

**TABLE 2-2
SENSITIVE AREAS AND FEATURES**

Archeological Sites

Site Location and Map No.	Description
1	Bowman Mound (8 Sm 10)
2	Pelacklakaha, a Seminole Indian village site
3	Jumper's Town, a Seminole Indian village site
4	Gator Hole Hammock (8 Sm 20)

Source: Florida Department of State, Division of Archives, History and Records Management, 1981.

**Biologically Sensitive Areas
(Wildlife)**

Site Location and Map No.	Description	Usage	Most Recent Status*
1	—	Bald eagle nest	Active
2	Bamboo (Hogeye Sink)	Wading bird colony	Empty
3	Chitty-Chatty Run	Bald eagle nest	Inactive
4	SU-15A	Bald eagle nest	Active
5	Lake Denham Marsh	Wading bird colony	Active
6	SU-10A	Bald eagle nest	Active
7	Indian House Swamp	Wading bird colony	Empty
8	Merritt Pond	Wading bird colony	Empty
9	Mascotte No. 4	Wading bird colony	Active
10	Mascotte	Wading bird colony	Active
11	Clay Sink	Wading bird colony	Active
12	Devils Creek	Wading bird colony	Active/Empty**
13	Little Gator Creek	Wading bird colony	Active
14	Grass Creek	Wading bird colony	Empty

*Source: Patty, B., L. Riopelle, and D. McCrimmon. 1980. Florida Wading Bird Survey. N.A.S. Administrative Report. Fickett, S. 1981. Personal communication.

**Active during the April survey; empty during the July survey.

TABLE 2-2 (Cont'd.)

(Vegetation)

Site Location and Map No.	Description
1	Virgin stand of cypress
2	Hardwood hammock
3	Sand ridge

Source: Florida Department of Agriculture and Consumer Services, Division of Forestry, 1981.

Recreational Areas

Site Location and Map No.	Description	Usage	Size (in acres)
1	Sumterville Community Center	Local recreation	2
2	Cathy Boyd Memorial Field	Ball park	3
3	Flag Ford Recreation Area	Seasonal hunting camp	2
4	South Grade Borrow Pit Recreation Area	Year-round campground	6
5	Megs Hole Recreation Area	Year-round campground	5
6	Powder House Recreation Area	Seasonal hunting camp	2

Source: Florida Department of Transportation, 1981.

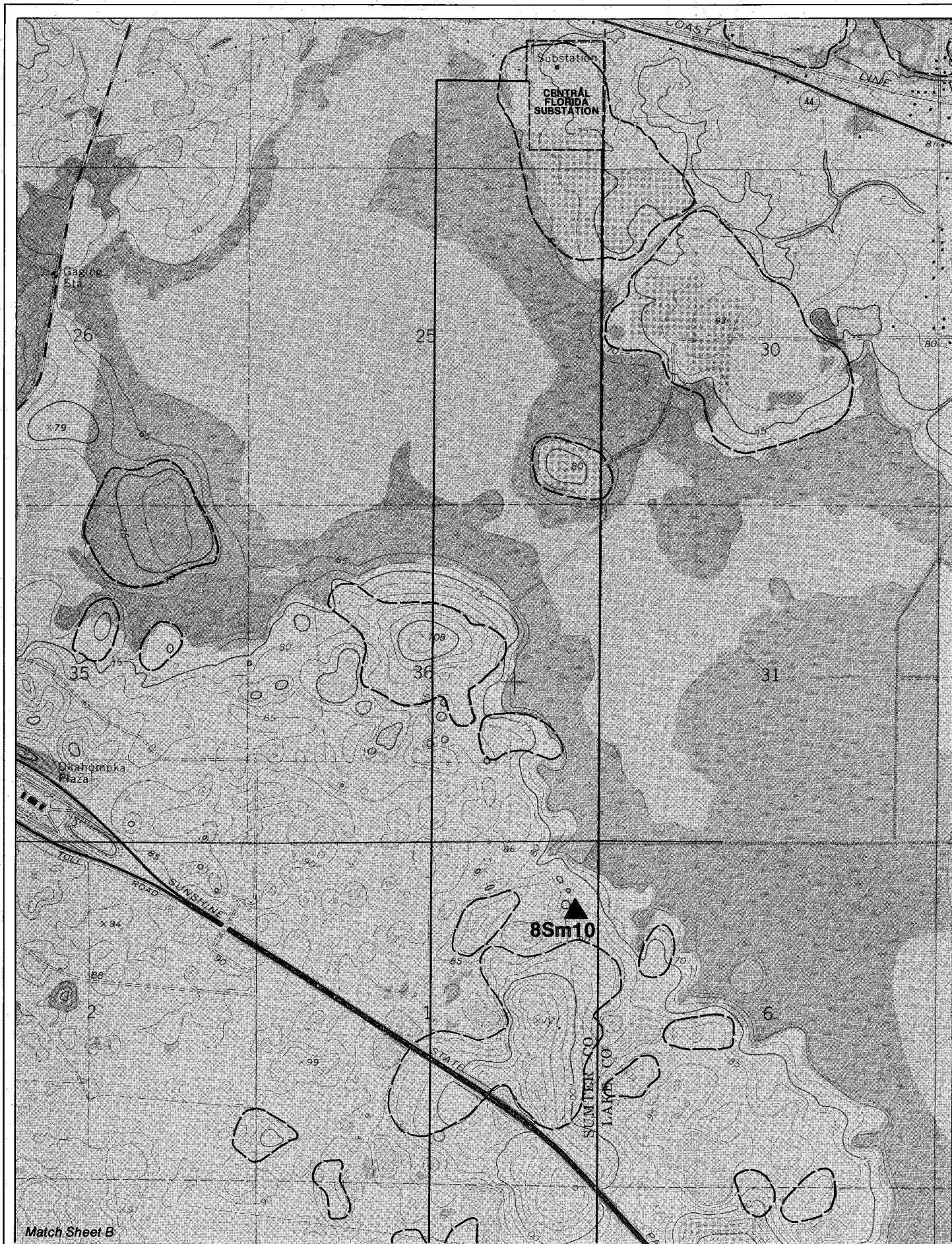
the proposed corridor. With the continual draining of the central portion of Florida in the past decade, native species of wading birds have suffered from the loss of habitat (Fickett, 1981). Thus, with artificially maintained water levels, this rookery is significant as a wading bird colony.

The rookery is located in the southeast corner of a 560 acre tract of a low, swampy portion of Little Gator Creek. Wunderlin (1980, unpublished) performed a botanical reconnaissance of this area. As access was unavailable during field investigations, Wunderlin's document will be substituted. The overstory of the rookery is dominated by bald cypress (*Taxodium distichum*) and various hardwoods such as southern red maple (*Acer rubrum*), pop ash (*Fraxinus caroliniana*), sweet gum (*Liquidambar styraciflua*), and swamp bay (*Persea palustris*).

