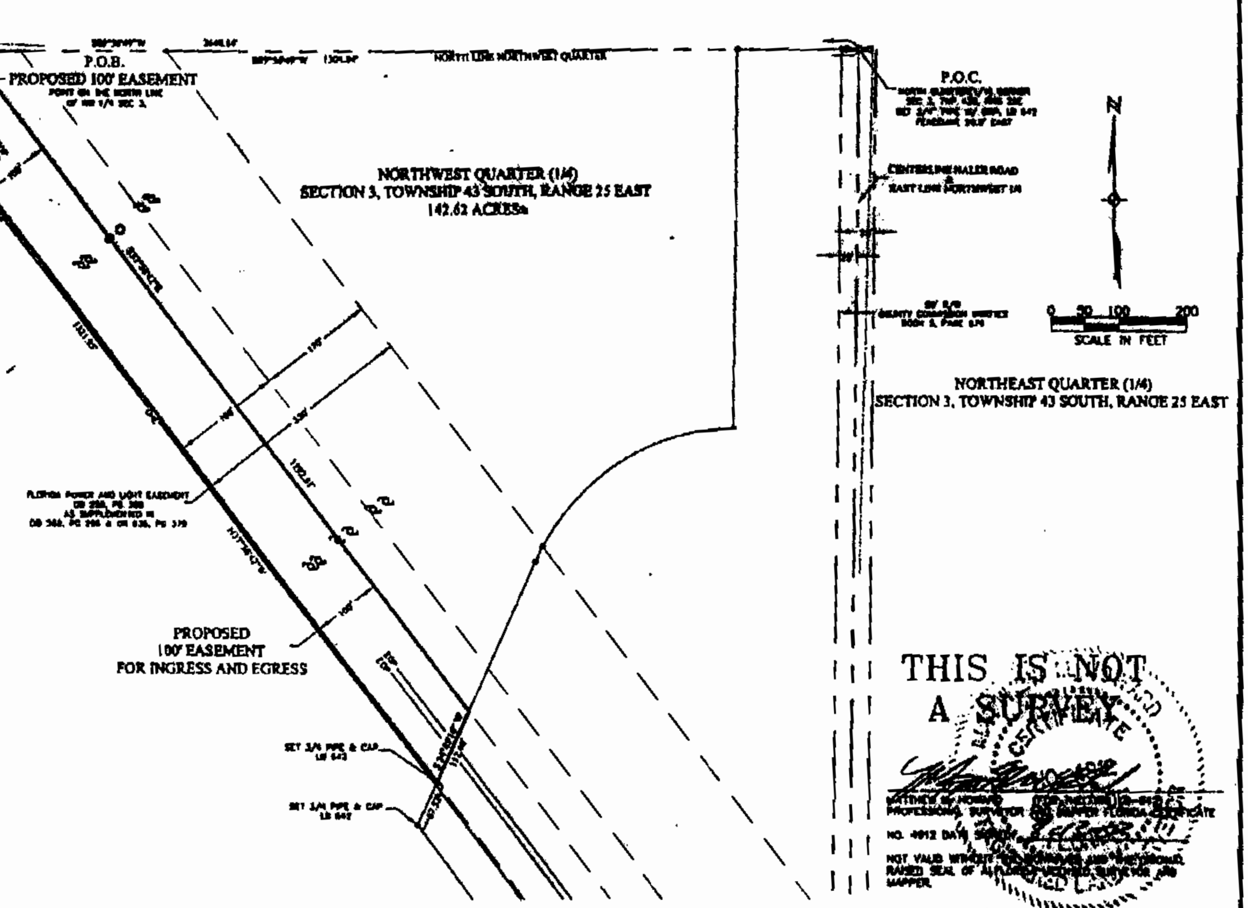
BY: _____
CHAIRMAN OR VICE CHAIRMAN

APPROVED AS TO LEGAL FORM AND
SUFFICIENCY

_____ 8-15-03
COUNTY ATTORNEY (DATE)

Exhibit "A"

S:\034010\SDWESTHALF.dwg (Layout1) KMR Aug 13, 2003 - 8:08am



NOTES:

1. DATE OF LAST FIELDWORK: AUGUST 6, 2003.
2. BEARINGS SHOWN HEREON ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER (1/4) OF SECTION 3, TOWNSHIP 43 SOUTH, RANGE 25 EAST, LEE COUNTY, FLORIDA TO BEAR S89°38'49"W.
3. THERE ARE NO VISIBLE APPARENT PHYSICAL USES OTHER THAN THOSE SHOWN.
4. SUBSTANTIAL VISIBLE IMPROVEMENTS OTHER THAN THOSE SHOWN, NOT LOCATED.
5. THIS SURVEY IS SUBJECT TO ANY FACTS THAT MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH.
6. THIS SURVEY DOES NOT MAKE ANY REPRESENTATION AS TO ZONING OR DEVELOPMENT RESTRICTIONS ON THE SUBJECT PARCEL.
7. NO ENVIRONMENTAL ASSESSMENT OR AUDIT WAS PERFORMED ON THE SURVEYED PARCEL BY THIS FIRM.
8. THIS SURVEY WAS PERFORMED FOR THE PURPOSE SHOWN HEREON AND DOES NOT MAKE ANY REPRESENTATION AS TO THE DELINEATION OF ANY JURISDICTIONAL LINES EXCEPT AS SHOWN OR NOTED HEREON.
9. OWNERSHIP OF FENCES SHOWN HEREON IS UNKNOWN, UNLESS OTHERWISE NOTED.

DESCRIPTION PROPOSED 100' EASEMENT:

A TRACT OR PARCEL OF LAND LYING IN THE NORTHWEST QUARTER OF SECTION 3, TOWNSHIP 43 SOUTH, RANGE 25 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTH QUARTER CORNER OF SECTION 3, TOWNSHIP 43 SOUTH RANGE 25 EAST, RUN S89°38'49"W, ALONG THE NORTH LINE OF SAID NORTHWEST QUARTER, A DISTANCE OF 1304.04 FEET TO THE POINT OF BEGINNING.

FROM SAID POINT OF BEGINNING, RUN S37°38'42"E, PARALLEL WITH AND 100 FEET NORTHEASTERLY OF THE SOUTHWESTERLY LINE OF A 236 FOOT FLORIDA POWER AND LIGHT EASEMENT AS DESCRIBED IN OFFICIAL RECORDS BOOK 636 PAGE 379, PUBLIC RECORDS OF LEE COUNTY, A DISTANCE OF 1152.41 FEET; THENCE RUN S34°45'16"W, A DISTANCE OF 103.40 FEET TO AN INTERSECTION WITH SAID SOUTHWESTERLY EASEMENT LINE; THENCE RUN N37°38'42"W, ALONG SAID SOUTHWESTERLY EASEMENT LINE, A DISTANCE OF 1321.85 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID NORTHWEST QUARTER; THENCE RUN N89°38'49"E, ALONG SAID NORTH LINE, A DISTANCE OF 128.72 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 2.98 ACRES MORE OR LESS.

LEGEND:
R/W = RIGHT-OF-WAY
SEC = SECTION
TWP = TOWNSHIP
RNG = RANGE
W/ = WITH
DB = DEED BOOK
PG = PAGE
OR = OFFICIAL RECORDS
FD = FOUND
CM = CONCRETE MONUMENT
P.O.B. = POINT OF BEGINNING
P.O.C. = POINT OF COMMENCEMENT
LB = LICENSED BUSINESS
EOP = EDGE OF PAVEMENT
OHE = OVERHEAD ELECTRIC
▢ = CONCRETE POWER POLE
= WOOD POWER POLE
—X— = FENCE

JOHNSON ENGINEERING
2158 JOHNSON STREET
P.O. BOX 1550
FORT MYERS, FLORIDA 33902-1550
PHONE (239) 334-0046
FAX (239) 334-3661
E.B. #642 & L.B. #642

SKETCH AND DESCRIPTION

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
8/08/03	20034010	3-43-25	1" = 200'	1 OF 1

