

LAND MANAGEMENT PLAN
SECTION 16, DELTONA, FLORIDA.

THE SCHOOL DISTRICT
OF VOLUSIA COUNTY, FLORIDA

SCHOOL BOARD MEMBERS

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SUPERINTENDENT OF SCHOOLS DR.JIM SURRATT

PREPARED BY: THE FACILITIES PROPERTY MANAGEMENT DEPARTMENT

EXECUTIVE SUMMARY

Section 16, Deltona is a 640 acre tract of upland sand pine scrub reserved for public education by an Act of Congress when Florida became a state in 1845. It is located in a rapidly growing residential community of 45,000 people that is anticipated to reach 87,000 residents by the year 2000. As a result of this growth Volusia County Schools have been accepting an additional 2500 students each year.

Yet even with the burgeoning growth experienced in this area of Volusia County, it is unrealistic to plan on locating many more schools on this one square mile tract. Therefore, the school board must review management alternatives that would best benefit present and future Volusia County students.

There are four alternatives available: education, preservation, recreation and development. The primary purpose for retaining any section sixteen is for education. This management plan retains education as a priority through development and construction for schools and school service facilities.

The second alternative of preservation is used as a complement to education as proposed. Students and the public may study and monitor upland scrub habitat and the wetlands around the sandhill lakes. They can also document the effects of different land management techniques and the success of mitigation for threatened scrub species.

Recreation is another public purpose for which this tract could be used. Other than nature and hiking trails, this plan does not provide much recreation. Also, other than construction of public schools and support facilities, little development is planned for this site.

It is planned that Volusia County Schools can build on the success of the Sand Pine Nature Center at Deltona Lakes Elementary School. The Deltona Lakes Elementary has been recognized by Presidents Reagan and Bush for excellence in environmental education.

With the cooperation of the county, Division of Forestry Services and the Freshwater Fish and Game Commission Section 16, Deltona can be a true scientific educational experience taking place in a 500 acre outdoor laboratory. Surely, this plan fulfills the management goals of the Internal Improvement Trust Fund and Congress when they reserved section sixteens for public education purposes.

A PRESENTATION BY THE
SIXTEENTH SECTION COMMITTEE
DELTONA, FLORIDA
MAY 22, 1990

OUR HISTORY

The sixteenth section, located north of Elkcam Boulevard in Deltona, Florida, is presently utilized by the Volusia County School Board through a lease arrangement with the Department of Natural Resources in Tallahassee, Florida.

It became more important in 1982 when the school board constructed Deltona Lakes Elementary School on the Southeast corner of the one square mile parcel.

During construction of the school, concern was raised by school officials and community members about the large wet sinkhole located on the school site. The contractors were going to fill it in and destroy the natural beauty of the area. Discussions were held and the property was left in its natural state.

A committee was formed through the PTA at Deltona Lakes Elementary School for the purpose of developing a nature center on the land adjoining the school. This committee was composed of school and community members.

A name, THE SAND PINE NATURE CENTER, was chosen by the students. Development began and over these eight years, the center has been recognized as a state and national winner by Take Pride in America on two separate occasions, and has also received the Little Red Schoolhouse Award from the Florida Association of School Administrators.

OUR PRESENT

In late 1989 and early 1990, an effort on the part of the business community in Deltona was begun to purchase the property for development of what was labeled "Downtown Deltona".

When this news reached school personnel, a committee was formed to expand the already existing curriculum into the middle and high school areas. Our goal was to show how vitally important this land is to our children, school and community. (A brief outline may be found at the end of this report.)

From the beginning, one of the goals for the Nature Center was to expand beyond the limited boundaries of the school and be able to incorporate more of the natural beauty and resources into the curriculum. Thus, in 1985, a presentation was made to the School Board of Volusia County and an agreement was reached for an additional 180 acres.

However, most of the development has remained on the school property. Some of the projects include: an outdoor classroom with a demonstration table, a picnic area, a beautiful overlook at the deep wet sink, many trails and markers noting special items of interest, a curriculum for elementary students K-5, involvement by community, clubs and other groups, video tapes, slide presentations, and the continuous training of students to act as trail guides.

In recent days the Sand Pine Nature Center became the focal point for the celebration of Earth Day, 1990, in Volusia County. State and local government, communities, families, and children all joined together to celebrate the beauty and splendor of our earth. We were proud to be a small part of that event. It also made a strong statement concerning the extreme importance of the sixteenth section and our future.

OUR FUTURE

Our committee speaks with one voice in recommending that the sixteenth section be set aside for educational purposes both now and in the future. Membership on the committee boasts educators K-12, administrators, parents, government and community leaders, all working toward common goals concerning curriculum and the environment. Our ideas are extensive but by no means exhaustive. It is a good beginning on which we must build to ensure the future of our children and their children who will continue to cope with the tremendous demands placed on our environment.

The pure water we drink, the clean air we breathe, are directly related to the survival of the sixteenth section and other areas like it. Only through education and involvement will we be able to preserve these and other very important elements so necessary to our survival.

The curriculum we are developing through the use of this living laboratory will help to ensure a better future for all mankind. Cost to the school board will be little since thousands of dollars are available through grants at the local, state and national levels. Many local and state agencies have offered assistance as well. Working together our goals can become a reality.

The members of the Sixteenth Section Committee and those whom we represent pledge our support to you the School Board of Volusia County in preserving and promoting this pristine property, given to us by the people of the state of Florida for the education of all those in our charge.

SECTION 16, DELTONA
LAND MANAGEMENT PLAN

- A. The common name of the property.

Section 16, Deltona

- B. A map showing the location and boundaries of the property plus any structure or improvements to the property.

This tract is located in the northern portion of the Deltona subdivision, an early subdivision consisting of approximately 40,000 residential building lots. Section 16, Deltona, lies east of I-4, south and west of Howland Boulevard and north of Elkcam Boulevard. See map - Exhibit A.

- C. The legal description and acreage of the property.

Township 18 South, Range 31 East, Section 16, Volusia

This contains approximately 640 acres of rolling sand pine scrub punctuated by sinkholes and sandhill lakes. Legal Descriptions - See Exhibit B.

- D. The degree of title interest held by the Board, including reservations and encumbrances such as leases.

The Volusia County School Board has a fifty year lease on the entire section, Lease No. 3403, that began June 15, 1987 (attached - Exhibit C). As provided by the Northwest Ordinance Act of 1785, amended in 1787, as each territory is surveyed for acceptance as a state the sixteenth section in each township was reserved for public education purposes. Consistent with the designation for public education purposes, three schools are located here. Deltona Lakes Elementary is located on 15 acres in the southeast corner of the section and is surrounded by another 25 acres reserved as a nature study area. Two schools are under construction in the northwest corner of the section, new Middle School "A" on 30 acres and new Elementary "L" on 20 acres. These schools are scheduled for completion by late fall 1990. To serve these schools and the Deltona area, Providence Boulevard was constructed from north to south with access roads to the schools. In addition to the improvements listed above, a 10 acre transportation terminal has been approved but not constructed. Also, a Florida Power and Light transmission line transects the northwest quarter of the tract.

- E. The land acquisition program, if any, under which the property was acquired.

An Act of Congress, the Act of March 3, 1845, 5 Stat. 788, supplemental to the act admitting Florida into the Union, provided:

...That in consideration of the concessions made by the State of Florida in respect to the public lands, there be granted to the said State eight entire sections of land for the purpose of fixing their seat of Government; also, section number sixteen in every township, or other lands equivalent thereto, for the use of the inhabitants of such townships, for the support of the public schools; also, two entire townships of land, in addition to the two townships already reserved, for the use of two seminaries of learning -- one to be located east, and the other west of the Suwanee River ...

- F. The designated single use or multiple use management for the property, including other managing agencies.

It is proposed that this tract be managed for educational purposes with the assistance of the Division of Forestry, the Freshwater Fish and Game Commission and the County of Volusia. As a use collateral to environmental education it is proposed that a portion of this 640 acre tract, approximately 300-400 acres, be managed as a mitigation bank for threatened scrub species such as the scrub jay and the gopher tortoise. This concept is explained below.

- G. Proximity of property to other significant state, local, or federal land or water resources.

Section 16, Deltona is approximately four miles northeast of Lake Monroe and seven miles east of the St. Johns River.

- H. A statement as to whether the property is within an aquatic preserve or a designated area of critical state concern or an area under study for such designation.

Section 16, Deltona is not within an aquatic preserve, a designated area of critical state concern nor an area under study for such a designation.

I. RESOURCE IDENTIFICATION

1. letter attached from Division of Historical Resources
2. report from Division of Forestry attached
3. report from Environmental Services, Inc., lists soils, biota and geo-physical conditions

- J. A description of actions the agency plans to locate and identify unknown resources such as surveys of unknown archaeological and historical resources.

Prior to any future construction, a survey will be conducted to identify historical and archaeological resources.

- K. The identification of resources on the property that are listed in the Natural Areas Inventory.

A letter from Florida Natural Areas Inventory is attached.

- L. A description of past uses, including any unauthorized uses of the property.

The earliest school board records show that this tract was leased to the DeLand Chapter of Future Farmers of America in 1958 for an Educational Agricultural Demonstration Project. The lease was renewed for another ten years in 1968. A Forest Resource Management Plan was prepared in 1979 and is attached. In addition to authorized uses, the tract has been subject to frequent trespass by all-terrain and recreational vehicles. Due to this uncontrolled traffic, the sandhill lakes area in the northeast quadrant has been seriously degraded.

- M. A detailed description of existing and planned use(s) of the property.

The existing uses of the tract include:

30.19 acres	-	new Middle School "A"
20.34 acres	-	new Elementary School "L"
15 acres	-	Deltona Lakes Elementary
25 acres	-	Nature Study Area
16.678 acres	-	Power transmission line
17.815 acres	-	Roadways
10 acres	-	Transportation Terminal (approved but not constructed)

135.026 acres - Total

In addition to existing uses it is proposed that a portion of the northeast quadrant where the terrain is relatively level be reserved for future development. The land to the south and on the east side of Providence Boulevard should serve as an agricultural/vocational area. The Future Farmers of America, the vocational/agricultural department of Volusia County Schools and the Division of Forestry could operate programs here. The acreage east of Providence Boulevard and south of the transmission line would be the primary environmental education site. Both the environmental education tract and the vocational/agricultural tracts will be part of the scrub habitat mitigation management area.

- N. A description of alternative or multiple uses of the property considered by the managing agency and an explanation of why such uses were not adopted.

Two alternative uses were considered but not adopted in the drafting of this plan. The first alternative was to fence the tract and leave it untouched except for proposed or existing schools. However, that course failed to recognize that in managing the surrounding area for fire control the natural regeneration process of sand pine scrub had been altered. This alternative also fails to take advantage of a rare opportunity for an outdoor learning experience.

The other option was to relinquish leasehold interest and recommend the uncommitted acreage for surplus. While this alternative releases the school board from the obligation of managing a large tract of land, this action would also cede an interest long held by Volusia County Schools in one of the last two remaining sixteenth sections in Volusia County and would forsake the opportunity of providing present and future school children with educational benefits intended in this far-sighted legislative Act of 1845.

- O. A detailed assessment of the impact of planned uses on the renewable and non-renewable resources of the property and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to mitigate damage caused by such uses.

The schools, roads, transportation center and future development have the potential to adversely impact the proposed mitigation area. The proposed mitigation, education and conservation area will be protected by surrounding the potential impacts with a continuous buffer of the existing dense sand pine scrub community. It is anticipated that the mitigation will greatly enhance the existing scrub community, returning the habitat to conditions found prior to the 1940's. Other potential impacts associated with the education aspect of the plan are expected to be minimal.

- P. A description of management needs and problems for the property.

The first step in managing this tract is to secure its boundaries by erecting a fence and ensuring that it is properly posted against trespassing. Land management practices as described in the Management Plan Objectives will serve to enhance the ecological diversity of this tract.

Once the tract is secured the sand hill lakes area in the northeast should be monitored to measure the success of their restoration. Nature trails, an outdoor classroom and a parking area will be needed at the entry point of the environmental education center, although the schools in the immediate area could meet these needs for the interim.

- Q. Identification of adjacent land uses that conflict with planned use of the property, if any.

None.

- R. A description of legislative or executive directives that constrain the use of such property.

Florida Statute 253.03 and F.A.C. Chapter 18-2 and 18-4.007.

- S. A finding regarding whether each planned use complies with the State Lands Management Plan, particularly whether such uses represent "balanced public utilization", specific agency statutory authority, and other legislative or executive constraints.

It is our belief that this land management plan as proposed meets and exceeds the planning goals for state lands. Not only does this plan advance the original purpose for each section sixteen to serve public education, but it combines the educational goals with land management practices that enhance and protect a threatened ecosystem. The plan balances public utilization and involves several other governmental agencies in best management practices for this unique habitat.

Specifically, this plan provides for the preservation and management of today's resources to benefit the education of successive generations both in the standard academic atmosphere of three public schools and support facilities and by establishing environmental education that studies habitat and land management techniques.

- T. An assessment as to whether the property, or any portion, should be declared surplus.

None of this property should be declared surplus at this time.

- U. Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property.

In order to better limit access at the northeast corner it would be wise to acquire the irregular lot at the north property line bounded on the west by the power transmission line and having frontage on Howland Boulevard Tract "K" Deltona Lakes Unit 53.

If the county wishes to complement the educational and conservation uses on Section 16 with a recreational facility, they may want to acquire the rural and agricultural parcels to the east. This would provide frontage on Dupont Lake. There is already a Boy Scout camp in this area. Expansion into this area is not essential for education purposes.

- V. A description of the management responsibilities of each agency and how such responsibilities will be coordinated, including a provision that requires that the managing agency consult with the Division of Historical Resources before taking actions that may adversely affect archaeological or historic resources.

The Volusia County School Board is the agency with primary responsibility for managing Section 16, Deltona. The school board will enter into an agreement with the County of Volusia governing land management in the conservation and mitigation areas. The school board will participate with the Division of Forestry and the Freshwater Fish and Game Commission to enhance the educational experience. The board will also consult with the Division of Historical Resources before taking actions that may adversely affect archaeological or historic resources.

- W. A statement concerning the extent of public involvement and local government participation in the development of the plan, if any, including a summary of comments and concerns expressed. (This question will be completed at end of process).

Presentation AAUW - Deltona - April 26, 1990
Board Meeting, Kurt Borglum - December 12, 1989
Environmental Services - October 24, 1989
(Board Meeting)

Public discussions
Sand Pine Nature Center

This land management plan is consistent with goals, objectives and policies set out in the State and Local Comprehensive Plan. This tract is designated Public Use in the Future Land Use Map for Volusia County.

RESOURCE DESCRIPTION

Section 16 can be divided into two major habitat types: mature sand pine scrub and freshwater marshes. Several small sinkholes are also present on the site, many of which retain water during most if not all of the year.

SAND PINE SCRUB

Sand pine scrub is a xeric evergreen plant community characterized by a dominant tree, sand pine (Pinus clausa) with rosemary (Ceratiola ericoides) or scrub oaks (Quercus virginiana, Q. chapmanii, Q. myrtifolia) comprising a major component of the understory. Open, sandy areas are numerous and commonly devoid of vegetation or covered by lichens. The community typically occurs on relict sand dunes which exhibit poor water retention, high groundwater recharge and low nutrient concentrations.

The community has evolved a close and dependant relationship with fire. Crown fires occur on 30 to 60 year cycles within a mature sand pine scrub habitat as those in Section 16. These intense fires are necessary to release the seeds from the resinous cones.

Fires of a more frequent cycle cause the habitat to remain in the in a subclimax scrub stage with fewer, scattered sand pines and more open areas.

Ninety-six percent of the Section 16 conservation/mitigation area is dominated by an extremely dense sand pine scrub community. The canopy's areal coverage is complete and is comprised, with the exception of three small areas, of nearly even-aged mature sand pines 10" to 12" in diameter. The dense midcanopy and subcanopy are dominated by various scrub oaks, rusty lyonia (Lyonia ferruginea), and silk bay (Persea humilis). While not common, rosemary is also found on the site in isolated areas. Open areas typical of sand pine scrub are not found within the boundaries of the habitat on Section 16.

Aerial photographs of the site from 1943 to the present indicate that a significant change in the community structure has occurred. Prior to 1943, the characteristics of the sand pine scrub community were more typical of a community maintaining a subclimax stage. The extent and areal coverage of the sand pine within the community was much less (approximately 80%) and the amount of non-vegetated, open areas was much greater. With the advent of fire prevention and suppression, a gradual increase in the amount and density of the sand pine has occurred and has continued through the present. During the early sixties and seventies, some limited harvesting and planting occurred in three different areas of Section 16 as part of the school systems vocational program. These activities have encouraged the dense

growth of sand pine and scrub oak and allowed the site to shift to the next successional stage, deviating from the historic subclimax community.

WETLANDS

The majority of the wetlands found along the DeLand Ridge, including the wetlands of Section 16, are subject to rapid, frequent and dramatic changes in water levels. These water level changes are dependant upon direct rainfall and the water levels of the surficial and Floridan aquifers. Historic photographs indicate the acreage of standing water within the wetlands has fluctuated from a total of approximately fifty (50) acres to less than five acres.

Until the creation and expansion of Deltona, the wetlands in Section 16 had experienced little or no adverse impacts. Along with the tremendous growth of the community, the impacts from off road vehicles have dramatically increased in recent years, particularly in the largest wetland in the northeast corner of the property. The disturbance of the wetlands by these vehicles has resulted in both upland and wetland vegetation destruction, erosion and temporary pollution problems.

The vegetation found in the transitional wetland areas include: slash pine (Pinus elliottii), broomsedge (Andropogon virginicus),

shortspike bluestem (Andropogon brachystachyus), blue maidencane (Amphicarpum muhlenbergianum), St. John's wort (Hypericum fasciculatum), and meadow beauty (Rhexia cubensis). The permanently inundated and saturated areas are dominated by red root (Lachnanthes caroliniana), meadow beauties (Rhexia spp.), beakrushes (Rhynchospora spp.), yellow-eyed grass (Xyris smalliana), spikerush (Eleocharis spp.), bladderwort (Utricularia spp.), and fragrant waterlily (Nymphaea odorata).

EDUCATIONAL OBJECTIVES: OVERVIEW

The goal of the environmental education curriculum committee is to produce a working document which supports the premise that the sixteenth section, located in Deltona, Florida, is a living laboratory, a classroom into the past, which will provide students of the present with knowledge, wisdom and concern needed to ensure a safe and healthy environment for all of us.

The principal educational objectives of Section 16 can be stated as follows:

1. To develop an awareness, appreciation and an affection for nature.
2. To develop an awareness that all things in nature constantly change.

3. To present conservation concepts in natural settings so that students will learn them easily.
4. To develop a desire and a will to protect and to use wisely the living and non-living natural resources of the earth important to man.
5. To increase knowledge of our natural world and man's responsibility towards nature.

Section 16 in Deltona Lakes contains an unprecedented opportunity for children, teachers, and citizens to become involved with our environment. Children will develop a caring attitude of their environment through significant life experiences with the environment.

Teachers serve as role models in environmental behavior. Teachers need to lead children in the discovery of the environment. Teachers need to actively guide children and challenge them to take effective actions. Teachers must take a scientific viewpoint and expose the children to science in nature, rather than teaching on emotions. It is important to show the children that we are taking more out of the environment than putting back into it. Most importantly, children need to learn to respect what we use on this earth.

The mission of this environmental education center, that would encompass all the surrounding schools, would be to foster an awareness and appreciation of a unique natural world, promote the understanding of ecological concepts, and instill a sense of stewardship toward the earth and its inhabitants.

MANAGEMENT OBJECTIVES

NATURAL HABITATS

Much of Volusia County still has fairly large tracts of viable scrub habitat and associated wetlands. Development pressures are rapidly impacting these valuable communities and are expected to continue. Any development within habitats with resident endangered species are required by the various permitting authorities to provide for mitigation. In some instances the mitigation has been allowed to take place several miles away in Polk County, which doesn't allow for habitat protection or replacement in Volusia County.

Mitigation required for permitted projects in Volusia County will be directed to the approximately 420 acres of Section 16 managed in perpetuity as a mitigation, education and conservation area. One of the goals of this plan is to restore the existing habitats to the conditions indicated by historical information prior to the 1940's. Such mitigation and continued management will provide

within Volusia County a sand pine scrub habitat at a successional stage that is more beneficial for many species of plants and animals which are presently endangered or threatened such as scrub jays and gopher tortoises.

A detailed plan for the management of the site has yet to be developed. The mitigation plan will be reviewed by the U.S. Fish and Wildlife Service, the Florida Game and Freshwater Fish Commission and the Department of Environmental Regulation to insure compliance with existing regulations.

The 420 acres of the mitigation, education and conservation area will be divided into three different areas: 1) scrub mitigation area; 2) open sand pine scrub; and 3) sand pine scrub buffers. Each area will be subjected to a different management strategy to achieve the desired community structure.

The scrub mitigation area will be managed to achieve habitat characteristics that consist of less than 20% scattered mature trees, 10-30% bare or sparsely vegetated ground and 50-75% scrub oaks three to ten feet tall. This type of habitat is recommended for various species, such as scrub jays and gopher tortoises, known to inhabit these areas and currently threatened with extinction.

The initial concept for the scrub mitigation area calls for the establishment of five 40 acre experimental tracts within the existing sand pine scrub. Each of the experimental tracts will be subjected to different management techniques, or combinations of techniques, such as harvesting, roller-chopping and burning. Within each tract two 20 acre subplots will be managed utilizing the same techniques but applied at staggered intervals. It is anticipated that the smaller subplots and the staggered management intervals will result in a 10-15 year disturbance cycle, replicating historic cycles.

Less than 30% of the mitigation area will be converted to an open sand pine scrub community, which is less dense than existing conditions. The objective within the open sand pine scrub area is to create a transition zone between adjacent scrub mitigation areas or the buffers and still provide habitat for a maximum number of plant and animal species. It is anticipated that 50-75% of the woody understory vegetation of the dense sand pine scrub community will be cleared or thinned to provide open areas for animal species endemic to sand pine scrub habitat.

Various impacts, such as predation from feral cats and dogs, increased traffic mortality and disturbance from intensive use areas (playgrounds) can be expected from the adjacent land uses surrounding the scrub and open sand pine scrub mitigation areas. In order to provide this necessary protection to the scrub mitigation sites, a minimum of a 100 ft. buffer of the existing

dense sand pine scrub community will be incorporated into the design of the scrub mitigation. The buffers will provide protection necessary from the roads, schools and surrounding residential areas.

The wetland mitigation will primarily consist of elimination of the disturbance from off-road vehicles. The areas suffering from the greatest impacts may be enhanced by vegetation planting, if natural recovery is unlikely. Soil which has eroded from the disturbed areas caused by the intense use, may be excavated to increase the volume of the wetlands and subsequently vegetated.

E X A M P L E

PROPOSED ENVIRONMENTAL STUDY STATIONS
FOR K-2 UNIT DEVELOPMENT

NATURE TRAIL

- *1. Sinkhole Stations
 - a. shallow sink
 - b. large wet sink
 - c. dry sink
2. Rotten Log Station
3. Soil Study Station
4. Tree Growth Study Station
5. Tracking Station
6. Fence Row Habitat Station
7. Native Plant Station
8. Fungi (moss, lichen) Growth Study Station
9. Insect Activity Station
10. Native Floridian Study Station
11. Orienteering Station
12. Land Measurement Station
13. Sundial Station
14. Weather Station

DIVERGENT AREAS

- *1. Outdoor Classroom
- *2. Picnic Area
3. Environmental Lab-indoor lecture hall
- *4. Observation Platform
5. Camping Areas
6. Challenge (fitness) Course Trail
7. Tree Identification Trail
8. Wildlife Identification Trail
9. Reflection, meditation, quiet spot area for poetry, art work, reading, just thinking
10. Collecting Trail
11. Blind-fold Trail
12. Energy Experimental Station
13. Arts and Crafts Area (long tables and benches)

*(already existing at Sand Pine Nature Trail)

BUDGET

A. Capital Improvements

1. Fencing boundary and along roadways
2. Entrance and parking lot for environmental study area
3. Nature trails
4. Outdoor classroom
5. Sinkhole stations
6. Restrooms

These capital improvements may be provided as funds become available. The only imperative is fencing estimated not to exceed \$100,000. Many of these improvements may be built by volunteers and students, i.e. nature trails.

B. Staffing

No on-site staffing. Volusia County school staff will accompany students to the site. Special assistance has been offered by the Division of Forestry Services and the Freshwater Fish and Game Commission. Land management expertise for conservation and mitigation are to be provided by the county.

C. Revenues

A formal agreement between the county the the school board will include the value of mitigation rights on the management parcel of 300-400 acres. The school board can assume that all mitigation rights will be reserved within ten years.

There will be some revenues received from timbering to create scrub areas. It is estimated that this income will not exceed \$10,000 per year.