The area is natural in appearance, however, the water level is artificially maintained as a result of pit pumpage from a limerock mine to the south. This paradoxically enhances the value of the rookery as it maintains high water levels when the surrounding area is dry. With the decline of the wood stork from inadequate feeding areas and stable nesting sites throughout its range (personal communication, Baker, 1981), the rapid increase in nesting pairs from 1976 to 1980 in the Little Gator Creek rookery indicates the value of this area to Central Florida wood stork populations (Ogden, 1978a). The area also serves as a rookery for cattle egret, great egret, blue heron, snowy egret, Louisiana heron, white ibis, and anhinga (Ogden, 1978a).

From information provided by local, regional, and state sources, particularly the Florida Department of State, Division of Archives, History and Records Management, areas of historic and archeological sensitivity, or those areas with a high probability to contain cultural resources, were identified. These areas are addressed in Section 2.2.5 and on Figure 2-6 A-M. Specifically, one archeological site occurs within the proposed corridor, state-designated site 8 Sm 10, Bowman Mound (1).

Four Florida Department of Transportation (DOT) designated Areas of Environmental Concern are situated in the Withlacoochee State Forest. They include: Flag Ford Recreation

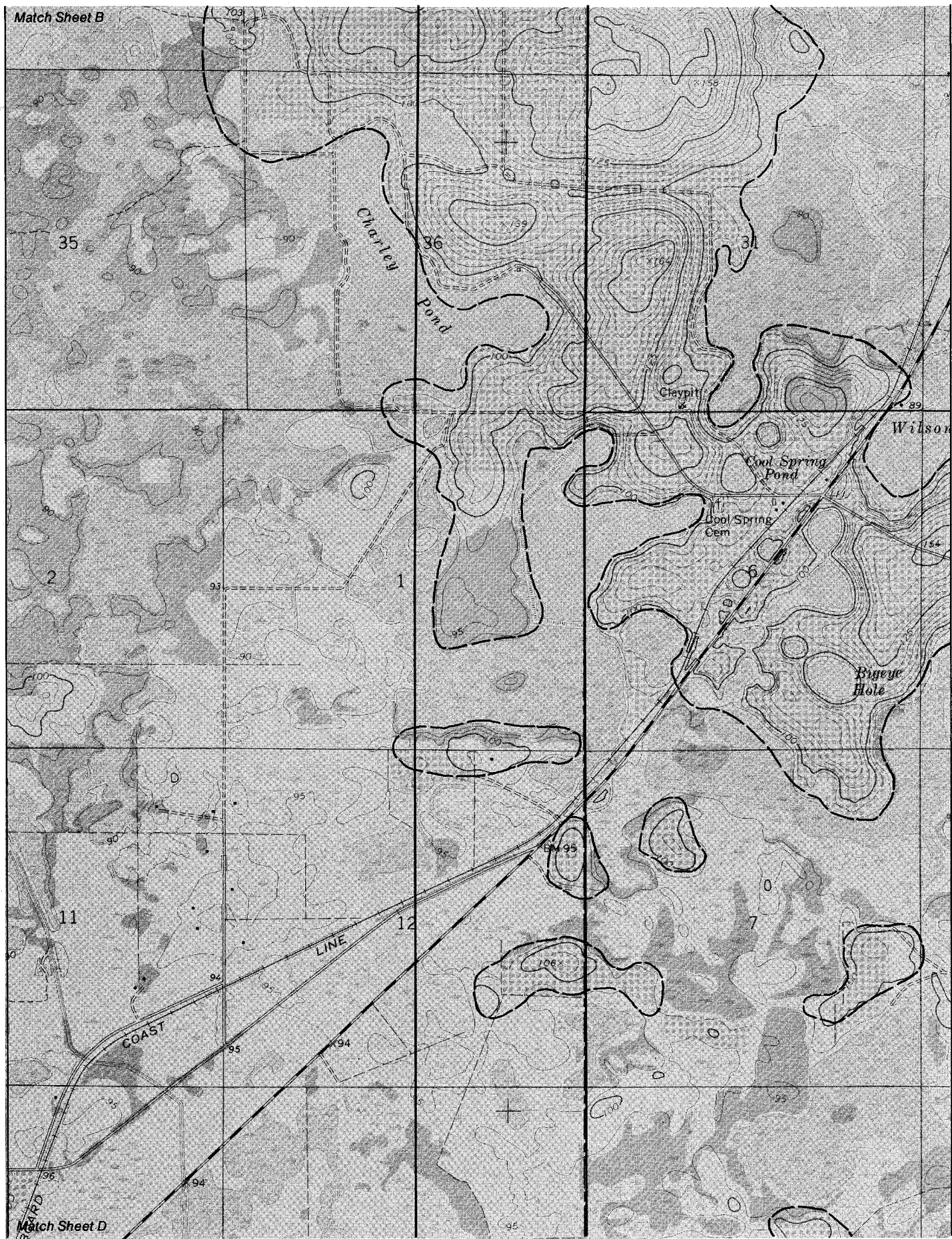


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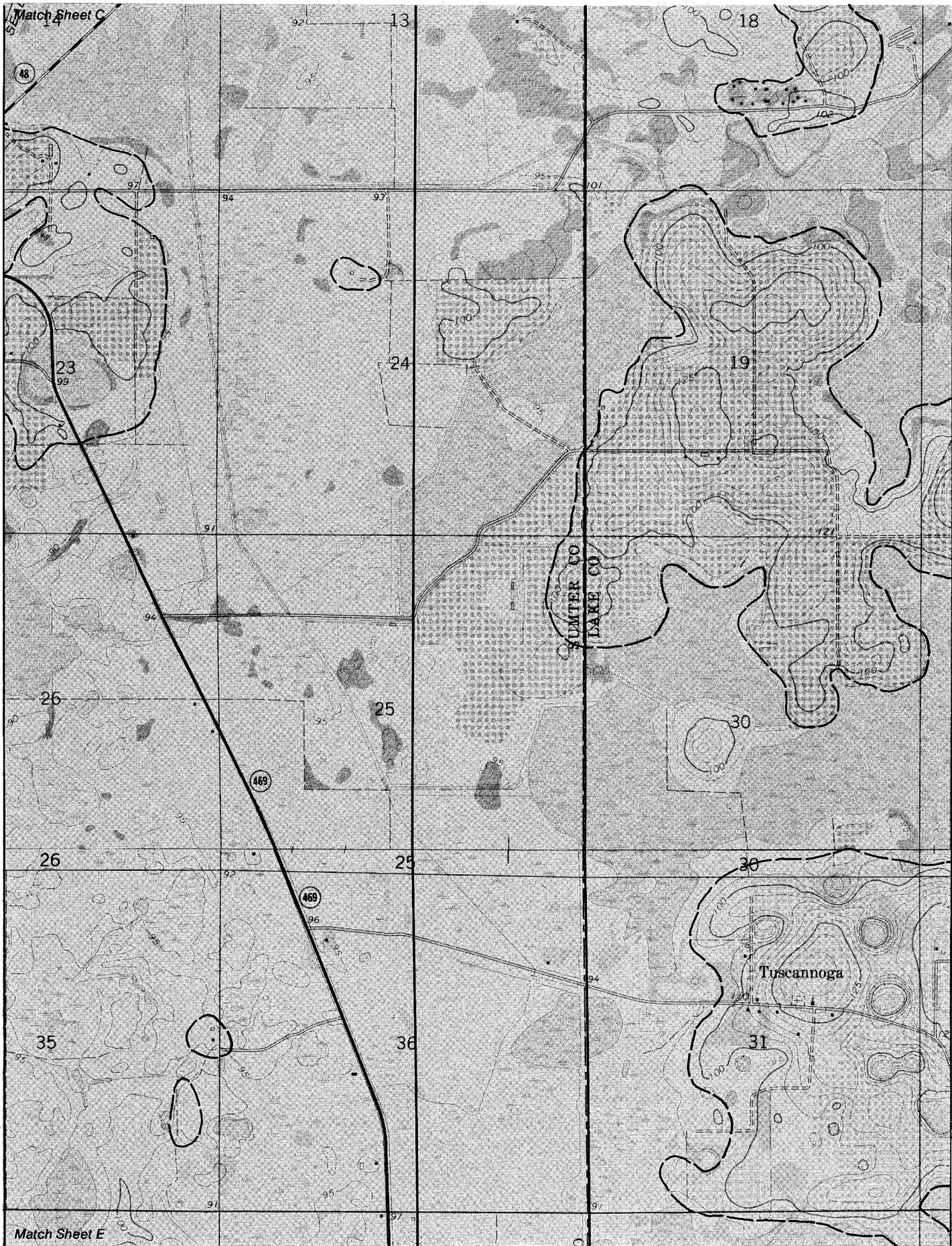
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Match Sheet E

