

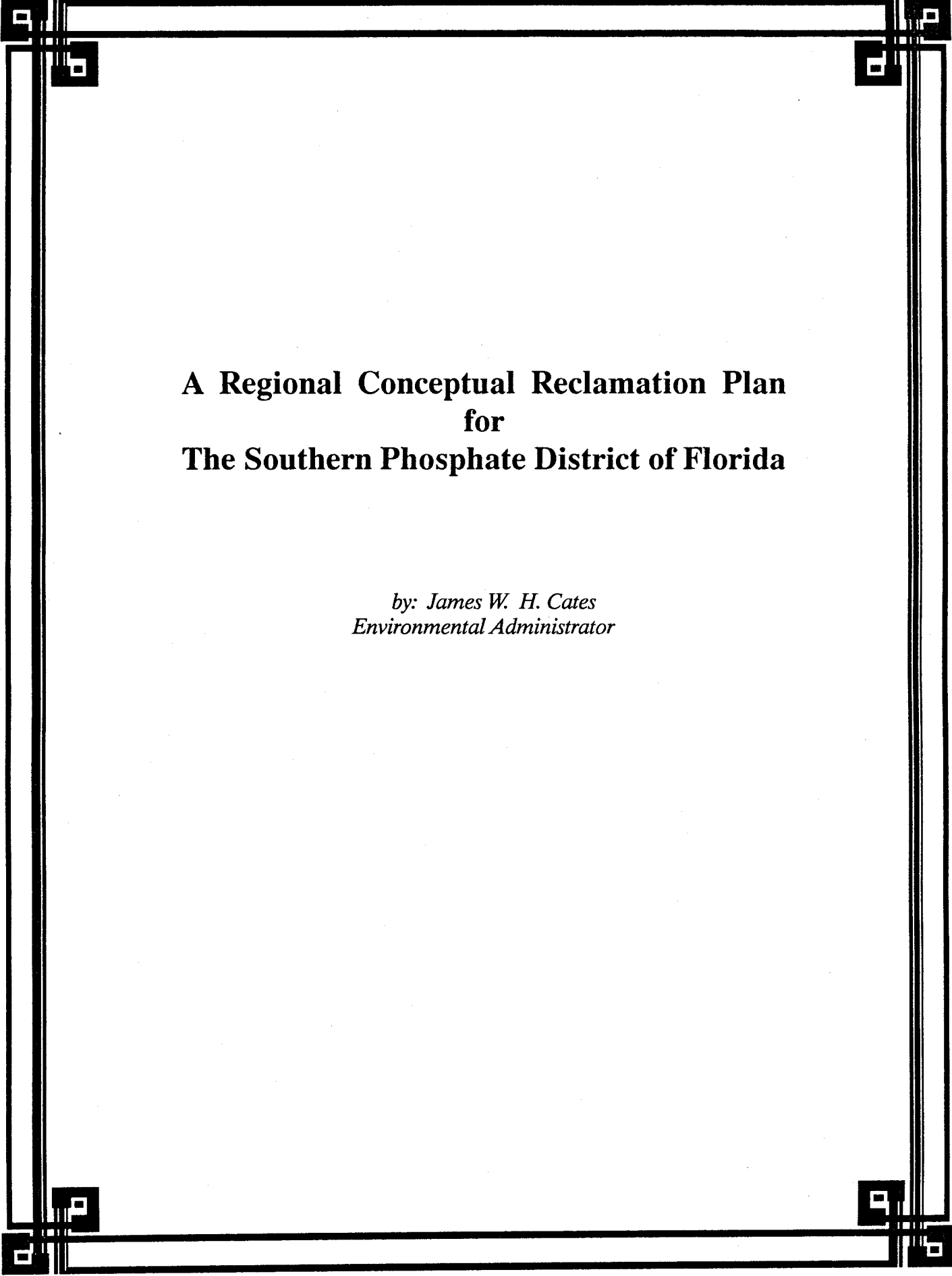
**A Regional Conceptual Plan
for
The Southern Phosphate District
of Florida**



Department of Environmental Protection

Bureau of Mine Reclamation

July 20, 1992



**A Regional Conceptual Reclamation Plan
for
The Southern Phosphate District of Florida**

*by: James W. H. Cates
Environmental Administrator*

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
EXECUTIVE SUMMARY	1
1.0 PROSPECTUS	2
1.1 Introduction	2
1.2 Methodology	2
2.0 AREA OF STUDY	4
3.0 ASSESSMENT OF EXISTING FACTORS AND IMPACTS	6
3.1 Environmental	7
3.11 Hydrology	7
3.12 Premining Vegetation	10
3.13 Premining/Postreclamation Vegetation	12
3.14 Threatened/Endangered Species	14
3.2 Economics	14
3.3 Political	20
4.0 PROJECT GOALS	27
4.1 Conceptual Reclamation Plan	27
4.2 Regional Plan	28
5.0 IMPLEMENTATION	28
5.1 Conceptual Reclamation Plan	28
5.2 Regional Plan	29
6.0 CONCLUSION	29
REFERENCES	31 -54

LIST OF TABLES

<u>TABLE</u>	<u>PAGE</u>
1 Southern Phosphate District Conceptual Reclamation Plan Project Area	5
2 Mandatory Phosphate Statistics as of December 31, 1990	7
3 Water Use: Water Withdrawals by Source in the State and Counties of Florida, 1985	8
4 Categories of Surface Impoundments in 1982	9
5 Study Area Vegetation Data 1986	11
6 Premining and Postreclamation Land Use	12
7 Number of State/Federal/FNAI Listed Plant and Animal Species by County	13
8 Some Representative Rare/Endangered Plant Species by County and Some Representative Rare/Endangered Animal Species by County	15
9 Farms: Number and Acreage, 1987, in the State and Counties of Florida	20
10 Farm Income and Expenses: Derivation of Proprietors' Income in the State and Counties of Florida, 1988	21
11 Farm Income: Market Value of Agricultural Products Sold in the State and Counties of Florida, 1987	22
12 Citrus: Acreage by Type of Fruit in the State and Specified Counties of Florida, 1988	23
13 Forest Products: Harvest by Product and by Species Group in the State and Counties of Florida, 1987	24
14 Fish and Shellfish: Quantity of Landings by Type of Species and Trips in the State and Specified Counties of Florida, 1988	24
15 Building Permit Activity: Value Reported on Building Permits Issued in the State and Counties of Florida, 1989	25
16 Manufacturing: Establishments, Employment, Value Added by Manufacture, Value of Shipments, and New Capital Expenditure in the State and Counties of Florida, 1982	26
17 Boats: Number Registered by Type in the State and Counties of Florida, Fiscal Year 1988-89	27

LIST OF FIGURES

<u>FIGURE</u>	<u>PAGE</u>
1 Southern Phosphate Mining District and Government Owned/Managed Lands in Florida	6A
2 The Project Study Area	6B

LIST OF APPENDIXES

APPENDIX

- 1 Chapter 378
- 2 Chapter 16C-16
- 3 Chapter 16C-17
- 4 Evaluation of Pre-July 1, 1975 Disturbed Phosphate Lands
- 5 Description of Plant Communities For Landsat Habitat Mapping
- 6 Regulations Pertaining To The Florida Phosphate Industry
- 7 Federal and State Law Relating To Wildlife Corridors

LIST OF MAPS

MAP

- 1 Vegetative Communities Existing in 1986
- 2 Currently Approved/Submitted Conceptual Reclamation Plans
- 3 Southern Phosphate District Conceptual Reclamation Plan
(Integrated Habitat Network)

EXECUTIVE SUMMARY

This document contains an analysis of environmental, economic and political factors existing within a nine-county region of central Florida, which affect or are effected by the southern phosphate mining district. The nine county region is composed of Polk, Hillsborough, Manatee, Hardee, Sarasota, DeSoto, Highlands, Charlotte and Glades counties. This analysis was undertaken as the first phase of a "plan within a plan" project. The southern phosphate mining district lies at the core of the nine county region and therefore exerts considerable environmental, economic and political influence over the region. The overall nine-county region contributes significantly to statewide totals of environmental and economic resources. This contribution, however, places an enormous strain on environmental resources and threatens to tip the balance toward economic as well as environmental degradation.

The objective is to produce a district-wide conceptual reclamation plan for the entire southern phosphate mining district. This plan can then be used as the nucleus for formation of a larger region-wide plan. The final outcome is intended to be a comprehensive, region-wide landscape plan which incorporates maintenance/protection of regional water resources, a balance of intensive and non-intensive land uses, and replacement/protection of critical, native plant and animal habitats.

Cooperation and coordination, relative to reclamation/restoration and land-use imperatives, between state, local (county) and regional agencies, environmental organizations, and phosphate industry (and trade association) representatives has reached unprecedented levels within the past few years. The quality and quantity of reclamation has grown exponentially in the relatively few years of phosphate mine reclamation/restoration regulation. State, local, and regional oversight of phosphate mine reclamation/restoration has evolved correspondingly. The phosphate industry has accepted and incorporated these evolutions and changes as a course of "progress." It is anticipated that the evolution to a district-wide conceptual reclamation plan is an accepted progression of the reclamation/restoration/"ultimate" land-use planning process. Through the interaction and cooperation of all interested agencies and parties, a region-wide landscape plan may be developed which will benefit the ecological, economic and political considerations of all those concerned or affected.

For further information relative to regional water, plant and animal resource protection, the following documents are suggested:

- S.W.I.M. Model Ordinance project and Issue papers prepared by Henigar and Ray Engineering, Incorporated, for the Southwest Florida Water Management District
- Coastal Nonpoint Pollution Control Program - Program Development and Approval Guidance, U.S. Department of Commerce and the Environmental Protection Agency
- "Lee County Wildlife Corridor System Plan" by Lisa B. Dodd, PhD., Director, Office of Environmental Sciences, Lee County Department of Community Development

1.0 | PROSPECTUS

1.1 INTRODUCTION

Following the advent of statutes and rules regulating the reclamation of lands mined for phosphate, the Governor and Cabinet, the Department of Natural Resources and the phosphate industry realized the need for mine-wide conceptual reclamation plans. Because mining acreage was estimated by the rate mined by a particular company within a given year and approval of a reclamation plan was given for an annual mining block (unit), the need for a mine-wide plan, which envisaged how the entire mine would appear after mining and reclamation, became obvious. During the past decade these mine-wide conceptual reclamation plans have formed the basis by which agency reclamation plan review was accomplished and phosphate mining regional land-use planning was performed (Long and Orne 1990).

As the knowledge of conservation and restoration of ecological systems, as well as reclamation plan review, construction and performance assessment methodology, has progressed and evolved, it has become increasingly apparent that reclamation (and restoration) must be viewed from a larger, regional scale. Present and future land-use patterns, transportation corridors, drainage basins, wildlife corridors and essential wildlife habitats do not (or should not) terminate or change at each mine boundary. Therefore the next evolutionary step, a district-wide conceptual reclamation plan and its incorporation into a larger regional landscape plan, becomes a necessity for prudent planning for the natural, economic and political considerations of the future.

In its short history as the lead state agency involved with phosphate mine reclamation, the Department of Natural Resources, Bureau of Mine Reclamation has acquired a great deal of experience and knowledge in all of the multi-faceted areas affecting reclamation and restoration. The bureau has resolved to utilize these resources to create an acceptable, district-wide conceptual reclamation plan.

To facilitate formulation of the plan, the bureau will consult with and obtain information from representatives of the phosphate industry, county governments, regional planning councils, involved state agencies, research organizations, environmental organizations and the general public. Upon formulation of a preliminary plan, drafts will be forwarded to all interested parties for review. After an appropriate review period, comments will be compiled and discussed in a series of open meetings.

1.2 METHODOLOGY

In section 5.3 of the Regional Study of Land Use Planning and Reclamation (Long and Orne, 1990), written by the Florida Audubon Society, the author concludes that "...comprehensive and integrated planning on a basin-wide (drainage) basis..." is needed for environmental considerations. In the same volume, Long and Orne (1990) further state that "Three factors are paramount in determining the use of a particular plot of land; natural, economic and political." The bureau proposes to combine these factors to produce a plan which integrates natural, economic and political factors as they relate to major drainage basins within the region.

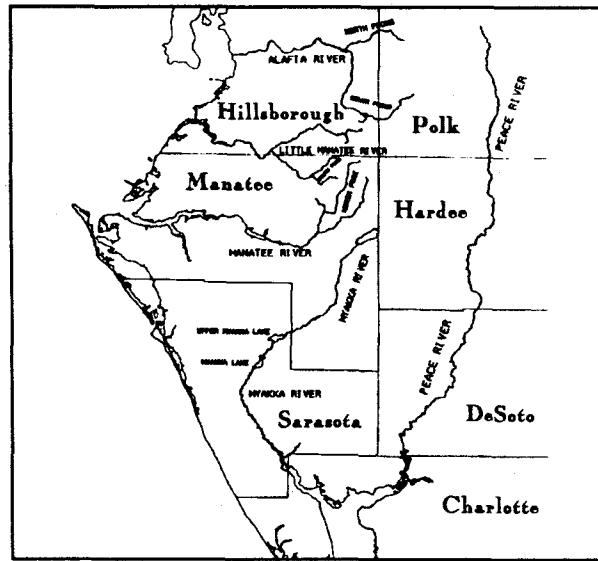
In 1989, Gosselink and Lee proposed a concept for the assessment and management of cumulative impacts resulting from various disturbances within a large drainage basin. This concept incorporates three levels of planning involvement and results in a basin-wide landscape scenario. The three planning levels include: assessment of the cumulative impacts within the area of study, goal-setting to formulate the methodology for addressing impacts, and implementation of specific plans to address the goals. The bureau proposes to use this basic planning concept for formulation of the final plan.

Although the basic concept proposed by Gosselink and Lee (1989) will remain unchanged, its application to the southern phosphate mining district will require expansion of the variables considered. The basic concept was devised to address cumulative impacts to the functional ecology of a single, large drainage basin. In considering the natural, economic, and political factors involved in the southern phosphate mining district, the variables obviously increase.

There are five major river systems which exist in west central Florida and are affected by the southern phosphate mining district. The five major river systems are: the Peace River, Alafia River, Little Manatee River, Manatee River and Myakka River. The headwaters and approximately half of the tributaries for each of these river systems lie within the southern phosphate mining district (mineable limit), as identified by Long and Orne (1990).

In order to address as many variables as possible, which will affect and be affected by a district-wide conceptual reclamation plan, the bureau proposes to expand the area of study.

Referring to Figure 2, the reader will observe that three major boundaries are delineated. The red lines indicate the approximate watershed (drainage basin) boundaries of the five major river systems within the region. The dashed black line represents the approximate limit of mineable phosphate deposits, as identified by Long and Orne (1989). The dashed blue line represents the arbitrary limits of the study area.



The delineations, as described, separate the entire study area into interrelated and integrated zones. A district-wide conceptual reclamation plan will be formulated for lands within the mineable limit (assumes eventual mining based on non-decreasing need for resource). Headwater portions of the five major drainage basins are included within the district-wide conceptual plan (within the mineable limits). The zone between the mineable limits boundary (dashed black line) and the study area boundary (dashed blue line) will be considered the "zone of continuity." A district-wide conceptual plan which stops at the mineable limit and which does not consider further extension and impact would only result in a progression of insulated island biogeographic and economic/geographic impacts. Planning within the zone of continuity will be accomplished partially by means of the individual county and regional comprehensive plans and the Florida Department of Transportation long-range transportation plans. These plans will be utilized to determine the forecasted future land uses within the zone of continuity. Adjustments to comprehensive plans may be suggested (within the mineable zone or zone of continuity), as discontinuities or adjustments are developed within formulation of the overall plan.

The primary objective of the zone of continuity will be to link biogeographic and economic/geographic considerations of the southern phosphate mining district to a statewide network. Because the headwaters of the five major regional drainage basins lie within the mineable zone, economic/geographic and land-use considerations may need to be adjusted downstream (zone of continuity) or upstream (mineable zone). For biogeographic considerations, the zone of continuity is important in that it links the otherwise isolated southern phosphate mining district to other "island preserves" within the state. The southern phosphate mining district, no matter to what extent it is environmentally reclaimed or restored, without viable connection to other "island preserves" within the state, will become no more than an isolated reclaimed/restored remnant of the state of Florida.

The zone of continuity will form the basis for connection of the Southern District Reclamation Plan to established state, county, or privately owned and managed "island preserves" within the region. Outside the scope of this study will remain the connection of these preserves to a statewide network. The zone of continuity is envisioned to possibly connect the southern phosphate mining district (and conceptual reclamation plan) to the Green Swamp to the north, the Winter Haven-Lake Hamilton chain-of-lakes to the northeast, the Saddlebag Scrub, Archbold preserves and Fisheating Creek headwaters to the southeast, the Peace River estuary preserve and Cecil Webb Wildlife Management Area (also Babcock Ranch) to the south, and the Myakka River State Park, Myakka Sandhills State Reserve, Manatee River State Reserve (Manatee County Reservoir) and Little Manatee River State Reserve to the southwest (Figure 2).

Pursuant to the methodology outlined and described by Gosselink and Lee (1989) and modified hereto, plan development shall consist of the following elements. An assessment of the ecological and economic impacts caused by phosphate mining and reclamation/restoration shall be considered. A set of goals which consider the ecological (natural), economic, and political factors, inherent within the study area, will be formulated. The regional plan devised as an outcome will be an implementable blueprint or "conceptual" plan for integration of the reclamation/restoration of the southern phosphate mining district into a larger biogeographic and economic/geographic land-use and "developmental" planning tool.

2.0 | Area of Study

As outlined in the prospectus, the following project contains two main elements. The elements are a conceptual reclamation plan for the southern phosphate mining district and suggested methodologies for "connecting" the reclamation plan area to other regions of the state through the delineated "zone of continuity."

The project study area boundary was delineated to include all or portions of those state owned/managed lands which are nearest the phosphate mining district and which, by nature of their location, may conceivably be connected to each other by the phosphate district (Figure 2). Regional drainage basins form the basis around which the study area was designed; and in fact the study area contains the entire drainage basins of the Peace, Alafia, Little Manatee, Manatee and Myakka Rivers. In two instances, portions of other drainage basins were included within the study area to illustrate connectivity to "preserve" lands in other drainage systems. The Hillsborough River State Park, Upper Hillsborough Wildlife Management Area, and Withlacoochee State Forest/Green Swamp Wildlife Management area complex may conceivably be connected to the Peace River drainage/corridor system by means of the Green Swamp proper. In the southeast quadrant of the study area, a Fisheating Creek drainage/corridor system may conceivably be connected by means of its interaction with the lower Peace River drainage basin.

Figure 1 (State and Federal Lands) adequately illustrates the strategic location of the southern phosphate mining district in relationship to government owned/managed lands. Improved landscape level reclamation of the phosphate district, in and of itself, is perceived as a worthwhile goal. However, as previously stated, the best district-wide reclamation plan, without further connectivity, would be self-limiting.

The entire study area consists in size of approximately 3,558,526 acres or roughly 5,561 square miles. Refer to Table 1 (pg. 5) for a breakdown of the approximate acreage or square miles within the study area by county. Within the project study area are the entire counties of Manatee, Hardee, Sarasota, DeSoto and portions of Polk, Hillsborough, Charlotte, Glades and Highlands counties.

The southern phosphate mining district "mineable limit," as delineated in Regional Study of Land Use Planning and Reclamation (Long and Orne, 1990) (Figure 2) has been determined by geologic and phosphate company prospect data to be the area containing phosphate reserves which are "mineable" under current economic and technological restraints. The "mineable limit," as currently delineated, lies in portions of Polk, Hillsborough, Manatee, Hardee and DeSoto counties. The entire area within the "mineable limit" consists of approximately 1,265,000 acres or 1,977 square miles.

TABLE 1

SOUTHERN PHOSPHATE DISTRICT CONCEPTUAL RECLAMATION PLAN		
COUNTY	SQUARE MILES	APPROX. ACRES
POLK	1,139	728,677
HILLSBOROUGH	845	540,517
MANATEE	747	478,080
HARDEE	637	407,680
DeSOTO	636	407,040
SARASOTA	573	366,720
CHARLOTTE	378	241,817
GLADES	161	103,298
HIGHLANDS	445	284,697
TOTAL	5,561 sq. miles	3,558,526 acres

According to figures published by the Florida Phosphate Council (*Phosphate Facts*, Spring 1991), member companies currently own or control 541,006 acres of land statewide. Exclusion of phosphate ownership in the north Florida phosphate mining district leaves an approximate phosphate company ownership within the southern phosphate mining district of approximately 470,658 acres. Inclusion of lands owned by non-member (Florida Phosphate Council) companies and reserve lands under ownership/control of parent company subsidiaries bring the total phosphate related ownership within the south Florida phosphate mining district to approximately 565,000 acres.

An overall statistical and historical analysis of mining/reclamation data within the southern phosphate mining district must be divided into the categories delineated by statutory and rule promulgation. The state legislature has decided that: (1) the decision(s) regarding phosphate mining and conditions thereof should be decided by the local (county) governments, and (2) that the regulation of reclamation of phosphate mining should be borne by the state, with the Department of Natural Resources as lead agency, and the local governments. The state legislature has divided reclamation regulation into two categories (see Appendix I: Ch. 378, Florida Statutes, Land Reclamation), those lands mined for phosphate on or after July 1, 1975 (Appendix II: Ch. 16C-16, Florida Administrative Code, Rules/Mandatory Phosphate Mine Reclamation) and those lands mined for phosphate prior to July 1, 1975 (Appendix III: Ch. 16C-17, Florida Administrative Code, Rules/Nonmandatory Phosphate Mine Reclamation).

Nonmandatory lands (mined prior to July 1, 1975) within the southern phosphate mining district total approximately 141,651 acres. Nonmandatory lands eligible for reclamation funding under the auspices of Chapter 16C-17, Florida Administrative Code (F.A.C.), and within the southern phosphate mining district, total 80,392 acres. Of the nonmandatory lands eligible for reclamation within the southern phosphate mining district, approximately 11,508 acres have been reclaimed to date (Appendices IV and IVA).

Phosphate mining has been ongoing in the southern district since the mid-1800's and has experienced many technological and company ownership changes. Land which was mined originally in the first half of the twentieth century under existing technology is often re-mined today using more sophisticated technology. Mining/reclamation and ownership statistics therefore are dynamic and change on an almost daily basis. Because changes from the arbitrary categories of nonmandatory to mandatory land exist, and because of the periodic nature of regulatory reporting, some data/acreage overlaps may exist. The Department of Natural Resources, Bureau of Mine Reclamation maintains the most up-to-date records on mining, reclamation, and categorical changes. Therefore, the information contained within this project and its related sources is the best obtainable data on the subject.

Beginning with the regulation of phosphate mine reclamation, there exists the following status of mines existing within the southern phosphate mining district. Five mines are "mined out," contain non-mandatory and mandatory lands, and are in various stages of reclamation (Table 2). Four new mines are planned, three of which currently have approved conceptual reclamation plans (DNR). Sixteen "mines" are actively mining and reclaiming under currently approved conceptual reclamation plans.

The sum of individual mine conceptual reclamation plan acreage, as currently computed, for mines in the above categories within the southern phosphate mining district totals 304,375 acres. This figure contains an undetermined acreage which may remain nonmandatory or which at some time may be re-mined/disturbed and therefore become mandatory. As of the reporting period ending December 31, 1991, 98,942 of these conceptual plan acres had been mined during the period of July 1, 1975, through December 31, 1991 (mandatory). At the end of the same reporting period, 47,064 acres, or 48% of the above mandatory acres have been reclaimed through earthmoving (Table 2).

For the purposes of the district-wide conceptual reclamation plan and the overall project, the sum total of all phosphate company owned/controlled (company owned, subsidiary owned, leased/controlled) land will be used. Formulation of the district-wide or Southern Phosphate District Conceptual Reclamation Plan will therefore be performed on the basis of "reserve" lands plus those lands currently within approved mine conceptual plans and those nonmandatory lands (eligible and ineligible for reimbursement) outside of existing mine conceptual plans.

3.0 | Assessment of Existing Factors and Impacts

The assessment of all human-related impacts to an area of this size are most likely incalculable. For this reason the project has attempted to determine the existing factors' impacts within three broad categories. The broad categories are the environmental, economic, and political factors/ impacts, both within the southern phosphate mining district and within the entire project study area. Each of these three categories has been further delimited to ascertain the impacts on regional hydrology/drainage, landforms and vegetative communities, and regional wildlife populations. By assessing the general character of impacts within the region on the delimited factors, a landscape-level plan can be formulated which will ultimately maximize a balance between intensive and non-intensive land uses, protect water quality and quantity for all uses, and concurrently provide a protection mechanism for native flora and fauna.

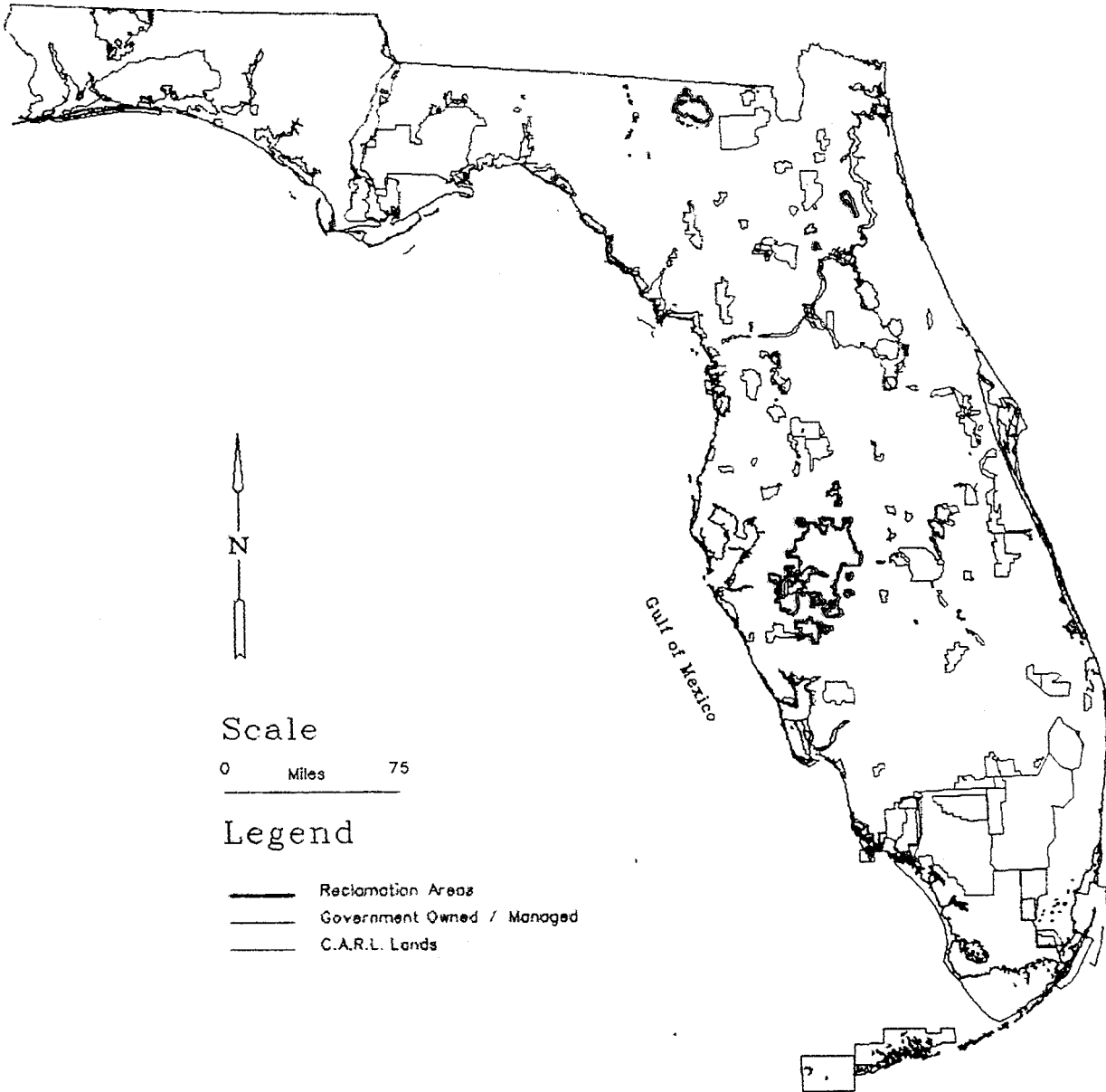
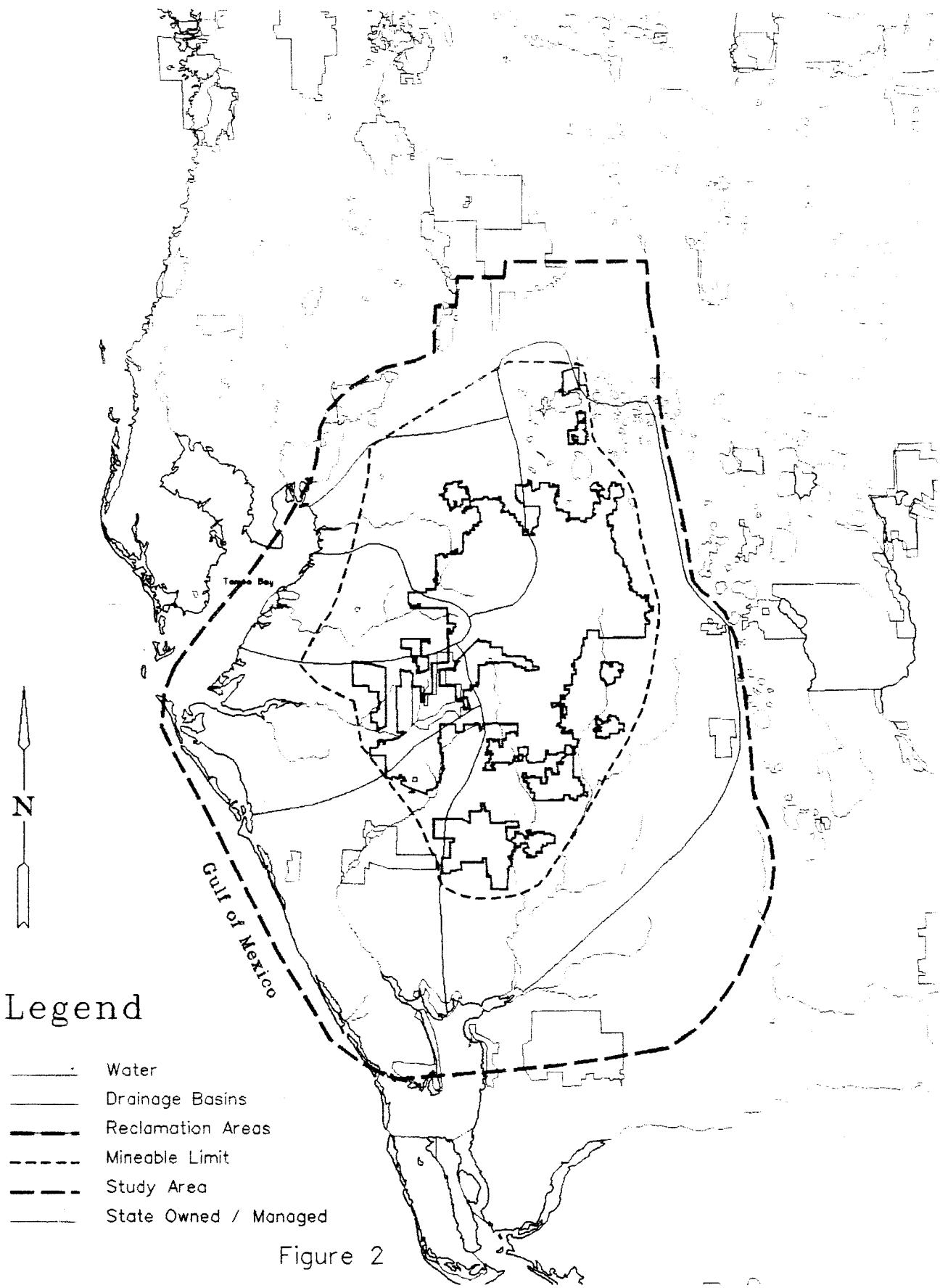


Figure 1



Legend

- Water
- Drainage Basins
- Reclamation Areas
- - - Mineable Limit
- Study Area
- State Owned / Managed

Figure 2

TABLE 2

MANDATORY PHOSPHATE STATISTICS*AS OF DECEMBER 31, 1991*

COMPANY	MINE	STATUS	CONCEPTUAL PLAN ACREAGE	TOTAL ACRES MINED	TOTAL ACRES IN RECLAMATION
Agrico	Ft. Green	A	19,464	11,771	4,801
	Payne Creek	A	17,514	5,440	2,452
Cargill	Ft. Meade	A	10,797	5,650	2,699
CF Industries	Hardee Complex	A	4,554	1,349	657
	South Pasture	IP	14,994	0	0
Estech	Silver City	IMO	2,483	1,961	1,033
	Watson	IMO	13,016	2,859	2,837
Farmland	Hickory Creek	IP	7,850	0	0
IMC	Clear Springs	A	13,188	4,362	2,002
	Four Corners	A	38,791	3,662	1,057
	Hopewell	A	4,512	458	59
	Kingsford	A	33,382	16,054	8,455
	Noralyn/Phosphoria	A	22,197	7,436	4,452
	New Wales	A	1,785	990	27
	Pebbledale	A	3,460	579	156
Mobil	Ft. Meade	IMO	15,668	5,579	3,271
	South Ft. Meade	IP	17,401	0	0
	Nichols	A	10,364	2,849	561
	Big Four	A	5,920	2,087	416
Nu-Gulf	Wingate Creek	A	6,836	550	102
Seminole	Bonnie Lake	IMO	7,622	1,953	1,953
	Hooker's Prairie	A	14,197	4,275	1,815
USACC	Rockland	A	12,100	4,305	1,788
Williams	Saddle Creek	IMO	6,280	1,532	1,410
TOTALS			304,375	98,942	47,064

A = Active/Mining & Reclaiming

IP = Inactive/Planned & Unmined

IMO = Inactive/Mined Out & Reclaiming

3.1 Environmental*3.11 Hydrology*

Water, as a basic element of life, has a profound effect upon all facets of endeavor in this region as well as all others. Maintenance or enhancement of water quality and quantity will have long term effects upon the region-wide economic base through its influence on or by industry, mining, development, tourism, the seafood industry and agriculture. Likewise, existing and future land uses, landforms, and native flora and fauna are dependent upon reliable sources of clean water.

From data reported in Florida Statistical Abstract 1990, it is known that a total of 3,650,060,000 gallons of water per day (1985) are withdrawn from the study area (entire nine counties). Reference to Table 3 (Water Use:) will show that, for the entire nine county area, groundwater withdrawals in 1985 totalled 1,036,340,000 gallons per day. Surface water withdrawals for the same area in 1985 totalled 2,590,450,000 gallons per day. A large percentage of the daily surface water withdrawal is accounted for by the extraction of saline water for industrial use. However, further analysis of the data in Table 3 reveals that approximately 28% of the total daily freshwater withdrawal is comprised of surface water.

TABLE 3

WATER USE: WATER WITHDRAWALS BY SOURCE IN THE STATE AND COUNTIES OF FLORIDA, 1985

(in millions of gallons per day)

County	Total	Ground			Surface		
		Total	Fresh	Saline	Total	Fresh	Saline
Florida	17,056.93	4,106.78	4,030.39	76.39	12,950.15	2,228.29	10,721.86
Charlotte	54.16	47.67	46.49	0.98	6.49	6.49	0.0
DeSoto	83.78	74.93	74.93	0.00	8.85	8.85	0.00
Glades	82.08	15.96	15.96	0.00	66.12	66.12	0.00
Hardee	94.18	94.18	94.18	0.00	0.00	0.00	0.00
Highlands	123.67	100.40	100.40	0.00	23.27	23.27	0.00
Hillsborough	2,645.07	249.30	249.30	0.00	2,395.77	67.91	2,327.86
Manatee	127.49	93.18	93.18	0.00	34.31	34.31	0.00
Polk	398.80	320.36	320.36	0.00	78.44	78.44	0.00
Sarasota	40.83	40.36	33.48	6.88	0.47	0.47	0.00
STUDY AREA TOTAL	3,650.06	1,036.34	1,028.48	84.25	2,590.45	285.86	13,049.72

Source: U.S. Department of the Interior, Geological Survey in cooperation with St. Johns River Water Management District, *Water Withdrawal and Use by Category in Florida, 1985*, excerpt from pgs. 212 & 213 Florida Statistical Abstract 1990.

Within the study area the primary sources of groundwater are the Floridan Aquifer and a combination of surficial and intermediate aquifers. For Polk, Hillsborough, Manatee and portions of DeSoto and Highlands counties the Floridan Aquifer remains the primary groundwater source. Sarasota, Charlotte and a major portion of DeSoto County are dependent upon the surficial and intermediate aquifers for groundwater. Natural recharge of the Floridan Aquifer is highest along the eastern boundary of the study area (Central Florida/Lake Wales Ridge). Natural recharge is moderate to very low within the Green Swamp proper, with the majority of the study area contributing very little to no recharge of the Floridan Aquifer (Fernald, E. and Patton, D., Water Resources Atlas of Florida, 1984).

The reliance upon surface water for a significant portion of the water within the study area is further emphasized by Table 4 (Categories of Surface Impoundments). Some of the listed impoundments are likely used for storm water/pollution control and as such may contribute to the net pollution of underlying groundwater. When correlated with the data in Table 3, however, it can be seen that some counties within the study area have a significant reliance upon surface water.

The overall relationship of phosphate mining to the long term hydrology of the study area is uncertain and is a subject of concern and study. Phosphate mining removes the matrix (ore-bearing) layer and through the beneficiation process (ore removal) causes the sand and clay fraction of the matrix to be separated. The sands and clays are then redeposited, sometimes in artificial admixtures, or as separate entities. The mining, beneficiation and matrix fraction re-deposition have several consequences.

TABLE 4

CATEGORIES OF SURFACE IMPOUNDMENTS IN 1982

COUNTY	TOTAL	MUNICIPAL	INDUSTRIAL	AGRICULTURAL	MINING
Charlotte	96	77	18	1	0
DeSoto	25	17	2	6	0
Glades	33	16	10	7	0
Hardee	25	8	3	12	2
Highlands	119	80	7	32	0
Hillsborough	404	224	72	82	26
Manatee	127	85	19	22	1
Polk	579	212	147	15	205
Sarasota	<u>157</u>	<u>133</u>	<u>24</u>	<u>0</u>	<u>0</u>
TOTAL	1,565	852	302	177	234

Source: *Water Resources Atlas of Florida, 1984.*

In the unmined state, the matrix layer (sand, clay and phosphate ore) forms a hydrological semi-confining zone. This zone has low transmissivity and therefore retards the upward or downward movement of water. Surficial percolation is restricted to the surficial aquifer, which aids in maintenance of the surficial water table. Little is known to date concerning interactions of the surficial, intermediate and Floridan aquifers after this semi-confining layer is removed.

The clay fraction, as it is separated, is deposited into large settling basins [aka: clay settling areas (CSA)]. Although a small percentage of sand and fine phosphate is contained within the clay, clay settling areas form an almost impervious seal over the land which they cover. For the average mine, clay settling areas cover 50-60% of the areal extent of the mine; and therefore may present an obstacle to the restoration of hydrologic functions.

Sand by-product, back-filled into mine cuts, returns a highly permeable substance to the substrate; however, again, little is known of the aquifer interactions resultant in a sand back-filled area. Sand-clay admixtures are known to have better water-holding capacities than pure sands and better agronomic qualities than pure sand or clay. Once again, little is known of the aquifer interactions resultant in a sand-clay mix back-filled area.

Through various studies, phosphate mining has been shown to remove what is considered a reasonable portion of the groundwater resource. ("Reasonable" as defined by relativity to other water users, within a short, time-specific period, against a correspondingly evaluated recharge/use ratio.) Phosphate mines are designed to conserve and recycle pumped groundwater, and to capture surface water. Although the progression of mining southward will produce localized relaxation of groundwater withdrawal, the sequential invasion of development and agriculture, with even greater water needs, will outbalance any groundwater gains. Region-wide, the growth of development and industry and the continued use by mining and agriculture will severely strain the groundwater resource.

The overall dilemma of hydrologic function within the region is obviously complex, dynamic and involves many classes of water users, each of whom must act responsibly within the framework. Because the regional water sources and water users are interdependent, it becomes important that each piece of the framework work as harmoniously as possible with the whole.

Because of the continuing and increasing impact to the groundwater resource, at least three factors render a plan for reestablishment and maintenance of surface hydrology imperative. Use of sur-

face waters to meet the needs of all water users will increase correspondingly with "growth" and the uses of groundwater. The headwaters, and approximately half of the watersheds of the five major rivers within the study area, lie inside the "mineable limit." All wildlife, native plants, native habitats and a high percentage of livestock are dependent upon the maintenance of surface hydrology.

3.12 Premining Vegetation

In 1987, the Florida Game and Fresh Water Fish Commission (GFC) entered into a contract with the Florida Department of Transportation (DOT), remote sensing section to "classify and map the natural plant communities of Florida." (Appendix V, "A Comprehensive Statewide Wildlife Habitat System for Florida, Project Outline") This task was accomplished after obtaining Landsat satellite imagery (circa: 1986-1987) of the entire state from the Florida Department of Natural Resources, Marine Research Institute.

In July 1991, the DNR, Bureau of Mine Reclamation obtained the interpreted Landsat data for the nine county project study area from the GFC. Through a contract with the Florida Resources and Environmental Analysis Center (FREAC) at Florida State University, the bureau was able to formulate the acreages of natural plant communities within the project study area and within the "mineable limit" (Table V). A detailed explanation of the community categories can be found in Appendix V: "Descriptions of Plant Communities for Landsat Habitat Mapping." Also contained within this project is a map detailing the interpreted Landsat data (map 1: Vegetative Communities Existing in 1986).

TABLE 5

Study Area Vegetation Data 1986

	Acres of community in mineable limits area	Percent of total area	Acres of community in outer study area	Percent of total area	Acres of community in total study area	Percent of total area
UPLAND PLANT COMMUNITIES			(zone of continuity)			
1. Coastal Strand	.00	0.00	74	0.00	74.13	0.00
2. Dry Prairie	93,894.73	7.46	254,992	11.09	384,886.70	9.80
3. Pinelands	46,739.80	3.71	205,282	8.92	252,021.78	7.08
4. Sand pine scrub	5,322.63	0.42	2,041	0.09	7,363.71	0.21
5. Sandhill	3,355.68	.27	697	0.03	4,052.51	0.11
6. Xeric oak scrub	14,875.68	1.18	5,387	0.23	20,262.56	0.57
7. Mixed hardwood pine forests	46,428.45	3.69	35,931	1.56	82,359.90	2.31
8. Hardwood hammocks and forests	91,403.92	7.26	107,910	4.69	199,314.41	5.60
9. Tropical hardwood hammocks	0.00	0.00	49	0.00	49.42	0.00
WETLAND PLANT COMMUNITIES						
10. Coastal salt marshes	2.47	0.00	19,247	0.84	19,249.43	0.54
11. Freshwater marsh and wet prairie	65,359.11	5.19	90,836	3.95	156,194.69	4.39
12. Cypress swamp	5,661.16	0.45	73,808	3.21	79,468.68	2.23
13. Hardwood swamp	68,393.56	5.43	72,184	3.14	140,577.69	3.95
14. Bay swamp	34.59	0.00	336	0.01	370.66	0.01
15. Shrub swamp	11,865.95	0.94	1,947	0.08	13,813.14	0.39
16. Mangrove swamp	9.88	0.00	21,686	0.94	21,695.77	0.61
17. Bottomland hardwoods	0.00	0.00	0	0.00	0.00	0.00
AQUATIC						
18. Open water	51,318.64	4.08	265,593	11.55	316,911.39	8.91
DISTURBED						
19. Grassland	444,350.55	35.29	639,326	27.80	1,083,676.35	30.45
20. Shrub and brushland	116,865.55	9.28	139,184	6.05	256,049.58	7.20
21. Exotic plant communities	0.00	0.00	124	0.00	123.55	0.00
22. Barren	193,198.58	15.34	362,811	15.78	556,009.61	15.62
TOTALS	1,259,080.93	100.00	2,299,445	100.00	3,558,525.75	100.00

3.13 Premining/Postreclamation Vegetation

Several authors (Marion, 1986, King, 1989, Long & Orne, 1990) have discussed the relationships of vegetative communities as reported in phosphate mine conceptual plans and the changes in these communities from the premining to postreclamation state. Further discussion and observation, based on updated information, is warranted for the purposes of this project.

TABLE 6

Premining and Postreclamation Land Use⁽¹⁾

FLUCCS ⁽³⁾	DESCRIPTION	ACRES		
		PREMINING	POSTRECLAMATION	CHANGE
100	Urban	1,324	1,271	-53
130	Industrial	1,221	2,728	+1,507
200	Agriculture	3,331	299	-3,032
210	Crop/Pasture	50,881	121,929	+71,048
230	Citrus	12,175	707	-11,468
300	Rangeland	48,958	9,128	-39,830
400	Forested Upland	4,240	7,391	-3,151
410	Coniferous Forest	27,753	5,780	-22,053
420	Hardwood Forest	29,955	9,303	-20,652
430	Mixed Forest	9,644	13,027	+3,383
500	Water	2,920	16,029	+13,109
600	Wetlands	306	452	+146
610/620/630	Forested Wetlands	16,950	18,427	+1,477
640	Herbaceous Wetlands	15,441	21,704	+6,263
700	Barren Land	1,066	0	-1,066
740	Altered Land	1,528	18	-1,510
750	Extractive	<u>43,359</u>	<u>31,299</u>	<u>-12,060</u>
	TOTAL	⁽²⁾ 271,052	259,412	-11,640

(1) Based on 1989 conceptual plan data

(2) Differences occur due to discrepancies in reporting over the period of 1975 through 1989

(3) FLUCCS = Florida Land Use and Cover Classification System

At the beginning of mandatory phosphate mine reclamation/regulation, FLUCCS (Florida Land Use and Cover Classification System) was selected as a standardized system for the reporting of categorized acreages. Refinement of this system, as well as refinements in the mandatory reclamation reporting procedures and requirements, enable the production of Table 6 (Premining and Postreclamation Land Use). Discrepancies are recognized in this table such as non-specific accounting (i.e., 400 vs 410-430) and acreage totals within approved conceptual plans (Table 2 vs Table 6 total acreage). These discrepancies are the result of an inability to adequately document acreages in the past and will be ad-

dressed through the use of Landsat data. Despite its inherent problems, Table 6 is still useful in determining land use and vegetative community change-trends which were planned prior to this project.

According to Table 6, general agriculture and citrus acreage would decrease by approximately 14,500 acres, which becomes a 94% reduction. Given the current interest in postreclamation agriculture and the use of clay settling areas for intensive agriculture, it is unlikely that such a reduction will be realized. Improved pasture is depicted as experiencing a 130% increase above current acreage. Conversely native rangelands would experience a reduction of 81%. All forested upland, as depicted, would experience a net reduction of 51% from the premining acreage. Wetlands (combined categories) would experience a 24% increase above premining acreage. Lake acreage would increase by 13,109 acres, accounting for a 549% increase.

Further analysis of these figures reveals underlying aspects not apparent in the raw data. As previously noted, reclamation methodology for--and company interest in--intensive agriculture is increasing. This will most likely dampen the reduction of premining agriculture/citrus land, as well as affect the increase of improved pasture. Improved pasture has always been the fastest and least expensive form of reclamation. With increasing pressure for more native habitat reclamation and improved habitat reclamation methodology, the proposed increase of improved pasture and decrease of native rangeland/upland forest will also be dampened. Chapter 16C-16 (F.A.C.) requires the "acre-for-acre, type-for-type" replacement of wetlands. From regulatory experience it is known that 49% of the wetland acres contained in Table 6 are within the zone of fluctuation of waterbodies and do not meet a strict interpretation of "type-for-type" replacement. Increased lake acreage has several pros and cons, and is the direct result of negative mining void to postreclamation fill ratios

The Southern Phosphate District Conceptual Reclamation Plan will provide a format for planning a landscape resource scenario which maximizes the postreclamation replacement of desired/required land uses, and which replaces those land uses in a manner that will maintain/protect water quality and quantity..

TABLE 7

Number of State/Federal/FNAI Listed Plant and Animal Species by County

<u>TYPE</u>	<u>CHARLOTTE</u>	<u>DESOTO</u>	<u>GLADES</u>	<u>HARDEE</u>	<u>HIGHLANDS</u>	<u>HILLS</u>	<u>MANATEE</u>	<u>POLK</u>	<u>SARASOTA</u>
Plants	14	13	4	10	49	24	20	40	11
Reptiles & Amphibians	9	5	5	4	9	11	9	12	9
Birds	42	30	28	25	28	40	42	27	44
Mammals	5	5	6	5	7	6	6	8	7
Fish	1	0	0	0	0	1	1	0	0
Total Species by county	71	53	43	44	93	82	78	87	71

Source: *Statewide Floral and Faunal Matrix, Florida Natural Areas Inventory (FNAI), 1990*

3.14 Threatened/Endangered Species

In 1981 the Florida Department of Natural Resources and the Nature Conservancy entered into a cooperative agreement forming the Florida Natural Areas Inventory (FNAI). In 1990 the Statewide Floral and Faunal Matrix was published, listing the presence of endangered plants and animals as observed by county. Table 7 (Number of State/Federal/FNAI Listed Plant and Animal Species by County) summarizes data contained within the statewide matrix to depict total species present by study

area county. Table 8 (Some Representative Rare/Endangered Species by County) presents a sample of listed species, their presence as reported by study area county, and representative habitat locations. It is obvious from the data presented by these tables that a large number of "listed" species reside within the project study area. Each species is dependent upon a set of habitat parameters or in some cases a suite of habitat sets. In order for some population of the "listed" plants and animals to survive within the project study area, at least three things must occur. Surface hydrology must be maintained and/or restored at levels commensurate with the needs of the dependent habitats. Mining and reclamation must be performed in a manner which replaces some percentage of the needed habitats. Lastly, mining/reclamation and all other forms of land development must be performed in a manner which protects and maintains a percentage of existing habitat(s) for perpetuity or until viable, replacement habitats perform at adequate levels.

3.2 Economics

This section contains the best-available economic data on industries within the project study area which are major consumers/users of ground and surface water. Through their use of water and land surface area they are the most likely to impact the eventual landscape outcome. Phosphate mining data was obtained from the spring 1991 Florida Phosphate Council Fact Sheet. Tables 9 - 17 are excerpts of data for the study area counties and are drawn from statewide data contained in Florida Statistical Abstract 1990.

Florida ranks first in the production of phosphate in the nation and produces 80% of the United States supply. For the year ending December 31, 1990, 35.4 million metric tons of phosphate rock were extracted. Total purchases of equipment, supplies, services and transportation equalled \$1.8 billion. The gross levy of severance tax paid for 1990 totalled \$55.2 million. Sales tax and other state taxes for 1990 totalled \$26.8 million. County ad valorem taxes for 1990 totalled \$31.6 million. The total value of phosphate rock produced and sold for the year is proprietary and therefore unavailable.

Other study area industries for which data is compiled (Tables 9-17) include agriculture (general crops, livestock and citrus), forestry, seafood, construction, manufacturing (all regional) and tourism/recreation. The data provided should be evaluated in terms of (1) its relationship to regional phosphate mining, (2) the combined regional effect on water quality and quantity, and (3) the combined and growing effects on native plant and animal populations.

C = Confirmed
R = Reported
Var. = Various/ Multiple Habitats

TABLE 8

Some Representative Rare/Endangered Plant Species by County

NAME	HABITAT	CHAR.	DESO.	GLAD.	HARD.	HIGH.	HILLS.	MANA.	POLK.	SARA.
<i>Agrimonia incisa</i> (Incised Groove-Bur)	Sandhill Upl. Pine									C
<i>Asclepias curtisii</i> (Curtis' milkweed)	Scrub Scr. Flatwoods	R	R		C	C	C	R	C	
<i>Bonamia grandiflora</i> (Florida Bonamia)	Scrub				C	C		C	C	
<i>Calamintha ashei</i> (Ashe's Savory)	Scrub					C				C
<i>Centrasema arenicola</i> (Sand Butterfly pea)	Sandhill Scr. Flatwoods					C	C			C
<i>Chionanthus pygmaeus</i> (Pygmy fringe-tree)	Scrub Sandhill					C	R			C
<i>Clitoria fragrans</i> (Pigeon wing)	Sandhill Scrub					C				C
<i>Conradina brevifolia</i> (Short-leaved Rosemary)	Sandhill Scrub					C				C
<i>Diceranda frutescens</i> (Scrub Mint)	Scrub Sandhill					C				C
<i>Erigonium longifolium</i> vat. gn (Scrub buckwheat)	Sandhill Scrub					C				C
<i>Eryngium cuneifolium</i> (Wedge-leaved Button-snakeroot)	Scrub					C				R
<i>Hartwrightia floridana</i> (Hartwright)	Mesic Flatwoods				C	C				C
<i>Hypericum cumulicola</i> (Highlands Scrub Hypericum)	Scrub		R			C				C
<i>Ilex opaco</i> var. <i>arenicola</i> (Scrub holly)	Scrub		C			C				C
<i>Illicium parviflorum</i> (Star anise)	Bottom land Wet Hammock									C
<i>Lantana depressa</i> (Florida lantana)						R	R	R	R	
<i>Lechea cernua</i> (Nodding pinweed)	Scrub				C	C	C	C	C	
<i>Liatris ohlingerae</i> (Florida gay-feather)	Scrub Scr. Flatwoods					C				C
<i>Lilium catesbaei</i> (So. red lily)	Mesic Fltws Wet Prairie	C	C		C	C	C	C	C	C

Some Representative Rare/Endangered Animal Species by County

NAME	HABITAT	CHAR.	DESO.	GLAD.	HARD.	HIGHL.	HILLS.	MANA.	POLK.	SARA.
<i>Rana areolata</i> (Gopher frog)	Sandhill Scrub	R	R	C		C	C	R	R	C
<i>Alligator mississippiensis</i> Var. (American alligator)		C	C	C	C	C	C	C	C	C
<i>Clemmys guttata</i> (Spotted turtle)	Var.								C	
<i>Drymarchon corais</i> <i>couperi</i> (Eastern indigo snake)	Var.	C	C	C	C	C	C	C	C	C
<i>Eumeces egregius lividus</i> (Blue-tailed mole skink)	Scrub Sandhill					C			C	
<i>Gopherus polyphemus</i> (Gopher tortoise)	Scrub-Sandhill Flatwoods	C	C	C	C	C	C	C	C	C
<i>Lampropeltis calligaster</i> (Mole Snake)	Sandhill Scr. Flatwoods								R	
<i>Neoseps reynoldsi</i> (Sand skink)	Scrub Sandhill		R		R	C			C	
<i>Pituophis melanoleucus</i> <i>mugitusp</i> (Florida Pine snake)	Sandhill Scr. Flatwoods	R				R			R	
<i>Pseudemys concinna</i> <i>suwanniensis</i> (Suwannee Cooter)	Var.						R	R	R	
<i>Sceloporus woodi</i> (Florida Scrub lizard)	Scrub Sandhill					C			C	
<i>Stilosoma extenuatum</i> (Short-tailed snake)	Sandhill Scrub					R	C		R	
<i>Accipiter cooperii</i> (Cooper's Hawk)	Var.	R	R	R	R	R	R	R	R	R
<i>Aimophila aestivalis</i> (Bachman's Sparrow)	Var.	R	R	R	R	R	R	R	R	R
<i>Ammodramos</i> <i>savannarum fl.</i> (FL grasshopper sparrow)	Dry-Wet Prairie			C		R			C	
<i>Aphelocoma</i> <i>coerulescens co.</i> (Florida scrubjay)	Scrub Scr. Flatwoods	C	R	C	C	C	R	C	C	C
<i>Aramus guarauna</i> (Limpkin)	Var.	R	R	C	R	R	C	R	R	R

<i>Athene cunicularia</i> <i>floridana</i> (Florida Burrowing Owl)	Sandhill Dry Prairie	C	C	C	R	R	R	C	R	R
<i>Buteo brachyurus</i> (short-tailed Hawk)	Var.	R	R	C	R	R	R	R	R	R
<i>Casmerodius albus</i> (Great egret)	Var.	C	C	C	C	R	C	C	C	R
<i>Egretta caerulea</i> (Little Blue heron)	Var.	R	C	C	C	R	C	C	C	R
<i>Egretta thula</i> (Snowy egret)	Var.	C	C	C	C	R	C	C	C	R
<i>Egretta tricolor</i> (Tricolor heron)	Var.	C	C	C	C	R	C	C	C	R
<i>Elanus caeruleus</i> (Black-shouldered kite)	Var.			R		R		R	R	R
<i>Eudocimus albus</i> (white ibis)	Var.	C	C	C	C	R	C	C	C	R
<i>Falco columbarius</i> (Merlin)	Var.	R	R	R	R	R	R	R	R	R
<i>Falco peregrinus</i> (Peregrine falcon)	Var.	R	R	R	R	R	R	R	R	R
<i>Falco sparverius paulus</i> (So. Eastern American Kestrel)	Var.	R	R	R	R	R	R	R	R	R
<i>Grus canadensis pratensis</i> (Florida Sandhill crane)	Var.	C	C	C	C	C	C	C	C	C
<i>Haliaeetus leucocephalus</i> (Bald Eagle)	Var.	C	R	C	R	C	C	C	C	C
<i>Ixobrychus exilis</i> (Least Bittern)	Var.	R	R	R	R	R	R	C	R	C
<i>Mycteria americana</i> (Wood stork)	Var.	C	C	C	C	R	C	R	C	R
<i>Nyctanassa violacea</i> (yellow-crowned night heron)	Var.	R	R	R	R	R	C	C	C	R
<i>Nycticorax nycticorax</i> (Black-crowned night heron)	Var.	R	R	R	R	R	C	C	R	R
<i>Pandion haliaetus</i> (Osprey)	Var.	R	R	R	C	R	C	C	C	C
<i>Picoides borealis</i> (Red-cockaded woodpecker)	Sandhill Flatwoods	C	R	C	R	C			C	R

Picoides villosus (Hairy woodpecker)	Var.	R	R	R	R	R	R	C	R	C
Plegadis falcinellus (Glossy Ibis)		R	C	C	C	R	C	R	C	R
Polyborus plancus (Crested Caracara)	Dry-Wet Prairie	C	C	C	C	C		C	C	C
Felis concolor coryi (Florida panther)	Var.	-	-	C	-	C	-		R	-
Mustela frenata peninsulae (FL long-tailed weasel)	Var.	R	R	R	R		R	R	R	R
Neofiber alleni (round-tailed muskrat)	Var. Marsh	R	R	R	R	R	R	R	R	R
Plecotus rafinesquii (S Eastern Big-eared bat)	Var.		R		R	R	R	R	R	
Podomys floridanus (Florida mouse)	Scrub Sandhill	R	R			C	R	R	C	R
Sciurus niger shermanii (Sherman's Fox Squirrel)	Var.		C	C	R	C	C		C	
Sorex longirostris lo. (Southeastern shrew)	Floodplain				R	R			C	
Trichechus manatus (West Indian manatee)	Var.	C		C			C	C		C
Ursus americanus floridanus (Florida Black Bear)	Var.	C	R	R	R	C		R	R	R

When perusing the data contained in Tables 9-17, keep in mind that the nine county area (data shown = entire county), of which the study area is a portion, comprises approximately 14% of the counties within the state (9 out of 67). The total land area of the region represents 15% of the total land area within the state of Florida (region = 7,951 sq. miles, state = 54,153 sq. miles). The significance of this fact makes itself apparent when comparing the percentage of total land area within the region to the percentage of statewide totals of the various categories. This exercise provides insight into the intensity of current land uses, and by extrapolation the regional effects on water and landscape. Some items of particular note include: 26% of the statewide total farm income for 1988 was produced by the region. Twenty-five percent of the statewide income for livestock in 1987 was produced regionally. Forty-four percent of the 1988 statewide income for citrus was produced by the region. Eighteen percent of the 1988 west coast seafood production income was realized by only four of the regional counties (Hillsborough, Manatee, Sarasota, Charlotte). Construction (17% of statewide total) and manufacturing (14% of statewide total) figures were roughly parallel to the percentage of total land area figure (15%). Table 17 (Boats: Number Registered) further illustrates the importance of surface water for recreation. The purchase of boats, supplies, registration, docking fees, gas and oil, and associated sports equipment and licenses generate economically important revenue.