APPENDIX



DELTONA

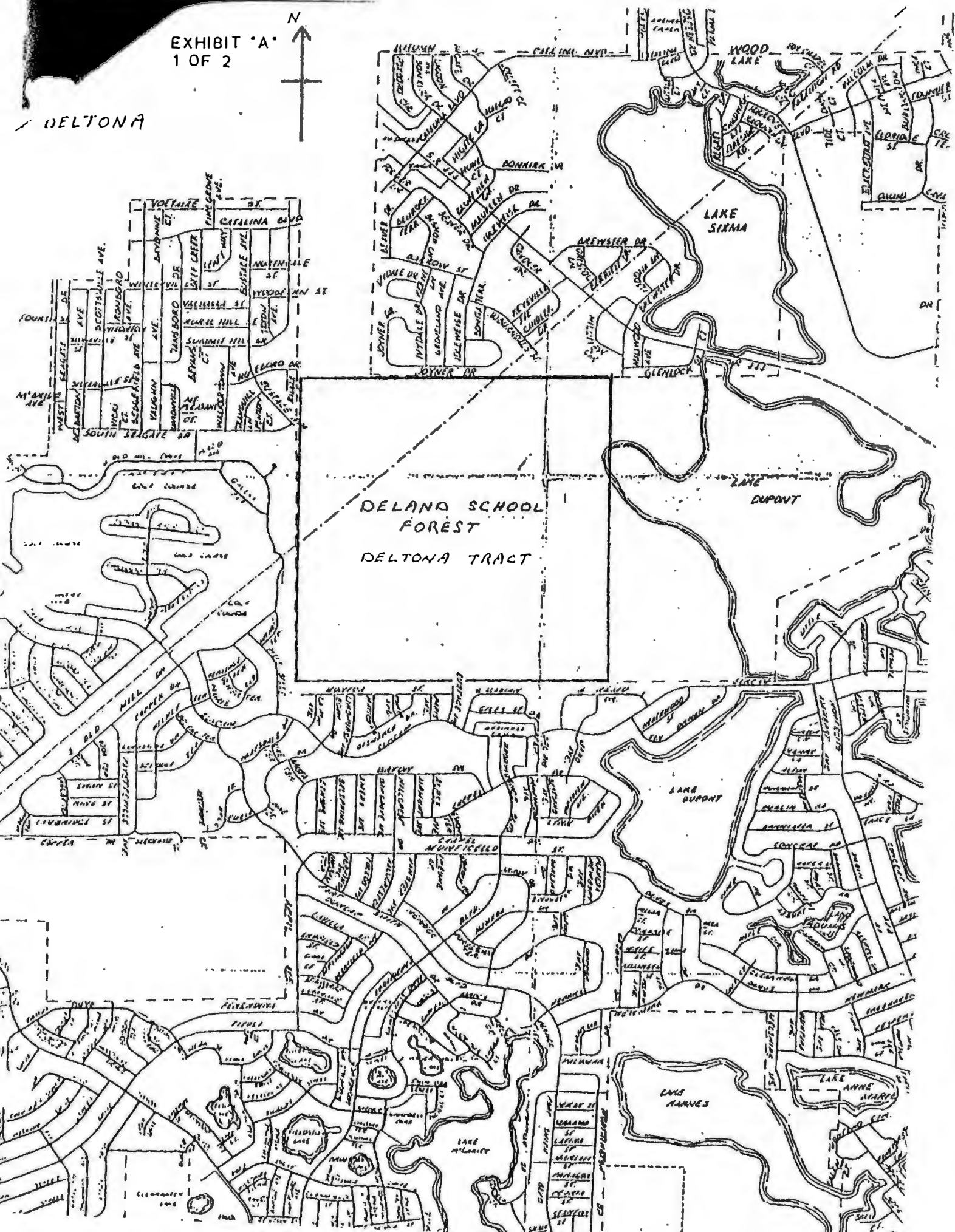
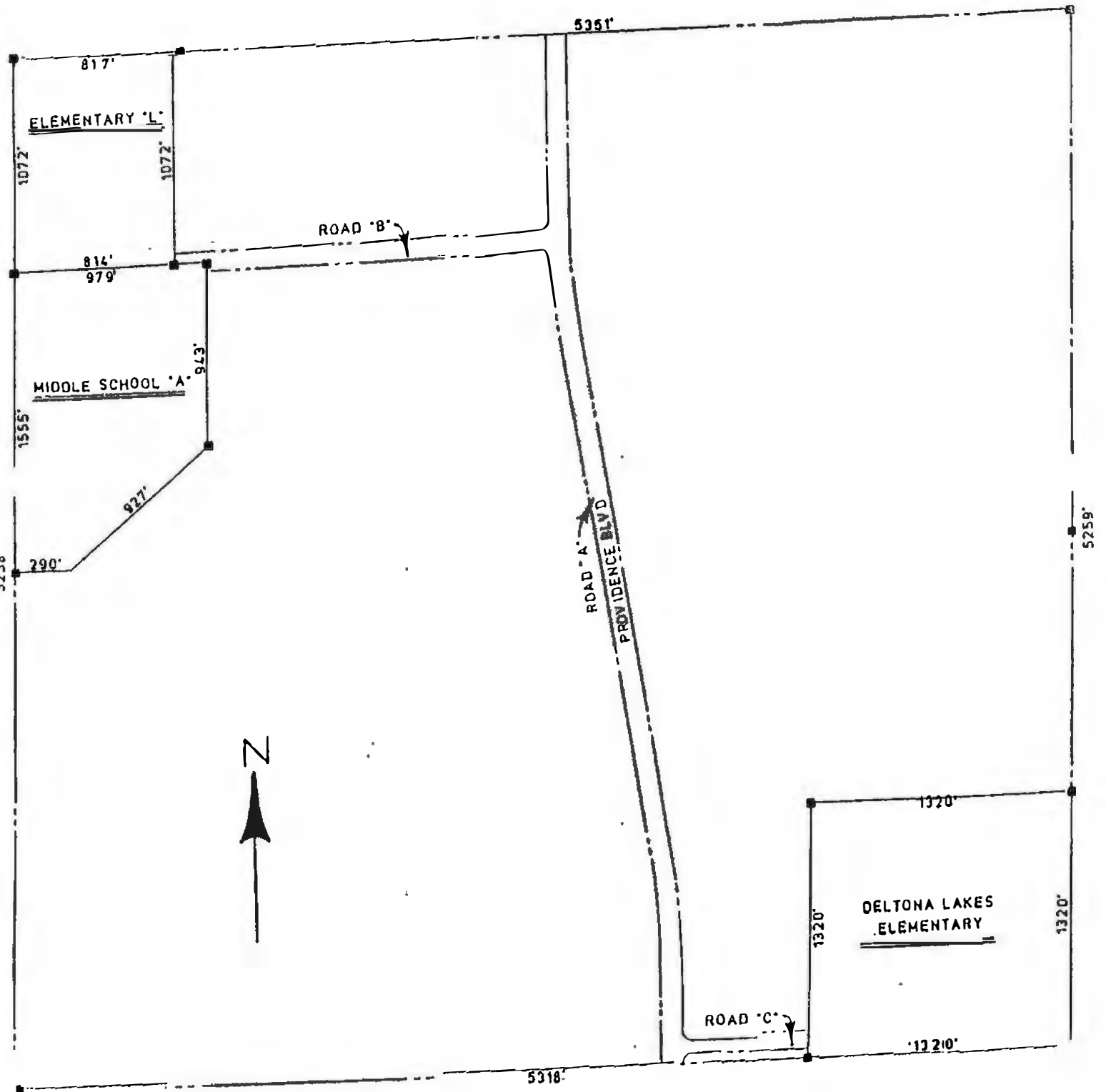


EXHIBIT 'A'

2 OF 2



VOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 10 SOUTH, RANGE 31 EAST

DESCRIPTION OF ROAD "A":

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 10 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE RUN N 09° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 597.05 FT. TO THE POINT OF BEGINNING; THENCE N 00° 54' 02" W A DISTANCE OF 639.63 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 00° 24' 02" AND A RADIUS OF 2,014.79 FT. AND A CHORD BEARING OF N 05° 06' 03" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 412.70 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 09° 18' 04" W A DISTANCE OF 2,023.97 FT. TO THE P.C. OF A CURVE CONCAVE TO THE EAST HAVING A CENTRAL ANGLE OF 00° 21' 55", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF N 05° 07' 06" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 425.57 FT. TO THE P.T.; THENCE N 00° 56' 00" W A DISTANCE OF 991.65 FT. TO THE NORTH LINE OF THE NE 1/4 OF SAID SECTION 16 AT A POINT 50.00 FT. WESTERLY OF THE CENTERLINE OF IDLEWISSE DR. AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTY-THREE, AS RECORDED IN MAP BOOK 20, PAGES 32 THROUGH 42, AFORESAID PUBLIC RECORDS; THENCE N 00° 50' 33" E ALONG SAID NORTH LINE 100.00 FT.; THENCE S 00° 56' 04" E A DISTANCE OF 991.00 FT. TO THE P.C. OF A CURVE CONCAVE TO THE EAST, HAVING A CENTRAL ANGLE OF 00° 21' 55", A RADIUS OF 2,014.79 FT. AND A CHORD BEARING OF S 05° 07' 06" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 410.97 FT. TO THE P.T.; THENCE S 09° 18' 04" E A DISTANCE OF 2,023.97 FT. TO THE P.C. OF A CURVE CONCAVE TO THE WEST, HAVING A CENTRAL ANGLE OF 00° 24' 02", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF S 05° 06' 03" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 427.36 FT. TO THE P.T.; THENCE S 00° 54' 02" E A DISTANCE OF 639.59 FT. TO THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16; THENCE S 09° 04' 39" W ALONG THE SAID SOUTH LINE 100.00 FT. TO THE POINT OF BEGINNING; CONTAINING 12.152 ACRES, MORE OR LESS.

SUBJECT TO A FLORIDA POWER AND LIGHT COMPANY EASEMENT AS RECORDED IN OFFICIAL RECORDS BOOK 211, PAGE 143, AND OFFICIAL RECORDS BOOK 1294, PAGE 494, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA.

EXHIBIT "B"

1 OF 4

DESCRIPTION OF ROAD "D":

COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF IDLEWEISE DRIVE AND THE NORTH LINE OF THE NE 1/4 OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTY-THREE, RECORDED IN MAP BOOK 28, PAGES 32 THROUGH 42, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE S 08° 58' 33" W ALONG THE SAID NORTH LINE 50.00 FT.; THENCE S 00° 56' 08" E A DISTANCE OF 991.65 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 00° 06' 29", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF S 00° 59' 23" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 5.50 FT. TO THE POINT OF BEGINNING;

THENCE CONTINUE ALONG THE ARC OF SAID CURVE 140.79 FT. THROUGH A CENTRAL ANGLE OF 02° 55' 29" AND A CHORD BEARING OF S 02° 30' 21" E TO THE POINT OF REVERSE CURVE (P.R.C.) OF A CURVE CONCAVE TO THE SOUTHWEST HAVING A CENTRAL ANGLE OF 07° 03' 46", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF N 47° 30' 00" W; THENCE NORTHWESTERLY ALONG THE ARC OF SAID CURVE 37.99 FT. TO THE POINT OF TANGENCY (P.T.); THENCE S 08° 50' 07" W, PARALLEL WITH THE NORTH LINE OF THE NW 1/4 OF SAID SECTION 16 A DISTANCE OF 1,724.63 FT. TO THE WEST LINE OF THE EAST 365 FT. OF THE WEST 1/2 OF THE NW 1/4 OF SAID SECTION 16; THENCE N 00° 10' 47" E ALONG SAID WEST LINE 50.01 FT. TO THE SOUTH LINE OF THE NORTH 1072.34 FT. OF THE SAID NW 1/4; THENCE S 08° 50' 07" W ALONG SAID SOUTH LINE 165.00 FT. TO THE WEST LINE OF THE EAST 530 FT. OF THE SAID WEST 1/2 OF THE NW 1/4; THENCE N 00° 10' 47" E ALONG SAID WEST LINE 50.01 FT.; THENCE N 00° 58' 07" E PARALLEL WITH THE NORTH LINE OF THE SAID NW 1/4 A DISTANCE OF 1,803.65 FT. TO THE P.C. OF A CURVE CONCAVE TO THE NORTHWEST HAVING A CENTRAL ANGLE OF 90° 00' 44", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF N 43° 57' 45" E; THENCE NORTHEASTERLY ALONG THE ARC OF SAID CURVE 39.27 FT. TO THE P.T. AND THE POINT OF BEGINNING; CONTAINING 4.20 ACRES, MORE OR LESS; SUBJECT TO A FLORIDA POWER AND LIGHT COMPANY EASEMENT AS RECORDED IN O.R. BK. 211, PG. 143, AND O.R. BK. 1294, PG. 494, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA;

EXHIBIT "B"

VOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST

DESCRIPTION OF ROAD "C":

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA AS SHOWN ON THE PLAT OF DELTONA LAKES UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; RUN THENCE N 89° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 697.05 FT.; THENCE N 00° 54' 02" W A DISTANCE OF 25.00 FT. TO THE POINT OF BEGINNING; THENCE CONTINUE N 00° 54' 02" W A DISTANCE OF 150.00 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE NORTHEAST HAVING A CENTRAL ANGLE OF 90° 01' 19", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF S 45° 54' 41" E; THENCE SOUTHEASTERLY ALONG THE ARC OF SAID CURVE 39.20 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 89° 04' 39" E PARALLEL WITH THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 611.00 FT. TO THE WEST LINE OF THE EAST 1320.00 FT. OF THE SAID SE 1/4; THENCE S 00° 42' 14" W ALONG SAID WEST LINE 100.04 FT.; THENCE S 89° 04' 39" W PARALLEL WITH THE SOUTH LINE OF THE SAID SE 1/4 A DISTANCE OF 600.222 FT. TO THE P.C. OF A CURVE CONCAVE TO THE SOUTHEAST HAVING A CENTRAL ANGLE OF 89° 50' 41", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF S 44° 05' 18" W; THENCE SOUTHWESTERLY ALONG THE ARC OF SAID CURVE 39.26 FT. TO THE P.T. AND THE POINT OF BEGINNING; CONTAINING 1.463 ACRES, MORE OR LESS.

EXHIBIT "B"

3 OF 4

DESCRIPTION OF 20 FT. UTILITY EASEMENT

THE WEST 20 FT. AND THE SOUTH 20 FT. OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, EXCEPT THE EAST 1320 FT. THEREOF; CONTAINING 4.239 ACRES, MORE OR LESS.

DESCRIPTION OF FUTURE ELEMENTARY SCHOOL:

THE NORTH 1072.34 FT. OF THE WEST 1/2 OF THE NW 1/4; EXCEPT THE EAST 530 FT. THEREOF, SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, CONTAINING 20.07 ACRES, MORE OR LESS, AND BEING SUBJECT TO A UTILITY EASEMENT OVER THE WEST 20 FT. THEREOF.

DESCRIPTION OF FUTURE MIDDLE SCHOOL

THE WEST 1/2 OF THE NW 1/4 LYING NORTH OF FLORIDA POWER & LIGHT COMPANY'S RIGHT-OF-WAY EASEMENT PER O.R. DK. 211, PAGE 143 AND D.R. DK. 1294, PAGE 494, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; EXCEPT THE NORTH 1072.34 FT. THEREOF AND EXCEPT THE EAST 365 FT. THEREOF; ALL IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, CONTAINING 30.04 ACRES, MORE OR LESS, AND BEING SUBJECT TO A UTILITY EASEMENT OVER THE WEST 20 FT. THEREOF.

DESCRIPTION OF DELTONA LAKES ELEMENTARY SCHOOL:

THE EAST 1320 FT. OF THE SOUTH 1320 FT. OF THE SE 1/4 OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, CONTAINING 40 ACRES, MORE OR LESS.

EXHIBIT "B"

4 OF 4

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

LEASE AGREEMENT

No. 1401

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida holds title to certain lands and property being utilized by the State of Florida for public purposes, and

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida is authorized in Section 253.03, Florida Statutes, to enter into leases for the use, benefit and possession of public lands by State agencies which may properly use and possess them for the benefit of the State;

NOW, THEREFORE, this agreement made between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND of the State of Florida, as Lessor, and the School Board of Volusia County as lessee and

WITNESSETH:

The parties, for and in consideration of mutual covenants and agreements hereinafter contained, hereby covenant and agree as follows:

1. The lessor does hereby lease to the lessee the following described premises in the County of Volusia, State of Florida, together with the improvements thereon (if applicable), viz:

(Exhibit A - attached)

TO HAVE AND TO HOLD the above described land for a period of 50 years for public school purposes.

2. The lessee shall have the right to enter upon said land for all purposes necessary to the full enjoyment by said lessee of the rights herein conveyed to it.

3. The lessee shall through its agents and employees prevent the unauthorized use of said land or any use thereof not in conformity with this lease.

EXHIBIT 'C'

4. This lease shall terminate at the sole option of the lessor, and the lessee shall surrender up the premises to the lessor, when and if said premises, including lands and improvements, shall cease to be used for school purposes. Any costs arising out of the enforcement of the terms of this lease agreement shall be the exclusive obligation of the lessee, payable upon demand of the lessor.

5. The lessee hereby covenants and agrees to investigate all claims of every nature at its own expense and to indemnify, protect, defend, hold and save harmless the lessor from any and all claims, actions, lawsuits and demands of any kind or nature arising out of this agreement to the extent allowable by law.

6. The lessor does not warrant or guarantee title, right or interest in the hereinabove described property.

7. The lessor or its duly authorized agents shall have the right at any time to inspect the said land and the works and operations thereon of the lessee in any matter pertaining to this agreement.

8. The lessee agrees to assume all responsibility for liabilities that accrue to the subject property or to the improvements thereon, including any and all drainage or special assessments or taxes of every kind and description which are now or may be hereafter lawfully assessed and levied against the subject property during the effective period of this lease.

9. The lessee is hereby authorized to grant utility and road easements which will be necessary to service authorized facilities located within the leased premises. Copies of any such easements granted shall be filed timely with the lessor.

10. This agreement is for the purposes specified herein, and subleases of any nature, excepting utility and road easements incident to authorized facilities, (Provision 9), are prohibited, unless previously authorized by the lessor.

11. A Management Plan for this tract shall be prepared by the lessee, in accordance with Section 253.014, Florida Statutes, within 12 months of the execution date of this Lease and shall be submitted to the Board for approval through State Lands, acting as agent for the Board. The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by the lessee and the Board at least every five (5) years. The lessee shall not use or alter the property except as provided for in the approved Management Plan without the advance written approval of State Lands, as agent for the Board. The land management plan prepared under this lease shall identify management strategies for exotic species, if present. The introduction of exotic species is prohibited, except when specifically authorized by the approved land management plan.

12. Upon cessation of occupation of said property, the lessee agrees to leave all fixed improvements for the use of the lessor and to put no claim upon said fixed improvements; or, at the option of the lessor, the lessee agrees to remove any or all improvements on the property at the lessee's expense.

13. Execution of this agreement in no way affects the lessee's obligations pursuant to Chapter 267, Florida Statutes.

14. The lessee hereby agrees that annual evidence of insurance will be submitted to the following: Bureau of State Lands Management, 3900 Commonwealth Boulevard, Tallahassee, Florida 32303.

15. The lessee hereby agrees that in the event no further use of this parcel or any part thereof is needed, notification will be given to the Bureau of State Lands Management, 3900 Commonwealth Boulevard, Tallahassee, Florida 32303, at least six months prior to the release of any or all of the premises. Notification will include a legal description, the

lease number, and an explanation of the release. The release will only be valid if approved by the Board of Trustees.

16. The lessee further agreed that any buildings on the premises will meet the following conditions upon release:

(a) The premises shall meet the building and safety codes in the location situated.

(b) The lessee shall properly dispose of utility fees, including having utilities turned off.

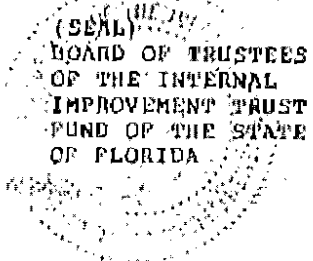
(c) The lessee shall not commit waste; fair wear and tear is acceptable.

(d) Prior to formal release a representative of the Bureau of State Lands Management shall perform an on-site inspection and the keys to any buildings on the premises shall be turned over to that Bureau.

(e) If the premises does not meet all conditions agreed upon, the lessee shall reimburse the Board for any expenses incurred in meeting the prescribed conditions.

(f) Any structures erected shall inure to the benefit of the State of Florida.

IN TESTIMONY WHEREOF, the lawfully designated agent of the Board of Trustees of the Internal Improvement Trust Fund has hereunto subscribed his name and has caused the official seal of said Board to be hereunto affixed, in the City of Tallahassee, Florida, on the 12 day of June, A.D. 1987.



BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA
By: [Signature]
EXECUTIVE DIRECTOR, AGENT FOR THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

APPROVED AS TO FORM AND LEGALITY
By: Dary L. Hester

THIS INSTRUMENT PREPARED AND REVIEWED
By: Catherine Daniels

SCHOOL BOARD OF VOLUSIA COUNTY
By: Beebe J. White

DATE November 18, 1986

VOLUSIA COUNTY SCHOOL BOARD
PROPERTY IN SECTION 16, TOWNSHIP 10 SOUTH, RANGE 31 EAST

DESCRIPTION OF THE VOCATIONAL, AGRICULTURE AND FOREST LAB LANDS

BEGINNING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 10 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, AS SHOWN ON THE PLAT OF DELTOMA LAKES, UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE RUN N 09° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 527.05 FT.; THENCE N 00° 54' 02" W A DISTANCE OF 839.628 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 08° 24' 02", A RADIUS OF 2,014.79 FT. AND A CHORD BEARING OF N 05° 06' 03" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 412.70 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 09° 16' 04" W A DISTANCE OF 2,023.97 FT. TO THE P.C. OF A CURVE CONCAVE TO THE EAST HAVING A CENTRAL ANGLE OF 00° 21' 55", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF N 05° 07' 06" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 425.57 FT. TO THE P.T.; THENCE N 00° 56' 00" W A DISTANCE OF 991.65 FT. TO THE NORTH LINE OF THE NE 1/4 OF SAID SECTION 16 AT A POINT 50.00 FT. WESTERLY OF THE CENTERLINE OF IDLEWISSE DR. AS SHOWN ON THE PLAT OF DELTOMA LAKES, UNIT FIFTY-THREE, AS RECORDED IN MAP BOOK 20, PAGES 32 THROUGH 42, AFORESAID PUBLIC RECORDS; THENCE S 00° 56' 33" W ALONG SAID NORTH LINE 11.89 FT. TO THE NORTH 1/4 CORNER OF SAID SECTION 16; THENCE S 80° 50' 07" W ALONG THE NORTH LINE OF THE NW 1/4 OF SAID SECTION 16 A DISTANCE OF 1,876.76 FT. TO THE WEST LINE OF THE EAST 530 FT. OF THE WEST 1/2 OF THE SAID NW 1/4; THENCE S 00° 10' 47" W ALONG THE SAID WEST LINE 1,072.34 FT.; THENCE N 00° 50' 07" E PARALLEL WITH THE NORTH LINE OF THE SAID NW 1/4 A DISTANCE OF 165 FT. TO THE WEST LINE OF THE EAST 365 FT. OF THE WEST 1/2 OF THE SAID NW 1/4; THENCE S 00° 10' 47" W ALONG THE SAID WEST LINE 943.11 FT. TO THE NORTHERLY LINE OF FLORIDA POWER & LIGHT COMPANY'S EASEMENT AS RECORDED IN OFFICIAL RECORDS BOOK 211, PAGE 143, AND OFFICIAL RECORDS BOOK 1294, PAGE 494, AFORESAID PUBLIC RECORDS; THENCE S 47° 52' 07" W A DISTANCE OF 927.04 FT. TO THE SOUTH LINE OF THE NW 1/4 OF SAID SECTION 16; THENCE S 09° 04' 33" W ALONG SAID SOUTH LINE 290.77 FT. TO THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S 00° 01' 03" W ALONG THE WEST LINE OF THE SW 1/4 OF SAID SECTION 16 A DISTANCE OF 2,631.05 FT. TO THE SW CORNER OF SAID SECTION 16; THENCE N 09° 05' 21" E ALONG THE SOUTH LINE OF SAID SECTION 16 A DISTANCE 2,668.96 FT. TO THE POINT OF BEGINNING; EXCEPT THE FOLLOWING DESCRIBED PARCEL:

COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF IDLEWISSE DRIVE AND THE NORTH LINE OF THE NE 1/4 OF SECTION 16, TOWNSHIP 10 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, AS SHOWN ON THE PLAT OF DELTOMA LAKES, UNIT FIFTY-THREE, RECORDED IN MAP BOOK 20, PAGES 32 THROUGH 42, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE S 80° 50' 33" W ALONG THE SAID NORTH LINE 50.00 FT.; THENCE S 00° 56' 00" E A DISTANCE OF 991.65 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 00° 06' 29", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF S 00° 59' 23" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 5.50 FT. TO THE POINT OF BEGINNING;

THENCE CONTINUE ALONG THE ARC OF SAID CURVE 148.79 FT. THROUGH A CENTRAL ANGLE OF 02° 55' 29" AND A CHORD BEARING OF S 02° 30' 21" E TO THE POINT OF REVERSE CURVE (P.R.C.) OF A CURVE CONCAVE TO THE SOUTHWEST HAVING A CENTRAL ANGLE OF 07° 03' 46", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF N 42° 30' 00" W; THENCE NORTHWESTERLY ALONG THE ARC OF SAID CURVE 37.99 FT. TO THE POINT OF TANGENCY (P.T.); THENCE S 80° 50' 07" W, PARALLEL WITH THE NORTH LINE OF THE NW 1/4 OF SAID SECTION 16 A DISTANCE OF 1,724.63 FT. TO THE WEST LINE OF THE EAST 365 FT. OF THE WEST 1/2 OF THE NW 1/4 OF SAID SECTION 16; THENCE N 00° 10' 47" E ALONG SAID WEST LINE 50.01 FT. TO THE SOUTH LINE OF THE NORTH 1072.34 FT. OF THE SAID NW 1/4; THENCE S 80° 50' 07" W ALONG SAID SOUTH LINE 165.00 FT. TO THE WEST LINE OF THE EAST 530 FT. OF THE SAID WEST 1/2 OF THE NW 1/4; THENCE N 00° 10' 47" E ALONG SAID WEST LINE 50.01 FT.; THENCE N 00° 50' 07" E PARALLEL WITH THE NORTH LINE OF THE SAID NW 1/4 A DISTANCE OF 1,803.65 FT. TO THE P.C. OF A CURVE CONCAVE TO THE NORTHWEST HAVING A CENTRAL ANGLE OF 90° 00' 44", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF N 42° 57' 45" E; THENCE NORTHEASTERLY ALONG THE ARC OF SAID CURVE 39.27 FT. TO THE P.T. AND THE POINT OF BEGINNING OF THE HEREIN DESCRIBED EXCEPTION; CONTAINING 290.49 ACRES, MORE OR LESS; SUBJECT TO A FLORIDA POWER AND LIGHT COMPANY EASEMENT AS RECORDED IN O.R. BK. 211, PG. 143, AND O.R. BK. 1294, PG. 494, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; AND BEING SUBJECT TO A UTILITY EASEMENT OVER THE WEST 20 FT. THEREOF AND THE SOUTH 20 FT. THEREOF.

VOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST

DESCRIPTION OF ENVIRONMENTAL STUDY AREA:

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA AS SHOWN ON THE PLAT OF DELTONA LAKES UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE N 09° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 697.052 FT. TO THE POINT OF BEGINNING; THENCE N 00° 54' 02" W A DISTANCE OF 639.59 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 00° 24' 02", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF N 05° 06' 03" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 427.36 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 09° 18' 04" W A DISTANCE OF 2,023.97 FT. TO THE P.C. OF A CURVE CONCAVE TO THE EAST HAVING A CENTRAL ANGLE OF 00° 21' 55", A RADIUS OF 2,014.79 FT. AND A CHORD BEARING OF N 05° 07' 06" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 410.97 FT. TO THE P.T.; THENCE N 00° 55' 08" W A DISTANCE OF 991.801 FT. TO THE NORTH LINE OF THE NE 1/4 OF SAID SECTION 16 AT A POINT 50.00 FT. EASTERLY OF THE CENTERLINE OF IDLEWISSE DRIVE AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTY-THREE AS RECORDED IN MAP BOOK 20, PAGES 32 THROUGH 42, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE N 08° 50' 33" E ALONG SAID NORTH LINE 2,556.79 FT. TO THE NE CORNER OF SAID NE 1/4; THENCE S 00° 19' 53" W ALONG THE EAST LINE OF THE SAID NE 1/4 A DISTANCE OF 2,634.33 FT. TO THE EAST 1/4 CORNER OF SAID SECTION 16; THENCE S 00° 42' 14" W ALONG THE EAST LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 1312.45 FT. TO THE NORTH LINE OF THE SOUTH 1/20 FT. OF THE SAID SE 1/4; THENCE S 09° 04' 39" W ALONG SAID NORTH LINE 1320 FT. TO THE WEST LINE OF THE EAST 1/20 FT. OF THE SAID SE 1/4; THENCE S 00° 42' 14" W ALONG SAID WEST LINE 1320 FT. TO THE SOUTH LINE OF SAID SE 1/4; THENCE S 09° 04' 36" W ALONG THE SAID SOUTH LINE 631.01 FT. TO THE POINT OF BEGINNING; EXCEPT THE FOLLOWING DESCRIBED PARCEL:

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA AS SHOWN ON THE PLAT OF DELTONA LAKES UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; RUN THENCE N 09° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 697.05 FT.; THENCE N 00° 54' 02" W A DISTANCE OF 25.00 FT. TO THE POINT OF BEGINNING OF THE HEREIN DESCRIBED EXCEPTION; THENCE CONTINUE N 00° 54' 02" W A DISTANCE OF 150.00 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE NORTHEAST HAVING A CENTRAL ANGLE OF 90° 01' 19", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF S 45° 54' 41" E; THENCE SOUTHEASTERLY ALONG THE ARC OF SAID CURVE 39.28 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 09° 04' 39" E PARALLEL WITH THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 611.00 FT. TO THE WEST LINE OF THE EAST 1/20.00 FT. OF THE SAID SE 1/4; THENCE S 00° 42' 14" W ALONG SAID WEST LINE 100.04 FT.; THENCE S 09° 04' 39" W PARALLEL WITH THE SOUTH LINE OF THE SAID SE 1/4 A DISTANCE OF 600.222 FT. TO THE P.C. OF A CURVE CONCAVE TO THE SOUTHEAST HAVING A CENTRAL ANGLE OF 09° 50' 41", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF S 44° 05' 16" W; THENCE SOUTHWESTERLY ALONG THE ARC OF SAID CURVE 39.26 FT. TO THE P.T. AND THE POINT OF BEGINNING OF THE HEREIN DESCRIBED EXCEPTION; SAID ENVIRONMENTAL AND STUDY AREA CONTAINING 230.31 ACRES, MORE OR LESS.

SUBJECT TO A FLORIDA POWER AND LIGHT COMPANY EASEMENT AS RECORDED IN OFFICIAL RECORDS BOOK 211, PAGE 143, AND OFFICIAL RECORDS BOOK 1294, PAGE 494, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; AND SUBJECT TO A UTILITY EASEMENT OVER THE SOUTH 20 FT. THEREOF.