Match Sheet D

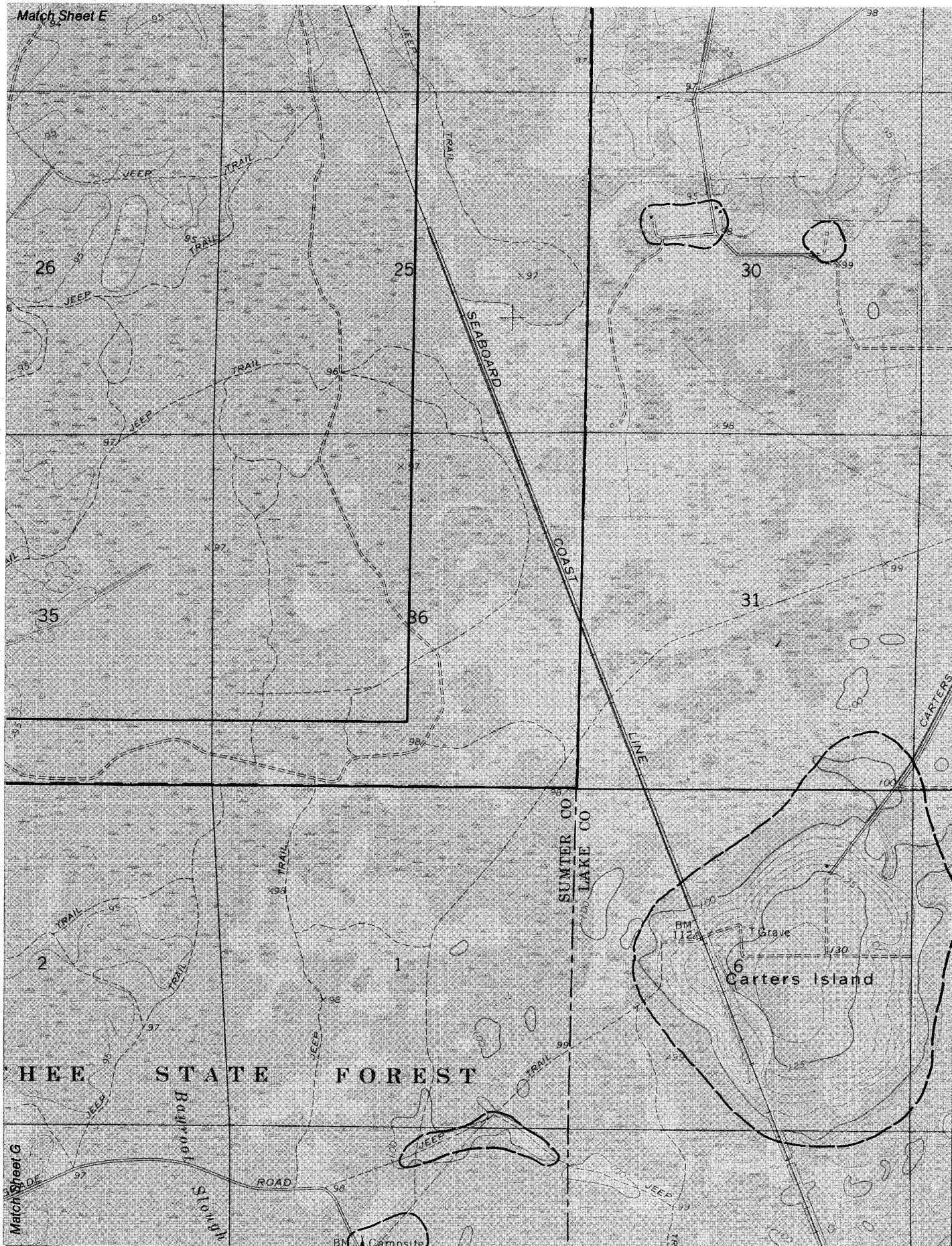
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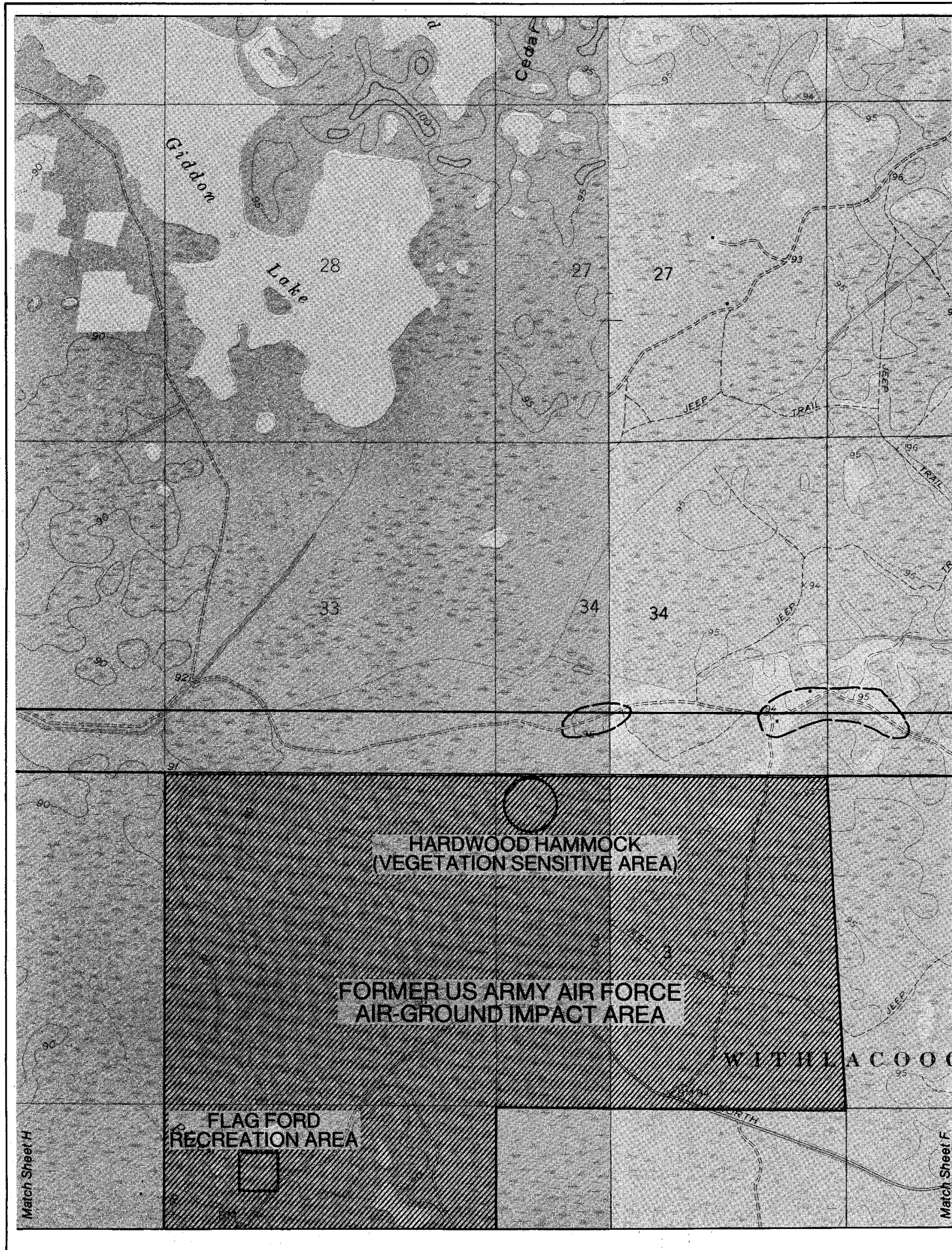