Lastly, an important environmental note is concealed within the data contained in Table 9. According to this data, 36% of the remaining statewide native rangeland acreage lies within the region. This fact is of great importance for many threatened and endangered species dependent upon the suite of habitats known as native rangelands.

3.3 Political

As most readers familiar with the phosphate mining industry are aware, this industry is one of the most heavily regulated within the state. Rather than reiterate, in this section, all of the agencies and corresponding regulations, the reader is referred to the tables contained in Appendix VI. These explanatory tables are a reprinted excerpt from Regional Study of Land Use Planning and Reclamation, compiled by Harold Long and David Orne of the Central Florida Regional Planning Council (Florida Institute of Phosphate Research, publication 04-041-085, 1990).

TABLE 9

FARMS: NUMBER AND ACREAGE, 1987, IN THE STATE AND COUNTIES OF FLORIDA

COUNTY	ACREAGE					
	FARMLAND					
	NUMBER OF FARMS 1/	TOTAL 2/	TOTAL 3/	CROPLAND 4/	PASTURELAND AND RANGELAND 5/	FORESTLAND
Florida	60,577	34,660,480	24,434,639	6,480,824	4,871,727	13,082,088
Charlotte	395	441,600	255,851	79,110	106,550	70,191
DeSoto	878	407,040	354,000	255,000	59,000	40,000
Glades	253	488,320	443,500	158,500	155,000	130,000
Hardee	1,500	407,680	326,302	166,302	108,000	2,000
Highlands	548	658,560	600,549	225,051	269,243	106,255
Hillsborough	4,447	673,920	575,626	156,800	272,788	146,038
Manatee	625	478,080	326,000	98,000	190,000	38,000
Polk	2,357	1,166,720	861,400	152,500	456,900	252,000
Sarasota	325	366,720	206,150	11,150	151,000	44,000
County Totals	10,780	5,088,640	3,623,076	1,302,413	1,768,481	878,484
% of State Total	18%	15%	15%	20%	36%	7%

1/ The Agricultural Stabilization and Conservation Service defines a farm as a place producing agricultural commodities for commercial sale. The number of farms of record is estimated in cooperation with county agents.

2/ Data from 1980 Census.

3/ Does not include public lands, urban areas, large bodies of water, highways, etc.

4/ Includes established and improved pasture.

5/ Native grasses. Excludes established and improved pasture.

Source: U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service, unpublished data.

TABLE 10

FARM INCOME AND EXPENSES: DERIVATION OF PROPRIETORS' INCOME IN THE STATE AND COUNTIES OF FLORIDA, 1988

(rounded to thousands of dollars)

COUNTY	CASH RECEIPTS FROM MARKETINGS	PLUS OTHER INCOME 1/	LESS PRODUCTION EXPENSES	PLUS VALUE OF INVENTORY CHANGE	TOTAL NET FARM INCOME
Florida	5,916,219	334,783	3,506,713	40,437	2,784,726
Charlotte	22,414	2,666	12,674	366	12,772
DeSoto	59,627	5,103	52,788	902	12,844
Glades	46,452	5,415	29,418	876	23,325
Hardee	104,003	9,899	61,528	947	53,321
Highlands	150,270	8,575	78,497	1,194	81,542
Hillsborough	353,149	12,913	186,733	1,015	180,344
Manatee	221,413	7,477	116,392	1,028	113,526
Polk	423,352	22,895	210,555	1,614	237,306
Sarasota	22,541	3,977	12,624	487	14,381
County Totals	1,403,221	78,920	761,209	8,429	729,361
% of State Total	24%	24%	22%	21%	26%

1/ Includes government payments, imputed income, and rent received.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, unpublished data.

TABLE 11

**FARM INCOME: MARKET VALUE OF AGRICULTURAL PRODUCTS
SOLD IN THE STATE AND COUNTIES OF FLORIDA, 1987**

COUNTY	AVERAGE PER FARM			LIVESTOCK, POULTRY AND THEIR PRODUCTS
	TOTAL(dollars)	CROPS	1/	
	1987	1987	1987	1987
Florida	4,351,383	119,033	3,317,823	1,033,560
Charlotte	18,508	93,950	13,828	4,680
DeSoto	72,586	110,988	53,052	19,535
Glades	36,578	188,549	17,590	18,988
Hardee	92,873	82,188	67,311	25,562
Highlands	138,223	188,059	106,463	31,760
Hillsborough	222,503	80,793	137,517	84,985
Manatee	148,655	194,067	125,858	222,797
Polk	260,669	98,813	219,034	41,635
Sarasota	15,239	43,293	9,912	5,327
County Totals	1,005,834	1,080,700	750,565	255,269
% of State total	23%	120,078	23%	25%

1/ Includes nursery and greenhouse products.

Note: Because data for selected items are collected from a sample of operators, the results are subject to sampling variability.

Source: U.S. Department of Commerce, Bureau of the Census, 1987 Census of Agriculture: State and County Data, Florida. AC87-A-9.

TABLE 12

CITRUS: ACREAGE BY TYPE OF FRUIT IN THE STATE AND SPECIFIED COUNTIES OF FLORIDA, 1988

COUNTY	ORANGES					
	TOTAL 1/	ALL ORANGES 1/	EARLY AND MID-SEASON	ALL VALENCIAS	SPECIALTY GRAPEFRUIT	FRUIT 2/
Florida	697,929	536,737	258,101	224,868	119,606	41,238
Charlotte	9,345	8,675	4,070	4,236	475	195
DeSoto	43,143	41,000	20,861	17,129	1,151	992
Glades	6,235	6,001	3,894	1,900	148	86
Hardee	45,898	43,910	27,049	12,127	833	1,155
Highlands	48,569	41,902	14,187	25,647	3,564	3,103
Hillsborough	25,507	23,503	15,706	5,757	989	1,015
Manatee	18,779	16,013	9,149	4,814	1,956	810
Polk	108,546	88,036	36,411	38,344	14,639	5,871
Sarasota	1,929	1,633	612	513	225	71
County Totals	307,951	270,673	131,939	110,467	23,980	12,298
% of State Total	44%	50%	51%	49%	20%	32%

1/ Includes unidentified variety acreage.

2/ Includes tangelos, temples, tangerines, limes, lemons and K-early citrus.

Source: State of Florida, Department of Agriculture and Consumer Services, Florida Agricultural Statistics Service, Florida Agricultural Statistics: Citrus Summary, 1988-89.

TABLE 13

FOREST PRODUCTS: HARVEST BY PRODUCT AND BY SPECIESGROUP IN THE STATE AND COUNTIES OF FLORIDA, 1987

(rounded to thousands of cubic feet)

COUNTY	ALL PRODUCTS		OTHER PULPWOOD		SAW/VENEER LOGS		PRODUCTS--
	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	SOFTWOOD	HARDWOOD	
Florida	453,543	26,415	267,032	21,438	166,813	4,655	19,698
Charlotte	1,392	0	1,326	0	0	0	66
DeSoto	579	0	561	0	18	0	0
Glades	987	0	505	0	0	0	482
Hardee	0	0	0	0	0	0	0
Highlands	313	0	0	0	0	0	313
Hillsborough	493	77	0	0	491	77	2
Manatee	85	7	34	0	51	7	0
Polk	2,309	50	199	0	831	50	1,279
Sarasota	3	0	0	0	3	0	0
County Totals	6,161	134	2,625	0	1,394	134	2,142
% of State Total	1%	.5%	1%	0%	.8%	3%	11%

Source: State of Florida, Department of Agriculture and Consumer Services, Division of Forestry, unpublished data.

TABLE 14

FISH AND SHELLFISH: QUANTITY OF LANDINGS BY TYPE OF SPECIES AND TRIPS IN THE STATE AND SPECIFIED COUNTIES OF FLORIDA, 1988

AREA AND COUNTY	TOTAL	LANDINGS 1/ (pounds)		
		FISH	SHELLFISH 2/	TRIPS 3/
Florida	162,822,981	104,605,883	58,217,098	374,570
Charlotte	3,428,852	2,703,873	724,979	9,963
Hillsborough	7,472,013	5,475,860	1,996,153	4,299
Manatee	3,499,052	8,395,912	103,140	8,170
Sarasota	717,319	628,812	88,507	2,216
County Totals	20,117,236	17,204,457	2,912,779	24,648
% of State Total	12%	16%	5%	7%
% of West Coast Total	18%	22%	8%	10%

1/ Based on whole weight of species with some exceptions, e.g., stone crabs, sponges. Recorded in county of first sale to dealer.

2/ Includes clams, conch, crabs, lobster, octopus, oysters, scallops, shrimp, sponges, and squid.

3/ Only successful trips of fishermen.

Source: State of Florida, Department of Natural Resources, Marine Fisheries Information System, unpublished data.

TABLE 15

BUILDING PERMIT ACTIVITY: VALUE REPORTED ON BUILDING PERMITS ISSUED IN THE STATE AND COUNTIES OF FLORIDA, 1989

(rounded to thousands of dollars)

COUNTY	TOTAL VALUE	PRIVATE		ADDITIONAL AND PUBLIC	
		RESIDENTIAL 1/	NON-RESIDENTIAL 2/	ALTERATIONS	PUBLIC
Florida	15,971,263	9,411,626	3,831,347	2,362,704	365,616
Charlotte	283,486	206,595	42,355	33,984	552
DeSoto	13,075	7,200	3,202	2,672	0
Glades	2,889	1,168	590	1,130	0
Hardee	10,062	5,985	2,173	1,904	0
Highlands	69,017	49,353	12,586	7,078	0
Hillsborough	1,206,033	455,905	544,628	178,413	27,086
Manatee	294,268	176,191	83,296	34,239	544
Polk	329,803	173,306	87,460	40,287	28,756
Sarasota	459,190	292,365	72,844	64,614	29,368
County Totals	2,667,822	1,368,068	849,134	364,321	86,306
% of State Total	17%	15%	22%	15%	24%

1/ Includes single family, multi-family, and mobile homes; motels, hotels, rooming houses, and other nonhousekeeping residential buildings.

2/ Includes offices, stores, schools, industrial, and institutional buildings and other nonresidential structures.

Note: Data include activity reported by April 1990. Figures are aggregates of value on monthly reports received from permit-issuing places.

Source: University of Florida, Bureau of Economic and Business Research, Building Permit Activity in Florida, Preliminary Calendar Year 1989.

TABLE 16

MANUFACTURING: ESTABLISHMENTS, EMPLOYMENT, VALUE ADDED BY MANUFACTURE, VALUE OF SHIPMENTS, AND NEW CAPITAL EXPENDITURE IN THE STATE AND COUNTIES OF FLORIDA, 1982

(in millions of dollars, except where indicated)

COUNTY	ALL EMPLOYEES 1/		PAYROLL	VALUE ADDED BY MANUFACTURE	VALUE OF SHIPMENTS 2/	NEW CAPITAL EXPENDITURE
	ESTABLISHMENTS 1/ (NUMBER)	NUMBER (1,000)				
Florida	13,723	454.4	7,773.2	18,111.8	38,683.3	1,960.6
Charlotte	45	0.4	3.9	9.4	20.5	0.3
DeSoto	20	0.4	4.4	15.6	39.0	(D)
Glades	2	(D)	(D)	(D)	(D)	(D)
Hardee	17	0.2	2.2	9.3	24.4	0.8
Highlands	51	0.7	9.5	25.4	55.9	1.1
Hillsborough	889	35.3	592.4	1,267.2	3,448.4	122.7
Manatee	158	5.8	94.9	258.7	654.7	20.0
Polk	413	19.5	337.6	943.2	3,115.7	205.9
Sarasota	356	7.6	117.1	267.0	461.9	15.1
County Totals	1,951	69.9	1,162.0	2,795.8	7,820.5	365.9
% of State Total	14%	15%	15%	15%	20%	17%

(D) Data withheld to avoid disclosure of information about individual companies.

1/ Includes establishments with payroll at anytime during the year.

2/ The total value of shipments may include extensive duplication arising from shipments between establishments in the same industry classification.

Source: U.S. Department of Commerce, Bureau of the Census, 1872 Census of Manufactures: Florida. Geographic Area Series MC82-A10.

TABLE 17

BOATS: NUMBER REGISTERED BY TYPE IN THE STATE AND COUNTIES OF FLORIDA, FISCAL YEAR 1988-89

COUNTY	PLEASURE BOATS	COMMERCIAL BOATS
Florida	679,710	31,121
Charlotte	12,529	591
DeSoto	1,584	56
Glades	804	123
Hardee	1,353	21
Highlands	7,010	137
Hillsborough	39,722	872
Manatee	12,929	591
Polk	25,653	468
Sarasota	16,616	514
County Totals	118,200	3,373
% of State Total	17%	11%

Source: State of Florida, Department of Natural Resources, Vessels Registered in Florida, Fiscal Year 1988-89.

Regulation is a manifestation of the concerns of the general populace regarding any activity which affects them or is perceived to affect them. Increasing human population and decreasing surface area and water within a given region inevitably lead to conflict and competition for resources. Farmers, miners, manufacturers, and urban/residential developers/dwellers are all competing for the same finite land and water resource. Some regulation is designed to reduce these conflicts and to slow so-called "growth." To date no regulation has been designed or promulgated to eliminate the cause. Therefore, as cities and suburbs spread, agricultural land will be lost and mines will face increased pressure over water use, water pollution, air pollution, fugitive dust, radiation, ruined aesthetics, etc. During drought years, suburbanites will increasingly complain that citrus growers or miners have dried-up their wells or lakes; and vice versa.

The impact of these conflicts and their long-term political ramifications can be considerably influenced by a region-wide, landscape-level plan, administered within a statutory framework by existing regulatory agencies. To accomplish this task, two considerations are foremost. The existing statutory framework (statutes, ordinances, rules, etc.) will require enhancement and/or reorganization. Concurrently, regulating agencies at all levels (county/local, regional and state) must formulate a cooperative agreement which outlines overall plan goals and the role(s) of each agency within the plan.

4.0 | Project Goals

As stated in the prospectus, the overall goal of this project is to devise a regional plan, considering the environmental, economic and political impacts outlined, which will contain one, implementable phosphate mine conceptual reclamation plan. The conceptual reclamation plan will consider drainage restoration, a balance of future land uses and replacement of critical habitats. The regional plan will provide a basis for wildlife corridors connectivity to outlying preserve lands by means of the conceptual-plan-area nucleus.

4.1 Conceptual Reclamation Plan

Restoration of an adequate drainage system in the headwaters of the major regional tributaries is paramount. Reclamation must be planned and performed in a manner which utilizes the best available data and methodology for replacing hydrologic function. Adequate, calculable hydrologic function is

critical to the implementation of water quality/quantity management and protection measures. Intensive and non-intensive land uses are equally dependent upon hydrologic function for their longevity.

Land uses must be planned and located in a landscape scenario which achieves a balance of intensive and non-intensive uses and simultaneously protects the environmental uses and water quality through planned management regimes. Economic and environmental land use considerations will receive equal consideration within the bounds of hydrology-replacement planning and available reclamation resources. Planning of mines, mining and mining operations will require integral reclamation planning prior to mine plan approval.

4.2 Regional Plan

The regional plan will provide the mechanism and impetus for a comprehensive, region-wide landscape plan which includes maintenance/ protection of regional water resources and protection of non-intensive land uses. The policy directions of the state and county comprehensive plans will be coordinated within the final regional planning effort. The plan contained within this project will provide suggested mechanisms for wildlife corridor protection and recommendations concerning the factors affecting their longevity. The plan may also provide a basis for interagency and affected-party cooperation so that plan goals can be achieved. Finally, preserve lands peripheral to and within the region will be connected by viable wildlife corridors which utilize the landscape achievements of the phosphate mine conceptual plan area and the "zone of continuity."

5.0 | Implementation

5.1 Conceptual Reclamation Plan

Map 3 [Southern Phosphate District Conceptual Reclamation Plan (Integrated Habitat Network)] provides a generalized view or "blueprint" which incorporates the landscape reclamation principles proposed. Consider our current mindset regarding reclamation; and while considering, view Map 2 (Currently Approved/Submitted Conceptual Plans). Currently we reclaim "programs" or small "puzzle-pieces" which may or may not interact in a sensible manner. Now consider the new concept - "landscape reclamation." Consideration of this concept is easily accomplished by refocusing on a regional scale rather than a program or mine scale.

Implementation of the Southern Phosphate District Conceptual Reclamation Plan begins by understanding the concepts involved. Again, the main concepts are: replace drainage/hydrologic function, organize land uses to maximize their longevity and water cleansing capacities, and provide quality wildlife habitats and corridors. To achieve these functions, the drainage basin or sub-basin will become the planning/ reclamation unit. The focal point of any unit now becomes the stream channel (mined or unmined). Working outward from the stream channel, the floodplain will be reclaimed to a landform which will provide for annual flooding and yet contain a 100-year flood event. Adjacent to the floodplain will be a zone which contains mesic/transitional forests, upland forests, and other habitats considered "critical" and in need of protection. In general the progression will be from less-intensive land uses near the floodplain to more-intensive as distance from the floodplain increases. Improved pasture, cropland and citrus groves will be situated adjacent to roads and as far as possible from floodplains. The watershed within the reclamation unit will be reclaimed "to grade" (natural or a unit-functional equivalent) to the greatest extent practical. Deep lakes resulting from void/fill imbalances may be utilized for surface water storage, recreation, and as nutrient sumps. All landforms within the unit will contribute at some level to the overall hydrology of the unit and will incorporate water-cleansing methodologies. Mining and reclamation will be planned so that a pre-determined portion of "critical" habitats are preserved until a functional equivalent is reclaimed and functioning at a designated level. A management plan will be required for the unit and reclamation will undergo a management phase until predetermined performance levels are attained. Multiple-use reclamation scenarios (Agroforestry, buffer strips, windrows, etc.) are encouraged for incorporation into all applicable intensive land uses.

Use of the basic tenants of the Southern Phosphate District Conceptual Reclamation Plan will begin as Logical Reclamation Unit (LRU) applications or amendments are received for review. Full scale implementation will begin with receipt of new or amended mine conceptual plans. The scenario depicted in Map 3 is a general blueprint only. Actual scenarios, following the outlined concepts, will be determined during the review of individual mine conceptual plans.

In order for the Southern Phosphate District Conceptual Reclamation Plan to become easily implemented the following must occur. The rules governing mandatory and nonmandatory phosphate mine reclamation (Chapters 16C-16 and 17, F.A.C.) will need revision. Rule revision should incorporate the concepts of the Southern Phosphate District Conceptual Reclamation Plan and emphasize streamlining the bureaucratic process. The nonmandatory Master Reclamation Plan (Section 378.021, Florida Statutes) must be compatible with the Southern Phosphate District Conceptual Reclamation Plan. Other agencies must embrace or agree with the Southern Phosphate District Conceptual Reclamation Plan concepts and adjust permitting actions to aid rather than hinder implementation.

5.2 Regional Plan

Three documents should be required reading prior to any discussion of the "regional plan." These documents are: (1) The Southwest Florida Water Management District's - S.W.I.M. Model Ordinance, (2) Lee County's proposed - Lee County Wildlife Corridor Plan, and (3) the U.S. Environmental Protection Agency's - Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. Documents no. 1 and 2 contain information relative to mechanisms available to governments and private citizens for wildlife corridor creation and water quality protection. A synopsis of "Federal and State Law Relating to Wildlife Corridors" is provided in Appendix VII and is an excerpt from the S.W.I.M. Model Ordinance project. Document no. 3 provides management guidelines for non-point source pollution within the context of a federally funded/state administered coastal zone management program. Here, consider two things! Once mines shutdown, are reclaimed, and point source (NPDES) permits are no longer in force, the reclaimed landforms/land uses will most likely become areas of non-point source pollution. The coastal zone management program involves management of riparian areas creating non-point source pollution, which in turn affects estuarine water quality.

Methods of regional plan implementation are many and varied. The methods may act singly or in combination. State agencies are currently working with counties and regional planning councils to incorporate wildlife corridors and water management practices within comprehensive plans and developments of regional impact. The Lee County plan involves an acquisition program, planned to take place in phases over a twenty-five-year period. Other options include coordination of government acquisition programs (S.W.I.M., C.A.R.L., Preservation 2000) with conservation easements, management agreements, or deeding of development rights on inter-connecting private ownerships. Development restrictions, zoning ordinances, and tax incentives are methodologies available to local governments for protection of non-intensive land uses. Public and agency review of road construction plans provides opportunity for siting review, wetland mitigation placement, and wildlife crossing placement. It all begins with a blueprint and ends with a structure!

6.0 | Conclusion

Competition for dwindling resources threatens not only rare plants and animals, it also threatens the livelihood and quality of life of every citizen within the central Florida region. Procession toward chaos need not be the universal law, once a comprehensive management plan is in place. The start should be a cooperative agreement among the regions' governing/regulating entities. The agreement should commit all to a common goal framework - a regional environmental constitution if you will! This framework can then guide agency rule reorganization and the eventual development of a comprehensive management plan.

REFERENCES

- Abstracts for SAF-SFRC Spring Symposium; Wildlife Considerations in Forest Management. April 12-13, 1989.
- Adamus, Christine. St. Johns River Water Management District S.W.I.M. Priority Ranking, 1991. March 1991.
- Alexander, H. E. "Water Use Committee, Summary Report - SE Section Wildlife Society." Proc. 18th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1964, pp. 483-494.
- Alexander, John F., Jr., Marjorie J. Alexander, and Neil G. Sipe. "Energetics; A New Tool for Decision Making." Prepared for the New Zealand Planning Institute Conference, May 9, 1980.
- Allen, Barbara H. "Forest Grazing - Use of Livestock in Plantation Management." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 229, February 9-14, 1986.
- Allison, C. D. "Factors Affecting Forage Intake by Range Ruminants: A Review." Journal of Range Management, Vol. 38, No. 4, July 1985, pp. 305-311.
- Audubon/TNC Charrette of Ecologists. "ADDENDUM 3: Florida Preservation 2000 Needs Assessment." Supporting Documents, Prepared for the Land Acquisition Advisory Council, January 24 and 25, 1991.
- Aust, W. Michael, Stephen F. Mader, Laura J. Mitchell, and Russ Lea. "An Approach to the Inventory of Forested Wetlands for Timber-harvesting Impact Assessment." Forest Ecology and Management, Vol. 33/34, 1990, pp. 215-225.
- Baconguis, Santiago R., Dexter M. Cabahug, Jr., and Simplicia N. Alonzo-Pasicolan. "Identification and Inventory of Philippine Forested-wetland Resource." Forest Ecology and Management, Vol. 33/34, 1990, pp. 21-44.
- Ball, D. M., C. S. Hoveland, and G. D. Lacefield. Southern Forages. The Potash and Phosphate Institute and the Foundation for Agronomic Research, Atlanta, 1991.
- Baltensperger, David D., C. S. Jones, W. R. Ocumpaugh, K. A. Albrecht, and G. O. Mott. "Comparison of Winter Pasture Alternatives for Supplemental Native Florida Range." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 238, February 9-14, 1986.
- Bardecki, Michael, E. W. Manning, and Wayne Bond. "Practical Methods for Valuing Wetlands: An Assessment of Three Approaches." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 367-371.
- Bareiss, Laura J., Paul Schulz, and Fred S. Guthery. "Effects of Short-duration and Continuous Grazing on Bob-white and Wild Turkey Nesting." Journal of Range Management, Vol. 39, No. 3, May 1986, pp. 259-260.
- Bayley, Suzanne, Diane Barile, Rene Boyt, Robert Costanza, Tom Dolan, Rolando Gutierrez. A Comparison of Energetics and Economic Benefit Cost Analysis for the Upper St. Johns River. Center for Wetlands, University of Florida, Gainesville, FL, June 1976.

- , and Robert Walker. Energy Methodologies for Assessing the Regional Role of Transportation Systems and for Evaluating Environmental Economic Tradeoffs. Department of Environmental Engineering Sciences, University of Florida, Gainesville, FL, December 1976.
- Beckwith, Stephen L. "Ecological Succession on Abandoned Farm Lands and Its Relationship to Wildlife Management." Ecological Monographs, Vol. 24, No. 4, October 1954, pp. 349-375.
- , "Effect of Site Preparation on Wildlife and Vegetation in the Sandhills of Central Florida." Proc. 18th Annual Conference of the Southeastern Association of Game and Fish Commissioners. October 1964, pp. 39-48.
- Belden, Robert C. "Distribution, Relative Abundance and Management Needs of Feral Hogs in Florida." Florida Game and Fresh Water Fish Commission, Gainesville, FL.
- , Bruce W. Hagedorn, and William B. Frankenberger. "Florida Panther Captive Breeding/Reintroduction Feasibility." Annual Performance Report, Statewide Wildlife Research. July 1, 1988 - June 30, 1989.
- , William B. Frankenberger, and Jayde C. Roof. "Florida Panther Distribution." Final Report, Florida Game and Freshwater Fish Commission, 1991.
- , and William B. Frankenberger. "Management of Feral Hogs in Florida -- Past, Present, and Future." Florida Game and Fresh Water Fish Commission, Gainesville, FL.
- Bergstrom, John, C., John R. Stoll, John P. Titre, and Vernon L. Wright. "Economic Value of Wetlands-based Recreation." Ecological Economics, Vol. 2, 1990, pp. 129-147.
- Bersok, Constance J. Conditions Controlling Wetland Development on a Phosphate-Mines Reclamation Site in Florida. Masters Thesis, University of Florida, Gainesville, FL, 1986.
- Best, G. R., R. A. Garren, M. H. Rector, and P. M. Wallace. A Predictive Assessment of Long Term Trends Towards Forest Development on Mobil's Reclaimed Phosphate Mines Lands: 1984-1985 Annual Report. Center for Wetlands, University of Florida, Gainesville, FL, April 1986.
- , "Enhanced Reestablishment of Disturbed Natural Ecosystems." pp. 45-47.
- , Peter M. Wallace, William J. Dunn, and James A. Feiertag. "Enhancing Ecological Succession: 4. Growth, Density, and Species Richness of Forest Communities Established from Seed on Amended Overburden Soils." Proceedings of National Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation. University of Kentucky, Lexington, KY, 1983.
- Blair, R. M., and L. K. Halls. "Growth and Forage Quality of Four Southern Browse Species." Proc. 21st Annual Conference of Southeastern Association of Game and Fish Commissioners. September 1967, pp. 57-61.
- Boody, O., Pollman, C. et al. Ecological Considerations of Reclaimed Lakes in Central Florida's Phosphate Region Vol.II. Florida Institute of Phosphate Research, Publication No. 03-018-030, Bartow, FL, 1985.
- Bowie, Lin Y. "An Analysis of Seven Grazing Fee Formulas for Improving Grazing Revenues at Pacific Gas and Electric Co." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 161, February 9-14, 1986.
- Brady, James R., and David S. Maehr. "Distribution of Black Bears in Florida." Florida Field Naturalist, Vol. 13, No. 1, February 1985, pp. 1-24.
- Brandt, Karla, and Mark T. Brown. "Noise Impacts on Wildlife and Recreation: Literature Review and Management Recommendations." prepared for Southwest Florida Water Management District, Brooksville, FL, September 30, 1988.

- Breining, D. R., P. A. Schmalzer, D. A. Rydene, and C. R. Hinkle. "Burrow and Habitat Relationships of the Gopher Tortoise in Coastal Scrub and Slash Pine Flatwoods on Merritt Island, Florida." Florida Game and Fresh Water Fish Commission Nongame Wildlife Program, December 1988.
- , Paul A. Schmalzer, and C. Ross Hinkle. "Estimating Occupancy of Gopher Tortoise (*Gopherus polphemus*) Burrows in Coastal Scrub and Slash Pine Flatwoods." Journal of Herpetology, Vol. 25, No. 3, 1991, pp. 317-321.
- Brolmann, John B. "Productivity and Survival of *Stylosanthes* Accessions Grown in Clean Cultivation and in a Bahiagrass Mixture." Proceedings Soil and Crop Science Society of Florida, Vol. 42, 1983.
- , "Stylosanthes, a Tropical Legume with Potential Use in South Florida Pastures." Fall Forage Forum. Agronomy Research Report AY-87-6, Proceedings Ninth Annual Meeting, Fort Pierce, FL, November 4, 1987.
- Brooks, Robert P., Edward D. Bellis, Carl S. Kenner, and Mary Jo Croonquist. "A Methodology for Biological Monitoring of Cumulative Impacts on Wetland, Stream, and Riparian Components of Watersheds." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 387-398.
- Browder, Joan A. Recommendations for Economic Survival in South Florida. Center for Wetlands, University of Florida, Gainesville, FL, July 16, 1975.
- Brown M. T., J. M. Schaefer, and K. H. Brandt. Buffer Zones for Water, Wetlands and Wildlife in East Central Florida. Publication No. 89-07, Center for Wetlands, University of Florida, Gainesville, FL, May 1990.
- , "Cumulative Impacts in Landscapes Dominated by Humanity." Proceedings of a Conference on Managing Cumulative Effects on Florida Wetlands. New College, Sarasota, FL, pp. 1-18.
- , Energy Basis for Hierarchies in Urban and Regional Landscapes. Doctoral Dissertation, University of Florida, Gainesville, FL, 1980, Volume 1 of 2.
- , Energy Basis for Hierarchies in Urban and Regional Landscapes. Doctoral Dissertation, University of Florida, Gainesville, FL, 1980, Volume 2 of 2.
- , Energy Basis for Hierarchies in Urban and Regional Systems. pp. 517-534.
- , and Robert E. Tighe. A Florida Pilot Study for the Evaluation of Created and Restored Wetlands. A Report to the U.S. Environmental Protection Agency. Center for Wetlands, University of Florida, Gainesville, FL, March 1989.
- , and G. R. Best. "Landscape Restoration; A Reclamation Manual for Phosphate Mines Lands." Center for Wetlands, University of Florida, 1988.
- , "Managing Landscapes for Humanity and Nature: The Role of Wetlands in Regional Nutrient Dynamics." Proceedings of Wetlands of the Chesapeake: Protecting the Future of the Bay. pp. 63-75.
- , Sandra Brown, Robert Costanza, Ed DeBellevue, Kathy Ewel, Rolando Gutierrez, David Layland, William Mitsch, and Maurice Sell. Natural Systems and Carrying Capacity of the Green Swamp. A Report to the Florida Department of Administration Division of State Planning. Center for Wetlands, University of Florida, Gainesville, FL, September 30, 1975.

- , and Robert E. Tighe (eds.). Techniques and Guidelines for Reclamation of Phosphate Mined Lands. Publication No. 03-044-095, Florida Institute of Phosphate Research, Bartow, FL, July 1991.
- , and M. F. Sullivan. "The Value of Wetlands in Low Relief Landscapes." Ecology & Management of Wetlands, Croom Helm Beckenha, England, 1987.
- Brown, Sandra L. A Comparison of Cypress Ecosystems in the Landscape of Florida. Doctoral Dissertation, University of Florida, Gainesville, FL, 1978.
- , "The Role of Wetlands in the Green Swamp." pp. 405-415.
- Brumback, Barbara C. "Local Growth Management: Purpose, Issues and Accomplishments." Environmental and Urban Issues, Vol. 19, No. 1. FAU/FIU Joint Center for Environmental and Urban Problems, Florida Atlantic University, Boca Raton, FL, Fall 1991, pp. 8-10.
- Buford, Marilyn A., Donald D. Hook, and Cynthia S. Bunton. "Composition of a Mixed Bottomland Hardwood Stand at Age 28 Years." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 162-163.
- Burgess, J. E. "Some Effects of Cultural Practices on Aquatic Environments and Native Fish Populations." Proc. 19th Annual Conference of the Southeastern Association of Game and Fish Commissioners. October 1965, pp. 225-235.
- Burt, Al. "Perspectives on Environmental Change in Florida." Environmental and Urban Issues, Vol. 18, No. 4, Summer 1991, pp. 1-10.
- Byrd, Nathan A., Clifford E. Lewis, and Henry A. Pearson. "Management of Southern Pine Forests for Cattle Production." General Report R8-GR4. U.S. Department of Agriculture, Forest Service Southern Region, June 1984.
- Callahan, Janine. "Lake Parameters in Relation to F.A.C. 16C-16." March 17, 1989.
- , "List of Native Trees in Central Florida." December 14, 1988.
- , "Stream Channel Parameters." March 31, 1989.
- Carlson, Dee, S. H. Sharrow, and D. P. Lavender. "Pasture and Tree Growth in a Small-Scale Agroforestry System." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 227, February 9-14, 1986.
- Casey, W. H. "Some Speculations on the Minimum Habitat Requirements of Bobwhite Quail." Proc. 19th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1965, pp. 30-38.
- Cates, James. "Land Use Program for 1976 for Pine Acres Ranch." 1976.
- Cates, J., and Callahan, J. "Wildlife Management and Phosphate Mined Lands." A bureau position paper for DNR Executive and Division Directors, 1990.
- Center for Wetlands, University of Florida. "Evaluation of Alternatives for Restoration of Soil and Vegetation on Phosphate Clay Settling Ponds." Publication No. 03-076-094. Under a Grant Sponsored by the Florida Institute of Phosphate Research, Bartow, FL, July 1991.

Central Florida Regional Policy Plan, Central Florida Regional Planning Council, July 1987.

Chabreck, R. H. "The Relation of Cattle and Cattle Grazing on Marsh Wildlife and Plants in Louisiana." Proc. 22nd Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1968, pp. 55-57.

Chadwick, Douglas H. "The Biodiversity Challenge." Defenders of Wildlife. A Special Report, 1990.

Chan, George L. "Integrated Farming System." Landscape Planning, Vol. 12, 1985, pp. 257-266.

Childers, Daniel L., and James G. Gosselink. "Assessment of Cumulative Impacts to Water Quality in a Forested Wetland Landscape." Journal of Environmental Quality, Vol. 19, 1990, pp. 455-464.

Clark III, Alexander, and Richard C. Field. "TBCP -- A Computer Program that Estimates: Total Tree Chips, Saw Logs, Pulpwood, and Firewood." Georgia Forest Research Paper 21. Research Division, Georgia Forestry Commission, August 1981.

Clewell, Andre F., Reed S. Beaman, William O. Cleckley, and Thomas R. Pratt. "Managing for Complexity in River Corridors." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 331-333.

Clouser, Rodney L., and David Mulkey. Maintaining Land for Agriculture: Use-value Assessment. FRE 28, Florida Cooperative Extension Service, Food and Resource Economics, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.

-----, and David Mulkey. Thoughts on Growth Management. FRE 64, Florida Cooperative Extension Service, Food and Resource Economics, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL

-----, L. W. Libby, S. A. Ford, M. Rahmani, and D. Mulkey. "Agriculture and Economic Change in Florida: Facts, Issues, and Options." Circular 888, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, July 1990.

Coastal Nonpoint Pollution Control Program-- Program Development and Approval Guidance. October 1991, U.S. Dept. of Commerce, N.O.A.A. and U.S. Environmental Protection Agency, Office of Water, Washington D.C.

"Collaborative Research on Adaptations of Plant Life in the Scrub." Archbold Biological Station Newsletter, No. 8 & 9, 1989, P. 7.

Collopy, Michael W., and Howard L. Jelks. "Distribution of Foraging Wading Birds in Relation to the Physical and Biological Characteristics of Freshwater Wetlands in Southwest Florida." Florida Game and Fresh Water Fish Commission Nongame Wildlife Program, June 1989.

Colvin, D. L., B. J. Brecke, L. B. McCarty, and P. Mislavy. "Weed Control in Pastures and Rangeland -- 1992." Weeds in the Sunshine. SS-AGR-8. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida, November 1991.

Connor, Mark. "Habitat Management of White-tailed Deer in Florida Pinelands." Abstracts for SAFFERC Spring Symposium, Wildlife Considerations in Forest Management, April 12 - 13, 1989.

Cook, Robert L. "Range Management and Commercial Hunting on Shelton Ranches: A Needed and Profitable Combination." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 377, February 9-14, 1986.

- Coss, R. D. "Wildlife Habitats Provided by Aquatic Plant Communities of Surface Mine Lakes." Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation. University of Kentucky, Lexington, KY, December 9-13, 1985, pp. 29-39.
- Cowardin, L., V. Carter, F. Golet, and E. LaRoe. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS 79/31, U.S. Dept. of Interior, Fish and Wildlife Service, Washington, D.C., 1979.
- Cox, James, Douglas Inkley, and Randy Kautz. "Ecology and Habitat Protection Needs of Gopher Tortoise (*Gopherus Polyphemus*) Populations Found on Lands Slated for Large-Scale Development in Florida." Nongame Wildlife Program Technical Report No. 4. Office of Environmental Services, Florida Game and Fresh Water Fish Commission, Tallahassee, FL, December 1987.
- Coyle, Kevin J. "Land Protection Techniques for a Nationwide System of Greenways." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 48-56.
- Dansereau, P. Biogeography- An Ecological Prespective. The Ronald Press Co., New York, N.Y., 1957.
- Dasmann, R. Wildlife Biology. J. Wiley and Sons, Incorporated. New York, N.Y., 1964.
- Data Inventory and Assessment Committee. "ADDENDUM 2: Florida Preservation 2000 Needs Assessment." Final Report, Prepared for the Land Acquisition Advisory Council, January 15, 1991.
- Dauffman, J. Boone, and W. C. Krueger. "Livestock Impacts on Riparian Ecosystems and Streamside Management Implications...a Review." Journal of Range Management, Vol. 37, No. 5, September 1984, pp. 430-438.
- Davis, Mary, M., Martin Munroe, and G. Ronnie Best. Evaluating Success of Wetlands Reclamation. Center for Wetlands, University of Florida, Gainesville, FL, June 1986 - July 1987.
- DeLaet, Christian. "Developing Networks and Institutions in Support of Sustainable Development." Landscape Planning, Vol. 12, 1985, pp. 301-309.
- Delany, B. W., T. W. Keegan, and M. K. Johnson. "Supplementation of Free-ranging Deer on Upland Sites with Forage Crops." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 329, February 9-14, 1986.
- Demarchi, Raymond A. "The Coordinated Resource Management Planning (CRMP) Process -- A Viewpoint." Rangelands, Vol. 10, No. 1, February 1988, pp. 15-16.
- Dennington, Roger W., and Robert M. Farrar, Jr. "Longleaf Pine Management." Forestry Report R8-FR-3. U.S. Department of Agriculture, Forest Service Southern Region, December 1983.
- Diamond, Craig. "The Future of Florida's Landscape." Environmental and Urban Issues, Vol. 19, No. 2. FAU/FIU Joint Center for Environmental and Urban Problems, Florida Atlantic University, Boca Raton, FL, Winter 1992, pp. 1-6.
- Diemer, Joan E., Dale R. Jackson, J. Larry Landers, James N. Layne, and Don A. Wood. "Gopher Tortoise Relocation Symposium Proceedings." Nongame Wildlife Program Technical Report No. 5, Florida Game and Fresh Water Fish Commission, The Gopher Tortoise Council, Florida State Museum, University of Florida, 1989.
- "Wildlife Considerations in Forest Management, Gopher Tortoise." Abstracts for SAF-SERC Spring Symposium, Wildlife Considerations in Forest Management. April 12-13, 1989.
- Dodd, Lisa B. "Lee County Wildlife Corridor System Plan." Memorandum from Lee Co. Dept. of Community Development, Off. Environmental Sciences to Interested Parties, July 18, 1991.

- Doherty, Steven James. "Patterns of Landscape Organization and Their Role in the Successional Recovery of Disturbed Areas in Central Florida." Masters Thesis, University of Florida, Gainesville, FL, 1991.
- Dressler, Robert L., David W. Hall, Kent D. Perkins, and Norris H. Williams. Identification Manual for Wetland Plant Species of Florida. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, 1991.
- Ducks Unlimited. "ACE Basin: Forever Wild." September/October 1989. Duda, Mark Damian. "Floridians and Wildlife; Sociological Implications for Wildlife Conservation in Florida." Technical Report No. 2, Florida Game and Fresh Water Fish Commission Nongame Wildlife Program, April 1987.
- Duever, Michael J., and Jean M. McCollom. "Hydrological Study Within Myakka River State Park." Department of Natural Resources, Tallahassee, FL, December 14, 1990.
- Duryea, Mary L. "Alternative Enterprises for Your Forest Land." Circular 810, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, June 1988.
- Dyer, M. I., and M. M. Holland. "The Biosphere-Reserve Concept: Needs for a Network Design." Bioscience, Vol. 41, No. 5, May 1991, pp. 319-325.
- Ebasco Environmental. Martin CG/CC Project Compliance With the Federal Policy of No Net Loss of Wetlands Functional Values. August 1990, Revised December 1990.
- Edelson, Naomi A., and Dr. Michael W. Collopy. "Foraging Ecology of Wading Birds Using an Altered Landscape in Central Florida." Publication No. 04-039-087, University of Florida Department of Wildlife and Range Sciences, Under a Grant Sponsored by the Florida Institute of Phosphate Research, Bartow, FL, September 1990.
- Elliott, Mark O. "Utilizing Wildlife as a Financial Asset on a Florida Ranch." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 376, February 9-14, 1986.
- Environmental Assessment: Amendment No.1 to the Florida Coastal Management Program. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Ocean and Coastal Resource Management, February 1988.
- Environmental Land Use Planning: An Integrating Theme for Areawide Impact. Assessment of the Central Florida Phosphate Industry. Proceedings of a Seminar in Bartow, Florida. July 27-28, 1977.
- Erwin, Kevin L. An Evaluation of Wetland Mitigation in the South Florida Water Management District, Vol. 1, July, 1991.
- An Evaluation of Wetland Mitigation in the South Florida Water Management District, Vol. 2, July, 1991.
- An Evaluation of Wetland Mitigation in the South Florida Water Management District, Vol. 3, July, 1991.
- Federal Register. Vol. 56, No. 200, U.S. Environmental Protection Agency, Washington, D.C., October 16, 1991.
- Fedkiw, John. "The Future for Multiple Use of Land in the South." Journal of Soil and Water Conservation, Vol. 41, No. 4, July-August 1986, pp. 211-214.

- Feinstein, Jonathan L. "Conservation Easements and Land Trusts to Preserve Riverine and Wetland Habitats." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 57-59.
- Ferlow, Donald L., and James B. Ferlow. "Development - Related Stormwater Runoff Renovation." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 218-221.
- Fernald, Edward A., and Donald J. Patton. Water Resources: Atlas of Florida. Florida Phosphate Council, "Wetland Restoration Report," 1991.
- Final Environmental Impact Statement of the Proposed Coastal Management Program for the State of Florida. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, and the State of Florida, Department of Environmental Regulation, Office of Coastal Management, August 1981.
- Fitzpatrick, John W. and Glen E. Woolfenden. "Components of Lifetime Reproductive Success in the Florida Scrub Jay." in T.H. Clutton-Brock, Reproductive Success, Chicago: University of Chicago Press, 1988, pp. 305-320.
- Florida Bureau of Mine Reclamation and the Southwest Florida Water Management District. "General Guidelines for Conceptual Plan Hydrological Analysis." August 1990.
- Florida Department of Agriculture, Forest Service. "36 CFR Part 219 National Forest System Land and Resource Management Planning; Advance Notice of Proposed Rulemaking." Part III, Federal Register, Vol. 56, No. 32, February 15, 1991.
- , Division of Forestry. "Florida Forest Stewardship Plan." January 22, 1990.
- Florida Department of Community Development, the Office of Environmental Sciences Division. "Lee County Wildlife Corridor System Plan." July 18, 1991.
- Florida Department of Environmental Regulation. "Report on the Effectiveness of Permitted Mitigation." Submitted to Governor Lawton Chiles, March 5, 1991.
- , "Strategic Assessment of Florida's Environment: SAFE." REVISED DRAFT, Review Indicator Manual, September 1991.
- Florida Department of Natural Resources, Office of Land Use Planning and Biological Services, and the Land Acquisition Advisory Council. 1991 Annual Report of the Conservation and Recreation Lands Program. February 12, 1991.
- Florida Department of Natural Resources. Proceedings of the National Association of State Land Reclamationists, Annual Conference. Orlando, FL, October 8-10, 1991.
- , "Requested Information on Wetlands Issues - DNR." Questionnaire of Information Requested by the House Natural Resources Committee, July 1991.
- Florida Department of Transportation, Office of Management and Budget. "Adopted; Five Year Work Program July 1, 1990, Through June 30, 1995." Volume 1 of 2, September 1990.
- , "Adopted; Five Year Work Program July 1, 1990, Through June 30, 1995." Volume 2 of 2, September 1990.
- , State Topographic Bureau, Thematic Mapping Section. "Florida Land Use, Cover and Forms Classification System." Second edition, Procedure No. 550-010-001-a, September 1985.

----- "The Florida Intrastate Highway System, Progress Report." February 1991.

Florida Game and Fresh Water Fish Commission. "Regulations and Enforcement of 'Taking' of Gopher Tortoise by Development Activities Under Existing Rules of the Florida Game and Fresh Water Fish Commission."

-----, Office of Environmental Services. "Wildlife Methodology Guidelines; for Section 18.D of the Application for Development Approval." January 15, 1988.

"Florida Preservation 2000 Needs Assessment." A Report to Governor Lawton Chiles and the Florida Legislature by the Land Acquisition Advisory Council. June 28, 1991.

Florida Natural Areas Inventory. "Florida Natural Areas Inventory Natural Communities." September 28, 1989.

-----, and Department of Natural Resources. "Guide to the Natural Communities of Florida." February 1990.

Florida Phosphate Council. "Wetland Restoration Report - 1991."

Florida Statistical Abstract 1990. Edited by Shermyen, A., The University Presses of Florida, Gainesville, FL

Frederick, David, and Baker, Scott (eds.). The Other Side of the Bailout: A Guide to Protecting Environmentally Significant RTC and FDIC Lands. Texas Center for Policy Studies, Austin, Texas, July 1991.

"From the Meeting of the Ecological Society of America, Snowbird, Utah, 29 July - 2 August 1990; Wetlands and Water Quality." BioScience, Vol. 40, No. 10, November 1990, p. 717.

Fulbright, Timothy E., and Samuel L. Beasom. "Long-Term Effects of Mechanical Treatments on White-tailed Deer Browse." Wildlife Society Bulletin 15:560-564, 1987.

-----, and Samuel L. Beasom. "Wildlife Habitat Research on Rangeland: A New Perspective." National Range Conference Proceedings. U.S. Department of Agriculture, November 6-8, 1985, pp. 130-135.

Fults, Gene A. "Florida Ranchers Manage for Deer." Rangelands, Vol. 13, No. 1, February 1991, pp. 28-30.

"Future of the Region, A Comprehensive Regional Policy Plan for the Tampa Bay Region." Tampa Bay Regional Planning Council, June 1988.

Gasaway, R. D., R. Haynes, and E. F. Bowers. "Fee Hunting on Private Lands: A Southeastern Perspective." Fee Hunting Proceedings, Clemson University, Clemson, SC, July 23-24, 1989, pp. 82-87.

Gilbert, Terry, and Richard Stout. "Fish and Wildlife Habitat Reclamation on Phosphate Mined Land." Florida Game and Fresh Water Fish Commission, March 1983.

Gluckman, David. "Habit Protection and the Police Power." Environmental and Urban Issues, Vol. 19, No. 3, Spring 1992, pp. 10-14.

- Goldman-Carter, Janice L. "A Bill to Conserve North American Wetland Ecosystems and Waterfowl and the Other Migratory Birds and Fish and Wildlife that Depend Upon Such Habitats." State-ment of the National Wildlife Federation Before the Subcommittee on Fisheries and Wildlife Con-servation and the Environment of the House Merchant Marine and Fisheries Committee, July 25, 1989.
- "An Evaluation of Federal and State Planning Information-- which might be applicable to the Multiple Use Management of State Wildlands." -- performed for the Michigan Dept. of Natural Resources, Div. of Wildlife, April 20, 1977.
- "Gopher Tortoise Notes; Gopherus polyphemus."
- Gosselink, J. and Lee, L. "Cumulative Impact Assessment in the Bottomland Forests." Wetlands, 9:83-174, 1989.
- , Shaffer, G., et al. Cumulative Impact Assessment and Management in a Forested Wetland Water-shed in the Mississippi River Floodplain. CEI-89-02. Center for Wetland Resources, Louisiana State University, Baton Rouge, 1989.
- , Shaffer, G., et al. "Landscape Conservation in a Forested Wetland Watershed." Bioscience, Vol. 40, No. 8, 1990, pp. 588-600.
- Graddy, J. "Mixing Cattle, Pasture, and Pines May Make Sense for Your Operation." The Florida Cat-tleman, April 1986, pp. 48-49.
- Green Swamp Task Force. The Green Swamp System -- A Scientific Analysis. ,1992.
- Griffith, Brad, Michael Scott, James W. Carpenter, and Christine Reed. "Translocation as a Species Conservation tool: Status and Strategy." Science, Vol. 245, August 4, 1989, pp. 477-480.
- Gross, Francesca Eda Helen. Characteristics of Small Stream Floodplain Ecosystems in North and Central Florida. Masters Thesis, University of Florida, Gainesville, FL, 1987.
- Grosz, K., and D. Kirby. "Impact of Four Short Duration Grazing Treatments Stocked with Cattle on Simulated Ground Nests." Abstracts 39th Annual Meeting Society for Range Management. Kis-simnee, FL, Abstract No. 333, February 9-14, 1986.
- Ground Water Resources Committee. "ADDENDUM 5: Florida Preservation 2000 Needs Assess-ment." Final Report, Prepared for the Land Acquisition Advisory Council, June 21, 1991.
- Grumbine, Edward. "Protecting Biological Diversity Through the Greater Ecosystem Concept." Natural Areas Journal, Vol. 10, No. 3, 1990, pp. 114-120.
- Hall, H. Dale, and Victor W. Lambou. "Determining the Value of Bottomland Hardwood Riverine Wetlands to Fisheries." Wetlands and River Corridor Management. Proceedings of the Interna-tional Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 132-137.
- Halls, L. K. "Flowering and Fruiting of Southern Browse Species." Forest Service Research Paper SO-90. U.S. Department of Agriculture, 1973.
- , et. al. "Southern Fruit-Producing Woody Plants Used by Wildlife." Technical Report 50-16. U.S. Department of Agriculture, Forest Service, 1977.
- Hamann, Richard. "Avoiding Takings in Wetlands Regulation." Wetlands and River Corridor Manage-ment. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 492-493.

- Hammer, Donald A. "Protecting Water Quality with Wetlands in River Corridors." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 206-210.
- "Hardwoods -- A Growing Idea." Forestry First, Vol. 2. International Forest Seed Company, October 1990.
- Harris, Larry D. Bottomland Hardwoods: Valuable, Vanishing, Vulnerable. 1984. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.
- Haynes, R., et al. Reestablishment of Bottomland Hardwood Forests on Disturbed Sites: An Annotated Bibliography. U.S. Dept. of Interior, Fish and Wildlife Service Bio. Rep. 88(42), Washington D.C., 1988.
- Henigar & Ray Inc. "Decision Model for the S.W.I.M. Model Ordinance Project." Prepared for Southwest Florida Water Management District, June 19, 1991.
- Henslick, John, Michele Lee, Carla Palmer, Ralph Rognstad, Jr., Neil Sipe, Dennis Swaney, and Arthur Wittman. An Energetics Approach to Assessing National Park Development Plans: A Case Study of Redwood National Park. University of Florida, Gainesville, FL, January 1980.
- Hillestad, H. O., and D. W. Spake. "Activities of Wild Turkey Hens and Poults as Influenced by Habitat." Proc. 24th Annual Conference of Southeastern Association of Game and Fish Commissioners. September 1970, pp. 244-251.
- Hoffmann, L., and R. E. Ries. "Seasonality of Grazing Reclaimed Pastures: Animal Performance." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 285, February 9-14, 1986.
- Holt, E. C., J. R. Cain, and R. J. Hendler. "Evaluation and Management of Grasses for Dual Livestock and Game Bird Use." Journal of Range Management, Vol. 38, No. 4, July 1985, pp. 342-346.
- Hooper, Robert G., Andrew F. Robinson, Jr., and Jerome A. Jackson. "The Red-cockaded Woodpecker: Notes on Life History and Management." General Report SA-GR9, U.S. Department of Agriculture, Forest Service, Southeastern Area, State and Private Forestry, March 1990.
- "How to Identify, Establish, and Manage Indiangrass." Fact Sheet. U.S. Department of Agriculture, Soil Conservation Service, Des Moines, IA, October 1984.
- "How to Identify, Establish, and Manage Switchgrass." Fact Sheet. U.S. Department of Agriculture, Soil Conservation Service, Des Moines, IA, October 1984.
- Hubbard, William G., Robert C. Abt, and Mary L. Duryea. "Estimating the Profitability of Your Forestland Enterprise." Circular 836, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, November 1989.
- Humphries Jr., William C., Albert A. Montgomery, and Ronald D. Thompson. "The Economic Management of Southern Pine Assisted by the Personal Computer." Georgia Forest Research Paper 56, Research Division, Georgia Forestry Commission, February 1985.
- Hunt, Constance E. "The Section 404 Program as a Stream Corridor Planning Tool." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 446-449.
- Hutchinson, Robert (ed.). Land Preservation for Floridians. Florida Land Trust Organization, Gainesville, Florida, 1991.

Important Native Grasses for Range Conservation in Florida. U.S. Department of Agriculture Soil Conservation Service.

Izuno, F. T., D. Z. Haman, and G. A. Clark. "Water Table Monitoring." Bulletin 251, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, August 1988.

Jacobs, Peter. "Achieving Sustainable Development." Landscape Planning, Vol. 12, 1985, pp. 203-209.

Johnson, Mark K. "Effects of Timber Stocking on Subclover Yields Under 25- 30-Year-Old Southern Pines." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 221, February 9-14, 1986.

Johnson, Robert. "Lone Star Mammal of Lone Star State is a Little, Wild Cat." The Wall Street Journal. June 10, 1991, p. 1, col. 3.

Johnston, Carol A, Naomi E. Detenbeck, and Gerald J. Niemi. "The Cumulative Effect of Wetlands on Stream Water Quality and Quantity. A Landscape Approach." Biogeochemistry, Vol. 10, 1990, pp. 105-141.

Johnson, Mark K., Billy W. Delany, Susan P. Lynch, and Billy D. Nelson. "Effects of Cool-Season Forage Crops on White-Tailed Deer." Louisiana Agriculture, Vol. 29, No. 4, May 1986, pp. 3, 20.

Josselyn, Michael, Kim Bobzien, Steven Bach, and Virgil Brack Jr. "Mitigation of Wooded Palustrine Wetlands: Selecting Mitigation Sites." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 436-440.