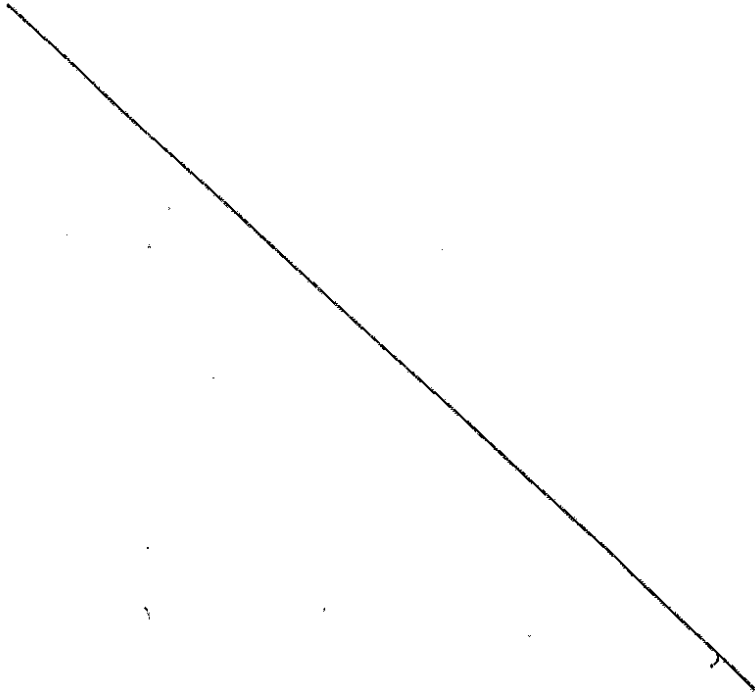
YOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST

DESCRIPTION OF ROAD "A":

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, YOLUSIA COUNTY, FLORIDA, AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF YOLUSIA COUNTY, FLORIDA; THENCE RUN N 89° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 597.05 FT. TO THE POINT OF BEGINNING; THENCE N 00° 54' 02" W A DISTANCE OF 639.63 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 00° 24' 02" AND A RADIUS OF 2,814.79 FT. AND A CHORD BEARING OF N 05° 06' 03" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 412.70 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 09° 18' 04" W A DISTANCE OF 2,023.97 FT. TO THE P.C. OF A CURVE CONCAVE TO THE EAST HAVING A CENTRAL ANGLE OF 08° 21' 55", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF N 05° 07' 06" W; THENCE NORTHERLY ALONG THE ARC OF SAID CURVE 425.57 FT. TO THE P.T.; THENCE N 00° 56' 00" W A DISTANCE OF 991.65 FT. TO THE NORTH LINE OF THE NE 1/4 OF SAID SECTION 16 AT A POINT 50.00 FT. WESTERLY OF THE CENTERLINE OF IDLEWISSE DR. AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTY-THREE, AS RECORDED IN MAP BOOK 20, PAGES 32 THROUGH 42, AFORESAID PUBLIC RECORDS; THENCE N 80° 50' 33" E ALONG SAID NORTH LINE 100.00 FT.; THENCE S 00° 56' 04" E A DISTANCE OF 991.00 FT. TO THE P.C. OF A CURVE CONCAVE TO THE EAST, HAVING A CENTRAL ANGLE OF 08° 21' 55", A RADIUS OF 2,814.79 FT. AND A CHORD BEARING OF S 05° 07' 06" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 410.97 FT. TO THE P.T.; THENCE S 09° 10' 04" E A DISTANCE OF 2,023.97 FT. TO THE P.C. OF A CURVE CONCAVE TO THE WEST, HAVING A CENTRAL ANGLE OF 00° 24' 02", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF S 05° 06' 03" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 427.36 FT. TO THE P.T.; THENCE S 00° 54' 02" E A DISTANCE OF 639.59 FT. TO THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16; THENCE S 89° 04' 39" W ALONG THE SAID SOUTH LINE 100.00 FT. TO THE POINT OF BEGINNING; CONTAINING 12.152 ACRES, MORE OR LESS.

SUBJECT TO A FLORIDA POWER AND LIGHT COMPANY EASEMENT AS RECORDED IN OFFICIAL RECORDS BOOK 211, PAGE 143, AND OFFICIAL RECORDS BOOK 1294, PAGE 494, PUBLIC RECORDS OF YOLUSIA COUNTY, FLORIDA.



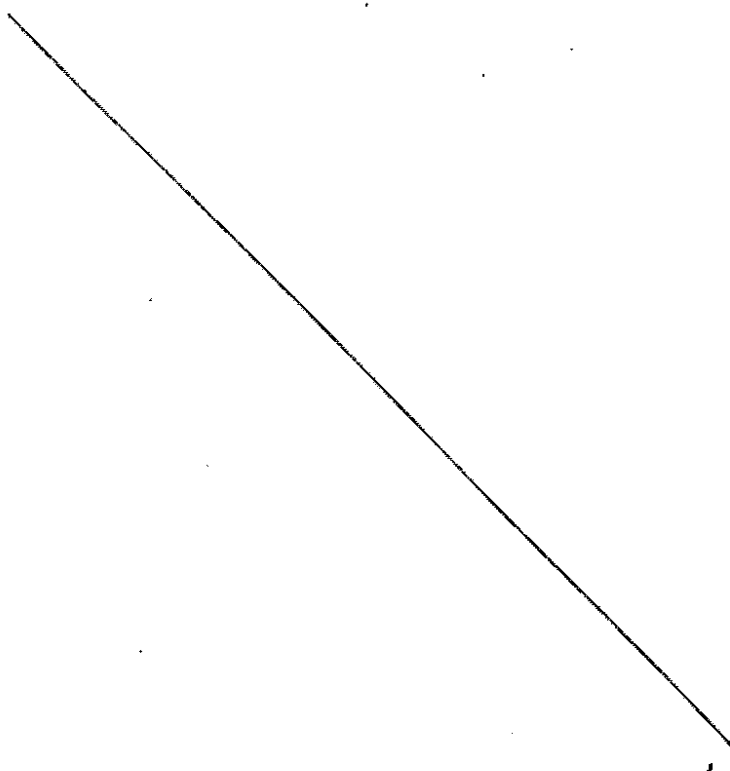
VOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST

DESCRIPTION OF ROAD "D":

COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF LOUWEISE DRIVE AND THE NORTH LINE OF THE NE 1/4 OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, AS SHOWN ON THE PLAT OF DELTONA LAKES, UNIT FIFTY-THREE, RECORDED IN MAP BOOK 28, PAGES 32 THROUGH 42, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; THENCE S 08° 58' 33" W ALONG THE SAID NORTH LINE 50.00 FT.; THENCE S 00° 56' 00" E A DISTANCE OF 991.65 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE WEST HAVING A CENTRAL ANGLE OF 00° 06' 29", A RADIUS OF 2,914.79 FT. AND A CHORD BEARING OF S 00° 59' 23" E; THENCE SOUTHERLY ALONG THE ARC OF SAID CURVE 5.50 FT. TO THE POINT OF BEGINNING;

THENCE CONTINUE ALONG THE ARC OF SAID CURVE 140.79 FT. THROUGH A CENTRAL ANGLE OF 02° 55' 29" AND A CHORD BEARING OF S 02° 30' 21" E TO THE POINT OF REVERSE CURVE (P.R.C.) OF A CURVE CONCAVE TO THE SOUTHWEST HAVING A CENTRAL ANGLE OF 07° 03' 46", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF N 47° 30' 00" W; THENCE NORTHWESTERLY ALONG THE ARC OF SAID CURVE 37.99 FT. TO THE POINT OF TANGENCY (P.T.); THENCE S 00° 58' 07" W, PARALLEL WITH THE NORTH LINE OF THE NW 1/4 OF SAID SECTION 16 A DISTANCE OF 1,724.63 FT. TO THE WEST LINE OF THE EAST 1/2 OF THE NW 1/4 OF SAID SECTION 16; THENCE N 00° 10' 47" E ALONG SAID WEST LINE 50.01 FT. TO THE SOUTH LINE OF THE NORTH 1/2 OF THE SAID NW 1/4; THENCE S 08° 58' 07" W ALONG SAID SOUTH LINE 165.00 FT. TO THE WEST LINE OF THE EAST 1/2 OF THE SAID WEST 1/2 OF THE NW 1/4; THENCE N 00° 10' 47" E ALONG SAID WEST LINE 50.01 FT.; THENCE N 08° 58' 07" E PARALLEL WITH THE NORTH LINE OF THE SAID NW 1/4 A DISTANCE OF 1,003.65 FT. TO THE P.C. OF A CURVE CONCAVE TO THE NORTHWEST HAVING A CENTRAL ANGLE OF 90° 00' 44", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF N 43° 57' 45" E; THENCE NORTHEASTERLY ALONG THE ARC OF SAID CURVE 30.27 FT. TO THE P.T. AND THE POINT OF BEGINNING; CONTAINING 4.20 ACRES, MORE OR LESS; SUBJECT TO A FLORIDA POWER AND LIGHT COMPANY EASEMENT AS RECORDED IN O.R. BK. 211, PG. 143, AND O.R. BK. 1294, PG. 494, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA;



Prepared By: ARTHUR W. STEINMAN & ASSOCIATES, INC., DeLand, Florida

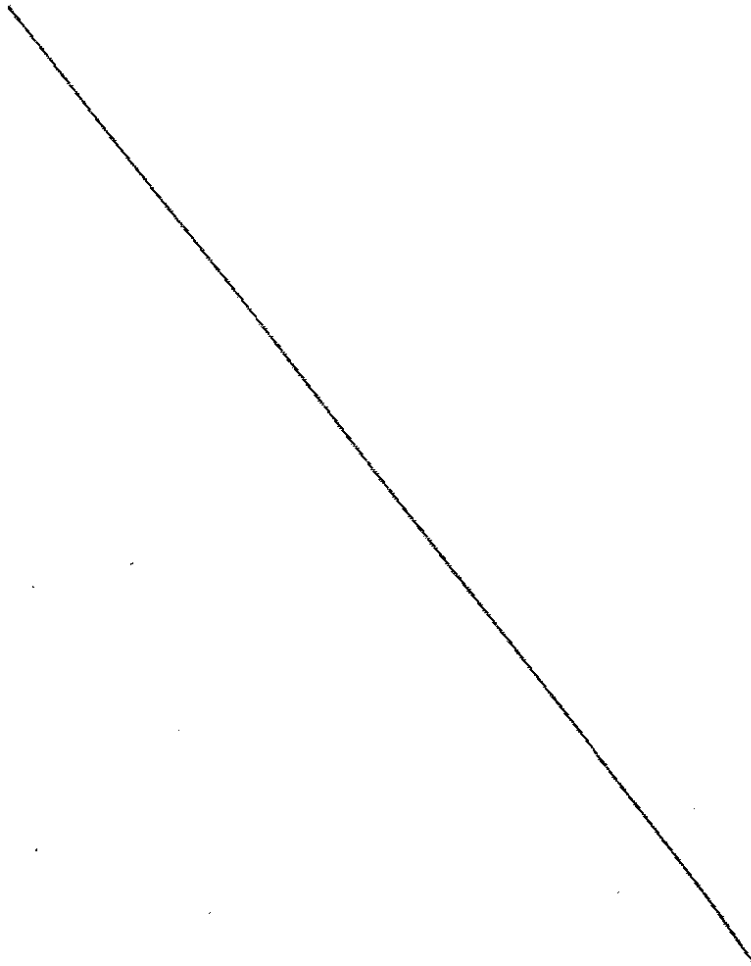
EXHIBIT "C"

VOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST

DESCRIPTION OF ROAD "C":

COMMENCING AT THE SOUTH 1/4 CORNER OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA AS SHOWN ON THE PLAT OF DELTOMA LAKES UNIT FIFTEEN, AS RECORDED IN MAP BOOK 25, PAGES 230 THROUGH 233, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; RUN THENCE N 09° 04' 39" E ALONG THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 697.05 FT.; THENCE N 00° 54' 02" W A DISTANCE OF 25.00 FT. TO THE POINT OF BEGINNING; THENCE CONTINUE N 00° 54' 02" W A DISTANCE OF 150.00 FT. TO THE POINT OF CURVATURE (P.C.) OF A CURVE CONCAVE TO THE NORTHEAST HAVING A CENTRAL ANGLE OF 90° 01' 19", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF S 45° 54' 41" E; THENCE SOUTHEASTERLY ALONG THE ARC OF SAID CURVE 39.20 FT. TO THE POINT OF TANGENCY (P.T.); THENCE N 09° 04' 39" E PARALLEL WITH THE SOUTH LINE OF THE SE 1/4 OF SAID SECTION 16 A DISTANCE OF 611.00 FT. TO THE WEST LINE OF THE EAST 1320.00 FT. OF THE SAID SE 1/4; THENCE S 00° 42' 14" W ALONG SAID WEST LINE 104.04 FT.; THENCE S 09° 04' 39" W PARALLEL WITH THE SOUTH LINE OF THE SAID SE 1/4 A DISTANCE OF 608.222 FT. TO THE P.C. OF A CURVE CONCAVE TO THE SOUTHEAST HAVING A CENTRAL ANGLE OF 09° 50' 41", A RADIUS OF 25.00 FT. AND A CHORD BEARING OF S 44° 05' 10" W; THENCE SOUTHWESTERLY ALONG THE ARC OF SAID CURVE 39.26 FT. TO THE P.T. AND THE POINT OF BEGINNING; CONTAINING 1.463 ACRES, MORE OR LESS.



Prepared By: ARTHUR W. STEINMAN & ASSOCIATES, INC., Deland, Florida

EXHIBIT "C"

9 OF 12

NO. 3403
EXHIBIT "A"
PAGE 5 OF 6

VOLUSIA COUNTY SCHOOL BOARD

PROPERTY IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST

DESCRIPTION OF 20 FT. UTILITY EASEMENT

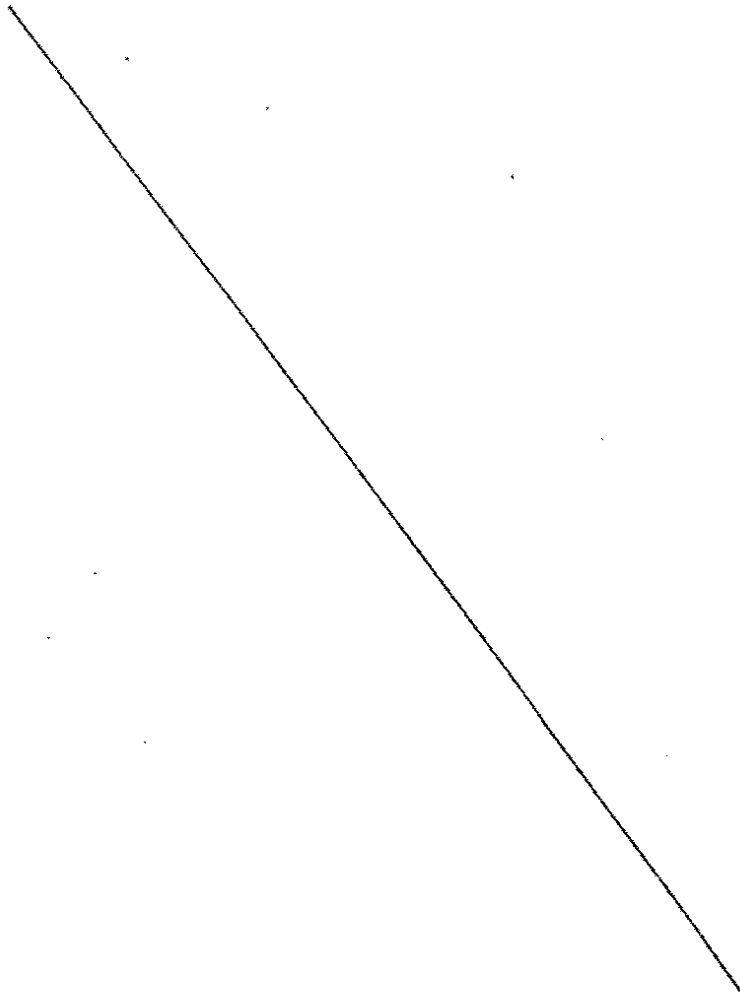
THE WEST 20 FT. AND THE SOUTH 20 FT. OF SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, EXCEPT THE EAST 1320 FT. THEREOF; CONTAINING 4.239 ACRES, MORE OR LESS.

DESCRIPTION OF FUTURE ELEMENTARY SCHOOL:

THE NORTH 1072.34 FT. OF THE WEST 1/2 OF THE NW 1/4; EXCEPT THE EAST 530 FT. THEREOF, SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, CONTAINING 20.07 ACRES, MORE OR LESS, AND BEING SUBJECT TO A UTILITY EASEMENT OVER THE WEST 20 FT. THEREOF.

DESCRIPTION OF FUTURE MIDDLE SCHOOL

THE WEST 1/2 OF THE NW 1/4 LYING NORTH OF FLORIDA POWER & LIGHT COMPANY'S RIGHT-OF-WAY EASEMENT PER O.R. BK. 211, PAGE 143 AND O.R. BK. 1294, PAGE 194, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA; EXCEPT THE NORTH 1072.34 FT. THEREOF AND EXCEPT THE EAST 265 FT. THEREOF; ALL IN SECTION 16, TOWNSHIP 18 SOUTH, RANGE 31 EAST, VOLUSIA COUNTY, FLORIDA, CONTAINING 30.04 ACRES, MORE OR LESS, AND BEING SUBJECT TO A UTILITY EASEMENT OVER THE WEST 20 FT. THEREOF.



Prepared By: ARTHUR W. STEINMAN & ASSOCIATES, INC., DeLand, Florida

EXHIBIT 'C'

10 OF 12

NO. 3403

EXHIBIT 'C'

JOHN H. MCKENZIE, III
GENERAL COUNSEL
BARBARA STARBUCK HARMON
DEPUTY GENERAL COUNSEL
CAROLYN S. HOLFIELD
COUNSEL
CHARLES S. RUIKRE
COUNSEL
CARL J. ZAJNER
COUNSEL



IRVING MARINER
GOVERNOR
CHAIRMAN OF THE BOARD
BETTY CASTON
COMMISSIONER OF EDUCATION
SECRETARY AND EXECUTIVE DIRECTOR
DOYLE CORNER
COMMISSIONER OF AGRICULTURE
GERALD LEWIS
COMPTROLLER
BILL GUNTER
TREASURER
BOB BUTTENWORTH
ATTORNEY GENERAL
JIM SMITH
SECRETARY OF STATE

FLORIDA BOARD OF EDUCATION
OFFICE OF THE GENERAL COUNSEL

KNOTT BUILDING
TALLAHASSEE, FLORIDA 32309-0400
TELEPHONE (904) 488-7707

May 3, 1989

MEMORANDUM

TO: Thomas E. Gardner, Executive Director
Department of Natural Resources

FROM: Sydney H. McKenzie *SHM*
General Counsel

RE: Volusia County School Board
Request to Utilize Section 16 Lands

The Volusia County School Board, presently leasing Section 16 land from the State, has proposed to use a portion of that property for a school bus facility.

According to the provisions of the lease agreement and the applicable federal act, the subject property must be used for "public school purposes". The proposed use of Section 16 land for a school bus transportation facility appears to be legally permissible.

SHM/ts

cc: Pete Mallison, Director
Division of State Lands, Department of Natural Resources
Deborah Hart, Chief
Bureau of Uplands Management
Division of State Lands, Department of Natural Resources
Mary Lou Rajchel, Chief Cabinet Aide
Department of Education

EXHIBIT 'C'

11 OF 12

RECEIVED

JUN 20 1989

FACILITIES PLANNING
& RESEARCH

STATE OF FLORIDA
DEPARTMENT OF NATURAL RESOURCES

Marjory Stoneman Douglas Building • 3900 Commonwealth Boulevard • Tallahassee, Florida 32399
Tom Gardner, Executive Director

June 9, 1989

Ms. McGlade L. Holloway
Director
Facilities Property Management
Post Office Box 2118
DeLand, Florida 32721-2118

RE: Lease No. 3403

Dear Ms. Holloway:

You have requested whether lease 3403 would allow for a school bus transportation facility to be constructed on a portion of the site.

I have reviewed the lease language which is for "public school purposes" and believe that the requested use is an allowable use. Enclosed is a copy of a letter from the Florida Board of Education concurring with the proposed use. Since the facility will involve diesel fuel and gasoline storage, you will need to contact the Department of Environmental Regulation and determine which rules and laws this new facility must comply with.

Please contact me at (904) 488-2291 if you have any further questions.

Sincerely,



Deborah A. Hart, Chief
Bureau of Uplands Management
Division of State Lands

DAH/ss
Enclosure

EXHIBIT "C"

12 OF 12

RECEIVED
JUN 20 1989
FACILITIES PLANNING
& RESEARCH



FOREST RESOURCE

DELAND SCHOOL FOREST

DELTONA TRACT

Prepared by:

James E. Grubbs

Volusia County Forester

Reg. Forester No. 595

Date 7/20/79

MANAGEMENT PLAN

DELAND SCHOOL FOREST

DELTONA TRACT

Introduction and History

This 640 acre tract of land comprises all of section 16, township 18 south, range 31 east, Volusia County, Florida. The property lies northeast of the intersection of Elkcam Boulevard and Dixie-Belle Drive in Deltona.

The land has been part of the DeLand High School FFA forest for years. It was previously known as the Lake Helen forest; however, since the development of the Deltona community it has become known as the Deltona Tract.

At one time, the FFA Chapter was fairly active in management of the tract. However, in recent years management activity has decreased. The forest has been a definite source of income for the school, but its effectiveness as an educational tool seems to have decreased as of late.

A three acre portion of the property is currently being used as a sand pine progeny study area by the University of Florida.

The property is bordered on the northern, western and southern sides by the Deltona housing development. The property along the eastern boundary is also privately owned but is not part of the Deltona development. Roads are established but the area is only partially developed. Garbage dumping occurs to a small extent along the northern boundary; this problem will most likely increase as the surrounding area develops.

This site is the only portion of the sand pine scrub ecosystem in the area that is not privately owned. In the future, this may well be the only undeveloped portion of this ecosystem in the area.

Current Resources

The soil conditions and plant life are typical of the sand pine scrub ecosystem. Soils are primarily paola and orsino sands. Paola is an excessively drained deep sandy soil and orsino is a deep, moderately well drained soil. Both of these soil types are very poor, infertile soils with very little organic matter.

Lesser vegetation includes rosemary (Ceratiola ericoides), rusty lyonia (Lyonia ferruginea), and a variety of native blueberries (Vaccinium spp).

Major vegetation includes saw palmetto (Serenoa repens), scrub hickory (Carya floridana), sand-live oak (Quercus geminata), myrtle oak, (Quercus myrtifolia), chapman oak (Quercus chapmanii), silk bay (Persea humilis) and sand pine (Pinus clausa). Slash pine (Pinus elliottii) can be found near the ponds.

It should also be noted that a specimen of the Florida Scrub Jay was noticed during the field inspection of this site. The scrub jay is found exclusively in the sand pine scrub ecosystem and prefers open stands. This species is non-migratory and is fairly localized in its activities. The best method of securing the continued existence of this threatened bird is to protect its environment and manage appropriate forest lands with its habit requirements in mind.

Current Timber Resources

The primary timber species found on this tract is sand pine. Overall, it is in fair condition with negligible insect and/or disease problems. The merchantable timber is growing at approximately 3 1/2 per cent a year. A stand by stand description of the timber, based upon stocking follows.

Stand 1 {144 acres} -- Stocking open, basal area less than 19 square feet per acre. Contains approximately 3 cords of pulpwood per acre. Regeneration is negligible.

Stand 2 {203 acres} -- Medium stocking with 47 square feet of basal area per acre. This is the most heavily stocked natural stand on the tract, containing approximately nine cords per acre.

Stand 3 {39 acres} -- Heavily stocked stand of ten year old planted sand pine.

Stand 4 {3 acres} -- Sand pine progeny test area.

Stand 5 {70 acres} -- Stocking poor, basal area 20 to 39 square feet per acre.

Stand 6 {79 acres} -- Stocking poor to medium with approximately 35 to 45 square feet of basal area per acre.

Stand 7 {11 acres} -- Slash pine islands in an area of receding lakes. Medium stocking.

Management Needs

A portion of this property should be maintained in its natural state for aesthetic and environmental purposes. The northeast corner of the property, starting at the fireline in stand number one and running to the north and east property lines, would be ideal. This would include the two timber types (sand pine and slash pine) and the lakes providing an excellent situation for environmental education. The open sand pine scrub in this area also provides the ideal habitat for the scrub jay.

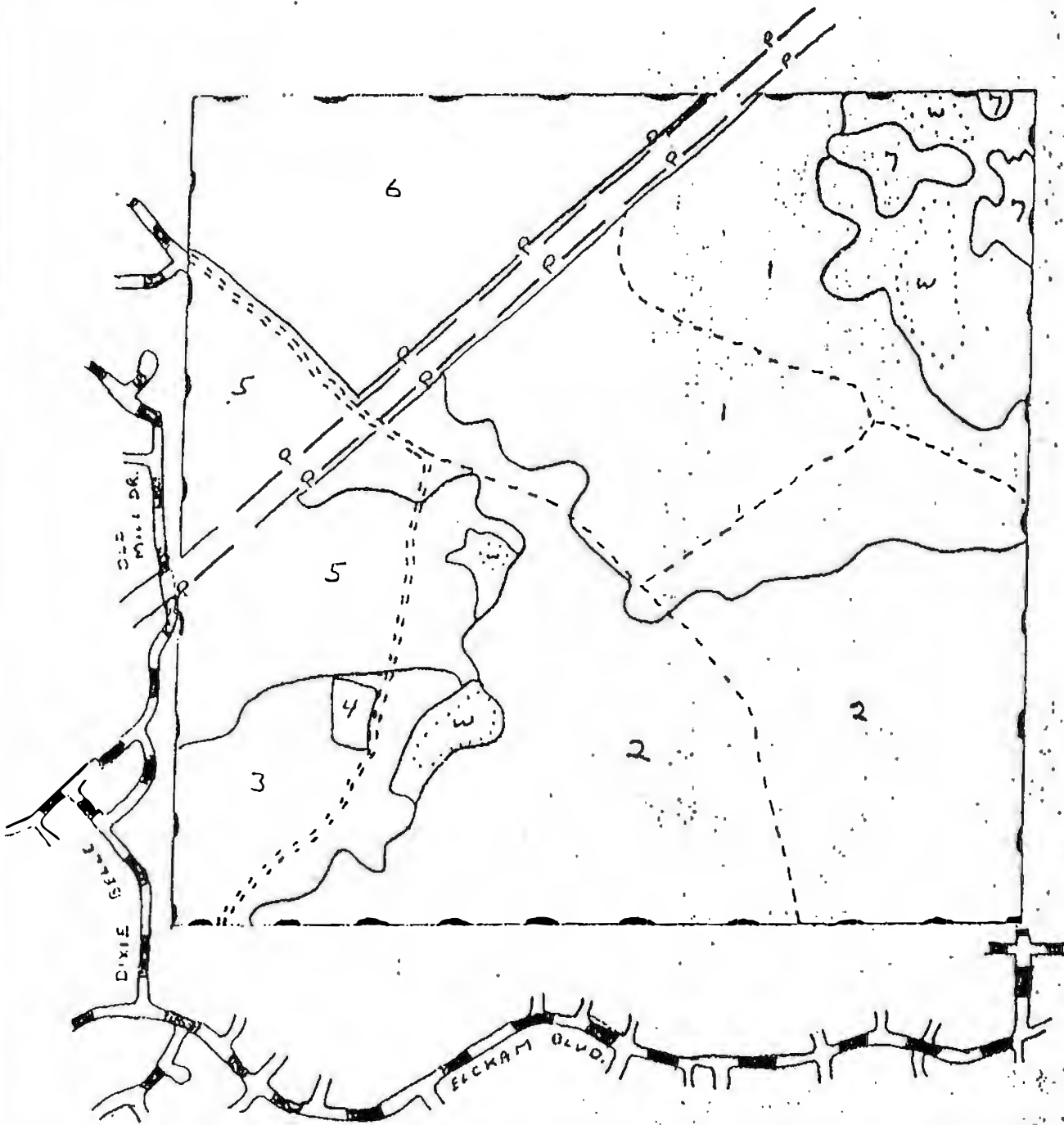
The sand pine progeny area should also be maintained in an undisturbed and protected state for the continuation of the study.

The remainder of the tract should be managed as a demonstration forest. Stands should be converted to full stocking by areas, starting with the poorest stocked areas first and progressing to the heavier stocked stands. After the stands are converted to full stocking they should be placed on a 30 year rotation and harvested in irregular shaped blocks ranging from 50 - 80 acres.

It is of utmost importance that the area be protected from wildfire.