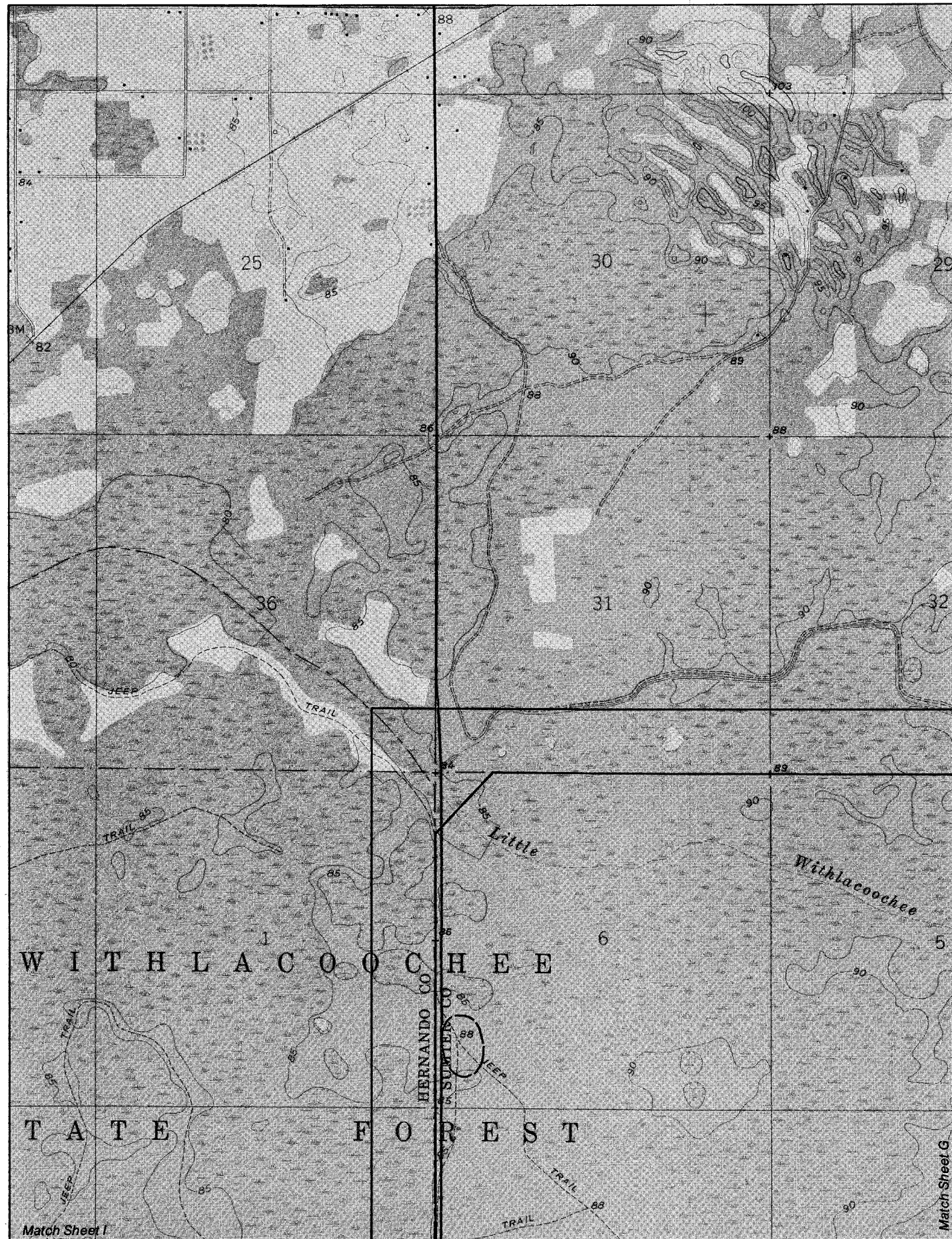
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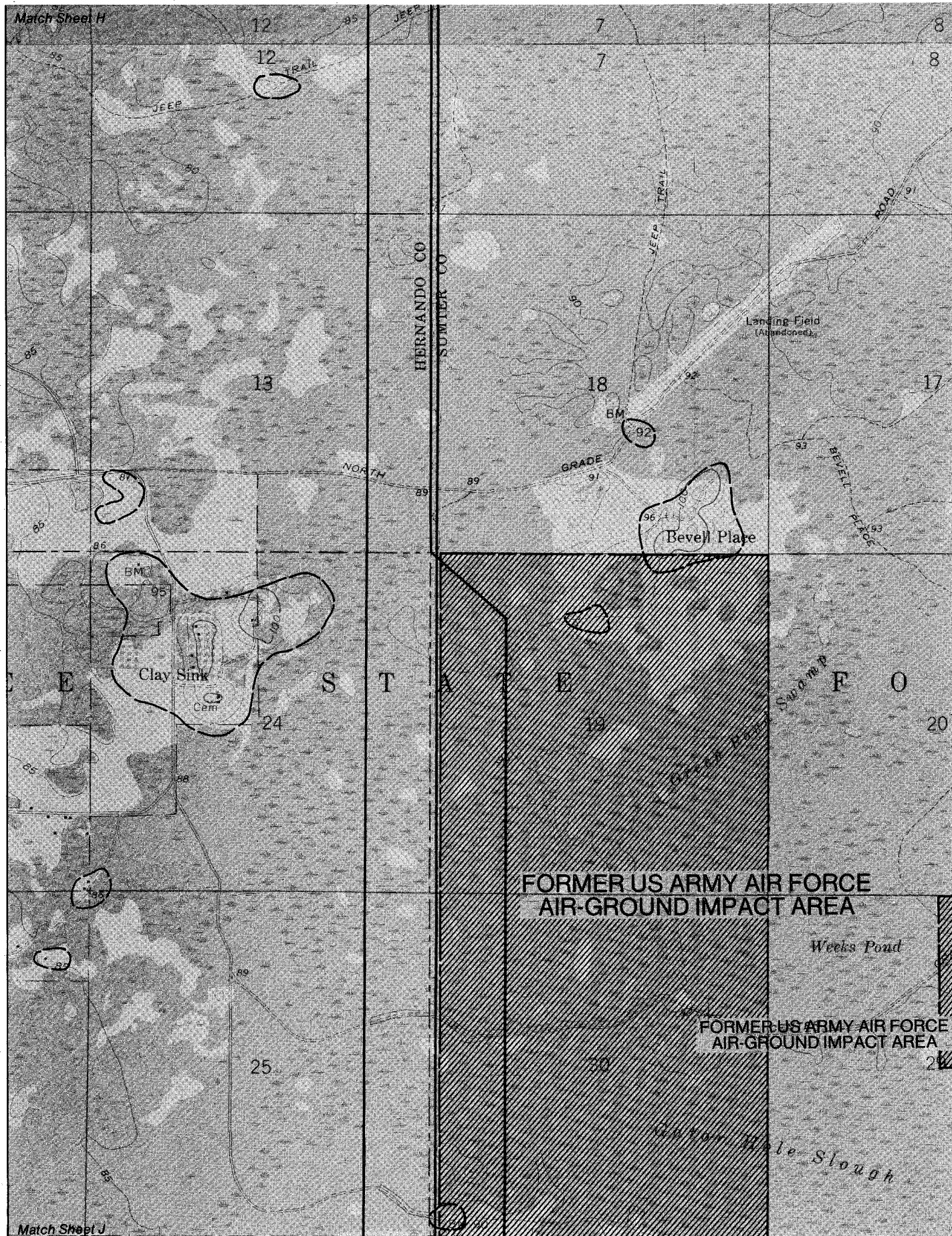
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Match Sheet H