Joyce, Linda A. "The Impact of Alternative Timber Management Scenarios on the Quantity and Quality of Grazingland in the South." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 220, February 9-14, 1986.

Kaczor, Sue A., and David C. Hartnett. "Gopher Tortoise (*Gopherus polyphemus*) Effects on Soil and Vegetation in a Florida Sandhill Community." The American Midland Naturalist, Vol. 123, 1990, pp. 100-111.

Kangas, Patrick Carl. Energy Analysis of Landforms, Succession, and Reclamation. Doctorial Dissertation, University of Florida, Gainesville, FL, 1983.

Kauffman, J. Boone, and W. C. Krueger. "Livestock Impacts on Riparian Ecosystems and Streamside Management Implications...A Review." Journal of Range Management, Vol. 37, No. 5, September 1984, pp. 430-438.

KBN Engineering, and Applied Sciences, Inc. "Utilization of Transmission Line Rights-of-Way by Wildlife: A Literature Review." March 1992.

Kelmbacher, R. S., and F. G. Martin. "Effect of Defoliation and Fertilizer on Maidencane (*Panicum hemitomon*)." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 260, February 9-14, 1986.

King, Timothy P. "CMI-PL-CP, Conceptual Reclamation Plan, Consolidated Minerals, Incorporated, Pine Level Mine, DeSoto County." in letter to Cheri Albin of the Florida Bureau of Mine Reclamation, May 17, 1991.

-----, and Wayne R. Marion. "Economic Considerations Affecting Wildlife Habitat Reclamation in Florida's Phosphate Mining Industry." Paper presented at the Conference 'Reclamation, A Global Perspective,' Calgary, Alberta, Canada. August 27-31, 1989.

- , Lindsey Hord, Terry Gilbert, Frank Montalbano III, and J.N. Allen Jr. "An Evaluation of Wetland Habitat Establishment and Wildlife Utilization in Phosphate Clay Settling Areas." Florida Game and Fresh Water Fish Commission.
- , Stout, R. and Gilbert, T. Habitat Reclamation Guidelines: A series of recommendations for fish and wildlife habitat enhancement on phosphate mined land and other disturbed sites. Florida Game and Fresh Water Fish Commission, Off. of Environmental Services, Tallahassee, FL, 1985.
- , "Fish and Wildlife Habitat Planning in Phosphate Mined Land Reclamation." Florida Game and Fresh Water Fish Commission, September 1989.
- , "Habitat Reclamation Objectives." DRAFT, November 29, 1989.
- , "Landscape System Planning and Permitting for Fish and Wildlife Habitat Reclamation on Florida's Phosphate Mined Lands." Florida Game and Fresh Water Fish Commission, May 1990.
- , "Opportunities for Improving Habitat Reclamation Planning in Florida's Phosphate Mining Industry." Florida Game and Fresh Water Fish Commission, May 1990.
- Klimstra, W. D., J. R. Nawrot, and M. R. Santner. "Recreation Utilization of Surface-mined Lands." Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation. University of Kentucky, Lexington, KY, December 9-13, 1985.
- Krug, A. S. "Multiple-Use Management of Public Game Lands." Proc. 19th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1965, pp. 147-153.
- Kusler, Jon. "Multi-objective River Corridor Management: An Introduction to Issues: Recommendations for Implementing Programs." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 2-19.
- Lahart, D. E.; Cornwell, G. W. "Habitat Preference and Survival of Florida Duck Broods." Proc. 24th Annual Conference of Southeastern Association of Game and Fish Commissioners. September 1970, pp. 117-120.
- Lambou, Victor W. "Management Needs for Fishes and Fisheries Dependent on Overflow Riverine Wetlands." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 123-131.
- Land Acquisition Programs Integration Committee. "ADDENDUM 1: Florida Preservation 2000 Needs Assessment." Final Report, Prepared for the Land Acquisition Advisory Council, June 10, 1991.
- Land Management Needs and Costs Committee. "ADDENDUM 6: Florida Preservation 2000 Needs Assessment." Final Report, Prepared for the Land Acquisition Advisory Council, March 1991.
- Landers, J. Larry. "Wild Food Plants Used by Upland Game Birds in the Southeast." Proceedings Tall Timbers Game Bird Seminar. Tallahassee, FL, March 9, 1990.
- Lantz, K. E. et. al. "Water Level Fluctuation - Its Effects on Vegetation Control and Fish Populations Management." Proc. 18th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1964, pp. 483-494.
- Lay, D. W. "The Importance of Variety to Southern Deer." Proc. 18th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1964, pp. 57-62.

- Layne, James N. "The Florida Mouse." in C.K. Dodd, Jr., R.E. Ashton, Jr., R. Frantz, and E. Wester (editors). Burrow Associates of the Gopher Tortoise. Proceedings of the Eighth Annual Meeting of the Gopher Tortoise Council. Florida Museum of Natural History, Gainesville, FL, 1990, pp. 1-21.
- Legislative Oversight Committee for General Program Matters. "ADDENDUM 8: Florida Preservation 2000 Needs Assessment." Final Report, Prepared for the Land Acquisition Advisory Council, June 24, 1991.
- Legislative Oversight Committee for Land Acquisition Procedures. "ADDENDUM 7: Florida Preservation 2000 Needs Assessment." Final Report, Prepared for the Land Acquisition Advisory Council, February 5, 1991.
- Leidner, John. "Legumes Grow Healthy Deer." Progressive Farmer. September 1991, p. 58.
- Leithead, H. L., L. L. Yarlett, and T. N. Shiflet. "100 Native Forage Grasses in 11 Southern States." Agricultural Handbook 389. U.S. Department of Agriculture Soil Conservation Service, 1971.
- Lewis, Clifford E., George W. Tanner, and W. Stephen Terry. "Double vs. Single-row Pine Plantations for Wood and Forage Production." Southern Journal of Applied Forestry, Vol. 9, No. 1, 1985, pp. 55-61.
- , George W. Tanner, and W. Stephen Terry. "Plant Responses to Pine Management and Deferred-rotation Grazing in North Florida." Journal of Range Management, Vol. 41, No. 6, November 1988, pp. 460-465.
- , Bence F. Swindel, and George W. Tanner. "Species Diversity and Diversity Profiles: Concept, Measurement, and Application to Timber and Range Management." Journal of Range Management, Vol. 41, No. 6, November 1988, pp. 466-469.
- Lewis, J.C. "Populations of Wild Turkey in Relation to Fields." Proc. 18th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1964, pp. 56-79.
- Lewis, Roy R. "Wetland Creation and Restoration: The Status of the Science." Volume I: Regional Reviews, EPA/600/3-89/038, Oct. 1989.
- , "Wetland Restoration/Creation/Enhancement Terminology: Suggestions for Standardization." Volume II: Perspectives, EPA/600/3-89/038, October 1989.
- Lindsay, Robert E., and Jack R. Nawrot. "Evaluation of Natural Revegetation of Problem Spoil Banks." Symposium on Surface Mining Hydrology, Sedimentology and Reclamation. University of Kentucky, Lexington, KY, December 7-11, 1981.
- Logan, Tom H., and Dr. Allan Egbert. The Florida Deer Story. Game and Fresh Water Fish Commission, Tallahassee, FL, November-December 1981.
- Lohrer, Fred E. Resident Bird Counts; Supplement to the Journal of Field Ornithology. Vol. 62, Chap. 33, "Breeding Bird Census; Mature Citrus Orchard; Cultivos de Citrosas," 1991, p. 87.
- , Resident Bird Counts; Supplement to the Journal of Field Ornithology. Vol. 62, Chap. 98, "Winter Bird Population Studies; Mature Citrus Orchard; Cultivos de Citrosas," 1991, p. 26.
- Long, H., and Orne, D. Regional Study of Land Use Planning and Reclamation. Publ.# 04-041-085 prepared by the Central Florida Planning Council under a grant from the Florida Institute of Phosphate Research, Bartow, Fl., 1990.

- Longman, Phillip. "What Water Crisis?" Florida Trend. June 1991, pp. 46-54.
- MacDonald, Laurie Ann. "Reintroduction of Gopher Tortoises (*Gopherus polyphemus*) to Reclaimed Phosphate Land." Report on Second Year's Activities, Florida Institute of Phosphate Research, March 1990.
- Maehr, David S., and Wayne R. Marion. "Bird Abundance and Distribution in a North Florida Phosphate Mine." Proceeds of the Annual Conference of Southeast Association of Fish and Wildlife Agencies, 38:111-120, 1984.
- , and James R. Brady. "A Comparison of Food Habitats in Two North Florida Black Bear Populations." Florida Game and Fresh Water Fish Commission, Gainesville, FL.
- , "Distribution of Black Bears in Eastern North America." Proceedings Eastern Workshop on Black Bear Research and Management, 7:1984.
- , and James R. Brady. "Fall Food Habitats of Black Bears in Baker and Columbia Counties, Florida." Florida Game and Fresh Water Fish Commission, Gainesville, FL.
- , "The Florida Panther and Private Lands." Conservation Biology, Vol. 4, No. 2, June 1990, pp. 167-170.
- , and James R. Brady. "Food Habitats of Florida Black Bears." Florida Game and Fresh Water Fish Commission, Gainesville, FL.
- , James N. Layne, Darrell Land, J. Walter McCown, and Jayde Roof. "Long Distance Movements of a Florida Black Bear." Florida Field Naturalist, Vol. 16, No. 1, February 1988, pp. 1-24.
- Maisenhelder, Louis C. "Understory Plants of Bottomland Forests." Occasional Paper 165. Southern Forest Experiment Station, Forest Service, U.S. Department of Agriculture.
- Marchinton, R. Larry, Karl V. Miller, R. Joseph Hamilton, and David C. Guynn. "Quality Deer Management: Biological and Social Impacts on the Herd." Proceedings Tall Timbers Game Bird Seminar, Tallahassee, FL, March 9, 1990.
- Marion, Wayne R. and Julie A. Hovis. "Developing a Hunting Lease in Florida." Wildlife and Range Sciences, WRS1. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, 1985.
- , David S. Maehr, and R. Kipp Frochlich. "Phosphate Mine Reclamation And Habitats For Wildlife." Proc. 7th Annual Conference on the Restoration and Creation of Wetlands, May 16-17, 1980, pp. 501-506.
- and Cyndi A. Gates. "Hunting Lease Arrangements in Florida and the Southeast." Circular 793, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.
- and Matthew Werner. "Management of Pine Forests for Selected Wildlife in Florida." Circular 706, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.
- , Phosphate Mining: Regulations, Reclamation and Revegetation. Florida Institute of Phosphate Research Publication # 03-043-040, Bartow, FL, 1986.
- and T. E. O'Meara. "Phosphate Reclamation Plans and Changes in Wildlife Habitat Diversity." in Robertson, D.J. (ed.), Reclamation and the Phosphate Industry, Proceedings of the Symposium, Clearwater Beach, FL, January 26-28, 1983, pp. 498-509.

- . "Recent Trends in Phosphate Mine Reclamation in the United States." Paper presented at the conference 'Reclamation, A Global Perspective,' Calgary Alberta, Canada, August 27-31, 1989.
- Marten, G. C., C. C. Sheaffer, and D. L. Wyse. "Forage Nutritive Value and Palatability of Perennial Weeds." Agronomy Journal, Vol. 79, No. 6, 1987, pp. 980-986.
- Matthews, Brank E., and Kathleen E. Moore. "The Vekiva River Buffer Experience: Land Use in the Fourth Dimension." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 464-468.
- McCarty, L. B., and D. L. Colvin. "Response to Turfgrass and Turfgrass Weeds to Herbicides -- 1992." Weeds in the Sunshine. SS-AGR-11. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, November 1991.
- . "Weed Control Guide for Florida's Turfgrass Professionals -- 1992." Weeds in the Sunshine. SS-AGR-18. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida, November 1991.
- McClanahan, Timothy R., and R. W. Wolfe. "Dispersal of Ornithochorous Seeds for Forest Edges in Central Florida." Vegetation, Vol. 71, 1987, pp. 197-112.
- . The Effects of Dispersal on Ecological Succession and Optimal Size Islands. Masters Thesis, University of Florida, Gainesville, FL, 1984.
- . "Seed Dispersal from Vegetation Islands." Ecological Modeling, Vol. 32, 1986, pp. 301-309.
- McCoy, Earl D., and Henry R. Mushinsky. "A Survey of Gopher Tortoise Populations Residing on Twelve State Parks in Florida." Technical Report No. 1. Florida Department of Natural Resources Office of Land Use Planning and Biological Services, January 1991.
- McDaniel, J. "Evaluation of Utilization, Harvest and Hunting Pressure on Privately Owned Hunting Areas." Proc. 19th Annual Conference of Southeastern Association of Game and Fish Commissioners, October 1965, pp. 60-69.
- McGaw, David. Environmental Auditing and Compliance Manual, Environmental Resource Center, Fayetteville, 1991.
- McKay, Patricia S. "Fall Of 1991: Where Are We? A Status Report On Growth Management Plans In Florida." Environmental and Urban Issues, Vol. 19, No. 1. FAU/FIU Joint Center for Environmental and Urban Problems, Florida Atlantic University, Boca Raton, Fl., Fall 1991, pp. 1-7.
- McKee, C. William. "Valuation of Wildlife Habitat by Forest Industry: One Firm's Approach." Fee Hunting Proceedings, Clemson University, Clemson, SC, July 23-24, 1989, pp. 107-116.
- , Wallace E. Killcreas, and John E. Waldrop. "Methodology for Assessing Timber and White-tailed Deer Habitat Tradeoffs." Proceedings of the Annual Conference of the Southeastern Association of the Fish and Wildlife Agencies, 1983, pp. 102-117.
- McPherson, John K. "Federal and State Law Relating to Wildlife Corridors." November 1, 1990.
- Means, Bruce D., and Gerald Grow. "The Endangered Longleaf Pine Community." Enfo. Florida Conservation Foundation.
- Mccrow, Alan W. Native Shrubs for South Florida. EES-59, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, July 1990.

- , and Jeffrey G. Norcini. Native Trees for North Florida. Circular 833, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.
- Melchior, M. Anthony. "Wildlife and Fee Hunting on Forest Industry Lands in the South: A Weyerhaeuser Company Perspective." Fee Hunting Proceedings, Clemson University. Clemson, SC, July 23-24, 1989, pp. 99-106.
- Menges, Eric S. "Predicting the Future of Rare Plant Populations: Demographic Monitoring and Modeling." Holcomb Research Institute, Butler University, Indianapolis, 1986.
- Merrill, John. "The XXX Ranch: Managing Range for Ecology and Economy." U.S. Department of Agriculture, Yearbook of Agriculture, Washington D.C., 1983, pp. 86-95.
- Messmer, T. A., and H. Goetz. "Specialized Grazing Systems and Upland Nesting Birds." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 335, February 9-14, 1986.
- Miller, H. A. "Why Wildlife Openings in Forest Habitat?." Proc. 19th Annual Conference of Southeastern Association of Game and Fish Commissioners, October 1965, pp. 171-173.
- Millsap, Brian A., Jerry A. Gore, Douglas E. Runde, and Susan I. Cerulean. "Setting Priorities for the Conservation of Fish and Wildlife Species in Florida." Wildlife Monographs, Supplement to the Journal of Wildlife Management, No. 111, July 1990.
- Mozley, S. N. "Florida's Grazable Resource." Rangelands, Vol. 7, No. 5, 1985, pp. 196-197.
- Muir, James P., and W. D. Pitman. "Germination of the Native Florida Legume *Galactia Elliottii* Nuttall: Effects of Scarification and Ambient Temperature." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 038, February 9-14, 1986.
- Mulkey, David, and Rodney L. Clouser. "Maintaining Land for Agriculture: A Policy Overview." Food and Resource Economics, FRE 27.
- , "Maintaining Land for Agriculture: Use-value Assessment." Food and Resource Economics, FRE 28.
- , "Maintaining Land for Agriculture: Agricultural Zoning." Food and Resource Economics, FRE 29.
- , "Maintaining Land for Agriculture: Fee Simple Purchase and Purchase of Development Rights." Food and Resource Economics, FRE 31.
- , "Maintaining Land for Agriculture: Transfer of Development Rights." Food and Resource Economics, FRE 32.
- Mullahey, J. Jeffrey. "Range Reseeding and Mycorrhizae Experiment." IFAS, SWFREC in Immokalee, FL, May 1990.
- Mullins, G. L., and C. C. Mitchell, Jr. Use of Phosphogypsum to Increase Yield and Quality of Annual Forages. Final Report, Publication No. 01-048-084. Auburn University, Department of Agronomy and Soils, Alabama, May 1990.
- Myers, R. and Ewel, J. (eds.). Ecosystems of Florida, University of Central Florida Press, Orlando, FL, 1990.

Nawrot, Jack R. "Stabilization of Slurry Impoundments Without Soil Cover: Factors Affecting Vegetation Establishment." Symposium on Surface Mining Hydrology, Sedimentology and Reclamation. University of Kentucky, Lexington, KY, December 7-11, 1981.

Nichols, James D., and Fred A. Johnson. "Evaluation and Experimentation with Duck Management Strategies." Trans. 54th N.A. Wildlife and Natural Resources Conference, 1989.

"North American Waterfowl Management Plan: A Strategy for Cooperation." U.S. Department of the Interior, Fish and Wildlife Service, May 1986.

Noss, Reed F. "Ecosystem Restoration" Wild Earth. Spring 1991, pp. 18-23.

Nuzzo, Victoria A., and Evelyn A. Howell. "Natural Area Restoration Planning." Natural Areas Journal, Vol. 10 (4), 1990, pp. 201-208.

Odum, Howard T., G. R. Best, M. A. Miller, B. T. Rushton, R. Wolfe, C. Bersok, and J. Feiertag. Accelerating Natural Processes for Wetland Restoration After Phosphate Mining. Final Report. Center for Wetlands, University of Florida, Gainesville, FL, August 1990.

-----, Mark Brown, and Robert Costanza. "Developing a Steady State for Man and Land: Energy Procedures for Regional Planning." Science for Better Environment, Proceedings of the International Congress on the Human Environment (HESC), Kyoto, Japan, 1976, pp. 343-361.

-----, "Energy, Ecology, and Economics." Ambio, Vol. 2, No. 6, 1973, pp. 220-227.

-----, E. C. Odum, M. T. Brown, G. B. Scott, D. LaHart, C. Bersok, and J. Sendzimir. "Florida Systems and Environment." January 1986.

-----, "Role of Wetland Ecosystems in the Landscape of Florida." Proc. of the International Scientific Workshop on Ecosystem Dynamics in Freshwater Wetlands and Shallow Water Bodies. Vol. 2, Moscow, 1982, pp. 31-72.

-----, Patrick Kangas, G. Ronnie Best, Betty T. Rushton, Scott Leibowitz, and James R. Butner. Studies on Phosphate Mining, Reclamation, and Energy: Preliminary Studies on Succession on Mines Lands, Models, Energy Analysis of Mining, and Values of Phosphate. Center for Wetlands, University of Florida, Gainesville, FL, September 1981.

-----, "Wetlands, Water, and Growth." Florida Environments. May 1987, pp. 5-25.

Oefinger Jr., Simeon W., and Lowell K. Halls. "Identifying Woody Plants Valuable to Wildlife in Southern Forests." Forest Service Research Paper SO-92. U.S. Department of Agriculture, 1974.

Ogden, John C. "Habitat Management Guidelines for the Wood Stork in the Southeast Region." for the Southeast Region U.S. Fish and Wildlife Service.

Olson, T. A. "The History and Current Status of Florida Native (Florida Scrub) Cattle." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 223, February 9-14, 1986.

"One Fine Catch." Tallahassee Democrat. August 16, 1991, p. 1B., article on inexpensive fish attracters in Lake Jackson, Leon Co., Florida.

Otte, J. A., P. Mislevy and B. Abbitt. "Estimated Costs to Establish and Maintain Grasses and Legumes in South Florida." Circular 466, Florida Cooperative Extension Service, 1979.

Overman, Allen R., William G. Blue, and Carrol G. Chambilss. "Estimation of Bahiagrass Production in Florida." Circular 936, Institute of Food and Agricultural Sciences, University of Florida.

- Palmer, Tom. "Disney Proposes Large Polk Land Swap." The Ledger, Lakeland, FL, September 7, 1991, p. 1.
- Pearson, H. A., and J. P. Barnett. "Agroforestry--Cattle Grazing and Pine Survival." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 222, February 9-14, 1986.
- , and Douglas A. Rollins. "Supplemental Winter Pasture for Southern Pine Native Range." Forage and Grassland Conference, 1986, pp. 258-263.
- "Perennial Peanut: An Alternative Forage of Growing Importance." Agronomy Facts. SS-AGR-39. Florida Cooperative Extension Service, University of Florida Institute of Food and Agricultural Sciences, October 1991.
- "Perennial Peanut Establishment Guide." Agronomy Facts. SS-AGR-35. Florida Cooperative Extension Service, University of Florida Institute of Food and Agricultural Sciences, August 1991.
- Pfeil, P. "Economic Benefits of Utilizing Native Range." The Florida Cattleman. September 1986, pp. 96-97.
- Phosphate Mining in Florida: A Source Book. Published with a grant from Seaboard System Railroad. Florida Defenders of the Environment.
- Phosphate Clay Disposal and Water Recirculation. Florida Dept. of Natural Resources, Bur. of Mine Reclamation, Tallahassee, Fl., 1985.
- Pitman, W. D., A. E. Kretschmer, Jr., and C. G. Chambliss. "Phasey Bean, a Summer Legume with Forage Potential for Florida Flatwoods." Circular S-330, Agricultural Experiment Stations, Institute of Food and Agricultural Sciences, University of Florida, December 1986.
- "Planting Guide for Aeschynomene Americana (Jointvetch)." Haile-Dean Seed Co. "Planting Guide for Panicum Virgatum ('Alamo' Switchgrass)." USDA-SCS Plant Materials Center, Brooksville, FL.
- "Planting Guide for Sorghastrum Nutans (Yellow Indiangrass)." USDA-SCS Plant Materials Center, Brooksville, FL, September 1983.
- Platt, Rutherford H. "Multi-Governmental Approaches to Wetland and River Management." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 320-323.
- "The Politics of Preserving Biodiversity." BioScience, Vol. 40, No. 10, November 1990, p. 769.
- "Proposed Development and Approval Guidance, State Coastal Nonpoint Pollution Control Programs." Fact Sheet. U.S. Department of Commerce, N.O.A.A. and U.S. Environmental Protection Agency, Office of Water, Washington, D.C., October 1991.
- Preservation 2000 Bonding Committee. "ADDENDUM 4: Florida Preservation 2000 Needs Assessment." Final Report, Prepared for the Land Acquisition Advisory Council, June 14, 1991.
- Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. May, 1991. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
- "Proposed revisions to the Tampa Bay Regional Policy Plan." Tampa Bay Regional Planning Council. May, 1991.

- Prokop, Robert J. "Factors Affecting Wood Duck Populations and Productivity on Oklahoma Streams." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 146-154.
- "Range Management: Wildlife on Rangeland." Fact Sheet. U.S. Department of Agriculture, Soil Conservation Service, Des Moines, IA, January 1985.
- Rechcigl, J. et al 1988. "Development of Fertilization Practices for Beef Cattle Pastures to Minimize Nutrient Loss in Runoff." Ona Agricultural Research and Education Center, IFAS, Ona, FL.
- "Recreation on Private Lands: Issues and Opportunities." A Workshop Convened by the Task Force on Recreation on Private Lands. Dirksen Senate Office Building, Washington, D.C., March 1986.
- "Regional Study of Land Use Planning and Reclamation." Publication No. 04 041-085, Florida Institute of Phosphate Research, Bartow, FL, August 1990.
- "Research Update; From the 1990 Meeting in Richmond, Virginia, of the American Institute of Biological Sciences; Interactions Drive Species Diversity." BioScience, Vol. 40, No. 10, November 1990, p. 715.
- Richardson, John R. Spatial Patterns and Maximum Power in Ecosystems. Doctoral Dissertation, University of Florida, Gainesville, FL, 1988.
- Robertson, Pat. "DU Blocks ACE Basin Development." Outdoor Life. September 1991, p. 97.
- Rodiek, Jon E., and Eric G. Bolen. Wildlife and Habitats in Managed Landscapes. Island Press, Washington, D.C., 1991.
- Rushton, B. 1989. "Cypress Swamp Regeneration: A Reclamation Alternative for Wet Depressions in Clay Settling Ponds." Center for Wetlands, University of Florida, Gainesville, FL.
- "Matching Tree Species to Site Conditions in Reclamation." Center for Wetlands, University of Florida, Gainesville, FL.
- Wetland Reclamation by Accelerating Succession. Doctoral Dissertation, University of Florida, Gainesville, FL, 1988.
- "Wetland Restoration Alternatives for Phosphatic Clay Settling Ponds." Center for Wetlands, University of Florida, Gainesville, FL.
- St. Johns River Water Management District, Department of Planning and Acquisition, Division of Land Acquisition. "Water Management Lands Trust Fund, Save Our Rivers Five-Year Plan." January 15, 1991.
- Saunders, Denis A., Richard J. Hobbs, and Chris R. Margules. "Biological Consequences of Ecosystem Fragmentation: A Review." Conservation Biology, Vol. 5, No. 1, March 1991, p. 18-32.
- Schuman, G. E., D. T. Booth, and J. W. Waggoner. "Livestock Gains and Forage Production on Reclaimed Mined Land." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 286, February 9-14, 1986.
- Scienceman, David M. "The Emergence of Economics." Proceeds of the International Soc. Systems Science 33rd Meeting, Vol. III, Edinburgh, Scotland, 1989, pp. 62-68.
- Shelton, Ross. "Fee Hunting Systems and Important Considerations." Fee Hunting Proceedings. Clemson University. Clemson, SC, July 23-24, 1989, pp. 24-32.

- Sievers, Ed. "Burning and Grazing Florida Flatwoods." Rangelands, Vol. 7, No. 5, October 1985, p. 208-209.
- "Florida's Range Sites." Rangelands, Vol. 7, No. 5, October 1985, pp. 198-200.
- Simberloff, Daniel, and David W. Mehlman. "Review of Theory Relevant to Acquiring Land; Species-Specific Strategies for Refuge Design; Examples of Applying Theoretical Principles to Land Acquisition and Management." Technical Report No. 2. Florida Department of Natural Resources, Office of Land Use Planning and Biological Services, May 1991.
- Skaggs, R. Wayne, and R. O. Evans. "Methods to Evaluate Effects of Drainage on Wetland Hydrology." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 291-299.
- Smajstria, A. G., G. A. Clark, S. F. Shih, F. Z. Zazueta, and D. S. Harrison. "Potential Evapotranspiration Probabilities and Distributions in Florida." Bulletin 205, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL.
- Small, Stephen J. "Preserving Family Lands; A Landowner's Introduction to Tax Issues and Other Considerations." Powers & Hall Professional Corporation, Boston, MA, 1990.
- Sotir, Robbin. "Soil Bioengineering and Stabilization of River Banks." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 415-423.
- "Soil Bioengineering for Highway Embankment Stabilization Cut and Fill Slopes." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 415-423.
- Soule, Michael E. "Land Use Planning and Wildlife Maintenance." Journal of the American Planning Association, Vol. 57, No. 3, Summer 1991, pp. 313-323.
- Southwest Florida Water Management District. "Save Our Rivers Preservation 2000." Water Management Lands Trust Fund Five Year Plan, 1991.
- Stiteler, W. M. "Prod. and Deer Utilization of Woody Browse Shrauder, P.A. on the Jefferson National Forest, Virginia." Proc. 18th Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1964, pp. 21-30.
- Stockdale, Erik C., and Richard R. Horner. "Using Freshwater Wetlands for Stormwater Management: A Progress Report." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 226-229.
- Sullivan, Mona F. Organization of Low-Relief Landscapes in North and Central Florida. Masters Thesis, University of Florida, Gainesville, FL, 1986.
- "Summary of Hydrologic Conditions in the Southwest Florida Water Management District." Resource Management Department, November 1988.
- Sumner, Malcolm E. Gypsum as an Ameliorant for the Subsoil Acidity Syndrome. Final Report, Publication No. 01-024-090. Department of Agronomy, University of Georgia, Athens, Georgia, December, 1990.
- "Surface Water Improvement and Management Plan for Banana Lake." Southwest Florida Water Management District, June 29, 1989.

"Surface Water Improvement and Management Plan for Lake Panasoffkee." Southwest Florida Water Management District.

"Surface Water Improvement and Management Program for Tampa Bay." Southwest Florida Water Management District, August 30, 1988.

"Surface Water Improvement and Management Plan for Winter Haven Chain of Lakes." Southwest Florida Water Management District, December 15, 1990.

Svejcar, Tony, and Martin Vavra. "The Influence of Several Range Improvements on Estimated Carrying Capacity and Potential Beef Production." Journal of Range Management, Vol. 38, No. 5, September 1985, pp. 395-399.

Swanson, F. J., T. K. Kratz, N. Caine, and R. G. Woodmansee. "Landform Effects on Ecosystem Patterns and Processes; Geomorphic Features of the Earth's Surface Regulate the Distribution of Organisms and Processes." BioScience, Vol. 38, No. 2, February 1988, pp. 92-98.

"Switchgrass." Fact Sheet. U.S. Department of Agriculture, Soil Conservation Service, Des Moines, IA, October 1984.

Tanner, G. W., and C. E. Lewis. "Alternative Tree Spacings for Wood and Forage Production in Florida." Forest Resources and Conservation Fact Sheet, FRC-36. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

----- and M. R. Werner. "Developing a Grazing Lease in Florida." Wildlife and Range Sciences, WRS-2. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, 1985.

----- and Michael E. Drummond. "Important Range Grasses for Evaluating Grazing Management." Circular 665, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, October 1985.

----- "Range Condition - A Guide to Grazing Management." Forest Resources and Conservation Fact Sheet, WRS4. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

----- and Stephen W. Terry. "Nitrogen and Phosphorus Concentrations within Freshwater Marsh Plant Species." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 061, February 9-14, 1986.

Tansey, John B., and Nel D. Cost. "Estimating the Forested-wetland Resource in the Southeastern United States with Forest Survey Data." Forest Ecology and Management, Vol. 33/34, 1990, pp. 193-213.

Techniques and Guidelines for Reclamation of Phosphate Mined Lands. Edited by Brown, M. and Tighe, R. Florida Institute of Phosphate Research Publication # 03-044-095, Bartow, Florida, 1991.

Thayer, Gordon W., David W. Engel, Donald E. Hoss, and Ford A. Cross. "National Marine Fisheries Service Habitat Research in the Southeastern United States." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 138-140.

The Managed Slash Pine Ecosystem. 1983, Proc. of a University of Florida Symposium June 1981, University of Florida, School of Forest Resources and Conservation, Gainesville, Fl. Edited by Stone, E.

- Thill, Ronald E. "Deer and Cattle Diet Overlap Under Seasonal and Yearlong Grazing of Southern Range." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 336, February 9-14, 1986.
- , Alton Martin, Jr., Hershel F. Morris, Jr., and E. Donice McCune. "Grazing and Burning Impacts on Deer Diets on Louisiana Pine-bluestem Range." Journal of Wildlife Management, Vol. 51, No. 4, 1987, pp. 873-880.
- , "Grazing Effects on Deer Diets and Nutrition on Southern Forest Range." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 337, February 9-14, 1986.
- Thomas, Frank H. "Innovative Nonstructural Flood Loss Reduction." Wetlands and River Corridor Management. Proceedings of the International Wetland Symposium. The Association of Wetland Managers, Inc., Charleston, SC, July 5-9, 1989, pp. 274-277.
- Tighe, Robert E. Florida Stream Networks and Drainage Basin Morphology. Masters Thesis, University of Florida, Gainesville, FL, 1988.
- Tiner, Ralph W. Jr. "Use of High-altitude Aerial Photography for Inventorying Forested Wetlands in the United States." Forest Ecology and Management, Vol. 33/34, 1990, pp. 593-604.
- , Wetlands of the United States: Current Status and Recent Trends. National Wetlands Inventory, U.S. Dept. of Interior, Fish and Wildlife Service, Washington D.C., 1984.
- Titus, Jonathan Harold. The Effect of Microtopography on Seedling Regeneration in a Florida Hardwood Floodplain Swamp. Masters Thesis, University of Florida, Gainesville, FL, 1987.
- Toussaint, Bayard. "Integrated Management of Range, Forest, and Wildlife on a Florida Ranch." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 378, February 9-14, 1986.
- Turner, Monica Goigel. "Landscape Ecology: The Effect of Pattern on Process." Annual Review of Ecological Systems, Vol. 20, 1989, pp. 171-197.
- Twenty Six Ecological Communities of Florida. U.S. Dept. of Agriculture, Soil Conservation Service, Gainesville, Florida, 1981.
- Upland Detention/Retention Demonstration Project Final Report: Impacts of agricultural land use on water quality and utilization of wetlands for detention/retention in the Kissimmee River basin. Tech. Publ. 86-2. South Florida Water Management District, W. Palm Beach, FL, 1986.
- Urban, Dean L., Robert O'Neill, and Herman H. Shugart, Jr. "Landscape Ecology: A Hierarchical Perspective Can Help Scientists Understand Spatial Patterns." BioScience, Vol. 37, No. 2, February 1987, pp. 119-127.
- Urbston, D. F. "Dynamics of a Pioneer-Like Deer Population." Proc. 21st Annual Conference of Southeastern Association of Game and Fish Commissioners. September 1967, pp. 42-50.
- U.S. Department of the Interior, National Park Service. General Management Plan and Final Environmental Impact Statement. Prepared for the Big Cypress National Preserve, Florida. Volume 1 of 2. October 1991.
- , General Management Plan and Final Environmental Impact Statement. Prepared for the Big Cypress National Preserve, Florida. Volume 2 of 2. October 1991.
- , Summary of the General Management Plan and Final Environmental Impact Statement. Prepared for the Big Cypress National Preserve, Florida. October 1991.

- U.S. Department of the Interior, Fish and Wildlife Service. "Habitat Management Guidelines for the Bald Eagle in the Southeast Region." January 1987.
- Vallentine, John F. "Grazing Lands: An Integrative Common Denominator." Rangelands, Vol. 10, No. 5. October 1988, pp. 218-220.
- Walker, Robert, and Suzanne Bayley. "Quantitative Assessment of Natural Values in Benefit-cost Analysis." Environmental Engineering Sciences, University of Florida, Gainesville, FL.
- Wallace, L. Tim. "The Economics of Range Management." National Range Conference Proceedings. U.S. Department of Agriculture, November 6-8, 1985, pp. 15-18.
- Wang, Flora C., M. ASCE, and Howard T. Odum. "The Evaluation of Environmental Services as an Objective in Planning." 1979.
- : "An Application of Energy Flow Technique to Watershed Model." Center for Wetlands, University of Florida, Gainesville, FL, January 1975.
- Ward, Albert. "An Estimate of the Contribution Made by Hunting to the Economy of Sutton County, Texas." Abstracts 39th Annual Meeting Society for Range Management. Kissimmee, FL, Abstract No. 162, February 9-14, 1986.
- : "Hunting Lease Impacts on Rural Communities' Economics." Proceedings of the 1985 International Ranchers Roundup. Laredo, TX, July 29 - August 2, 1985.
- Ward, Daniel B. "Checklist of the Trees Native to Florida." The Palmetto. Florida Native Plant Society, Vol. 10, No. 4. Winter 1990.
- Warren, D. "One Successful Approach to Improving and Maintaining Public Hunting on Industrial Lands." Proc. 21st Annual Conference of Southeastern Association of Game and Fish Commissioners. September 1967, pp. 73-78.
- "Waterfowl of the Future." The North American Waterfowl Management Plan. U.S. Department of the Interior, Fish and Wildlife Service.
- White, Larry, D., Tom R. Troxel, Jose G. Pena, and Dwight E. Guynn. "Total Ranch Management: Meeting Ranch Goals." Rangelands, Vol. 10, No. 1. February 1988, pp. 3-6.
- "Wildlife Corridor Special District." June 13, 1991.
- Williams, James D., and C. Kenneth Dodd, Jr. "Importance of Wetlands to Endangered and Threatened Species." Wetland Functions and Values: The State of Our Understanding. American Water Resources Association, November 1978.
- Williams, Lovett. "Habitat Requirements of the Wild Turkey." Abstracts for SAF-SFRC Spring Symposium, Wildlife Considerations in Forest Management. April 12 - 13, 1989.
- : "A Study of Nesting Turkeys in Southern Florida." Proc. 22nd Annual Conference of Southeastern Association of Game and Fish Commissioners. October 1968, pp. 16-29.
- Williston, H. L., F. W. Shropshire, and W. E. Balmer. "Cypress Management: A Forgotten Opportunity." Forestry Report SA-ER-8. U.S. Department of Agriculture Forest Service Southeastern Area, State and Private Forestry, September 1980.
- Wilson, Dawn S. "Estimates of Survival for Juvenile Gopher Tortoises, *Gopherus polyphemus*." Journal of Herpetology, Vol. 25, No. 3, 1991, pp. 329-382.

Witz, Brian W., Dawn S. Wilson, and Michael D. Palmer. "Distribution of *Gopherous polyphemus* and Its Vertebrate Symbionts in Three Burrow Categories." The American Midland Naturalist. Vol. 126, 1991, pp. 152-158.

Wood, Don A. "Habitat Protection Guidelines for the Red-cockaded Woodpecker in Florida." DRAFT, Florida Game and Fresh Water Fish Commission, June 26, 1989.

Wood, John M., and George W. Tanner. "Browse Quality Response to Forest Fertilization and Soils in Florida." Journal of Range Management, Vol. 38, No. 5. September 1985, pp. 432-435.

-----, Wayne Marion, and Dwayne Dippon. "Forestry Information System 7 Wildlife Management." Circular 633. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.

Zellars, Michael E., and J. M. Williams. Evaluation of the Phosphate Deposits of Florida Using the Minerals Availability System. Prepared for United States Department of the Interior, Bureau of Mines, June 1978.

Zomlefer, Wendy B. Flowering Plants of Florida -- A Guide to Common Families, Biological Illustrations, Inc., Gainesville, Fl., 1991.

APPENDIX I

CHAPTER 378

LAND RECLAMATION

[Section 1. ch. 86-294, Laws of Florida, designated ss. 378.011-378.038 as part I, s. 378.101 as part II, and created parts III and IV of this chapter, consisting of ss. 378.201-378.212 and ss. 378.401-378.804, respectively.]

- 378.034 Submission of a reclamation program request; procedures.**
- 378.101 Florida Institute of Phosphate Research.**
- 378.102 Florida Institute of Phosphate Research; procurement of research services**
- 378.201 Short title.**
- 378.202 Legislative intent.**
- 378.203 Definitions.**
- 378.204 Applicability.**
- 378.205 Administration; powers and duties of the department; agency review responsibility.**
- 378.206 Authority to approve reclamation.**
- 378.207 Reclamation criteria and standards.**
- 378.208 Financial responsibility.**
- 378.209 Timing of reclamation.**
- 378.211 Violations; damages; penalties.**
- 378.212 Variances.**
- 378.401 Short title**
- 378.402 Legislative findings and intent.**
- 378.403 Definitions.**
- 378.404 Department of Natural Resources; powers and duties.**
- 378.405 Reclamation review procedure.**
- 378.406 Confidentiality of records; availability of information.**
- 378.407 Inspection.**
- 378.408 Injunctive relief.**
- 378.409 Civil liability.**
- 378.411 Certification to receive notices of intent to mine, to review and to inspect for compliance.**
- 378.412 Relationship with other laws.**
- 378.501 Limestone; notice of intent to mine required.**
- 378.502 Existing mines.**
- 378.503 Limestone reclamation performance standards.**
- 378.601 Heavy minerals.**
- 378.701 Fuller's earth clay; notice of intent to mine required.**
- 378.702 Existing mines.**
- 378.703 Fuller's earth clay reclamation performance standards.**
- 378.801 Other resources; notice of intent to mine required.**
- 378.802 Existing mines.**
- 378.803 Other resources reclamation performance standards.**
- 378.804 Exemption.**

378.034 Submission of a reclamation program request; procedures.--

(1) The department shall establish by rule procedures for a nonbinding preapplication review to assist a landowner in submitting a reclamation program request.

(2) Landowners shall reclaim all nonmandatory lands which were put into use as clay settling areas after July 1, 1975, and on or before July 1, 1984, under the nonmandatory land reclamation program, pursuant to the provisions of this act. A landowner shall submit a reclamation program application within 180 days after the land ceases to be used as a clay settling area. The requirements of this subsection are expressly contingent upon the availability of sufficient funds in the Nonmandatory Land Reclamation Trust Fund established pursuant to s. 211.3103.

(3)(a) Landowners shall submit reclamation program applications to the department by November 1 of each year for funding consideration during the following year.

(b) Each reclamation program application shall include a timetable for completion of the program and a completion date.

(4) The department staff shall review each reclamation program application to determine whether it complies with the standards and criteria for a reclamation program or for land acquisition and to determine its consistency with the master reclamation plan.

(5) For the 1984-1985 year, the department staff shall present to the Governor and Cabinet by July 31, 1984, those reclamation program applications which are deemed complete by the Bureau of Reclamation; which are eligible for Governor and Cabinet approval as of July 1, 1984; and the applicants of which agree to provide reclamation data for a cost model to the Department of Natural Resources, at no cost to the state, with an outside party hired by the applicant with the approval of the department to monitor costs. The department staff shall prioritize the applications in conformity with the criteria in subsection (7). The Governor and Cabinet shall approve the list of reclamation projects, in whole or in part, subject to the requirements of subsections (8), (10), and (11) and ss. 378.035 and 378.037.

(6)(a) Beginning with funding for the 1985-1986 year, the department staff shall, by February 1 of each year, present to the committee for its consideration those reclamation program applications received by the preceding November 1.

(b) The department staff shall recommend an order of priority for the reclamation program applications that is consistent with subsection (7).

(c) The recommendation of the department staff shall include an estimate of the cost of each reclamation program or land acquisition.

(7) The committee shall recommend approval, modification, or denial of the reclamation program applications, associated cost estimates, and the department staff's recommended prioritized list. Recommendations on the order of priority shall be based, among other criteria, on the following criteria; however, the committee may give greater weight to one or more of the criteria depending on the overall needs of the nonmandatory land reclamation program:

(a) Whether health and safety hazards exist; and, if so, such hazards shall be given the greatest weight;

(b) Whether the economic or environmental utility or the aesthetic value of the land will return naturally within a reasonable period of time;

(c) Whether there is a reasonable geographic and applicant diversity in light of previously awarded reclamation contracts, reclamation program applications before the committee, and the remaining eligible lands;

(d) Whether reclamation is in the public interest;

(e) Whether the land has been naturally reclaimed or is eligible for acquisition by the state for hunting, fishing, or other outdoor recreation purposes or for wildlife preservation;

(f) Whether the land is to be reclaimed for agricultural use and the applicant has agreed to maintain the land in agricultural use for at least 5 years after the completion of the reclamation;

(g) Whether the program, alone or in conjunction with other reclamation programs, will provide a substantial regional benefit;

(h) Whether the program, alone or in conjunction with other reclamation programs, will benefit regional drainage patterns;

(i) Whether the land is publicly owned and will be reclaimed for public purposes;

(j) Whether the program includes a donation or agreement to sell a portion of the program application area to the state for outdoor recreational or wildlife habitat protection purposes;

(k) Whether the program is cost-effective in achieving the goals of the nonmandatory land reclamation program; and

(1) Whether the program will reclaim lands described in subsection (2).'

(8) Until 1995, the funds available for approved reclamation contracts and acquisitions of nonmandatory lands shall not exceed 20 percent of the uncommitted fund balance of the trust fund at the beginning of each year. The prioritized list approved by the committee may contain more reclamation program applications than there are funds available during the year.

(9) Each year, 15 percent of the funds available for approved reclamation contracts, as set forth in subsection (8), shall be reserved for reclamation programs which are submitted by applicants other than corporations primarily engaged in the mining or processing of phosphate ores to create lands to be actively used for agricultural activities. In the event that, in any given year, there are insufficient applicants that meet the department criteria for approval to use the funds reserved under this subsection, the remaining moneys may be made available to other applicants.

(10) The committee recommendations shall be submitted to the Governor and Cabinet by April 1 of each year for final agency action by June 1 of that year. The Governor and Cabinet shall approve, in whole or in part, the list of reclamation program applications in the order of priority in which the applications are presented.

(11) Any approved reclamation program application that was not funded shall, at the request of the applicant, be considered by the committee at its next meeting called for that purpose, together with other reclamation program applications received by November 1 of the next year.

(12)(a) After receiving the approval of the Governor and Cabinet, the department shall offer a reclamation contract within 30 days to each applicant whose reclamation program has been approved. The contracts shall be offered to the applicants in their approved order on the priority list to the extent funds are available. Each applicant shall have 30 days in which to execute a reclamation contract. If the contract is not executed within 30 days, the application shall be dropped from the approved list for the current year.

(b) Beginning in 1985, reclamation contracts may not be signed and available funds may not be committed after June 30 of the year in which a reclamation program application is approved by the Governor and Cabinet.

(c) The amount of reimbursement for reclamation activities allowed in the contract shall be a grant of money equal to the estimated cost of the program as approved by the Governor and Cabinet. In no event, however, shall the grant amount exceed the maximum amounts specified in s. 378.037(1)(b).

(d) After receiving the approval of the Governor and Cabinet, each reclamation program application for the acquisition of land shall be transferred to the Division of State Lands, which shall acquire the lands in compliance with the acquisition procedures of s. 253.025.

(13) The department shall require by rule that owners of eligible properties who intend to seek approval of a reclamation program submit, not later than December 31, 1993, a notice of intent to file an application for approval, indicating the date upon which the application will be filed.

378.101 Florida Institute of Phosphate Research.--

(1) There is created a Florida Institute of Phosphate Research, which is empowered:

(a) To conduct or cause to be conducted such environmental studies related to radiation and water consumption, or other environmental effects of phosphate mining and reclamation, as may from time to time be deemed reasonably necessary by the institute for the health, safety, and welfare of the citizens of this state and particularly the citizens of the regions where phosphate mining or processing occurs.

(b) To conduct or cause to be conducted a thorough and comprehensive study of reclamation alternatives and technologies in the phosphate mining or processing industry, including wetlands reclamation.

(c) To conduct or cause to be conducted a thorough and comprehensive study of phosphatic clay disposal and utilization as a part of phosphate mining, together with all environmental or land use related thereto.

(d) To establish methods for better and more efficient phosphate recovery mining and processing in this state as it may determine most beneficial to the economy, environment, and way of life of the citizens of the state.

(e) To enter into any mutually satisfactory contract with any firm, institution, corporation, or federal or state agency, as may be reasonably required or desired in carrying out the research and studies herein authorized.

(f) To make available to the public the results of its research program so that the research efforts will result in the public being better informed as to the effects of phosphate mining in the state.

(g) To hold public hearings and consult with representatives of the phosphate industry and all other interested parties; to assign priorities for its research and studies; to make public from time to time its intentions as to future research and study; and to allocate its resources and personnel for such research and studies as it may determine from time to time to be in the public interest.

(h) To provide suitable and sufficient laboratory facilities and equipment, making use insofar as practical of the existing laboratory facilities and equipment of the State University System and other facilities as may be available, for carrying out the research and studies herein authorized.

(i) To administer the Phosphate Research Trust Fund and to expend funds therefrom for its administration and for carrying out the purposes set forth in this section. The Phosphate Research Trust Fund shall be subject to the service charge imposed pursuant to chapter 215.

(2) The institute may develop work products relating to research which is subject to trademark, copyright, or patent protection. Notwithstanding any law to the contrary, the institute may:

(a) Secure patents, copyrights, or trademarks on any of its work products and enforce its rights in such products. It shall consider contributions by institute personnel, contractors, and grantees in the development of such products and shall enter into written agreements with them establishing the interests of the respective parties in each patent, copyright, or trademark it secures.

(b) License, lease, or assign, or otherwise give consent to other persons for the manufacture or use of, work products it develops and receive royalties or other consideration for such use.

(c) Take any action necessary to protect its work products from improper or unlawful use or infringement.

(d) Collect any sums due it for the manufacture or use by any other person of such work products.

(e) Sell its interest in or rights to any work products it owns.

(f) Do all acts necessary to exercise its powers and perform its duties. Any action taken by the institute in securing or exploiting such patents, copyrights, or trademarks shall, within 30 days, be reported in writing to the Department of State. Any proceeds received by the institute under this subsection shall be deposited in the Phosphate Research Trust Fund for use as provided by law.

(3)(a) The institute may establish policies necessary to administer its research programs to assure their efficiency and effectiveness, producing the maximum benefit to the economy, environment, and residents of this state.

(b) Materials which relate to methods of manufacture or production, actual or potential trade secrets, patentable or Potentially patentable materials, business transactions, or proprietary information pertaining to research conducted by or on behalf of the institute shall be confidential and exempt from the provisions of s. 119.07(1), except that the institute shall disclose, upon request, the title and description of any research project, the researchers' names, and the amount and source of funding provided for such project. This exemption is subject to the Open Government Sunset Review Act in accordance with s. 119.14.

(4)(a) The work of the Florida Institute of Phosphate Research shall be directed by a five-member board of directors appointed by the Governor. The board shall be composed of one member from the faculty of a university within the State University System, one member from a major conservation group in this state, one member from state government, and two members from the phosphate mining or processing industry. The Governor shall make these appointments on the basis of their ability to set priorities for the phosphate research and otherwise give direction to a professional, efficient, and broad phosphate research effort. In setting such priorities, emphasis shall be given to applied research which tends to solve real problems of the industry in which the public has a substantial interest.

(b) Members of the board of directors shall serve 3-year terms, or serve until successors are appointed; except that, of those members first appointed following October 1, 1983, one member shall be appointed for a term of 1 year; two members shall be appointed for terms of 2 years; and two members shall be appointed for terms of 3 years in order to achieve staggering of terms. A member of the board of directors shall be eligible for reappointment.

(c) A vacancy occurring other than by expiration of a term shall be filled by appropriate appointment for the remainder of the unexpired term in the same manner as the original appointment. However, no single vacancy in the board of directors shall impair the right of the remaining members to exercise the powers of the board of directors.

(d) The members of the board of directors shall select a chairman.

(e) The policies and decisions of the board shall be implemented through an executive director chosen by the board on the basis of professional competence, both scientific and administrative.

(f) The board shall adopt rules necessary to carry out the duties and responsibilities of the institute.

History.--s. 6, ch. 78-136; s. 1, ch. 83-41; s. 16, ch. 83-339; s. 1, ch. 85-23; s. 3, ch. 86-294; s. 12, ch. 89-117; s. 114, ch. 90-360.

378.102 Florida Institute of Phosphate Research; procurement of research services.--

(1) **SHORT TITLE.**--This section may be cited as the "Florida Institute of Phosphate Research Competitive Negotiation Act."

(2) **DEFINITIONS.**--As used in this section, the term:

(a) "Research services" means services within the scope of research, as performed by a chemist, biologist, geologist, engineer, university professor, or other researcher in connection with research performed for the institute.

(b) "Institute" means the Florida Institute of Phosphate Research.

(c) "Firm" means any individual, firm, partnership, corporation, association, university, state or federal agency, or other legal entity permitted by law to enter into a contractual agreement for services in this state.

(d) "Compensation" means the total amount paid by the institute for research services.

(e) "Project" means the research study or planning activity described by the institute pursuant to paragraph (3)(a).

(f) "Selection committee" means a group composed of one or more of research directors of the institute and one or more outside experts, knowledgeable in the research subject to be addressed in the project. The committee shall consist of an odd number of at least three members selected by the board of directors of the institute.

(3) **PUBLIC ADVERTISEMENT AND QUALIFICATION PROCEDURE.--**

(a) The institute shall publicly advertise, in a uniform and consistent manner, each occasion when research services are required to be purchased for a research project or for a research-related planning or study activity and the fee for services exceeds \$5,000. The advertisement shall include a general description of the project and shall indicate how interested parties may apply for consideration.

(b) The institute shall adopt administrative procedures for the evaluation of research services, including, but not limited to, qualifications of the firm, capabilities, adequacy of personnel, plan of study, past record and experience, and any other factors applicable to the institute's requirements for a project.

(c) The proceedings under this section shall be open to the public.

(4) **COMPETITIVE SELECTION.--**

(a) A selection committee shall be chosen to evaluate current statements of qualifications and performance data on file with the institute, for each proposed project, with statements submitted by other firms regarding the proposed project, and shall conduct discussions with, and may require public presentations by, no fewer than three firms regarding their qualifications, approach to the project, and ability to furnish the required service. If three firms are not available, the board of directors may authorize consideration of fewer than three firms.

(b) The selection committee, considering the ability of research personnel; Past Performance; Proposed Plan of study; willingness to meet time and budget requirements; location; recent, current, and projected workloads; and the volume of work previously awarded to the firm by the institute, shall select in order of preference no fewer than three firms deemed to be most highly qualified to equitably distribute contracts among qualified firms, provided the most highly qualified firm with the most appropriate plan of study is selected. If fewer than three firms apply, the board of directors may consider the ones that apply.

(c) This subsection does not apply when the fee for professional services is \$5,000 or less.

(5) **COMPETITIVE NEGOTIATION.--**

(a) The institute shall negotiate a contract with the selected firm at compensation which is fair, competitive, and reasonable. In making such determination, the institute shall analyze the cost, scope, and complexity of the research services required. Fixed-fee contracts must contain a provision stating that wage rates and other factual unit costs supporting the compensation are accurate, complete, and current at the time of contracting and must contain a provision that the original contract price and any additions will be adjusted to exclude any significant sums by which the institute determines the contract price was increased due to inaccurate, incomplete, or noncurrent wage rates and other factual unit costs. Contract adjustments must be made within 1 year following completion of a contract.

(b) If the institute is unable to negotiate a fair, competitive, and reasonable contract with the most qualified firm, negotiations with that firm shall be terminated and the institute shall negotiate with the second most

qualified firm. If no agreement can be reached with the second most qualified firm, the institute shall terminate negotiations and shall negotiate with the third most qualified firm.

(c) If the institute is unable to negotiate a satisfactory contract with any of the selected firms, the institute shall select additional firms in order of competence and qualifications and shall continue negotiations until an agreement is reached, or the institute may readvertise or terminate the project.

(6) PROHIBITION AGAINST CONTINGENT FEES.--

(a) Each contract entered into by the institute for research services must contain the following provision: The researcher warrants that he has not employed or retained any person, other than an employee working only for him to secure this agreement and that he has not paid or agreed to pay any other person any consideration contingent upon the making of this agreement. If this provision is violated, the institute may terminate the agreement without liability and may deduct from the contract price, or otherwise recover, the full amount of such consideration from the researcher.

(b) Any person, other than an employee working only for a researcher, who offers, agrees, or contracts to solicit or secure institute contracts for any person other than the researcher and is to be paid, or is paid, any consideration contingent upon the award of a contract, is guilty of a misdemeanor of the first degree, punishable as provided in s. 775.082 or s. 775.083.

(c) Any person who offers to pay or pays any consideration contingent upon the award of any contract is guilty of a misdemeanor of the first degree, punishable as provided in s. 775.082 or s. 775.083.

(d) Any person employed by the institute who offers to solicit or solicits a contract for consideration contingent upon the award of such contract is guilty of a misdemeanor of the first degree, punishable as provided in s. 775.082 or s. 775.083.

(7) APPLICABILITY TO EXISTING CONTRACTS.--This section does not affect the validity or effect of any contracts in existence on October 1, 1986.

History.--s. 4, ch. 86-294.

PART III

PHOSPHATE LAND RECLAMATION

378.201 Short title.--This part may be cited as the "Phosphate Land Reclamation Act."

History.--s. 1, ch. 86-294.

378.202 Legislative intent.--The Legislature finds that:

(1) Florida is endowed with varied natural resources that provide recreational, environmental, and economic benefit to the people of this state. The extraction of phosphate is important to the continued economic well-being of the state and to the needs of society. While it is not possible to extract minerals without disturbing the surface areas and producing waste materials, mining is a temporary land use. Therefore, it is the intent of the Legislature that mined lands be reclaimed to a beneficial use in a timely manner and in a manner which recognizes the diversity among mines, mining operations, and types of lands which are mined.

(2) The rules developed by the department for the regulation of mandatory land reclamation should be consistent with the goals of the state to simplify and coordinate regulation. The department shall enter into memoranda of understanding to eliminate duplication, to simplify the processing of reclamation applications, and to maximize the effectiveness of the regulatory process.

History.--s. 1, ch. 86-294

378.203 Definitions.--As used in this part:

(1) "Acres mined" means all acres on which mining operations have resulted in extraction of phosphate rock.

(2) "Board" means the Governor and Cabinet sitting as the head of the Department of Natural Resources.

(3) "Conceptual reclamation plan" means a graphic and written description of general activities to be undertaken across the whole mine to comply with the reclamation standards and criteria contained in this part.

(4) "Department" means the Department of Natural Resources.

(5) "Executive director" means the chief administrative officer of the department.

(6) "Mine" means an area of land upon which mining operations have been conducted, are being conducted, or are planned to be conducted, as the term is commonly used in the trade.

(7) "Mining operations" means those physical activities, other than prospecting and site preparation, which are necessary for extraction, waste disposal, storage, or dam maintenance prior to abandonment.

(8) "New mine," as used in s. 378.209, means a mine for which the operator first became obligated to pay a severance tax for the extraction of minerals there from after July 1, 1975.