CR. No. _____

PHOTO No. _____



WOODLAND TRACING

LEGEND

- ROADS:**
- PAVED
 - GRADED
 - WOODS
 - RILROAD
- BOUNDARY**
- FENCE
 - PROPERTY
 - STAND

- R/W**
- GAS
 - POWER
 - TELEPHONE
- FIRELINE**
- PROPOSED (Red)
- STREAM**
- INTERMITTENT
- BUILDINGS**
- RES.
 - BUS

DELANO SCHOOL FORE
NAME: DELTONA TRACT

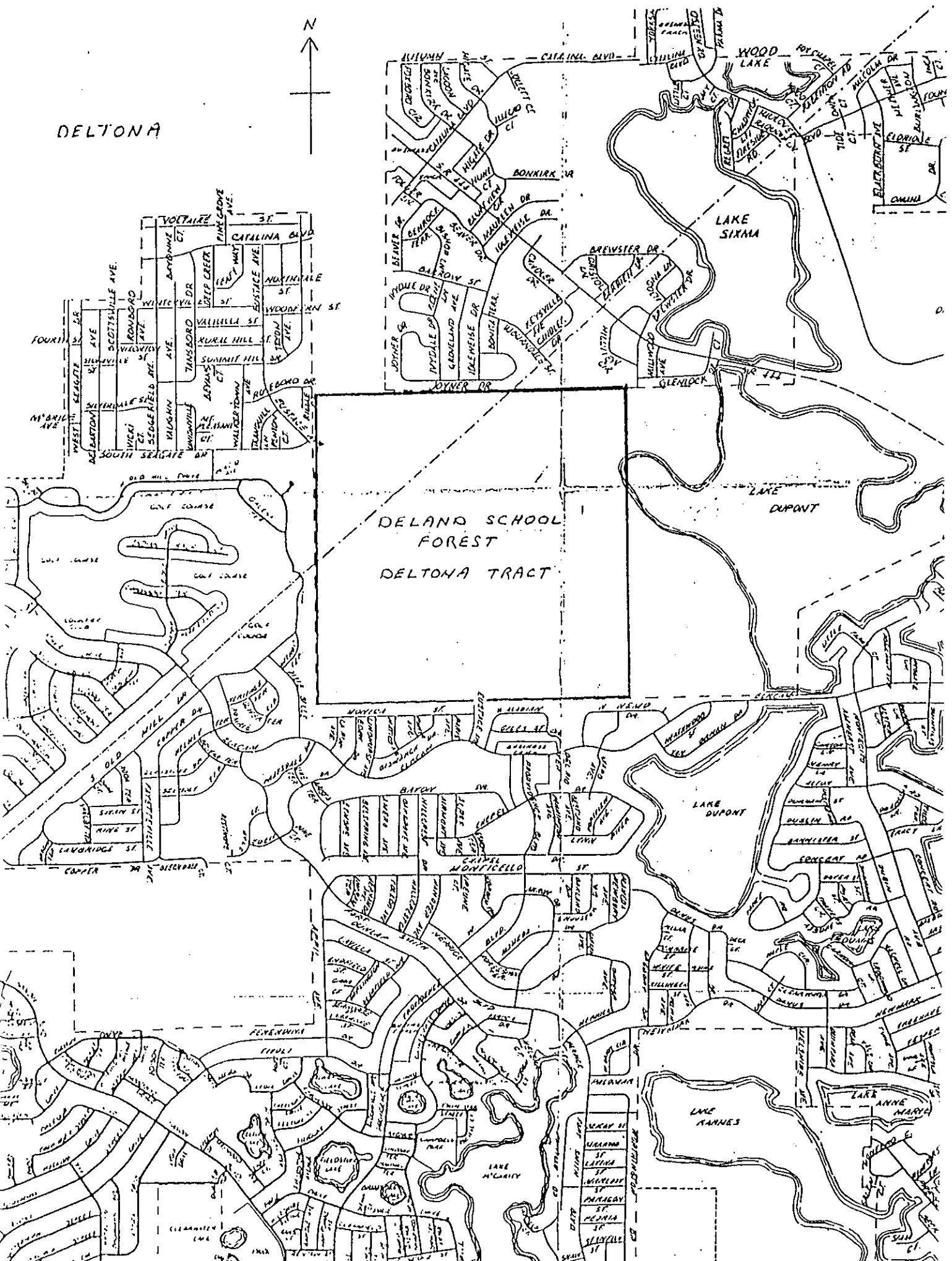
ADDRESS: DEPARTMENT OF
 NATURAL RESOURCES

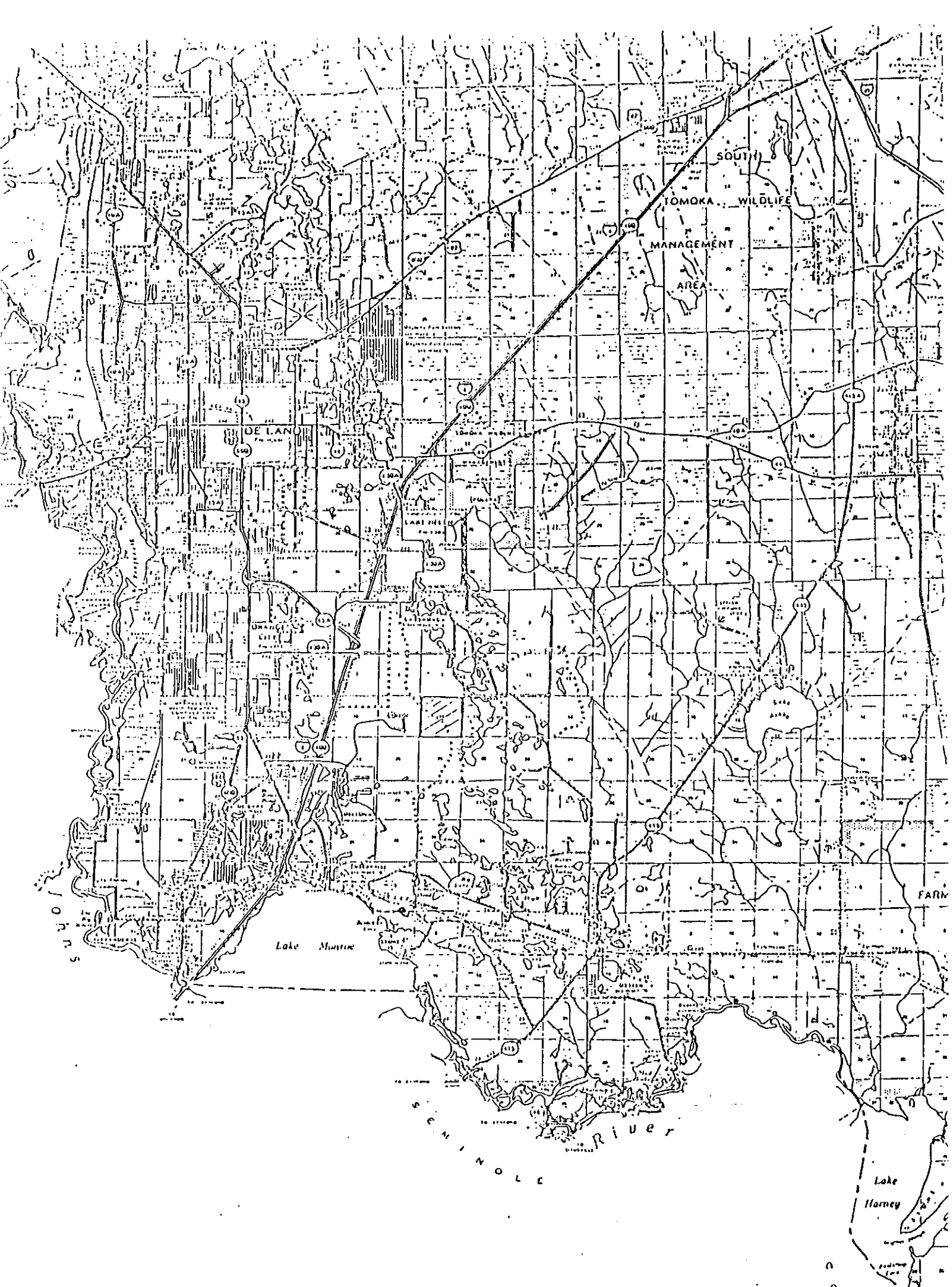
COUNTY: VOLUSIA

SCALE: 1" = 1000' **DATE:** 7/18/77

J.E. GRUBBS
 FARM FORESTER

DELTONA





FM-10 (9/75)
1.5M(9/75)

NAME DELTA TRACT POINT SAMPLE TALLY SHEET - SAWTIMBER OR PULPWOOD
RECORD BY DBH CLASS IN EACH PLOT BLOCK
DATE 8/16/75 UNDER PROPER LOG LENGTH

SHEET 1 OF 2

CUMULATIVE DIAMETER INCHES	PLOT NUMBER	NUMBER 16' LOGS OR (0.1/4)' CUTS									BASAL AREA																																							
		2	3	4	5	6	7	8	9																																									
0	CUT	1									0	<table border="1"> <tr> <td>Cut & Leave</td> <td>Cut</td> </tr> <tr> <td>Av. Dia./Tree</td> <td></td> </tr> <tr> <td>= $\frac{\Sigma \text{Cum. Dia.}}{\# \text{ Trees}}$</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>BA/Tree</td> <td></td> </tr> <tr> <td>= DBH(.00545)</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>#Trees/Ac</td> <td></td> </tr> <tr> <td>= Total BA</td> <td></td> </tr> <tr> <td># Plots</td> <td></td> </tr> <tr> <td>BA/Tree</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> <tr> <td>=</td> <td></td> </tr> </table>	Cut & Leave	Cut	Av. Dia./Tree		= $\frac{\Sigma \text{Cum. Dia.}}{\# \text{ Trees}}$		=		BA/Tree		= DBH(.00545)		=		#Trees/Ac		= Total BA		# Plots		BA/Tree		=		=		=		=		=		=		=		=	
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N	CUT	PRODUCTS																																																
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8.15																																																		
16.50																																																		

Total (cut, leave) _____
Total (cut) _____

N = No. of Plots _____
M = $\frac{\Sigma \text{Basal Area}}{\text{No. of Plots}}$ _____
R = Range of Basal Area = _____
F = Given % _____
SD = $\frac{R}{F}$ = _____
SE = $\frac{SD}{\sqrt{N}}$ = _____
CV = $\frac{SD}{M}$ = _____ X 100 = _____ %
LE = $\frac{SE}{M}$ = _____ X 100 = _____ %
Y = $\frac{(CV)^2}{(A)^2}$ = _____
A = Desired Accuracy _____

Pulpwood: Conv. factor, Haven Table of Cu. Ft. Tree Vol. *
(Cut, Leave): Cds/Ac = $\frac{\text{Products (BAF)}}{\# \text{Plots (90)}}$ = _____ Cds/Ac
(Cut) = _____ Cds/Ac
Sawtimber: Form Class; conv. factors; Scribner Log Rule *
(Cut, Leave): BF/Ac = $\frac{\text{Products (100)}}{\# \text{Plots}}$ = _____ BF/Ac
(Cut) = _____ BF/Ac

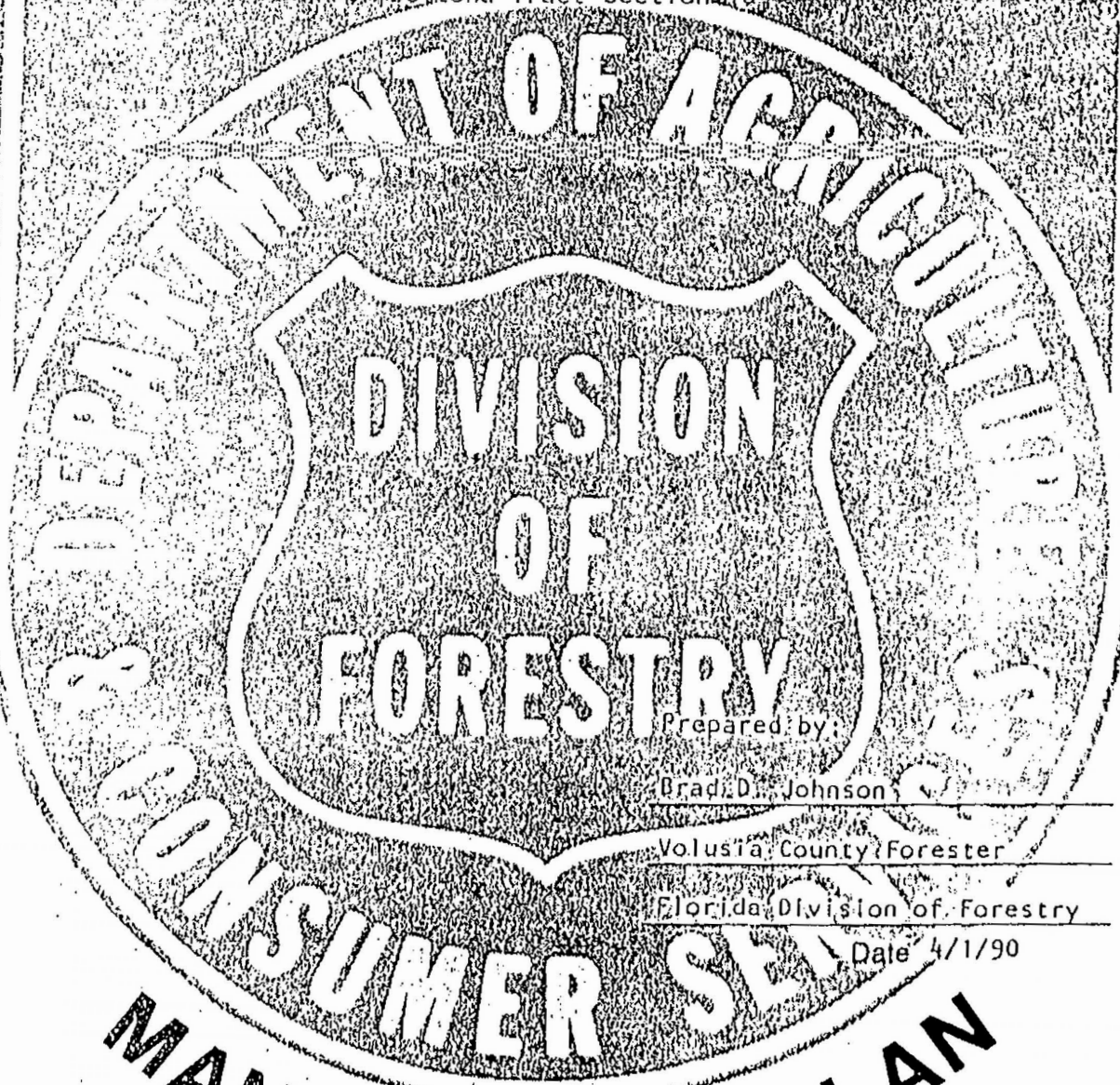
Tree No.	Dob	D1B	d1b	$\frac{d1b}{D1B}$	$\frac{(d1b)^2}{(D1B)^2}$	Total Hgt.	Age
1	6.8	6.5	4.55			28	20
2	7.8	6.8	6.0			41	40
3	8.1	7.3	6.3			30	29
4	11.0	10.0	9.0			32	31
5	14.1	13.2	12.0			28	41

Growth Projection _____ Site Index _____
Gross Growth % = $1 - \frac{\Sigma \frac{d1b}{D1B}}{\text{No. Trees}}$

FOREST RESOURCE
FLORIDA

Forest Management Recommendations

Deltona Tract Section 16



Prepared by:

Brad D. Johnson

Volusia County Forester

Florida Division of Forestry

Date 4/1/90

MANAGEMENT PLAN

FOREST MANAGEMENT RECOMMENDATIONS

DELTONA TRACT SECTION 16

General Comments

Most of the following recommendations will be in addition to, and refer to the attached 1979 Deltona Tract Forest Management Plan prepared by Jim Grubbs, Volusia County Forester, Florida Division of Forestry. Section 16 of Township 10 South, Range 31 East in Deltona, Florida is a very unique piece of property with great potential for public benefit. For the most part, I support the management plan written by Jim Grubbs. He has adequately addressed the uniqueness of this area.

I would like to emphasize that this area has unparalleled potential for environmental education and preservation. The Section 16 Tract is one of the few remaining undeveloped areas remaining in Deltona. The deep sands of this area are valuable for aquifer recharge and a unique sand hill ecological community. The area is readily accessible to area school children and the surrounding urban area. Development within this area should be restricted to educational and environmental uses.

Environmental Education

Being a School Board property, environmental education is a valuable and obvious use. No other rural undeveloped property in the county is as accessible to as many school children as this Section 16 Tract. Within the year 2 additional elementary schools and a middle school will be in operation on the property. School children can access this tract with little or no transportation

required. This sand hill community is a valuable learning tool when combined with the low flatwood community of the School Board's Bicentennial Youth Park. School children and the general public now have a unique opportunity to learn about two sharply contrasting ecological communities.

As Mr. Grubbs suggests, I recommend setting aside the northeast corner of the tract from the fireline north for environmental education. (See the management plan stand map). This is approximately the north half of Stand 1, encompassing 70-80 acres. This area exhibits the contrast between the lake or slash pine community and the surrounding sand hill or sand pine community. This area is already, in part, good scrub jay habitat. Students could learn about this unique bird. Parts of this area should be prescribed burned to maintain the scrub jay habitat. A facility much like the Bicentennial Youth Park could be developed here.

Stands 3 and 4 as well as the area immediately surrounding the small dry lakes in the southwest corner of the section, should also be preserved for environmental education opportunities. The planted sand pine in stands 3 and 4 offer a unique study area for sand pine forest management.

The east half of Stand 2 and all of Stand 6 should also be primarily managed for environmental education, with primary consideration given to aesthetics and a natural sand pine community. Small patch cuts could be implemented in these areas to show students natural regeneration of sand pine and wildlife habitat enhancement. The cutting of trails and creation of some outdoor classrooms would be useful in these areas. Students attending the

schools in this area could walk into these unique outdoor classrooms. The schools in these areas should encourage minimum impact management.

Scrub Jay Habitat

I am recommending the south half of Stand 1 and ^{all of} Stand 5 be reserved for scrub jay habitat and mitigation. This area includes approximately 150 acres. The northernmost 50 acres of stand 2 could also be included in this area to make an approximately 200 acre scrub jay management area. Stands 1 and 5 are the most sparsely stocked stands of sand pine on the property. Therefore, these areas would be best for removal of the sand pine overstory to help create scrub jay habitat. Prescribed burning or mechanical tree harvesting would accomplish this purpose. The Division of Forestry can help with these management activities. A prescribed burn would leave dead sand pine creating nesting sites for cavity nesting birds and perch areas for other species. A tree harvest would not leave standing dead trees for wildlife, but would create some monetary income. Both alternatives will help to create scrub jay habitat. Prescribed burning will have to be implemented in either case to maintain scrub jay habitat. Because of the obvious aesthetical drawbacks of creating scrub jay habitat, I am recommending developing no more than 200-250 acres of this type of management on the whole tract. This scrub jay area can be a valuable teaching tool as well. Some buffering should be implemented along Providence Blvd. and area subdivisions. It is important that this Section 16 property be managed for a multiple of uses to maximize its educational and public benefits.

Recreation

Of course, section 16 has ample opportunities for outdoor recreation. Maintained trails and environmental education facilities are useful to the school children and the general public as well. Hiking and nature study should be encouraged on this tract.

However, the present all terrain vehicle use of the site is incompatible with the tracts purpose. The tract should be fenced and signed to keep unwanted vehicles and illegal dumping out.

Final Comments

The School Board now has a unique opportunity to plan and develop a valuable area in the most rapidly growing section of Volusia County. With the extension of Providence Blvd. through the tract, commercial development pressures are bound to increase. I encourage the School Board to continue to utilize this property for its intended use, public education, not monetary gain.

Final

ENVIRONMENTAL ASSESSMENT

OF

SECTION 16

DELTONA, FLORIDA

A

SAND PINE SCRUB ECOSYSTEM

FOR

MS. PAT DRAGO
VOLUSIA COUNTY SCHOOLS
P.O. BOX 2118
200 NORTH CLARA AVENUE
DELAND, FLORIDA 32721-2118

BY

ENVIRONMENTAL SERVICES, INC.
9124 CYPRESS GREEN DRIVE
JACKSONVILLE, FLORIDA 32256

Maisha Peacock

FIELD INVESTIGATOR

David Palmer

SUPERVISOR

ENVIRONMENTAL ASSESSMENT

OUTLINE

I. INTRODUCTION

II. BIOPHYSICAL RESOURCES: BIOTIC

A. Sand Pine Scrub

1. Definition

2. Vegetation

a. Trees

b. Upper shrub layer

c. Lower shrub layer

d. Vines

e. Ground cover

f. Herbaceous

3. Wildlife

a. Endangered or threatened species

(1) Florida scrub jay

(2) Gopher tortoise

b. Amphibians

c. Reptiles

d. Birds

e. Mammals

f. Other species

B. Sinkhole/Sandhill Lakes

1. Definition

2. Vegetation

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VI. SUMMARY

89-270a.01
(OCT89)

ENVIRONMENTAL SERVICES, INC.
0124 CYPRESS GREEN DRIVE
JACKSONVILLE, FLORIDA 32250

(904) 636-8552

SECTION 16
DELTONA, FLORIDA
A SAND PINE SCRUB ECOSYSTEM

I. INTRODUCTION

In September 1989, Environmental Services, Inc. conducted an environmental assessment for the Volusia County School Board of a sand pine scrub ecosystem in Deltona, Florida. The site is located at Section 16, Township 18 South, Range 31 East, in southern Volusia County (Figure 1) and covers approximately 640 acres. The purpose of the study was to assess the resources of the site to assist in developing options for a management plan for the site.

In late September and October 1989, Environmental Services, Inc. conducted various studies of the property. Emphasis was placed on the biotic components of the ecosystem such as vegetation, wildlife, and endangered and threatened species. Additional data were collected on the abiotic aspects of the site such as soils, climate, geology, fire and on potential hazardous and toxic materials. This report outlines the biophysical resources which were examined, existing land use, and options for management of the property.

II. BIOPHYSICAL RESOURCES: BIOTIC

The site is primarily comprised of sand pine scrub with several sinkhole/sandhill lakes. Each ecosystem is described below with regards to vegetation and wildlife including threatened and endangered species.

A. Sand Pine Scrub

1. Definition. Sand pine scrub is a xeric terrestrial community found on ancient dunes with a deep, fine white sand substrate. The ecosystem is dependent upon fire on 30 to 60 year cycles. The sandy soils exhibit frequent water deficits owing to poor water retention and nutrient limitations resulting from low mineral absorption capacity (Barbour and Billings, 1988).

Sand pine scrub community has been differentiated into two phases (Abrahamson, et al. 1984). These two phases are the oak understory phase and the rosemary phase. The sand pine scrub community studied on this site was dominated by the oak understory phase. This is a three layer community with a lower shrub level of palmetto, upper shrub layer of scrub oaks and an overstory of sand pine. Herbs are scarce in this phase except in disturbed areas such as powerline crossings and trails. The rosemary phase is not represented, though some small areas of rosemary with

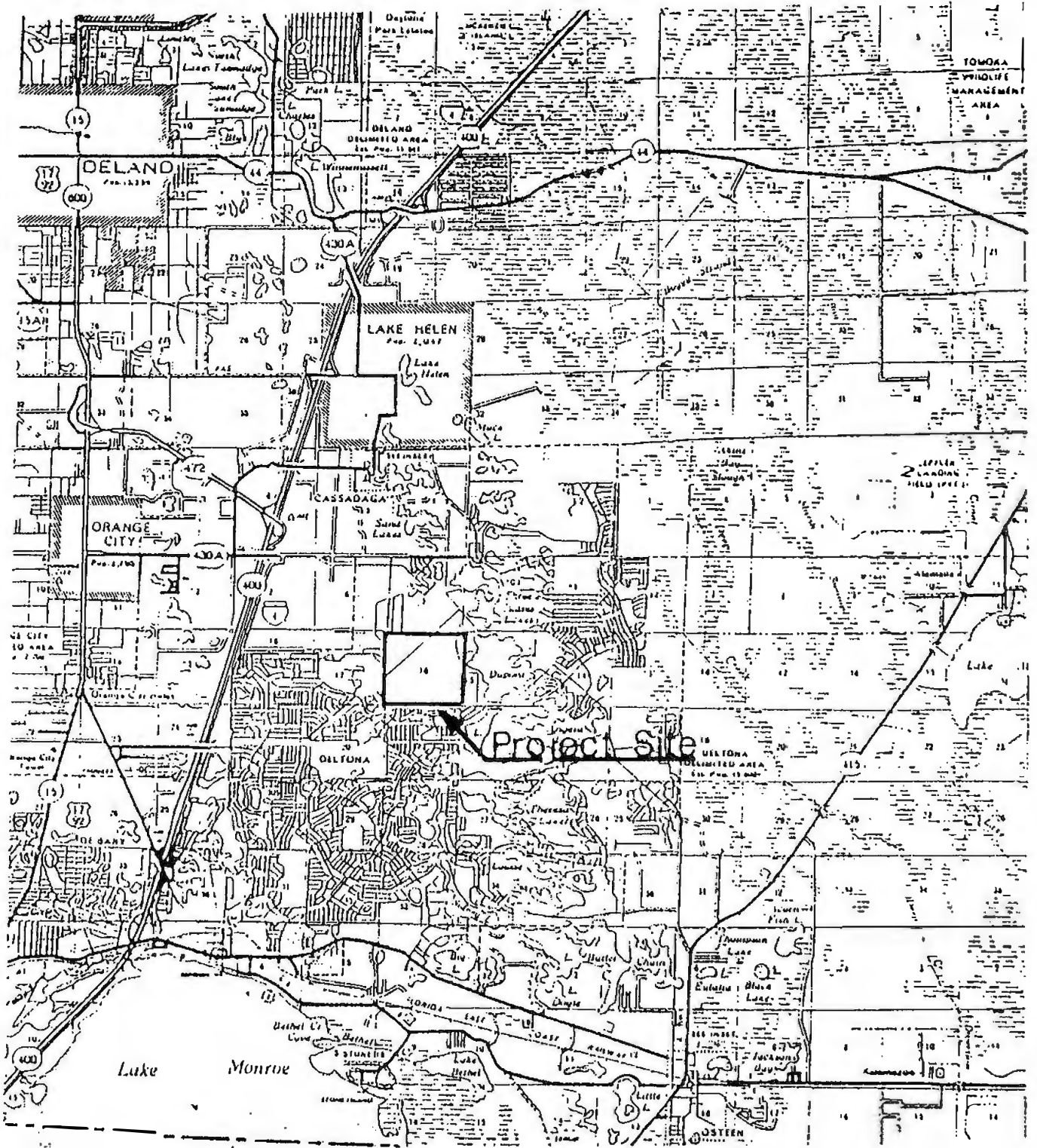


Figure 1
Location Map



Volusia County School Board

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reindeer moss could be found. Sand pines on this site formed nearly even-aged mature stands of trees averaging 10" to 12" in diameter at breast height and were approximately 60 feet tall.

Because it comprises some of the best soils for development and groves in Florida, this habitat is much reduced from its original coverage and is becoming more and more scarce, as recognized in the state comprehensive plan.

2. Plants. A variety of plants characterize the sand pine scrub community on this site. The various vegetative layers are described below.

a. Trees. Sand pine scrub is dominated by one tree, the Ocala sand pine (Pinus clausa var. clausa), with occasional pockets of live oak (Quercus virginiana).

b. Upper shrub layer. Below the pine is a thick understory layer. Dominant plants include sand live oak (Quercus geminata), myrtle oak (Quercus chapmanii), rusty lyonia (Lyonia ferruginea), silkbay (Persea humilis), sand holly (Ilex ambigua), scrub hickory (Carya floridana) and wild olive (Osmanthus americanus).

c. Lower shrub layer. Below the upper shrub layer is a less dense stratum of vegetation. Typical species include rosemary (Ceratiola ericoides), staggerbush (Lyonia mariana), fetterbush (Lyonia lucida), saw palmetto (Serenoa repens), scrub palmetto (Sabal etonia), dwarf pawpaw (Asimina pygmaea), huckleberry (Gaylussacia tomentosa), deerberry (Vaccinium stamineum), gallberry (Ilex glabra) and blueberry (Vaccinium myrsinites).

d. Vines. Scattered throughout all of the vegetation layers are various vines such as milkpea (Galactica elliotii), grapevine (Vitis rotundifolia), sarsaparilla vine (Smilax pumila) and greenbriar (Smilax auriculata).

e. Ground cover. Below the shrub layers and in open, sandy layers are scattered ground cover species such as gopher apple (Licania michauxii), prickly-pear cactus (Opuntia humifusa), St. John's wort (Hypericum reductum) and reindeer moss (Cladonia sp.)

f. Herbaceous. A variety of herbaceous plants were found along the large powerline crossing and along the various trailroads which allowed for open, sunny conditions. Typical species included grass-leaved golden aster (Chrysopsis graminifolia), nutgrass (Scleria sp.), dicantherium (Dicantherium dichotomum), wireweed (Polygonella gracilis), blazing star (Liatris tenuifolia), cottonweed (Proelichia floridana), goldenrod (Solidago chapmanii), umbrella sedge (Cyperus sp.), horseweed (Erigeron canadensis), coastal foxtail (Setaria corrugata), stinging nettle

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(Cnidoscylus stimulosus), jointweed (Polygonella polygama), broomsedge (Andropogon virginicus), dog fennel (Eupatorium sp.), thoroughwort (Eupatorium leptophyllum), sphortspike bluestem (Andropogon brachystachyus), warty panic grass (Panicum vericosum) and bahai grass (Paspalum notatum).