Match Sheet J

Match Sheet I

SOUTH GRADE BORROW PIT
RECREATION AREA

CLAY SINK WADING
BIRD COLONY
(WILDLIFE SENSITIVE AREA)

FORMER US ARMY AIR FORCE
AIR-GROUND IMPACT AREA

Devils

Creek

DEVILS CREEK WADING
BIRD COLONY
(WILDLIFE SENSITIVE AREA)

Creek

Match Sheet II

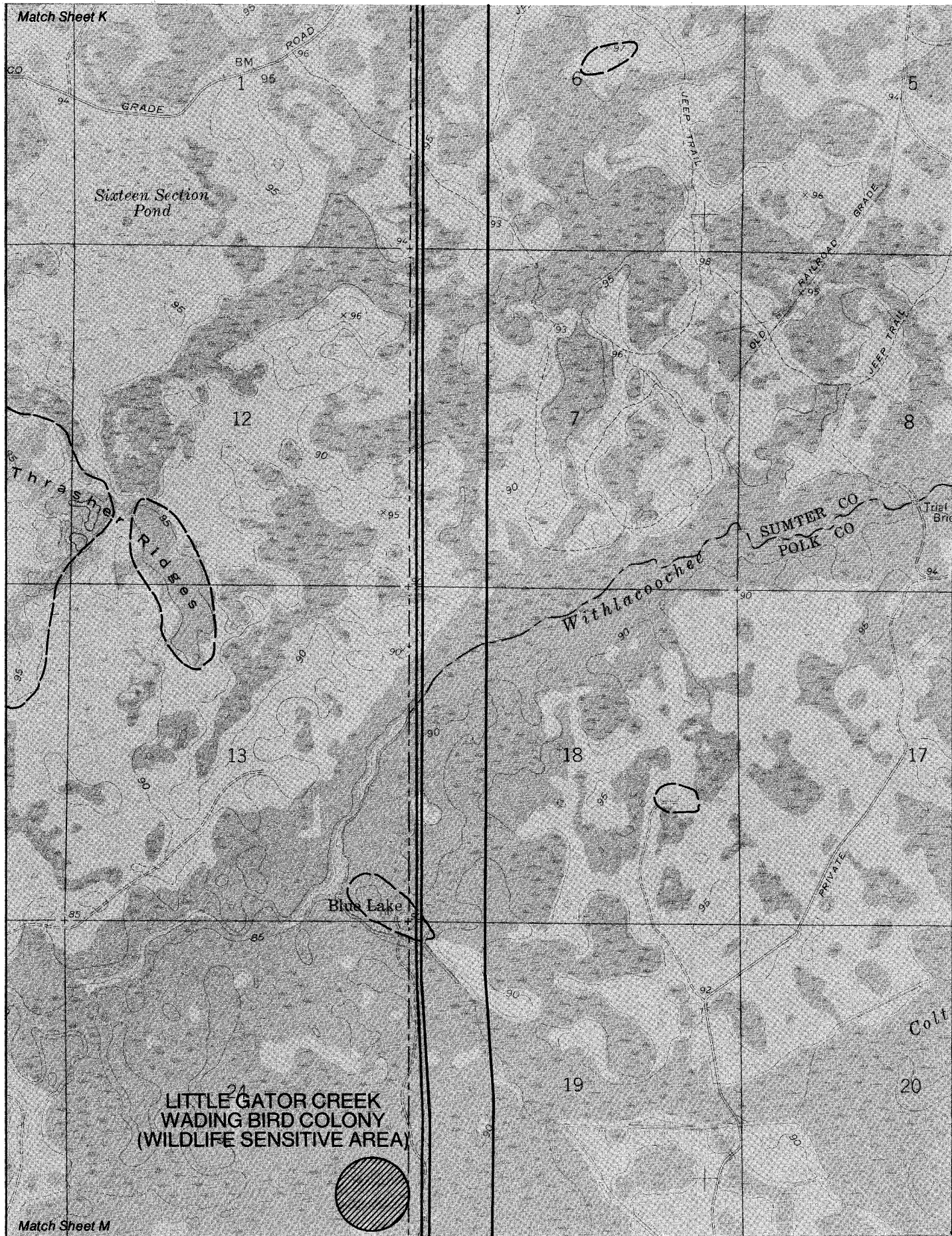
Stake key

PASCO CO
SUMNER CO

This is a topographic map of a coastal region, likely in the Pacific Northwest. The map is oriented with North at the top. It features a grid system with section numbers 19, 20, 24, 25, 29, 30, 31, 32, 36, and 39. Key geographical features include Mills Bay, Cumpresco, and a well. The map shows various roads, including a main road, a private road, and a railroad. Trails are also marked, including a jeep trail. Contour lines indicate elevation, with labels such as 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000. The map is labeled with 'Match Sheet J' at the top left and 'Match Sheet L' at the bottom left. A vertical line runs through the center of the map, labeled 'PASCO CO'. A horizontal line runs across the middle of the map, labeled 'MILLS BAY'. A diagonal line runs from the top right to the bottom left, labeled 'CUMPRESCO'. A dashed line runs from the top left to the bottom right, labeled 'JEOP TRAIL'. A solid line runs from the top left to the bottom right, labeled 'PRIVATE'. A dotted line runs from the top left to the bottom right, labeled 'RAILROAD'. A thick solid line runs from the top left to the bottom right, labeled 'LINE'. A thin solid line runs from the top left to the bottom right, labeled 'ROAD'. A thick dashed line runs from the top left to the bottom right, labeled 'TRAIL'. A thin dashed line runs from the top left to the bottom right, labeled 'WELL'. A thick dotted line runs from the top left to the bottom right, labeled 'BM'. A thin dotted line runs from the top left to the bottom right, labeled 'X'. Hand-drawn circles highlight specific features: a circle around a well in section 31, a circle around a bench mark in section 32, and a circle around a feature in section 24. The map is divided into sections by a grid. The sections are numbered 19, 20, 24, 25, 29, 30, 31, 32, 36, and 39. The map is labeled with 'Match Sheet J' at the top left and 'Match Sheet L' at the bottom left. A vertical line runs through the center of the map, labeled 'PASCO CO'. A horizontal line runs across the middle of the map, labeled 'MILLS BAY'. A diagonal line runs from the top right to the bottom left, labeled 'CUMPRESCO'. A dashed line runs from the top left to the bottom right, labeled 'JEOP TRAIL'. A solid line runs from the top left to the bottom right, labeled 'PRIVATE'. A dotted line runs from the top left to the bottom right, labeled 'RAILROAD'. A thick solid line runs from the top left to the bottom right, labeled 'LINE'. A thin solid line runs from the top left to the bottom right, labeled 'ROAD'. A thick dashed line runs from the top left to the bottom right, labeled 'TRAIL'. A thin dashed line runs from the top left to the bottom right, labeled 'WELL'. A thick dotted line runs from the top left to the bottom right, labeled 'BM'. A thin dotted line runs from the top left to the bottom right, labeled 'X'. Hand-drawn circles highlight specific features: a circle around a well in section 31, a circle around a bench mark in section 32, and a circle around a feature in section 24.



Match Sheet K



Match Sheet M

Match Sheet L



Williams Hammock

Area (3), South Grade Borrow Pit Recreation Area (4), Megs Hole Recreation Area (5) and the Powder House Recreation Area (6). Only South Grade is in proximity to the proposed corridor.