Appendix G: Equestrian Access Agreement Letter

Appendix G: Equestrian Access Agreement Letter

Mr. & Mrs. John Q. Public
12345 Nalle Grade Road
North Fort Myers, Florida 33917

Jan. 3, 2005

Subject: Permission for equestrian use of the Pop Ash Creek Preserve

Dear Mr. & Mrs. Public,

As we discussed, Parks and Recreation is giving the local equestrian community permission to ride on the Preserve based on the conditions listed below. If we have not received any complaints from staff or the cattleman regarding equestrians on the Preserve this Department will continue to grant permission to ride on an annual basis with a re-evaluation at the end of each year. When a stewardship plan is written for the Preserve staff will explore a permanent solution to combining cattle grazing and appropriate public use on the Preserve. If the conditions set forth below are not adhered to permission to ride will be revoked and not readdressed until a stewardship plan is written for the Preserve.

Conditions:

1. Entrance into the Preserve by equestrians will be through a special gate at the southeast entrance to the Preserve only.
2. This gate will be locked at all times.
3. Parks and Recreation will provide the combination to the lock to individuals with interest. The combination will also be given out to Caloosa Saddle Club members, under the discretion of a designated representative of the Club. Contact information for each combination holder will be provided to Parks and Recreation staff.
4. Permission to ride on the Preserve is not granted to for-profit businesses that rent horses.
5. The preserve will be open to equestrians from dawn until dusk, six days a week. The preserve is closed to equestrians on **Wednesdays** for cattle operations.
6. Due to the location of the Preserves northern boundary, **all riders must stay south of the power lines.**
7. Since a parking facility for the Preserve is not available at this time, permission to ride on the Preserve is meant for those who can access the Preserve already on horseback. This Department does not encourage

parking along the road shoulder with horse trailers for safety reasons. The southeast entrance to the Preserve must remain unobstructed at all times.
8. Anyone who rides on the Preserve should be made aware of these rules.
9. Parks and Recreation at any time can revoke riding privileges if these conditions are not adhered to.

We anticipate this will be a successful partnership where equestrians are given permission to ride on the Preserve and their presence on site should benefit the County and the cattleman in providing additional surveillance for the Preserve.

When you have reviewed and agreed to the above, **please sign and return** to me (I have included a copy for you to keep). I will be the primary staff contact regarding this issue, please let me know if I can be of any further assistance. We thank you for the interest and ownership you have already shown towards the Pop Ash Creek Preserve.

Sincerely,

Laura Wewerka
Land Stewardship Coordinator
Conservation 20/20
(239) 461-7469

I have read and understand the conditions set above.

_____ _____
Mary Public Dated

_____ _____
John Public Dated

Appendix H: Projected Costs and Funding Sources

Appendix H - Projected Costs and Funding Sources Table

Resource Enhancement and Protection

Item	Possible Funding Source	Estimated Costs
Invasive exotic plant control	USFWS, DEP-BIPM mitigation, C20/20	$350,000
Plantings in exotic grass areas		$13,000
Possible borrow pond re-grading and fish trap creation (25% of the pond shorelines)	Lee County DNR, C20/20, mitigation	$450,000
Fill and plant ditches		$110,000
Level ditch berms		$10,000
Pine tree thinning		$4,000
Feral hog trapping		$750
total		$937,750

Overall Protection

Item	Possible Funding Source	Estimated Costs
Large debris removal	C20/20	$500
Boundary signs		$1,060
total		$1,560

Public Use

Item	Possible Funding Source	Estimated Costs
Equestrian access sign	C20/20, miscellaneous grants	$40
Trailhead area		$4,000
Trailhead signs		$4,000
Additional equestrian access		$5,000
Trail connector		$200
total		$13,240

TOTAL COST ESTIMATE **$952,550**

Site Management and Maintenance

Item	Possible Funding Source	Estimated Costs
Exotic Plant Control	C20/20	$60,000
Prescribed Fire Regime	LC P&R, C20/20	In-house
Assorted Repairs		$500

Yearly Maintenance Estimate **$60,500**

All costs are rough estimates based on information currently available. Every effort will be made to not exceed this budget by more than 10%.