3. Wildlife

a. Endangered or threatened species. Sand pine scrub community is a valuable wildlife area for a variety of animals. With the rapid growth of the Deltona area, this large parcel of land provides important habitat for common animals and could potentially be the home for those considered to be threatened or endangered. Two important species are the Florida scrub jay and the gopher tortoise, each described below.

1) Florida scrub jay. The Florida scrub jay (Aphelocoma coerulascens coerulescens) lives exclusively in scrub communities. They are considered to be a disjunct, relic race of a jay species that is widespread in the western United States and Mexico (Cox, 1987). The Florida scrub jays numbers have dwindled drastically over the years because much of its' habitat has been destroyed by rapid housing growth and development of citrus groves (Cox, 1987). The Florida scrub jay is considered to be threatened by the Florida Game and Fresh Water Fish Commission (FGFWFC) and by the U.S. Department of the Interior, Fish and Wildlife Service (FWS).

Though no scrub jays have been recorded on the site they have been recorded extremely close by, just off-site to the north. According to Cox (1987), scrub jays were located in Section 9, Township 18 south, Range 31 east, which is the section adjacent to and immediately north of this parcel. The scrub jays were found in mature sand pine scrub with an oak understory, the same conditions that occur on this site. This area had an extensive road network with some houses during Cox's survey in 1981. Since that time, houses have continued to be built, but the area is not overdeveloped. Florida scrub jays were also found in south eastern Deltona and in the nearby towns of DeBary, Deland, Orange City and Lake Helen.

With proper management of the sand pine scrub habitat, it is quite possible to encourage Florida scrub jays to become established on the site. If they already exist on-site, the habitat could be managed to improve conditions for nesting and foraging.

2) Gopher tortoise. In addition to the Florida scrub jay, sand pine scrub is also used by gopher tortoises (Gopherus polyphemus). Gopher tortoises are considered to be a species of special concern by FGFWFC and is under review for listing by FWS. Because of habitat destruction, habitat degradation (fire exclusion) and human predation, an estimated 80 percent of the original number of gopher tortoises have been

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reduced over the last 100 years (Diemer, 1985). With the loss of gopher tortoises has also come the loss of many commensal species which share the gopher tortoise burrow. These include the threatened eastern indigo snake (Drymarchon corais couperi) and two species of special concern, the Florida mouse (Peromyscus floridanus) and the gopher frog (Rana areolata) as listed by the FGFWFC. Additionally, the Florida Committee on Rare and Endangered Plants and Animals (FCREPA) has identified three uncommon scarab beetles which live in gopher tortoise burrows. These are the scarab beetle (Onthophagus polyphemus), aphodius tortoise commensal scarab beetle (Aphodius troglodytes) and the copris tortoise commensal scarab beetle (Copris gopheri) (Franz, 1982). The latter two beetles are under review for listing by FWS.

FGFWFC has developed a methodology for determining local population size, population viability and calculating habitat suitability indices for gopher tortoises (Cox, et al. 1987). Methods have also been developed for determining minimum area requirements, and guidelines for delineating preservation areas and developing management plans. However, under current policy the guidelines frequently are not required to be followed unless a project is a Development of Regional Impact (DRI). As a result, most housing and commercial developments, like those found throughout the Deltona area, are exempt from preserving gopher tortoises or their habitats. Such losses could occur on this site unless a management plan is developed to determine the population size and methods of preservation.

3) Other species. Sand pine scrub community can also potentially be the host of many other species which can be considered rare, threatened or endangered. The Florida pine snake (Pituophis melanoleucus mugitus) prefers dry, sandy areas and is considered a species of special concern by FGFWFC and is under review for listing by FWS. Additionally, sand pine scrub has been reported to be habitat for several mammals, but data has not been adequate to evaluate its relative importance to the species. These mammals are the Shermann's fox squirrel (Sciurus niger shermani), hoary bat (Lasiurus cinereus cinereus), southeastern big-eared bat (Plecotus rafinesquii) and the Florida weasel (Mustela frenata peninsulæ) (Layne, 1979). Sand pine scrub can also be used for nesting by bald eagles (Haliaeetus leucocephalus) especially where food sources such as lakes are found nearby. The bald eagle is considered to be threatened by FGFWFC and endangered by USFWS. Similarly, Dachman's sparrow, under review by FWS, also utilizes sand pine scrub (Kale, 1979; Soil Conservation Service, 1989).

In addition to animals, a number of plants are endemic to sand pine scrub, at least one of which is considered to be endangered or threatened. The plant is known to occur within Volusia County and could potentially occur on this site although it was not observed during field studies. This plant is called Florida bonamia (Bonamia grandiflora) and is considered to be endangered by the Florida Department of Agriculture and Consumer Services

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(FDA) and threatened by FWS. The FDA also considers garberia (Garbaria heterophylla) to be threatened. We found garberia throughout the site.

b. Amphibians. A variety of amphibians utilize sand pine scrub for most of their life cycle. This is especially true where sinkholes and lakes, such as those found on this site, are used for breeding. The two common species found in the sand pine scrub community are the oak toad (Bufo quercicus) and the southern toad (Bufo terrestris) (Conant, 1975).

c. Reptiles. As mentioned under endangered or threatened species, the site could contain gopher tortoises, indigo snakes and the Florida pine snake. Additionally, sand pine scrub is also a habitat for a variety of other reptiles such as the green anole (Anolis carolinensis), black racer (Coluber constrictor), diamondback rattlesnake (Crotalus adamanteus), corn snake (Elaphe guttata), southeastern five-lined skink (Eumeces inexpectatus), eastern hognose snake (Heterodon platyrhinos), scarlet king snake (Lampropeltis dolia), coral snake (Micrurus fulvius), rough green snake (Opheodrys aestivus), island glass lizard (Ophisaurus compressus), peninsula crowned snake (Tantilla relicta relicta) and the box turtle (Terrapene carolina) (Conant, 1975).

d. Birds. During the field study, a variety of birds were seen on-site. A list of these species, plus others which may occur in sand pine scrub are the cedar waxwing, great horned owl, red-tailed hawk, red-shouldered hawk, chuck-will's widow, cardinal, boat-tailed grackle, yellow-shafted flicker, bobwhite quail, ground dove, mourning dove, turkey vulture, black vulture, common crow, fish crow, blue jay, yellow-rumped warbler, prairie warbler, palm warbler, downy woodpecker, pileated woodpecker, red-bellied woodpecker, red-headed woodpecker, kestrel, loggerhead shrike, wild turkey, eastern mockingbird, great crested flycatcher, screech owl, English sparrow, painted bunting, rufous-sided towhee, eastern phoebe, white-breasted nuthatch, brown-headed nuthatch, Carolina wren, brown thrasher, house wren, American robin, eastern king bird, barn owl, gray cat bird, American redstart, tufted titmouse, eastern meadowlark, pine warbler and yellow-throated warbler (Peterson, 1980; Soil Conservation Service, 1981).

e. Mammals. Any large tract of land will provide a variety of niches for mammals of all sizes to occur. On this parcel common mammals expected to occur include armadillo, opossum, southeastern pocket gopher, bobcat, striped skunk, spotted skunk, white-tailed deer, raccoon, gray squirrel, eastern cottontail rabbit and gray fox (Soil Conservation Service, 1981).

f. Other species. In addition to amphibians, reptiles, birds and mammals, sand pine scrub also contains an extraordinary assortment of invertebrates such as snails, moths, butterflies, beetles, spiders, scorpions, crickets, and flies. Such a list would be too large of scope to include in this report.

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B. Sinkhole/Sandhill Lakes

1. Definition. Sinkhole/sandhill lakes are lacustrine communities within natural topographic depressions. Most are generally rounded solution depressions in deep sandy uplands or sandy uplands shallowly underlain by limestone. Some of the smaller lakes on-site show classic karst topography with relatively steep walls. Karst topography is the relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins (Soil Conservation Service, 1980).

This site contains four major solution depressions and several minor ones, with those near the Deltona Lakes Elementary School exhibiting the steepest slopes. All of them are dominated by emergent vegetation of various species depending upon the depth. The four largest lakes show signs of decreasing water levels, especially when compared to historic photographs and communications with local residents. The two lakes in the northeast corner appear to have been connected and part of a much larger surface water system. Further evidence that this area was once under water is the young age of the encroaching slash pines, and the scattered wetland species found underneath them. Additionally, nearby lakes exhibiting the same vegetation growth, have docks leading from peoples' homes which stop significantly short of any open water. The cause of the water subsidence is unknown, but cyclical drought and/or increased use of the local aquifer are suspected to be causes.

2. Vegetation. The vegetation around the sinkhole/sandhill lakes can be divided into three major zones - outer, middle and inner. Each is described in detail below.

a. Outer zone. The outer zone is an area outside of any open water, but is not sand pine scrub. It may be considered a transitional zone between the two communities. Dominant species in this outer zone is slash pine (Pinus elliotii) most of which appears to be less than 15 years old. The young age of the slash pine supports the concept that the lakes may have been larger at one time, but have subsided, allowing the slash pines to become established. Other species include broomsedge (Andropogon virginicus), shortspike bluestem (Andropogon brachystachyus), blue maidencane (Amphicarpum muhlenbergianum), meadow beauty (Rhexia cubensis), St. John's wort (Hypericum fasciculatum) and bladder pod (Sesbania vesicaria).

b. Middle zone. The middle zone comprises the majority of the lake, much of which is subject to seasonal flooding. This area remains dry enough to support upland to marginally wetland species. Soils were dry to partially saturated, but not inundated, during our study. Dominant species included St. John's wort (Hypericum fasciculatum), thoroughwort (Eupatorium leptophyllum), warty panic grass (Panicum vericosum), blue

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maidencaine (Amphicarpum muhlenbergianum), red root (Lachnanthes caroliniana) and short spike bluestem (Andropogon brachystachyus). Other species included meadow beauty (Rhexia cubensis), pale meadow beauty (Rhexia mariana), beakrush (Rhynchospora microcephala), primrose (Ludwigia suffruticosa), marsh pink (Sabatia grandiflora), dicantherium (Dicantherium sp.), dahoon holly (Ilex cassine) and yellow-eyed grass (Xyris smalliana).

c. Inner zone. Toward the center of each large lake is an area of permanent water with well saturated soils along the edges. The portions with very saturated soils are dominated by fimbriatylis (Fimbristylis sp.), bogbutton (Lachnocaulon spp.), sundew (Drosera brevifolia), marsh pink (Sabatia grandiflora), beakrush (Rhynchospora microcephala), yellow-eyed grass (Xyris smalliana) and Asian coinwort (Centella asiatica). The open water areas were dominated by spikerush (Eleocharis sp.), and water lily (Nymphaea odorata) with some beakrush (Rhynchospora corniculata) and duck potato (Sagittaria graminea).

3. Wildlife

a. Endangered or threatened species. Several species of aquatic and water dependent species are known to use lakes such as those occurring on this site. Many wading birds are dependent upon these permanent pools of water, especially in relatively undisturbed conditions, as found on this site. FGFWFC has listed the limpkin, little blue heron, reddish egret, snowy egret and tricolored heron as species of special concern. All of these birds could likely occur on this site with a confirmed sighting of a little blue heron. Of course the gopher frog, mentioned under sand pine scrub, is dependent upon lakes and wet areas for breeding.

b. Amphibians. Because amphibians are dependent upon water to complete their life cycle, a variety of amphibians found in the sand pine scrub can also be found in the sinkhole/sandhill lakes. This includes the gopher frog, referred to earlier, and more common species such as the green tree frog (Hyla cinerea), southern spring peeper (Hyla crucifer), little grass frog (Hyla ocularis), southern leopard frog (Rana utricularia), pig frog (Rana grylio) and the bullfrog (Rana catesbiana) (Conant, 1975).

c. Reptiles. Due to the permanent water in the large lakes, several reptiles would be expected to be able to utilize them. These include the cottonmouth moccasin (Agkistrodon piscivorus), striped mud turtle (Kinosternon bauri), eastern mud turtle (Kinosternon subrubrum subrubrum), banded water snake (Natrix fasciata fasciata), and Florida brown snake (Storeria dekayi victa) (Conant, 1975).

d. Birds. In addition to the limpkin, little blue heron, reddish egret, snowy egret and tricolored heron mentioned

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above, a number of other birds were observed on-site, or are common residents of lakes such as those found on this site. These birds include the great blue heron, American egret, great egret, cattle egret and various other wading birds and ducks. Lakes such as these are known to be important brooding, feeding and nesting areas for ducks (Smith, 1980).

e. Mammals. All of the mammals listed earlier are dependent upon freshwater and can be expected to utilize the sinkhole/sandhill lakes. Additionally, some small rodents and other species may live most of their life cycle in the vicinity of the lakes.

f. Fish. During the study some minnows were seen in the largest lake on-site. Since three of the lakes on-site have permanent pools of water, a variety of fish such as minnows, darters, killifish and mosquito fish can be expected.

g. Other species. In addition to amphibians, reptiles, birds, mammals and fish, a wide variety of invertebrates would also be expected to be dependent upon the sinkhole/sandhill lakes. During our field visit, several species of dragonflies were seen at the lakes, and a great diversity of other invertebrates can be expected.

III. BIOPHYSICAL RESOURCES: ABIOTIC

In addition to the unique flora and fauna, the site also contains unique abiotic resources such as geology, soils, etc. We have included information on these resources, as well as an analysis of the fire ecology and a report on hazardous and toxic materials.

A. Geology

1. Physiography. According to Marcus and Fernald (1975), more than 300 million years ago, during the Paleozoic era, an area of volcanic islands occupied part of present-day Florida. About 150 million years ago these islands were slowly worn down and submerged beneath the shallow waters of the sea. While submerged, these islands were covered with sediments, principally limestones. During that time an arching occurred forming the axis of peninsular Florida. Later, approximately 50 million years ago, there was a gentle doming which resulted in the formation of a broad, oval arch running roughly in a north-northeast direction. The bulk of the arch is made up of almost pure limestone, called Ocala limestone. The Ocala limestone lies on or near the surface in north central Florida but becomes buried beneath 1,200 feet of younger sediments in the Everglades.

As the Ocala limestone has eroded over time, many separate ridges and terraces have formed. This site is located on the DeLand Ridge, between the Talbot Terrace and the St. Johns River Valley

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(Soil Conservation Service, 1980). The DeLand Ridge is an isolated ridge with depth to limestone rock about 65 feet. It is separated from the various other Ocala limestone ridges by the St. Johns River Valley. Another ridge, the Crescent City Ridge, lies to the north and crosses into Putnam County. The surface of the DeLand and Crescent City Ridges have been altered by erosion, and the collapse of solution caverns in the underlying limestone. Of the approximately 120 lakes which are greater than 5 acres in size found in Volusia County, 90 percent are within these two ridges (Soil Conservation Service, 1980). This site contains several of these lakes, and smaller ponds. However, the majority of the site represents the top of the DeLand Ridge, the sand pine scrub community.

2. Ground water recharge. The ridges have little or no runoff because rain rapidly percolates down through the sandy soil and reaches the water table where it recharges the aquifer, accumulates in lakes or depressions, or seeps outward from the base of the ridges (Soil Conservation Service, 1980). The Florida Aquifer underlies all of Volusia County. This limestone aquifer supplies about 95 percent of the water used in the county (Soil Conservation Service, 1980). Recharge to the Florida Aquifer occurs throughout the county, but the areas of greatest recharge are the deep sandy soils of the ridges in the western part of the county, such as the DeLand Ridge which this site is located on. Groundwater recharge which occurs on this site is vital to the maintenance of the quality and quantity of water resources county-wide. Urbanization in the surrounding areas is threatening groundwater resources by increasing surface runoff, developing over recharge areas, over-consumption and pollution.

B. Soils

The site is located on the DeLand Ridge and is considered to be part of the Paola-Orsino soil map unit. These soils are excessively drained and moderately well-drained, grayish sandy soils that have a yellowish sandy subsoil. The sand pine scrub on this site has been identified as having Paola fine sand, Orsino fine sand, Daytona fine sand and Apopka fine sand.

Interspersed within the Paola-Orsino map unit are sinks, lakes and wet depression. This site includes several sinkhole/sandhill lakes which have been identified as having Myakka fine sand, and Myakka fine sand depressional. These soils are found in depressional areas which have high water tables or are inundated throughout most of the year.

C. Climate

1. Rainfall. Volusia County has a subtropical maritime climate. Average annual rainfall is approximately 55 inches. Nearly 60 percent of the annual rainfall occurs between the first

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of June and the middle of October as a result of convective thundershowers in the afternoon and evenings. July has the highest average rainfall at 8.4 inches, while December has the lowest at 1.8 inches (Soil Conservation Service, 1980).

2. Temperature. The average temperature in Volusia County is approximately 70 degrees F. During the summer the average daily temperature is about 81 degrees F with an average daily maximum of 91 degrees F, and an average daily minimum of 71 degrees F. In winter the average daily temperature is approximately 62 degrees F with an average daily maximum of 74 degrees F, and an average daily minimum of 50 degrees F (Soil Conservation Service, 1980).

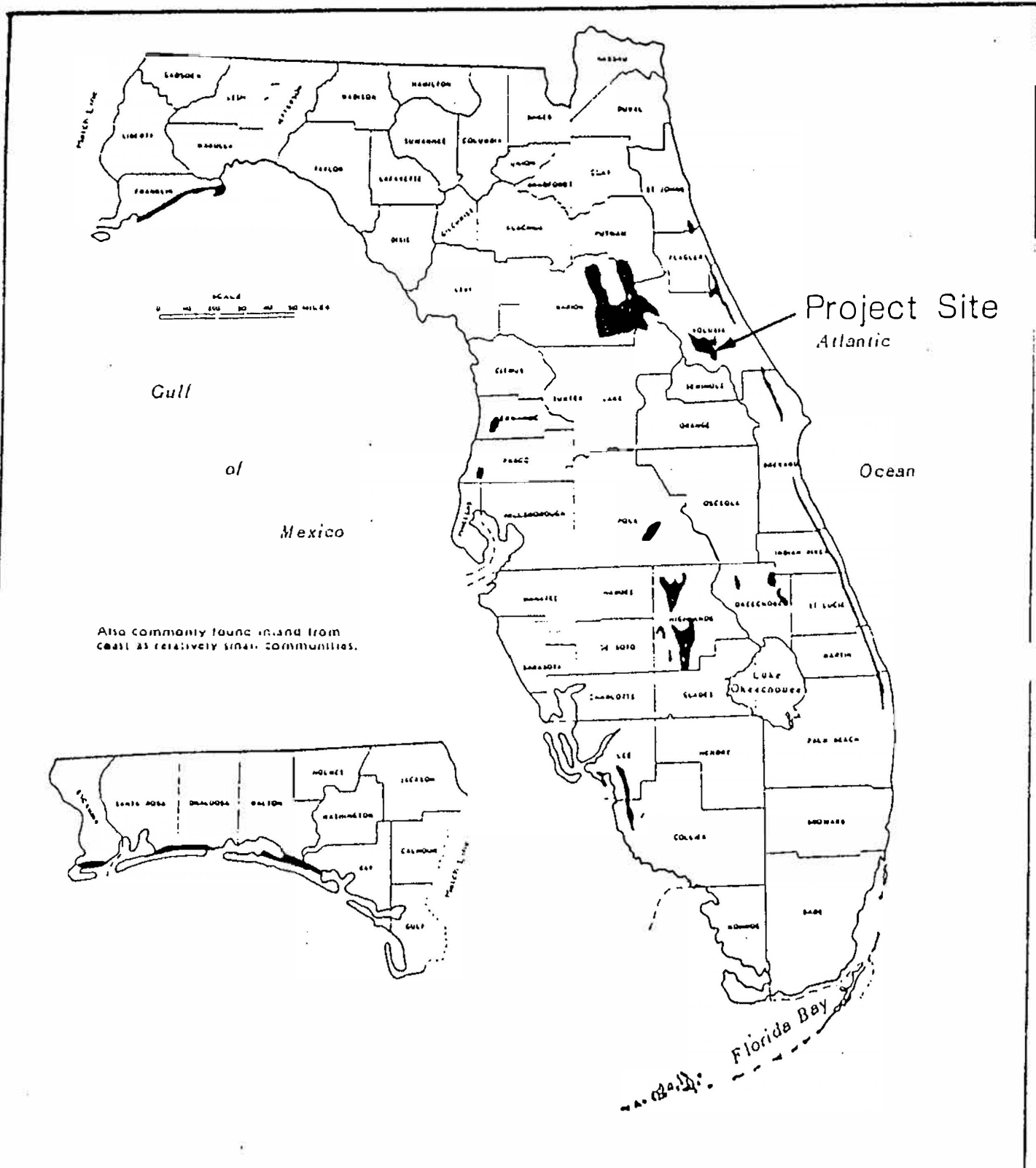
3. Winds. Prevailing winds in Volusia County are from the east - northeast. Northwest and southwest winds are not uncommon, however, especially during the winter months. Average wind speed is slightly greater than 10 mph in February, March and April and slightly less than 10 mph throughout the rest of the year (Soil Conservation Service, 1980).

4. Humidity. The relative humidity is in Volusia County normally greater than 50 percent by mid-day and increases to 80 to 100 percent at night resulting in heavy dews (Soil Conservation Service, 1980).

D. Fire Ecology

The sand pine scrub ecosystem is dependent upon infrequent high-intensity fires. These fires typically occur every 30 to 60 years (Barbour and Billings, 1988). The dense scrubby oak understory creates a pathway for the fire to reach the crowns of the trees, thus killing them (Soil Conservation Service, 1981). Once burned, the serotinous cones release seed which regenerate the ecosystem into even aged stands of sand pine. Without fire, the pines eventually die and the ecosystem succeeds into xeric hardwoods dominated by oaks. If fire occurs repeatedly, the ecosystem changes into sandhill (Figure 2, Barbour and Billings, 1988).

Based on the size of the trees, 10" to 12" dbh (diameter at breast height), the trees are approximately 50 years of age (United States Department of Agriculture, 1983). The trees are estimated to live another ± 40 years before being replaced by oaks, if fire does not occur before then (Myers, 1989). Under natural conditions, fires would not generally start in the sand pine scrub areas on a regular basis due to the lack of herbaceous cover needed for fuel. Instead, fires would occur in nearby ecosystems, such as flatwoods or sandhill, and spread into the scrub on rare occasions (Myers, 1989). Because the site is now surrounded by residential development the likelihood of fire is even further diminished (Myers, 1989).



Also commonly found inland from coast as relatively small communities.

Map prepared by U. S. Department of Commerce, Bureau of The Census, 1960, Corrected as of April 1965.
 U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

FEBRUARY 1981 4-R-3672 0-3
 FEBRUARY 1968 BASE 4-L-25770

Figure 2
 Distribution of Sand Pine Scrub

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IV. EXISTING USE

The majority of the site has been left undisturbed. This is a result of foresight by early planners in Florida who set aside Section 16's in many townships throughout the state. The Section 16's are managed by the Department of Natural Resources (DNR) and are offered for lease by the DNR to the local county school boards. Those sections not used by the school board are offered to other local county agencies, and on occasion, are traded or sold (Daniels, 1989). Currently, the Volusia County School Board has a 50 year lease on a Section 16 parcel in Deltona. Existing uses of the land are described below.

A. Deltona Lakes Elementary School. The Deltona Lakes Elementary School opened in 1982, in the southeastern corner of Section 16. It was the second elementary school built in the Deltona area and opened with 760 students. Enrollment has increased dramatically and the school now operates at over-capacity with many portable classrooms used in teaching the students. The opening of a third local elementary school has relieved some of the over crowding, and plans are underway to build a fourth elementary school.

B. Sand Pine Nature Center. When the Deltona Lakes Elementary School was founded, the Sand Pine Nature Center on the school grounds was also formed. The Sand Pine Nature Center is an environmental education center for students in grades K-6, staffed with volunteers and an administrative staff. The purpose of the center is to educate the students on environmental studies beyond the classroom walls in a natural setting. Trails and interpretive stations have been established and are used by the students to study such things as flora, fauna, sinkhole geology, soils, erosion, food chains, astronomy and orienteering (Moreau, 1989). To date, the Sand Pine Nature Center has been utilized by greater than 5,000 students and is one of the most popular curriculums offered to the students.

C. New elementary and middle schools. With the rapid growth of the Deltona area has come the need for additional elementary and middle schools. Two such schools are currently being built on the northwest corner of the site, tentatively called elementary school "L" and middle school "A". The development of these schools is consistent with the planned use of Section 16 as set aside by DNR.

D. Providence Road extension. With the development of the two new schools, and the development of a new high school off-site in the northwest portion of Deltona, an extension of Providence Road has been undertaken to facilitate access to all of the schools. Without the Providence Road extension, the newest schools are disjunct from easy access to Deltona Lakes Elementary School, the Sand Pine Nature Center, and to the students and residents of central Deltona. The Providence Road extension is a north/south

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access road and essentially bisects Section 16 in half. Access roads from the existing school and the new schools to Providence Road extension, have also been built. Despite the potential negative effects of the road, it does serve an important role in facilitating the education process and the overall acreage impact is a small percentage of the Section 16 parcel.

E. Horse and vehicle trails. In addition to planned educational uses of the site, the project area is also heavily used by local residents. There are few trails through the sand pine scrub, but many around the existing sinkhole/sandhill lakes. One local resident described the parcel as the last refuge for horseback riding, with over 3,000 people owning horses in the area but no place to ride, since many other natural areas have been converted to residential use. These same trails are also used extensively by trucks, cars and dirt bikes. The traffic on the site is causing damage to the delicate ecosystem of the lakes and creating pollution problems.

F. Toxic and hazardous materials. A preliminary visual inspection of the property was conducted to assess the potential for presence of toxic and hazardous materials. The subject property has been used for unauthorized dumping. The dumping has occurred primarily around the sinkhole/sandhill lakes, especially those in the northeast corner of the site. Although most of the material that has been dumped is domestic garbage (i.e.- beverage containers, paper products, yard trimmings, tires), there is one rusted, bullet-riddled drum present in one of the small, northeastern lakes.

In addition to the visual site inspection, appropriate records have been reviewed to determine if the subject property and/or adjacent properties have any known history of hazardous materials on site. The following records were reviewed:

- . SUPER Act Site Cleanup Ranking Report. The SUPER Act Ranking Report is an inventory (computer printout dated March 13, 1989) of stationary tank Superfund cleanup sites for the State of Florida prepared by the Florida Department of Environmental Regulation (DER). No sites were listed pertinent to the subject property.
- . DER Stationary Tank Inventory System - Contamination Detail Report. The Contamination Detail Report is a computer printout (dated March 13, 1989) that provides the contamination details of the SUPER Act sites that are identified in the above-referenced report and of other contaminated tank sites in Florida. No sites were listed pertinent to the subject property.

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- . Hazardous Waste Quick Look (GMS 10). The Hazardous Waste Quick Look directory is a computer printout (dated March 13, 1989) from DER of known hazardous material generators, handlers, transporters, and disposers. No sites were listed pertinent to the subject property.
- . Solid Waste Facilities Directory (GMS 80). The Solid Waste Facilities Directory is a computer printout (dated March 13, 1989) from DER of known active and inactive landfill sites. No sites were listed pertinent to the subject property.
- . U.S. EPA National Priorities List (NPL). The NPL is a computer printout listing (dated July 26, 1989) from the U.S. Environmental Protection Agency (EPA) of Superfund sites. No sites were listed pertinent to the subject property.
- . U.S. EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List. The CERCLIS is a computer printout listing (July 27, 1989) from the U.S. EPA of suspected contamination sites. No sites were listed pertinent to the subject property.
- . U.S. EPA Hazardous Waste Data Management System (HWDMS) List. The HWDMS list is a computer printout listing (July 24, 1989) from the U.S. EPA of facilities which have received or applied for permits to generate, transport, treat, store, or dispose of hazardous waste materials. No sites were listed pertinent to the subject property.
- . U.S. EPA Facility Index System (FINDS) Report. The FINDS report is a computer printout listing (July 18, 1989) of sites or facilities subject to EPA regulations and programs, such as for air, water, hazardous waste, and pesticides. No sites were listed pertinent to the subject property.