(9) "Operator" means the person engaged, or seeking to be engaged, in the severance of solid minerals, or any other person who is obligated to reclaim mined lands pursuant to s. 211.32(1). For purposes of s. 378.208 relating to financial responsibility, "operator" includes a parent, its subsidiary, or division.

(10) "Reclamation" means the reshaping of lands in a manner which meets the reclamation criteria and standards contained in this part.

(11) "Reclamation program" means a detailed graphic and written description of a reclamation plan for a segment of a mine that is consistent with the applicable approved conceptual reclamation plan and that shows with specificity how that segment will be reclaimed to comply with the reclamation criteria and standards contained in this part.

(12) "Restoration" means the recontouring and revegetation of lands in a manner, consistent with the criteria and standards established pursuant to this part, which will return the type, nature, and function of the ecosystem to the condition in existence prior to mining. In requiring restoration of an area, the department shall recognize technological limitations and economic considerations. For example, restoration shall be considered accomplished when immature trees are used; mature trees are not required to be replanted in areas where mature trees were removed to allow mining.

(13) "Revegetation" means, in reclaimed areas, a cover of vegetation consistent with the criteria and standards established pursuant to this part and consistent with the landform created and the future land uses. In restored areas, it means a cover of vegetation that is designed to return the restored area to the condition in existence prior to mining.

History.--s. 1, ch. 86-294.

378.204 Applicability.--The provisions of this part apply to land subject to the mandatory reclamation obligation for the severance of solid mineral phosphate rock set forth in s. 211.32(1) and to those lands which are initially used after July 1, 1984, as a clay settling area or a dam for use with a clay settling area. Such provisions do not apply to acres disturbed by the severance of phosphate rock prior to July 1, 1975, and, therefore, do not affect the determination of whether lands disturbed by the severance of phosphate rock are subject to the mandatory reclamation obligation. This part shall not be construed as giving the department permitting authority over mining operations.

History.--s. 1, ch. 86-294.

378.205 Administration; powers and duties of the department; agency review responsibility.--

(1) The department shall administer the provisions of this part and shall have the following powers and duties:

(a) To issue conceptual reclamation plan and reclamation program approvals requiring an operator to take such actions as are necessary to comply with the provisions of this part.

(b) After proper notice, and upon the presentation of appropriate credentials and other documents as may be required by law, to enter on and inspect at reasonable times and intervals for the purpose of assuring compliance with ¹ss. 378.202-378.213, any lands that are subject to the provisions of ¹ss. 378.202-378.213.

(c) To prescribe the forms for conceptual reclamation plan and reclamation program applications.

(d) To adopt those rules necessary to implement the provisions of this part.

(2)(a) The department shall be the lead agency responsible for phosphate mine reclamation in accordance with the provisions of this part and with the rules adopted by the department. The department may seek comments from appropriate federal, state, regional, or local governmental agencies to assist it in establishing rules, reviewing reclamation applications, or otherwise implementing the provisions of this part. The department's consideration of comments on proposed conceptual reclamation plans and reclamation programs shall be limited to matters within the jurisdiction of the commenting agency.

(b) If, after July 1, 1980, the Department of Environmental Regulation or the appropriate water management district has issued a permit for work to be conducted on land which is or will be the subject of a reclamation program, and that permit contains conditions that require reclamation or restoration to be

conducted according to certain specifications that are consistent with the standards and criteria adopted pursuant to this part, the department shall accept those requirements as part of its reclamation approval process.

(c) By January 1, 1987, the department, the Department of Environmental Regulation, and appropriate water management districts shall enter into memoranda of agreement for the purposes of carrying out the requirements of this subsection.

History.--s. 1, ch. 86-294.

¹**Note.--**There is no s. 378.213. As created by s. 1, ch. 86-294, the Phosphate Land Reclamation Act consists of ss. 378.201 through 378.212.

378.206 Authority to approve reclamation.--

(1) The board shall take final agency action on applications for the following:

(a) Conceptual reclamation plans.

(b) Modifications to conceptual reclamation plans that result in significant changes to an approved conceptual reclamation plan.

(c) Any variance requested pursuant to s. 378.212.

(d) Reclamation programs excepted from subsection (2).

(2) The executive director shall take final agency action on applications for reclamation programs, except:

(a) Those requiring a modification to an approved conceptual reclamation plan that must be approved by the board.

(b) If approval of a reclamation program would result in the approval of variance pursuant to s. 378.212.

(3) By January 1, 1987, the board shall adopt rules establishing the types of modifications that do not result in significant changes to an approved conceptual reclamation plan on which the executive director shall take final agency action. Consistent with the requirements of subsection (1), the board may by rule delegate to the executive director the authority to take final agency action on other approvals necessary for routine reclamation operations.

History.--s. 1, ch. 86-294.

378.207 Reclamation criteria and standards.--

(1) The department, by rule, shall adopt statewide criteria and standards for reclamation. Such rules shall recognize that surface mining takes place in diverse areas where the geologic, topographic, and edaphic conditions are different, and that reclamation operations and the specifications therefor may vary accordingly. The rules, recognizing technological limitations and economic considerations, shall require the return of the natural function of wetlands or a particular habitat or condition to that in existence prior to mining.

(2) The criteria and standards shall govern performance of reclamation and not the methodology to be used to achieve compliance with the reclamation obligation or the manner in which mining and associated activities are conducted.

History.--s. 1, ch. 86-294.

378.208 Financial responsibility.--

(1) An operator of a mine shall provide appropriate financial assurance to the state that the reclamation of lands subject to the mandatory reclamation obligation will be completed in a timely manner. Compliance with the rate of reclamation established in s. 378.209 is deemed to be appropriate financial assurance.

(2) Operators who are not in compliance with the rate of reclamation established in s. 378.209 must post one or more of the following forms of security:

(a) A lien in favor of the state on unmined lands or on reclaimed and released real property owned in fee simple absolute by the operator. No formal appraisal of the property shall be required; however, the unencumbered value of the property shall be comparable to the cost of reclamation established pursuant to subsection (4).

(b) A surety bond in either a fixed amount, adjusted annually for inflation, or in an amount to be determined based upon projected reclamation costs at the time the security is purchased.

(c) A letter of credit in either a fixed amount, adjusted annually for inflation, or in an amount to be determined based upon projected reclamation costs at the time the security is purchased.

(d) A donation of land acceptable to the state whereby every acre donated would relieve the company of the obligation to bond or otherwise provide security for the reclamation of acres mined, based on a ratio of 1 acre donated to cover the financial responsibility for 10 or more acres of mined lands. This donation would not relieve the operator of the obligation to reclaim.

(e) A cash deposit or trust fund payable to the state in a fixed amount, adjusted annually for inflation, or in an amount to be determined based upon projected reclamation costs at the time the cash deposit or trust fund is established.

(f) Any combination of the financial assurance methods allowed in paragraphs (a) through (e). The form of security posted shall be at the option of the operator and shall cover the number of acres for which the operator is delinquent in reclaiming in the required time period as well as the number of acres that the operator must reclaim in the current 5-year period. The security, other than the donation of land, shall be released upon completion of reclamation of delinquent acres.

(3) Operators of mines in existence on July 1, 1978, shall have until July 1, 1988, to meet the rate of reclamation established in s. 378.209(1)(b) without incurring the obligation to post any form of security.

(4) The amount of financial responsibility shall be established by the executive director and shall not exceed \$4,000 per acre for each reclamation program, adjusted annually by the appropriate inflationary index for construction. The Department of Insurance shall be available to assist the executive director in making this determination. In establishing the amount of financial responsibility, the executive director shall consider:

- (a) The amount and type of reclamation involved.
- (b) The probable cost of proper reclamation.
- (c) Inflation rates.
- (d) Changes in mining operations.
- (5) The department shall adopt rules which establish:

(a) Procedures to establish, modify, or release the security posted.

(b) Procedures and criteria for modifications to or exemptions from the financial responsibility requirements when such modifications will not conflict with the purposes of this part, including consideration of such factors as the size or nature of the operation, demonstrated reclamation performance, and compliance with conceptual reclamation plans or reclamation programs approved prior to October 1, 1986.

(6) The department, by rule, may require each operator to submit a copy of its most recent annual financial statements. An operator's submittal of its annual report on Form 10K, as filed with the Securities and Exchange Commission, shall constitute compliance with this requirement. The financial statement submitted pursuant to rules authorized by this subsection, except for a financial statement that is a public record in the custody of another governmental agency, shall be confidential and exempt from the provisions of s. 119.07(1), and the department shall ensure the confidentiality of such statements. This exemption is subject to the Open Government Sunset Review Act in accordance with s. 119.14.

History.--s. 1, ch. 86-294; s. 13, ch. 89-117; s. 115, ch. 90-360.

378.209 Timing of reclamation.--

(1) Reclamation should be completed within 2 years of completion of mining operations, exclusive of a growing season required to ensure establishment of vegetation. For purposes of this section, completion of reclamation shall be determined by that point at which initial revegetation is completed and not at the point of final release of the reclamation program. For the purpose of s. 378.208, the schedule for complete reclamation shall be as prescribed in paragraphs (a) through (e).

(a) For the period July 1, 1975, to December 31, 1980, for existing mines or the first 5-year period of mining for new mines, no reclamation shall be required and any reclamation which is completed shall be credited forward.

(b) For the period January 1, 1981, to December 31, 1985, for existing mines or the second 5-year period of mining for new mines, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 15 percent of the acres mined during the period July 1, 1975, to December 31, 1980, or the immediately preceding 5-year period, as appropriate. Reclamation in excess of the required percentage shall be credited forward.

(c) For the period January 1, 1986, to December 31, 1990, for existing mines or the third 5-year period of mining for new mines, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 60 percent of the acres mined during the period January 1, 1981, to December 31, 1985, or the immediately

preceding 5-year period, as appropriate. Reclamation in excess of the required percentage shall be credited forward.

(d) For the period January 1, 1991, to December 31, 1995, for existing mines or the fourth 5-year period of mining for new mines, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 75 percent of the acres mined during the period January 1, 1986, to December 31, 1990, or the immediately preceding 5-year period, as appropriate. Reclamation in excess of the required percentage shall be credited forward.

(e) For the period January 1, 1996, to December 31, 2000, for existing mines or the fifth 5-year period of mining for new mines, and each 5-year period thereafter, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 100 percent of acres mined during the immediately preceding 5-year period. Reclamation in excess of the required percentage shall be credited forward.

(2) The rate of mining during any 5-year period is to be determined solely by the operator and not the state.

(3) The time periods and reclamation rates specified in this section may be modified or waived for experimental reclamation programs, to take into account the effect of temporary shutdown of mining operations or other physical restraints, for unreasonable delays in the processing of reclamation applications by the department, or to relieve or prevent extreme economic hardship on the operator.

History.--s. 1, ch. 86-294.

378.211 Violations; damages; penalties.--

(1) The department may institute a civil action in a court of competent jurisdiction for injunctive or other appropriate relief to enforce compliance with this part, for the assessment of damages, or for both injunctive relief and damages.

(2) The department may institute a civil action in a court of competent jurisdiction to impose and recover a civil penalty for violation of this part or of any rule adopted or order issued pursuant to this part. The penalty shall not exceed the following amounts, and the court shall consider evidence in mitigation:

(a) For violations of a minor or technical nature, \$100 per violation.

(b) For major violations by an operator on which a penalty has not been imposed under this paragraph during the previous 5 years, \$1,000 per violation.

(c) For major violations not covered by paragraph (b), \$5,000 per violation.

Subject to the provisions of subsection (4), each day or any portion thereof in which the violation continues shall constitute a separate violation.

(3) The remedies provided for in subsections (1) and (2) shall not apply to the failure to comply with the requirements of s. 378.209. However, if an operator has failed to comply with the requirements of s. 378.209 and the department determines that the operator is unable or unlikely to come into compliance with those requirements within a reasonable time, then the department may institute a civil action in a court of competent jurisdiction to recover against the security provided pursuant to s. 378.208.

(4) As a condition precedent to the institution of any action authorized by subsection (1), subsection (2), or subsection (3), the department shall issue a written notice of violation to the operator setting forth in detail the alleged violation and specifying a reasonable time, not to exceed 90 days, in which to initiate corrective action. If the operator disputes the matters contained in the notice of violation, the operator may request a hearing pursuant to s. 120.57. If a hearing is requested, the time for initiating corrective action shall not begin to run until a final order is entered. The civil penalties provided in subsection (2) shall not begin to accrue until the expiration of the time for initiating corrective action provided in the notice of violation issued by the department. Upon the expiration of the period provided in the notice, the department, in its discretion, may institute the action provided for under subsection (1), subsection (2), or subsection (3), if the violation specified in the notice of violation has not been corrected.

(5) Penalties collected pursuant to subsection (2) shall be deposited to the credit of the Phosphate Research Trust Fund.

History.--s. 1, ch. 86-294.

378.212 Variances.--

(1) Upon application, the board may grant a variance from the provisions of this part or the rules adopted pursuant thereto. Variances and renewals thereof may be granted for any one of the following reasons:

(a) There is no practicable means known or available to comply with the provisions of this part or the rules adopted pursuant thereto.

(b) Compliance with a particular requirement or requirements from which a variance is sought will necessitate the taking of measures which must be spread over a considerable period of time. A variance granted for this reason shall prescribe a timetable for the taking of the measures required.

(c) To relieve or prevent hardship, including economic hardship, of a kind other than those provided for in paragraphs (a) and (b).

(d) To accommodate specific phosphate mining, processing or chemical plant uses that otherwise would be inconsistent with the requirements of this part.

(e) To provide for an experimental technique that would advance the knowledge of reclamation and restoration methods.

(2) Consideration of a variance pursuant to this section shall be based on the particular facts and circumstances surrounding each individual request.

(3) The department shall publish a notice of proposed agency action in the Florida Administrative Weekly and in a newspaper of general circulation in the area affected, and the department shall afford an opportunity for a hearing on each application for a variance, pursuant to the provisions of chapter 120. If no request for a hearing is filed with the department within 14 days of publication of the notice, the department may proceed to final agency action without a hearing.

(4) Variances issued pursuant to this section may be for the life of the facility or for such shorter period of time as may be appropriate. Variances issued for a period of 5 years or more shall be reviewed by the board at least every 5 years to ensure that the factors justifying the issuance of the variance have not changed so as to make the variance unnecessary.

(5) The department may prescribe appropriate conditions, including time limits, to the granting of a variance.

History.--s. 1, ch. 86-294.

PART IV

RESOURCE EXTRACTION RECLAMATION

378.401 Short title.--This part may be cited as the "Resource Extraction Reclamation Act."

History.--s. 1, ch. 86-294.

378.402 Legislative findings and intent.--

(1) The Legislature finds that Florida is endowed with varied natural resources that provide great recreational, environmental, and economic benefit to the people of the state. While the extraction of resources is an activity that contributes to the economic well-being of the state, improperly reclaimed or unreclaimed land may adversely affect the environment and may cause the temporary and, in some circumstances, permanent destruction of scenic beauty and wildlife habitats. The Legislature further finds that while it is not practicable to extract resources without disturbing the surface of the earth and producing waste materials, and that the very character of certain surface extraction operations precludes complete restoration of the land to its original contour, it is essential to require reclamation to mitigate the effects of resource extraction on the environment.

(2) The Legislature recognizes that there are wide variations in the circumstances and conditions surrounding and arising out of the extraction process and that the rehabilitation and conservation of resources will be assured only through proper planning and through consideration of the impact of resource extraction upon the environment as well as upon the land use of the surrounding areas. Reclamation actions are an integral part of the extraction process. The Legislature further recognizes that it is in the best interest of the state that the reclamation process be accomplished in a timely manner and that persons engaged in resource extraction shall be responsible for attaining required reclamation standards. Reclamation as provided in this part will allow the extraction of valuable resources while still providing for the protection of the public's health, safety, and welfare, the protection of the state's environment, and the subsequent beneficial use of the disturbed and reclaimed land.

(3) The Legislature recognizes that where possible and feasible the department should enter into memoranda of understanding to eliminate duplication and maximize the effectiveness of the regulatory process in the management and protection of our natural resources.

History.--s. 1, ch. 86-294; s. 53, ch. 91-221.

378.403 Definitions.--As used in this part:

(1) "Agency" means an official, committee, department, commission, officer, division, authority, bureau,

council, board, section, or unit of government within the state, including a county, municipal, or other local or regional entity or special district.

(2) "Department" means the Governor and Cabinet sitting as the head of the Department of Natural Resources.

(3) "Executive director" means the chief administrative officer of the department or his designee.

(4) "Existing mine" means any area upon which an operation is being conducted, or has been conducted, on October 1, 1986.

(5) "Extraction" or "resource extraction" means the removal of resources from their location so as to make them suitable for commercial, industrial, or construction use; but does not include excavation solely in aid of onsite farming or onsite construction, nor the process of searching, prospecting, exploring, or investigating for resources by drilling.

(6) "Fuller's earth clay" means clay possessing a high absorptive capacity consisting largely of montmorillonite or palygorskite. Fuller's earth clay includes attapulgite.

(7) "Heavy minerals" means those resources found in conjunction with sand deposits which have a specific gravity of not less than 2.8, and includes an admixture of such resources as zircon, staurolite, and titanium minerals as generally mined in this state.

(8) "Limestone" means any extracted material composed principally of calcium or magnesium carbonate.

(9) "Local government" means any county or municipality.

(10) "Mine" means an area of land upon which mining operations have been conducted, are being conducted, or are planned to be conducted, as the term is commonly used in the trade.

(11) "New mine" means any mine that is not an existing mine.

(12) "Operation" means any activity, other than prospecting, necessary for site preparation, extraction, waste disposal, storage, or reclamation.

(13) "Operator" means any person engaged in an operation.

(14) "Overburden" means soil and rock removed to gain access to the resource in the process of extraction and means such soil or rock before or after its removal.

(15) "Reclamation" means the reasonable rehabilitation of land where resource extraction has occurred.

(16) "Resource" means soil, clay, peat, stone, gravel, sand, limerock, metallic ore, or any other solid substance of commercial value found in natural deposits on or in the earth, except phosphate, which is regulated by part III.

(17) "Wetlands" means any area having dominant vegetation as defined and listed in ¹Department of Environmental Regulation Rule 17-4.022, Florida Administrative Code, regardless of whether the area is within the Department of Environmental Regulation's jurisdiction or whether the water bodies are connected.

History.--s 1, ch. 86-294.

¹**Note.--**Rule 17-4.022 has been transferred to another section in the Florida Administrative Code.

378.404 Department of Natural Resources; powers and duties.--The department shall have the following powers and duties:

(1) To adopt, by January 1, 1987, procedural rules to implement this part.

(2) To prescribe the form, content, and necessary supporting documentation for notices of intent to mine.

(3) To receive notices of intent to mine and operators' conceptual reclamation plans in order to determine the completeness and sufficiency thereof.

(4) To develop rules to receive and approve reclamation program applications when specifically authorized, for the detailed evaluation of reclamation units within conceptual mine plans.

(5) To prescribe the means for inspecting reclamation operations.

(6) To issue orders requiring an operator to take such actions as are necessary to comply with this part and rules adopted hereunder, and to issue orders modifying prior orders.

(7) To enter on and inspect the mine site at reasonable times and intervals pursuant to s. 378.407.

(8) To ensure that reclamation will be consistent with the provisions of this part and the performance standards and criteria provided by this part, and will be consistent with other statutes and local ordinances pertaining to reclamation.

History.--s. 1, ch. 86-294.

378.405 Reclamation review procedure.--

(1) All agency reviews conducted under this part are subject to the provisions of this section. Within 30 days after receipt of an operator's conceptual reclamation plan, the department, the executive director or the affected agency shall review the plan and shall request submittal of all additional information the agency is permitted by law to require. If the applicant believes any agency request for additional information is not authorized by law or agency rule, the applicant may request a hearing pursuant to s. 120.57. Within 30 days after receipt of such additional information, the agency shall review it and may request only such information needed to clarify such additional information.

(2) If the applicant believes the request of the agency for such additional information is not authorized by law or agency rule, the agency, at the applicant's request, shall proceed to process the plan. Plans shall be approved or denied within 90 days after receipt of the original plan, the last item of timely requested additional information, or the applicant's written request to begin processing the plan.

History.--s. 1, ch. 86-294.

¹378.406 Confidentiality of records; availability of information.--

(1)(a) Any information relating to prospecting, rock grades, or secret processes or methods of operation which may be required, ascertained, or discovered by inspection or investigation shall be exempt from the provisions of s. 119.07(1), shall not be disclosed in public hearings, and shall be kept confidential by any member, officer, or employee of the department, if the applicant requests the department to keep such information confidential and informs the department of the basis for such confidentiality. Should the executive director determine that such information requested to be kept confidential shall not be kept confidential, he shall provide the operator with not less than 30 days' notice of his intent to release the information. When making his determination, the executive director shall consider the public purposes specified in s. 119.14(4)(b). This exemption is subject to the Open Government Sunset Review Act in accordance with s. 119.14.

(b) Nothing in this section shall be construed to prevent the use of such records in judicial proceedings when ordered to be produced by appropriate subpoena or by order of the court. No such subpoena or order of the court shall abridge or alter the rights or remedies of persons affected in the protection of trade secrets or secret processes in the manner provided by law, and such person affected may take any and all steps available by law to protect such trade secrets or processes. This section shall not prevent the department from providing such information to other agencies if the information is necessary to prepare the reports and studies required by this part. Agencies receiving such information shall be subject to the provisions of this section. This exemption is subject to the Open Government Sunset Review Act in accordance with s. 119.14.

(2)(a) Except as provided in subsection (1), the department shall make available for public inspection and copying, during regular office hours, any information filed or submitted pursuant to this part.

(b) The executive director may charge a fee to cover the actual cost of duplicating the information filed or submitted pursuant to this part. "Actual cost of duplicating" means the cost of material and supplies used to duplicate the record, but it does not include the labor cost or overhead cost associated with such duplication.

(c) The fees charged for duplication of public records shall be deposited and accounted for in the manner prescribed for other operating funds of the agency.

History.--s. 1, ch. 86-294; s. i4, ch. 89-117; s. 3, ch. 91-114.

¹**Note.--**Section 5, ch. 91-114, provides that the reenactment and amendment by s. 3, ch. 91-114, "shall operate retroactively to October 1, 1989."

378.407 Inspection.--

(1)(a) Any duly authorized representative of the department may at any reasonable time enter and inspect, for the purpose of ascertaining the state of compliance with the law or rules of the department, any property, premises, or place, except a building which is used exclusively for a private residence, on which a reclamation operation is or will be conducted or where records required by this part or rule are kept.

(b) Any duly authorized representative of the department may, during normal business hours, have access to and copy any records required under this part and may obtain any other information and samples necessary to determine compliance with the requirements of this part or rules.

(c) The duly authorized representative of the department shall comply with all federal, state, and local safety standards.

(2) The owner or operator of the premises shall receive a report setting forth all facts found which relate to compliance status.

(3)(a) Upon completion of reclamation of an area, the operator shall notify the executive director. The executive director may make an inspection of the area, and if he finds that reclamation has been properly completed, he shall notify the operator in writing and release him from further obligations regarding that land.

(b) If upon the receipt of the notification the executive director determines that an inspection will not be conducted within an operating year, the operator shall be released from the reclamation requirements upon the completion of the second operating year.

History.--s. 1, ch. 86-294.

378.408 Injunctive relief.--The executive director may institute civil action in a court of competent jurisdiction to seek injunctive relief to enforce compliance with the requirements of this part.

History.--s. 1, ch. 86-294.

378.409 Civil liability.--

(1) Any operator who begins resource extraction without meeting the requirements of this part is liable to the state for any damages caused to the water or property, including animal, plant, or aquatic life, of the state, and is liable for reasonable costs and expenses of the state in restoring the waters and property, including animal, plant, and aquatic life, of the state to their former condition.

(2) In assessing damages for animal, plant, or aquatic life, the value shall be determined in accordance with the tables of values established by the Department of Environmental Regulation, the Game and Fresh Water Fish Commission, and the department.

(3) Nothing in this section gives the department the right to bring an action on behalf of any private person.

History.--s. 1, ch. 86-294.

378.411 Certification to receive notices of intent to mine, to review and to inspect for compliance.--

(1) By petition to the executive director, a local government or the Department of Transportation may request certification to receive notices of intent to mine, to review, and to conduct compliance inspections.

(2) In deciding whether to grant certification to a local government, the executive director shall determine whether the following criteria are being met:

(a) The petitioning local government has adopted and effectively implemented a local government comprehensive plan.

(b) The local government has adequate review procedures and the financial and staffing resources necessary to assume responsibility for adequate review and inspection.

(c) The local government has a record of effectively reviewing, inspecting, and enforcing compliance with local ordinances and state laws.

(3) In deciding whether to grant certification to the Department of Transportation, the executive director shall request all information necessary to determine the capability of such department to meet the requirements of this part.

(4) In making his determination, the executive director shall consult with the Department of Community Affairs, the Department of Environmental Regulation, the appropriate regional planning council, and the appropriate water management district.

(5) The executive director shall evaluate the performance of a local government or the Department of Transportation on a regular basis to ensure compliance with this section. All or part of the certification may be rescinded if the executive director determines that the certification is not being carried out pursuant to the requirements of this part.

(6) The department shall establish the certification procedure by rule.

History.--s. 1, ch. 86-294.

378.412 Relationship with other laws.--It is the intent of the Legislature that ss. 378.202-378.804 supplement other laws regarding resource extraction. Nothing contained in such sections shall be construed to limit, abridge, or alter any agency's duties, authority, and responsibilities granted pursuant to another statute. Nothing in ss. 378.202-378.804 shall be deemed to preempt local ordinances that impose stricter reclamation standards.

History.--s. 1, ch. 86-294.

378.501 Limestone; notice of intent to mine required.--

(1) After January 1, 1987, no operator may begin the process of limestone resource extraction at a new mine without notifying the executive director of the intention to mine.

(2) The operator's notice of intent to mine shall include, but not be limited to:

(a) The operator's conceptual mining plan which is comprised of such maps and other supporting documents as may be reasonably required by the department, the operator's time schedule that assures that the reclamation process is achieved in a timely manner, and the operator's estimated life of the mine.

(b) The operator's signed acknowledgment of the limestone reclamation performance standards provided by s. 378.503.

(3) The department shall develop by rule the required data, forms, and other information for the notice of intent to mine. The rule shall clearly state what data, forms, and other information are required and the reasons why such data, forms, and other information are required.

(4) The executive director shall notify the operator as to the sufficiency of the notice of intent to mine. The review of such notice shall be accomplished in accordance with the provisions of s. 378.405.

History.--s. 1, ch. 86-294.

378.502 Existing mines.--After January 1, 1989, all operators of existing mines for limestone resource extraction shall meet the reclamation performance standards provided by s. 378.503 for any new surface area disturbed at such mines. The operator shall provide the executive director with a documented list of all existing mines subject to the provisions of this section.

History.--s. 1, ch. 86-294.

378.503 Limestone reclamation performance standards.--

(1) All reclamation activities shall be initiated at the earliest practicable time.

(2) Reclamation activities shall be consistent with all applicable local government ordinances at least as stringent as the criteria and standards contained in this section.

(3) Reclamation shall achieve the stormwater, drainage, wetlands, and other surface and ground water management requirements of the Department of Environmental Regulation and the appropriate water management district.

(4) Provisions for safety to persons, wildlife, and adjoining property must be provided.

(5) The operator shall use best management practices to minimize erosion.

(6) Reclamation shall include revegetation, with species native to the area, of littoral zones and upland areas, except that revegetation shall not be required in those areas where revegetation is impractical or not in accordance with good land management practices.

(7) Resource extraction which results in a water body shall provide one of the following shoreline treatments:

(a) A littoral shelf not less than 18 feet in width with a berm on the waterward side.

(b) A straight slope not steeper than 1 vertical to 3 horizontal, and extending downward from average water level to 6 feet below the average water level.

(c) Where a sheer wall results, then in lieu of a shoreline treatment, access shall be controlled by the use of berms, fences, or other restrictive methods, all of which shall be used in conjunction with a transition shelf of at least 10 feet in width.

(d) Slope requirements of the U.S. Army Corps of Engineers or the Department of Environmental Regulation under the Warren S. Henderson Wetlands Protection Act of 1984.

(e) The executive director may allow other shoreline treatments to achieve appropriate safety and environmental considerations.

(8) Where a dry sheer wall results, access shall be controlled by the use of berms, fences, or other restrictive methods, all of which shall be used in conjunction with a transition shelf of at least 10 feet in width.

History.--s. 1, ch. 86-294.

378.601 Heavy minerals.--

(l)(a) Each operator who intends to mine or extract heavy minerals at a new mine shall receive approval of the department of a conceptual reclamation plan prior to undertaking mining or extraction.

(b) New mine, for the purposes of this section, shall mean a mine where the operator begins the clearing of land for mining after July 1, 1987.

(c) The term "conceptual reclamation," for the purposes of this section, means a graphic and written description of general activities to be undertaken across the whole mine to comply with the reclamation standards applicable to this part.

(2) Each operator of an existing mine, which has not submitted a conceptual reclamation plan pursuant to the requirements of s. 211.32, shall submit to the department for approval a conceptual reclamation plan no later than July 1, 1987.

(3) The department shall also require that each operator submit for approval from time to time a detailed reclamation program, no more frequently than annually, sufficient to assure that the reclamation standards are being met. The term "reclamation report," for purposes of this section, means a detailed graphic and written description of a reclamation plan which is consistent with the conceptual reclamation plan and which will specify the mine's compliance with the reclamation plan for all or a segment of the mine.

(4) Reclamation standards applicable to this section shall be adopted by rule by the department. The intent shall be that these regulations shall be no more stringent than those standards currently in place for the heavy mineral mining. The department shall consider the following criteria in its regulations:

(a) The reclamation standards shall reflect the circumstances unique to each mineral commodity and must reasonably address the practicality for reclamation for each commodity and the future use of the land. All reclamation activities shall, to the extent feasible, be coordinated with resource extraction and shall be initiated at the earliest practicable time.

(b) Reclamation activities shall be conducted in a manner which has minimal long-term adverse impacts on surface and groundwater resources, wildlife, and adjacent lands.

(c) The department shall by rule adopt adequate reclamation sloping requirements.

(d) The operator shall use best management practices to minimize erosion.

(e) Drainage systems, wetlands, and other surface waters shall function in manners which are not significantly different from those which existed prior to resource extraction.

(f) Reclamation shall provide for revegetation. Plans for revegetation shall incorporate measures to minimize wildlife habitat lost as a result of resource extraction.

(g) Reclamation shall result in landforms which are capable of supporting diverse and beneficial land uses.

(h) Exceptions to the criteria contained in this section may be granted by the executive director for experimental or innovative techniques.

(i) Reclamation of the land, including a complete growing season for revegetation, shall be completed within 3 years of the completion of the mining operation associated with the resource extraction.

History.--s. 1, ch. 86-294.

378.701 Fuller's earth clay; notice of intent to mine required.--

(1) After January 1, 1987, no fuller's earth clay operator may begin the process of resource extraction at a new mine without notifying the executive director of the intention to mine.

(2) The operator's notice of intent to mine shall include, but not be limited to:

(a) Such maps and other supporting documents as may be reasonably required by the department.

(b) The operator's time schedule that assures that the reclamation process is achieved in a timely manner.

(c) The operator's estimated life of the mine.

(d) The operator's conceptual reclamation plan.

(3) The department shall develop by rule the required data, forms, and other information for the notice of intent to mine. The rule shall clearly state what data, forms, and other information are required and the reasons why such data, forms, and other information are required.

(4) The executive director shall notify the operator as to the sufficiency of the notice of intent to mine. The review of such notice shall be accomplished in accordance with the provisions of s. 378.405.

(5) The executive director shall approve, modify, or reject the operator's conceptual reclamation plan.

History.--s. 1, ch. 86-294.

378.702 Existing mines.--On October 1, 1986, all operators of existing mines for fuller's earth clay resource extraction shall meet the performance standards provided by s. 378.703 on all mines that increase the diameter of an existing mine.

History.--s. 1, ch. 86-294.

378.703 Fuller's earth clay reclamation performance standards.--

(1) All reclamation activities shall, to the extent feasible, be coordinated with resource extraction and in any event shall be initiated at the earliest practicable time.

(2) Reclamation activities shall be consistent with all applicable local government ordinances at least as stringent as the criteria and standards contained in this section.

(3) Reclamation activities shall be conducted in a manner which has no long-term adverse impact on surface and groundwater resources, wildlife, and adjacent lands.

(4) Drainage systems, wetlands, and other surface waters shall function in manners which are not significantly different from those which existed prior to resource extraction.

(5) Reclamation shall achieve the stormwater requirements of the appropriate water management district.

(6) The department shall establish by rule the reclamation sloping requirements.

(7) The operator shall use best management practices to minimize erosion, including revegetation.

(8) The plans for revegetation shall incorporate measures to offset wildlife habitat lost as a result of resource extraction.

(9) Reclamation shall provide for the establishment of flora and fauna which are consistent with intended land use.

(10) Reclamation and restoration shall result in landforms which are capable of supporting diverse and beneficial land uses.

(11) Exceptions to the criteria and standards contained in this section may be granted by the executive director for experimental or innovative techniques.

(12) Reclamation of the land, including a complete growing season for revegetation, shall be completed within 3 years of the completion of the mining operations associated with the resource extraction.

History.--s. 1, ch. 86-294.

378.801 Other resources; notice of intent to mine required.--

(1) After January 1, 1987, no operator may begin the process of extracting clay, peat, gravel, sand, or any other solid substance of commercial value found in natural deposits or in the earth, except fuller's earth clay, heavy minerals, limestone, or phosphate, which are regulated elsewhere in this chapter, at a new mine without notifying the executive director of the intention to mine.

(2) The operator's notice of intent to mine shall consist of the operator's estimated life of the mine and the operator's signed acknowledgment of the performance standards provided by s. 378.803.

History.--s. 1, ch. 86-294.

378.802 Existing mines.--After January 1, 1989, all operators of existing mines for the extraction of resources as described in s. 378.801 shall meet the performance standards provided by s. 378.803 for any new surface area disturbed at such mines.

History.--s. 1, ch. 86-294; s. 1, ch. 89-88.

378.803 Other resources reclamation performance standards.--

(1) Reclamation shall achieve the stormwater, drainage, wetlands, and other surface and groundwater requirements of the Department of Environmental Regulation and the appropriate water management district.

(2) The final slopes shall be at such an angle as to minimize the possibility of slides and shall not exceed the natural angle of repose of the material being mined.

(3) Provisions for safety to persons, wildlife, and adjoining property must be provided.

(4) Any overburden and spoil shall be left in a configuration which is in accordance with accepted soil conservation practices and which is suitable for the proposed future use of the land.

(5) Reclamation shall be designed to avoid the collection of water in pools which are, or are likely to become, noxious, odious, or foul.

(6) All reclamation activities shall, to the extent possible, be coordinated with resource extraction and in any event shall be initiated at the earliest practicable time.

(7) Reclamation activities shall be consistent with all applicable local government ordinances at least as stringent as the criteria and standards contained in this section.

History.--s. 1, ch. 86-294.

378.804 Exemption.--Any operator who extracts resources from 1 acre or less at any one site in a given year, not to exceed 5 acres over the life of the mine, or who extracts peat for agricultural purposes is exempt from the provisions of s. 378.801.

History.--s. 1, ch. 86-294.

APPENDIX II

**RULES
OF THE
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RESOURCE MANAGEMENT
BUREAU OF MINE RECLAMATION
CHAPTER 16C-16
MANDATORY PHOSPHATE MINE RECLAMATION**

16C-16.0011	Intent
16C-16.0012	Applicability
16C-16.0021	Definitions
16C-16.003	Applications Required
16C-16.0032	Application Filing Procedures
16C-16.0033	Application Review Procedures
16C-16.0034	Notice to Parties and Interested Persons
16C-16.0035	Previous Approvals and Inconsistencies
16C-16.0036	Application Standards
16C-16.0041	Conceptual Reclamation Plans and Modifications
16C-16.0042	Programs and Amendments
16C-16.0045	Variances
16C-16.0051	Reclamation and Restoration Standards
16C-16.0053	Remaining Natural Resources
16C-16.0054	Donations of Land
16C-16.006	Changes to Approved Conceptual Plans and Programs
16C-16.0067	Inspections
16C-16.0068	Release Procedures
16C-16.0071	Violations, Damages, and Penalties
16C-16.0075	Financial Responsibility
16C-16.0091	Annual Reports
16C-16.0095	Reclamation Forms

16C-16.0011 Intent.

(1) The intent of these rules is to assure that:

(a) Florida's lands, waters, and wetlands which are mined to remove phosphate from underlying strata are reclaimed and restored to the fullest extent of the law.

(b) The department's regulatory procedures and criteria are clearly set forth so that all interested citizens will understand the means by which decisions on applications are made and approved conceptual plans and programs are monitored.

(c) Procedures are adopted to eliminate duplication between the department and other agencies, to simplify the processing of applications, and to maximize the effectiveness of the regulatory process.

(2) Nothing in these rules shall be:

(a) Construed to limit, abridge, or alter any agency's duties, authority, and responsibilities as otherwise provided by law.

(b) Deemed to preempt local ordinances that impose stricter reclamation and restoration standards.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.202, 378.204 FS.

History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.011.

16C-16.0012 Applicability.

(1) The provisions of this chapter apply to:

(a) Land subject to the mandatory reclamation obligation for the severance of the solid mineral phosphate rock set forth in section 211.32(1), F. S.; and

(b) Those lands which are initially used after July 1, 1984, as a clay settling area or a dam for use with a clay settling area.

(2) The provisions of this chapter do not apply to acres disturbed by the severance of phosphate rock prior to July 1, 1975, and, therefore, do not affect the determination of whether lands disturbed by the severance of phosphate rock are subject to the mandatory reclamation obligation.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.204 FS. History - New 2-22-87.

16C-16.0021 Definitions. For the purpose of this chapter, the following words and terms shall have the definitions and meanings ascribed to them in this section:

(1) "Applicant" shall mean the person or agent authorized by the operator to make application to the bureau pursuant to this rule.

(2) "Board" shall mean the Governor and Cabinet sitting as the head of the Department of Natural Resources.

(3) "Bureau" shall mean the department's Bureau of Mine Reclamation, 903 West Tennessee Street, Tallahassee, FL 32304.

(4) "Conceptual reclamation plan" or "conceptual plan" shall mean a graphic and written description of general activities to be undertaken across the whole mine to comply with the reclamation standards contained in this chapter.

(5) "Department" shall mean the Department of Natural Resources, 3900 Commonwealth Boulevard, Tallahassee, Florida 32303.

(6) "Executive director" shall mean the chief administrative officer of the department.

(7) "Indigenous species" shall mean species native to the region of Florida in which the reclamation and restoration activities are to be undertaken.

(8) "Mine" shall mean an area of land on which mining operations have been conducted, are being conducted, or are planned to be conducted, as the term is commonly used in the trade. This definition is limited to use as a descriptive term in this chapter and is not intended to define or explain the term as it is used in chapter 211, F. S., nor as it is used or may be used by any other agency.

(9) "Mining operations" shall mean those physical activities, other than prospecting and site preparation, which are necessary for extraction, waste disposal, storage, or dam maintenance prior to abandonment.

(10) "New mine" shall mean a mine for which the operator first became obligated to pay a severance tax for the extraction of phosphate rock therefrom after July 1, 1975.

(11) "Operator" shall mean the person engaged, or seeking to be engaged, in the extraction of phosphate rock or any other person who is obligated to reclaim mined lands pursuant to subsection 211.32(1), F. S. For the purposes of section 16C-16.0075, relating to financial responsibility, "operator" includes a parent, its subsidiary, or division.

(12) "Overburden" shall mean all soil and rock removed to gain access to the phosphate in the process of extraction and shall mean such soil or rock before or after its removal.

(13) "Reclamation" shall mean the reshaping of lands in a manner which meets the reclamation standards, including revegetation, contained in this chapter.

(14) "Reclamation program" or "program" shall mean a detailed graphic and written description of a reclamation plan for a segment of a mine that is consistent with the applicable approved conceptual reclamation plan and that shows with specificity how that segment will be reclaimed to comply with the reclamation standards contained in this chapter. A reclamation program shall include appropriate restoration activities.

(15) "Restoration" shall mean the recontouring and revegetation of lands in a manner, consistent with the criteria and standards established pursuant to this chapter, which will return the type, nature, and function of the ecosystem to the condition in existence immediately prior to mining operations. In requiring restoration of an area, the department shall recognize technological limitations and economic considerations. For example, restoration shall be considered accomplished when immature trees are used; mature trees are not required to be replanted in areas where mature trees were removed to allow for mining.

(16) "Revegetation" shall mean, in reclaimed areas, a cover of vegetation consistent with the standards established pursuant to this chapter and consistent with the land form created and the future land uses. In restored areas, it means a cover of vegetation that is designed to return the restored area to the condition in existence prior to mining.

(17) "Temporary land use" shall mean any use of lands under reclamation or restoration after contouring is complete, but before release, that is necessary for the mining operation or other reclamation or restoration activities within the mine.

(18) "Waste" shall mean all earth materials, exclusive of the phosphate being mined for sale, removed from the acres mined and requiring some means of disposal. This shall only include wastes generated by mining or beneficiation of the phosphate.

(19) "Wetlands" shall mean the various types of habitats and vegetative communities which exist where the water table is at or above grade for periods of the year and shall include forested wetlands, such as hardwood swamps, cypress swamps, and domes, and nonforested wetlands, such as wet prairies and freshwater marshes.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.203 FS. History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.021.

16C-16.003 Applications Required.

(1) Approval must be obtained from the department prior to an operator beginning any reclamation and restoration activities on lands subject to this rule. The following applications are required:

(a) Conceptual plan. Each operator shall have an approved conceptual reclamation plan for each mine under its control. An approved conceptual plan shall be a prerequisite to the approval of reclamation programs.

(b) Conceptual plan modification. Each operator shall have an approved modification for all changes to approved conceptual reclamation plans, whether or not the changes are significant. Time schedule changes that are the result of changes in the rate of mining shall not be considered modifications, but shall be reported in the annual report.

(c) Program. Each operator shall have an approved reclamation program for each site upon which reclamation and restoration activities are to occur.

(d) Amendment. Each operator shall have an approved amendment for all changes to approved reclamation programs, whether or not the changes are significant. A request for a temporary land use after a program has been approved shall be submitted as an amendment. Time schedule changes that are the result of changes in the rate or area of mining or circumstances beyond the reasonable control of the operator shall not be considered amendments, but shall be reported in the annual report.

(e) Variance. Each operator shall have an approved variance for any exception to the provisions of this chapter.

(2) Reclamation activities that are consistent with an approved conceptual plan and the standards in section 16C-16.0051 and have received local government approval may begin prior to approval of a program where such activities are within 500 feet of a public road or mine boundary.

Specific Authority 211.32, 370.021, 378.205, 378.212 FS. Law Implemented 211.32, 378.205 FS. History - New 10-21-75, Amended 10-11-78, 10-6-80, 2-22-87, Formerly 16C-16.03.

16C-16.0032 Application Filing Procedures.

(1) Preapplication Meetings. In order to reduce the time required for processing applications, preapplication meetings are encouraged and should be arranged in accordance with the following:

(a) Prior to submitting an application to the bureau, the applicant should notify the bureau in writing that an application is due to be submitted. The notice should state the purpose of the application and whether or not a preapplication meeting is desired and include a map that outlines the application area.

(b) If a meeting is requested by the applicant, the bureau shall meet with the applicant at the earliest practical time or as otherwise agreed to by both parties.

(c) These meetings are for the purpose of exchanging ideas and information and shall be nonbinding on either party.

(2) Filing. Applications shall be filed with the bureau in accordance with the following deadlines:

(a) Conceptual plans. Conceptual plan applications shall be filed at least six months prior to beginning mining operations. If the operator is required to prepare an Application for Development Approval (ADA) under chapter 380, F.S., the operator shall file the conceptual plan application within seven days of the submittal of the ADA.

(b) Conceptual plan modifications. Modification applications shall be filed at least 90 days prior to beginning activities that constitute a significant change in an approved conceptual plan. If the proposed modification would constitute a substantial deviation to the approved Development Order under chapter 380, F. S., then the modification application and substantial deviation application should be filed within seven days of each other. If a modification application is for activities that are not a significant change in an approved

conceptual plan, then the application shall be filed at least 30 days prior to beginning such activities.

(c) Programs. Program applications shall be filed at least six months, but no more than two years, prior to the anticipated initiation of mining in the application area.

(d) Amendments. Amendment applications shall be filed at least 90 days prior to beginning activities which require an amendment to an approved program. However, if an amendment application is for activities that are not a significant change to an approved program, then the application shall be filed at least 30 days prior to beginning such activities.

(e) Variances. Variance applications may be filed at any time.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS.

History - New 10-6-80, Amended 7-19-81, 2-22-87, Formerly 16C-16.032.

16C-16.0033 Application Review Procedures.

(1) General Processing Procedures.

(a) All applications shall be processed in accordance with the provisions of chapter 120, F. S.

(b) No information regarding any application will be deemed to have been received by the department unless it has been filed with the bureau.

(c) Within 30 days after the receipt of an application, the department shall examine the application, notify the applicant of any apparent errors or omissions, and request any information the department is permitted by law to require. As part of its request, the bureau may require the applicant to provide one document which has been revised to incorporate all submitted corrections and additional information.

(d) If the reclamation activities for which the applicant seeks approval are exempt from the requirements of this chapter, the department shall notify the applicant of its findings within 10 days after receipt of the original application or the timely requested additional information or correction of errors or omissions.

(e) Within 45 days after receipt of any request for additional information or correction of apparent errors or omissions, the applicant shall:

1. Provide the requested additional information or correction of errors or omissions; or
2. Identify any items in the request which the applicant believes are not authorized by law or rule and provide all of the requested additional information or corrections that the applicant is willing to provide; or
3. Request an extension to the 45-day period. The request shall include the date by which the information can be provided and the reason for the extension. The executive director or his designee shall approve reasonable requests that are based on a need to complete data collection.

(f) If the applicant fails to respond, as required in paragraph (e) above, to any request for additional information or correction of apparent errors or omissions, the department shall proceed to process the application after notifying the applicant of its intent to do so and specifying the date on which processing will resume. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the application unless the department timely notified the applicant within the initial 30-day period.

(g) Within 30 days after receipt of any requested additional information or corrections, the department shall examine such information or corrections and shall notify the applicant of any apparent errors or omissions in or additional information needed to clarify or to answer new questions raised by or directly related to the newly submitted material.

(h) An application shall be approved, approved with conditions, or denied within 90 days after:

1. Receipt of the original application; or
2. Receipt of the timely requested additional information or corrections or identification of items believed to be unauthorized by law or rule, if received before the department's notification pursuant to paragraph (f) above; or
3. Receipt of the timely requested additional information or corrections or identification of items believed to be unauthorized by law or rule, if received after the 45-day period and an extension has been granted; or
4. The date specified by the department that processing will resume pursuant to paragraph (f) above; whichever is latest.

(i) The applicant may grant at any time a specific time period for which the 90-day period for department action may be tolled. The grant shall be in writing and shall state the reason and length of time the 90-day period may be tolled. Such grant shall not act to preclude the department from taking action at any time after the 90-day period has begun.

(2) Revisions.

(a) If the department receives an unsolicited revision to an application before department action on the application, the revision may be considered as part of the application, provided that:

1. The revision does not require additional information or corrections to be submitted, and
2. The department has enough time to review the revision and meet normal internal processing deadlines.

(b) The bureau shall notify the applicant within 30 days after receipt of a revision whether or not that revision will be considered as part of the application, unless that revision is received less than 30 days prior to the date the department intends to take action. If a revision is received less than 30 days prior to the date the department intends to take action, the department shall notify the applicant as soon as practical whether or not the revision will be or was considered.

(c) If the department notifies the applicant that a revision cannot be considered, the applicant may withdraw and refile the original application to incorporate the revision.

(3) Withdrawals. An applicant may withdraw an application at any time prior to the department's action, provided that notice of withdrawal is submitted in writing to the bureau. A new application shall be filed within 30 days of receipt of the bureau's notice that a new application is required, unless a later date is approved by the bureau. The bureau shall approve any reasonable later date that is based on the applicant's need to redesign any or all of the reclamation program.

(4) Comments from Other Agencies. The bureau may seek comments from other appropriate agencies; however, the bureau's consideration of comments on applications shall be limited to matters within the jurisdiction of the commenting agency.

(5) Authority to Approve Applications. Applications shall be approved, approved with conditions, or denied, as follows:

- (a) The board shall take final agency action on applications for:
1. Conceptual plans.
 2. Modifications to conceptual plans that result in significant changes to an approved conceptual plan.
 3. Variances.
 4. Programs excepted from paragraphs (c) and (d) below.

(b) Approval of a conceptual plan, conceptual plan modification, or variance shall not constitute the approval of a program.

(c) The executive director shall take final agency action on applications for modifications to approved conceptual plans, except those that will result in significant changes or will require a variance. Approval of a conceptual plan modification shall not constitute the approval of a program.

(d) The executive director shall take final agency action on applications for programs and program amendments, except for those which contain significant changes to an approved conceptual plan or would require a variance.

(e) Approval of a conceptual plan or program does not constitute a statement or admission by the department concerning the ownership of any interests in lands included in a conceptual plan or program.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205, 378.206 FS. History - New 2-22-87.

16C-16.0034 Notice to Parties and Interested Persons.

(1) All persons interested in obtaining information concerning applications made to the department or notice of the department's action on an application shall request such information or notice in writing. The bureau shall maintain a list of persons making such requests.

(2) The bureau shall notify the applicant, the applicant's attorney of record, unless waived, and all persons requesting notice of the department's action. Such notifications shall include:

- (a) The name and address of the applicant.
- (b) The location of the application area.
- (c) The department's action.
- (d) Whether any administrative hearing or judicial review is available, the procedure which must be followed, and the applicable time limits.

**Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS.
History - New 2-22-87.**

16C-16.0035 Previous Approvals and Inconsistencies.

(1) The standards and criteria set forth herein shall apply to all areas of a mine to be included in any application submitted subsequent to the effective date of these amendments, whether the mine is already in existence and operating, or whether it is a new mine. Any requirement to submit an annual or biennial application, pursuant to any previously approved conceptual plan, shall be met by submitting a program, pursuant to the provisions in this chapter.

(2) The parcels in all approved special, annual, or biennial applications shall be considered as programs and may be amended at the operator's request to conform to the program requirements in this chapter.

(3) Lands mined or disturbed prior to July 1, 1975, and included in an approved mandatory program after October 21, 1975, may be withdrawn by written notice to the department, unless such lands were approved for mitigation purposes or as part of a condition for approval.

**Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS.
History - New 2-22-87.**

16C-16.0036 Application Standards. All applications shall be submitted using forms incorporated by reference in section 16C-16.0095 and shall meet the following minimum standards:

(1) At least one copy of signed documents made a part of the application shall bear an original signature.

(2) All maps, cross sections, and drawings shall be originals or legible 1:1 reproductions, and shall be no larger than 30 inches by 40 inches, including a one-inch border.

(3) All maps, cross sections, and drawings shall include at least the following information:

- (a) Legend for all symbols and patterns.
- (b) Title which explains the purpose of the graphic.
- (c) The date the original was prepared.
- (d) If revised, the date the revision was prepared.

(4) All maps shall include at least the following additional information:

- (a) Sections, townships, ranges, and counties.
- (b) Section corners. At least three corners from the same section shall be included.
- (c) North arrow.
- (d) Scale bar.

(5) All cross sections shall include at least the following additional information:

- (a) Horizontal and vertical scales.
- (b) Clearly defined and labeled endpoints.
- (c) Geographic location on a map.

(6) The original scale for all conceptual plan maps shall be one inch equals 2,000 feet, or 1:24,000.

(7) The original scale for program maps shall be no smaller than one inch equals 500 feet, unless the program area will not fit within the format requirements of subsection (2) above.

(8) All drawings shall include scales, if such drawings are scaled drawings.

(9) Each application shall include aerial photographic coverage of the application area. The photographs shall include the date flown, approximate scale, and section corners.

(10) An applicant may submit to the bureau as part of an application any documents, graphics, or other materials which have been prepared as part of other regulatory or planning programs, including chapter 380, F.S., provided the format and information given in these materials meet the requirements of this chapter and the original document is properly referenced.

**Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS.
History - New 2-22-87.**

16C-16.0041 Conceptual Plans and Modifications. Each conceptual plan application and conceptual plan modification application shall describe in writing and graphically, as required by the bureau, the activities which are the subject of the application.

(1) Conceptual Plan. A conceptual plan application shall:

- (a) Describe the location, areal extent, and ownership of the mine.

(b) Classify all lands within the mine as mined before July 1, 1975, disturbed before July 1, 1975, mined or to be mined after June 30, 1975, disturbed or to be disturbed after June 30, 1975, or to remain undisturbed by mining operations.

(c) Describe the status of all lands mined or disturbed by mining operations before July 1, 1975.

(d) Describe the geology, topography, drainage, vegetation, and land uses within the mine prior to mining operations.

(e) Describe, as existing immediately prior to mining operations and site preparation, the presence and habitat location of plant and animal species listed as threatened or endangered by the Florida Game and Fresh Water Fish Commission or the U.S. Fish and Wildlife Service.

(f) Describe the mining, waste disposal, and reclamation and restoration plans.

(g) Describe the quantities, by weight and volume, of earth materials to be considered in planning the reclamation and restoration activities.

(h) Describe postreclamation and restoration stratigraphy, topography, drainage, vegetation, and land uses.

(i) Describe permits required for mining or reclamation and restoration activities.

(j) Describe how the natural resources will be preserved and conserved, as specified in section 16C-16.0053 in areas to remain undisturbed.

(k) Provide approximate completion dates, based on mine-years, for mining, waste disposal, and reclamation and restoration activities.

(2) Conceptual plan modification. A conceptual plan modification shall:

(a) Describe which part or parts of an approved conceptual plan will be modified.

(b) Describe the modification.

(c) Explain why the modification is requested.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS.

History - New 10-6-80, Amended 7-19-81, 2-22-87, Formerly 16C-16.041.

16C-16.0042 Programs and Amendments. Each program application and program amendment application shall describe in writing and graphically, as required by this chapter, the activities which are the subject of the application.

(1) Program. A program application:

(a) Shall delineate the program area with simple boundaries and, therefore, may include areas which will not be disturbed by mining operations.

(b) Shall meet the following minimum requirements:

1. All acres shall be contiguous.

2. The program area must be large enough to include appropriate drainage features, such as lakes, wetlands, and streams and enough of the surrounding uplands to evaluate the function of each feature.

3. The program area shall consist of a logical reclamation unit which has a boundary that is based on a consideration of the standards in section 16C-16.0051. The bureau may request alterations in the originally submitted boundary as part of the bureau's evaluation of the completeness of the application.

4. The program area shall not exceed 640 acres, unless otherwise approved by the executive director or his designee.

5. The program area must include entire waste disposal sites, if such sites include slurried wastes contained by a dam or disposed of below grade in an identified disposal site. If such sites are larger than 640 acres, but in agreement with the approved conceptual plan, approval of the program area, pursuant to subparagraph 4. above, is not required.

(c) Shall describe a detailed program for reclamation and restoration in accordance with the standards in section 16C-16.0051.

(d) Shall include the ownership of the application area.

(2) Amendment. An amendment application shall:

(a) Describe which part or parts of an approved program will be amended.

(b) Describe the amendment requested.

(c) Explain why the amendment is requested.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS.

History - New 2-22-87.

16C-16.0045 Variances.

(1) All applications for a variance, pursuant to section 378.212, F.S., shall be in accordance with these rules. The department shall review the application within a reasonable period of time and, if the department determines the application to be incomplete, the applicant shall be afforded an opportunity to supply additional information before the department evaluates the merits of the application. The applicant shall address the following factors in the application:

- (a) The statute or rule from which a variance is sought.
- (b) The facts which show that a variance should be granted because of one of the reasons set forth in paragraphs 378.212(1)(a)-(e), F.S.
- (c) The period of time for which the variance is sought, including the reasons and facts in support of the time limit.
- (d) The requirements which can be met by the applicant, including the date or time when the requirements can be met.
- (e) The steps or measures the applicant is taking or has taken to meet the requirements of the rule or statute from which the variance is requested.
- (f) The social, economic, and environmental impacts on the applicant and residents of the area and the state, if the variance is granted.
- (g) The social, economic, and environmental impacts on the applicant and residents of the area and the state, if the variance is denied.

(2) Renewals of variances shall be applied for in the same manner as for the initial variance.

(3) Variances may be issued for the life of the facility, or such shorter period of time as may be appropriate. Variances issued for more than five years shall be reviewed by the board at least every five years to assure that the factors justifying the issuance of the variance have not changed so as to make the variance unnecessary. Any order granting a variance for more than five years shall require the operator to submit, at least once every five years, the information necessary to allow the board to conduct this review.

(4) Upon receipt of a complete application or the requested additional information for a variance or renewal of a variance, the executive director will submit his recommendations on the application to the board. Comments from other agencies may be solicited, as appropriate, before submitting the recommendation. All applications for variances or renewals of variances shall be approved, approved with conditions, or denied at the discretion of the board.

(5) The action taken by the board shall be the proposed agency action and notice of the action shall be published by the department in the Florida Administrative Weekly and in a newspaper of general circulation in the area affected. The notice shall contain the following:

- (a) Name of the applicant, brief description of the variance requested, and its location.
- (b) Location of the application and its availability.
- (c) Statement of the proposed action.
- (d) Notification of an administrative hearing opportunity and time limitations.

(6) If no request for an administrative hearing is received by the department within 14 days from the date of publication of the notice, the action taken by the board shall be final agency action.