Appendix I: Report of an evaluation of two ponds at the Pop Ash Creek Preserve

Report of an evaluation of two ponds at the Pop Ash Creek Preserve

By

Ernesto Lasso de la Vega
Lee County Hyacinth Control District

October 28, 2005

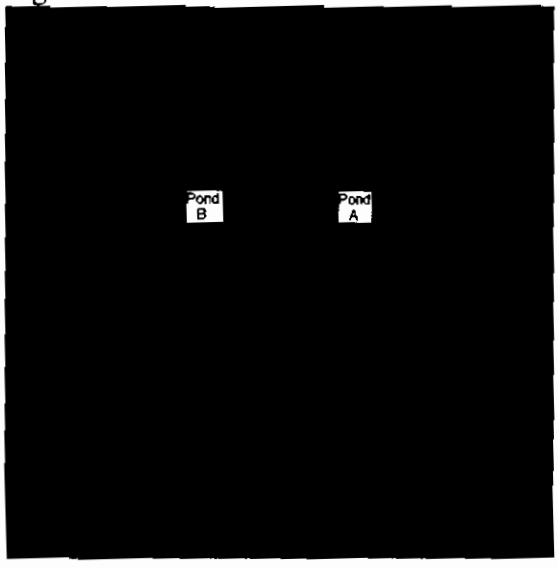
Introduction

On September 19, 2005 biologist Ernesto Lasso de la Vega from the Lee County Hyacinth Control District conducted a water quality evaluation on two ponds located at the Pop Ash Creek Preserve in Lee County (Fig.1).

Figure 1.

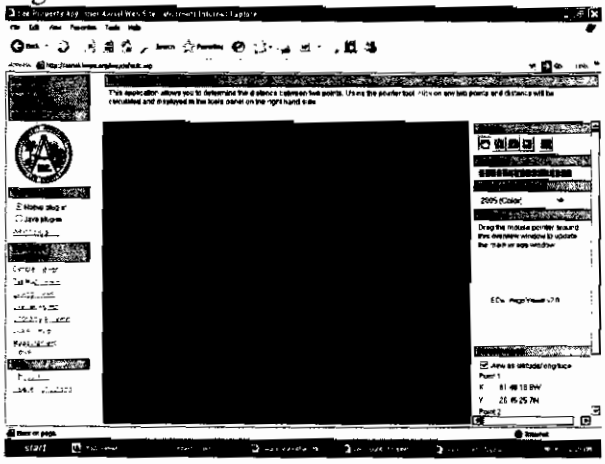
The ponds were identified as Pond A (eastern) and Pond B (western)(Fig. 2).

Figure 2.



The approximate area of the ponds was calculated using the measuring tools provided on the appraisal website (http://aerial.leepa.org/iws/default.asp)(Fig. 3). The areas of the ponds were: Pond A = 0.68 acres and Pond B = 0.63 acres.

Figure 3.



The average depth was determined by random canoe depth soundings at the site. The estimated average depth of Pond A and Pond B was 4 ft. on September 19, 2005.

Part of the evaluation consisted on determining the basic environmental characteristics of both ponds and the chemical characteristics of the water. Grab water samples were collected using a kemmer sampler. Pond B presented a high levels of turbidity therefore two point grab samples (surface and bottom) were obtained to determine if chemical stratification occurs.

Results

Both ponds presented relatively different environmental characteristics when comparing the conditions in the surface and bottom between both ponds(Table 1).

Table 1. Environmental Characteristics of two ponds in Pop Ash Preserve. Conducted on Sep. 19, 2005 11am.