V. MANAGEMENT RECOMMENDATIONS AND LAND USE ALTERNATIVES

In determining the ultimate use of the site, the Volusia County School Board needs to review all options available. The site could be managed for a single use or for multiple uses. Four major management directions are conservation education, recreation and development. All four of these options need to be explored by the school board, as each has positive and negative aspects. A discussion of each of these management options is described below.

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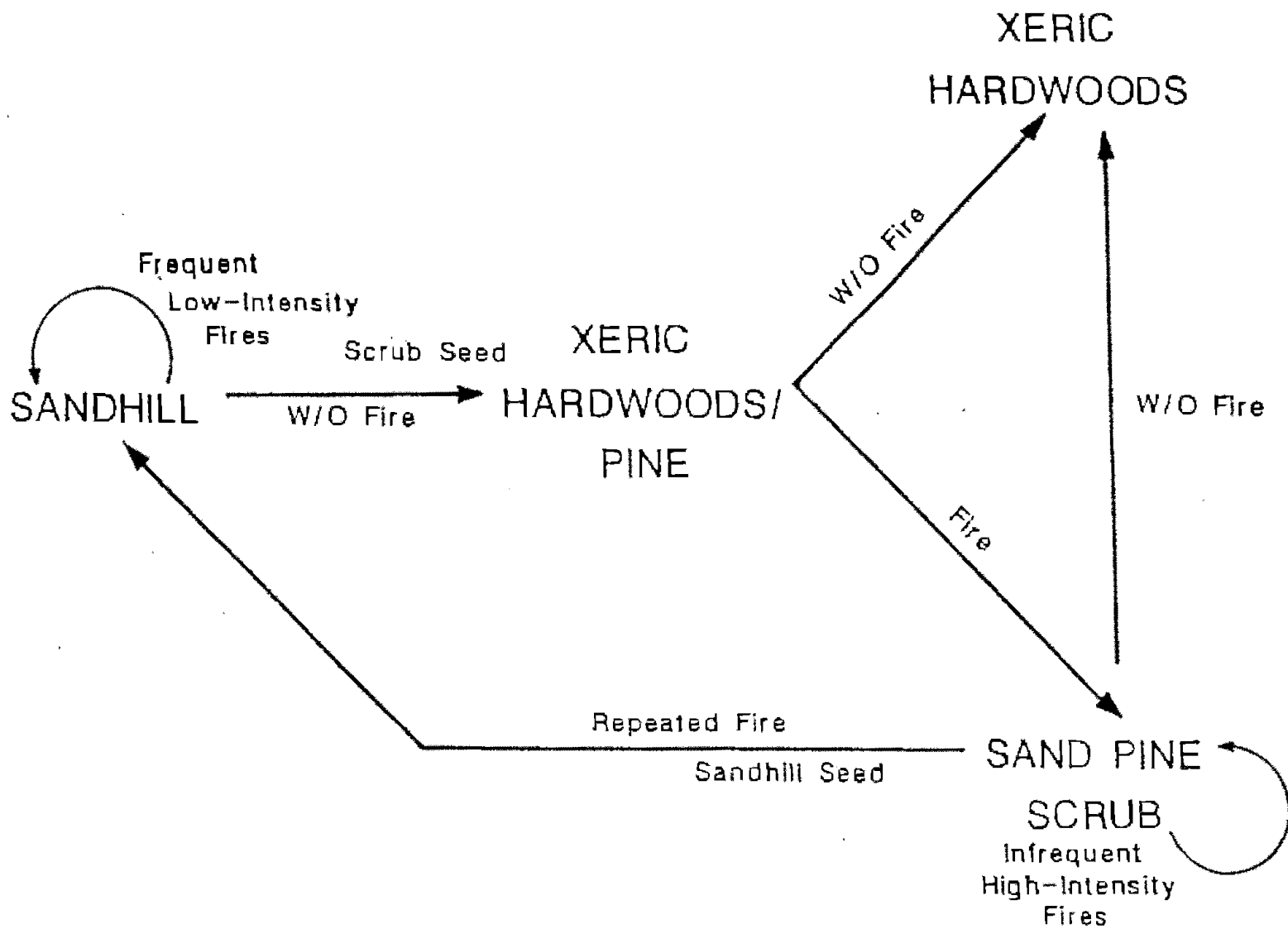
A. Conservation

1. Preservation. Sand pine scrub is a fire-based community found in only small areas of the state (Figure 3). Much of the original sand pine scrub in the state has been destroyed or altered due to rapid housing, commercial, and agricultural development. The coarse textured, excessively well-drained soils make the community extremely important in aquifer recharge, with an estimated 95 percent of the water used in the county being derived from the aquifer (Soil Conservation Service, 1981). It is a unique ecosystem which gives it an important scientific value. Heat and drought stress response by plants and animals are often studied in these sites (Soil Conservation Services, 1981). Sand pine scrub is the home to many rare, endangered, threatened or endemic species, some of which are found no where else on the globe.

To preserve the sand pine scrub on this site, certain management techniques should be considered. One is management through controlled burning. Uncontrolled fires could create serious liability problems. Without fire, the ecosystem will eventually change in the next ± 50 years to xeric hardwoods. We recommend utilizing different controlled burn techniques in different areas and at different times to provide for diversity. Such methods could also be part of an environmental education program. Development of a controlled burn plan should be done with the assistance of an expert in sand pine scrub management, such as the Archbold Biological Station, a research facility devoted to studying scrub communities, or state expert Ronald L. Myers, now with Tall Timbers Research Station.

Part of the preservation of sand pine scrub should require limited use by man. Damage to vegetation by excessive foot or vehicle travel has adverse effects on the community (Soil Conservation Service, 1981). The adverse effects are clearly seen around the sinkhole/sandhill lakes. The lakes in the northeastern portion of the site show significant damage caused by man which have destroyed vegetation, increased erosion problems and polluted the lakes. These areas need to be cleaned up and given time to restore themselves naturally.

An additional advantage to preservation of the unique sand pine scrub ecosystem is in "mitigation banking". Mitigation is a technique of offsetting losses to valuable ecosystems, usually wetlands, through creation, enhancement or preservation. Mitigation is often required when developing large parcels of lands, such as schools, and is likely to be required during the development of many new schools in Volusia County. Because the regulatory agencies recognize the uniqueness of sand pine scrub, they may allow for the preservation of portions of this property to count as mitigation credit for impacts which will occur in other parts of the county. Such off-site areas are known as "mitigation



Source: Bourbour and Billings, 1988

Figure 3
Fire Ecology of Xeric Communities

Project:	89-270
Date:	10/23/89
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banks" and this site has the potential of serving as an important mitigation bank for the Volusia County School System.

2. Fire ecology management. To maintain the sand pine scrub we recommend developing a fire management plan. Depending upon wild fires to maintain the scrub is not preferred due to liability problems. A lack of planning is also not preferred since the sand pine would eventually die and be replaced by a xeric hardwood community. Instead, several options are available involving site preparation and controlled burn which will maintain sand pine scrub as a viable ecosystem. Examples of just some of the options (Myers, 1989) are described below:

a. Harvest/roller-chop/burn. The most economical method of maintaining sand pine is to harvest the trees (which can then be sold), leaving the branches, cones and slash on the site during tree removal after tree harvest. The shrubby live oaks are then roller-chopped, with minimal disturbance to the soil, and the entire area burned. The burning allows for nutrients to be released into the soil, the release of the seeds from the pine cones and the opening of the ground cover layer for pine seeds and herbs to establish. The controlled burn is easier to contain and the trees are not lost as with a crown fire. This method will encourage scrub jays.

b. Cut/roller-chop/burn. This method is similar to the one above, with the exception that the trees are cut and left on-site. This allows for more nutrients to be returned to the soil. This method produces a cooler fire than would occur with a natural crown fire. The end result is the same, but by cutting and roller-chopping, the fire can be managed and liability greatly reduced. This method has the added benefit of being the most beneficial to wildlife, including scrub jays.

c. Cut/roller-chop. Through not preferred as a method of maintaining sand pine scrub, thinning of the trees and roller-chopping the understory will increase wildlife use and encourage scrub jays.

d. Benefits. Developing a fire management plan to maintain sand pine scrub has many benefits. The key benefit will be that the sand pine scrub on-site can be maintained indefinitely, without reverting into another ecosystem. Additionally, fire management of the site can produce areas of young scrub, which is extremely favorable to scrub jays and other threatened and endangered species. To encourage the most diversity on-site, different fire management methods can be used on different areas. This information could have the added benefit of being studied and incorporated into the environmental education program of the local schools.

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B. Education. The reason this parcel, Section 16, has remained undeveloped is so it could be used for educational purposes. The land is owned by DNR and leased by the Volusia County School Board. Currently, the site contains an operating elementary school with new elementary and middle schools being built. The development of the schools is obviously consistent with the planned use of the land. However, the educational value of the remainder of the land needs to be considered.

Because of the uniqueness of the ecosystem, many educational opportunities exist on the site. This can already be seen in the very successful Sand Pine Nature Center located at the Deltona Lakes Elementary School in the south-eastern corner of the site. This environmental education center has the potential to expand so it can be used by all of the students of Deltona, not just those students at Deltona Lakes Elementary School. The educational opportunities are extensive on the site and can be incorporated into a conservation plan. For example, students could assist in developing and monitoring a controlled burn program. Additional research and study could be done on rare species such as the scrub jay and gopher tortoise, as well as monitoring the restoration of the lakes on-site. All of the biotic and abiotic aspects of the ecosystem can be studied.

C. Recreation. Along with an educational commitment, the school board should also consider utilizing some portion of the site for recreation. Recreation facilities are needed by the local residents and students and there appears to be a lack of enough facilities in the Deltona area. A large area designated for sports facilities should be chosen in a less environmentally sensitive area and near the schools. One such ideal area would be adjacent to the east boundary of the new elementary and middle schools being constructed in the northwestern portion of the site. Between the schools, the power line and the Providence Road extension is an area that may be difficult to manage that has already been disturbed by the power line crossing. Such an area could be used for playing fields, ball courts and other sports activities.

In addition to a sports complex, the overall site could also be further developed for jogging trails and nature trails with interpretive signs, observation platforms over the lakes and outdoor classroom facilities. The existing trails at the Sand Pine Nature Center are very popular with the students and present many educational opportunities.

Because most of the site is undeveloped with easy access, people are already using the site for riding dirt bikes, all terrain vehicles, cars, trucks and horses. Unfortunately, most of these activities occur around the delicate sinkhole/sandhill lakes and they are being damaged. A decision will need to be made to either stop these activities or control it to restricted areas designated for that purpose. Without control, the lakes will continue to

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suffer and the school board could be liable for personal damages or injuries which may occur on the site.

D. Development. In determining a management plan for the site, the school board must consider the option of trading the site so development can occur. Deltona does not have a central commercial district and if the community wishes to have one; this may be a logical choice. Under certain circumstances, DNR will allow the trading or selling of Section 16 parcels (253.034 (5) FS). If desired, it may be possible for the school board to retain usage of portions of the property (for future school growth and some nature trails) and trade the remainder of land for land needed elsewhere for schools. Such a plan would give the school board the opportunity to acquire lands in other parts of the county, such as rapidly growing areas. However, because the land is owned by DNR and only leased by the school board, the school board will likely have little control on what happens to the site if it is decided to not manage it. Most likely, the site will be offered to other county agencies, including the prison, and if rejected by all other county authorities, then offered for sale (Daniels, 1989). Additionally, such a plan would also ensure the loss of the sand pine scrub community on-site and its resources such as ground water recharge, flora and fauna. Having the ecosystem divided and separated into various parcels will eliminate many of the unique characteristics which it now contains because it is one large, virtually undistributed tract of land. If this were a widely distributed ecosystem, such as pine flatwoods, such losses may be considered negligible. However, sand pine scrub is very limited in the state and much of this limited area is already lost due to residential, commercial and agricultural development. The site is unique, and worthy of consideration to preserve it.

VI. SUMMARY

The Volusia County School Board needs to develop a plan for managing Section 16 in Deltona as required by the lease with DNR (253.034 (a) FS). Such a plan should recognize the biophysical resources of the site and its potential for development. Many options are available to the school board for management including conservation education, and recreation, all of which can occur on the site with a multiple-use plan. Management of the site must include security considerations regarding liability of unauthorized recreational uses of the property. Additionally, the site should be secured to minimize unauthorized dumping on the property. Another option available to the school board may be the partial or complete trading of the land for lands elsewhere in the county so this parcel can be given to another county agency or be developed. This can be a complicated legal step since DNR owns the land. Such a trade should only occur if it is clearly in the best interest of the Volusia County school system.

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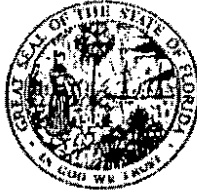
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FLORIDA DEPARTMENT OF STATE

Jim Smith
Secretary of State

DIVISION OF HISTORICAL RESOURCES

R.A. Gray Building
500 South Bronough

Tallahassee, Florida 32399-0250

Director's Office

Telecopier Number (FAX)

(904) 488-1480

(904) 488-3353

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JAN 31 1990

FACILITIES PLANNING
& RESEARCH

January 26, 1990

Ms. Patricia Drago
Real Properties Planner
Volusia County Schools
P.O. Box 2118
200 North Clara Avenue
DeLand, Florida 32721-2118

In Reply Refer To:
Robert C. Taylor
Historic Preservation
Planner
(904) 487-2333
Project File No. 900235

RE: Your Letter of January 22, 1990
Request for Land Management Plan Information
Section 16, T18S-R31E, Volusia County, Florida

In accordance with this agency's responsibilities under Chapter 234.034(4), Florida Statutes, we have reviewed the information contained in the Florida Master Site File to determine whether any archaeological or historical resources are recorded for the referenced tract, and also to determine the potential for the occurrence of such resources.

Our review indicates that no archaeological or historic sites are recorded in the subject tract. However, it is the opinion of this agency that there is a probability of significant, unrecorded archaeological sites being located within this land parcel.

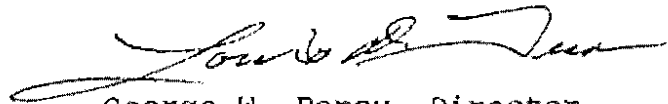
We have noted in the attachments to your January 22, 1990 letter that three school construction projects are proposed for this tract. Some of these areas may require archaeological survey prior to the initiation of land clearing or ground disturbing activities related to the construction projects.

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

Mr. Patricia Drago
January 26, 1990
Page 2

If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's archaeological and historical resources is appreciated.

Sincerely,

A handwritten signature in cursive script, appearing to read "George W. Percy".

George W. Percy, Director
Division of Historical Resources

GWP/rt
Enc. (1)

xc: Dawn Dunnam

FLORIDA GAME AND FRESH WATER FISH COMMISSION

WILLIAM G. BOSTICK, JR.
Winter Haven

DON WRIGHT
Orlando

THOMAS L. HRES, SR.
Lake Wales

MRS. GILBERT W. HUMPHREY
Micosukee

JOE MARLIN HILLIARD
Clewiston

ROBERT M. BRANTLY, Executive Director
ALLAN L. EGRETT, Ph.D., Assistant Executive Director



FARRIS BRYANT BUILDING
620 South Meridian Street
Tallahassee, Florida 32399-1600
(904) 488-1960

April 20, 1990

Ms. Patricia Drago
School Board of Volusia County
P. O. Box 2118
200 N. Clara Avenue
DeLand, FL 32721-2118

Ms. Drago:

In response to your 9 April inquiry, the Florida Natural Areas Inventory (254 E. 6th Avenue, Tallahassee, FL 32303, 904/224-8207) should be contacted regarding the occurrence of protected species on the site you referenced in Volusia County. That entity's species occurrence database is more comprehensive than ours and, unlike ours, accessible on a site-specific basis. I have provided the Inventory with a copy of your request.

Cordially,

Don A. Wood
Endangered Species Coordinator

666-8450/jh
ESC 6-1 (Volusia County)
cc: Mr. Jim Muller

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APR 26 1990
FACILITIES PLANNING
& RESEARCH

FLORIDA NATURAL AREAS INVENTORY

1018 Thomsville Road, Suite 200-C, Tallahassee, FL 32303

March 20, 1990

Patricia Drago
Volusia County School Board
P.O. Box 2118
200 N. Clara Avenue
DeLand, Florida 32721-2118

RECEIVED
APR 20 1990
FACILITY
& RESEARCH

Dear Ms. Drago:

In response to your request for information on the scrub site in Volusia County, we have reviewed our database and the site survey performed by Marsha Peacock at Environmental Services, Inc. and have the following comments and recommendations regarding the natural resources at the site.

The scrub community has long been recognized by biologists as ecologically unique. This natural community and many species associated with it are endemic or nearly endemic to Florida. Because of the dramatic loss of this habitat to development, and this is especially true of these well-drained ridge sites, the remaining scrub is highly valued for its natural resources.

As noted in the site evaluation by Environmental Services Inc., populations of scrub jays and gopher tortoises are very significant. Our records confirm the occurrence of scrub jays very near to the subject site. Additional field work such as a search for gopher burrows and periodic visits in search of foraging birds could confirm the occurrence of these species on the site. Both species are listed with the Florida Game and Freshwater Fish Commission due to their limited range, population numbers and biology. It is also very likely that the gopher tortoise burrows are providing habitat for other rare species such as the Florida mouse (Podomys floridanus), the only mammal endemic to this state. Several of these commensal species are listed in the site report. Additional surveys for these animals are needed to verify their occurrence.

In addition to the animals reported from this scrub, several rare plant species potentially occur on the site; additional field surveys are needed to determine the extent of rare plant resources on this site.

Based on the importance of the scrub community and its associated species, we strongly recommend that a management plan appropriate for this system be developed. Some aspects of management that the plan should address are threatened species habitat preferences, fire management - particularly how development around the site can be integrated into the fire plan - as well as educational access and presentation. Volusia County is very lucky to have an educational showense so accessible to the schools; the Section 16 designation should certainly be maintained.

Please let me know if you have any questions concerning these recommendations.

Sincerely,

Deborah L. White
vj

Deborah L. White
Botanist

History.—s. 1, ch. 63-294, ss. 27, 35, ch. 69-106, s. 1, ch. 74-18, s. 9, ch. 79-65; s. 3, ch. 82-185

253.033 Inter-American Center property; transfer to board; continued use for government purposes.—

(1) All real and personal property presently owned by the Inter-American Center Authority, pursuant to 's. 554.072 or otherwise, and all existing liabilities of said authority are hereby transferred to the Board of Trustees of the Internal Improvement Trust Fund. However, the liability to the Department of Transportation for road and bridge work is hereby waived and satisfied. Except as provided in s. 4, chapter 75-131, Laws of Florida, all obligations in connection with contracts and bond issues of the authority shall be assumed and performed by the trustees as provided by law or contract. No action shall be taken as a result of this act that will impair the obligations of any such contract or outstanding bonds.

(2) It is hereby recognized that certain governmental entities have expended substantial public funds in acquiring, planning for, or constructing public facilities for the purpose of carrying out or undertaking governmental functions on property formerly under the jurisdiction of the authority. All property owned or controlled by any governmental entity shall be exempt from any local building and zoning regulations which might otherwise be applicable in the absence of this section in carrying out or undertaking any such governmental function and purpose.

(3)(a) Except as provided in this subsection, in no event shall any of the lands known as "the Graves tract," including, without limitation, the land previously transferred to the City of Miami and Dade County by the Inter-American Center Authority and the lands transferred pursuant to this act, be used for other than public purposes. However, the portion of "the Graves tract" owned by the City of North Miami on the effective date of this act shall not be subject to such public purpose use restriction and may be used for any purpose in accordance with local building and zoning regulations.

(b) Notwithstanding any provision of paragraph (a) or any other law to the contrary, the Board of Trustees of the Internal Improvement Trust Fund shall sell as soon as feasible that portion of "the Graves tract" described in this paragraph as set forth with particularity in s. 1, ch. 85-201, Laws of Florida. The purchase price for the conveyances of land specified in this paragraph shall be not less than the appraised value of such lands determined in accordance with the appraisal procedures set forth in s. 253.025(7). The proceeds derived from such sale shall be used to purchase lands within "the Graves tract" owned by the City of North Miami and designated by the city for purchase by the board of trustees. The purchase price for such purchase shall be determined in accordance with the provisions of s. 253.025. Alternatively, and at the option of the board of trustees, the board of trustees shall exchange the lands described above for an equivalently valued portion of lands within "the Graves tract" owned by the City of North Miami.

(4) The Board of Trustees of the Internal Improvement Trust Fund may lease to Dade County approximately 300 acres of land, and approximately 90 acres of abutting lagoon and waterways, designated as the Pri-

mary Development Area, and may also transfer to Dade County all or any part of the plans, drawings, maps, etc., of the Inter-American Center Authority existing at the date of transfer, provided Dade County:

(a) Assumes responsibilities of the following agreements:

1. That certain agreement entered into on June 12, 1972, between the City of Miami and Inter-American Center Authority whereby the authority agreed to repurchase, with revenues derived from the net operating revenue of the project developed on the leased lands after expenses and debt service requirements, the approximately 93 acres of lands previously deeded to the City of Miami as security for repayment of the \$8,500,000 owed by the authority to the City of Miami. Title to the land repurchased pursuant to the provisions of this subsection shall be conveyed to the State of Florida.

2. Those certain rights granted to the City of North Miami pursuant to the provisions of 's. 554.29(1)(a) and 's. 554.30 obligating the authority to issue a revenue bond to the City of North Miami, containing provisions to be determined by Dade County, to be repaid from all ad valorem taxes, occupational license fees, franchise taxes, utility taxes, and cigarette taxes which would have accrued to the authority or the City of North Miami by nature of property owned by the authority having been in the City of North Miami and from the excess revenue after operating expenses, development cost and debt service requirements, of the project developed on the leased lands.

(b) Develops a plan for the use of the land that meets the approval of the Board of Trustees of the Internal Improvement Trust Fund or that meets the following purposes heretofore authorized:

1. To provide a permanent international center which will serve as a meeting ground for the governments and industries of the Western Hemisphere and of other areas of the world,

2. To facilitate broad and continuous exchanges of ideas, persons, and products through cultural, educational, and other exchanges.

3. By appropriate means, to promote mutual understanding between the peoples of the Western Hemisphere and to strengthen the ties which unite the United States with other nations of the free world.

Any property leased under this subsection shall not be leased for less than fair market value.

History.—ss. 2, 3, 5, 7, 8, ch. 75-131, s. 1, ch. 85-201; s. 1, ch. 87-293

*Note.—All sections of ch. 584 were repealed by s. 1, ch. 75-131

*Note.—The words "this act" as appearing here were enacted by s. 5, ch. 75-131

*Note.—The words "this act" as appearing here were enacted by s. 1, ch. 87-293 effective July 9, 1987

*Note.—The words "in this paragraph as set forth with particularity in s. 1, ch. 85-201, Laws of Florida" were substituted for the words "as follows" and the words constituting the particular notes and boards land description set forth in s. 1, ch. 85-201, because of the potentially limited use of the particular description

253.034 State-owned lands; uses.—

(1) As used in this section, the following phrases have the following meanings:

(a) "Multiple use" means the harmonious and coordinated management of timber, recreation, wildlife, forage, archaeological and historic sites, or water resources so that they are utilized in the combination that will best serve the people of the state, making the most

judicious use of the land for some or all of those resources and giving consideration to the relative values of the various resources.

(b) "Single use" means management for one particular purpose to the exclusion of all other purposes, except that the using agency shall have the option of including in its management program compatible secondary purposes which will not detract from or interfere with the primary management purpose. Such single uses may include, but are not necessarily restricted to, the use of agricultural lands for production of food and livestock; use of improved sites and grounds for institutions; and the use of lands for parks, wildlife management, archaeological or historic preserves, areas where the maintenance of estuarine conditions is important. All submerged lands shall be considered single-use lands and shall be primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, or recreation, including hunting and fishing, as determined appropriate by the managing agency. Lands owned by the Board of Trustees of the Internal Improvement Trust Fund shall be managed in a way that will provide the greatest combination of benefits to the people of the state. All such lands not included in the land-management plan required by subsection (4) for a specific single use shall receive multiple-use management.

(c) Any management agreement, lease, or other instrument authorizing the use of lands owned by the Board of Trustees of the Internal Improvement Trust Fund shall be executed for a period greater than is necessary for the reasonable use of the land for the intended or planned life cycle or amortization of the improvements.

(d) An agency managing or leasing state-owned lands from the Board of Trustees of the Internal Improvement Trust Fund may not sublease such lands without prior review by the Division and by the Land Management Advisory Committee created in s. 253.022 and approval by the board. The Land Management Advisory Committee is not required to review subleases of parcels which are less than 100 acres in size.

(4) Each state agency managing lands owned by the Board of Trustees of the Internal Improvement Trust Fund shall submit to the Division of State Lands a land-management plan no later than July 1, 1984, and at least every 5 years thereafter, in a form and manner prescribed by rule by the board no later than January 1, 1984. All management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile nonrenewable resources, such as archaeological and historic sites, as well as other fragile resources, including endangered plant and animal species. Land-management plans submitted by an agency shall include reference to appropriate statutory authority for such use or uses and shall conform to the appropriate policies and guidelines of the state land-management plan.

(a) The Division of State Lands shall submit a copy of each land-management plan for parcels which exceed 100 acres in size to each member of the Land Management Advisory Committee. The committee shall,

within 60 days after receiving a plan from the division, review each plan for compliance with the requirements of this subsection and with the requirements of the rules established by the board pursuant to this subsection. The committee shall also consider the propriety of the recommendations of the managing agency with regard to the future use of the property, the protection of fragile or nonrenewable resources, the potential for alternative or multiple uses not recognized by the managing agency, and the possibility of disposal of the property by the board. After its review, the committee shall submit its plan, along with its recommendations and comments, to the board. The committee shall specifically recommend to the board whether to approve the plan as submitted, approve the plan with modifications, or reject the plan.

(b) The Board of Trustees of the Internal Improvement Trust Fund shall consider the land-management plan submitted by each state agency and the recommendations of the Land Management Advisory Committee and the Division of State Lands and shall approve the plan with or without modification or reject such plan. The use or possession of any such lands which is not in accordance with an approved land-management plan is subject to termination by the board.

(5) The Board of Trustees of the Internal Improvement Trust Fund shall determine which lands, the title to which is vested in the board, are of no benefit to the public and shall dispose of such lands pursuant to law.

(a) No later than July 1, 1984, and at least every 5 years thereafter, in a form and manner prescribed by rule by the board, each state agency shall indicate to the board those lands which the agency manages which are not being used for the purpose for which they were originally leased. Such lands shall be reviewed by the Land Management Advisory Committee for its recommendation as to whether such lands shall be disposed of by the board.

(b) Lands owned by the board which are not actively managed by any state agency or for which a land-management plan has not been completed pursuant to subsection (4) shall be reviewed by the Land Management Advisory Committee for its recommendation as to whether such lands shall be disposed of by the board.

(c) In reviewing lands owned by the board pursuant to paragraphs (a) and (b), the Land Management Advisory Committee shall consider whether such lands would be more appropriately owned or managed by the county or other unit of local government in which the land is located. The committee shall recommend to the board whether a sale, lease, or other conveyance to a local government would be in the best interests of the state and local government. The provisions of this paragraph in no way limit the provisions of ss. 253.111 and 253.115.

(d) After reviewing the recommendations of the Land Management Advisory Committee, the board shall determine whether lands identified in paragraphs (a) and (b) shall be held for other public purposes or whether such lands are of no benefit to the public. The board may require an agency to release its interest in such lands. Lands determined to be of no benefit to the public shall be disposed of pursuant to law. The proceeds from

the disposal of such lands shall be used for the benefit of the state and the people of the state.

(i) This section shall not apply to any land owned by the board which is subject to a lease and the provisions of the lease shall govern the disposal of the land.

(j) Sovereign immunity shall not apply to the board or any member of the board in the performance of their duties.

History.—s. 2, ch. 84-24, § 1, effective 10-1-84.

Note.—Repealed by ch. 84-24, § 1, effective 10-1-84.

1987-1988 Session, ch. 87-1, § 1, effective 10-1-87.

1987-1988 Session, ch. 87-1, § 1, effective 10-1-87.

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1987-1988 Session, ch. 87-1, § 1, effective 10-1-87.

1987-1988 Session, ch. 87-1, § 1, effective 10-1-87.

the disposal of such lands shall be placed in the Conservation and Recreation Lands Trust Fund.