Specific Authority 211.32, 370.021, 378.205, FS. Law Implemented 378.212, FS. History - New 2-22-87.

16C-16.0051 Reclamation and Restoration Standards. This section sets forth the minimum criteria and standards which must be addressed in an application for a program to be approved.

(1) Safety.

(a) Site cleanup. All lands reclaimed shall be completed in a neat, clean manner by removing or adequately burying all visible debris, litter, junk, worn-out or unuseable equipment or materials, as well as all footings, poles, pilings, and cables. If any large rocks or boulders exist as a result of mining, these should be left either at the surface where they are distinctly visible or placed in mined-out areas and covered to a minimum depth of four (4) feet.

(b) Structures. All temporary buildings, pipelines, and other man-made structures shall be removed with the exception of those that are of sound construction with potential use compatible with the reclamation goals.

(2) Backfilling and Contouring. The proposed land use after reclamation and the types of landforms shall be those best suited to enhance the recovery of the land into mature sites with high potential for the use desired.

(a) Slopes of any reclaimed land area shall be no steeper than four (4) feet horizontal to one (1) foot vertical to enhance slope stabilization and provide for the safety of the general public.

For long continuous slopes, mulching, contouring, or other suitable techniques shall be used to enhance stabilization. Should washes or rills develop after revegetation and before final release of the area, the operator shall repair the eroded areas and stabilize the slopes to eliminate any further similar erosion.

(b) The operator shall inform the department of the nature and an estimate of the amount of strata planned to be removed during mining operations which is unsuitable for general reclamation use because of its potential hazard to the health and safety of the general public. Material of this type shall be replaced in the mine cut beneath all other backfill material.

(3) Soil Zone.

(a) The use of good quality topsoils is encouraged, especially in areas of reclamation by natural succession.

(b) Where topsoil is not used, the operator shall use a suitable growing medium for the type vegetative communities planned.

(4) Wetlands which are within the conceptual plan area which are disturbed by mining operations shall be restored at least acre-for-acre and type-for-type.

(5) Wetlands and Water Bodies. The design of artificially created wetlands and water bodies shall be consistent with health and safety practices, maximize beneficial contributions within local drainage patterns, provide aquatic and wetland wildlife habitat values, and maintain downstream water quality by preventing erosion and providing nutrient uptake. Water bodies should incorporate a variety of emergent habitats, a balance of deep and shallow water, fluctuating water levels, high ratios of shoreline length to surface area and a variety of shoreline slopes.

(a) At least 25% of the highwater surface area of each water body shall consist of an annual zone of water fluctuation to encourage emergent and transition zone vegetation. This area will also qualify as wetlands under the requirements of subsection (4) above if requirements in paragraph 16C-16.0051(9)(d) are met. In the event that sufficient shoreline configurations, slopes, or water level fluctuations cannot be designed to accommodate this requirement, this deficiency shall be met by constructing additional wetlands adjacent to and hydrologically connected to the water body.

(b) At least 20% of the low water surface shall consist of a zone between the annual low water line and six feet below the annual low water line to provide fish bedding areas and submerged vegetation zones.

(c) The operator shall provide either of the following water body perimeter treatments of the high water line:

1. A perimeter greenbelt of vegetation consisting of tree and shrub species indigenous to the area in addition to ground cover. The greenbelt shall be at least 120 feet wide and shall have a slope no steeper than 30 feet horizontal to one foot vertical.

2. A berm of earth around each water body which is of sufficient size to retain at least the first one inch of runoff. The berm shall be set back from the edge of the water body so that it does not interfere with the other requirements of subsection (5).

(6) Water Quality.

(a) All waters of the state on or leaving the property under control of the operator shall meet applicable water quality standards of the Florida Department of Environmental Regulation.

(b) Water within all wetlands and waterbodies shall be of sufficient quality to allow recreation or support fish and other wildlife.

(7) Flooding and Drainage.

(a) The operator shall take all reasonable steps necessary to eliminate the risk that there will be flooding on lands not controlled by the operator caused by silting or damming of stream channels, channelization, slumping or debris slides, uncontrolled erosion, or intentional spoiling or diking or other similar actions within the control of the operator.

(b) The operator shall restore the original drainage pattern of the area to the greatest extent possible. Watershed boundaries shall not be crossed in restoring drainage patterns; watersheds shall be restored within their original boundaries. Temporary roads shall be returned at least to grade where their existence interferes with drainage patterns.

(8) Waste Disposal.

(a) Clay Wastes.

1. Disposal areas shall be reclaimed as expeditiously as possible. Experimental methods which speed reclamation and which are consistent with these rules are encouraged.

2. To the greatest extent practical, all waste clays shall be disposed of in a manner that reduces the volume needed for disposal.

3. Above-ground disposal areas shall be reclaimed in a manner so that long-term stabilization of retention dikes and dams is assured.

4. Waste clays shall be disposed of in a manner which minimizes the length of time waste disposal sites are needed for mining operations, reduces the impact on drainage patterns and premining topography, and considers postreclamation land use potential.

(b) Sand Tailings.

1. Sand tailings should not be permanently spoiled above natural grade unless needed to meet regulatory or environmental requirements.

2. The operator shall give highest priority to the use of sand tailings for backfilling mine cuts, for accelerating the thickening of waste clays, or as a soil enhancement by mixing the sand with the surface clays on clay storage areas.

(9) Revegetation. The operator shall develop a revegetation plan to achieve permanent revegetation, which will minimize soil erosion, conceal the effects of surface mining, and recognize the requirements for appropriate habitat for fish and wildlife.

(a) The operator shall develop a plan for the proposed revegetation, including the species of grasses, shrubs, trees, aquatic and wetlands vegetation to be planted, the spacing of vegetation, and, where necessary, the program for treating the soils to prepare them for revegetation.

(b) All upland areas must have established ground cover for one year after planting over 80% of the reclaimed upland area, excluding roads, groves, or row crops. Bare areas shall not exceed one-quarter (1/4) acre.

(c) Upland forested areas shall be established to resemble premining conditions where practical and where consistent with proposed land uses. At a minimum, 10% of the upland area will be revegetated as upland forested areas with a variety of indigenous hardwoods and conifers. Upland forested areas shall be protected from grazing, mowing, or other adverse land uses to allow establishment. An area will be considered to be reforested if a stand density of 200 trees/acre is achieved at the end of one year after planting.

(d) All wetland areas shall be restored and revegetated in accordance with the best available technology.

1. Herbaceous wetlands shall achieve a ground cover of at least 50% at the end of one year after planting and shall be protected from grazing, mowing, or other adverse land uses for three years after planting to allow establishment.

2. Wooded wetlands shall achieve a stand density of 200 trees/acre at the end of one year after planting and shall be protected from grazing, mowing, or other adverse land uses for five years or until such time as the trees are ten feet tall.

(e) All species used in revegetation shall be indigenous species except for agricultural crops, grasses, and temporary ground cover vegetation.

(10) Wildlife.

(a) The operator shall identify what measures have been incorporated into the conceptual plan or program to offset fish and wildlife values lost as a result of mining operations and shall identify special programs to restore, enhance, or reclaim particular habitats, especially for endangered and threatened species, as identified by the Florida Game and Fresh Water Fish Commission or the U.S. Fish and Wildlife Service.

(b) The operator may designate specific locations within the mine as "Wildlife Areas" and include a plan for reclamation and management for sites so designated. Slopes, revegetation, and erosion control requirements may be waived or modified by the department in such areas on a case-by-case basis where such changes will benefit the overall plan for the propagation of wildlife.

(11) Time Schedule.

(a) Each operator shall develop a time schedule for completion of the reclamation process in the area covered by the application. The time schedule shall include an estimate of:

1. When removal of phosphate rock in the area will be completed, including the estimated acreage to be mined in each calendar year that mining will occur.

2. When any other mining operations phase in the area will be completed and an explanation of such operations.

3. When waste disposal will be started and completed.

4. When contouring will be started and completed.

5. When revegetation will be started and completed.

(b) Completion dates.

1. Where mined-out areas will be used for waste disposal, waste disposal shall be completed as soon as practical after mining has occurred. Waste disposal on other sites shall also be completed as soon as practical. The completion date for waste disposal shall consider the availability and volume of materials needed.

2. Contouring for all acres mined in a given calendar year shall be completed no later than 18 months after the end of that calendar year or 18 months after an area is capable of being contoured when additional mining operations, such as waste disposal, occur. If contouring is needed on lands that are disturbed by mining operations, but not mined, then contouring on such lands shall be completed no later than the end of the year following the year in which mining operations ceased on such lands.

3. Revegetation shall be completed as soon as practical after each acre is contoured, but no later than six months after contouring is required to be completed. The executive director may allow a later completion date upon a showing of good cause.

4. Reclamation and restoration shall be completed within two (2) years of the actual completion of mining operations, exclusive of the required growing season to ensure the growth of vegetation, except that where sand-clay-mix or other innovative technologies are used, the department may specify a later date for completion. The required completion date may vary within a program, depending upon the specific type of mining operation conducted.

5. The completion dates for each phase of the reclamation and restoration activities shall be extended by the period of any delays attributable to causes beyond the reasonable control of the operator.

6. Initiation and completion dates should be specified by month and year only with initiation being the first day of the month and completion being the last day of the month.

7. If the operator designates any mine cut as a future mineable face, the requirements for reclamation on the mineable face and an appropriate buffer zone may be delayed for a maximum period of five years; however, upon a clear demonstration of just cause by the operator, the executive director may extend the five-year delay period. If mining has not resumed along the mineable face within the five-year or approved, longer delay period, the mineable face and buffer zone shall be reclaimed as specified in the approved program. Completion dates for waste disposal, contouring, and revegetation shall be in accordance with 1., 2., and 3. above; however, the completion dates shall be extended by the five-year or approved, longer grace period.

8. The actual completion dates for contouring, revegetation, and the period of establishment shall be based on information provided in the annual reports, as required by section 16C-16.0091, and verified by the bureau.

(12) Exceptions and Innovations. In order to encourage the development of new technology which will hasten reclamation or improve the quality of restored lands, the board may grant a variance to any of the requirements of section 16C-16.0051 for the following circumstances:

- (a) Experimental or innovative techniques where the technology is not proven.
- (b) Methods which will increase the overall quality of the reclamation program through the creation of particular landforms or habitats.

Specific Authority 211.32, 370.021, 378.207 FS. Law Implemented 211.32, 378.207 FS. History - New 10-6-80, Amended 7-19-81, 2-22-87, Formerly 16C-16.051.

16C-16.0053 Remaining Natural Resources. The operator shall take care to protect the natural resources within the mine which are not disturbed by phosphate rock mining operations. Highest priority shall be given to the following concerns:

- (1) Protection of endangered and threatened species and their habitat.
- (2) Protection of surface drainage patterns and water quality, including the natural resources and integrity of natural streams and their floodplains.
- (3) Protection of uplands from erosion, loss of topsoil, and vegetation loss.

Specific Authority 211.32, 370.021, 378.207 FS. Law Implemented 211.32, 378.207 FS. History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.053.

16C-16.0054 Donations of Land. An operator holding title to lands mined or to be mined may request the department to accept a donation of such lands as part of completing reclamation pursuant to these rules. Such request shall be accompanied by an offer to transfer to the state title to the land involved and suitable ingress and egress therefrom. Such requests shall be considered by the Board of Trustees of the Internal Improvement Trust Fund. If accepted as donations, such lands may be leased back to the operator for mining operations.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS. History - New 2-22-87.

16C-16.006 Changes to Approved Conceptual Plans and Programs.

(1) All reclamation and restoration activities shall be carried out as approved; however, when it becomes apparent or is anticipated that a change in an approved conceptual plan or program is needed, the operator shall inform the bureau that a change is needed and obtain approval, as necessary, before proceeding with the change.

(2) The operator shall inform the bureau in writing and with supporting graphics, as needed, of any proposed or anticipated changes in approved conceptual plans or programs.

(3) Within 30 days of receipt of such a notification, pursuant to subsection (1) above, the bureau shall notify the operator whether or not the proposed change is significant or what additional information is needed to make such a determination.

(4) **Conceptual Plan Modifications.** Changes to approved conceptual plans that are not significant are:

(a) Changes that affect or result in a cumulative change of less than 640 acres or less than 20 percent, whichever is greater, of the originally approved area of the conceptual plan.

(b) Changes that do not alter the method of waste disposal.

(5) **Program Amendments.** Significant changes to approved programs are changes that affect or result in a cumulative change of more than 100 acres or more than 20 percent, whichever is smaller, of the originally approved area of the program.

(6) All changes in land ownership and operators at a mine shall be reported to the bureau no later than 30 days after the effective date of such changes.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205, 378.206 FS. History - New 10-21-75, Amended 10-6-80, 2-22-87, Formerly 16C-16.06.

16C-16.0067 Inspections.

(1) All authorized representatives of the department, on presentation of appropriate credentials to the operator, or its authorized representative, shall have the right of entry to, on, or through all lands subject to this chapter.

(2) Inspections shall occur on an irregular basis at a frequency necessary to insure compliance with the provisions of these rules. The bureau shall make at least quarterly inspections of all programs and shall make a final inspection for purposes of certifying completion of reclamation and restoration.

(3) Inspections shall occur only during normal office hours, if practical. Inspectors shall give the operator notice of the proposed inspection and shall allow the operator the opportunity to provide appropriate personnel to accompany the inspector while on the operator's premises.

(4) The bureau shall make an initial inspection of each conceptual plan and program area.

(5) Inspections may consist of:

(a) On-the-ground inspections of the affected land.

(b) Taking photographs for official use by the department.

(c) Taking and removing samples of soil, vegetation, water, waste products, or material mined.

(d) Inspection of environmental monitoring installations and data relating to the reclamation and restoration.

(6) A copy of the inspection report will be provided to the operator upon request.

(7) Inspection of premining conditions.

(a) The producer shall provide notice to the bureau at least 30 days prior to initiating a major disturbance. Only one notice shall be required for any given area. Major disturbances shall include:

1. Clearing land in preparation for mining, but not for construction of roads, powerlines, or pipelines.

2. Clearing land for constructing waste disposal sites.

3. Draining wetlands.

4. Removing overburden, if no clearing was necessary.

5. Constructing dams.

(b) The notification shall identify the area to be disturbed by section, township, and range, provide a description of the disturbance, and give the approximate date the disturbance is due to start.

(c) A program application shall be acceptable notice, if filed 30 days prior to disturbance of the program area.

(8) The bureau shall inspect each approved conceptual plan area at least once every year to verify the status of lands within the mine.

(9) Reclamation program boundaries shall be marked as follows:

(a) As soon as practical after reclamation and restoration activities have begun, the operator shall clearly mark and maintain the boundaries of an approved program area so that they are clearly identifiable until the release of the program. This shall not be construed to require a survey of the program boundary by a registered land surveyor.

(b) No markers shall be required where natural or man-made features, such as roads, railroads, dams, fences, streams, or distinct vegetation clearly delineate the boundary.

(c) Where markers are required, they shall be placed at each corner or inflection in the boundary and at least two markers, the last marker and the next marker, shall be visible from any given marker.

(d) Required markers shall be maintained on each program area through release of the upland portion of that area. Where boundaries divide wetlands, markers may be required through release of the divided wetlands.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS. History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.067.

16C-16.0068 Release Procedures.

(1) When the operator fulfills the requirements for a reclamation program, he may request an early release of the program. The request shall be in writing to the bureau on the form incorporated by reference in section 16C-16.0095 and shall include a statement certifying that the requirements of this chapter have been met.

(2) Within 30 days after notification by the operator or the scheduled completion date, whichever comes first, the bureau shall make a final inspection of a program area.

(3) Within 30 days after the final inspection, the bureau shall notify the operator in writing of its findings.

(a) If the bureau is satisfied that the requirements of the program have been met, it shall notify the executive director within 30 days of the final inspection that release is recommended.

(b) If the bureau is not satisfied that the requirements of the program have been met and an early release was requested, within 30 days of the final inspection it shall notify the operator of the deficiencies which must be corrected before release can be recommended.

(c) If the bureau is not satisfied that the requirements of the program have been met and the specified completion date has expired, it shall notify the operator of the deficiencies which must be corrected. Within 60 days after such notice by the bureau, the operator shall return work on the program to a rate of progress that will reasonably ensure completion within not more than 180 days after receipt of such deficiency notice.

(4) If, following a recommendation for release by the bureau, the executive director is satisfied that all requirements of the reclamation and restoration program have been met, he shall notify the operator in writing within 60 days of the final inspection that the reclamation program is complete and the area is released from further obligation under chapter 211, F.S.

(5) Release of a reclamation program under this chapter shall not operate to relieve the operator of any other obligations imposed under other laws, rules, regulations or ordinances.

(6) If any released area is again disturbed by mining operations, the disturbed areas shall become subject to the requirements of this chapter.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.207 FS. History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.068.

16C-16.0071 Violations, Damages, and Penalties.

(1) Upon determination by the executive director that an operator is in violation of any requirement of this chapter or approval granted, he shall notify the operator in writing by certified mail of the alleged violation. The notice of violation shall set forth in detail the alleged violation and specify a reasonable time, not to exceed 90 days, in which to begin corrective action. The executive director may also specify a time by which the corrective action must be completed.

(2) If an operator disputes the matters contained in a notice of violation, the operator may request a hearing, pursuant to section 120.57, F. S. If a hearing is requested, the time for initiating corrective action shall not begin to run until a final order is entered.

(3) If the violation specified in the notice of violation has not been corrected upon the expiration of the period provided in the notice of violation, the department may institute a civil action in a court of competent jurisdiction, as follows:

(a) For injunctive or other appropriate relief to enforce compliance with this chapter, or for the assessment of damages, or for both injunctive relief and damages. This paragraph shall not apply to the failure to comply with the requirements of subsection 16C-16.0075(6).

(b) To impose and recover a civil penalty for a violation of this chapter or any order issued pursuant to this chapter. This paragraph shall not apply to the failure to comply with the requirements of subsection 16C-16.0075(6). The penalty shall not exceed the following amounts and the court shall consider evidence in mitigation:

1. For violations of a minor or technical nature, \$100 per violation.

2. For major violations on which a penalty has not been imposed under this subparagraph during the previous five years, \$1,000 per violation.

3. For major violations not covered by subparagraph 2. above, \$5,000 per violation.

The civil penalties provided for in this paragraph (b) shall not begin to accrue until the expiration of the time for initiating corrective action, as provided in the notice of violation issued by the department. Each day or any portion thereof in which the violation continues shall constitute a separate violation.

(c) To recover against the security provided pursuant to section 16C-16.0075, if an operator has failed to comply with the requirements of subsection 16C-16.0075(6) and the department determines that the operator is unable or unlikely to come into compliance with those requirements within a reasonable time.

(4) Minor violations shall consist of the following:

(a) All violations of a technical nature.

(b) Being behind schedule in contouring or revegetation on reclamation programs more than one month, but less than six months, based on the required completion dates in subsection 16C-16.0051(11).

(c) Being out of compliance with contouring and erosion control standards, after the required completion date for contouring in subsection 16C-16.0051(11).

(d) Being out of compliance with revegetation standards, after the required completion date for revegetation in subsection 16C-16.0051(11).

(e) Failure to submit and complete an annual report, pursuant to section 16C-16.0091.

(f) Failure to comply with any rule contained in this chapter, unless otherwise specified in subsections (3) and (4).

(5) Major violations shall consist of any violation not specified in subsection (4) above, including the following:

(a) Undertaking any activities that are not in agreement with the approved conceptual plan.

(b) Undertaking any reclamation or restoration activities that are not approved or in agreement with approved programs.

(c) Being behind in contouring or revegetation on reclamation programs more than six months, based on required completion dates.

(d) Failure to comply with an order issued pursuant to this chapter.

(e) Failure to post a security as required by subsection 16C-16.0075(1).

Specific Authority 211.32, 370.021, 378.205, 378.211 FS. Law Implemented 120.69, 378.211 FS. History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.071.

16C-16.0075 Financial Responsibility.

(1) Security.

(a) Form of Security. If the Department determines that an operator is not in compliance with the rate of reclamation established in subsection (5), the department shall notify the operator in writing that the operator shall have 30 days to post one or more of the following forms of security:

1. A lien in favor of the state on unmined lands or on reclaimed and released real property owned in fee simple absolute by the operator.

2. A surety bond using the form provided by the bureau or a comparable format approved by the bureau.

3. A letter of credit using the form provided by the bureau or a comparable format approved by the bureau.

4. A donation of land acceptable to the state whereby every acre donated would relieve the company of the obligation to bond or otherwise provide security for the reclamation of acres mined, based on a ratio of 1 acre donated to cover the financial responsibility for 10 or more,

at the discretion of the department, acres of mined lands. This donation would not relieve the operator of the obligation to reclaim and will not be released upon reclamation of the delinquent acres. The donation shall be made in accordance with chapter 253, F. S.

5. A cash deposit or trust fund payable to the state.

(b) The form of security posted shall be at the option of the operator and shall cover the number of acres for which the operator is delinquent in reclaiming in the required time period as well as the number of acres that the operator must reclaim in the current five-year period. The security posted shall remain in effect until all delinquent acres are reclaimed, except as provided in subparagraph (1)(a)4. above.

(c) Release of posted securities. The operator may request that the land upon which a security has been posted be released. Such request shall be in writing to the bureau. If the security cannot be released, the executive director or his designee shall notify the operator in writing within 30 days of such request specifically what work must be done in order to obtain release of the security. The posted security shall be released within 30 days of a determination by the executive director that reclamation upon delinquent acres has been completed. Release shall consist of notification in writing by the executive director that the operator is no longer under obligation to have a posted security and return of the security, except for donated lands.

(d) Failure to provide the department with an acceptable form of security within the time allowed will constitute a major violation for which the department may institute a civil action in accordance with section 16C-16.071.

(e) The notification provided pursuant to subsection (1)(a), shall include:

1. The number of acres on which reclamation is delinquent.
2. Which five-year period the delinquency covers.
3. The number of acres covered by the current five-year period.
4. The amount of security required at the current time.
5. How the amount of security was determined.

(f) Should the security be in the form of a surety bond, letter of credit or cash deposit, or trust fund payable to the state, the amount of the security will be adjusted annually for the percentage change in the construction cost index as published in the Engineering News Record. The percentage change shall be for the twelve-month period beginning on the date of notification, pursuant to subsection (1)(a).

(2) Establishment of required security. The amount of the security shall be established by the executive director using the following criteria:

- (a) The amount and type of reclamation involved.
- (b) The probable cost of proper reclamation.
- (c) Inflation rates based on the construction cost index as published in the Engineering News

Record.

(d) Changes in mining operations.

(e) The amount of security shall not exceed \$4,000 per acre for each reclamation program, adjusted annually by the appropriate inflationary index for construction.

(3) Waiver or Modification of Financial Security. In instances where the intent of the financial responsibility requirements will not be at risk, the department may modify or release an operator from the requirements of posting security. Requests for such modifications or releases shall be filed as requests for a variance in accordance with section 16C-16.0045. Consideration shall be given to the following:

(a) Past performance by the operator in complying with approved reclamation programs and conceptual plans.

(b) Compliance by the operator with all other portions of this rule.

(c) The size and nature of the operation, when the reclamation effort may be reduced significantly by the lapse of time and/or a single reclamation program currently underway would bring the operator into compliance with reclamation rates. It must be shown that reclamation rates would be met should a portion of the reclamation program(s) be considered as reclaimed in proportion to the percentage of the reclamation work effort completed on the program.

(d) The department's analysis of the operator's financial statements.

(4) Financial Statements.

(a) Within 120 days of the end of the operator's annual reporting period, operators shall submit to the department audited financial statements for the mining operation.

(b) Operators that are subsidiaries of a parent may be required to submit audited consolidated financial statements only.

(c) Operators that are parents may be required to submit both separate audited financial statements and consolidated financial statements.

(d) The bureau shall consider the following in the determination of the financial statement's format requirements for segments of a business enterprise:

1. Generally accepted accounting principles.
2. Securities and Exchange Commission (SEC) regulations.

(e) The financial statements must include, at a minimum, a profit or loss statement, balance sheet, statement of changes in financial position, and an audit report. For operators reporting to the SEC, their annual Form 10K shall constitute compliance with this requirement.

(f) All financial statements shall be considered confidential by the department and shall be maintained in locked files of which only authorized personnel shall have access.

(g) The operator shall be responsible for the confidentiality of all financial statements until receipt by the department.

(h) If an operator is not in compliance with the rate of reclamation specified in subsection (6) below, the department may request an explanation of any item of concern on the financial statements, such as, but not limited to, disclaimers or qualifications in the audit report, declining profits, losses, low asset to liability ratio, or rearrangement of debt. This may be followed with a request to interview the auditor of the financial statements, to review the auditor's workpapers, to review the worksheets used to prepare the financial statements, or to review the accounting records of the reporting or current period.

(5) Operators of mines in existence on July 1, 1978, shall have until July 1, 1988, to meet the rate of reclamation in subsection (6) below without incurring the obligation to post any form of security.

(6) For the purpose of section 16C-16.0075, the reclamation shall be accomplished in accordance with the following criteria:

(a) For the period July 1, 1975, to December 31, 1980, for existing mines, or the first five-year period of mining for new mines, no reclamation shall be required and any reclamation which is completed shall be credited forward.

(b) For the period January 1, 1981, to December 31, 1985, for existing mines, or the second five-year period of mining for new mines, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 15 percent of the acres mined during the period July 1, 1975, to December 31, 1980, or the immediately preceding five-year period, as appropriate. Reclamation in excess of the required percentage shall be credited forward.

(c) For the period January 1, 1986, to December 31, 1990, for existing mines, or the third five-year period of mining for new mines, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 60 percent of the acres mined during the period January 1, 1981, to December 31, 1985, or the immediately preceding five-year period, as appropriate. Reclamation in excess of the required percentage shall be credited forward.

(d) For the period January 1, 1991, to December 31, 1995, for existing mines, or the fourth five-year period of mining for new mines, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 75 percent of the acres mined during the period January 1, 1986, to December 31, 1990, or the immediately preceding five-year period, as appropriate. Reclamation in excess of the required percentage shall be credited forward.

(e) For the period January 1, 1996, to December 31, 2000, for existing mines, or the fifth five-year period of mining for new mines, and each five-year period thereafter, reclamation of acres mined shall be completed at the rate of an acreage equivalent of 100 percent of the acres mined during the immediately preceding five-year period. Reclamation in excess of the required percentage shall be credited forward.

(f) For the purposes of this subsection, completed shall mean reclaimed through the initial revegetation and not through final release of the reclaimed area.

(g) Acres to be credited forward shall consist of acres mined or disturbed after June 30, 1975, and completed pursuant to paragraph (f) above.

(h) The time periods and reclamation rates specified in this subsection may be modified or waived for experimental reclamation programs to take into account the effect of a temporary shutdown of mining operations or other physical restraints, for unreasonable delays in the processing of reclamation applications by the department, or to relieve or prevent extreme economic hardship on the operator.

(i) The rate of mining during any five-year period is to be determined solely by the operator and not the department.

**Specific Authority 370.021, 378.205, 378.208 FS. Law Implemented 378.208, 378.209 FS.
History - New 2-22-87.**

16C-16.0091 Annual Reports.

(1) On or before March 1 of each year, each operator shall submit to the bureau a detailed report for the previous calendar year for each mine under its control. The report shall be submitted on the form incorporated by reference in section 16C-16.0095 and shall include:

(a) A written description of all new sites disturbed by mining operations by quarter-quarter section, including township, range, and county. The actual number of acres shall be given for each partial quarter-quarter section.

(b) An accounting of the materials encountered as described in paragraph 16C-16.0051(2)(b) and how they were handled.

(c) A description of reclamation and restoration activities, including the percent completion of each phase, carried out during the year for each approved program and other areas subject to this chapter.

(d) A map which shows all lands disturbed by mining operations within the mine through the previous calendar year, and identified as follows, including acreages for each area:

1. Disturbed by mining operations, but not mined.

a. Prior to July 1, 1975.

b. From July 1 to December 31, 1975.

c. After 1975, specifying the year.

2. Mined.

a. Prior to July 1, 1975.

b. From July 1 to December 31, 1975.

c. After 1975, specifying the year.

(e) A map which shows all programs approved after June 30, 1975, including their current status and acreage, and the location of all permitted water discharge points, including their identification number and the permitting agency.

(f) A map which shows all sites used or under construction for waste disposal, including the type of waste, the acreage of each site, and the beginning and ending dates for disposal.

(g) Any changes in the information required under paragraph 16C-16.0041(1)(k).

(h) Aerial photographs of all disturbed and mined lands, including the area within one mile of such lands within the mine boundary. The photographs shall be taken after December 1, but as close as reasonably possible, to December 31 of the previous calendar year. The copies submitted to the bureau shall be acceptable quality sepias and include the date flown, scale, and locations of section corners.

(2) The bureau shall examine each annual report and notify the operator within 30 days from receipt of the report of any apparent errors or omissions.

(3) The operator shall respond to the bureau's request for corrections of apparent errors or missing information within 60 days.

Specific Authority 211.32, 370.021, 378.205 FS. Law Implemented 211.32, 378.205 FS. History - New 10-6-80, Amended 2-22-87, Formerly 16C-16.091.

16C-16.0095 Reclamation Forms. The following forms are available from the Bureau of Mine Reclamation and are incorporated by reference:

(1) Application for a Conceptual Reclamation Plan, Reclamation Form No. 1, DNR 53-018(16), effective 1/81.

(2) Application for a Reclamation Program, Reclamation Form No. 2, DNR 53-019(16), effective 1/81.

(3) Annual Mining and Reclamation Report, Reclamation Form No. 3, DNR 53-020(16), effective 1/81.

(4) Reclamation Program Early Release Request, Reclamation Form No. 4, DNR 53-021(16), effective 1/87.

(5) Reclamation Modification/Amendment Application, Reclamation Form No. 6, DNR 53-023(16), effective 1/87.

(6) Variance Application, Reclamation Form No. 7, DNR 53-024(16), effective 1/87.

Specific Authority 211.32, 370.021, 378.205 F.S. Law Implemented 211.32, 378.205, 378.212 F.S. History - New 2-26-81, Amended 2-22-87, Formerly 16C-16.095.

APPENDIX III

CHAPTER 16C-17

MASTER RECLAMATION PLAN FOR LANDS DISTURBED BY THE SEVERANCE OF PHOSPHATE PRIOR TO JULY 1, 1975

16C-17.001	Intent.
16C-17.002	Definitions.
16C-17.003	Incorporation by Reference of the Evaluation Methodology, Identification and Parcelization of Lands and Results of Evaluation of Parcels.
16C-17.0035	Eligibility of Parcels.
16C-17.004	Reevaluation of Parcels.
16C-17.005	Prioritization of Reclamation Programs.
16C-17.006	Minimum Size Reclamation Program.
16C-17.007	Duration of Reclamation Programs.
16C-17.008	Reclamation Standards and Criteria.
16C-17.0085	Acquisition Standards and Criteria.
16C-17.009	Applications.
16C-17.0093	Reclamation Contracts.
16C-17.0095	Reclamation Contracts Assignment.
16C-17.010	Reclamation Cost.
16C-17.011	Multiple Landowner Application.
16C-17.0115	Nonmandatory Land Reclamation Committee.
16C-17.012	Inspections, Cost Reporting and Auditing.
16C-17.013	Reimbursement.
16C-17.014	Forms. (Repealed)

16C-17.001 Intent. It is the intent of these rules to:

- (1) Set forth and be the Master Reclamation Plan as required in Section 378.021, Florida Statutes;
- (2) Identify and provide guidelines for the reclamation, donation, or purchase of lands mined or disturbed by the severance of phosphate rock prior to July 1, 1975, which lands are not subject to mandatory reclamation under Part II of Chapter 211, Florida Statutes, and which meet the criteria set forth in Chapter 378, Florida Statutes; and
- (3) Provide grants of funds from the Nonmandatory Land Reclamation Trust Fund to encourage the reclamation of the maximum number of acres of eligible nonmandatory lands to the standards of these rules in the most timely and efficient manner, or the donation or purchase of nonmandatory lands pursuant to chapter 378, Florida Statutes.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.031 FS.

History|New 3-24-82, Amended 1-10-85, Formerly 16C-17.01.

16C-17.002 Definitions. The following words and terms shall have the definition and meaning ascribed to them in this section:

- (1) "Approved Reclamation Program" shall mean a reclamation program which has been approved by the Department.
- (2) "Bureau" shall mean the department's Bureau of Mine Reclamation, Division of Resource Management, 2051 East Dirac Drive, Tallahassee, FL 32310-3760.

(3) "Clay Settling Area", for purposes of the reimbursement provisions of these rules, shall mean an area completely enclosed by and including an earthen dam used for waste clay disposal.

(4) "Committee" shall mean the Nonmandatory Land Reclamation Committee.

(5) "Commodity" shall mean any of the various supplies, materials, goods, merchandise, equipment and other personal property purchased, leased or otherwise contracted for by the Landowner for the purpose of performing the approved reclamation activities.

(6) "Contractual Service" shall mean the rendering by a contractor, engineer, surveyor or any other provider of a service of its time and effort rather than the furnishing of specific commodities.

(7) "Department" shall mean the Governor and Cabinet sitting as the head of the Department of Natural Resources, 3900 Commonwealth Boulevard, Tallahassee, Florida 32303.

(8) "Dewatering Phase" shall mean the work effort put forth to remove surface waters from clay settling areas by the use of spillways, and the partial removal of combined waters from waste clay by the use of ditches to facilitate and promote the drying and crusting of waste clays. This phase includes disturbance of the earthen dams surrounding the pond for dewatering and breaching of the dam for abandonment.

(9) "Earthmoving Stage" shall mean that period of time which extends from initiation of reclamation activity to and including final contouring of the landform to the point at which the Bureau certifies the earthmoving complete and at which point revegetation would normally occur.

(10) "Eligible Lands" means those lands mined or disturbed by the severance of phosphate rock prior to July 1, 1975, and included as eligible lands in the master reclamation plan adopted pursuant to Section 378.021, F.S.

(11) "Eligible Parcel" shall mean those parcels mined or disturbed by the severance of phosphate rock, prior to July 1, 1975, which have been evaluated and determined to qualify for reimbursement grant funding, pursuant to Chapter 378, Florida Statutes, and Chapter 16C-17, F.A.C.

(12) "Establishment Stage" shall mean the period of time, after the Bureau has certified the revegetation complete, required to determine the probable survival of vegetative plantings | normally one year. This term shall also include approved erosion and vegetation maintenance activities.

(13) "Evaluation Methodology" shall mean the procedures used for the determination of parcel eligibility as set forth in the Report, "Evaluation of Pre-July 1, 1975, Disturbed Phosphate Lands."

(14) "Executive Director" shall mean the chief administrative officer of the Department of Natural Resources.

(15) "Finger Lakes" shall mean those elongate, parallel waterbodies, normally resulting from the reclamation of a mined-out area, separated in whole or in part by narrow uplands in such a way that their parallel elongate appearance is preserved.

(16) "Initiation of Reclamation Activity" shall mean the beginning of physical earthmoving or the activities necessary to achieve abandonment of a dam within the approved reclamation program boundaries.

(17) "Landowner" shall mean the titleholder of record of the affected land or the agent for the titleholder of record provided written authorization designating the agent and the specific scope of the agent's authority is on file with the Bureau.

(18) "Mined-out Area", for purposes of the reimbursement provisions of these rules, shall mean all eligible lands other than clay settling areas.

(19) "Nonmandatory Lands" shall have the meaning set forth in Subsection 378.032(8), Florida Statutes. Lands which are put into use after July 1, 1984, as a clay settling area or a dam for use with a clay settling area are not included as nonmandatory lands unless such lands were used for clay disposal between July 1, 1975, and July 1, 1984.

(20) "Other Landforms", for the purposes of the reimbursement provisions of these rules, shall mean those parcels defined and identified in the Report as "Hydraulically Mined Areas", "Sand Tailings Areas" and "Other Areas" such as abandoned plant sites, mine roads, railroad rights-of-way, ditches and canals.

(21) "Parcel" shall mean a unit of disturbed land which is similar in landform and postdisturbance age and has been defined and identified by a unique number by the Bureau.

(22) "Parcel Evaluation" shall mean the examination of the physical features and conditions of a parcel pursuant to the evaluation methodology.

(23) "Prereclamation Application" shall mean a request by a Landowner for a nonbinding review of a proposed reclamation program, donation or purchase of an eligible parcel(s).

(24) "Primarily engaged in the mining or processing of phosphate ores" shall mean any company or corporation that is or has in the past engaged in the mining or processing of phosphate ores within the State of Florida.

(25) "Program Site" shall mean the parcel of land defined by a legal description and included in a reclamation program or reclamation program application.

(26) "Put Into Use" shall mean the date a clay settling area first receives waste clay material.

(27) "Reclaimed Landform" shall mean uplands, submerged lands, or wetlands included in or established under an approved reclamation program.

(28) "Reclamation Contract" shall mean the agreement entered into between the Department of Natural Resources and the Landowner to implement the Landowner's approved reclamation program.

(29) "Reclamation Program" shall mean a specific reclamation proposal on an eligible parcel or portion of an eligible parcel presented by a Landowner.

(30) "Reclamation Program Application" shall mean any application for reclamation, donation, or purchase of an eligible parcel.

(31) "Report" shall mean the "Evaluation of Pre-July 1, 1975, Disturbed Phosphate Lands," August 1980, including the Appendices and Map Book.

(32) "Revegetation" shall mean the providing of a diverse permanent vegetation, indigenous to the State, capable of self-regeneration which within a reasonable time will provide the appearance of a natural landscape. This term shall also include erosion control grasses.

(33) "Revegetation Stage" shall mean the period of time during which approved revegetation is normally done and extends from the date the Bureau certifies the earthmoving complete to the date the Bureau certifies the revegetation complete.

(34) "Staff" shall mean employees of the Bureau.

(35) "Substantial Completion" shall mean the point at which the Bureau certifies the revegetation complete.

(36) "Wetlands" shall mean the various types of habitats and vegetative communities which exist where the water table is at or above grade for portions of the year and shall include forested wetlands such as hardwood swamps, cypress swamps and domes, and nonforested wetlands such as wet prairies and freshwater marshes.

(37) "Year" shall mean the fiscal year of the State of Florida.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.032 FS.

History | New 3-24-82, Amended 1-10-85, 12-3-85, Formerly 16C-17.002, Amended 12-25-86, 6-13-91.

16C-17.003 Incorporation by Reference of the Evaluation Methodology, Identification and Parcelization of Lands and Results of Evaluation of Parcels.

(1) The Report of the Department of Natural Resources entitled, "Evaluation of Pre-July 1, 1975 Disturbed Phosphate Lands," August, 1980, including the Appendices and Map Book, (henceforth referred to as the "Report") is hereby incorporated into these rules to the extent that it:

- (a) Identifies the lands subject to these rules;
- (b) Subdivides these lands into parcels for evaluation purposes;
- (c) Sets forth the methodology for evaluating the parcels for reclamation;
- (d) Provides a summary of the evaluation of each parcel; and

(e) Identifies those parcels determined eligible for consideration of reclamation reimbursement grant funding on the basis of the evaluation of the physical characteristics of the parcel.

(2) Notwithstanding the conclusions of the Report, the Bureau, pursuant to Section 16C-17.004 and paragraphs 16C-17.003(1)(a), (b), and (c), has reevaluated the parcels below and has concluded that the eligibility characteristics of the parcels are as follows:

Parcel Identification	Eligibility Status	Landform
AGR-SC-07	Eligible	Mined Out Area
Highland Village	Ineligible	Mined Out Area
Wayne Thomas "M"	Ineligible	Mined Out Area
Agri-Leis-01	Ineligible	Mined Out Area
Agri-Leis-02	Ineligible	Mined Out Area
EGC-SC-F	Ineligible	Gypsum Disposal
BP-L-01	Ineligible	Mined Out Area
BP-L-02	Ineligible	Mined Out Area
Alva Carver	Ineligible	Mined Out Area
M. C. Leetun	Ineligible	Mined Out Area
Christina Commercial	Ineligible	Mined Out Area

(3) A copy of this report is on file with the Secretary of State. Copies may be obtained from the Bureau of Mine Reclamation, at cost of reproduction, postage, and handling.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History|New 3-24-82, Amended 1-10-85, Formerly 16C-17.03, Amended 6-13-91.

16C-17.0035 Eligibility of Parcels.

(1) The Department will presume that a property is eligible or ineligible to participate in this program from the perspective of site characteristics based on the conclusions contained in the Report.

(2) Notwithstanding the presumption of eligibility set forth in subsection (1) above, the Department will presume that the following lands are not eligible to participate in this program;

(a) Lands included in a reclamation program approved by the Department pursuant to Chapter 211, Part II, F. S., and subsequently determined to be abandoned pursuant to Chapter 211, Florida Statutes,

(b) Any lands included in a reclamation program approved by the Department pursuant to Chapter 211, Part II, Florida Statutes, on or after July 1, 1978, and which have not been or will not be withdrawn from the approved reclamation program, and

(c) Any lands put into use as a clay settling area or dammed for use with a clay settling area after July 1, 1984.

(3) Additional lands disturbed by the severance of phosphate rock prior to July 1, 1975, may be determined eligible or ineligible through Bureau re-evaluation or evaluation of a Request to Evaluate the Status of Disturbed Lands, as more fully set out in Rule 16C-17.004, F. A. C.

(4) Lands otherwise eligible but which have been included in a mitigation agreement resulting from a breach or alleged breach of either a reclamation program approved by the Department or any provision of Rule 16C-16, F. A. C., are excluded from participation in this program.

Specific Authority 378.021, 378.034, 378.038, 370.021 FS.

Law Implemented 378.021, 378.034, 378.036, 378.038 FS.

History|New 3-24-82, Amended 1-10-85, Formerly 16C-17.035, Amended 12-25-86.

16C-17.004 Reevaluation of Parcels.

(1) The Department recognizes that certain lands identified as being eligible or ineligible to participate in this program based on the conclusions contained in the Report may have changed characteristics since the publication of the Report. Therefore, the Bureau may reevaluate certain nonmandatory lands to determine their current eligibility status. All changes in eligibility, other than lands which have been reclaimed and certified as complete, shall be adopted by rule.

(2) Any Landowner who owns land which has been presumed eligible or ineligible or any substantially affected person, including the Department, may file with the Bureau a Request to Evaluate the Status of Disturbed Lands to rebut the presumption of the status or to determine the status of unevaluated property. Prospective applicants for reclamation of a site shall notify the Bureau of an intent to prepare a reclamation application prior to submittal of the application, for the purpose of permitting the Bureau to review the current status of the site.

(3) A Request to Evaluate the Status of Disturbed Lands shall include at least the following information:

- (a) The name and address of the Landowner or other affected person filing the request;
- (b) The name and address of all persons holding any interests in the property in question;
- (c) If the Request concerns reevaluation of property included in a parcel evaluated in the Report, the parcel number used in the Report;
- (d) A map showing the location of the property;
- (e) A general description of the condition of the property at the time the Request is filed;
- (f) A statement of whether the Landowner or the affected person requests the property to be declared eligible or ineligible under the program; and
- (g) The facts necessary to support the requested status. Where a property has not been previously evaluated, the statement of facts must include evidence that the property was disturbed by the severance of phosphate rock prior to July 1, 1975.

(4) A Request to evaluate the status of disturbed lands may be filed with the Bureau at any time. Requests for evaluation must be in compliance with subsection 16C-17.004(3) and shall be evaluated within five (5) years of the date the Request is deemed complete. The Request to evaluate shall include physical evidence of changes in or to the site which might indicate a change in eligibility.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History | New 3-24-82, Amended 1-10-85, 12-3-85, Formerly 16C-17.04, Amended 12-25-86, 6-13-91.

rioritization of Reclamation Programs.

(1) Reclamation program application prioritization shall be based on the following criteria; however, greater weight shall be given to one or more of the criteria depending on the overall needs of the nonmandatory land reclamation program:

- (a) Whether there are existing Category 1, as defined in the Report, health and safety hazards, and if there are, they shall be given the greatest weight;
- (b) Whether the economic or environmental utility or the aesthetic value of the land would return naturally within a reasonable period of time;
- (c) Whether there is a reasonable geographic and applicant diversity in light of prior awarded reclamation contracts, reclamation program applications before the Committee, and the remaining eligible lands;
- (d) Whether reclamation or acquisition is in the public interest;
- (e) Whether the land has been naturally reclaimed or is eligible for acquisition by the State for hunting, fishing, or other outdoor recreation purposes, or wildlife preservation;
- (f) Whether the land is to be reclaimed for agricultural uses and the applicant has agreed to maintain the lands in agricultural use for at least five (5) years after the completion of reclamation;
- (g) Whether the program alone or in conjunction with other reclamation or acquisition programs will provide a substantial regional benefit;
- (h) Whether the reclamation or acquisition program alone or in conjunction with other reclamation programs will benefit regional drainage patterns or is part of an overall reclamation plan identified for environmental land uses or the protection of diverse plant and wildlife communities;

(i) Whether the land is publicly owned and will be reclaimed for public purposes or whether the land is adjacent to or nearby publicly owned lands;

(j) Whether the applicant has demonstrated, by performance, the ability to accomplish quality reclamation in an economical, expeditious, and efficient manner;

(k) Whether the program includes a donation or agreement to sell a portion of the program application area to the State for outdoor recreational or wildlife habitat protection purposes;

(l) Whether the reclamation or acquisition program is cost-effective in achieving the goals of the nonmandatory land reclamation program;

(m) Whether the program will reclaim lands described in Subsection 16C-17.009(5);

(n) Whether the applicant has agreed to maintain the land in conformance with the standards and criteria of this rule and without substantial deviation from the approved program for a period of five (5) years following completion of the reclamation program; and

(o) Whether any endangered or threatened species occupy the reclamation or acquisition program area and the extent to which they will be affected.

(2) The criteria enumerated in (1) above shall be used to establish two (2) prioritized lists of applications for presentation to the Committee. One list of prioritized applications shall be made up of those reclamation programs to create lands to be actively used for agricultural activities which are submitted by applicants other than corporations primarily engaged in the mining or processing of phosphate ores for which there are available funds under the provisions of (4) below. The other list of prioritized applications shall be made up of all other applications.

(3) Until 1995, the funds each year available for new reclamation contracts and new acquisition of nonmandatory lands shall not exceed 10 percent (10%) of the uncommitted fund balance of the Nonmandatory Land Reclamation Trust Fund at the beginning of each year.

(4) Each year, fifteen percent (15%) of the funds available for new reclamation contracts, as set forth in (3) above, shall be reserved for reclamation programs to create lands to be actively used for agricultural activities which are submitted by applicants other than corporations primarily engaged in the mining or processing of phosphate ores. In the event that, in any given year, there are insufficient applicants that meet this criterion to use the funds reserved under this subsection, the remaining moneys may be made available to other applicants.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.034 FS.

History | New 3-24-82, Amended 1-10-85, 12-3-85, Formerly 16C-17.05, Amended 12-25-86, 6-13-91.

16C-17.006 Minimum Size Reclamation Program.

(1) To be acceptable for consideration, a reclamation program must contain a contiguous land unit which constitutes the following minimum fraction of the total parcel.

Parcel Size (Acres)	Minimum Program
20 or Less	Total Parcel
21-100 Acres	1/2 of Parcel but not less than 20 acres
101-200 Acres	1/3 of Parcel but not less than 50 acres
201-400 Acres	1/4 of Parcel but not less than 68 acres
401 or More	1/5 of Parcel but not less than 100 acres

(2) The Bureau may make exceptions to these minimums upon justification by the landowner and a finding by the Bureau that due to unique circumstances, a substantial regional benefit would result from the reclamation proposed.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History | New 3-24-82, Amended 1-10-85, Formerly 16C-17.06.

16C-17.007 Duration of Reclamation Programs.

(1) The Department recognizes that geographic extent, diversity of existing and proposed landforms and availability of fill and revegetation materials have a direct bearing on the time required for the completion of a reclamation program. Landowners are encouraged to complete reclamation programs in the most timely manner consistent with good quality work.

(2) Each reclamation program shall include a timetable for completion of each stage of the program.

(3) The following time periods are the maximum allowed durations for those programs not using sand tailings fill:

Acres In Program	Earth Moving Stage	Revegetation Stage	Establishment Stage	Total Program
20 or less	6 months	1 year	1 year	30 mos.
21-100	1 year	1 year	1 year	3 years
101-200	2 years	1 year	1 year	4 years
201-400	3 years	1 year	1 year	5 years
401 or more	4 years	1 year	1 year	6 years

On parcels of four hundred (400) or more acres, the owner should give serious consideration to multiple programs within the parcel.

(4) Programs proposing to use sand tailings for fill material may have the maximum time period for the earthmoving stage extended by up to fifty percent (50%).

(5) Programs on clay settling areas required to submit applications, pursuant to Rule 16C-17.009(5), may have the maximum time period for the earthmoving stage extended by up to five (5) years.

(6) Programs on clay settling areas may have the initiation of the earthmoving stage begin prior to the certification of abandonment of the dams by the Florida Department of Environmental Regulation.

(7)(a) The Bureau may approve the extension of any stage for good cause. The Landowner shall provide a detailed explanation of the good cause in any request for extension of any stage.

(b) Any approved extension of the duration of a stage of a reclamation program shall extend the duration of the total program by the amount of the extension of duration of the particular stage.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History | New 3-24-82, Amended 1-10-85, 12-3-85, Formerly 16C-17.07.

16C-17.008 Reclamation Standards and Criteria.

(1) Safety.

(a) Site cleanup. Each program site shall be left in a neat, orderly condition by removing or adequately burying all debris, junk, abandoned equipment, abandoned structures or parts of structures, worn-out or unusable equipment or materials, as well as all footings, piles, pilings, and cables.

(b) Any existing structures, roads, pilings, or other artifacts on a program site which the Landowner anticipates retaining after reclamation shall be identified in the program application together with their proposed use.

(c) Should a Landowner demonstrate that slope requirements of this rule cannot be met, the Landowner shall identify any locations where a potential hazard exists or may exist and shall provide, in the program application, for the construction of a protective fence.

(2) Contouring. The proposed landforms after reclamation shall be those best suited to enhance the recovery of the land into natural appearing areas. Any identified use to be made of the area shall not conflict with the Local Comprehensive Plan or the Comprehensive Regional Policy Plan, adopted pursuant to Chapter 186, F.S.

(a) Upland slopes of any reclaimed land areas shall normally be no steeper than four (4) feet horizontal to one (1) foot vertical to provide for the safety of the general public. When reclaiming above-grade clay settling areas, Landowners are encouraged to incorporate a variety of slopes four (4) feet to one (1) foot or flatter to result in a rolling topography. For long continuous slopes, mulching, contouring, vegetation, or other suitable techniques

shall be used to enhance stabilization. Should washes or rills develop after revegetation to such an extent that an erosion problem would result, the Landowner shall repair the eroded area prior to the program's final certification of completion.

(b) Deviations from upland slopes of no steeper than four (4) feet horizontal to one (1) foot vertical shall be approved by the Bureau in those instances where:

1. The ownership boundary of the program site is such that this standard could be met only by excessive excavations resulting in undesirable water body depths or where excessive volumes of fill material would have to be imported to the site; or

2. There currently exist mature patches of desirable vegetation or desirable trees which could be expected to survive the reclamation activities and would contribute significantly to the recovery of the site.

(c) Any reclamation program in which a deviation from the slope requirements of this rule is necessary shall contain the request for a deviation, together with detailed dimensions of the requested deviation in the application for a reclamation program, as well as the reasons for the requested deviation. The use of sloping terraces is encouraged if a deviation from the slope requirement is necessary. The steeper terrace faces shall be separated from adjacent terrace faces as far as possible but at least ten (10) feet horizontally. Terrace faces shall extend over no more than four (4) feet vertically on any single terrace.

(d) The design of artificially created wetlands and waterbodies shall be consistent with health and safety; maximize beneficial contributions within local drainage patterns; provide aquatic and wetland wildlife habitat values; maintain water quality, both within the waterbody and downstream by preventing erosion and providing nutrient uptake; and, does not conflict with the Local Comprehensive Plan or the Comprehensive Regional Policy Plan adopted pursuant to Chapter 186, F.S.; enhance the potential for productive human use of the adjacent uplands. Waterbodies should incorporate emergent habitat, both deep and shallow water, naturally fluctuating water levels, high ratios of shoreline length to surface area, and a variety of shoreline slopes. Variety in configuration of both plan view and profile of waterbodies is encouraged within the reasonable limits of insuring that peninsulas and bays will be beneficial and useable features. The configuration known as "finger" lake(s) shall be approved where the submerged slopes are no steeper than four (4) feet horizontal to one (1) foot vertical from the design average water level out to six (6) feet of water depth.

(e) Waterbodies shall be constructed with submerged slopes no steeper than four (4) feet horizontal to one (1) foot vertical from the design average water level out to six (6) feet of water depth. Where practical, waterbodies constructed in parcels lying generally three (3) miles or more outside the corporate limits of municipalities should be constructed with approximately twenty percent (20%) of the design low water surface area less than six (6) feet deep at design low water. Waterbodies constructed in parcels lying generally three (3) miles or more outside the corporate limits of a municipality and in excess of ten (10) acres and not constructed with twenty percent (20%) less than six (6) feet deep shall be constructed with a minimum of one-half (1/2) of the lineal feet of shoreline having submerged slopes no steeper than six (6) feet horizontal to one (1) foot vertical from one (1) foot above the design average water level out to six (6) feet of water depth. Those parcels lying generally three (3) miles outside the corporate limits of municipalities are more specifically identified by parcel number in the files of the Bureau.

(f) The Department shall approve deviations from (d) and (e) above when:

1. The ownership boundary and the existing landform to be reclaimed (amount of earth material above the water table compared to the extent of submerged void) preclude the meeting of the slopes required;

2. The proposed use of the reclaimed site is for construction of buildings and their attendant facilities and such proposed use is not in conflict with the Local Comprehensive Plan or the Comprehensive Regional Policy Plan, adopted pursuant to Chapter 186, F.S.; or

3. The reclamation program is within an urban area defined by the affected local governing body through its Local Comprehensive Plan enacted in conformance with the Local Government Comprehensive Planning Act of 1975 (Chapter 163, F.S.).

4. Deviations in 2. and 3. above shall not result in submerged slopes steeper than four (4) feet horizontal to one (1) foot vertical from shore out to six (6) feet of water depth.

(3) Revegetation.

(a) Although the hydroperiod and soil type of lands to be reclaimed have been altered to the extent that the reestablishment of the historical order of plant succession may not be practical, it is the objective of these guidelines for revegetation to establish a diverse, productive, and natural appearing plant community within the limits of the land capability and various plant tolerances.

(b) The Landowner will develop a schedule for the proposed revegetation including species of trees, grasses and any shrubs to be planted; location and spacing of vegetation; and where necessary, a program for treating the soils to prepare them for planting. Furthermore, the Landowner shall provide a flexible planting schedule to insure an adjustment to the revegetation timetable when weather conditions or seasonal changes in the weather would be detrimental to the survival of the revegetation.

(c) A program site must have established ground cover on a minimum of eighty percent (80%) of the upland area excluding roads, groves, or row crops at the end of the establishment stage. Bare areas shall not exceed one-quarter (1/4) acre.

(d) All species used in revegetation shall be indigenous to the State except for upland grasses, and temporary ground cover vegetation.

(e) Each program site containing nonsubmerged land, excluding the greenbelt, shall have a minimum of three (3) different species of indigenous trees planted within its boundaries in sufficient and approximate equal numbers to provide an average minimum density of twenty (20) healthy trees per acre of nonsubmerged land at the end of the establishment stage. It is assumed that planted trees (bare-root seedlings) will experience a fifty percent (50%) mortality during the establishment stage. The trees may be concentrated onto no less than ten percent (10%) of the total nonsubmerged area, provided that the planting includes upland and transition zones (if any), and that no single area of the planting of trees | patch, greenbelt or windrow | be smaller than one-quarter (1/4) acre, and further, that no area without trees be greater than forty (40) acres.

(f) All submerged land features within the program site shall have a greenbelt of trees along a minimum of fifty percent (50%) of the perimeter of the feature. The greenbelt shall extend at least thirty-five (35) feet, but not to exceed one hundred ten (110) feet, upland from the highwater line of the feature. The greenbelt shall consist of a minimum of three (3) different species of trees. Both upland and water tolerant species shall be included. Survival density shall be two hundred (200) trees per acre. It is assumed that planted trees (bare-root seedlings) will experience a fifty percent (50%) mortality during the establishment period.

(g) Herbaceous wetland areas within the program site shall be revegetated with a minimum of five (5) indigenous species of wetland plants planted in approximately equal numbers, excluding cattails, primrose willow, and exotics. These plantings shall be spaced on three-foot (3-foot) centers, and demonstrate fifty percent (50%) survival at the end of the growing season. Any acreage of cattails and/or primrose willows existing in an herbaceous wetland shall not exceed twenty percent (20%) of the total wetland acreage. Areas to be reclaimed as wooded wetlands shall be planted with a minimum of three (3) different species of indigenous trees in sufficient and approximately equal numbers to provide an average density of two hundred (200) healthy trees per acre at the end of the growing season. It is assumed that planted trees (bare-root seedlings) will experience a fifty percent (50%) mortality during the establishment period.

(h) A program site planted with trees on which livestock grazing will be allowed shall have the trees protected from the livestock by a fence of such construction as to reasonably protect the plantings for five (5) years.