The South Grade Borrow Pit Recreation Area is a 6.0 acre (2.4 hectare) campground located off Center Grade Road adjacent to a water-filled borrow pit. It is a year-round facility, offering 50 primitive campsites, picnicking, pit toilets, and fishing. The location of the campground exhibits a unique visual quality apart from the other camping sites. It is less than 0.5 mile (0.8 kilometer) from the proposed corridor.

2.2.5 Archeological and Historic Sites

The proposed corridor will traverse one known and state-designated archeological site, 8 Sm 10 (Figure 2-6A). No other archeological or historic sites are known to occur within the corridor, though this does not preclude their existence. Site 8 Sm 10 is located in the NE 1/4 of NE 1/4 of Section 1, T. 20 S., R. 23 E., which is on the eastern edge of the proposed corridor. It is known as the Bowman Mound and has been identified as a burial mound (Florida Department of State, 1981).

The exact diameter of the mound has not been determined due to the slope of the surrounding ground surface, disturbance by plowing, and clearing of the original pine forest. The measured diameter distance was 65 feet (19.8 meters); height was estimated at 2 feet (0.6 meter). Close examination of the surface revealed a square depression several inches deep in the center, the result of an old excavation.

No other known and state-identified archeological sites occur in the proposed corridor.

The proposed corridor will traverse several areas identified by the state as being "potentially sensitive archeologically" (Figure 2-6 A-M), in other words, having a potential for historic and prehistoric sites. These areas are considered to be potentially sensitive because they consist of physiographic features characteristic in north central Florida of conditions which may have supported habitation sites by historic or prehistoric peoples. These would include such features as well drained soils, higher elevations, and available water sources.

2.2.6 Geology/Geography

2.2.6.1 Topography

The topography in the proposed corridor is generally flat to gently sloping, even at the major river crossings (Figure 2-6). Major topographic changes along the corridor route occur at physiographic boundaries and reflect the variations in geology (Section 2.2.6.2). Within the Western Valley, the ground surface elevation ranges from approximately 85 to 100 feet National Geodetic Vertical Datum (NGVD), or above sea level, and averages approximately 90 feet NGVD. The topographic character changes abruptly where the corridor crosses the Lake Uplands. Geologic conditions, combined with the low relief and a high water table, have produced a subdued karst (sinkhole) topography in the Lake Uplands with well developed subsurface drainage (Faulkner, 1973). In that area, swamp prairies and shallow lakes surround a series of hills, some of which rise to approximately 150 feet NGVD. In the Lake Harris Cross Valley between the Lake Uplands and the Sumter Uplands, the ground surface drops below elevation 65 feet NGVD.

2.2.6.2 Geology

Geologic formations present at or near the ground surface in the proposed transmission corridor are summarized in Table 2-3. Holocene- and Pleistocene-age surficial soils overlie the older bedrock formations. These soils consist of sands, clays, and marls which vary in thickness and may be locally absent. South of State Route 50, soils are generally less than 25 feet (7.6 meters) thick (Grubb, 1977) and are commonly less than 15 feet (4.5 meters) thick (Grubb and Rutledge, 1979). Specific soil thickness data are not available for the corridor north of SR 50; however, the limestone bedrock in this area is generally overlain by 25 to 50 feet (7.6 to 15.2 meters) of sand and clayey sand (Faulkner, 1973).