(b) This section shall not be construed so as to affect:

(a) Other provisions of this chapter relating to oil, gas, or mineral resources.

(b) The exclusive use of state-owned land subject to a lease authorized and executed by the Board of Trustees of the Internal Improvement Trust Fund leasing state-owned land for private uses and purposes.

(c) Sovereignty lands not leased for private uses and purposes.

History.—s. 2, ch. 100-200, s. 167, ch. 11-259, s. 1, ch. 112-36, s. 3, ch. 103-222; s. 2, ch. 111-94, s. 4, ch. 114-197

Note.—Repealed effective October 1, 1990, by s. 2, ch. 114-94, and scheduled for review pursuant to s. 11.611 in advance of that date.

Ch. 114-94, 705 Leases to research and development authorities

253.037 Use of state-owned land for correctional facilities.—

(1) The Department of Natural Resources shall review, identify, and secure state-owned lands which may be used for correctional facilities subject to determination by the Department of Corrections of where sites are needed and their appropriateness for use as prisons or other correctional facilities.

(2) Notwithstanding the provisions of s. 253.025, the Board of Trustees of the Internal Improvement Trust Fund may purchase federal surplus lands for use as sites for correctional facilities, using federal land purchasing procedures, regulations, and requirements.

(3) The Auditor General is directed to conduct performance audits of any purchases made pursuant to the provisions of subsection (2).

History.—s. 50, ch. 113-131

253.04 Duty of board to protect, etc., state lands; state may join in any action brought.—

(1) The Board of Trustees of the Internal Improvement Trust Fund may police; protect; conserve; improve; and prevent trespass, damage, or depredation upon the lands and the products thereof, on or under the same, owned by the state as set forth in s. 253.03. The board may bring in the name of the board all suits in ejectment, suits for damage, and suits in trespass which in the judgment of the board may be necessary to the full protection and conservation of such lands, or it may take such other action or do such other things as may in its judgment be necessary for the full protection and conservation of such lands; and the state may join with the board in any action or suit, or take part in any proceeding, when it may deem necessary, in the name of this state through the Department of Legal Affairs.

(2) In lieu of seeking monetary damages pursuant to subsection (1) against any person or the agent of any person who has been found to have willfully damaged lands of the state, the ownership or boundaries of which have been established by the state, or willfully damaged or removed products thereof in violation of state or federal law or to have knowingly refused to comply with or willfully violated the provisions of this chapter, the board may impose a fine for each offense in an amount up to \$10,000 to be fixed by rule and imposed and collected by the board in accordance with the provisions of chapter 120. Each day during any portion of which such viola-

tion occurs constitutes a separate offense. This subsection does not apply to any act or omission which is currently subject to litigation wherein the state or any agency of the state is a party as of October 1, 1984, or to any person who holds such lands under color of title contained herein impairs the rights of any person to obtain a judicial determination in a court of competent jurisdiction of such person's interest in lands the subject of a claim or proceeding by the department under this subsection.

(3) Whenever any person or the agent of a person knowingly refuses to comply with or willfully violates the provisions of this chapter so that such causes damage to the lands of the state or thereof, including removal of those products, such person is liable for such damage. Whenever two or more persons or their agents cause damage, and if such damage is indivisible, each violator is jointly and severally liable for such damage; however, if such damage is attributable to a particular violator or violators, each violator is liable only for that damage and subject to the fine attributable to his violation.

(4) All fines imposed hereunder and damages awarded are a lien upon the real and personal property of the violator or violators, enforceable by the Department of Natural Resources as are statutory liens under chapter 85.

(5) All moneys collected pursuant to fines imposed or damages awarded shall be deposited into the Internal Improvement Trust Fund created by s. 253.01 and used for the purposes defined in that section.

History.—s. 2, ch. 116-62, 1981, CCL 1936 Supp. 1446(14), s. 11, ch. 250-25, 1949; s. 2, ch. 61-119, ss. 11, 27, 35, ch. 103-106, s. 11, ch. 114-79

253.05 Prosecuting officers to assist in protecting state lands.—State attorneys, other prosecuting officers of the state or county, wildlife officers of the Florida Game and Fresh Water Fish Commission, conservation officers, together with the executive director of the Department of Natural Resources, and county sheriffs and their deputies shall see that the lands owned by the state, as described in ss. 253.01 and 253.03, shall not be the object of damage, trespass, depredation, or unlawful use by any person. The said officers and their deputies shall, upon information that unlawful use is being made of state lands, report the same, together with the information in their possession relating thereto, to the Board of Trustees of the Internal Improvement Trust Fund and shall cooperate with the said board in carrying out the purposes of ss. 253.01-253.04 and this section. State attorneys and other prosecuting officers of the state or any county, upon request of the Governor or Board of Trustees of the Internal Improvement Trust Fund, shall institute and maintain such legal proceedings as may be necessary to carry out the purpose of said sections.

History.—s. 3, ch. 156-12, 1981, CCL 1936 Supp. 1446(15), s. 2, ch. 61-119, ss. 27, 35, ch. 69-106, s. 1, ch. 70-117; ch. 27 State attorneys, duties; ch. 30 Sheriffs, duties

253.111 Notice to board of county commissioners before sale.—The Board of Trustees of the Internal Improvement Trust Fund of the state may not sell or convey any land to which they hold title unless and until they

these uses do not interfere or detract from the designated primary purpose. Single use properties will most often be managed by a single agency but may be placed under cooperative management if the expertise of two or more agencies is required to carry out the primary purpose.

(16) "Sole management" means management by one agency on a single or multiple use management tract.

(17) "State land" as used in this rule means land in which the title is vested in the Board.

(18) "Sublease" means a lesser than leasehold interest in lands executed by the lessee to a third party for a definite time period with specific conditions attached.

(19) "Surplus lands" means lands which are not needed by any State agency, and are recommended for disposal, pursuant to Rule 18-4.010.

Specific Authority 253.03(7) FS. Law Implemented 253.022, 253.034 FS. History—New 4-4-84, Formerly 16Q-23.03, Transferred from 16Q-23.001.

18-4.004 Land Management Advisory Committee Composition and Procedures

(1) The committee shall be composed of the following persons or their designees:

(a) The Executive Director of the Department of Natural Resources;

(b) The Commissioner of the Department of Agriculture and Consumer Services;

(c) The Secretary of State;

(d) The Executive Director of the Game and Fresh Water Fish Commission;

(e) The Secretary of the Department of Environmental Regulation;

(f) The Secretary of the Department of Corrections;

(g) The Commissioner of the Department of Education.

(2) The Chairmanship of the committee shall rotate annually on October 1 of each year in the order listed above as set forth in Section 253.034, F. S.

(3) The committee shall hold periodic meetings at the request of the chairman. The meetings shall be recorded electronically and such records shall be preserved pursuant to Chapters 119 and 267, F. S.
Specific Authority 253.03(7) FS. Law Implemented 253.022(1), (2) FS. History—New 4-4-84, Formerly 16Q-23.04, Transferred from 16Q-23.004.

18-4.005 Land Management Advisory Committee Responsibilities and Procedures

(1) The responsibilities of the committee shall include:

(a) Reviewing each plan or sublease over 160 acres, and each surplus land determination within 60 days after receipt from the division.

(b) Considering the propriety of the agency's recommendations regarding the future use of the land, protection of fragile and non-renewable resources, maintenance and use of renewable resources.

(c) Identifying the potential for alternative or multiple uses not recognized by the managing agency.

(d) Identifying lands surplus to the agency's need which could be used by or reserved for other agency use or disposed of as surplus.

(e) Considering whether lands would be more appropriately owned or managed by a county or other local government and whether a sale, lease, or other conveyance would be in the interests of the State and local government.

(2) The procedures of the committee shall include:

(a) All management plans and subleases for areas over 160 acres in size, and all surplus land determinations shall be reviewed by the committee prior to submittal to the Board. Utilizing the policies, standards, and criteria of Rule 18-4.008, the committee shall specifically recommend to the Board whether to approve, approve with modifications, or reject a management plan, sublease, or surplus lands determination.

(b) Management plans and subleases for areas less than 160 acres in size, may at the request of three (3) or more committee members, be submitted to the committee for review and recommendations.

(c) A recommendation to the Board on management plans, subleases and surplus land designations by the committee shall be by the concurrence of at least four (4) members.

(d) The use of State-owned land in a manner which is inconsistent with the existing lease or the approved land management plan, shall cause the lease to be subject to termination by the Board. The committee shall recommend to the Board when such uses are not in accordance with the approved management plan or lease/agreement.

Specific Authority 253.03(7), 253.034(4), (5) FS. Law Implemented 253.022(1), 253.034(3), (4), (5) FS. History—New 4-4-84, Formerly 16Q-23.05, Transferred from 16Q-23.005.

18-4.006 Agency Duties

(1) Primary staff support for the committee shall be provided by the division, including the recording functions listed in paragraph (3) of Rule 18-4.004.

(2) The managing agency should be prepared to respond to any inquiries or issues.

(3) The managing agency shall prepare executive summaries which highlight important management facts, issues, or problems, and any public input which went into developing the plan or sublease.

Specific Authority 253.03(7) FS. Law Implemented 253.022(2), 253.034(4) FS. History—New 4-4-84, Formerly 16Q-23.06, Transferred from 16Q-23.006.

18-4.007 Management Plans. Plans submitted to the division for committee review under the requirements of Section 253.034, F. S., should contain, where applicable to the management of resources, the following:

(1) The common name of the property.

(2) A map showing the location and boundaries of the property plus any structures or improvements on the property.

(3) The legal description and acreage of the property.

(4) The degree of title interest held by the Board, including reservations and encumbrances such as leases.

(5) The land acquisition program (e.g., C. A. R. L., E. E. L., Save Our Coast), if any, under which the property was acquired.

(6) The designated single use or multiple use management for the property, including other managing agencies.

(7) Proximity of property to other significant State, local, or federal land or water resources.

(8) A statement as to whether the property is within an aquatic preserve or a designated area of critical State concern or an area under study for such designation.

(9) The location and description of known and reasonably identifiable renewable and non-renewable resources of the property including, but not limited to, the following:

(a) Brief description of soil types, using U. S. D. A. maps when available;

(b) Archaeological and historical resources;

(c) Water resources including the water quality classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Waters;

(d) Fish and wildlife and their habitat;

(e) State and federally listed endangered or threatened species and their habitat;

(f) Beaches and dunes;

(g) Swamps, marshes and other wetlands;

(h) Mineral resources, such as oil, gas and phosphate;

(i) Unique natural features, such as coral reefs, natural springs, caverns, large sinkholes, virgin timber stands, scenic vistas, and natural rivers and streams; and

(j) Outstanding native landscapes containing relatively unaltered flora, fauna, and geological conditions.

(10) A description of actions the agency plans to locate and identify unknown resources such as surveys of unknown archaeological and historical resources.

(11) The identification of resources on the property that are listed in the Natural Area Inventory.

(12) A description of past uses, including any unauthorized uses of the property.

(13) A detailed description of existing and planned use(s) of the property.

(14) A description of alternative or multiple uses of the property considered by the managing agency and an explanation of why such uses were not adopted.

(15) A detailed assessment of the impact of planned uses on the renewable and non-renewable resources of the property and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to mitigate damage caused by such uses.

(16) A description of management needs and problems for the property.

(17) Identification of adjacent land uses that conflict with the planned use of the property, if any.

(18) A description of legislative or executive directives that constrain the use of such property.

(19) A finding regarding whether such planned use complies with the State Lands Management Plan, particularly whether such uses represent "balanced public utilization", specific agency statutory authority, and other legislative or executive constraints.

(20) An assessment as to whether the property, or any portion, should be declared surplus.

(21) Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property.

(22) A description of the management responsibilities of each agency and how such responsibilities will be coordinated, including a provision that requires that the managing agency consult with the Division of Archives, History and Records Management before taking actions that may adversely affect archaeological or historic resources.

(23) A statement concerning the extent of public involvement and local government participation in the development of the plan, if any, including a summary of comments and concerns expressed. *Specific Authority 253.03(7), 253.034(4), (5) FS. Law Implemented 253.034(3), (4), (5) FS. History—New 4-4-84, Formerly 16Q-23.07, Transferred from 16Q-23.007.*

18-4.008 Policies, Standards, and Criteria. The following management policies, standards, and criteria will be used by the committee to determine whether to recommend approval, approval with conditions or modifications, or to reject any agency management plan, sublease or surplus land determination.

(1) The policies, standards, and criteria that are enumerated in the "Upland Management Rules of the Department of Natural Resources".

(2) The policies, standards, and criteria that are enumerated in the "Sovereignty Submerged Lands Management Rules of the Department of Natural Resources", Chapter 16-21, F. A. C.

(3) The policies, standards, and criteria that are enumerated in the "State Lands Management Plan", adopted March 17, 1981, by the Board. *Specific Authority 253.03(7), 253.034(4) FS. Law Implemented 253.034(3), (4), (5) FS. History—New 4-4-84, Formerly 16Q-23.08, Transferred from 16Q-23.008.*

18-4.009 Sublease Reviews.

(1) An agency managing or leasing State-owned lands from the Board shall not sublease lands without prior review by the division and subsequent approval by the Board. Subleases for areas greater than 160 acres in size shall be reviewed by the committee prior to submittal to the Board.

(2) All sublease requests shall be made pursuant to applicable laws and rules governing the leasing and subleasing of State-owned lands.

(3) Subleases submitted to the division for

County of Volusia
Florida

RECEIVED

MAR 12 1990



~~ENVIRONMENTAL MGMT.~~

BY ~~DISTRICT ADVISORY BOARD~~
DELTONA MUNICIPAL SERVICE DISTRICT

March 9, 1990

Ms. Beebe White, Chairman
Volusia County School Board
334 John Anderson Drive
Ormond Beach, FL 32176

Dear Ms. White:

At the March 6, 1990 meeting of the Deltona Municipal Service District Advisory Board, the Board approved Resolution No. 90-1 attached for your review, which supports maintaining all of the Section 16 lands located in Deltona in public ownership and under full and complete public control, and opposes any commercial development of these lands by private interests.

The Advisory Board acknowledges that complete control of Section 16 lands rests with the School Board, however, it was the Boards' wish to advise your members and County Council of the concerns of the residents of Deltona that Section 16 be utilized in accordance with the best interests of this community.

Mr. Stephen S. Kintner, Director of the Department of Environmental Management, addressed the Advisory Board at its meeting of March 6, 1990 regarding the use of approximately 400 acres of Section 16 as a mitigation bank which would allow the area to be permanently established as a species and habitat preserve under the auspices of Federal, State and County wildlife agencies. We believe that utilizing the parcel to maintain, and indeed to enhance, its value to the community as a wildlife management area would represent an important step toward conservation for the future of Deltona and its citizens, and would present opportunities for our youth to develop interests and experience in resource management.

COUNTY COUNCIL MEMBERS

Clay Henderson - At Large

Big John - At Large

Alice Cycler - District #1

We appreciate the opportunity of voicing our concerns regarding this issue.

Sincerely yours,



Patricia Northey,
Chairman

PN:ch

Attachment

cc: Alice Cyler
Big John
Clay Henderson
Vicky Jackson
Robert Tuttle
Deanie Lowe
Roy Schleicher
Ann McFall
Dr. James Surratt
Ronald McPherson
Lonnie N. Groot
Stephen Kintner
Louis E. DiFiore

RES

**A RESOLUTION OF THE DELTONA MUNICIPAL SERVICES
DISTRICT ADVISORY BOARD EXPRESSING OPPOSITION
TO ANY COMMERCIAL DEVELOPMENT OF SECTION 16
PROPERTIES IN DELTONA, FLORIDA.**

WHEREAS, in 1822 the 16th Section of every Township was reserved for use by the public for educational purposes and title to Section 16 lands was vested in the then Territory of Florida; and

WHEREAS, title to Section 16 in Deltona, Florida is now vested in the State of Florida and is being held in trust for the public; and

WHEREAS, the Section 16 lands within Deltona, Florida have significant environmental and educational value as well as a general benefit to the public by remaining in a commercially undeveloped condition; and

WHEREAS, Article II, Section 7, of the Constitution of the State of Florida provides that "[i]t shall be the policy of the State to conserve its natural resources and scenic beauty"; and

WHEREAS, the State Comprehensive Plan for the State of Florida as set forth in Chapter 187 of the Florida Statutes provides that "Florida shall protect ... unique natural habitats and ecological systems" and provides, further, that it is the policy of the State of Florida to "conserve forests", to "...retain, manage, and inventory public lands to provide recreation, conservation, and related public benefits", to "emphasize the ... maintenance of ecologically intact systems in all land and water planning, management, and regulation" and to "protect and expand park systems throughout the State"; and

WHEREAS, the Comprehensive Plan for Volusia County, Florida provides for the protection of environmentally valuable and sensitive lands and provides for the preservation of open space and recreational lands for the use and benefit of all citizens; and

WHEREAS, repeated attempts have been made to take the Section 16 public trust lands present in Deltona, Florida from the domain of the public and to develop those lands for commercial purposes by private development interests; and

WHEREAS, the Deltona Municipal Services District Advisory Board desires to protect the public health, safety and welfare of the citizens of the Deltona, Florida community,

NOW, THEREFORE, BE IT RESOLVED BY THE DELTONA MUNICIPAL SERVICES DISTRICT ADVISORY BOARD that:

The Board hereby supports maintaining all of the Section 16 lands located in Deltona, Florida in public ownership and under full and complete public control and opposes any commercial development of said lands by private development interests.

ADOPTED this 6th day of March, 1990.

DELTONA MUNICIPAL SERVICES
ADVISORY BOARD

By: Patricia L. Northey
PATRICIA L. NORTHEY
Chairperson

Town Meeting

Our Opinion

Section 16 land bank offers many benefits

The best deal a land seller can get is to receive money for property, then retain the use of it.

That unbeatable deal is what the Volusia County School Board would get if Section 16 is preserved as a land mitigation bank.

Developers required by state and federal rules to set aside land to mitigate, for example, scrub jay or gopher tortoise habitats they plan to destroy in other areas would "buy" a share of Section 16.

The 400-acre uplands scrub, set aside for educational purposes in the 1800s, would be managed as a wildlife preserve, with opportunities aplenty for Volusia County public school students to learn about conservation, wildlife, forestry and land management.

Scrub jays and gopher tortoises would benefit from a large tract of mitigation land set aside by many developers, rather than piecemeal parcels set aside here and there by individual developers. A scrub jay family needs 20 acres for survival; 10 acres preserved amidst a subdivision and commercial district would not assure that survival.

The school system would benefit by being reimbursed for its development rights on land that may not be the best location for new schools. The money could be used to buy school sites where they are needed, while Section 16 could still be used for environmental education.

Volusia County residents will benefit by providing a means to keep mitigation dollars and lands in Volusia County. Developers don't have to set aside miti-

gation lands in the same county where their building activity takes place. If there is no land bank established in Volusia County, it's likely that developers required to mitigate will take part in the large bank operated by the Nature Conservancy in Polk County.

The Volusia County School Board might be able to get more money by selling Section 16 outright to developers who would love to get their hands on the last large undeveloped piece of Deltona.

That move, however, would preserve nothing for future generations of Volusia County students. It would, on the other hand, saddle Deltona with a big development headache.

If this plan is approved, a percentage of the money developers pay will be used to "manage" the Section 16 land bank. An investment will be needed: to fence the land, to reforest nearly 80 acres destroyed by youths trespassing on motorbikes and all-terrain vehicles, to carve out nature trails, etc.

The county and school board, however, should guarantee that the percentage set aside for management doesn't swell into a bureaucracy. With coordination, the necessary tasks can be taken over by county and school board employees and shared with environmental groups whose members would be glad to volunteer.

Making a land bank of Section 16 has so many benefits — to students, taxpayers, wildlife — that we're tempted to say it kills several birds with one stone. In this case, though, we'll just call it an excellent idea.



Car
FR. WADDE
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Your Opinion

Group rejects 'downtown' plan for school land

By Rick Tonyan

OF THE SENTINEL STAFF

DELTONA — A plan to create a commercial center for Deltona on land earmarked for school sites should be stopped, said a majority of members of the Deltona Civic Association in a straw vote.

However, the margin of votes opposed to the idea, 21 to 18, was so small that developers proposing the project said Thursday they will continue their plans.

Winning public opinion is vital to the project's success, the developers said. If they cannot get Deltona residents' backing, they said they will abandon the idea of negotiating for the school board land.

"I've been in this county long enough to know you need public sentiment behind a project like this," said

Herky Huffman, a Stone Island Realtor who is part of a team of developers.

Although few cast ballots and the margin was slim, the association's vote shows that the community is not giving the developers that support, said Jim Kelly, an opponent of the project. "They still got only 18 votes," Kelly said. "That's a positive step from my standpoint."

The association has about 4,100 members. Slightly more than 40 were at the Wednesday night meeting and 39 of them cast ballots.

Huffman and another team member, Deltona attorney Kurt Borglum, said they consider the vote a draw.

Most association members at a meeting late Wednesday did not know enough details of the project to support it, Borglum said. "We basically split — and that's without them knowing the details."

Huffman, Borglum and Jacksonville

developer John Crabtree have described their project as a downtown area for Deltona — a commercial hub of shops and professional offices. The project would enlarge the tax base and provide jobs in what is now a mostly residential community, the developers said.

In the Wednesday night straw vote, a bare majority, 20 to 19, said there was no need for more local shops and professional offices. Most of the commercial development serving Deltona is on the fringes of the community.

The project would be on 640 acres called Tract 16 in the middle of Deltona. Deltona Lakes Elementary School is on the southeast corner of the tract and the school board plans to build as many as three other schools on it. Opponents say they don't want heavy commercial development near schools.

Developers have planned to pay as

much as \$2.2 million for whatever land in the tract the school board does not use. That could be as much as 500 acres. The Florida Department of Natural Resources owns the land and leases it free to the county school board.

The school board and the state Department of Education would have to agree to sell the land. The tract got its name because it was the 16th section of a township surveyed near Lake Monroe when Florida first became a state in 1845. State and federal law dictated that the 16th section of each township be earmarked for educational purposes.

There were 1,627 such tracts in Florida. Hundreds of them have been sold for private development over the years, said Dan Crabb, director of the division of state lands. He said money from the sales was used for education.

Deltona-area retail center turned down

By ANDY CAMPANARO
Sun News Writer

DELAND — A shopping center about the size of Deltona Plaza, wrapped around the north end of Trout Lake, was denied unanimously Tuesday by the county's Planning and Land Development Regulation Commission.

DeLand attorney Allen Watts represented owner Colonial Properties Inc. and told the commission that this is the first developer to buy into a mitigation bank that Volusia County and the Volusia County School Board are trying to set up in Section 16 in the middle of Deltona.

Colonial Properties Inc. is asking for the current zoning of B-1, B-4, PUD-R and R-4 to be rezoned to B-PUD in order to develop the 50 acres into a retail shopping center of 122,000 square feet and 671 parking lots, a 5,000-square-foot bank and 7,500-square-foot drive-through restaurant, and a hotel and 7,500-square-foot restaurant.

About 50 people from the adjoining area and wearing signs saying "No B-PUD" were represented by James R. Clayton of Clayton and Teal, DeLand.

Watts presented Traffic Engineer Bill Tipton Sr., who told the commissioners that the traffic generated from the shopping center would be less than 10 percent of trips allowed on Finland Drive, once it was increased to an 80-foot

width.

"You're going to have to build an eight or 10-lane road to alleviate what's going to happen there," Commissioner Paul Holt said.

Objections heard before the commission unanimously voted to deny the project were:

- The proposed application is inconsistent with protecting residential neighborhoods from encroachment by incompatible land uses such as commercial or industrial development.

- "The first law of zoning is 'protect the people'," Clayton said.

- One family of scrub jays exists on the subject site and development plans would require the clearing of this site.

- A list of planning comments literally from "A through Z" was attached, mostly stipulating landscaping buffering areas in and around the development, and parking spaces.

- The hotel-restaurant site is either partially or completely located within the 100-year flood plain of Trout Lake and the county is opposed to any development activity within the flood plain.

- The applicant's environmental consultants report several wading bird species, considered species of special concern, that were observed along Trout Lake.

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FACILITIES PLANNING
& RESEARCH

Section 16

C U R R I C U L U M O V E R V I E W
K I N D E R G A R T E N T H R O U G H G R A D E T W E L V E
C O M M I T T E E F O R T H E S I X T E E N T H S E C T I O N

May, 1990

DR. BARBARA FOSTER
CHAIRPERSON

P R E F A C E

THE GOAL OF THIS COMMITTEE IS TO PRODUCE A WORKING DOCUMENT WHICH SUPPORTS THE PREMISE THAT THE SIXTEENTH SECTION, LOCATED IN DELTONA, FLORIDA, IS A LIVING LABORATORY, A CLASSROOM INTO THE PAST, WHICH WILL PROVIDE STUDENTS OF THE PRESENT WITH THE KNOWLEDGE, WISDOM AND CONCERN NEEDED TO ENSURE A SAFE AND HEALTHY ENVIRONMENT FOR ALL OF US.

EDUCATIONAL OBJECTIVES: OVERVIEW

The principal educational objectives of Section 16 can be stated as follows:

1. To develop an awareness, appreciation and an affection for nature.
2. To develop an awareness that all things in nature constantly change.
3. To present conservation concepts in natural settings so that students will learn them easily.
4. To develop a desire and will to protect and to use wisely the living and non-living natural resources of the earth important to man.
5. To increase knowledge of our natural world and man's responsibility towards nature.

PERSONNEL LIST FOR 16th SECTION COMMITTEE

COUNTY ADMINISTRATION: DR. BARBARA FOSTER

BICENTENNIAL YOUTH PARK: ROBERT HORN

DELTONA HIGH SCHOOL: CHUCK WILLIAMS-PRINCIPAL
PAMELA LAVERTY-ADMN.
SUSAN CRAIN
MINCE DUNCAN -ECOLOGY
AL EVANS -BOTANY
ALEX NELSON -EARTH SCIENCE

DELTONA LAKES ELEMENTARY: RON MCPHERSON -PRINCIPAL
PAUL LEFFLER -ASST. PRINCIPAL
DOROTHY TAYLOR-ASST. PRINCIPAL
ALICE CROSS
MIKE FLIGOR
PAMELA HARRIS
JANE HILLE
MARY SARA MOREAU
BARBARA PENN
MARTHA BUSH
DONNA SCHAEFFER-REYNOLDS
GAY WEIKEL

DELTONA MIDDLE SCHOOL BETH DORAN -SCIENCE
BARBARA GARBER
DOUGLAS HEPWORTH
JEANNE HILL
GREG MAKRIS -SCIENCE
CINDY MCCONKEY-SCIENCE
SUSAN SWARTZFAGER-AGRICULTURE

DISCOVERY ELEMENTARY SUELLEN BIFERIE
KAREN BURGESS
SHARON SANFORD

ENTERPRISE SCHOOL DAVID FISHER -PRINCIPAL
PAT ZEOLLA
SUSANNE GOODIN

OSTEEN SCHOOL MICHAEL MONGELLI-ASST. PRINCIPAL
GAIL FILSON
JAMIE ZIMMERMAN

STETSON UNIVERSITY KRISTEN MAUCERI (WITH DR. FOSTER)
TRIPP ODOM (WITH DR. FOSTER)

Section 16
PROPOSED ENVIRONMENTAL STUDY STATIONS
K-12 Unit Development

- | | |
|--|---|
| 1. Sinkhole Stations | 17. Environmental Lab
indoor lecture hall |
| 2. Rotten Log Station | 18. Observation platform |
| 3. Soil Study Station/Geology | 19. Camping areas |
| 4. Tree Growth Study Station | 20. Challenge Course Trail
(fitness) |
| 5. Tracking Station | 21. Tree Identification
Trail |
| 6. Fence Row Habitat Station
Identification Trail | 22. Wildflower |
| 7. Native Plant Station | 23. Reflection,
meditation, quiet spot
area for poetry, art
work, reading. |
| 8. Fungi (Moss, Lichen Growth
Study Station) | 24. Collection Trail |
| 9. Insect Activity Station | 25. Blind-Fold Trail |
| 10. Native Floridian Study
Station (Indian, Early
Settlers, Geography) | 26. Energy Experimental
Station |
| 11. Orienteering Station | 27. Arts and Crafts Area |
| 12. Land Measurement Station | 28. Outdoor Theater |
| 13. Sundial Station | 29. Agriculture Farm |
| 14. Weather Station | 30. Bird Sanctuary |
| 15. Outdoor Classroom | 31. Chickee |
| 16. Picnic Area | |

SECTION I
KINDERGARTEN THROUGH SECOND

KINDERGARTEN THROUGH SECOND GRADE

In order for a new environmental curriculum to be incorporated into the K-2 curriculum, it was necessary to utilize many Science Priority Skills. The activities and units utilize the process-inquiry skills that are the "tools" of scientific investigation. The Environmental Assessment Outline of Section 16 reflects the units that can be developed unique to the environmental center.