(i) Programs designed wholly or in part as wildlife habitats must incorporate greenbelts on swales. The greenbelt should provide at least a thirty-five-foot (35-foot) wide wildlife corridor on each side of the swale. All submerged features, including herbaceous and/or wooded wetlands, shall have a greenbelt according to (f) above. Wildlife habitats must utilize the upland forest requirements to maximize the habitat quality by planting upland forests adjacent to the greenbelt area or the submerged feature and thus utilize the edge effect of continuous cover from one type of vegetative cover to another type of vegetative cover. The Bureau shall waive the forty-acre (40-acre) forestation requirement of paragraph 16C-17.008(3)(e) to permit the maximum utilization of upland forested areas to enhance the wildlife habitat. Where practical, wildlife habitats established on a program should be connected to any similar wildlife habitats on adjacent programs. Landowners electing to establish a wildlife habitat shall receive an enhanced priority recommendation after review of the reclamation application.

(j) For programs where wildlife habitat is all or a significant portion of the proposed use of the program site, the Landowner shall consult with the Florida Game and Fresh Water Fish Commission and provide the results

of this consultation to the Bureau as a part of the Landowner's application. Slopes, revegetation, reforestation and erosion control requirements may be waived or modified by the Bureau in areas where such changes will benefit the overall plan for wildlife habitat restoration.

(4) Water quality.

(a) All waters of the state on or leaving the program site shall meet applicable water quality standards of the Florida Department of Environmental Regulation, Chapter 17-3, F.A.C.

(b) Water within all wetlands and waterbodies shall be of sufficient quality to allow recreation or support fish and other wildlife.

(5) Drainage. To the extent feasible, the Landowner shall restore certain drainages as a desirable step toward the reestablishment of regional drainage patterns. These drainages are included, but are not limited to those highlighted in the Report.

(6) Deviations. Any deviations from standards and criteria which would minimize expenditures in excess of maximum reimbursable cost as provided for in Section 16C-17.010, may be approved provided there is no significant impact on environmental quality.

(7) Additional work effort. Landowners proposing immediate use of a program site for such uses as silviculture, livestock grazing, agriculture crops, or development shall review subsection 16C-17.009(11).

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History | New 3-24-82,

Amended 1-10-85, 12-3-85, Formerly 16C-17.08, Amended 12-25-86, 6-13-91.

16C-17.0085 Acquisition Standards and Criteria.

(1) Acquisition applications for nonmandatory lands shall be considered with the reclamation applications for funding under the provisions of subsection 16C-17.005(3). The per acre cost of lands acquired under this program are subject to the limitations of Chapter 253, F.S., and shall not exceed the maximum allowable per acre cost established for reclamation in subsection 16C-17.010(3) unless the Department specifically determines that a payment in excess of this per acre cost is necessary and appropriate to effect the purposes of Chapter 378, Part I, F.S., and that such payment will not adversely affect the ability of the Department to reimburse Landowners for reclamation of eligible parcels in accordance with Chapter 378, Part I, F.S., and this Chapter 16C-17, Florida Administrative Code. Acquisition applications received by January 1 of each year shall be considered with the reclamation applications which are received by July 1 of that year.

(2) Acquisition applications may be filed by any interested person or the Bureau, and must identify a managing agency responsible for the management of the property after acquisition, and shall meet one or more of the following standards and criteria:

(a) Lands which have been or may be naturally reclaimed and which are suitable for hunting, fishing, or other outdoor recreational purposes;

(b) Lands which have been or may be naturally reclaimed and which provide valuable wildlife habitat;

(c) Lands which will serve the public interest because of the exceptional need to accomplish the particular reclamation and the Landowner is unable or unwilling to restore or reclaim the land in accordance with the master reclamation plan. Lands in this category shall consist of the following:

1. Lands which are needed for the reestablishment of a stream or river;
2. Lands which are necessary for the reestablishment of regional drainage;
3. Lands which may serve as wildlife or recreational corridors;
4. Lands which the state may wish to acquire for the preservation of an existing landform.

(3) Costs incurred during the preparation of an application for acquisition by the state are reimbursable. The applicant may apply for reimbursement of costs necessary to file the application, such as surveys, aerial photographs, appraisals, and application preparation. Any costs which are paid for by the Division of State

Lands are not reimbursable to the applicant. Applicant's reasonable and necessary eligible costs are reimbursable after the parcel is approved by the Department for acquisition within the funds available.

(4) Acquisition program applications which are approved by the Governor and Cabinet members and which qualify for funding under the provisions of Section 378.034, shall be transferred upon approval to the Division of State Lands for acquisition according to Chapter 253, F.S.

Specific Authority 378.021, 378.034, 378.036, 378.038, 370.021 FS.

Law Implemented 378.036 FS.

History | New 1-10-85, Amended 12-3-85, Formerly 16C-17.085, Amended 12-25-86, 6-13-91.

16C-17.009 Applications.

The Department acknowledges that a significant number of Landowners have received approval of reclamation plans. The approval of reclamation plans, which are strictly conceptual in nature and not a precondition to reclamation program approval, does not offer any additional priority to reclamation program applications filed subsequent to these approved plans. In order to evaluate the extent of reclamation proposed, and the landforms proposed to result from the reclamation as early as possible; to evaluate acquisition proposals; to establish eligibility; to provide an estimate of reclamation cost; and otherwise assist the Landowner in submitting a reclamation program application prior to consideration by the Committee, applications for participation in the Nonmandatory Land Reclamation Program may be submitted in two stages | a prereclamation application and a reclamation program application.

(1) A prereclamation application shall be made on forms provided by the Bureau or in a manner which will clearly document the information required on the forms. Form DNR 53-010(16) "Prereclamation Application" is incorporated by reference into this rule with the effective date of November 1985. Copies of the form may be obtained from the Bureau.

(2) Landowners shall include their entire eligible ownership in any prereclamation application. In those instances where a Landowner's prereclamation application encompasses less than a whole parcel and less than the Landowner's ownership within that parcel, the prereclamation application shall identify any other anticipated reclamation program(s) for the remainder of his land in the parcel. In those instances where a Landowner's prereclamation application contains more than one anticipated reclamation program, the Landowner shall identify his preferred priority for submitting the reclamation programs and the preferred year for submittal of each program application.

(3) The estimated cost of reclamation of each proposed reclamation program in each prereclamation application shall be developed by staff using historical cost data from prior approved reclamation programs. This information will be made available to assist the Landowner in submitting a reclamation program application.

(4) The Bureau's review of the prereclamation application is nonbinding in regards to the approval and funding of reclamation programs.

(5) Landowners shall reclaim all nonmandatory lands which were put into use as clay settling areas after July 1, 1975, and on or before July 1, 1984, under the Nonmandatory Land Reclamation Program. Landowners shall submit reclamation program applications within one hundred eighty (180) days after the land ceases to be used as a clay settling area. The requirements of this subsection are expressly contingent upon the availability of sufficient funds in the Nonmandatory Land Reclamation Trust Fund.

(6) Landowners should submit reclamation program applications to the Bureau by July 1 to allow sufficient time to review the application for completeness before November 1. All applications which are complete by November 1 will be evaluated and considered for funding.

(7) Within forty-five (45) days after initial receipt of a reclamation program application, the staff shall review each application and shall request submittal of all additional information necessary to complete the application. Within thirty (30) days after receipt of such additional information, staff shall review it and may request only that information needed to clarify such additional information or to answer new questions raised by or directly related to such additional information. The Landowner shall be notified when his application is deemed complete or incomplete.

(8) Applications shall be made on forms provided by the Bureau. The Landowner shall submit three (3) copies of the completed application which shall include all the information, certifications, aerial photographs, draw-

ings, and reports certified by an engineer and/or surveyor registered to practice in the State of Florida, as applicable. Each application shall be signed and bear the seal of an engineer registered to practice in the State of Florida, except those applications involving only donation or purchase of nonmandatory lands. Form DNR 53-011(16) "Reclamation Program Application" is incorporated by reference into this rule effective April 1990. Copies of the form may be obtained from the Bureau.

(9) Each reclamation program application shall include a current list of names and mailing addresses of all adjacent Landowners within the parcel or within one hundred (100) feet of the program's boundaries. The staff shall notify each identified adjacent Landowner of the application. In those instances where objections to said application are offered by an adjacent Landowner, the Bureau will notify the adjacent Landowner by certified mail of the date that the reclamation program application is to be submitted to the Committee so that the adjacent Landowner may attend the meeting to present objections to the Committee for consideration.

(10) Each application shall include a statement from the appropriate local government(s) that the proposed reclamation is consistent with the Local Comprehensive Plan and the Comprehensive Regional Policy Plan, adopted pursuant to Chapter 186, F.S.

(11) In order to achieve the standards and criteria of Section 16C-17.008, and to facilitate the extra or special earthmoving or vegetation planting required for a specific land use planned by the Landowner which does not conflict with the Local Comprehensive Plan or the Comprehensive Regional Policy Plan adopted pursuant to Chapter 186, F.S., the Bureau shall consider reclamation programs which will result in reclamation of units of eligible land for specific land uses, with additional earthmoving and vegetation plantings occurring during reclamation under the following circumstances:

(a) Reimbursement of the Landowner's cost of reclamation from the Nonmandatory Land Reclamation Trust Fund shall not be more than the maximum reimbursable reclamation cost pursuant to Section 16C-17.010, to achieve the standards and criteria of Section 16C-17.008.

(b) The estimated cost of the reclamation to achieve the standards and criteria of Section 16C-17.008, shall be identified and agreed upon by the Landowner and Bureau prior to approval of the reclamation program. No funds from the Nonmandatory Land Reclamation Trust Fund shall be granted to reimburse any of the additional work effort.

(c) The application for a reclamation program shall set forth the total effort proposed by the Landowner including estimated cost and identification of the additional work to achieve reclamation for a specific use.

(d) The additional work effort shall be confined to earthmoving, earthen retaining structures, preparation for planting and cultivation of agriculture or silviculture crops, or additional vegetation which for reasons of efficiency and economy can be accomplished simultaneously.

(e) The Landowner shall maintain cost records which clearly set forth and separate the costs of eligible reclamation work for reimbursement and that additional work required for the specific use planned.

(f) The costs of water control structures, required as a condition for approval of a permit from a regulatory agency of the State of Florida or any other agency having jurisdiction over the application site, are reimbursable upon proof by the Landowner that the structure is required. The cost of artificial structures required to convey water from elevated clay surfaces to lower elevations may be reimbursable in those instances where it is necessary to prevent erosion. Structures should be designed to be as naturally appearing as possible. No other permanent structural work nor additional vegetation plantings will be included in the eligible reimbursable cost (examples | retainer walls, compaction costs, agricultural or silvicultural crops).

(g) Additional work effort performed shall conform to the standards and criteria of Section 16C-17.008.

(h) All work to be performed on the program site shall be included in the reclamation program application.

(i) Inspections, including final inspections, shall evaluate the entire work performed.

(j) In order to provide a means for the Landowner to achieve an agricultural land use involving the planting of agricultural crops and silvicultural crops, the Landowner must request, at the time of application, a waiver of the revegetation and establishment requirements of this rule to permit the immediate agricultural or silvicultural use. Agricultural and silvicultural plantings will be done at the Landowner's expense. Earthmoving costs in excess of minimum standards will be at the Landowner's expense, and must be identified in the application. If the Landowner does not anticipate utilizing the entire program or parcel for the agricultural or silvicultural

use then that portion which is not in agricultural or silvicultural use must conform to all standards and criteria based on the acreage not utilized for agricultural or silvicultural use. The request for a waiver of the revegetation and establishment stages does not include pastures as an agricultural use. A Landowner must utilize at least ninety percent (90%) of the program upland acreage for agricultural enhancement. Those reasonable costs for soil amendments, in agricultural or silvicultural applications, are reimbursable when the revegetation and establishment stages are waived. All additional work effort shall be accomplished within the maximum stage duration limits set forth in these rules. It is the intent of these rules that the extra work effort is in addition to, and not in lieu of, the efforts necessary to meet the standards and criteria of Section 16C-17.008.

(12) In order to assure that the use of fill material from off-site sources will not adversely impact the reclamation of the off-site sources, the owner of the sources of the fill material must certify to the Bureau and the Bureau must be satisfied that the fill material to be used is absolutely surplus to the needs of the off-site source. This certification, when applicable, shall be included in the reclamation program application.

(13) Beginning with the funding for the 1985-86 year, the staff shall, by February 1 of each year, present to the Committee for its consideration the two prioritized lists required by Subsection 16C-17.005(2), of the applications received by the preceding November 1. These lists shall include the staff's recommendation and an estimate of the cost of each reclamation program or land acquisition.

(14) The Committee shall recommend to the Department approval, modification, or denial of reclamation program applications, associated cost estimates, and the staff's recommended prioritized lists. The Committee's recommendations on the prioritization shall be based on the criteria contained in Section 16C-17.005.

(15) The Committee's recommendations shall be submitted to the Department by April 1 for final agency action by June 1 of each year. The Department shall approve, in whole or in part, the list of reclamation program applications in the order of priority in which such reclamation program applications are presented.

(16) Staff shall notify, in writing, the Landowners and appropriate local governmental entities of the Department's final agency action on the list of reclamation program applications. Within thirty (30) days of final agency action, the Bureau shall offer reclamation contracts to each Landowner who received an approval in the order on the priority list to the extent that funds are available for that year. Each applicant shall have thirty (30) days from receipt of the contracts in which to execute the contracts. If the contracts are not executed within the thirty (30) days after receipt, the application shall be removed from the approved list for the current year. Reclamation contracts for additional approved programs may be offered if sufficient funds are available.

(17) Beginning in 1985, reclamation contracts may not be executed and available funds may not be committed after June 30 of the year for which a reclamation program application is approved by the Department.

(18) After receiving the approval of the Department, each reclamation program application for the acquisition of land shall be transferred to the Division of State Lands, which shall acquire the lands in compliance with acquisition procedures of Section 253.025, F.S.

(19) All approved reclamation program applications which are not funded shall be considered by the Committee at its next meeting called for the purpose of approving and prioritizing applications, together with other reclamation program applications received by November 1 of that calendar year, provided a written request for consideration is received from the Landowner by the Bureau by July 1 of the same calendar year. Supplemental requests by the Bureau for additional information may be made to update the application. Substantial changes in the program may necessitate the submittal of a new application.

Specific Authority 378.021, 378.034, 378.038, 370.021 FS.

Law Implemented 378.021, 378.034 FS.

History|New 3-24-84, Amended 1-10-85, 12-3-85, Formerly 16C-17.09, Amended 6-13-91.

16C-17.0093 Reclamation Contracts.

(1) Reclamation contracts offered Landowners, execution of which shall signify acceptance of the reclamation program as approved, shall be in duplicate, each of which shall for all purposes be considered an original.

(2) Reclamation contracts shall contain all modifications, if any, to the reclamation program which were not contained in the application or agreed to by the Landowner, in writing, prior to the reclamation program application's approval by the Department. Form DNR-53-012(16) entitled "Reclamation Contract" is incor-

porated by reference into this rule with the effective date of the rule. Copies of the form may be obtained from the Bureau.

(3) Landowner executed reclamation contracts shall be returned to the Bureau within forty-five (45) days from the receipt of the contracts. The date the Executive Director executes the contracts, on behalf of the Department, shall be the effective date of the reclamation program. The notice to proceed on the reclamation program shall be the return of one of the duplicate contracts.

(4) The amount of reimbursement for reclamation activities allowed in the reclamation contract shall be a grant of money equal to the estimated cost of the reclamation program as approved by the Department. In no event, however, shall the grant amount exceed the maximum amounts specified in Rule 16C-17.010.

(5) Within three (3) months of the effective date of the reclamation contract and prior to any physical alteration of the program area or initiating of any dam abandonment procedures, the Landowner shall notify the Bureau of the date of initiation of reclamation activity. This date of initiation of reclamation shall be the anniversary date of the reclamation program from which the approved stage duration periods will be determined.

(6) Any approved reclamation program for which a reclamation contract has been executed shall be considered abandoned when:

(a) Initiation of reclamation activity does not begin within six (6) months of the effective date of the reclamation contract and the Bureau has not received and approved a written request for an initiation date time extension,

(b) There has been no physical reclamation activity after the initiation of reclamation for a period of one hundred twenty (120) consecutive days, without prior written approval of the Bureau, or

(c) The Landowner by act, or omission, or otherwise evidences an intent to not complete the reclamation program.

(7) Funds set aside for reimbursement of any reclamation contract which becomes void for the year approved shall become available for other approved reclamation programs prior to June 1 of that year if the Department elects not to complete the reclamation program.

(8)(a) The Bureau shall approve, deny, or approve with modifications time extensions, reclamation program modifications or amendments to the reclamation contract upon written request by the Landowner, provided:

1. The Landowner submits appropriate evidence of the necessity for the time extension, modification or amendment and all documentation requested by the Bureau,

2. The modification constitutes less than twenty percent (20%) of the total work effort under the approved reclamation program, and

3. The modification does not substantially change the original character of the approved reclamation program scheme.

(b) The Department shall approve, deny, or approve with modifications all other reclamation program modifications. Stage duration periods of the reclamation program shall continue to run during the time involved in the time extension, modification or amendment consideration. Should a modification of the reclamation program be approved, the stage duration limits of the amended reclamation program shall be defined with consideration given to the lapsed time involved and the increase/decrease of work effort involved. Should a modification to a reclamation program be approved in which the work previously done pursuant to the original reclamation program be destroyed, the cost of the work destroyed shall not be a reimbursable cost under the reclamation contract.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.035, 378.038 FS.

History|New 1-10-85, Amended 12-3-85, Formerly 16C-17.093.

16C-17.0095 Reclamation Contracts Assignment.

(1)(a) Reclamation contracts are not assignable without the approval of the Bureau or the Department. The Bureau may approve the assignment of a reclamation contract if there is not to be any modification to the approved reclamation program. The Department must approve all assignments involving reclamation program modifications.

(b) Where, prior to the issuance of a certification of reclamation completion pursuant to Rule 16C-17.013, and the expiration of any post reclamation conditions stipulated in a reclamation contract, a Landowner wishes to transfer, by sale or otherwise, fee title to lands which have been included in a reclamation contract and where the transferee desires the assignment of the reclamation contract to him, then the transferer or transferee may request that the reclamation contract be assigned.

(c) Should the fee title of lands included in a reclamation contract be transferred, by sale or otherwise, to a new owner without the assignment of the reclamation contract, the Landowner named in the reclamation contract shall retain all obligations to perform under the reclamation contract. If the Landowner fails to perform under the reclamation contract, the Department shall take appropriate legal action to recover cost of damages.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.035, 378.038 FS.

History | New 1-10-85, Amended 12-3-85, Formerly 16C-17.095.

16C-17.010 Reclamation Cost.

(1) The Department acknowledges that a number of Landowners have received approval of their reclamation program applications prior to July 1, 1984 and therefore are not subject to the funding limits of Chapter 378, Florida Statutes, as amended July 1, 1984. All actions on reclamation program applications approved by the Department prior to July 1, 1984 shall be governed by the appropriate statutes, rules and regulations in effect at the time of their approval.

(2) In establishing maximum reimbursable reclamation costs, the Department recognizes the existence of multiple landforms within certain parcels. Funding of such programs shall be on a prorata basis for each landform present in the parcel based on the acreage of each landform present. The Landowner shall submit an aerial photograph of the program site clearly indicating the boundaries and acreages of those lands. The outside toe of the dam shall be considered the outside boundary of a clay settling area.

(3) For the 1984-85 year the maximum reimbursable cost per reclaimed acre, based on prereclamation landforms identified in the Report or as determined as part of the Bureau's re-evaluation of the parcel shall be \$4,000 for mined-out areas and \$2,500 for clay settling areas and other landforms. Commencing with the funding for the 1985-86 year, the maximum reimbursable cost per reclaimed acre for the respective landforms shall be the previous year's maximum reimbursable cost per reclaimed acre adjusted for the percentage change in the Construction Cost Index as published by the Engineering News Record. The percentage change for the 1985-86 year shall be for the interval from July 1, 1984 to December 31, 1984. For the 1986-87 year and thereafter, the percentage change shall be for the twelve (12) month interval from the last month used to establish the prior year's percentage change.

(4)(a) The reimbursement of reclamation costs for a program shall only include actual acres worked. It is recognized that there are instances in which a portion of a program site may not require modification to meet minimum standards. In such cases, the unaffected acreage shall be deleted from the program site acreage when calculating the maximum reimbursable cost of the reclamation program.

(b) In those instances where the Landowner's estimate of cost exceeds the maximum reimbursable reclamation cost established in this rule, the reclamation program application may be considered by the Committee for recommendation of approval, modification or denial, within the funding limitations of this rule.

(c) In establishing recommended estimated cost of reclamation required by Rule 16C-17.009(14), the staff will recommend the lower of the estimated reclamation cost or the maximum reimbursable reclamation cost.

(5) Those reasonable and properly documented planning, engineering and surveying costs necessary for the preparation of the reclamation program application are reimbursable for those programs under a reclamation contract.

(6) The Department recognizes that time is an important factor in the reclamation of clay settling areas and that the dewatering and crusting phase is the most time consuming phase of the reclamation. In those instances where the landowner desires to initiate the dewatering phase of an eligible, nonmandatory, clay settling parcel or program prior to the submission or approval of an application for reclamation funding, the costs incurred for this activity are reimbursable to the landowner only after approval of a reclamation contract and compliance with the following conditions:

(a) The applicant must file a detailed plan for dewatering and crusting of the clay settling area including the methodology to be used, the estimated timetable to accomplish dewatering and dam abandonment, including breaching, and the estimated cost of the entire phase up to but not including any earthmoving. Form DNR 53-013(16) "Application for Approval of Early Dewatering of Clays" is incorporated by reference into this rule with the effective date of the rule. Copies of the form may be obtained from the Bureau.

(b) The applicant must secure approval, in writing, from the bureau for the plan submitted in (a). No costs will be eligible for reimbursement which have been incurred prior to the bureau's written approval.

(c) The approval of the dewatering phase prior to the approval of a reclamation program application does not guarantee funding, a recommendation for funding, or any enhancement during the prioritization of applications.

(d) Costs which have been approved under an approved dewatering plan may be reimbursed only after approval of the reclamation program application by the Department and issuance of a reclamation contract. These costs shall be considered as part of (5) above for reimbursement purposes.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.034, 378.035, 378.038 FS.

History | New 3-24-84, Amended 1-10-85, 12-3-85, Formerly 16C-17.10, Amended 12-25-86.

16C-17.011 Multiple Landowner Application.

A Landowner whose geographic extent of ownership within a parcel will not satisfy the minimum reclamation size necessary for participation in this program and whose land cannot be shown to qualify for an exception to the reclamation program size requirements of Rule 16C-17.006, is encouraged to join with any adjacent contiguous Landowner(s) in preparing an application for a reclamation program. Such application will require the same information as set forth for a single owner application. In addition to the information set forth in Rule 16C-17.009, the multiple Landowners will be required to designate one of the Landowners as an agent for purposes of contact with the Bureau and to request and receive reimbursements. Also multiple Landowners shall provide a land boundary survey that clearly shows all ownership boundary lines and the program site boundary.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History | New 3-24-84, Amended 1-10-85, 12-3-85, Formerly 16C-17.11.

16C-17.0115 Nonmandatory Land Reclamation Committee.

(1) The Nonmandatory Land Reclamation Committee is created within the Department of Natural Resources to serve as an advisory body on matters relating to nonmandatory land reclamation. The Committee will be composed of five (5) members appointed by the Governor and confirmed by the Cabinet. In making the appointments, the Governor will consider the needs of the program for engineering, fiscal, reclamation, and environmental expertise. Three (3) of the members will be selected from Hamilton, Polk and Hillsborough counties.

(2) In order to achieve staggered terms, of those members first appointed, two (2) members will be appointed from a term of two (2) years and three (3) members will be appointed for a term of four (4) years. Thereafter, members of the Committee will serve four (4) year terms or until successors are appointed. Members of the Committee will be eligible for reappointment.

(3) A vacancy on the Committee will be filled for the remainder of the unexpired term in the same manner as the original appointment. A single vacancy on the Committee will not impair the right of the remaining members to exercise the powers of the Committee.

(4) The members of the Committee will select a chair, whose office will rotate among the members of the Committee annually.

(5) The Committee will meet at least annually at the call of the chair. The presence of four (4) members is required to constitute a quorum; a vote of three (3) members is necessary for Committee action.

(6) Committee members will serve without pay. However, members will be reimbursed from the Nonmandatory Land Reclamation Trust Fund for per diem and travel expenses pursuant to Sections 20.05 and 112.061, Florida Statutes.

Specific Authority 378.033 FS.

Law Implemented 378.033 FS.

History | New 1-10-85, Formerly 16C-17.115.

16C-17.012 Inspections, Cost Reporting and Auditing.

(1) Inspections.

(a) The Landowner, by executing the reclamation contract, authorizes the employees of the Bureau to enter upon the program site, upon prior notification to the Landowner, during normal business hours to inspect for compliance with the reclamation contract. All staff conducting inspections shall display appropriate identification and comply with all Landowner safety guidelines at all times.

(b) Informal inspections by staff shall occur on an irregular basis at a frequency necessary to ensure compliance with the reclamation contract. All program sites shall be formally inspected at least quarterly. A formal inspection for purposes of reimbursement or certifying completion of reclamation to a particular stage or totally shall be made at the written request of and in the company of the Landowner.

(c) Prior to initiating nonreimbursable activities on the program site as permitted by subsection 16C-17.009(11), the Landowner shall notify the Bureau, in writing, of the anticipated initiation date of the nonreimbursable activities and request a formal inspection to ensure that the reimbursable activities performed prior to the nonreimbursable activities comply with the reclamation contract.

(d) The Landowner's written request for a formal inspection shall include a certification signed and bearing the seal of an engineer registered to practice in the State of Florida, that the completed reclamation is in accordance with the reclamation contract.

(e) Upon receipt of the Landowner's written request for a formal inspection, the staff shall within thirty (30) days conduct an appropriate inspection of the program site. If the inspection reveals that the program site is in compliance with the reclamation contract, staff shall, within thirty (30) days, provide the Landowner an appropriate certification. Certification of reclamation completion to a particular stage shall constitute final action for that stage and subsequent inspections shall address subsequent reclamation activities and remedial actions such as correction of erosion problems or replanting of vegetation, if such is found necessary. Should the inspection reveal that the program site is not in compliance with the reclamation contract, staff shall, within thirty (30) days, notify the Landowner by certified mail of the noncompliance. The Landowner shall, within thirty (30) days from the date of the certification of the notice, correct the noncompliance. A period longer than thirty (30) days to correct the noncompliance may be granted, in writing, by the Bureau upon the receipt of the Landowner's written request. Once the noncompliance has been corrected, the Landowner shall request, in writing, an inspection to verify that the program site is in compliance. If noncompliance is not corrected within the allotted time, the Bureau shall take the appropriate action to foreclose on the mortgage or to collect the face value of the surety bond or letter of credit required by Chapter 3A-44, Part I, F.A.C., and may recommend to the Department that the Department take charge of the program site pursuant to the reclamation contract and complete the approved reclamation program.

(f) Once the reclamation has been certified complete pursuant to Section 16C-17.013, inspections by staff shall continue, if applicable, on an irregular basis and at least once per calendar year for a period of five (5) years after the date of the certification of reclamation completion to ensure compliance with the five (5) year alteration or agricultural use stipulations of the reclamation contract.

(g) Staff performing inspections shall prepare a written report on each inspection and shall provide a copy of the report to the Landowner.

(2) Cost Reporting.

(a) The Landowner shall provide the Bureau with a certified report of program incurred costs and progress, on forms provided by the Bureau, made during each calendar quarter of a reclamation contract beginning three (3) calendar months after the effective date of the reclamation contract. Each quarterly report shall be due within thirty (30) days following the last day of each quarter. Form DNR 53-001(16) "Quarterly Planned and Expenditure Report" is incorporated by reference into this rule effective November 1985. Copies of the form may be obtained from the Bureau.

(b) For all programs involving the use of the Landowner's employees, equipment, or inventorial materials and supplies to perform approved reclamation activities, the Landowner shall provide the Bureau, prior to submitting the first reimbursement request, detailed information to verify the reimbursable cost for labor, equipment and/or inventorial materials and supplies and to ensure compliance with "Reclamation Work Performed By

Landowner" section of Chapter 3A-44, Part I, F.A.C. Information required by the Bureau by way of illustration and not by way of limitation will be:

1. A listing of all job classifications or employee names, with a description of their duties, equipment and inventorial materials and supplies anticipated to be used in performing the reclamation indicating the per worked hour or item cost;

2. A detailed description of the procedures to be used to accumulate worked hours and quantities of supplies and materials used; and

3. Copies of all forms to be used in accounting for and accumulating worked hours and quantities of supplies and materials used.

(c) Forms for Landowners' cost reporting on reimbursement requests are included by reference into this rule effective November 1985. The following forms with titles are included: DNR 53-006(16) "Landowner's Labor and Travel Cost Schedule", DNR 53-007(16) "Landowner's Stock Material Cost Schedule", DNR 53-008(16) "Direct Material Purchases Schedule", and DNR 53-009(16) "Landowner's Equipment Cost". Copies of all forms are available from the Bureau.

(3) Auditing.

(a) Fiscal records shall be maintained in a manner prescribed by Chapter 3A-44, Part I, F.A.C.

(b) Audits will be performed as necessary to ensure compliance with the applicable rules and to certify reclamation cost.

(c) Prior to any audit, staff shall give the Landowner notice of the proposed audit.

(d) Staff performing the audit shall prepare a written report on each audit and shall provide a copy of the report to the Landowner. The Landowner shall respond, in writing, to the findings and recommendations of the report within thirty (30) days of the certification of receipt.

Specific Authority 378.021, 378.035, 370.021 FS.

Law Implemented 378.021, 378.035, 378.038 FS.

History | New 3-24-82,

Amended 1-10-85, 12-3-85, Formerly 16C-17.12, Amended 6-13-91.

16C-17.013 Reimbursement.

(1) Reimbursement under this Chapter is subject to Chapter 3A-44, Part I, F. A. C.

(2) Landowners shall submit to the Bureau for prior approval all advertisements and bid or proposal documents to be used to solicit bids or proposals for any contractual service or commodity to be used to perform the approved reclamation program.

(3) After staff has notified the Landowner that the program site is in compliance with the reclamation contract for the purpose of reimbursement, the Landowner shall provide the Bureau pursuant to Chapter 3A-44, Part I, F. A. C., the documentation of cost incurred in performing the approved reclamation activities. The documented cost shall be summarized on forms provided by the Bureau. Staff shall, within thirty (30) days, review the documentation of cost submitted by the Landowner and if in order and proper, the Bureau shall authorize the appropriate reimbursement pursuant to the reclamation contract. The following forms are incorporated by reference into the rule and are effective with the effective date of the rule. Forms DNR 53-013(16) "Reimbursement Request Form, Preparation Instructions"; DNR 53-003(16) "Request for Reimbursement | Final Completion Method"; DNR 53-003(16) "Statement of Expenditures | Final Completion Method"; DNR 53-003(16) "Summary of Program Costs | Final Completion Method"; DNR 53-002(16) "Request for Reimbursement | Completion of Revegetation Method"; DNR 53-002(16) "Statement of Expenditures | Completion of Revegetation Method"; DNR 53-002(16) "Summary of Program Costs | Completion of Revegetation Method"; DNR 53-004(16) "Request for Reimbursement | Stage Completion Method"; DNR 53-004(16) "Statement of Expenditures | Stage Completion Method"; DNR 53-004(16) "Summary of Program Costs | Stage Completion Method"; DNR 53-005(16) "Request for Reimbursement | Percentage of Completion Method"; DNR 53-005(16) "Statement of Expenditures | Percentage of Completion Method"; DNR 53-005(16) "Summary of Program Costs | Percentage of Completion Method". All forms are available from the Bureau.

(4) When the final inspection of the program site indicates that the reclamation requirements of the reclamation contract have been met satisfactorily, and when the examination of the documentation of the cost of reclamation as reported by the Landowner indicates the costs are in order and proper, the Executive Director is authorized to certify the reclamation completed.

(5) The certification of reclamation completion shall be recorded by the Landowner in the county in which the program site property is located. If the property is located in more than one county, the certification of reclamation contract completion shall be recorded in each county in which the property is located. Proof of recording the certification of reclamation completion must be provided to the Bureau prior to the Bureau's authorization of the final reimbursement.

(6) The Bureau is authorized to take final agency action on all matters required of the Department pursuant to Chapter 3A-44, Part I, F. A. C.

(7) Landowners shall use Bureau provided forms for the documented first mortgages, surety bonds or irrevocable letter of credits required, pursuant to Chapter 3A-44, Part I, F. A. C. Forms DNR 53-014(16) "Nonmandatory Land Reclamation Mortgage", DNR 53-015(16) "Nonmandatory Land Reclamation Surety Bond" and DNR 53-016(16) "Nonmandatory Land Reclamation Irrevocable Letter of Credit" are incorporated by reference into this rule and are effective with the effective date of the rule. These forms are available at the Bureau.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.034, 378.035, 378.038 FS.

History|New 3-24-82, Amended 1-10-85, 12-3-85, Formerly 16C-17.13.

16C-17.014 Forms.

Specific Authority 378.021, 378.038, 370.021 FS.

Law Implemented 378.021, 378.038 FS.

History|New 3-24-82, Amended 1-10-85, Repealed 12-3-85, Formerly 16C-17.14.

APPENDIX IV

REVISED DATE: AUGUST 2, 1991

ELIGIBILITY STATUS SUMMARY SHEET

Data Prepared from the Report:
 "Evaluation of Pre-July 1, 1975
 Disturbed Phosphate Lands"

Category	TOTAL INVENTORIED PROGRAMS				ELIGIBLE PROGRAMS			
	No of Programs	% of Total	No of Acres	% of Acres	No of Programs	% of Eligible	No of Acres	% of Acres
Total Programs	748	100%	149,129	100%	347	100%	86858	100%
Eligibility Status								
Eligible without clays	330	44%	83549	56%	330	95%	83549	96%
Eligible with clays	17	2%	3309	2%	17	5%	3309	4%
Eligible Total	347	46%	86858	58%	347	100%	86858	100%
Ineligible	179	24%	31075	21%	N/A	0%	N/A	0%
Not Evaluated	222	30%	31196	21%	N/A	0%	N/A	0%
Land Form								
Clay Settling	227	30%	64062	43%	183	53%	55639	64%
Hydraulically Mined	120	16%	13982	9%	19	5%	1322	2%
Mined-out	289	39%	49964	34%	113	33%	23680	27%
Sand Tailings	64	9%	9343	6%	25	7%	5126	6%
Other Land Forms	48	6%	11778	8%	7	2%	1091	1%
Potential Ecological Rating								
0.0 - 1.0	251	34%	35274	24%	18	5%	2904	3%
1.1 - 2.0	28	4%	4654	3%	14	4%	3877	4%
2.1 - 3.0	89	12%	24776	17%	67	19%	21762	25%
3.1 - 4.0	108	14%	28140	19%	86	25%	22504	26%
4.1 - 5.0	88	12%	18480	12%	66	19%	14641	17%
5.1 - 6.0	83	11%	16063	11%	55	16%	9022	10%
6.1 - 7.0	51	7%	11668	8%	33	10%	9587	11%
7.1 - 8.0	37	5%	7625	5%	8	2%	2561	3%
8.1 - 9.0	8	1%	1640	1%	1	0%	0	0%
9.1 - 10.0	5	1%	809	1%	1	0%	0	0%
Date Programs Mined								
0000 - 1900	40	5%	11561	8%	7	2%	1812	2%
1901 - 1910	22	3%	1634	1%	3	1%	86	0%
1911 - 1920	25	3%	3770	3%	2	1%	29	0%
1921 - 1930	61	8%	8579	6%	14	4%	2421	3%
1931 - 1940	66	9%	9071	6%	18	5%	2081	2%
1941 - 1950	110	15%	16398	11%	37	11%	6129	7%
1951 - 1960	130	17%	25477	17%	80	23%	18790	22%
1961 - 1970	159	21%	38446	26%	96	28%	28303	33%
1971 - 1980	135	18%	34193	23%	91	26%	27207	31%

Nonmandatory Reclamation Section
 Bureau of Mine Reclamation
 Division of Resource Management
 Florida Department of Natural Resources

ELIGIBLE PROGRAM LIST AS IDENTIFIED BY THE ZW REPORT
 MASTER FILE RECORDS
 NONMANDATORY RECLAMATION PROGRAM
 BUREAU OF MINE RECLAMATION
 FLORIDA DEPARTMENT OF NATURAL RESOURCES

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
AAC-13-A-72-LL-147-PR	92	0.0	X	18-32S-24E	MOA	147	0
AAC-17-A-73-LL-226-PR	93	0.0	X	21-32S-24E	MOA	226	0
AAC-1-74-LL-640-PR	91	0.0	X	10-32S-24E	MOA	640	0
AAC-21-B-72-LL-400-PR	94	0.0	X	15-32S-24E	MOA	400	0
AAC-25-A-LL-82-PR	95	0.0	X	18-32S-24E	MOA	82	0
AAC-26-B-LL-344-PR	96	0.0	X	16-32S-24E	MOA	344	0
AC-OP-02-PR	2	2.0	E	23-27S-24E	CSA	270	1958
AC-OP-03-PR	3	3.3	E	22-27S-24E	CSA	509	1957
AC-OP-04-PR	4	3.3	E	15-27S-24E	MOA	202	1968
AC-OP-05-PR	5	4.9	E	21-27S-24E	MOA	829	1967
AC-OP-06-PR	6	2.0	E	22-27S-24E	CSA	938	1961
AC-OP-A-PR	8	0.0	X	22-27S-24E	OT	111	1979
AC-OP-B-PR	9	3.3	I	28-27S-24E	MOA	277	1963
AC-OP-C-PR	10	3.3	I	29-27S-24E	MOA	855	1966
AC-OP-D-PR	11	4.2	I	32-27S-24E	OT	161	1966
AC-OP-E-PR	12	3.3	I	05-28S-24E	MOA	147	1963
AC-OP-07-PR	7	7.0	E-C	14-27S-24E	MOA	143	1960
AC-SC-A-PR	14	7.0	I	10-28S-24E	MOA	138	1950
AC-SC-01-PR	13	6.4	E	28-28S-24E	MOA	120	1954
AC-SM-010-PR	17	2.9	E	16-29S-21E	CSA	538	1960
AC-SM-011-PR	18	3.7	E	28-29S-21E	CSA	170	1958
AC-SM-012-PR	19	3.7	E	27-29S-21E	CSA	197	1951
AC-SM-013-PR	20	3.7	E	28-29S-21E	CSA	437	1957
AC-SM-014-PR	22	4.9	E	27-29S-21E	CSA	259	1950
AC-SM-015-PR	21	5.0	E	22-29S-21E	CSA	73	1952
AC-SM-08-PR	15	5.7	E	17-29S-21E	MOA	178	1961
AC-SM-09-PR	16	4.7	I	16-29S-21E	MOA	263	1970
AC-SM-A-PR	23	5.6	I	06-29S-21E	MOA	135	1953
AC-SM-B-PR	24	5.6	I	08-29S-21E	MOA	249	1962
AC-SM-C-PR	25	5.6	I	17-29S-21E	MOA	340	1971
AC-SM-D-PR	26	5.6	I	17-29S-21E	MOA	106	1970
AC-SM-E-PR	27	3.0	E	28-29S-21E	OT	115	1970
AC-SM-F-PR	28	8.5	I	27-29S-21E	OT	96	1956
AC-SM-G-PR	29	3.6	E	27-29S-21E	CSA	240	1956
AC-SM-H-PR	30	3.7	E	27-29S-21E	CSA	198	1958
AGRI-LEIS-01-PR	527	9.0	I	2-29S-23E	MOA	90	1930
AGRI-LEIS-02-PR	528	9.3	I	2-29S-23E	MOA	60	1930
AGR-BY-01-PR	31	1.3	E	14-31S-21E	CSA	555	1956
AGR-BY-04-PR	34	5.8	E	14-31S-21E	CSA	231	1950
AGR-BY-A-PR	35	4.9	I	15-31S-21E	MOA	321	1964
AGR-BY-B-PR	36	4.1	E	15-31S-21E	CSA	148	1964
AGR-BY-C-PR	37	4.9	I	16-31S-21E	MOA	366	1966
AGR-BY-D-PR	38	0.0	X	15-31S-21E	MOA	138	1964
AGR-BY-E-PR	39	0.0	X	15-31S-21E	MOA	78	1964
AGR-BY-F-PR	40	0.0	X	15-31S-21E	MOA	8	1963
AGR-BY-02-PR	32	4.5	E	13-31S-21E	MOA	67	1949
AGR-BY-03-PR	33	4.8	I	13-31S-21E	CSA	140	1955
AGR-FG-04-PR	41	3.3	E	16-32S-23E	CSA	33	1975
AGR-FG-06-PR	42	3.3	E	16-32S-23E	CSA	34	1975
AGR-FG-A-PR	43	0.0	X	17-32S-23E	MOA	33	1975
AGR-FG-B-PR	44	2.9	E	21-32S-23E	CSA	556	1975
AGR-PC-015-PR	46	2.9	E	13-32S-23E	CSA	733	1973
AGR-PC-017-PR	48	4.9	E	27-32S-24E	MOA	110	1974
AGR-PC-018-PR	49	4.2	E	31-32S-24E	CSA	400	1967
AGR-PC-019-PR	50	1.8	E	29-32S-24E	CSA	365	1966

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
AGR-PC-020-PR	51	1.8	E	19-32S-24E	CSA	200	1967
AGR-PC-021-PR	52	4.9	E	31-32S-24E	MOA	331	1969
AGR-PC-022-PR	53	4.2	E	29-32S-24E	CSA	286	1970
AGR-PC-023-PR	54	3.6	I	28-32S-24E	CSA	476	1967
AGR-PC-024-PR	55	4.2	E	28-32S-24E	CSA	340	1970
AGR-PC-025-PR	56	3.9	E	19-32S-24E	CSA	326	1969
AGR-PC-026-PR	57	3.9	E	19-32S-24E	CSA	500	1969
AGR-PC-027-PR	58	3.9	E-C	24-32S-23E	MOA	380	1975
AGR-PC-028-PR	59	4.9	E	8-32S-24E	CSA	311	1964
AGR-PC-029-PR	60	3.9	E	8-32S-24E	CSA	433	1964
AGR-PC-030-PR	61	5.7	E	8-32S-24E	MOA	583	1967
AGR-PC-031-PR	62	4.9	E	8-32S-24E	MOA	122	1965
AGR-PC-032-PR	63	4.1	E	9-32S-24E	CSA	139	1972
AGR-PC-033-PR	64	0.0	E	5-32S-24E	STA	170	1967
AGR-PC-034-PR	65	4.9	E	4-32S-24E	MOA	364	1964
AGR-PC-035-PR	66	3.9	E	7-32S-24E	CSA	550	1970
AGR-PC-036-PR	67	5.0	E	36-31S-23E	MOA	413	1975
AGR-PC-037-PR	68	5.7	E	36-31S-23E	MOA	186	1940
AGR-PC-038-PR	69	4.9	E	31-31S-24E	MOA	424	1945
AGR-PC-039-PR	70	4.1	E	2-32S-24E	MOA	415	1974
AGR-PC-07-PR	45	3.1	E	20-32S-24E	STA	126	1972
AGR-PC-1-PR	87	0.0	X	3-32S-24E	MOA	514	1972
AGR-PC-3-PR	88	0.0	X	16-32S-24E	MOA	78	1966
AGR-PC-4-PR	89	0.0	X	5-32S-24E	CSA	258	1965
AGR-PC-5A-PR	90	0.0	X	4-32S-24E	STA	231	1965
AGR-PC-A-PR	71	0.0	E-C	11-32S-23E	CSA	48	1975
AGR-PC-B-PR	72	5.8	I	1-32S-23E	HMA	86	1930
AGR-PC-C-PR	73	4.1	I	6-32S-24E	HMA	85	1931
AGR-PC-D-PR	74	5.8	I	6-32S-24E	HMA	162	1931
AGR-PC-E-PR	75	2.6	I	32-31S-24E	CSA	61	1946
AGR-PC-F-PR	76	2.3	I	5-32S-24E	CSA	161	1962
AGR-PC-G-PR	77	0.3	I	5-32S-24E	CSA	91	1962
AGR-PC-H-PR	78	3.2	E	6-32S-24E	OT	150	1967
AGR-PC-I-PR	79	2.6	I	4-32S-24E	CSA	40	1962
AGR-PC-J-PR	80	2.8	I	4-32S-24E	MOA	34	1971
AGR-PC-K-PR	81	4.3	I	18-32S-24E	MOA	632	1969
AGR-PC-L-PR	82	5.2	E	19-32S-24E	STA	119	1968
AGR-PC-M-PR	83	7.8	I	21-32S-24E	MOA	40	1971
AGR-PC-N-PR	84	8.6	I	27-32S-24E	HMA	188	1922
AGR-PC-O16-PR	47	6.6	E	21-32S-24E	STA	326	1973
AGR-PC-O-PR	85	8.6	I	27-32S-24E	HMA	47	1922
AGR-PC-P-PR	86	7.8	I	34-32S-24E	HMA	94	1922
AGR-PP-01-PR	97	0.0	I	35-30S-23E	HMA	81	1912
AGR-PP-02-PR	98	6.2	E	25-30S-23E	MOA	20	1934
AGR-PP-03-PR	99	4.3	E	36-30S-23E	MOA	65	1930
AGR-PP-04-PR	100	4.3	E	30-30S-24E	MOA	42	1930
AGR-PP-A-PR	102	3.7	I	28-30S-24E	HMA	65	1924
AGR-PP-B-PR	103	0.0	X	30-30S-24E	HMA	171	1917
AGR-PP-C-PR	104	3.9	I	31-30S-24E	HMA	297	1927
AGR-PP-D-PR	105	7.3	I	1-31S-23E	HMA	268	1925
AGR-PP-E-PR	106	7.3	I	36-30S-23E	HMA	64	1919
AGR-PP-F-PR	107	7.3	I	36-30S-23E	MOA	49	1933
AGR-PP-G-PR	109	0.0	X	35-30S-23E	OT	84	0
AGR-PP-H-PR	108	5.4	E	26-30S-23E	HMA	29	1920
AGR-PP-O5-PR	101	4.4	I	36-30S-23E	HMA	144	1925
AGR-SC-010-PR	115	3.2	E	24-27S-24E	CSA	760	1968
AGR-SC-05-PR	110	5.5	E	13-27S-24E	MOA	111	1974
AGR-SC-06-PR	111	3.2	E	13-27S-24E	CSA	405	1971
AGR-SC-07-PR	112	6.3	E	13-27S-24E	MOA	630	1973
AGR-SC-08-PR	113	5.5	E	19-27S-25E	MOA	188	1973
AGR-SC-09-PR	114	2.1	E	26-27S-24E	STA	42	1972
AGR-SC-A-PR	116	6.1	E	12-27S-24E	MOA	495	1975

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE
							OF MING
AGR-SC-B-PR	117	5.5	E	19-27S-25E	MOA	128	1975
AGR-SP-02-PR	119	4.4	E	20-31S-24E	MOA	1006	1962
AGR-SP-03-PR	120	3.7	E	32-31S-24E	MOA	187	1957
AGR-SP-A-PR	121	0.0	X	20-31S-24E	OT	17	0
AGR-SP-B-PR	122	2.9	E	29-31S-24E	STA	271	1957
AGR-SP-O1-PR	118	0.0	X	17-31S-24E	OT	491	1961
ALFRED DANA-A-PR	720	0.0	X	7-30S-22E	MOA	72	1945
ALFRED DANA-B-PR	721	5.7	E	12-30S-21E	MOA	175	1945
ALVA CARVER-PR	541	0.0	X	36-28S-23E	MOA	19	1955
ARTHUR THOMAS-PR	688	2.7	E	13-30S-23E	CSA	20	1955
BANANA LK.W.(MULTI-OWNERS)-PR	533	0.0	X	9-29E-24E	MOA	150	1945
BARRETT HAENTJENS & CO.-PR	534	0.0	X	2-30S-23E	HMA	22	1915
BDN-C-A-PR	136	5.8	I	34-28S-22E	HMA	217	1913
BDN-C-B-PR	137	0.0	X	34-28S-22E	HMA	544	1913
BDN-C-C-PR	138	5.4	I	26-28S-22E	HMA	554	1913
BDN-T-01-PR	123	3.3	E	26-27S-24E	CSA	571	1953
BDN-T-02-PR	124	3.2	E	35-27S-24E	OT	271	1952
BDN-T-03-PR	125	4.6	E	35-27S-24E	CSA	528	1956
BDN-T-04-PR	126	4.6	E	36-27S-24E	CSA	458	1958
BDN-T-06-PR	128	4.6	E	31-27S-25E	CSA	366	1960
BDN-T-07-PR	129	5.8	E	32-27S-25E	MOA	40	1959
BDN-T-08-PR	130	5.8	I	34-27S-24E	MOA	359	1970
BDN-T-A-PR	131	0.0	X	33-27S-24E	MOA	1024	1974
BDN-T-B-PR	132	5.8	I	3-28S-24E	MOA	137	1970
BDN-T-C-PR	133	3.3	I	35-27S-24E	CSA	500	1950
BDN-T-D-PR	134	3.3	I	31-27S-25E	CSA	114	1960
BDN-T-E-PR	135	4.8	E	31-27S-25E	MOA	10	1960
BDN-T-O5-PR	127	6.3	E	25-27S-24E	MOA	998	1964
BEN HILL GRIFFIN INC.-PR	586	0.0	X	1-30S-24E	HMA	32	1935
BILLIE D.WHITTAKER-PR	710	5.3	E	18-29S-24E	MOA	15	1950
BP-HAYN-AR-3-PR	157	0.0	X	30-31S-23E	MOA	143	1972
BP-HAYN-AR-5-PR	158	0.0	X	31-31S-23E	MOA	151	1973
BP-HAYN-AR-7-PR	159	0.0	X	29-31S-23E	MOA	115	1972
BP-HAYN-AR-8-PR	160	0.0	X	28-31S-23E	MOA	90	1973
BP-HAYN-BR-1-PR	161	0.0	X	31-31S-23E	MOA	118	1973
BP-HAYN-BR-2-PR	162	0.0	X	31-31S-23E	MOA	166	1973
BP-HAYN-BR-4-PR	163	0.0	X	33-31S-23E	HMA	149	1925
BP-H-010-PR	142	3.0	E	29-31S-23E	CSA	600	1973
BP-H-011-PR	143	4.0	E	32-31S-23E	CSA	175	1974
BP-H-07-PR	139	2.0	E	32-31S-23E	CSA	338	1969
BP-H-08-PR	140	4.0	E	27-31S-23E	CSA	387	1970
BP-H-09-PR	141	3.0	E	33-31S-23E	CSA	321	1971
BP-H-D-PR	144	2.9	I	29-31S-23E	STA	387	1974
BP-H-E-PR	145	3.6	E	28-31S-23E	STA	225	1974
BP-H-F-PR	146	0.3	E	28-31S-23E	STA	46	1974
BP-H-G-PR	147	2.4	E	16-31S-23E	STA	308	1975
BP-H-H-PR	148	3.0	I	34-31S-23E	MOA	60	1925
BP-H-I-PR	149	1.7	I	27-31S-23E	HMA	24	1925
BP-H-J-PR	150	7.6	I	27-31S-23E	HMA	123	1925
BP-H-K-PR	151	0.0	X	25-31S-23E	OT	685	1945
BP-H-L-PR	152	6.1	I	25-31S-23E	HMA	157	1925
BP-H-M-PR	153	5.7	I	34-31S-23E	HMA	466	1925
BP-H-N-PR	154	8.1	I	26-31S-23E	HMA	280	1925
BP-H-O-PR	156	4.5	I	26-31S-23E	MOA	167	1971
BP-H-P-PR	155	7.9	I	28-31S-23E	MOA	68	1973
BP-L-01-PR	164	8.0	I	18-31S-22E	MOA	320	1955
BP-L-02-PR	165	9.2	I	17-31S-22E	MOA	280	1955
BP-L-03-PR	166	6.2	E	8-31S-22E	MOA	500	1955
BP-L-04-PR	167	4.0	E	7-31S-22E	MOA	240	1955
BP-L-05-PR	168	7.9	E	18-31S-22E	CSA	320	0
BP-L-06-PR	169	5.8	E	18-31S-22E	CSA	520	1955
BRANDON SWIMMING ASSOC.INC.-PR	718	0.0	X	17-29S-21E	MOA	310	1960

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
CARTER KILPATRICK-PR	621	5.2	E	17-32S-25E	MOA	94	1957
CHAIN OF LAKES-PR	542	0.0	X	27-31S-25E	HMA	27	1920
CHARLES M.GOIN-PR	723	0.0	X	9-30S-22E	HMA	93	1935
CHRISTINA COMMERCIAL-PR	543	0.0	X	13-29S-23E	HMA	45	1920
CHRISTINA PLAZA-PR	544	0.0	X	13-29S-23E	HMA	2	1920
CIRTUS CENTER DEVEL.INC.-PR	546	0.0	X	25-28S-23E	MOA	43	1940
CITRUS BYPRODUCTS-PR	545	3.7	E	35-28S-24E	MOA	42	1950
CITRUS CITY COLONY TLR.PK.-PR	547	0.0	X	25-28S-23E	MOA	36	1940
CITY OF LAKELAND-A-PR	625	0.0	X	32-28S-24E	MOA	71	1950
CITY OF LAKELAND-B-PR	626	0.0	X	31-28S-24E	MOA	100	1950
CITY OF LAKELAND-C-PR	627	6.1	E	32-28S-24E	MOA	28	1950
CITY OF MULBERRY-A-PR	649	7.4	I	11-30S-23E	HMA	18	1910
CITY OF MULBERRY-B-PR	650	7.2	I	11-30S-23E	HMA	35	1910
CITY OF MULBERRY-C-PR	651	0.0	X	11-30S-23E	HMA	23	1910
CLAUDE M. HARDEN-PR	588	0.0	X	1-29S-23E	MOA	3	1950
CLAYTON J. PRUITT-B-PR	739	2.7	I	14-31S-21E	STA	29	1950
CLAYTON J.PRUITT-A-PR	738	6.4	E	13-31S-21E	MOA	647	1955
COMBEE ROAD EAST-PR	549	0.0	X	27-28S-24E	MOA	89	1950
COMMUN. DEVEL. BLOCK GRANT-PR	550	0.0	X	6-30S-25E	MOA	15	1940
CRYSTAL ACRES-PR	552	0.0	X	27-28S-24E	MOA	38	1950
CRYSTAL ESTATES INC.(OTHERS)-PR	553	5.7	E	27-28S-24E	MOA	260	1950
CRYSTAL HILLS-PR	554	0.0	X	34-28S-24E	MOA	216	1950
CRYSTAL LK. MOBILE HOME PK.-PR	555	0.0	X	27-28S-24E	MOA	97	1950
CUSTRED-PR	557	0.0	X	18-29S-24E	MOA	20	1940
C.F. INDUSTRIES-PR	170	0.0	X	18-30S-24E	OT	1892	0
C.L.KNIGHT-A-PR	731	10.0	I	17-30S-22E	MOA	96	1935
C.L.KNIGHT-B-PR	732	7.6	E	16-30S-22E	CSA	283	1945
C.L.KNIGHT-C-PR	733	7.5	I	16-30S-22E	MOA	208	1945
C.WILSON RANCH-PR	711	0.0	X	28-29S-25E	CSA	563	1950
DAVID CRUM-PR	719	0.0	X	32-29S-22E	MOA	774	1934
DAVID R.ANDRESS(5 OWNERS)-PR	532	5.8	E	13-29S-23E	HMA	62	1930
DAVID ST. SUBDIVISION-PR	558	0.0	X	12-29S-23E	MOA	35	1930
DAWN HEIGHTS-PR	559	0.0	X	26-28S-24E	MOA	283	1950
DETSKO-PR	560	0.0	X	30-30S-24E	MOA	116	1935
DIMBATH DEVELOPMENT-PR	561	0.0	X	25-29S-23E	MOA	15	1920
DOLIME MINERALS CO.-PR	563	5.4	E	9-31S-25E	MOA	340	1950
DONALD E.HEMPHILL-PR	727	0.0	X	7-30S-22E	MOA	61	1945
DRUMMOND COAL CO.-A-PR	564	0.0	X	1-29S-23E	MOA	292	1940
DRUMMOND COAL CO.-B-PR	565	5.0	E	36-28S-23E	MOA	352	1940
DRUMMOND COAL CO.-C-PR	566	1.5	I	35-28S-23E	MOA	127	1940
DRUMMOND COAL CO.-D-PR	567	7.9	I	26-28S-23E	MOA	341	1940
DRUMMOND COAL CO.-E-PR	568	6.5	I	35-28S-23E	MOA	242	1940
D. H. HAAG-PR	587	0.0	X	35-30S-24E	MOA	26	1974
D.H.CROMER(AND OTHERS)-PR	551	7.1	I	12-30S-23E	HMA	107	1910
EDGEWOOD N.(MULTI-OWNERS)-PR	570	0.0	X	28-28S-24E	STA	52	1950
EDGEWOOD PK. (MULTI-OWNERS)-PR	571	0.0	X	32-28S-24E	STA	124	1940
EGC-SC-01-PR	171	5.5	E	9-31S-24E	CSA	160	1965
EGC-SC-02-PR	172	3.9	E	16-31S-24E	CSA	113	1967
EGC-SC-03-PR	173	3.9	E	15-31S-24E	CSA	300	1970
EGC-SC-04-PR	174	5.5	E	22-31S-24E	CSA	80	1969
EGC-SC-05-PR	175	3.9	E	22-31S-24E	CSA	228	1971
EGC-SC-A-PR	176	4.3	E	23-31S-24E	MOA	235	1971
EGC-SC-B-PR	177	9.4	I	16-31S-24E	HMA	51	1930
EGC-SC-C-PR	178	0.0	X	15-31S-24E	OT	268	0
EGC-SC-D-PR	179	0.0	X	10-31S-24E	OT	208	0
EGC-SC-E-PR	180	0.0	X	14-31S-24E	CSA	343	1965
EGC-SC-F-PR	181	1.9	E	16-30S-24E	OT	282	1935
EGC-SC-G-PR	182	5.3	I	21-30S-24E	CSA	461	1935
EGC-SC-H-PR	183	2.9	E	16-31S-24E	CSA	92	1968
EGC-SC-I-PR	184	2.9	E	15-31S-24E	CSA	70	1967
EGC-SC-J-PR	185	2.9	E	15-31S-24E	CSA	32	1966
EGC-SC-K-PR	186	2.9	E	12-31S-24E	CSA	453	1975