Pond ID		Temp (C)	Sp. Cond. mS	D. Oxy. mg/L	pH	Secchi D. (inches)
A	Surface	30.29	0.195	7.44	7.43	
A	Bottom	30.11	0.195	7.32	7.41	> 48
B	Surface	30.50	0.244	8.79	7.89	
B	Bottom	30.00	0.243	8.64	7.74	39

Water samples were collected for chemical analysis from the surface and bottom points only in Pond B because the environmental conditions were different when comparing to Pond A. As shown in Table 1, Pond B had higher levels of dissolved

oxygen, specific conductance and less transparency indicated by the Secchi depth (Secchi D. = 39 inches) when compared to Pond A (Secchi D. > 48 inches). In addition, the bottom of Pond A was covered with submerged vegetation (predominantly Chara sp.).

Water quality analysis, which include the following nutrients: total phosphorus (TP), ortho phosphorus (OP), nitrates + nitrites (NOx), ammonia (NH3), total kjeldahl nitrogen (TKN), and chlorophyll a (Chl A), are presented in table 2.

Table 2. Water Quality data of two ponds in Pop Ash Preserve.

Pond		TP	OP	NOx	NH3	TKN	Chl A
		mg/L	mg/L	mg/L	mg/L	mg/L	ug/L
A	Surface	0.015	0.006	0.001	0.047	0.758	1.24
B	Surface	0.020	0.005	0.010	0.033	1.053	13.71
B	Bottom	0.022	0.006	0.016	0.049	1.143	-----

The analysis of the surface and bottom water samples in Pond B do not showed a significant difference for all parameters. However, bottom samples presented slightly higher concentrations. This could be attributed to the planktonic algae having an effect reducing the nutrients at the surface where the photic zone is present.

Pond A presented less concentrations of nutrients overall and significantly less concentration of chlorophyll a, indicating less presence of planktonic algae in the water column. This condition of very low turbidity may account for the extreme abundance of submerged vegetation as it was mentioned before.

The ratio between total nitrogen and total phosphorus (TN/TP) is important in order to determine whether phosphorus and/or nitrogen is the limiting nutrient in the system. Total nitrogen (TN), which is the sum of the concentrations of NOx and TKN, is usually present in higher concentrations than the total phosphorus (TP). In our ponds samples (see Table 3), the ratio TN/TP showed to be higher than the threshold value 17. This threshold number was determined in a study conducted on 534 Florida lakes by the LAKEWATCH Program of the University of Florida. Our results indicate that the ponds were not limited by nitrogen, in other words, there is plenty nitrogen for planktonic algae production. What might be limited in this case is the amount of phosphorus.

Table 3

Pond	TN (mg/L) (TKN+NOx)	TP (mg/L)	TN/TP
A surface	0.758	0.015	50
B surface	1.063	0.020	52
B bottom	1.159	0.022	53

An "on site" inspection revealed that pond A had a considerable amount of submerged macrophytes (Chara sp.), which removes nutrients from the water column limiting the proliferation of planktonic algae. Pond B has no submerged vegetation and a

significant amount of suspended particles and planktonic algae, which limit the amount of light penetration.

These findings may suggest that the rate of sedimentation of zooplankton and phytoplankton in Pond B might be part of the contributors of phosphorus. In addition, the obstruction of light will inhibit the proliferation of submerged macrophytes. This condition may remain in place until conditions, such as light, nutrients, or presence of macrophytes, alter the present status.

A series of aerial pictures can give some information regarding the historical conditions of the ponds. As seen on aerials taken on 1998 (Fig.4, blank and white), there are signs of presence of emergent macrophytes (presumable Cattails) in Pond B. Aerial pictures taken on 2000 (Fig. 5) show less presence of macrophytes. Finally, on the aerial picture publish at the appraisal website, which may be as recent as 2004 (Fig. 6) it shows the least amount of plants. This evidence may suggest that the bottom of Pond B may be abundant in detritus and unconsolidated muck, which is rich in nutrients and organic matter. This may be the potential source of nutrients that triggers the hypereutrophic condition. Pond B has shift from an eutrophic pond with nutrient filtering macrophytes to a hypereutrophic planktonic predominant pond.

Figure 4. Aerial from 1998.