PROCESS-INQUIRY SKILLS

- P-1 Observing-using the senses to find out about subjects and events (Observing at Sand Pine Scrub)
- P-2 Classifying-grouping things according to similarities or differences. (Classifying at Sand Pine Scrub)
- P-3 Measuring-making quantitative observations. (Measuring at Sand Pine Scrub)
- P-4 Using spatial relationships-identifying shapes and movement. (Spatial Relationships at Sand Pine Scrub)
- P-5 Communicating-using the written and spoken word, graphs, drawings, diagrams, or tables to transmit information and ideas to others. (Communicating about Sand Pine Scrub)
- P-6 Predicting-making forecasts of future events or conditions based upon observations or inferences. (Predicting about Sand Pine Scrub)
- P-7 Inferring-explaining an observation or set of observations. (Inferring about Sand Pine Scrub)

KINDERGARTEN UNITS

- 1. All about Me
- 2. Growing Things
- 3. Daily Weather

FIRST GRADE UNITS

- 1. The Wonderful World in our Neighborhood
- 2. The Wonderful Earth
- 3. World of Animals
- 4. World of Plants
- 5. Wonderful World of Me

SECOND GRADE UNITS

- 1. Working with Weather
- 2. Plants
- 3. Animal Awareness
- 4. Magical Matter
- 5. Wonderful Me

ENVIRONMENTAL ASSESSMENT OUTLINE OF SECTION 16

I. Sand Pine Scrub

- A. define - The Sand Pine Scrub is a forest built on dunes.
- B. vegetation-
 - 1) Pine tree
 - 2) Oak tree
 - 3) Palmetto bush
- C. wildlife - Florida scrub jay
Gopher Turtle

II. Sink Hole/Sandhill Lakes

- A. define - Sink holes occur when a crack grows in the clay that lies under the sand and over the limestone.
- B. vegetation- 3 distinct areas
- C. wildlife - several endangered or threatened species.

SECTION II
THIRD THROUGH FIFTH GRADE

THIRD THROUGH FIFTH

All children need contact with the earth to know and value it's essential role in their future. Once this beautiful, natural Sand Pine forest is destroyed there will be no possibility to rethink or regain the immense loss to all citizens of Deltona and Volusia County.

The value of this natural reserve is immeasurable. As our young citizens move into the future they must know what and where their roots are, they must be firmly anchored in appreciation of the earth as their habitat. Only by deliberate acts at this time, which is our time to choose the course of the future, can we save, preserve, and reserve the earth for it's future citizens.

Implement Environmental Stations

1. Overnight Campground
2. Outdoor Theater
3. Agriculture Farm
4. Observatory
5. Bird Sanctuary
6. Trails
7. Ponds Studios/Sinkholes
8. Geology
9. Permanent Science Labs
10. Chickee
11. Observation Sites

I. Language Arts

- A. Creative writing
- B. Language development
 1. LEP students (Limited English Proficient)
 2. journals
- C. Plays/playwriting
 1. history - explorers/Indians
 2. habitat/environment
- D. Listening skills
- E. Storytelling
- F. Public speaking

II. Science

- A. Scientific method
- B. Experiments relevant to environment
- C. Observe/describe
- D. Plants
 - 1. adopt-a-tree
 - 2. locate, identify, classify
 - 3. endangered
 - 4. adaptive behavior
 - 5. redistribution
 - 6. poisonous/nonpoisonous
 - 7. seeds/grafting
 - 8. conservation
 - 9. effects of heat/light
 - 10. native
- E. Weather station
 - 1. measurement
 - 2. instruments/student made
- F. Matter
 - 1. living/nonliving
 - 2. identification/mass
- G. Water table
 - 1. Floridan aquifer
 - 2. salt water intrusion
 - 3. recharge
 - 4. percolation
- F. Wildlife
 - 1. adaptation
 - 2. native
 - 3. endangered/extinct
 - 4. record animal tracking on trail
 - 5. identification
 - 6. habitats
 - 7. food chains
 - 8. producers/consumers
 - 9. balance of nature
 - 10. harmony with man
 - 11. sanctuary for injured

- I. Geology
 - 1. landforms
 - 2. history
- J. Recycle
- K. Health/safety
- L. Erosion
 - 1. controlled
 - 2. lake beds
 - 3. preventative (dry sink)
- M. Energy
 - 1. potential/kinetic
 - 2. tools/machines
 - 3. solar/wind

III. Math

- A. Measurement/geometry
- B. Graphing/map skills
- C. Fractions
- D. Statistics/probability/ratios
- E. Area, perimeter, circumference
- F. Per cent - increase/decrease
- G. Problem solving
- H. Estimation

IV. Art

- A. Nature sketching
- B. Expanded vision
- C. Photography/publication
- D. Awareness of change

- V. Social Studies
 - A. Florida history
 - 1. Chickee (Indians)
 - 2. Deland Ridge
 - B. Development/change/effects

- VI. Technology
 - A. Computer process
 - B. Calculators

SECTION III
SIXTH THROUGH EIGHTH

SIXTH THROUGH EIGHTH

With Florida's burgeoning population and shrinking natural environment, it is crucial that students have the opportunity to witness and participate in the preservation of a small but pristine area. This involvement will heighten the awareness of future generations to the necessity of man's interdependence with nature.

This land should be set aside for the use of the culturally and economically deprived segment of the student population as well as the enrichment of those more fortunate. For it is an aware and informed population that can make educated decisions about the quality of the world in which man must coexist with nature.

- I. Social Studies and Science
 - A. Students will demonstrate effects of the human and non-human acts in forested areas. (i.e. power line and Providence, global warming, oxygen depletion).
 - B. Distinguish between healthy and unhealthy trees. Examine the value of each to a forest ecosystem.
 - C. Describe the interdependence of various forest organisms (examples: show interdependence of rotting and plant and animal growth around it).
 - D. Students will locate components of a forest ecosystem.
 - E. Measurement using metrics-distance, temperature, capacity, and mass.
 - F. Identification and study of invertebrate species and their habitats.
 - G. Bird watching
 1. identification
 2. study migration
 - H. Isolation of microorganisms
 1. identification
 2. bacteria in soil, water, plants

- I. Ecology
 - 1. biotic and abiotic factors
 - 2. ecosystems
 - 3. biomes
 - 4. wildlife
 - 5. factors specific to sand pines
 - 6. factors that disrupt the ecosystem
 - 7. recycling: biodegradability of types of garbage
 - 8. composting
 - 9. observe/describe periodic and continuous changes
 - 10. cause and effect relationships in the environment
 - 11. environmental and energy education
 - 12. soil conservation: water run off; erosion; seasonal water fluctuation

- J. Fossil evidence

- K. Aquatic Biology
 - 1. water testing
 - 2. soil testing
 - 3. organism
 - 4. mapping lakes

- L. Identification of foods: what each species lives on; what humans could eat.

- M. Study genetic mutation and hybrids

- N. Plant unit
 - 1. identification
 - 2. planting
 - 3. seeds (types, dispersal)
 - 4. ferns
 - 5. fungi
 - 6. occurrence
 - 7. native Florida plants
 - 8. natural pesticides
 - 9. agriculture students from various school would maintain area.

- O. Man's impact on ecology
 - 1. factors that disrupt ecosystems
 - 2. preventive measures
 - 3. direct impact of building, development and growth on the ecology of Deltona
 - P. Local endangered plant and animal life
 - 1. identify species
 - 2. develop plan to save/possible organizations to contact
- II. Physical Science
- A. Orienteering-navigate using a compass, following a guide of distance and degrees to find set points.
 - B. Gravitational Studies
 - C. Water Testing
 - 1. quality testing
 - 2. graphing and predicting trends
 - D. Energy center to study solar power and wind power
- III. Mathematics
- A. Percolation
 - 1. calculate rate in the active sink hole
 - 2. determine the water percolation rates of designated areas
 - B. Measurement
 - 1. draw to scale various nature trail sites such as the outdoor classroom
 - 2. calculate water volume of the dry lakes
 - C. Graphing and Mapping
 - 1. develop a topological map of the area using appropriate elevations
 - 2. use grids and graph the area

IV. Language arts

- A. Describe legends created in a forest and then visit the forest to see the relationship i.e. HIAWATHA, ROBIN HOOD.
- B. Writing
- C. Blindfold student in a forest area as an awareness experience.
- D. Write a weekly journal (How does the area change through the year?)
- E. Examine the forest from different perspectives: artist, ecologist, bird, logger, camper, etc.

V. Geography

- A. Map/geographic skills
 - 1. development of topographic maps based on contour and elevation changes.
 - 2. identification of specific areas by reading various types of maps
 - 3. identify migrating birds. Research and map the migration routes
 - 4. wildlife location map
 - 5. comparison, location, and study of the land by use of aerial photography
 - 6. create a map along with the legend/key of the environment
 - 7. compass use
- B. Geographic/geologic features
 - 1. landmark identification
 - 2. study geographic causes of sink holes
 - 3. make soil and water comparisons close to the sink holes and farther from the sink hole
 - 4. identify the unique features of the pine ridge as created by its formation
 - 5. identify characteristic of soil
 - 6. relate topography, flora and fauna of this area

C. Career Education

1. identify natural species of area and environmental circumstance that provide for their existence
2. examine the effects of animal life on the environment in a time study
3. identify unique properties of the scrub as an ecosystem
4. identification of food chains around the sink hole areas
5. exploration and examination of pristine Florida geography
6. controlled burns--identify need, procedure, results, patterns in wild, etc. Compare different areas.

VI. Fine Arts for Middle School Students

A. Fiber Art/Textiles

1. weaving with natural materials
2. natural dyes and fiber products

B. Crafts

1. crafts from natural source/materials
2. musical instruments from forest products

VII. Vocational Agriculture

A. Agriculture Production

1. animal production
 - a. bird sanctuary
 - b. seed crops grown to attract native and migrating birds for observation
 - c. identification of native and migrating birds
2. plant production
 - a. organically grown vegetables
 - b. vegetables and native plants cultivated by groups of students from local schools
 - c. use of only hand tools and horse powered tools
 - d. students shown a demonstration and given a chance for hands-on experience
 - e. use of water conservation practices: rain barrels and cisterns to collect water for irrigation

- B. Horticulture
- C. Forestry
- D. Natural Resources

VIII. Vocational Magnet Schools

- A. Forestry
- B. Engineering
- C. Surveying
- D. Agriculture
- E. Photography
- F. Geology
- G. Geography
- H. Science
- I. Construction

IV. Career Education

- A. Environmental/Conservation
- B. Cartography
- C. Zoology
- D. Entomology
- E. Forestry
- F. Fish and Wildlife Management
- G. Plant Pathology
- H. Soil conservation
- I. Wildlife Biology
- J. Agencies that employ conservationists

SECTION IV
NINTH THROUGH TWELFTH

I. Life Science (Biology, Zoology, Botany)

- A. Botany
 - 1. Taxonomy of sand-pine community
 - 2. Wildflower research
 - a. best adapted species for road-side beautification
 - b. hormone research-dormancy
 - 3. Endangered species-(research)
 - a. pollinators of *Garbaria heterophylla* (research)
 - b. reintroduce *Bonamia grandiflora*
 - 4. Insectivorous plants
- B. Microscience
 - 1. Protozoans taxonomy (research)
 - a. soil
 - b. sinkhole
 - 2. Preparation of permanent slides
 - 3. Effect of acid rain on protozoans (research)
- C. Ichthyology
 - 1. fish farming
 - a. students tag and monitor movement and patterns
 - b. population studies (research)
 - c. mercury contamination (research) large tank
 - d. genetic studies on fish species(research)
 - e. introduce new species adaptable to area that naturally sequester mercury
- D. Ornithology
 - 1. Taxonomy
 - 2. Population studies (research)
 - a. feeder station-quiet center for observation drawing station, poetry writing
 - 3. Birds as secondary pollinators and dispersers(research) population counts
 - 4. Recovery area for injured birds- cages, etc.
 - 5. Mercury contamination (research)
- E. Entomology
 - 1. Glass beehives-observation center
 - 2. Butterfly farm & Greenhouse Comb. (research-monarch butterfly migration path)
 - a. all metamorphic stages observed
 - b. symbiotic relationships
 - 3. numerous endangered species(research)
 - a. scarab beetle(*Aphodius troglodytes*)
- F. Herpetology
 - 1. taxonomy-(sand-pine scrub)
 - 2. (research) endangered species
 - a. indigo snake
 - b. king snake - gopher tortoise
 - 3. population studies (research) competition
- G. Greenhouse
 - 1. Plant research
 - a. wildflower
 - b. hormone studies
 - c. tissue culture studies
 - d. woody ornamentals - plant propagation
 - e. insect studies-butterfly
 - f. *Microfilium*(parrot feather) research

II Environmental - Ecology

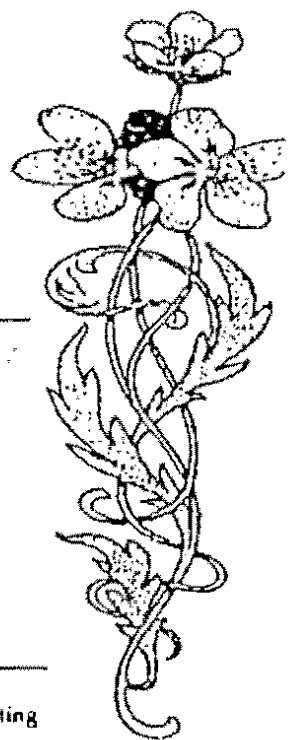
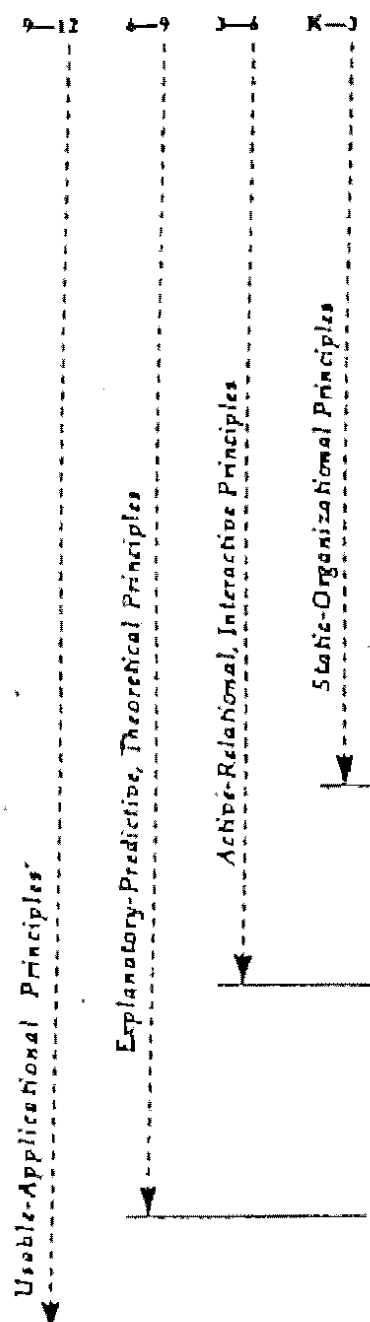
- A. Ecosystems
 - 1. Sand-pine scrub
 - 2. Sink-hole
 - 3. Lake beds returning to original state
- B. Soil
 - 1. Water
 - a. ground water recharge(research)
 - b. holding capacity studies(research)
 - c. analysis of soil fertility
 - 2. testing - ph - nutrient studies
 - 3. paleo-ecology-ancient soils(research)
- C. Erosion
 - 1. effect of Providence extension(research)
new school sites(research)
 - 2. lake-beds erosion
 - 3. trails
 - 4. effect of lining of water retention areas
- D. Salt-water intrusion
 - 1. well analysis(research)
 - 2. seasonal studies(research)
 - 3. purification studies(research)
- E. Population
 - 1. wildflowers(research)
 - 2. endangered species(research)
 - 3. insectivorous plants
 - 4. fish farming
 - 5. birds
 - 6. butterflies-monarch
 - 7. insects
- F. Food-chains and Food Webs
 - a. unique to sand-pine scrub(research)
- G. Fire Ecology(research)

III Earth Science

- A. Minerals research - substances indigenous to area
- B. Paleo-ecology
 - 1. see Ecology Part B - Soil
 - 2. fossils
- C. Cartography
 - 1. large outdoor map for visitors
 - 2. small individual maps
- D. Telescope
 - 1. permanent observatory
- E. Salt-water intrusion
 - 1. see Ecology(D)
- F. Paleo-geology
 - 1. Deland Ridge studies
 - 2. fossil studies
- G. Climatological Research Center
 - 1. rainfall studies
 - 2. wind pattern studies
 - 3. temperature & humidity studies
- H. Pine-resin studies
 - 1. collecting pine resin
 - 2. making resin for amber-insect
 - 3. "cat-facing" - pots

Chart Summarizing Processes Common to All Scientific Disciplines

Grade Level Content	Processes	Learner's Developmental Stages
9-12	<ul style="list-style-type: none"> <i>Observing</i> • Seeing • Hearing • Feeling • Tasting • Smelling <i>Communicating</i> • Silent • Oral • Written • Pictorial <i>Comparing*</i> (includes measuring) • Sensory comparisons • Relative position comparisons • Linear comparisons • Weight comparisons • Capacity comparisons • Quantity comparisons <i>Organizing*</i> • Data gathering • Sequencing • Grouping • Classifying <i>Relating*</i> • Using space-time relationships • Formulating experimental hypotheses • Controlling and manipulating variables • Experimenting <i>Inferring*</i> • Synthesizing, analyzing • Generalizing • Recognizing and predicting patterns; stating laws • Formulating explanatory models and theorizing <i>Applying*</i> • Using knowledge to solve problems • Inventing (technology) 	Sensory Motor
6-8		Preconceptual
3-5		Intuitive
K-2		Concrete Operational
		Formal Operational



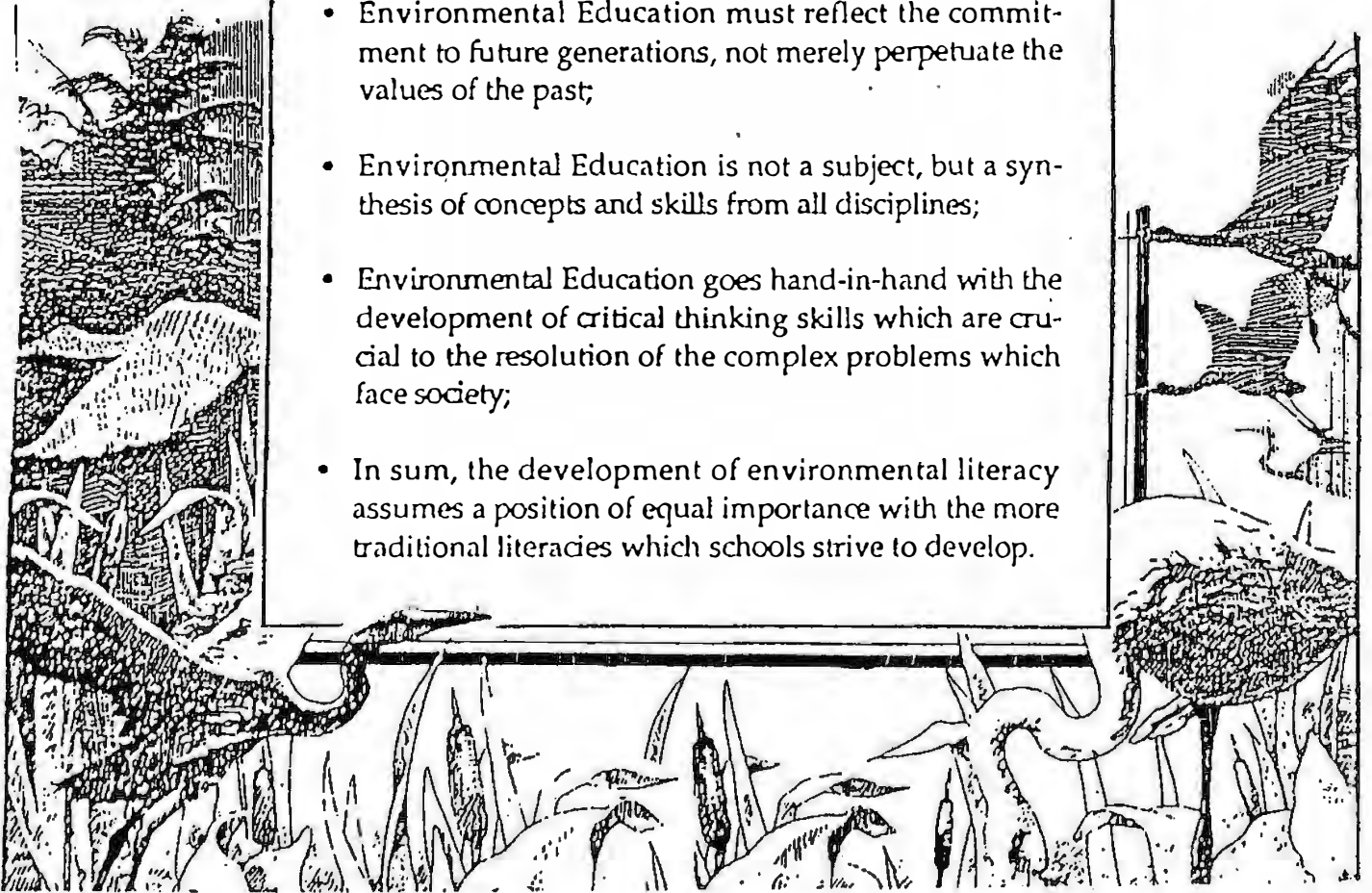
* These processes include the application of appropriate mathematical concepts and skills in interpreting data and solving problems.

Taken from: Science Framework Addendum for California Public Schools, California State Department of Education, 1984, p. 1.

A Point of View

The quality of the environment and the quality of life for the inhabitants of planet Earth are directly related. The primary goal of Environmental Education is to develop citizens who are knowledgeable about the environment and involved in working toward a more liveable future. This goal is based upon the following assumptions:

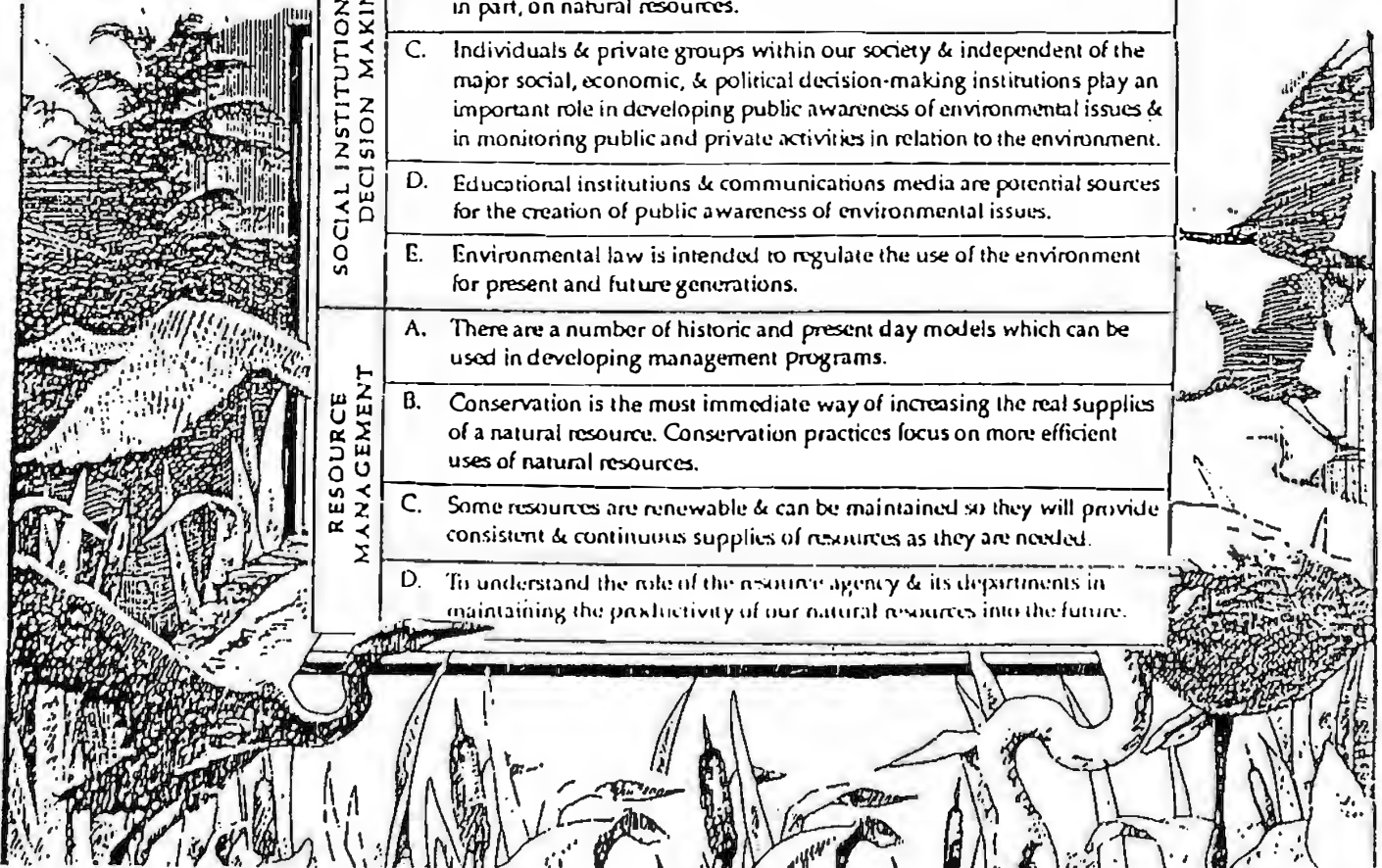
- The environment is not only biophysical; it is also aesthetic, economic, social, political, and intrapsychic as well;
- Environmental Education must promote an environmental ethic in which people are not exploiters of the environment but are stewards concerned with the preservation of all life systems;
- Environmental Education must reflect the commitment to future generations, not merely perpetuate the values of the past;
- Environmental Education is not a subject, but a synthesis of concepts and skills from all disciplines;
- Environmental Education goes hand-in-hand with the development of critical thinking skills which are crucial to the resolution of the complex problems which face society;
- In sum, the development of environmental literacy assumes a position of equal importance with the more traditional literacies which schools strive to develop.



Taken from: The Eagle, An Educator's Guide to Environmental Education, The Pomona Valley Audubon Society, 1989, p.5.

ENVIRONMENTAL EDUCATION CONCEPTS AND GOALS

NATURAL ENVIRONMENT	A. The natural environment functions according to patterns of established relationships between living and nonliving things.
	B. All species of plants and animals live in habitats and many species exploit more than one habitat in order to meet their needs.
	C. The sun is the ultimate source of energy which all life on earth needs in order to exist.
	D. The environment is being shaped continually by naturally & humanly produced forces which can alter the balance of conditions & lead to changes in the plants & animals which are able to exist.
BUILT ENVIRONMENT	A. Built environments depend on resources from the natural environment for survival.
	B. The design and maintenance of built environments have both reflected and influenced the values, ethics and lifestyles of the inhabitants.
	C. Built and natural environments function in similar ways and share many basic needs for survival and growth.
SOCIAL INSTITUTIONS AND DECISION MAKING	A. Environmental problems transcend political entities, state and national boundaries & cultural differences.
	B. The goals for every society include economic prosperity which is based, in part, on natural resources.
	C. Individuals & private groups within our society & independent of the major social, economic, & political decision-making institutions play an important role in developing public awareness of environmental issues & in monitoring public and private activities in relation to the environment.
	D. Educational institutions & communications media are potential sources for the creation of public awareness of environmental issues.
	E. Environmental law is intended to regulate the use of the environment for present and future generations.
RESOURCE MANAGEMENT	A. There are a number of historic and present day models which can be used in developing management programs.
	B. Conservation is the most immediate way of increasing the real supplies of a natural resource. Conservation practices focus on more efficient uses of natural resources.
	C. Some resources are renewable & can be maintained so they will provide consistent & continuous supplies of resources as they are needed.
	D. To understand the role of the resource agency & its departments in maintaining the productivity of our natural resources into the future.



Taken from: The Eagle, An Educator's Guide to Environmental Education, The Pomona Valley Audubon Society, 1989, p.6.