Within the proposed corridor, the surficial soils are underlain, in order of increasing age, by the Miocene-age Fort Preston and Hawthorn Formations, the Oligocene-age Suwannee Limestone, and the Eocene-age Crystal River, Williston, and Inglis Formations of the Ocala Group (limestone). The Tampa Formation, which occurs between the Hawthorn Formation

TABLE 2-3
GEOLOGIC FORMATIONS AT OR NEAR GROUND SURFACE
PROPOSED CENTRAL FLORIDA – KATHLEEN CORRIDOR

Series	Formation	Description
Holocene and Pleistocene		Alluvium (sands, silts, and clays), freshwater marls, peats and muds in stream valleys and freshwater lakes. Only locally present.
Miocene	Fort Preston	Gray and white, varigated, cross-bedded, thinly laminated quartz sands.
	Hawthorn	Marine sands, clays, marls, and sandy limestones. Usually phosphoritic.
Oligocene	Suwannee Limestone	Granular, thin-bedded, soft, shallow marine, highly fossiliferous limestone. Portions may be highly dolomitized.
Eocene	Crystal River	Shallow marine, high calcium, fossiliferous limestone.
	Williston	Shallow marine, fragmental limestone.
	Inglis	Cross-bedded, shallow marine, fragmental and microfossiliferous limestone and finely crystalline dolomite.

Notes:

1. Formations are listed in order of increasing age.
2. The Crystal River, Williston, and Inglis Formations are commonly referred to as the Ocala Group by the Florida Bureau of Geology. The U.S. Geological Survey recognizes the Ocala Limestone as a single formation comprised of an upper member equivalent to the Crystal River Formation and a lower member equivalent to the Williston and Inglis Formations (Faulkner, 1973).

Source: Vernon and Puri (1965); Faulkner (1973).

and the Suwannee Limestone in parts of Hillsborough, Pasco, and Polk Counties, is not reported as present in published literature covering the corridor area. Formations older than the Ocala Group are not discussed in this report because they are too deep to be affected by construction of the proposed transmission line. Geologic formations at or near the ground surface, excluding surficial soils, are shown on Figure 2-7.

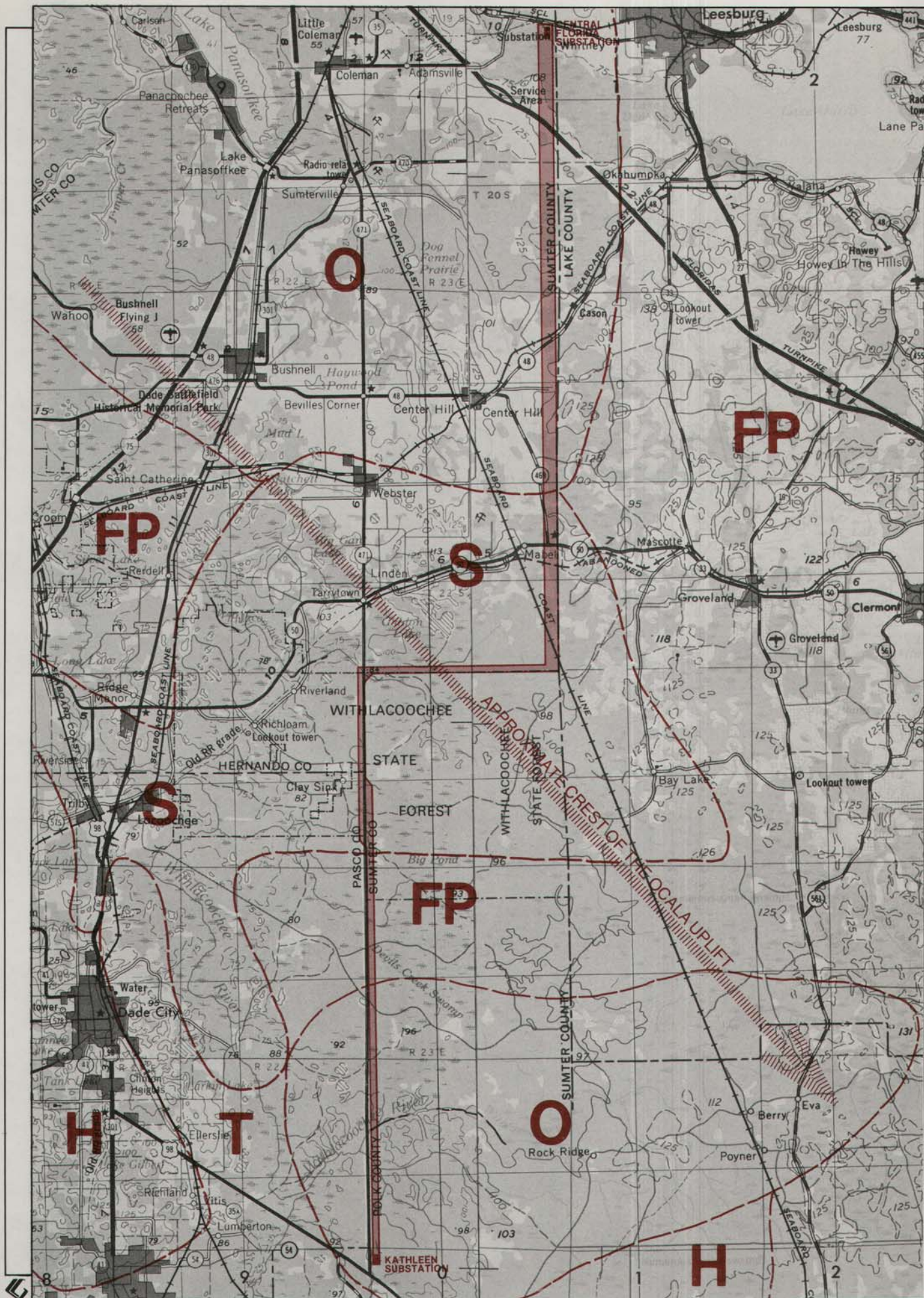
Five soils associations, composed of material which is poorly to very poorly drained and subject to flooding, appear throughout the study area, though some sandy, droughty soils not subject to flooding do exist. According to the U.S. Department of Agriculture, Soil Conservation Service (SCS), soils classified as "unique" occur in the study area (personal communication, G. Roane, 1981). These soils, one grade below prime farmland, are being used for citrus production and high yield truck farming operations. They are concentrated in the Center Hill/Bushnell/Webster area, in the vicinity of SR 470 and the Sunshine State Parkway, and along the proposed corridor from its juncture with SR 50.

2.2.7 Affected Waters and Wetlands

2.2.7.1 Surface Waters

Within the proposed corridor, surface water resources consist of rivers, streams, canals, ponds, marshes and swamps. While numerous shallow wetlands and ponded surface waters occur, a well defined surface drainage system does not exist. Through geologic time, the surface streams which once drained the region eroded the surface cover overlying permeable limestones. Exposure of the limestone formations permitted greater infiltration of precipitation, thereby reducing surface runoff. Consequently, only principal streams and short tributaries remain, while a highly developed subsurface drainage system has evolved in the cavernous limestones of the Floridan Aquifer (Faulkner, 1973). Figure 1-1 identifies the location of important surface water features within the study area.