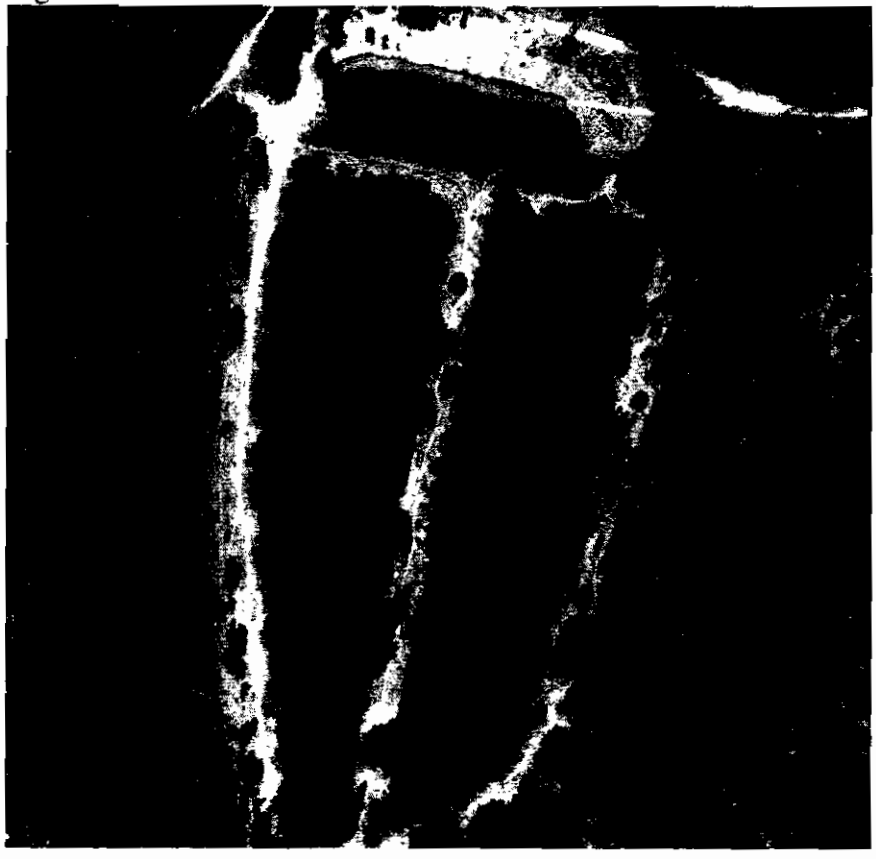


Figure 5. Aerial from 2000.