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
EGC-SC-L-PR	187	3.1	I	23-31S-24E	CSA	118	1970
EGC-W-010-PR	200	4.9	E	5-32S-26E	CSA	440	1971
EGC-W-01-PR	191	4.9	E	4-32S-25E	CSA	130	1953
EGC-W-02-PR	192	5.5	E	4-32S-25E	STA	80	1960
EGC-W-03-PR	193	4.9	E	4-32S-25E	CSA	80	1942
EGC-W-04-PR	194	3.7	E	4-32S-25E	CSA	125	1942
EGC-W-05-PR	195	3.7	E	3-32S-25E	STA	100	1939
EGC-W-06-PR	196	5.9	E	9-32S-25E	CSA	55	1964
EGC-W-07-PR	197	4.9	E	9-32S-25E	STA	20	1950
EGC-W-09-PR	199	3.9	E	1-32S-25E	CSA	200	1966
EGC-W-A-PR	201	0.0	X	3-32S-25E	OT	124	1940
EGC-W-B-PR	202	6.3	E	4-32S-25E	MOA	20	1940
EGC-W-C-PR	203	3.7	E	9-32S-25E	STA	117	1950
EGC-W-D-PR	204	0.0	X	3-32S-25E	MOA	68	1979
EGC-W-F-PR	205	5.5	I	36-31S-25E	MOA	92	1971
EGC-W-G-PR	206	4.2	E	36-31S-25E	MOA	19	1971
EGC-W-H-PR	207	3.9	E	36-31S-25E	CSA	71	1975
EGC-W-I-PR	208	0.0	X	1-32S-25E	MOA	119	1980
EGC-W-J-PR	209	2.3	E	31-31S-26E	CSA	273	1972
EGC-W-K-PR	210	2.0	I	6-32S-26E	MOA	5	1970
EGC-W-L-PR	211	0.0	E-C	32-31S-26E	CSA	54	1972
EGC-W-M-PR	212	8.9	I	5-32S-26E	MOA	346	1942
EGC-W-N-PR	213	0.0	X	4-32S-26E	OT	169	1940
EGC-W-O8-PR	198	6.4	E	1-32S-25E	MOA	115	1967
ELLSWORTH INC.-PR	572	0.0	X	12-29S-23E	MOA	24	1930
ENGLEHARD MIN.&CHEM.CORP.-PR	722	0.0	X	6-30S-22E	CSA	73	1940
EXECUTIVE ESTATES (MULT-OWN)-PR	573	0.0	X	13-29S-23E	HMA	54	1930
E.E.HOLLOWAY-A-PR	594	2.7	E	33-28S-24E	CSA	162	1952
E.E.HOLLOWAY-B-PR	595	5.0	E	33-28S-24E	CSA	347	1952
E.E.HOLLOWAY-C-PR	596	3.9	E	4-29S-24E	STA	482	1952
E.E.HOLLOWAY-D-PR	597	0.0	X	3-29S-24E	MOA	41	1945
E.E.HOLLOWAY-E-PR	598	7.8	E	3-29S-24E	CSA	673	1953
E.E.HOLLOWAY-F-PR	599	6.8	I	3-29S-24E	MOA	86	1945
E.H.SIMMONS-PR	741	0.0	X	16-31S-21E	MOA	35	1960
FARMLAND INDUSTRIES-PR	763	0.0	X	28-30S-24E	HMA	385	1925
FLEMING FAMILY CORP.-PR	574	0.0	X	18-29S-24E	MOA	31	1940
FLORAL LAKES-PR	575	0.0	X	18-30S-25E	MOA	114	1968
FLORIDA AUDUBON-A-PR	576	6.6	I	23-28S-24E	MOA	123	1950
FLOYD ENTRPRS.INC.-A(& OTR)-PR	577	5.7	E	36-28S-24E	CSA	421	1955
FLOYD ENT.INC.-B(AND J.A.KENT)-PR	578	6.5	E	36-28S-24E	CSA	215	1953
FT. MEADE AIRPORT-A-PR	579	0.0	X	25-31S-25E	STA	92	1965
FT.MEAD AIRPORT-B-PR	580	5.4	E	30-31S-26E	MOA	37	1965
F.F.EARP(AND STAVELY)-PR	569	5.0	E	35-29S-23E	MOA	93	1940
GAR-A-9-PR	231	0.0	X	13-32S-24E	STA	91	1972
GAR-FM-02-PR	222	2.5	E	24-32S-24E	CSA	270	1972
GAR-FM-03-PR	223	1.4	E	12-32S-24E	CSA	185	1969
GAR-FM-04-PR	224	3.5	E	1-32S-24E	CSA	110	1970
GAR-FM-05-PR	225	3.0	E	1-32S-24E	CSA	437	1973
GAR-FM-06-PR	226	3.0	E	6-32S-25E	CSA	300	1975
GAR-FM-A-PR	227	0.0	X	12-32S-24E	OT	17	1980
GAR-FM-B-PR	228	6.4	E	12-32S-24E	MOA	33	1971
GAR-FM-C-PR	229	5.3	I	14-32S-24E	STA	370	1960
GAR-FM-D-PR	230	8.0	I	28-32S-25E	HMA	85	1910
GENERAL TELEPHONE-PR	581	0.0	X	3-30S-25E	MOA	3	1945
GEORGE R. BURT-PR	535	4.7	E	1-30S-23E	HMA	12	1925
GIRLS VILLA-A-PR	582	0.0	X	3-30S-25E	HMA	111	1935
GIRLS VILLA-B-PR	583	6.8	I	3-30S-25E	HMA	13	1935
GORDON HEIGHTS-PR	584	0.0	X	27-29S-25E	MOA	55	1945
HARRY C. INNES (&OTHERS)-PR	606	0.0	X	14-28S-14E	MOA	124	1955
HIGHLAND LAKES-PR	590	3.1	E	35-29S-24E	MOA	698	1965
HIGHLAND LK.EST/FLA.VILLAGE-PR	591	0.0	X	36-29S-24E	MOA	57	1965
HIGHLAND VILLAGE-A-PR	592	6.0	E	13-29S-23E	MOA	14	1955

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
HIGHLAND VILLAGE-B-PR	592	0.0	I	13-29S-23E	MOA	89	1955
HILDA KILGORE-PR	730	0.0	X	30-29S-22E	MOA	22	1934
HILLSBOROUGH CO.BALLPARK-PR	728	0.0	X	5-29S-21E	MOA	59	1960
HOMELAND TRAILER PARK-PR	600	0.0	X	32-30S-25E	STA	9	1960
HWY 92 E. PROPERTIES-PR	593	0.0	X	14-28S-24E	MOA	6	1955
HYDE INC.-A-PR	601	0.0	X	35-29S-23E	HMA	114	1962
HYDE INC.-B-PR	602	4.8	E	26-29S-23E	CSA	65	1962
HYDE INC.-C-PR	603	5.9	E	26-29S-23E	MOA	32	1900
H. JENKS CALDWELL-A-PR	536	2.3	I	28-29S-25E	MOA	133	1945
H. JENKS CALDWELL-B-PR	537	2.3	E	27-29S-25E	CSA	96	1945
H. JENKS CALDWELL-C-PR	538	5.6	E	27-29S-25E	MOA	362	1945
H. JENKS CALDWELL-D-PR	539	0.0	X	27-29S-25E	STA	246	1945
H. JENKS CALDWELL-E-PR	540	0.0	E-C	27-29S-25E	OT	69	1945
IMC DEVELOPMENT INC.-PR	604	0.0	X	24-29S-23E	HMA	592	1910
IMC-CS-011-PR	266	2.0	I	36-30S-25E	MOA	18	1959
IMC-CS-015-PR	269	4.4	E	16-30S-25E	CSA	163	1958
IMC-CS-018-PR	270	4.8	E	28-30S-25E	MOA	145	1958
IMC-CS-049-PR	271	5.4	E	27-30S-25E	MOA	36	1975
IMC-CS-050-PR	272	5.4	E-C	35-30S-25E	MOA	502	1975
IMC-CS-053-PR	273	4.9	E	16-30S-25E	CSA	154	1960
IMC-CS-055-PR	274	3.3	E	23-30S-25E	CSA	250	1975
IMC-CS-056-PR	275	3.9	E	28-30S-25E	STA	118	1955
IMC-CS-058-PR	276	5.4	E	26-30S-25E	MOA	126	1975
IMC-CS-060-PR	277	3.3	E	23-30S-25E	CSA	28	1975
IMC-CS-063-PR	278	6.1	I	22-30S-25E	OT	50	1968
IMC-CS-064-PR	279	4.3	I	16-30S-25E	CSA	106	1960
IMC-CS-065-PR	280	4.3	I	33-30S-25E	CSA	47	1957
IMC-CS-074-PR	281	3.9	E	33-30S-25E	CSA	135	1963
IMC-CS-07-PR	265	6.1	E	28-30S-25E	MOA	73	1957
IMC-CS-A-PR	282	5.6	I	10-30S-25E	CSA	578	1959
IMC-CS-B-PR	283	5.6	I	15-30S-25E	CSA	94	1962
IMC-CS-C-PR	284	2.0	I	22-30S-25E	STA	212	1972
IMC-CS-D-PR	285	4.3	I	15-30S-25E	STA	181	1955
IMC-CS-E-PR	286	4.8	E	9-30S-25E	MOA	44	1955
IMC-CS-F-PR	287	4.0	I	16-30S-25E	CSA	35	1955
IMC-CS-G-PR	288	1.3	I	16-30S-25E	OT	10	1955
IMC-CS-H-PR	289	2.3	E	16-30S-25E	CSA	40	1955
IMC-CS-I-PR	290	4.3	I	21-30S-25E	CSA	102	1960
IMC-CS-J-PR	291	4.3	I	28-30S-25E	CSA	46	1954
IMC-CS-K-PR	292	5.6	I	34-30S-25E	CSA	308	1955
IMC-CS-O12-PR	267	4.4	E	21-30S-25E	CSA	170	1955
IMC-CS-O14-PR	268	4.4	E	28-30S-25E	CSA	320	1953
IMC-K-017-PR	294	3.0	E	9-31S-23E	CSA	469	1969
IMC-K-035-PR	295	3.0	E	32-30S-23E	CSA	380	1971
IMC-K-036-PR	296	3.0	E	33-30S-23E	CSA	286	1964
IMC-K-038-PR	297	3.0	E	34-30S-23E	CSA	100	1963
IMC-K-039-PR	298	3.0	E	27-30S-23E	CSA	290	1966
IMC-K-040-PR	299	3.0	E	27-30S-23E	CSA	204	1959
IMC-K-041-PR	300	3.0	E	26-30S-23E	CSA	404	1961
IMC-K-042-PR	301	3.0	E	34-30S-23E	CSA	440	1968
IMC-K-043-PR	302	3.0	E	3-31S-23E	CSA	400	1971
IMC-K-044-PR	303	3.0	E	15-31S-23E	CSA	401	1972
IMC-K-045-PR	304	3.0	E	11-31S-23E	CSA	160	1975
IMC-K-046-PR	305	3.6	E	9-31S-23E	MOA	270	1970
IMC-K-048-PR	306	1.0	I	31-30S-23E	OT	20	1975
IMC-K-068-PR	307	3.6	E	26-30S-23E	MOA	117	1953
IMC-K-071-PR	309	2.0	I	11-31S-23E	STA	22	1975
IMC-K-072-PR	310	2.0	I	11-31S-23E	STA	9	1974
IMC-K-08-PR	293	5.0	E	27-30S-23E	MOA	75	1959
IMC-K-A-PR	311	2.0	I	10-31S-23E	STA	86	1970
IMC-K-B-PR	312	5.8	I	25-30S-23E	HMA	79	1961
IMC-K-C-PR	313	1.3	E	34-30S-23E	STA	48	1963

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
IMC-K-D-PR	314	2.7	I	33-30S-23E	HMA	53	1965
IMC-K-E-PR	315	5.5	E	33-30S-23E	MOA	18	1971
IMC-K-F-PR	316	1.3	E	6-31S-23E	STA	165	0
IMC-K-G-PR	317	3.0	E	7-31S-23E	CSA	393	0
IMC-K-H-PR	318	3.0	E	12-31S-22E	CSA	490	0
IMC-K-I-PR	319	0.0	X	12-31S-22E	OT	177	0
IMC-K-J-PR	320	5.0	E-C	1-31S-22E	MOA	235	1975
IMC-K-K-PR	321	0.0	X	1-31S-22E	OT	255	0
IMC-K-L-PR	322	0.0	X	5-31S-23E	OT	189	1977
IMC-K-M-PR	323	0.0	X	2-31S-23E	OT	122	1977
IMC-K-N-PR	324	2.7	I	27-30S-23E	HMA	52	1959
IMC-K-O69-PR	308	3.6	I	15-31S-23E	MOA	516	1974
IMC-K-O-PR	325	0.0	X	3-31S-23E	OT	325	0
IMC-K-P-PR	326	0.0	X	8-31S-23E	OT	1903	0
IMC-K-Q-PR	327	0.0	X	36-29S-23E	OT	65	1930
IMC-K-R-PR	328	6.0	E	2-30S-23E	HMA	151	1930
IMC-N-019-PR	335	3.0	E	36-30S-24E	CSA	800	1974
IMC-N-01-PR	329	1.7	I	30-30S-25E	STA	70	1957
IMC-N-020-PR	336	3.0	E	36-30S-24E	CSA	360	1964
IMC-N-021-PR	337	3.0	E	31-30S-25E	CSA	320	1962
IMC-N-022-PR	338	3.0	E	1-31S-24E	CSA	194	1963
IMC-N-023-PR	339	3.0	E	6-31S-25E	CSA	386	1969
IMC-N-024-PR	340	3.0	E	7-31S-25E	CSA	790	1960
IMC-N-025-PR	341	3.0	E	5-31S-25E	CSA	350	1962
IMC-N-026-PR	342	3.0	E	31-30S-25E	CSA	270	1964
IMC-N-028-PR	344	3.0	E	29-30S-25E	CSA	550	1967
IMC-N-029-PR	345	3.0	E	19-30S-25E	CSA	270	1965
IMC-N-030-PR	346	3.0	E	24-30S-24E	CSA	740	1971
IMC-N-031-PR	347	3.0	E	31-30S-25E	CSA	250	1967
IMC-N-032-PR	348	3.0	E	35-30S-24E	CSA	433	1950
IMC-N-033-PR	349	3.0	E	31-30S-25E	CSA	130	1959
IMC-N-034-PR	350	0.0	E-C	7-31S-25E	MOA	140	1975
IMC-N-03-PR	330	1.0	E	36-30S-25E	STA	221	1965
IMC-N-04-PR	331	1.3	I	20-30S-25E	STA	17	1967
IMC-N-059-PR	352	1.3	E	29-30S-25E	STA	127	1955
IMC-N-05-PR	332	2.6	I	36-30S-24E	MOA	35	1967
IMC-N-066-PR	353	0.0	I	29-30S-25E	CSA	157	1955
IMC-N-067-PR	354	1.0	E	29-30S-25E	CSA	104	1955
IMC-N-06-PR	333	3.3	E	32-30S-25E	MOA	136	1962
IMC-N-070-PR	355	1.0	I	26-30S-24E	STA	175	1971
IMC-N-09-PR	334	3.9	E	3-30S-24E	MOA	111	1952
IMC-N-A-PR	356	3.8	I	26-30S-24E	MOA	186	1973
IMC-N-B-PR	357	4.9	I	26-30S-24E	HMA	168	1945
IMC-N-C-PR	358	5.9	I	23-30S-24E	MOA	97	1959
IMC-N-D-PR	359	3.8	I	14-30S-24E	MOA	289	1969
IMC-N-E-PR	360	4.0	E	13-30S-24E	MOA	124	1972
IMC-N-F-PR	361	3.8	I	25-30S-24E	STA	411	1969
IMC-N-G-PR	362	3.8	I	18-30S-24E	MOA	89	1970
IMC-N-H-PR	363	7.3	I	17-30S-25E	MOA	93	1960
IMC-N-I-PR	364	3.8	I	20-30S-25E	MOA	89	1965
IMC-N-J-PR	365	1.0	E	29-30S-25E	STA	314	1953
IMC-N-K-PR	366	1.0	I	30-30S-25E	STA	105	1951
IMC-N-L-PR	367	4.8	E	5-31S-25E	MOA	136	1957
IMC-N-M-PR	368	0.0	E-C	7-31S-25E	MOA	39	1960
IMC-N-N-PR	369	0.0	E-C	7-31S-25E	HMA	27	1940
IMC-N-O27-PR	343	3.0	E	32-30S-25E	CSA	300	1953
IMC-N-O51-PR	351	3.6	E	17-31S-25E	MOA	111	1975
IMC-N-O-PR	370	0.0	E-C	12-31S-24E	HMA	70	1940
IMC-N-P-PR	371	0.0	E-C	12-31S-25E	MOA	198	1974
IMC-N-Q-PR	372	4.5	E	31-30S-24E	MOA	103	1961
IMC-N-R-PR	373	0.0	X	26-30S-24E	HMA	80	1915
IMC-P-061-PR	375	3.3	E	3-31S-24E	CSA	106	1975

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
IMC-P-062-PR	376	3.3	E	4-31S-24E	CSA	112	0
IMC-P-073-PR	377	2.0	I	3-31S-24E	STA	13	1974
IMC-P-A-PR	378	3.0	I	3-31S-24E	HMA	113	1910
IMC-P-B-PR	379	0.0	E-C	33-30S-24E	MOA	148	1940
IMC-P-C-PR	380	4.4	E	33-30S-24E	MOA	55	1940
IMC-P-D-PR	381	0.0	E-C	33-30S-24E	OT	185	1979
IMC-P-052-PR	374	3.0	E	33-30S-24E	CSA	205	1950
IMP. POLK LAND INVESTMENTS-PR	605	1.3	E	3-32S-25E	CSA	105	1939
JAIME JURADO-PR	609	0.0	X	25-28S-23E	STA	53	1950
JAMES E. JONES-PR	729	0.0	X	5-30S-22E	MOA	25	1940
JOSEPH E.MOTSINGER(& OHTERS)-PR	648	6.0	E	1-30S-23E	HMA	52	1910
JOSEPH PERRY-PR	665	4.8	E	16-32S-25E	MOA	32	1955
J. WARREN ALLEN-A-PR	529	0.0	X	12-30S-23E	MOA	179	1940
J. WARREN ALLEN-B-PR	530	0.0	X	1-30S-23E	HMA	45	1925
J. WARREN ALLEN-C-PR	531	0.0	X	3-30S-23E	HMA	51	1915
J.A.KENT-PR	620	6.1	E	36-28S-24E	MOA	97	1952
J.A.PRINE-PR	668	0.0	X	29-30S-24E	HMA	72	0
J.C.BENEFIELD-PR	717	5.4	E	6-30S-22E	MOA	721	1942
J.P.JAMES-PR	608	2.4	I	36-29S-24E	MOA	20	1965
J.T.HAYNSWORTH-PR	726	6.0	I	30-29S-22E	MOA	500	1943
J.T.TICE-PR	700	0.0	X	34-29S-25E	MOA	2	1940
J.V.APRILE-PR	716	0.0	X	6-30S-22E	CSA	382	1940
J.W.PEAVY-PR	664	0.0	X	14-28S-24E	MOA	4	1955
KAISER ALUMINUM-A-PR	610	8.0	I	3-30S-23E	HMA	82	1915
KAISER ALUMINUM-B-PR	611	0.0	X	3-30S-23E	HMA	38	1915
KAPLAN-A-PR	612	0.0	X	20-30S-25E	STA	129	1958
KAPLAN-B-PR	613	3.7	E	32-30S-25E	MOA	124	1958
KAPLAN-C-PR	614	0.0	X	28-30S-25E	STA	88	1958
KAPLAN-D-PR	615	3.3	E	29-30S-25E	MOA	54	1958
KELLER-PR	617	0.0	X	6-32S-26E	MOA	6	1965
KELLS ESTATE-A-PR	618	1.6	E	32-28S-24E	HMA	55	1955
KELLS ESTATE-B-PR	619	3.3	I	5-29S-24E	CSA	417	1955
KINGSFORD ELEMENTARY-PR	622	6.4	I	11-30S-23E	HMA	19	1930
KINGSFORD ELMTRY.RESIDNTL.-PR	623	0.0	X	11-30S-23E	HMA	7	1930
KIRK MC KAY-A-PR	640	5.9	I	26-29S-23E	HMA	221	1925
KIRK MC KAY-B-PR	641	4.3	E	35-29S-23E	HMA	168	1925
KIRK MC KAY-C-PR	642	6.6	I	11-30S-23E	HMA	51	1910
KIRK MC KAY-D-PR	643	0.0	X	11-30S-23E	HMA	26	1910
LAKE BENTLY-PR	624	0.0	X	29-28S-24E	MOA	101	1950
LAKE MIRIAM DRIVE SOUTH-PR	629	0.0	X	12-29S-23E	MOA	50	1950
LAKE MIRIAM SQUARE-PR	630	0.0	X	12-29S-23E	MOA	39	1950
LAKE PARK-A-PR	631	5.6	E	2-30S-23E	HMA	20	1910
LAKE PARK-B-PR	632	5.6	E	2-30S-23E	HMA	14	1910
LAKE VIEW MOBILE HOME PARK-PR	633	0.0	X	7-29S-24E	MOA	10	1950
LAKELAND SOUTH CENTER-PR	628	0.0	X	12-29S-23E	MOA	80	1950
LAURENT-A-PR	634	0.0	X	3-30S-25E	MOA	46	1945
LAURENT-B-PR	635	6.2	E	3-30S-25E	CSA	26	1945
L.D.GRIFFIN-PR	725	5.0	I	9-30S-22E	MOA	28	1935
MAINE AVE.COMMERCIAL-PR	636	0.0	X	35-28S-24E	STA	42	1955
MARAN GROVES-PR	735	5.7	E	23-31S-21E	MOA	75	1945
MARY HOLLAND PARK-PR	637	0.0	X	17-30S-25E	MOA	118	1967
MASTER MACHINE TOOL CO.-PR	638	0.0	X	10-30S-23E	HMA	15	1910
MAX & ASSOCIATES-PR	639	0.0	X	26-29S-24E	OT	24	1965
MC DONALD CONST.CO.-PR	736	0.0	X	8-30S-22E	MOA	122	1945
MCC-FM-010-PR	392	3.5	E	16-31S-25E	CSA	673	1970
MCC-FM-011-PR	393	2.3	E	29-31S-25E	CSA	344	1972
MCC-FM-012-PR	394	0.0	X	4-31S-25E	CSA	60	1950
MCC-FM-013-PR	395	0.0	X	4-31S-25E	CSA	52	1959
MCC-FM-014-PR	396	0.0	X	3-31S-25E	CSA	138	1950
MCC-FM-015-PR	397	0.0	X	3-31S-25E	STA	40	1950
MCC-FM-016-PR	398	0.0	X	3-31S-25E	CSA	160	1944
MCC-FM-017-PR	399	0.0	X	1-31S-25E	MOA	180	1970

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
MCC-FM-01-PR	382	4.3	E	3-31S-25E	CSA	170	1950
MCC-FM-02A-PR	384	7.3	I	10-31S-25E	OT	82	1947
MCC-FM-02-PR	383	4.3	E	10-31S-25E	CSA	190	1947
MCC-FM-03-PR	385	3.5	E	10-31S-25E	CSA	146	1948
MCC-FM-04-PR	386	4.3	E	15-31S-25E	CSA	319	1946
MCC-FM-05-PR	387	3.5	E	30-31S-26E	CSA	423	1964
MCC-FM-06-PR	388	4.3	E	3-31S-25E	CSA	102	1960
MCC-FM-07-PR	389	2.7	I	4-31S-25E	CSA	457	1945
MCC-FM-08-PR	390	4.3	E	9-31S-25E	CSA	301	1956
MCC-FM-09-PR	391	3.5	E	17-31S-25E	CSA	468	1968
MCC-FM-15-PR	403	2.7	I	3-31S-25E	CSA	135	1955
MCC-FM-2-PR	400	2.7	I	4-31S-25E	CSA	56	1950
MCC-FM-5-PR	401	0.0	X	3-31S-24E	CSA	42	1945
MCC-FM-8-PR	402	4.3	I	19-31S-26E	CSA	260	1955
MCC-FM-A-PR	404	4.4	E	2-31S-25E	MOA	124	1972
MCC-FM-B-PR	405	3.9	E	1-31S-25E	CSA	406	1971
MCC-FM-C-PR	406	3.0	E	12-31S-25E	CSA	544	1971
MCC-FM-D-PR	407	2.7	E	13-31S-25E	CSA	1002	1973
MCC-FM-E-PR	408	0.0	E-C	13-31S-25E	MOA	279	1973
MCC-FM-F-PR	409	7.2	I	25-31S-25E	MOA	121	1955
MCC-FM-G-PR	410	7.3	I	11-31S-25E	MOA	48	1945
MCC-FM-H-PR	411	6.5	I	15-31S-25E	MOA	24	1945
MCC-FM-I-PR	412	0.0	X	20-31S-25E	HMA	330	1915
MCC-FM-J-PR	413	5.8	E	21-31S-25E	HMA	37	1930
MCC-FM-K-PR	414	0.0	X	27-31S-25E	HMA	339	1935
MCC-FM-L-PR	415	0.0	X	20-31S-25E	HMA	160	1935
MCC-FM-M-PR	416	7.2	I	22-31S-25E	HMA	22	1935
MCC-FM-N-PR	417	0.0	X	24-31S-25E	MOA	58	1965
MCC-FM-O-PR	418	4.8	E	30-31S-26E	OT	19	1968
MCC-FM-P-PR	419	4.4	E	20-31S-25E	STA	154	1968
MCC-FM-Q-PR	420	4.4	E	29-31S-25E	MOA	36	1974
MCC-FM-R-PR	421	0.0	X	3-31S-25E	OT	49	1950
MCC-FM-S-PR	422	1.0	I	3-31S-25E	OT	12	1950
MCC-N-01-PR	424	3.6	E	14-30S-23E	CSA	446	1972
MCC-N-02-PR	425	3.6	E	15-30S-23E	CSA	298	1973
MCC-N-03-PR	426	8.0	I	23-29S-23E	HMA	105	1915
MCC-N-04-PR	427	5.6	I	14-30S-23E	HMA	200	1935
MCC-N-05-PR	428	5.6	E	14-30S-23E	HMA	100	1935
MCC-N-07-PR	430	4.5	I	22-30S-23E	CSA	235	1945
MCC-N-A-PR	431	9.0	I	4-30S-23E	HMA	413	1915
MCC-N-B-PR	432	7.7	I	9-30S-23E	HMA	153	1925
MCC-N-C-PR	433	7.2	I	10-30S-23E	HMA	74	1935
MCC-N-D-PR	434	5.0	E	27-30S-23E	MOA	14	1959
MCC-N-E-PR	435	3.0	E	27-30S-23E	CSA	13	1966
MCC-N-F-PR	436	3.6	E	28-30S-23E	CSA	498	1973
MCC-N-G-PR	437	2.3	E	28-30S-23E	CSA	159	1973
MCC-N-H-PR	438	0.0	X	20-30S-23E	OT	28	1965
MCC-N-I-PR	439	6.6	I	30-30S-24E	MOA	60	1945
MCC-N-O6-PR	429	6.9	I	3-30S-23E	HMA	110	1915
MCC-SFM-A-PR	423	0.0	X	8-32S-26E	MOA	197	1935
MERLIN KARLOCK-PR	616	0.0	X	4-29S-24E	MOA	18	1950
METALCOAT INC.-PR	645	0.0	X	11-30S-23E	HMA	25	1910
MID-FLORIDA INDUSTRIAL PARK-PR	646	0.0	X	2-30S-23E	HMA	132	1925
MULBERRY HIGH SCHOOL(& OT.)-PR	652	0.0	X	1-30S-23E	HMA	98	1910
M.C. LEETUN-PR	734	0.0	X	7-30S-22E	MOA	120	1945
NOR-H-A-PR	440	5.4	I	28-29S-22E	HMA	57	1925
NOR-H-B-PR	441	5.1	I	27-29S-22E	HMA	224	1925
NOR-H-C-PR	442	5.1	I	34-29S-22E	HMA	193	1925
NOR-H-D-PR	443	6.0	I	33-29S-22E	HMA	536	1925
NOR-H-E-PR	444	6.9	I	33-29S-22E	HMA	120	1925
NOR-H-F-PR	445	7.7	I	4-30S-22E	HMA	286	1925
NOR-H-G-PR	446	6.6	E	21-30S-22E	CSA	171	1940

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
N. MULBERRY E. 37-PR	653	0.0	X	1-30S-23E	HMA	33	1910
N. MULBERRY W. 37-PR	654	0.0	X	2-30S-23E	MOA	25	1945
OCC-SC-01-PR	447	3.6	E	30-1N-14E	STA	488	1974
OCC-SC-02-PR	448	3.3	E	31-1N-14E	CSA	603	1974
OCC-SC-03-PR	449	0.0	X	36-1N-14E	OT	132	1974
OCC-SR-010-PR	460	3.2	E	31-1N-16E	CSA	583	1973
OCC-SR-011-PR	461	3.7	E	30-1N-16E	CSA	933	1972
OCC-SR-012A-PR	463	0.0	X	12-1S-15E	MOA	337	1973
OCC-SR-012-PR	462	2.9	I	11-1S-15E	CSA	145	1973
OCC-SR-013-PR	464	3.6	I	13-1S-15E	STA	113	1975
OCC-SR-014A-PR	466	0.0	X	2-1S-15E	MOA	69	1969
OCC-SR-014-PR	465	1.3	I	2-1S-15E	MOA	10	1966
OCC-SR-015-PR	467	0.0	X	1-1S-15E	OT	92	1974
OCC-SR-016-PR	468	0.0	X	36-1N-15E	OT	320	1966
OCC-SR-017-PR	469	0.0	X	36-1N-15E	OT	29	1967
OCC-SR-01-PR	450	3.2	E	35-1N-15E	CSA	325	1967
OCC-SR-03-PR	452	3.6	E	31-1N-16E	CSA	279	1969
OCC-SR-04-PR	453	5.2	E	25-1N-15E	CSA	458	1975
OCC-SR-05-PR	454	1.6	E	1-1S-15E	CSA	244	1971
OCC-SR-06A-PR	456	5.2	E	19-1N-16E	MOA	85	1972
OCC-SR-06-PR	455	0.0	E-C	19-1N-16E	MOA	737	1972
OCC-SR-07-PR	457	3.2	E	30-1N-16E	CSA	120	1966
OCC-SR-08-PR	458	4.3	E	7-1S-16E	CSA	195	1974
OCC-SR-09-PR	459	3.6	E	5-1S-16E	CSA	184	1975
OCC-SR-02-PR	451	4.5	E	25-1N-15E	CSA	998	1968
OCEAN PROD.INC.-PR	737	0.0	X	6-29S-21E	MOA	67	1960
OLIVER GREEN (AND OTHERS)-PR	585	5.3	E	7-29S-24E	MOA	34	1950
O.H.WRIGHT-A-PR	713	5.4	E	10-32S-25E	MOA	47	1964
O.H.WRIGHT-B-PR	714	7.8	E	16-32S-25E	CSA	135	1949
PAVERS INC. (& OTHERS)-PR	663	0.0	X	35-28S-24E	STA	120	1955
PIERCE-PR	666	0.0	X	26-30S-23E	HMA	52	1910
PUBLIX SUPERMARKETS (& OTH)-PR	669	5.3	E	7-29S-24E	MOA	40	1950
P.C.DEVELOPMENT-PR	661	4.0	E	35-28S-24E	CSA	70	1?5
P.T.DEVELOPMENT (& OTHERS)-PR	662	6.1	E	26-28S-24E	CSA	115	1952
RED BARN INC.-PR	670	4.3	E	31-28S-24E	MOA	25	1955
REYNOLDS ROAD COMMERCIAL-PR	671	0.0	X	35-28S-24E	STA	74	1950
RICHARD CLARK-PR	548	0.0	X	6-30S-25E	MOA	136	1960
RIDGE RENTALS-A-PR	672	3.6	E	33-30S-25E	MOA	31	1955
RIDGE RENTALS-B-PR	673	0.0	X	33-30S-25E	STA	51	1955
ROBERT L.RODERICK-PR	740	0.0	X	9-30S-22E	MOA	40	1945
ROLLING HILLS-A-PR	674	0.0	X	36-30S-23E	HMA	99	1925
ROLLING HILLS-B-PR	675	5.9	E	36-30S-23E	HMA	37	1925
ROLLING WOOD-PR	676	0.0	X	6-29S-24E	MOA	24	1940
ROYSTER-PR	470	0.0	X	7-30S-24E	OT	690	0
SACC-SC-4-PR	190	0.0	X	10-31S-24E	STA	54	0
SACC-W-10-PR	214	0.0	X	4-32S-25E	STA	33	0
SACC-W-4-PR	216	0.0	X	36-31S-25E	MOA	61	0
SACC-W-5-PR	217	0.0	X	30-31S-26E	MOA	25	0
SACC-W-6-PR	218	0.0	X	31-31S-26E	MOA	46	0
SAC-A1-390-PR	215	0.0	X	25-31S-25E	MOA	150	0
SAC-A2-70.5-PR	220	0.0	X	31-31S-26E	MOA	70	0
SAC-A-2-76/77-LL-168-PR	219	0.0	X	31-31S-26E	MOA	120	0
SAC-B-218-PR	221	0.0	X	31-31S-26E	MOA	18	0
SAC-B-2-PR	188	0.0	X	14-31S-24E	CSA	67	1970
SAC-B-5-PR	189	0.0	X	9-31S-24E	MOA	19	0
SADDLE CREEK PARK-PR	677	7.4	I	14-28S-24E	MOA	548	1955
SADDLE CREEK VILLAGE-PR	678	0.0	X	25-28S-24E	CSA	332	1950
SAMUEL D. HARRIS (& OTHERS)-PR	589	6.1	E	23-28S-24E	MOA	73	1955
SAND GULLEY HEIGHTS-PR	679	0.0	X	35-28S-23E	MOA	7	1950
SCOTT KELLY CORP-PR	680	4.5	E	1-29S-23E	MOA	85	1950
SKYVIEW-PR	681	0.0	X	22-28S-24E	MOA	273	1945
SO.SADDLE CREEK-A-PR	684	6.2	E	14-28S-24E	MOA	37	1955

PARCEL NAME	RECORD NUMBER	POT		ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE
		ECOL VALUE						OF MING
SO.SADDLE CREEK-B-PR	685	0.0	X		14-28S-24E	MOA	20	1955
SUNSHINE VILLAGE-PR	686	0.0	X		23-28S-24E	MOA	30	1955
SUPERIOR PAVING INC.-PR	687	0.0	X		22-28S-24E	MOA	243	1950
SWFWMD PLSNT GROVE RES.-PR	742	7.8	I		36-29S-21E	MOA	1152	1945
S. MULBERRY E. RR-PR	655	0.0	X		12-30S-23E	HMA	10	1910
S. MULBERRY W. 37-A-PR	658	0.0	X		14-30S-23E	HMA	58	1935
S. MULBERRY W. 37-B-PR	659	3.8	E		14-30S-23E	HMA	22	1935
S. MULBERRY W. RR-PR	656	0.0	X		11-30S-23E	HMA	37	1910
S.BELMONT AVE.RESEDENTIAL-PR	682	0.0	X		11-30S-23E	HMA	4	1910
S.D.AND W.R.GOOCH-PR	724	6.9	I		10-30S-22E	MOA	225	1925
S.LAKELAND INDUS.COMPLEX-PR	683	0.0	X		13-29S-23E	HMA	87	1940
S.MULBERRY E.37 COMMERCIAL-PR	657	0.0	X		13-30S-23E	MOA	22	1945
TAM-A-PR	473	0.0	X		23-30S-23E	OT	82	1950
TAM-B-PR	474	0.0	X		23-30S-23E	HMA	25	1950
TAM-C-PR	475	5.5	E		23-30S-23E	HMA	199	1950
TAM-D-PR	476	0.0	X		23-30S-23E	HMA	66	1980
TAM-E-PR	477	0.0	X		23-30S-23E	HMA	48	1948
TAM-F-PR	478	4.7	E		22-30S-23E	HMA	10	1950
TAM-G-PR	479	0.0	X		23-30S-23E	HMA	199	1950
TAM-H-PR	480	5.8	E		13-30S-23E	MOA	67	1950
TAM-I-PR	481	3.6	E		13-30S-23E	CSA	192	1950
TAM-J-PR	482	0.0	E-C		24-30S-23E	MOA	55	1950
TAM-PC-1-PR	471	2.3	I		13-30S-23E	STA	33	1950
TAM-PC-2-PR	472	0.0	X		13-30S-23E	STA	23	1935
TECO-PR	743	6.8	E		34-29S-21E	MOA	1252	1955
THE MEADOWS-PR	644	0.0	X		5-29S-24E	MOA	57	1950
TROY S.CUMMING(AND MATHIS)-PR	556	0.0	X		11-30S-23E	HMA	16	1920
TWIN LAKE MOBILE HOME PARK-PR	701	0.0	X		18-29S-24E	MOA	18	1950
T.R.JACKSON (& OTHERS)-PR	607	0.0	X		36-31S-25E	MOA	76	1965
URANIUM RECOVERY CORP.-A-PR	702	0.0	X		30-30S-24E	HMA	19	1925
URANIUM RECOVERY CORP.-B-PR	703	0.0	X		30-30S-24E	HMA	32	1925
URS INC.-A-PR	704	0.0	X		34-29S-23E	HMA	563	1920
URS INC.-B-PR	705	0.0	X		3-30S-23E	HMA	30	1920
USS REALTY-A-PR	706	0.0	X		7-30S-25E	STA	67	1967
USSAC-B-2-PR	525	0.0	X		25-31S-24E	CSA	71	1972
USSAC-B-6-PR	526	0.0	X		25-31S-24E	CSA	96	1970
USSAC-B-8-PR	494	0.0	X		1-30S-24E	STA	22	1925
USS-B-01-PR	483	4.2	E		11-30S-24E	CSA	480	1959
USS-B-02-PR	484	3.9	E		12-30S-24E	CSA	220	1963
USS-B-04-PR	486	4.7	I		3-30S-24E	MOA	80	1969
USS-B-A-PR	488	4.4	I		2-30S-24E	MOA	102	1964
USS-B-B-PR	489	0.0	X		2-30S-24E	OT	257	1925
USS-B-C-PR	490	1.7	I		1-30S-24E	CSA	154	0
USS-B-D-PR	491	4.4	E		1-30S-24E	HMA	207	1965
USS-B-E-PR	492	2.4	E		12-30S-24E	MOA	191	1968
USS-B-F-PR	493	4.4	E		11-30S-24E	MOA	113	1963
USS-B-O3-PR	485	3.7	E		12-30S-24E	CSA	101	1971
USS-B-O5-PR	487	6.8	I		13-30S-24E	MOA	240	1965
USS-H-06-PR	500	6.0	E		16-29S-25E	MOA	450	1963
USS-H-07-PR	501	6.1	E		15-29S-25E	STA	340	1968
USS-H-08-PR	502	6.0	E		9-29S-25E	MOA	570	1970
USS-H-A-PR	503	7.5	E		15-29S-25E	STA	104	1970
USS-H-O1-PR	495	6.4	E		19-29S-25E	CSA	605	1973
USS-H-O2-PR	496	6.4	E		20-29S-25E	CSA	434	1971
USS-H-O3-PR	497	6.4	E		29-29S-25E	CSA	247	1971
USS-H-O4-PR	498	6.7	E		21-29S-25E	MOA	640	1968
USS-H-O5-PR	499	6.7	E		28-29S-25E	MOA	100	1952
USS-LP-A-PR	746	0.0	I		25-32S-24E	HMA	60	1925
USS-LP-B-PR	747	0.0	I		26-32S-24E	HMA	20	1925
USS-R-01-PR	504	3.7	E		24-31S-24E	CSA	190	1973
USS-R-02-PR	505	2.7	E		26-31S-24E	CSA	116	1970
USS-R-03-PR	506	3.6	E		35-31S-24E	CSA	245	1970

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
USS-R-04-PR	507	2.7	E	36-31S-24E	CSA	300	0
USS-R-05-PR	508	0.0	X	31-31S-25E	OT	204	0
USS-R-06-PR	509	3.6	E	36-31S-24E	CSA	74	1973
USS-R-07-PR	510	2.4	E	36-31S-24E	CSA	140	1974
USS-R-08-PR	511	3.7	E	35-31S-24E	CSA	125	1972
USS-R-09-PR	512	2.5	E	2-32S-24E	CSA	400	1975
USS-R-A-PR	513	3.9	E	35-31S-24E	MOA	150	1970
USS-R-B-PR	514	3.3	I	26-31S-24E	STA	104	1972
USS-R-C-PR	515	3.6	E	25-31S-24E	CSA	84	1972
USS-R-D-PR	516	3.7	E	25-31S-24E	CSA	120	1972
USS-R-E-PR	517	2.4	E	25-31S-24E	CSA	187	1975
USS-R-F-PR	518	7.5	I	32-31S-25E	MOA	332	1939
USS-R-G-PR	519	0.0	X	6-32S-25E	OT	182	1939
USS-R-H-PR	520	0.0	X	31-31S-25E	OT	29	0
USS-R-I-PR	521	0.0	X	31-31S-25E	MOA	70	1935
USS-R-J-PR	522	5.3	I	34-31S-24E	MOA	68	1975
USS-R-K-PR	523	7.8	I	6-32S-25E	OT	63	0
USS-R-L-PR	524	6.1	E	5-32S-25E	MOA	12	1955
VILLAGE SOUTH-PR	707	0.0	X	12-29S-23E	MOA	32	1950
WAYNE THOMAS INC.-J-PR	698	6.2	E	7-32S-25E	MOA	22	1959
WAYNE THOMAS INC.-A-PR	689	0.0	X	18-32S-25E	CSA	120	1963
WAYNE THOMAS INC.-B-PR	690	0.0	X	7-32S-25E	CSA	113	1960
WAYNE THOMAS INC.-C-PR	691	3.0	E	7-32S-25E	CSA	93	1961
WAYNE THOMAS INC.-D-PR	692	7.1	E	6-32S-25E	MOA	138	1959
WAYNE THOMAS INC.-E-PR	693	4.0	E	5-32S-25E	CSA	300	1958
WAYNE THOMAS INC.-F-PR	694	6.6	E	8-32S-25E	CSA	210	1963
WAYNE THOMAS INC.-G-PR	695	5.8	E	8-32S-25E	CSA	42	1964
WAYNE THOMAS INC.-H-PR	696	7.1	E	8-32S-25E	CSA	293	1955
WAYNE THOMAS INC.-I-PR	697	5.9	E	17-32S-25E	MOA	87	1963
WAYNE THOMAS INC.-K-PR	699	5.7	E	14-31S-25E	MOA	34	1950
WAYNE THOMAS-L-PR	744	6.9	E	7-30S-22E	MOA	248	1935
WAYNE THOMAS-M-PR	745	9.1	I	17-30S-22E	MOA	322	1935
WEST MULBERRY-PR	660	0.0	X	2-30S-23E	HMA	54	1910
WILBUR A. PIPKIN-PR	667	0.0	X	7-29S-24E	MOA	35	1950
WILLARD J. MOSES-PR	647	0.0	X	11-30S-23E	HMA	170	1910
WILLIE A. DOBBS-PR	562	0.0	X	27-31S-23E	HMA	60	1950
WOODLAKE DEVELOPMENT-PR	712	0.0	X	32-28S-24E	MOA	293	1945
WRG-BL-010-PR	242	3.0	E	31-29S-24E	CSA	429	1930
WRG-BL-011-PR	243	5.5	E	6-30S-24E	CSA	388	1930
WRG-BL-02-PR	233	3.8	E	14-30S-24E	CSA	519	1973
WRG-BL-03A-PR	235	3.7	E	15-30S-24E	MOA	44	1970
WRG-BL-03-PR	234	3.0	E	14-30S-24E	CSA	400	1970
WRG-BL-04-PR	236	3.0	E	11-30S-24E	CSA	324	1966
WRG-BL-05-PR	237	3.0	E	10-30S-24E	CSA	480	1967
WRG-BL-06-PR	238	3.3	E	33-29S-24E	CSA	389	1956
WRG-BL-07-PR	239	3.6	E	32-29S-24E	CSA	448	1956
WRG-BL-08-PR	240	3.9	E	30-29S-24E	CSA	219	1930
WRG-BL-09-PR	241	3.0	E	31-29S-24E	CSA	146	1930
WRG-BL-A-PR	244	2.9	I	34-29S-24E	OT	609	0
WRG-BL-B-PR	245	2.3	I	31-29S-24E	CSA	59	1930
WRG-BL-C-PR	246	5.5	E	25-29S-23E	MOA	60	1940
WRG-BL-DD-PR	248	6.3	I	25-29S-23E	MOA	151	1940
WRG-BL-D-PR	247	3.9	I	25-29S-23E	MOA	210	1940
WRG-BL-EE-PR	250	7.0	I	36-29S-23E	MOA	109	1940
WRG-BL-E-PR	249	6.7	I	25-29S-23E	MOA	163	1940
WRG-BL-FF-PR	252	5.8	E	36-29S-23E	MOA	22	1935
WRG-BL-F-PR	251	5.5	E	1-30S-23E	HMA	50	1925
WRG-BL-G-PR	253	2.7	I	6-30S-24E	STA	172	1960
WRG-BL-H-PR	254	4.6	I	6-30S-24E	MOA	80	1965
WRG-BL-I-PR	255	4.5	I	5-30S-24E	MOA	125	1965
WRG-BL-J-PR	256	5.3	I	4-30S-24E	MOA	152	1973
WRG-BL-K-PR	257	4.0	I	9-30S-24E	MOA	48	1973

PARCEL NAME	RECORD NUMBER	POT ECOL VALUE	ELIG	SEC-TWN-RN	LNDFRM	ACRE	DATE OF MING
WRG-BL-L-PR	258	2.4	I	9-30S-24E	MOA	170	1965
WRG-BL-M-PR	259	3.1	I	16-30S-24E	MOA	280	1973
WRG-BL-O1-PR	232	6.4	E	15-30S-24E	MOA	595	1972
WRG-BL-Q-PR	260	1.0	I	1-30S-24E	OT	364	0
WRG-HP-01-PR	261	7.6	E	31-31S-24E	STA	615	1925
WRG-HP-A-PR	262	8.7	I	9-31S-24E	MOA	180	1920
WRG-HP-B-PR	263	7.5	I	9-31S-24E	HMA	83	1925
WRG-HP-C-PR	264	0.0	X	30-31S-24E	STA	67	1925
W.BARTOW ELEMENTARY SCHOOL-PR	708	0.0	X	6-30S-25E	HMA	10	1930
W.REYNOLDS RD.REIDIDENTIAL-PR	709	0.0	X	27-28S-24E	MOA	71	1955
XYZ LIQUOR-PR	715	0.0	X	13-29S-23E	HMA	1	1920

APPENDIX V

DESCRIPTIONS OF PLANT COMMUNITIES FOR LANDSAT HABITAT MAPPING

Prepared by: Terry Gilbert

Florida Game and Fresh Water Fish Commission
Office of Environmental Services
Non-game Wildlife Section
Tallahassee, Florida

Introduction

The purpose of this narrative is to define the plant communities or associations of community types that are being mapped statewide as part of the Florida Game and Freshwater Fish Commission's project to develop a comprehensive statewide habitat system for Florida. The mapping phase is a three-year effort that is being accomplished by the Office of Environmental Services Non-game Wildlife Section in cooperation with the Florida Department of Transportation.

The communities were grouped into categories following Hartman (1978), Kautz (1986), and various other sources listed in the bibliography. The final selection of plant community types or associations being mapped are based on: (1) their overall habitat importance to wildlife in the state; (2) the ability to accurately map these particular communities using digital image classification techniques associated with the Landsat thematic mapper; and (3) the ability to accomplish a statewide vegetation mapping effort as a three-year project. Appendix I contains an outline of the native plant communities together with their corresponding Landsat class numbers, and number order for color table construction.

A. Upland Plant Communities

1. **Coastal Strand**--The coastal strand occurs on well drained sandy soils and includes the typically zoned vegetation of the upper beach, nearby dunes, or on coastal rock formations. This community generally occurs in a long, narrow band parallel to the open waters of the Atlantic Ocean or Gulf of Mexico, and along the shores of some saline bays or sounds in both north and south Florida. This community occupies areas formed along high energy shorelines, and is strongly affected by wind, waves, and salt spray. Vegetation within this community typically consists of low growing vines, grasses, and herbaceous plants with very few small trees or large shrubs. Pioneer or early successional herbaceous vegetation characterizes the foredune and upper beach, while a gradual change to woody plant species occurs in more protected areas landward. Typical plant species include beach morning glory, railroad vine, sea oats, saw palmetto, spanish bayonet, yaupon holly, wax myrtle, along with sea grape, cocoplum, and other tropicals in southern Florida. The coastal strand community only includes the zone of early successional vegetation which lies between the upper beach, and more highly developed communities landward. Adjacent or contiguous community types such as xeric oak scrubs, pinelands, or hardwood forests would therefore be classified and mapped respectively.

2. **Dry Prairies**--Dry prairies are large native grass and shrublands occurring on very flat terrain interspersed with scattered cypress domes and strands, bayheads, isolated freshwater marshes, and hardwood hammocks. This community is characterized by many species of grasses, sedges, herbs, and shrubs, including saw palmetto, fetterbush, staggerbush, tar flower, gallberry, blueberry, wiregrass, carpet grasses, and various bluestems. The largest areas of these treeless plains historically occurred just north of Lake Okeechobee, and they were subject to annual or frequent fires. Many of these areas have been converted to improved pasture. In central and south Florida, palmetto prairies, which consist of former pine flatwoods where the overstory trees have been thinned or removed, are also included in this category. These sites contain highly scattered pines which cover less than 10 to 15 percent of an area.

3. **Pinelands**--The pinelands category includes north and south Florida pine flatwoods, south Florida Pine rocklands, and commercial pine plantations. Pine flatwoods occur on flat sandy terrain where the overstory is characterized by longleaf pine, slash pine, or pond pine. Generally, flatwoods dominated by longleaf pine occur on well-drained sites, while pond pine is found in poorly drained areas, and slash pine occupies intermediate or moderately moist areas. The understory and groundcover within these three communities are somewhat similar and include several common species such as saw palmetto, gallberry, wax myrtle, and a wide variety of grasses and herbs. Generally wiregrass and runner oak dominate longleaf pine sites, fetterbush and bay trees are found in pond pine areas, while saw palmetto, gallberry, and rusty lyonia occupy slash pine flatwoods sites. Cypress

domes, bayheads, titi swamps, and freshwater marshes are commonly interspersed in isolated depressions throughout this community type, and fire is a major disturbance factor. An additional pine flatwoods forest type occurs in extreme south Florida on rocklands where the overstory is the south Florida variety of slash pine, and tropical hardwood species occur in the understory. Scrubby flatwoods is another pineland type which occurs on drier ridges, and on or near old coastal dunes. Longleaf pine or slash pine dominate the overstory, while the groundcover is similar to the xeric oak scrub community.

Commercial pine plantations are also reluctantly included in the pinelands association. This class includes predominately planted slash pine, although longleaf pine and loblolly pine tracts also occur. Sandpine plantations, which have been planted on severely site prepared sandhill sites in the north Florida panhandle, are also included in this category. An acceptable accurate separation of areas of densely stocked native flatwoods and older planted pine stands with a closed canopy was not consistently possible.

4. **Sand Pine Scrub**--Sand pine scrub occurs on extremely well- drained, sorted, sterile sands deposited along former shorelines and islands of ancient seas. This xeric plant community is dominated by an overstory of sand pine and has an understory of myrtle oak, Chapman's oak, sand-live oak, and scrub holly. Ground cover is usually sparse to absent, especially in mature stands, and rosemary and lichens occur in some open areas. Sites within the Ocala National Forest which have an overstory of direct seeded sand pine, and an intact understory of characteristic xeric scrub oaks, are also included in this category. Fire is an important ecological management tool, and commonly results in even-aged stands within regenerated sites. The distribution of this community type is almost entirely restricted to within the state of Florida.

5. **Sandhill**--Sandhill communities occur in areas of rolling terrain on deep, well-drained, white to yellow, sterile sands. This xeric community is dominated by an overstory of scattered longleaf pine, along with an understory of turkey oak and bluejack oak. The park-like ground cover consists of various grasses and herbs, including wiregrass, partridge pea, beggars tick, milk pea, queen's delight, and others. Fire is an important factor in controlling hardwood competition and other aspects of sandhill ecology. Although many of these sites throughout the state have been modified through the selective or severe cutting of longleaf pine, these areas are still included in the sandhill category.

6. **Xeric Oak Scrub**--Xeric oak scrub is a xeric hardwood community typically consisting of clumped patches of low growing oaks interspersed with bare areas of white sand. This community occurs on areas of deep, well-washed, sterile sands, and it is the same understory complex of scrubby oaks and other ground cover species that occurs in the sand pine scrub community. This condition frequently occurs when the short time periods between severe fires results in the complete removal of sand pine as an overstory species. Also included in this category are sites within the Ocala National Forest which have been clearcut, and are sometimes dominated during the first one to five years by the xeric oak scrub association. The xeric oak scrub community is dominated by myrtle oak, Chapman's oak, sand-live oak, scrub holly, scrub plum, scrub hickory, rosemary, and saw palmetto. Fire is important in setting back plant succession and maintaining viable oak scrubs.

7. **Mixed Hardwood Pine Forests**--This community is the southern extension of the Piedmont southern mixed hardwoods, and occurs mainly on the clay soils on the northern Panhandle. Younger stands may be predominantly pines, while a complex of various hardwoods become co-dominants as the system matures over time through plant succession. The overstory consists of shortleaf and loblolly pine, American beech, mockernut hickory, southern red oak, water oak, American holly, and dogwood.

Also included in this category are other upland forests that occur statewide which contain a mixture of conifers and hardwoods as the co-dominant overstory component. These communities contain longleaf pine, slash pine, and loblolly pine in mixed association with live oak, laurel oak, and water oak, together with other hardwood species characteristic of the upland hardwood hammocks and forests class.

8. **Hardwood Hammocks and Forests**--This class includes the major upland hardwood associations that occur statewide on fairly rich sandy soils. Variations in species composition, and the local or spatial distributions of these communities are due in part to differences in soil moisture regimes, soil type, and geographic location within the state. The major variations within this association are mesic hammocks, xeric hammocks, coastal and hydric hammocks, and live oak or cabbage palm hammocks.

The mesic hammock community represents the climax vegetation type within many areas of northern and central Florida. Characteristic species in the extreme north include American beech, southern magnolia, Shumard oak, white oak, mockernut hickory, pignut hickory, sourgum, basswood, white ash, mulberry, and spruce pine. Mesic hammocks of the peninsula are less diverse due to the absence of hardwood species which are adapted to more northerly climates, and are characterized by laurel oak, hop hornbeam, blue beech, sweetgum, cabbage palm, American holly, and southern magnolia.

Xeric hammocks occur on deep, well-drained, sandy soils where fire has been absent for long periods of time. These open, dry hammocks contain live oak, sand-live oak, bluejack oak, blackjack oak, southern red oak, sand-post oak, and pignut hickory.

Coastal and hydric hammocks are relatively wet hardwood forests that are found between uplands and true wetlands. These sometimes seasonally wet forests are associated with some non-alluvial peninsula streams, scattered broad lowlands, and are also found in a narrow band along parts of the Gulf and Atlantic coasts where they often extend to the edge of coastal salt marshes. These communities contain water oak, red maple, Florida elm, cabbage palm, red cedar, blue-beech, and sweetgum.

Live oak and cabbage palm hammocks are often found bordering large lakes and rivers, and are distributed throughout the prairie region of south central Florida and extend northward in the St. John's River basin. These communities may occur as mixed stands of oak and palm, or one of these species can completely dominate an area.

9. **Tropical Hardwood Hammock**--These upland hardwood forests occur in extreme south Florida and are characterized by tree and shrub species on the northern edge of a range which extends southward into the Caribbean. These communities are sparsely distributed along coastal uplands south of a line from about Vero Beach on the Atlantic coast to Sarasota on the Gulf coast. They occur on many tree islands in the Everglades and on uplands throughout the Florida Keys. This cold-intolerant tropical community has very high plant species diversity, sometimes containing over 35 species of trees and about 65 species of shrubs. Characteristic tropical plants include strangler fig, gumbo-limbo, mastic, bustic, lancewood, ironwoods, poisonwood, pigeon plum, Jamaica dogwood, and Bahama lysiloma. Live oak and cabbage palm are also sometimes found within this community. Tropical hammocks in the Florida keys may also contain several plants, including lignum vitae, mahogany, thatch palms, and manchineel, which are extremely rare within the United States.