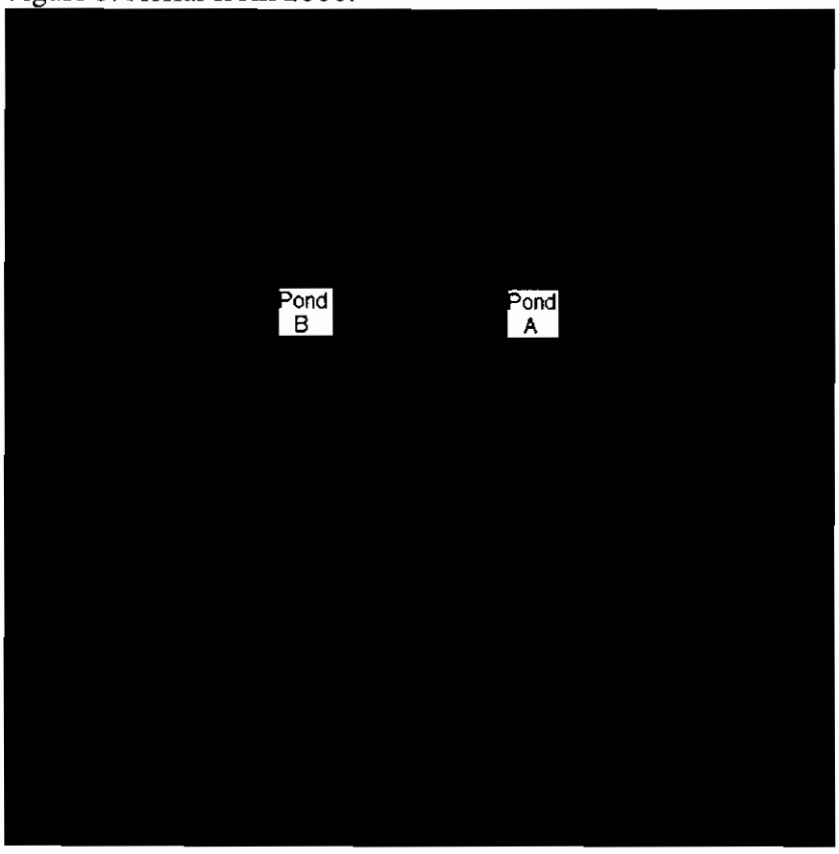
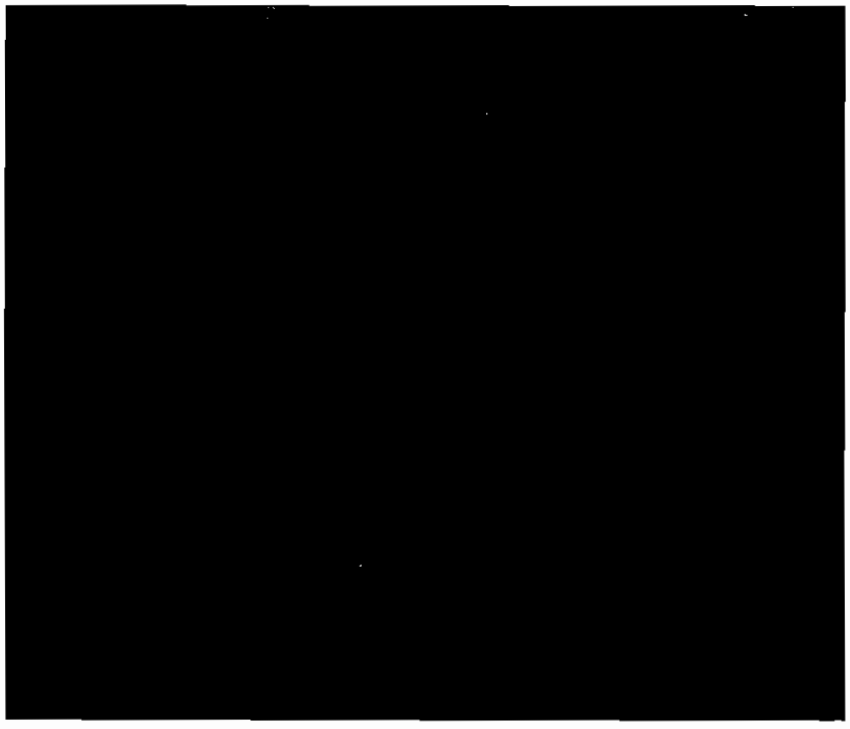


Figure 6. Aerial from 2004.



Conclusion.

Based on the information gather in this evaluation, Ponds A and B presented different ecological conditions that were distinctive and dependent on the macrophyte composition. Pond A, is compoused of predominantly submerged macrophytes (Chara sp.) which filter nutrients and provide a balanced conditions for fish and other aquatic organisms. Pond B on the other hand, is a predominantly planktonic algae in composition, has no mechanisms of filtering nutrients other than the proliferation of more planktonic algae. This intensification of algal bloom provides turbidity which limits the light for submerged macrophytes to recolonize the pond.

Regarding the chemical composition of the water, the analysis reveals that nutrients, nitrogen and phosphorus differ among the ponds as well. Phosphorus, which is the limiting nutrient in Pond B, may have been provided by historical sedimentation of zooplankton and phytoplankton along with organic matter accumulated in the bottom by previous macrophyte populations.

If the conditions intensified, this could make Pond B more unstable and extreme variable contrary to a balanced condition exibited in Pond A, that supports a healthy fish and aquatic community. Conditions in Pond B may continue to deteriorate until the intensity of the algal bloom produce a collapse of the system creating anaerobic conditions for algae and fish. A massive fish kill may be expected. Once the systems recuperates a new planktonic algae cycle will start all over. This cycling could be repeated again and it could last one or several seasons.