B. **Wetland Plant Communities**

10. **Coastal Salt Marshes**--These herbaceous and shrubby wetland communities occur statewide in brackish waters along protected low energy estuarine shorelines of the Atlantic and Gulf coasts. The largest continuous areas of salt marsh occur north of the range of mangroves, and border tidal creeks, bays and sounds. Salt marshes are sometimes interspersed within mangrove areas, and also occur as a transition zone between freshwater marshes and mangrove forests such as in the Ten Thousand Islands area along the southwest Florida coast. Plant distribution within salt marshes is largely dependent on the degree of tidal inundation, and many large areas are completely dominated by one species. Generally, smooth cordgrass typically occupies the lowest elevations immediately adjacent to tidal creeks and pools, while black needlerush dominates less frequently inundated zones. The highest elevations form transitional areas characterized by glasswort, saltwort, saltgrass, sea oxeye daisy, marsh elder, and saltbush. For the purposes of this project, cordgrass, needlerush, and transitional or high salt marshes are collectively mapped as this single category.

11. **Freshwater Marsh and Wet Prairie**--These wetland communities are dominated by a wide assortment of herbaceous plant species growing on sand, clay, marl, and organic soils in areas of variable water depths and inundation regimes. Generally, freshwater marshes occur in deeper, more strongly inundated situations and are characterized by tall emergents, and floating leafed species. Freshwater marshes occur within depressions, along broad, shallow lake and river shorelines, and are scattered in open areas within hardwood and cypress swamps. Also, other portions of freshwater lakes, rivers, and canals which are dominated by floating-leaved plants such as lotus, spatterdock, duck weed, and water hyacinths are included in this category. Wet prairies commonly occur in shallow, periodically inundated areas and are usually dominated by aquatic grasses, sedges, and their associates. Wet prairies occur as scattered, shallow depressions within dry prairie areas and on marl prairie areas in south Florida. Also included in this category are areas in Southwest Florida with scattered dwarf cypress having less than 20 percent canopy coverage, and a dense groundcover of freshwater marsh

plants. Marshes and wet prairies are dominated by various combinations of pickerel weed, sawgrass, maidencane, arrowhead, fire flag, cattail, spike rush, bulrush, white water lily, water shield, and various sedges. Many marsh or wet prairie types, such as sawgrass marsh or maidencane prairie, have been described and so-named based on their dominant plant species.

12. **Cypress Swamp**--These regularly inundated wetlands form a forested border along large rivers, creeks, and lakes, or occur in depressions as circular domes or linear strands. These communities are strongly dominated by either bald cypress or pond cypress, with very low numbers of scattered black gum, red maple, and sweetbay. Understory and ground cover are usually sparse due to frequent flooding but sometimes include such species as buttonbush, lizard's-tail, and various ferns.

13. **Hardwood Swamp**--These wooded wetland communities are composed of either pure stands of hardwoods, or occur as a mixture of hardwoods and cypress. This association of wetland-adapted trees occurs throughout the state on organic soils and forms the forested floodplains of non-alluvial rivers, creeks, and broad lake basins. Tree species include a mixed overstory containing black gum, water tupelo, bald cypress, dahoon holly, red maple, swamp ash, cabbage palm, and sweetbay.

14. **Bottomland Hardwoods**--These wetland forests are composed of a diverse assortment of hydric hardwoods which occur on the rich alluvial soils of silt and clay deposited along several Pandhandle rivers including the Apalachicola. These communities are characterized by an overstory that includes water hickory, overcup oak, swamp chestnut oak, river birch, American sycamore, red maple, Florida elm, bald cypress, blue beech, and swamp ash.

15. **Bay Swamp**--These hardwood swamps contain broadleaf evergreen trees that occur in shallow, stagnant drainages or depressions often found within pine flatwoods, or at the base of sandy ridges where seepage maintains constantly wet soils. The soils, which are usually covered by an abundant layer of leaf litter, are mostly acidic peat or muck which remain saturated for long periods but over which little water level fluctuation occurs. Overstory trees within bayheads are dominated by sweetbay, swamp bay, and loblolly bay. Depending on the location within the state, other species including pond pine, slash pine, blackgum, cypress, and Atlantic white cedar can occur as scattered individuals, but bay trees dominate the canopy and characterize the community. Understory and groundcover species may include dahoon holly, wax myrtle, fetterbush, greenbriar, royal fern, cinnamon fern, and sphagnum moss.

16. **Shrub Swamp**--Shrub swamps are wetland communities dominated by dense, low-growing, woody shrubs or small trees. Shrub swamps are usually characteristic of wetland areas that are experiencing environmental change, and are early to mid-successional in species complement and structure. These changes are a result of natural or man-induced perturbations due to increased or decreased hydroperiod, fire, clear cutting or land clearing, and siltation. Shrub swamps statewide may be dominated by one species, such as willow, or an array of opportunistic plants may form a dense, low canopy. Common species include willow, wax myrtle, primrose willow, buttonbush, and saplings of red maple, sweetbay, black gum, and other hydric tree species indicative of wooded wetlands.

In northern Florida, some shrub swamps are a fire-maintained subclimax of bay swamps. These dense shrubby areas are dominated by black titi, swamp cyrilla, fetterbush, sweet pepperbush, doghobble, large gallberry, and myrtle-leaf holly.

17. **Mangrove Swamp**--These dense, brackish water swamps occur along low-energy shorelines and in protected, tidally influenced bays of southern Florida. This community is composed of freeze-intolerant tree species that are distributed south of a line from Cedar Key on the Gulf coast to St Augustine on the Atlantic coast. These swamp communities are usually dominated by red, black, and white mangroves that progress in a sere from seaward to landward areas, respectively, while buttonwood trees occur in areas above high tide. Openings and transitional areas in mangrove swamps sometimes contain glasswort, saltwort, and other salt marsh species. All three major species of mangroves are mapped as a single class with no effort made to differentiate these species into separate zones.

C. **Aquatic**

18. **Aquatic**--This community is comprised of the open water areas of inland freshwater lakes, ponds, rivers and creeks, and the brackish and saline waters of estuaries, bays, tidal creeks, the Gulf of Mexico, and the Atlantic Ocean.

D. Disturbed Communities

19. **Grassland**--These are upland communities where the predominant vegetative cover is very low growing grasses and forbs on intensively managed sites such as improved pastures, lawns, golf courses, road shoulders, cemeteries, or weedy, fallow agricultural fields, etc. This very early successional category includes all sites with herbaceous vegetation during the time period between bare ground, and the shrub and brush stage.

20. **Shrub and Brushland**--This association includes a variety of situations where natural upland community types have been recently disturbed through clear-cutting commercial pinelands, land clearing, or fire, and are recovering through natural successional processes. This type could be characterized as an early condition of old field succession, and the community is dominated by various shrubs, tree saplings, and lesser amounts of grasses and herbs. Common species include wax myrtle, saltbush, sumac, elderberry, saw palmetto, blackberry, gallberry, fetterbush, staggerbush, broomsedge, dog fennel, together with oak, pine and other tree seedlings or saplings.

21. **Exotic Plant Communities**--Upland and wetland areas dominated by non-native trees that were planted or have escaped and invaded native plant communities. These exotics include melaleuca, Australian pine, Brazilian pepper, and eucalyptus.

22. **Barren**--This class includes highly reflective unvegetated areas such as roads, beaches, active strip mines, tilled agricultural sites, and cleared land on sandy soils. Unvegetated sites in urban areas which include rooftops of buildings, athletic fields, landfills, and parking lots, etc., are also included in this category. Vegetated tracts within urban areas are classified and mapped according to their predominate vegetation cover or plant community type.

Appendix I. Outline of plant communities for Landsat habitat mapping showing Landsat class numbers, and color table values.

		Landsat Class Numbers	Color Table Values (R-G-B)
A. Upland Plant Communities			
1.	Coastal strand (CS)	1-10	255190190
2.	Dry prairie (DP)	11-20	255200255
3.	Pinelands (PL)	21-40	361700
4.	Sand pine scrub (SPS)	41-50	2551600
5.	Sandhill (SH)	51-60	16521075
6.	Xeric oak scrub (XOS)	61-70	25500
7.	Mixed hardwood pine forests (MHPF)	71-80	190950
8.	Hardwood hammocks and forests (UHF)	81-100	0255255
9.	Tropical hardwood hammock (THH)	101-110	255100255

B. Wetland Plant Communities *****

Appendix I. Outline of plant communities for Landsat habitat mapping showing Landsat class numbers, and color table values.

		Landsat Class Numbers	Color Table Values (R-G-B)
A. Upland Plant Communities			
1.	Coastal strand (CS)	1-10	255190190

2. Dry prairie	(DP)	11-20	255200255
3. Pinelands	(PL)	21-40	361700
4. Sand pine scrub	(SPS)	41-50	2551600
5. Sandhill	(SH)	51-60	16521075
6. Xeric oak scrub	(XOS)	61-70	25500
7. Mixed hardwood pine forests	(MHPF)	71-80	190950
8. Hardwood hammocks and forests	(UHF)	81-100	0255255
9. Tropical hardwood hammock	(THH)	101-110	255100255

B. Wetland Plant Communities

10. Coastal salt marshes	(CSM)	111-130	30170220
11. Freshwater marsh and wet prairie	(FWM)	131-150	128240160
12. Cypress swamp	(CSWP)	151-160	1622232
13. Hardwood swamp	(HS)	161-170	195165110
14. Bay swamp	(BS)	171-175	25517048
15. Shrub swamp	(SS)	176-185	130150100
16. Mangrove swamp	(MS)	186-195	13113145
17. Bottomland hardwoods	(BHW)	196-205	2552000

C. Aquatic

18. Open water	(W)	206-215	000
----------------	-----	---------	-----

D. Disturbed

19. Grassland	(G)	216-225	25525550
20. Shrub and brushland	(SB)	226-235	185185185
21. Exotic plant communities	(EXPC)	236-245	11060130
22. Barren	(B)	246-255	255255255

A COMPREHENSIVE STATEWIDE WILDLIFE HABITAT SYSTEM FOR FLORIDA

PROJECT OUTLINE

**Florida Game and Fresh Water Fish Commission
Office of Environmental Services
620 S. Meridian St.
Tallahassee, FL 32399-1600**

Problem Statement

As shown in Figure 1, from 1830 until 1950, the human population in Florida grew at a relatively constant rate. However, since 1950, Florida's population has increased four-fold to approximately 12,000,000 citizens today. While population growth has been a boon to Florida's economy, it has come at a price: millions of acres of once productive wildlife habitat have been lost to development.

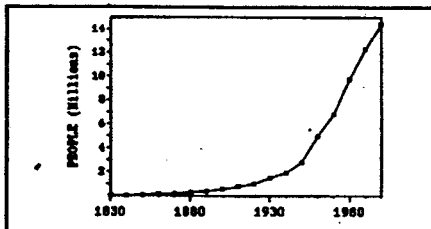


Figure 1. Growth of the human population in Florida, 1830-2000.

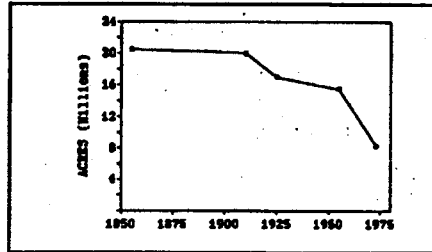


Figure 2. Acreage of Florida wetlands, 1850-1973.

Between 1850 and 1973, the total area of wetlands in Florida declined from over 20 million acres to approximately 8 million acres (Figure 2), with most of the lost wetland acreage coming from the Everglades. Total forest cover in Florida declined from 21 million acres in 1936 to approximately 16.5 million acres in 1987, a loss of 21% over a 50-year period (Figure 3). A total of 585,000 acres of forest, an area the size of the Apalachicola National Forest, was lost between 1980 and 1987 alone. Data available from the U.S. Forest Service provides insight into the types of land uses to which Florida's native wildlife habitats have been converted. In 1987, approximately 17% of the land area was used for cattle grazing, 11% was in agricultural use, and 7% was urban (Figure 4).

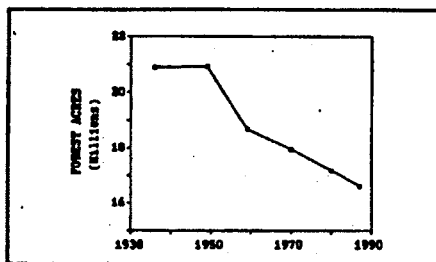


Figure 3. Forest acreage in Florida, 1936-1987.

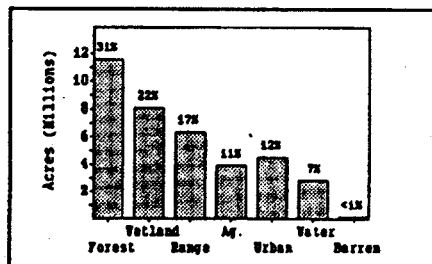


Figure 4. Distribution of land cover in Florida, 1973-1974.

As a consequence of the extensive and rapid reductions in native wildlife habitats in Florida, the populations of many species of wildlife dependent upon those habitats have been drastically reduced. For some species, for example the Key Largo wood rat, habitat losses have been so severe that the species have been listed by the state as endangered. Other species, such as the ivory-billed woodpecker and dusky seaside sparrow, are extinct in Florida because of the loss of habitat.

Although the acreage of undeveloped wildlife habitat now remaining in Florida might be sufficient to preserve all species of Florida wildlife in perpetuity, the current rate of growth of the human population leads to the inevitable conclusion that too much habitat will ultimately be lost to assure the continued survival of all species. In order to prevent additional species of wildlife from going extinct in Florida, to ensure that new species are not added to the state's threatened and endangered species lists, and to provide living space for all of Florida's game and nongame wildlife, wildlife managers urgently need to identify and preserve those remaining areas of the state that provide habitat of sufficient quantity and quality to sustain all species of Florida wildlife indefinitely. In addition, those areas of disturbed habitat that are amenable to

habitat restoration efforts or that could serve as low-intensity land use corridors for wildlife movements between separated wildlife habitats also need to be identified and preserved.

The following narrative outlines an ongoing project designed to identify those remaining undeveloped areas of Florida that should be preserved or restored in order to meet the long term conservation needs of all species of Florida wildlife. The goal of the project is to establish a biological basis for lands that should be included in a Comprehensive Statewide Wildlife Habitat System.

Process for Identifying Habitat Areas Needing Protection

The process for identifying those track of land that can be used to meet the long term habitat needs of Florida wildlife on a macroscopic scale involves the development and computer manipulation of three major data bases. Those data bases are 1) a computerized map of existing Florida habitat types, 2) computerized maps of existing publicly-owned lands, and 3) the habitat requirements of a list of priority species of wildlife. The three data bases are being developed independently and will be entered into a computer with Geographic Information System (GIS) capabilities. Wildlife biologist working with the GIS will highlight those undeveloped tracts of public and private land in Florida that could be used to meet the long term habitat needs of the selected list of wildlife species. The highlighted areas will be surveyed in the field wherever possible to ascertain whether or not the predicted wildlife habitat values of particular sites are real. Maps of proposed preserve sites will then be generated and entered into an atlas that will form the basis for a Comprehensive Statewide Wildlife Habitat System. It is hoped that the atlas will be used to guide future land acquisition programs or the land use planning decisions of state and local governments. The following sections describe in greater detail the necessary data bases and the process for establishing a biological basis for a Comprehensive Statewide Wildlife Habitat System.

Landsat Habitat Inventory - In August 1987, the Commission entered into a three-year contract with the Florida Department of Transportation to map wildlife habitats (i.e., natural plant communities) statewide in Florida using Landsat satellite imagery. Sensing that there was a critical need for land cover information at the local government level, a decision was made to map wildlife habitats in the state one regional planning council at a time. The sequence of mapping and target dates for completion of each regional planning council are shown in Table 1. As of this writing, mapping is proceeding according to schedule.

Table 1. Due dates for completion of mapping of Florida regional planning councils. Dates marked with an asterisk (*) have been completed.

RPC NAME	APPROXIMATE DUE DATE
East Central Florida	Aug 22, 1988 *
Northeast Florida	Jun 30, 1989
Withlacoochee	Oct 25, 1988 *
Tampa Bay	Dec 5, 1988 *
Central Florida	Feb 22, 1989
Southwest Florida	May 17, 1989
Treasure Coast	Jun 30, 1989
South Florida	Sep 8, 1989
North Central Florida	Dec 27, 1989
Apalachee	Apr 1, 1990
West Florida	Jun 30, 1990

Because the intent of this project is to plan for the habitat needs of Florida wildlife at the scale of the landscape, the focus of the mapping effort is on the major natural plant communities of Florida. The list of natural plant communities being mapped, which appears in table 2, closely follows the 17 habitat types appearing on Davis' 1967 General Map of Natural Vegetation of Florida. Also being mapped are several classes associated with human disturbance, such as grassland, shrub and brush, exotic plants, and barren land. rand cover data at this scale lacks sufficient resolution for it to be used to evaluate within-type habitat quality for wildlife, but it can successfully be used to assess wildlife habitat needs between types.

Although the Landsat inventory of Florida natural plant communities is being used specifically to identify those areas meeting the long term habitat needs of wildlife, the final classified habitat data base will have many ancillary applications. For example, cover type data will be available to other state agencies, regional planning councils, water management districts, and local government for land use planning purposes. The data base can be used by researchers investigating various wildlife conservation and land use

issues. The habitat inventory can be used as a cover map by biologists working on wildlife management problems in specific areas, or the data can be reclassified to better depict habitat conditions in small areas. Finally, future landsat imagery can be used to reclassify wildlife habitats in the state, and the results can be used to evaluate habitat changes over time.

Table 2. List of natural plant communities being mapped using Landsat satellite imagery

UPLANDS	WETLANDS
Sandhill	Bay Swamp
Pinelands	Salt Marsh
Dry Prairie	Shrub Swamp
Coastal Strand	Cypress Swamp
Sand Pine Scrub	Mangrove Swamp
Xeric Oak Scrub	Freshwater Marsh
Upland Hardwood Forest	Mixed Hardwood Swamp
Tropical Hardwood Hammock	Bottomland Hardwood Forest
Mixed Pine-Hardwood Forest	

Data Base of Publicly Owned Lands - The boundaries of all publicly owned areas in Florida will be determined, digitized, and entered into the GIS as an overlay on the habitat inventory. Examples of the types of areas to be included in the overlay are state and national forests, state and national parks, national wildlife refuges, state reserves and preserves, and lands acquired with Save Our Rivers, Save Our Coasts, and Conservation and Recreation Lands funds.

It is assumed that all publicly owned lands are relatively well protected from development related habitat losses, and that these lands, therefore, constitute the basic blocks around which a Comprehensive Statewide Wildlife Habitat System can be built. Overlaying these lands on the habitat inventory will provide a good indication of the extent to which the major Florida habitat types and their associated wildlife communities have been protected by past acquisitions. This overlay also will suggest ways in which existing publicly owned lands can be expanded into surrounding undeveloped habitats, linked via corridors to other areas to increase their wildlife values, or better managed to achieve specific wildlife conservation objectives.

Wildlife Species Data Base - A list of priority species of wildlife is being developed for use in determining which remaining areas of the state should be "protected to serve as long-term wildlife habitats. The species are being drawn from the state's endangered species, threatened species, and species of special concern lists, but they also include selected game and nongame species that have special habitat needs or are susceptible to the problems of habitat loss or fragmentation. Selected species are being prioritized on the basis of degree of endangerment, ability of a large scale habitat protection program to meet their conservation needs, use as indicators of high quality wildlife habitat for a variety of other species, and value as indicators of specific habitat types. For example, the Florida sandhill crane has been selected because it is listed as a threatened species and is indicative of freshwater marsh habitats. Turkeys have been selected because they are popular game animals that have fairly large area requirements and are indicative of high quality forest habitats that support a variety of other game and nongame wildlife. Sherman's fox squirrel has been selected because it is indicative of high quality sandhill habitat and is listed as a species of special concern.

Basic life history data, including range within Florida, habitat requirements, and population structure, are obtained from the literature or from wildlife experts. Population models are employed to estimate the viable size of small isolated populations of each species, and, using estimates of population density, the area required to support a viable population of each species is calculated. These results are then entered into the GIS and used to identify all areas of the state which provide habitat of sufficient area to meet the long term conservation needs of one or more viable populations of each species. The GIS will also be used to evaluate the effectiveness of wildlife corridors for maintaining animal populations. Once the critical areas needed by the selected species have been determined, they will be overlain in the GIS to identify which areas protect the greatest number of species. The assumption is that the greater the number of species that can be maintained in a given area, the more valuable will that area be as a habitat preserve. However, those areas that meet the needs of critically endangered species are of greatest importance even if they prove to be valuable only to one species.

Each area identified as meeting the long term conservation needs of one or more species will be surveyed in the field, if possible, to ascertain whether or not predicted habitat values are realized. This step will ensure that identified areas truly meet the criteria for preserve establishment such that future commitments of time

and money to protect these areas are not in vain. However, field surveys may prove difficult to effect if identified tracts are on private lands and the landowner is unwilling to allow access to a site.

In addition, if time permits, an overlay will be developed of the Florida Natural Areas Inventory's records of occurrence for the species appearing on the project's species list. This overlay will serve as a form of ground-truthing of the landsat habitat map, will provide additional verification of the wildlife values of particular sites, and will point to areas that may be in need of special habitat protection efforts.'

Habitat Protection Atlas - Once all areas of the state meeting the criteria for entry into a Comprehensive Statewide Wildlife Habitat System have been identified and surveyed, they will be published in atlas form. Current plans are for the atlas to contain brief descriptions of the wildlife values of each particular site and how each site meets the criteria for entry into the habitat system. It is hoped that the atlas will be used as a blueprint to guide current and future land acquisition programs and will provide a wildlife conservation basis for land use decisions made by state agencies and local governments. The atlas, the end product of this project, is intended to provide the biological basis for the long term conservation of wildlife in Florida at the macroscopic scale; however, the atlas is not intended to provide habitat protection recommendations for wildlife in local, small scale settings. Neither will the atlas provide information concerning the means by which the habitat protection recommendations made in the plan will be implemented. Implementation of the recommendations will be left to future efforts.

The Roles of DOT and DNR in the Project

The Florida Department of Transportation's remote sensing section, and the Florida Department of Natural Resources' Marine Research Institute, play integral roles in the development of a Comprehensive Statewide Wildlife Habitat System for Florida. Through a cooperative agreement, DNR is making 1986-1987 Landsat satellite imagery available to the Commission for use on this project. DOT's remote sensing section is using the imagery to classify and map the natural plant communities of Florida, and Commission and DOT staff work together to ground-truth the resulting maps. The final maps of Florida natural plant communities are delivered to the Commission on floppy disk or computer compatible tape for input into the Commission's GIS.

GFC Project Personnel

Commission staff for the Comprehensive Statewide Wildlife Habitat System project consists of three full-time positions and a supervisor. One full-time position is responsible for the wildlife species data base, one position is responsible for the habitat data base, and one position is responsible for the public lands data base and operation of the GIS. The responsibilities of these positions are described in greater detail below.

Wildlife Data Base Position - This position is responsible for all aspects of the wildlife species data base. This staff member coordinates the selection and prioritization of the species, conducts literature searches and contact experts to determine the life history features and habitat requirements of each species, and uses models to evaluate viable population sizes of the selected species. The wildlife specialist then works closely with the GIS specialist to identify those lands meeting the habitat needs of the selected species. This person is also responsible for coordinating field surveys of those areas identified by the computer as meeting the habitat needs of individual species of wildlife.

Habitat Data Base Position - The habitat data base position is responsible for providing the list of desired habitat types to DOT staff and working with DOT to ensure that the desired habitat types can be classified from landsat imagery. The habitat specialist is also responsible for coordinating ground-truthing efforts to ensure that the habitat classification work performed by DOT staff is as accurate as possible. The ground-truthing technique being used in the project might better be referred to as "air-truthing." The latitude/longitude coordinates of specific sites to be checked in the field are obtained from the landsat imagery. These coordinates are fed into the Loran navigation system onboard a Commission helicopter, and the helicopter then flies to the exact location of the site to be checked. In this way, large areas of land can be covered in short periods of time, access can be obtained to lands that would otherwise be inaccessible, and accurate identification of cover types is possible. The ground-truth results are returned to DOT for final editing prior to delivery to the Commission.

GIS Specialist - This position is responsible for all aspects of GIS operations. The GIS specialist has participated in the evaluation process leading to the selection of the image processing and geographic information system being purchased by the Commission. Upon arrival of the system early in April 1989, the GIS specialist will be responsible for installation, operation, and maintenance of the system. The primary duties of this person include developing the publicly owned lands data base for entry into the GIS, working with the wildlife and habitat specialists to ensure that wildlife and habitat data are properly entered into the GIS, and organizing project results into hard copy form suitable for publication. The GIS specialist is also

responsible for providing project data to other governmental agencies and private individuals and for assisting other Commission staff with GIS data needs.

Project Supervisor - The project is supervised by the Nongame Habitat Protection Coordinator in the Commission's Office of Environmental Services. This person is responsible for supervising all project operations, coordinating with the public concerning progress of the project, planning for and securing an adequate budget, and ensuring that the project is completed in a timely manner.

Project Phasing and Proposed Time Schedule

As presently conceived, the entire project is expected to take approximately five years to complete, the actual length of time depending upon the number and difficulty of problems encountered and whether or not the Legislature provides annual funding for the project. The three-year contract between the Commission and DOT calls for completion of the Landsat habitat classification and mapping effort by June 30, 1990. Completion of the GIS aspects of the project, compilation of project results into atlas form, and publication of the atlas will require an additional year or two. The following timetable illustrates the sequence of events over the life of the project.

	<u>FY 87-88</u>	<u>FY 88-89</u>	<u>FY 89-90</u>	<u>FY 90-91</u>	<u>FY 91-92</u>
Landsat Classification	*****	*****	*****		
GIS Applications		**	*****	*****	****
Atlas Production					*****

Commission Contact Person

For additional information concerning the project to develop a Comprehensive Statewide Wildlife Habitat System for Florida, please contact the following person

Mr. Randy Kautz
Florida Game and Fresh Water Fish Commission
620 S. Meridian St.
Tallahassee, FL 32399-1600 Phone (904) 488-6661

APPENDIX VI

6. REGULATORY

The Florida phosphate industry has been, from the early 1960's, progressively regulated in their day to day operation by a multitude of various federal, state, and county environmental or operational regulations. Most of the regulations are now in place but some portions are being constantly revised and updated. The revisions create problems for the industry as to keeping updated on the proposed revisions and compliance after adoption.

It is not within the scope of this project to provide a detailed study of each regulation and how it affects the phosphate industry. However, lists of the various regulations are provided in Tables 14, 15, and 16.

TABLE 14 FEDERAL LEGISLATION AFFECTING ENVIRONMENTAL REVIEW AND/OR PERMITTING

- Clean Air Act
- Clean Water Act
- National Environmental Policy Act
- Atomic Energy Act
- Resource Conservation and Recovery Act
- Surface Mining Control and Reclamation Act
- Comprehensive Emergency Response, Compensation and Liability Act
- Superfund Amendments and Reauthorization Act
- Emergency Planning and Community right-to-Know Act
- Marine Protection Research and Sanctuaries Act of 1972
- Coastal Zone Management Act of 1972
- Marine Mammal Protection Act of 1972
- Fish and Wildlife Coordination Act
- Endangered Species Act of 1973
- Wild and Scenic Rivers Act
- Soil and Water Resources Conservation Act
- Noise Control Act of 1972
- National Historic Preservation Act of 1966

TABLE 15
STATE LEGISLATION PERTAINING TO THE LICENSING
OF FLORIDA PHOSPHATE OPERATIONS

<u>Agency</u>	<u>Florida Statute</u>	<u>Florida Administrative Code</u>
Florida Game and Freshwater Fish Commission	372 (Wildlife)	39 (Wildlife Code) 39-4 (General Prohibition) 29-25 (General Provisions Reptiles) 39-27 (Endangered Species)
Department of Health and Rehabilitative Services	290 (Fla. Nuclear Code and Southern Interstate Nuclear Compact Law) 387 (Pollution of Water) 404 (Radiation)	10D-56 10D-91 (Control of Radia- tion Hazards)
Southwest Fla. Water Management District	373 (Water Resources)	40D-2 (Consumptive Use Permitting) 40D-3 (Regulation of Wells) 40D-4 (Management and Stor- age of Surface Waters *Interagency Agreement) 40D-5 (Artificial Recharge) 40D-6 (Works of the Dis- trict) 40D-8 (Water Levels and Rates of Flow)

TABLE 15 (continued)
STATE LEGISLATION PERTAINING TO THE LICENSING
OF FLORIDA PHOSPHATE OPERATIONS

<u>Agency</u>	<u>Florida Statute</u>	<u>Florida Administrative Code</u>
Department of Natural Resources	211-Part II (Tax on Severance of Solid Minerals) 378 (Land Reclama- tion)	16C-16 (Mandatory Phos- phate Mine Reclamation) 16C-17 (Master Reclama- tion Plan for Land Disturbed by the Severance of Phosphate Prior to July 1, 1975) 3A-44 (Nonmandatory Land Reclamation Trust Fund)
Regional Planning Councils	380 (Environmental Land and Water Management)	9J-2 (Rules of Procedure and Practice) 27F-2 (Land Planning) 28 (Clerks of the Circuit Courts)
	186 (State and Regional Planning)	9J-5 (Minimum Criteria for Review)
Department of Environmental Regulation	403 (Environmental Control)	

TABLE 15 (continued)
STATE LEGISLATION PERTAINING TO THE LICENSING
OF FLORIDA PHOSPHATE OPERATIONS

<u>Agency</u>	<u>Florida Statute</u>	<u>Florida Administrative Code</u>
Department of Environmental Regulation		17-103 Rules of Administrative Procedures Non-rulemaking 17-140 Permitting - General Procedures 17-141 Permit Fees 17-150 Requirements for Reporting Releases of Hazardous Substances 17-220 thru 17-249 Air Pollution Control 17-301 Surface Waters of the State 17-303 Surface Water Quality Standards 17-309 Fish Values 17-310 thru 17-320 Wetland Resource Management

TABLE 15 (continued)
STATE LEGISLATION PERTAINING TO THE LICENSING
OF FLORIDA PHOSPHATE OPERATIONS

<u>Agency</u>	<u>Florida Statute</u>	<u>Florida Administrative Code</u>
Department of Environmental Regulation		17-325 Stormwater Management 17-329 Phosphate Dams
		17-520 GroundWater Standards
		17-522 thru 17-530 Ground Water Requirements & UIC
		17-531 WaterWell Construction
		17-532 Water Wells
		17-550 thru 17-699 Wastewater Facilities
		17-701 thru 17-729 Solid Waste
		17-730 Hazardous Waste
		17-734 Polychlorinated Blphenyls (PCBs)
		17-761 Stationary Tanks

TABLE 16

COUNTY REGULATIONS

<u>County</u>	<u>Ordinance</u>
Polk	Ordinance No. 88-19 (Phosphate Mining Ordinance)
DeSoto	Ordinance No. 1984-17 (Phosphate Mining Operations) Section 7-27 (County Zoning Ordinance) 27-M-1 (Phosphate Mining and Earth Moving District)
Hardee	Section M-1 (Mining District) Article IV (Mining Regulations)
Manatee	Ordinance No. 81-22 (Mining and Reclamation Ordinance)
Hillsborough	Ordinance No. 87-27 (Phosphate Mining Ordinance)

APPENDIX VII

FEDERAL AND STATE LAW RELATING TO WILDLIFE CORRIDORS

Prepared by John K. McPherson

INTRODUCTION

There is little state or federal law that specifically relates to the issue of wildlife corridors. Most laws are couched in terms of protecting a resource, or purchasing environmentally sensitive lands, without specifying how the resources are to be protected, or which lands are to be purchased. The permanent protection of wildlife corridors could result from the application of the laws discussed below.

STATE LAW

I. NATURAL RESOURCES AND SCENIC BEAUTY, ARTICLE II, SECTION 7, FLORIDA CONSTITUTION

The most general statement of support for wildlife corridors is in the Florida Constitution, which at Article II, Section 7, provides:

It shall be the policy of the state to conserve and protect its natural resources and scenic beauty. Adequate provision shall be made by law for the abatement of air and water pollution and of excessive and unnecessary noise.

II. NATURAL SYSTEMS, RECREATIONAL LANDS, AND WATER RESOURCES, STATE COMPREHENSIVE PLAN, CHAPTER 187, FLORIDA STATUTES

The State Comprehensive Plan contains the following goals and policies that may support the creation of wildlife corridors:

Goal:

Florida shall...maintain the functions of natural systems....

Policies:

Establish minimum seasonal flows and levels for surface water courses with primary consideration given to the protection of natural resources, especially marine, estuarine, and aquatic ecosystems.

Discourage the channelization, diversion, or damming of natural riverine systems.

Encourage the development of a strict floodplain management program by state and local governments designed to preserve hydrologically significant wetlands and other natural floodplain features.

Goal:

Florida shall insure that development and marine resource use...in coastal areas do not endanger...important natural resources.

Policies:

Accelerate public acquisition of coastal and beachfront land where necessary to protect coastal and marine resources....

Protect coastal resources, marine resources, and dune systems from the adverse effects of development.

Encourage land and water uses which are compatible with the protection of sensitive coastal resources.

Protect and restore long-term productivity of marine fisheries habitat and other aquatic resources.

Prohibit development and other activities which disturb coastal dune systems, and ensure and promote the restoration of coastal dune systems that are damaged.

Goal:

Florida shall protect and acquire unique natural habitats and ecological systems, such as wetlands, tropical hardwood hammocks, palm hammocks, and virgin longleaf pine forests, and restore degraded natural systems to a functional condition.

Policies:

Conserve forests, wetlands, fish, marine life and wildlife to maintain their environmental, economic, aesthetic, and recreational values.

Prohibit the destruction of endangered species and protect their habitats.

Establish an integrated regulatory program to assure the survival of endangered species and protect their habitats.

Promote the use of agricultural practices which are compatible with the protection of wildlife and natural systems.

Encourage multiple use of forest resources, where appropriate, to provide for timber production, recreation, wildlife habitat, watershed protection, erosion control, and maintenance of water quality.

Protect and restore the ecological functions of wetlands systems to ensure their long-term environmental, economic, and recreational value.

Promote restoration of the Everglades system and of the hydrological and ecological functions of degraded or substantially disrupted surface waters.

Develop and implement a comprehensive planning, management, and acquisition program to ensure the integrity of Florida's river systems.

Emphasize the acquisition and maintenance of ecologically intact systems in all land and water planning, management, and regulation.

Protect and expand park systems throughout the state.

III. STATE LAND DEVELOPMENT PLAN

The State Land Development Plan is prepared by the Florida Department of Community Affairs and is "an executive formulation of state land development policies." It is based on selected policies in the State Comprehensive Plan, and is intended to be "a strategic, direction-setting document and the basis for additional statutory, budget and appropriations requests where necessary to pursue its intent."

The Plan contains the following "Objectives" designed to implement the Natural Systems provisions of the State Comprehensive Plan:

By 1992, protect and manage all of Florida's natural systems, and especially wetland areas, through an integrated and coordinated planning and management system among all levels of government.

By 1992, all of Florida's rivers and drainage basins will be managed under common intergovernmental strategies that are coordinated with state and regional agencies, and consistent with local government comprehensive plans and land development regulations.

By 1990, there will be no net loss of endangered species habitat as a result of land development decisions.

By 1992, best management practices which are compatible with and protect wildlife and natural systems will be developed and implemented for all types of agricultural uses.

By 1990, identify all significant ecologically intact systems within the state for the purposes of planning, management and possible acquisition.

By 1992, the ecological integrity of important natural systems, such as river systems, wetland and lake communities and wildlife corridors, will be protected from resource extraction by the combination of comprehensive regional policy plans, local government comprehensive plans and, where necessary, public acquisition.

By 1995, all of Florida's local governments will be planning and managing for compact urban growth that will separate urban and rural land uses, and protect wildlife and natural systems.

By 1992, local governments will implement through land development regulations approved comprehensive plans that consider the impact on and continued availability of the state's natural resources.

IV. LOCAL GOVERNMENT COMPREHENSIVE PLANNING AND LAND DEVELOPMENT REGULATION ACT, CHAPTER 163, FLORIDA STATUTES

Pursuant to the Local Government Comprehensive Planning and Land Development Regulation Act each local government in Florida must adopt a comprehensive plan and implementing land development regulations that address wildlife corridors. Each local comprehensive plan must contain the following:

A conservation element for the conservation, use, and protection of natural resources in the area, including...water,...wetlands,...estuarine marshes,...beaches, shores, flood plains, rivers, bays, lakes, harbors, forests, fisheries and wildlife, marine habitat,...and other natural and environmental resources....

[A] coastal management element [setting] forth the policies that shall guide the local government's decisions and program implementation with respect to the following objectives:

* * * * *

2. Continued existence of viable populations of all species of wildlife and marine life.

In several places the rules adopted by the Department of Community Affairs relating to the contents of local comprehensive plans reiterate and emphasize the requirement that plans address the protection of wildlife habitat.

After adopting a comprehensive plan, each local government must adopt land development regulations "that are consistent with and implement" the plan. Among the regulations that must be contained in the code are those that:

Ensure the protection of environmentally sensitive lands designated in the comprehensive plan.

Rules adopted by the Department of Community Affairs expand on this by providing that the regulations must address:

The protection of environmentally sensitive lands from development impacts, including ensuring the protection of...surface water, shorelines, fisheries, vegetative communities, and wildlife habitat.

V. FLORIDA ENVIRONMENTAL LAND AND WATER MANAGEMENT ACT OF 1972, CHAPTER 380, FLORIDA STATUTES

This act contains provisions for the designation of Areas of Critical State Concern, and the review of large-scale development through the Development of Regional Impact process.

A. Area of Critical State Concern

An Area of Critical State Concern may be designated for:

An area containing, or having a significant impact upon, environmental or natural resources of regional or statewide importance, including, but not limited to, state or federal parks, forests, wildlife refuges, wilderness areas, aquatic preserves, major rivers and estuaries, state environmentally endangered lands, Outstanding Florida Waters, and aquifer recharge areas, the uncontrolled private or public development of which would cause substantial deterioration of such resources.

After an area has been designated as being of critical state concern, local governments within the area must submit land development regulations and a local comprehensive plan to the Department of Community Affairs for approval. These regulations must be consistent with the principles for guiding development which are included in the rule designating the area as one of critical state concern. If the local government fails to submit regulations and a plan that is in compliance, the Department of Community Affairs will recommend a plan and regulations for adoption by the Governor and Cabinet. In general, the plan and regulations should be designed to protect the environmental resources that formed the basis for the designation. This, of course, could include the protection of wildlife corridors.

To date the following areas have been designated as Areas of Critical State Concern: Big Cypress Swamp, Green Swamp, Florida Keys, City of Key West, and Apalachicola Bay.

B. Development of Regional Impact (DRI)

A "development of regional impact" is defined in the Act as any development that, because of its "character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one county." Developments of regional impact are reviewed by local, regional, and state agencies to ensure that the regional environmental, economic, and social impacts of the development are adequately considered. Although the impact of development on wildlife habitat has generally been considered as part of this review

process, the Department of Community Affairs has only recently proposed a rule specifically addressing this issue.

The proposed rule would establish the manner in which the Department of Community Affairs evaluates the impacts of proposed development on upland vegetation and wildlife species and their habitats in the DRI process. The rule provides for varying degrees of preservation if a proposed development encompasses endangered or threatened animal or plant species. Onsite and offsite preservation is provided for in the rule. Such preservation requirements could result in the permanent protection of wildlife corridors.

VI. WETLANDS AND OTHER SURFACE WATER PROTECTION LAWS

Various state and regional regulatory programs are designed to protect wetlands and other surface waters. These laws may result in the preservation of wildlife corridors and are discussed in detail in the issue paper dealing with the protection of aquatic habitats.

VII. FLORIDA ENDANGERED AND THREATENED SPECIES ACT OF 1977, SECTION 372.072, FLORIDA STATUTES

This Act contains the following declaration of policy:

The Legislature recognizes that the State of Florida harbors a wide diversity of fish and wildlife and that it is the policy of this state to conserve and wisely manage these resources, with particular attention to those species defined by the Game and Fresh Water Fish Commission, the Department of Natural Resources, or the U.S. Department of Interior, or successor agencies, as being endangered or threatened. As Florida has more endangered and threatened species than any other continental state, it is the intent of the Legislature to provide for research and management to conserve and protect these species as a natural resource.

"Endangered Species" is defined as:

[A]ny species of fish and wildlife naturally occurring in Florida, whose prospects of survival are in jeopardy due to modification or loss of habitat; over-utilization for commercial, sporting, scientific, or educational purposes; disease; predation; inadequacy of regulatory mechanisms; or other natural or manmade factors affecting its continued existence.

"Threatened Species" is defined as:

[A]ny species of fish and wildlife naturally occurring in Florida which may not be in immediate danger of extinction, but which exists in such small populations as to become endangered if it is subjected to increased stress as a result of further modification of its environment.

Responsibility for the research and management of freshwater and upland species is given to the Game and Fresh Water Fish Commission; responsibility for marine species is given to the Department of Natural Resources. The Act "encourages" these agencies to develop a public education program dealing with endangered and threatened species; and requires that each year these agencies transmit to the Legislature and Governor and Cabinet,

a revised and updated plan for management and conservation of endangered and threatened species, including criteria for research and management priorities; a description of the educational program; statewide policies pertaining to protection of endangered and threatened species; additional legislation which may be required; and the recommended level of funding for the following year, along with a progress report and budget request.

The Game and Fresh Water Fish Commission has recently proposed a rule for the protection of the gopher tortoise, a listed species. The proposed rule prescribes the conditions under which a permit would have to be obtained from the Game and Fresh Water Fish Commission prior to an "incidental take" of a gopher tortoise. "Incidental take" is defined as: "Land clearing within a 50-foot radius of the entrance of a maintained [gopher tortoise] burrow."

Thresholds based on the size of proposed development are established, above which the developer would have to protect .18 acres for every maintained burrow on the development site up to a maximum of thirty percent of the development site. The developer may preserve the gopher tortoise habitat onsite if the preserve meets certain size and management conditions. In cases where such conditions cannot be met, the developer must protect an area of gopher tortoise habitat offsite equal to 1.25 times the area that would have to be protected onsite. Where the conditions for onsite preservation can be met, the developer may nevertheless choose offsite

mitigation if the off-site preserve equals two times the size of the preserve that would be required on-site. Existing agricultural activities and normal silvicultural activities would be exempt under the proposed rules.

VIII. PRESERVATION OF NATIVE FLORA OF FLORIDA, SECTIONS 581.185 - 581.191, FLORIDA STATUTES

This Act contains the following statement of legislative intent:

The Legislature finds and declares that it shall be the public policy of this state to: provided recognition of those plant species native to the state that are endangered, threatened, or commercially exploited; protect the native flora from unlawful harvesting on both public and privately owned lands; provide an orderly and controlled procedure for restricted harvesting of native flora from the wild, thus preventing wanton exploitation or destruction of native plant populations, encourage the propagation of native species of flora; and provide the people of this state with the information necessary to legally harvest native plants so as to ultimately transplant those plants with the greatest possible chance of survival.

The Act divides native plants into the following categories: commercially exploited, endangered, and threatened. Plants on the Florida Endangered Species list may not be taken or destroyed without obtaining permission of the landowner and a permit from the Department of Agriculture and Consumer Services. A permit may not be issued by the Department for the taking or destroying of plants on the Federal Endangered Species List. The permission of the landowner is all that is needed to take or destroy plants on the Florida list of threatened species. Permission of the landowner and a permit from the Department is needed to take or destroy more than two plants on the Florida list of commercially exploited species.

Complete exemptions from the Act are provided for agricultural activities, clearing by utilities, and the clearing of right of ways. The Endangered Plant Advisory Council is created and has the responsibility of making recommendations to the Department of Agriculture and Consumer Services on proposed changes to the Act, including revisions to the plant lists.

IX. SURFACE WATER IMPROVEMENT AND MANAGEMENT ACT, SECTIONS 373.451 - 373.4595

Under this Act the water management districts are to prioritize those surface waters most in need of environmental restoration, and then develop plans for their restoration. The statute lists the following as one of the functions of surface waters to be restored: "Providing habitat for native plants, fish, and wildlife, including endangered and threatened species." Each SWIM plan is to be reviewed by the Game and Fresh Water Fish Commission and the Department of Natural Resources to determine the impact of the plan on wildlife habitat values.

X. MYAKKA RIVER WILD AND SCENIC DESIGNATION AND PRESERVATION ACT: CHAPTER 258, PART III, FLORIDA STATUTES (1989)

This act constitutes the first designation of a river in Florida as a state wild and scenic river. It is based on a legislative finding that the "Myakka River in Manatee, Sarasota, and Charlotte Counties possesses outstandingly remarkable ecological, fish and wildlife, and recreational values which are unique in the State of Florida."

The Act creates a coordinating council which, in conjunction with the Department of Natural Resources, is to develop a management plan for the wild and scenic portion of the river. The plan is to include provisions for the "[p]ermanent protection and enhancement of the ecological, fish and wildlife, and recreational values within the river area...." The Department of Natural Resources is given authority "to adopt rules to regulate activities within the river area which have an adverse impact on resource values...." The Department is also given permitting authority as follows: "No person or entity shall conduct any activity within the river area which will or may have an adverse impact on any resource value in the river area without first having received a permit from the [Department of Natural Resources.]"

XI. PROTECTION OF SEA TURTLE BEACH HABITAT, SECTION 161.163, FLORIDA STATUTES

This section requires that the Department of Natural Resources "adopt by rule a designation of coastal areas which are utilized, or are likely to be utilized, by sea turtles for nesting [and] guidelines for local government regulations that control beachfront lighting to protect hatching sea turtles."

XII. BEACH AND SHORE PRESERVATION DISTRICTS, CHAPTER 161, PART II, FLORIDA STATUTES

This act authorizes counties to do whatever is necessary to carry out a beach and shore preservation program including the purchase and holding of land. Special districts for beach and shore preservation may be established with their boundaries based on the benefits to be derived from the plan of improvement for the

beach and shore preservation program. The county commission, as the governing body of each district, may impose a tax of up to one mill per year for two years to "defray organizational and administrative costs," may impose an ad valorem benefits tax of any amount to carry out the improvement plan within the district, and may, subject to a referendum, issue bonds for all or any of the districts to carry out the improvement plan.

XIII. CONSERVATION EASEMENTS, SECTION 704.06, FLORIDA STATUTES

This section establishes Florida's statutory conservation easement. "Conservation easement" is defined, in relevant part, as

a right or interest in real property which is appropriate to retaining land or water areas predominantly in their natural, scenic, open, or wooded condition...and which prohibits or limits any or all of the following:

* * * * *

(f) Activities detrimental to...fish and wildlife habitat preservation.

Conservation easement may be acquired by purchase, donation, or other method except they may not be obtained by eminent domain. They may be held by governmental entities or by a charitable corporation or trust whose purposes include the conservation of land or water areas.

XIV. STATE LAND ACQUISITION PROGRAMS

A. Conservation and Recreational Lands Trust Fund, Section 253.023, Florida Statutes

This section establishes the Conservation and Recreational Lands Trust Fund to be funded with the proceeds of certain excise taxes. Lands that may be purchased with this fund include "environmentally unique and irreplaceable lands," as well as "lands which...should be acquired in the public interest for the following purposes:

1. For use and protection as natural flood plain, marsh, or estuary, if the protection and conservation of such lands is necessary to enhance or protect water quality or quantity or to protect fish or wildlife habitat which cannot otherwise be accomplished through local and state regulatory programs;
2. For use as state parks, recreation areas, public beaches, state forests, wilderness areas, or wildlife management areas;
3. For restoration of altered ecosystems to correct environmental damage that has already occurred...

Lands are prioritized by the Land Acquisition Advisory Council created by the "Land Conservation Act of 1972." Among the factors to be considered by the Council in prioritizing potential land acquisition projects is the project's "ecological value." The Land Conservation Act also provides that the governor and cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, has the "responsibility, authority, and power to develop and execute a comprehensive plan to conserve and protect environmentally endangered lands in [Florida.]"

B. Outdoor Recreation And Conservation Act of 1963, Chapter 375, Florida Statutes

This act creates the Land Acquisition Trust Fund for the purpose of expediting the purchase of "parks and recreation areas, wildlife preserves, forest areas, wetlands, floodways and water storage areas, beaches, water access sites, boating and navigational channels, [and] submerged lands...." These lands may be purchased by the Department of Natural Resources pursuant to a "comprehensive multipurpose outdoor recreation plan for this state with the cooperation of the Department of Agriculture and Consumer Services, the Department of Transportation, the Game and Fresh Water Fish Commission, the Department of Commerce, and the water management districts." The purpose of this plan is to "document recreational opportunities, describe current recreational opportunities, estimate the need for additional recreational opportunities, and proposed means for meeting identified needs." Moneys appropriated by the legislature and otherwise accruing to state agencies for the purposes of the act may be placed in the Trust Fund.

C. Florida Water Resources Act Of 1972, Chapter 373, Florida Statutes

This Act creates the various water management districts and grants them the authority "to acquire fee title to real property and easements therein by purchase, gift, devise, lease, eminent domain, or otherwise for flood control, water storage, water management, and preservation of wetlands, streams and lakes, except that eminent

domain powers may be used only for acquiring real property for flood control and water storage." Further, land may be purchased by a water management district for "the purpose of introducing water into, or drawing water from, the underlying aquifer for storage or supply...."

The Southwest Florida Water Management District, as well as other districts, has used this authority to purchase floodplain lands for flood control purposes. In many places this has created wildlife corridors along rivers, streams and other surface waters.

D. Surface Water Improvement and Management Act, Sections 373.451 - 373.4595

This Act creates the Surface Water Improvement and Management Trust Fund for the purpose of providing state appropriated moneys for the implementation of SWIM plans. Each water management district is to make an annual request for funding of its SWIM plans. It would appear that these budget requests could include funds for the creation, by purchase or otherwise, of wildlife corridors associated with designated surface waters. The only activities that may not be funded are the "planning for, or construction or expansion of, treatment facilities for domestic or industrial waste disposal."

E. Nongame Wildlife Trust Fund, Section 372.991, Florida Statutes

This section contains the following statement of legislative intent:

The Legislature recognizes the value of maintaining ecologically healthy and stable populations of a wide diversity of fish and wildlife species and recognizes the need for monitoring, research, management, and public awareness of all wildlife species in order to guarantee that self-sustaining populations be conserved....It is the intent of the Legislature that the funds provided herein be spent to identify and meet the needs of nongame wildlife as a first priority with the ultimate goal of establishing an integrated approach to the management and conservation of all native fish, wildlife, and plants.

The section goes on to establish the trust fund within the Game and Fresh Water Fish Commission, to be funded by certain license and title fees on motor vehicles, legislative appropriations, and donations. The section provides that proceeds from the trust fund "shall" be used for the following purposes:

1. Documentation of population trends of nongame wildlife and assessment of wildlife habitat, in coordination with the data base of Florida natural areas inventory.
2. Establishment of effective conservation, management, and regulatory programs for nongame wildlife of the state.
3. Public education programs.

Finally, the Nongame Wildlife Advisory Council, consisting of nine members representing various governmental and private wildlife-related organizations, is created. The purpose of the council is to "recommend to the [Game and Fresh Water Fish Commission] policies, objectives, and specific actions for nongame wildlife research and management."

F. Florida Recreational Trails Act Of 1979, Chapter 260, Florida Statutes

This Act makes it the public policy of the State of Florida to "provide the means and procedures for establishing and expanding a network of recreational and scenic trails designated as the 'Florida Recreational Trails System.'" The Act authorizes the Department of Natural Resources to purchase land for the trail system, and expresses the following legislative intent: "[T]hat recreational trails be established within and without boundaries of state parks and state forests and, when feasible, to interconnect units of the state park and forest system, as well as national forests and parks and such locally maintained parks as may be appropriate." Thus these trails may provide wildlife corridors between otherwise separated publicly owned lands.

G. State Infrastructure Fund, Section 212.235, Florida Statutes

This section creates the State Infrastructure Fund into which up to \$500 million per year may be placed. By legislative appropriation, moneys from this fund may be used for, among other things: "Financing state projects for beach restoration or renourishment or lake, river, or other water body restoration, including the restoration of bays and estuaries."

H. Florida Wildlife Stamp Revenues, Chapter 372, Florida Statutes

Various sections in Chapter 372 provide for the use of revenues from wildlife stamps to increase the populations of certain wildlife. These expenditures may be for the purchase of land for management areas, and to provide habitat for waterfowl and wild turkeys.

I. Florida Panther Research And Management Trust Fund, Section 372.672, Florida Statutes

This section establishes the Florida Panther Research and Management Trust Fund within the Game and Fresh Water Fish Commission. Moneys from this fund are to be used for various purposes in the promotion of the survival of the Florida Panther, including "assessing the potential for panther habitat acquisition." A source of money for the trust fund is not identified other than that the Commission is authorized to accept donations to the fund.

J. Acquisition Of State Game Lands, Section 372.12, Florida Statutes

This section authorizes the Game and Fresh Water Fish Commission to acquire "lands and waters suitable for the protection and propagation of game, fish, nongame birds or fur-bearing animals" so long as the price of such land does not exceed \$10.00 per acre.

FEDERAL LAW

I. ENDANGERED SPECIES ACT OF 1973, 16 U.S.C. 1536

This Act requires that all federal agencies take steps to ensure that actions authorized, funded, or carried out by them do not "jeopardize the continued existence of" endangered and threatened species. "Jeopardize the continued existence of" is defined as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."

A process of consultation is required whereby the agency with jurisdiction over the protected species issues to the Secretary of the Interior a "biological opinion" evaluating the nature and extent of jeopardy posed to that species by the agency action. The agency proposing the action must provide the Secretary with the "best scientific and commercial data available." If the biological opinion concludes that the proposed action is likely to jeopardize a protected species, the action agency must modify its proposal. In addition, the Act forbids the "irreversible or ir retrievable commitment of resources" during the consultation process."

Although critical habitat for endangered and threatened species is identified, the identification process is solely for the purpose of letting federal agencies know where their responsibilities under the Act may apply. The designations are not comparable to the creation of a refuge--no legal jurisdiction is assumed and no prohibition of activities is imposed.

II. MARINE MAMMAL PROTECTION ACT OF 1972, 16 U.S.C. 1361-1407.

The intent of this Act is to protect marine mammals from a diminishment in numbers "below their optimum sustainable population." The regulates the taking and importing of marine mammals and marine mammal products, authorizes the Secretary of State to initiate international negotiations for the protection of marine mammals, precludes states from regulating the taking of marine mammals unless authorized by the federal government to do so, provides for marine mammal research grants, authorizes the federal government to do research and development on commercial fisheries gear to reduce the taking of marine mammals, and establishes the Marine Mammal Commission. Pursuant to this Act and the Endangered Species Act, certain parts of Kings Bay in Citrus County have been designated as manatee sanctuaries. In these sanctuaries no waterborne activities are allowed.

III. NATIONAL ENVIRONMENTAL POLICY ACT OF 1969, 42 U.S.C. 4321 et seq.

This Act forces all federal agencies to consider environmental factors along with the more traditional economic, engineering or scientific ones in deciding to proceed with major federal projects. The act requires than an Environmental Impact Statement (EIS) be prepared prior to a federal agency undertaking a "major federal action significantly affecting the quality of the human environment." The EIS must fully evaluate the environmental ramifications of the proposed activity and the agency must minimize environmental degradation in carrying out the project.

If the agency finds, based on a less formal and rigorous "environmental assessment" that the proposed action will not significantly affect the environment, the agency can issue a "Finding of No Significant Impact" in lieu of

the EIS. Courts will uphold the agency decision that a particular project does not require an EIS unless that decision is unreasonable.

The Act creates the Council on Environmental Quality which serves as an advisory body to the Executive Branch and Congress on environmental matters. The Council by executive order also was given the responsibility for drafting guidelines for the Environmental Impact Statement process. The guidelines for preparing the impact statement include the requirement that the statement include consideration of:

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

A majority of federal circuit courts of appeal have ruled that a decision of federal agency may be overturned if it goes against the weight of the information in the impact statement. Others have held that the Act is purely procedural and contains no substantive requirement that agencies act in accord with the impact statement. The U.S. Supreme Court has yet to decide the issue.

IV. FEDERAL AID HIGHWAY ACT OF 1968, 49 U.S.C. 1653 *et seq.*

This act contains the following declaration of national policy:

[T]hat special effort would be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges and historic sites....[T]he Secretary [of Transportation] shall not approve any program or project which requires use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance...unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use.

In *Citizens Committee to Save Overton Park v. Volpe*, 401 U.S. 402 (1971), the U.S. Supreme Court ruled that the Secretary had to make specific findings that there is no feasible and prudent alternative. The statute was interpreted to mean that natural and historic values at risk were to be given higher consideration than the usual economic and safety factors.

V. WETLANDS AND OTHER SURFACE WATER PROTECTION LAWS

Various federal regulatory programs are designed to protect wetlands and other surface waters. These laws may result in the preservation of wildlife corridors and are discussed in detail in the issue paper dealing with the protection of aquatic habitats.