Two surface water drainage basins are located within the proposed corridor. An upland area along the eastern boundary of Sumter County diverts some runoff into the St. Johns River Basin. However, this area is insignificant with respect to the overall drainage pattern, most of which lies within the Withlacoochee River Basin.



According to the water classification system designated in Chapter 17-3 Florida Administration Code (Rules of the Department of Environmental Regulation, Water Quality Standards), no rivers or streams within the proposed corridor have received special protection or recognition. Surface waters are generally classified as Class III — Recreation, Propagation and Management of Fish and Wildlife. All secondary and tertiary canals wholly within agricultural areas are classified as Class IV. Agricultural areas generally include lands which are actively used solely for the production of food and fiber, and which are zoned for agricultural use where zoning is in effect.

At several points along the proposed corridor, streams, canals, and swampy areas are crossed. The most important of these rivers and streams, starting from the southern boundary of the study area and working north, include: (1) Withlacoochee River, (2) Devils Creek and Gator Hole Slough, and (3) Little Withlacoochee River. These water bodies are described in the following sections based on information obtained from the Sumter County Comprehensive Plan (Withlacoochee Regional Planning Council, 1979) and the Environmental Assessment for the Upper Hillsborough Flood Detention Area (Southwest Florida Water Management District, 1980).

Withlacoochee River

The Withlacoochee River, which originates in the Green Swamp in northern Polk County, flows west and then northwest to the Gulf of Mexico near Yankeetown. The river has a total drainage area of 2059 square miles (Conover and Leach, 1975) and has an average discharge of 1191 cubic feet per second (cfs) (Kenner, 1969).

The river within the proposed corridor is a relatively slow-moving stream (mean discharge at Dade City is 80.0 cfs). The principal source of flow is from ground water discharge. Although highly-colored, river water is clear and quite alkaline. Concentrations of phosphorous, nitrate-nitrogen and ammonia-nitrogen are generally low. Dissolved oxygen levels are in the acceptable range.

Approximately 82 percent of the Green Swamp is drained by the Withlacoochee River. The slope of the river is gradual, dropping approximately two feet per river mile. This stretch of the river is characterized by areas in which the channel is deeply incised, alternating with shallow, poorly defined zones. The substrates consist of sand, clay, silt and peat. The main channel typically has a sandy bottom with isolated rock outcroppings, while in shallow reaches, traversing heavily forested areas, silt and peat predominate. Large rafts of water hyacinth (*Eichornia crassipes*) are prevalent in back water areas and in the main channel.

One crossing of the Withlacoochee River and four crossings of a minor tributary system (Gator Creek) will be associated with the proposed corridor. These crossings are near the proposed Kathleen Substation, where the width of the river measures approximately 30-40 feet (9-12 meters), depending on the season.

Devils Creek and Gator Hole Slough

Devils Creek originates in a swampy area south of the Withlacoochee State Forest. Gator Hole Slough crosses the southern tip of Sumter County and joins Devils Creek in Pasco County. Both of these sluggish, narrow streams flow through unimproved swamp channels; both are crossed by the proposed corridor.

Little Withlacoochee River

The Little Withlacoochee River originates near State Route 33 in Lake County and flows west to join the Withlacoochee River. Its channel within the State Forest and the proposed corridor is wide and shallow, measuring approximately 10-20 feet (3-6 meters). Just north of the point where the Little Withlacoochee emerges from the State Forest, a small canal which drains the swampy area south of SR 50 merges with it. Big Gant Canal, which joins the Little Withlacoochee River approximately one-quarter mile upstream from US 301, drains Big Gant Lake along with farms and pasture in the Webster area.

Table 2-4 summarizes the river and stream crossings of the proposed Central Florida — Kathleen 500 kV Transmission Line Corridor. Several unnamed canals are crossed by the corridor,

TABLE 2-4
WATER BODIES CROSSED BY THE PROPOSED CORRIDOR

Water Body	Number of Crossings
Gator Creek System	4
Withlacoochee River	1
Unnamed Canal	1
Devils Creek	1
Gator Hole Slough	1
Little Withlacoochee River	1
Unnamed Tributary	1
Unnamed Canal System	7

Source: U.S. Geological Survey Quadrangle Maps (7½ minute series). Commonwealth Associates Inc. 1981.

as numerous canals have been constructed in this region of central Florida for drainage purposes. These canals are often tributaries to the abovementioned water bodies, or connect one swampy area with another.

In addition to the many streams and canals of the study area, an abundance of lakes and ponds also exist. Most of these are less than 25 acres (10 hectares), although several large lakes are located in the northern portions of the study area. Charley Pond is the only large body of water in the proposed corridor.

Lakes in the study area are generally shallow with levels that fluctuate widely due to seasonal variations of water supplies (Withlacoochee Regional Planning Council, 1979). Typical lakes and ponds are surrounded by wet prairies or swamps. These lakes serve as storage for excess surface runoff during seasons of high rainfall (Withlacoochee Regional Planning Council, 1979).

2.2.7.2 Wetlands

The study area could be considered as a series of wetlands (swamps and marshes), interspersed with slightly higher flat uplands. Wetlands are those areas where the water table is at, near or above the land surface for a significant part of most years. The hydrologic regime is such that aquatic or hydrophytic vegetation is usually established. Shallow water areas with submerged aquatic vegetation are classified as open water and are not included in the wetlands category (Florida Department of Administration, Bureau of Comprehensive Planning, 1976).

Various wetland types are located within the proposed corridor, as indicated by the Land Use/Vegetation Map (Figure 2-4) which illustrates their location and distribution. A report prepared by the Center for Wetlands, University of Florida (Wharton et al., 1977), provides the basis for the wetland classification system used by the Florida Department of Administration, Bureau of Comprehensive Planning.

The forested wetlands can be categorized by vegetation types into cypress swamp, bayheads (evergreen hardwood swamps) and mixed (deciduous hardwood) swamps (Monk, 1966 and

1968). The cypress swamp would correspond to the Level III Florida land use/cover category 611, which is located throughout the study area and the proposed corridor (Figure 2-4). The latter two (bayheads and mixed swamps) are grouped under category 612, which is present along watercourses.

Monk (1966) studied bayheads and swamp forests and reported they could be separated by certain edaphic variables such as amounts of calcium and magnesium present, i.e., calcium/magnesium and calcium/potassium ratios, pH, and depth of maximum flooding. He also found that dominance within the mixed swamps was more variable. In general, bayheads are located on more sterile and acid soils and are not flooded so deeply as the mixed swamp habitat (Monk, 1966). The only area dominated by these types is the Withlacoochee River swamp in the southern part of the study area.

By far the most abundant forested wetland type in the study area contains cypress, which occurs either in ponds, along watercourses, or interspersed through other habitats such as prairies with the pine flatwood forest. Wharton et al. (1977) indicate it is common practice for pines to be planted on the uplands among the cypress pond depressions. He further indicated that ditching operations leave dead or dying cypress ponds associated with pine silviculture operations.

Cypress heads have been the topic of several research efforts including those of Kurz (1933), Kurz and Wagner (1953), and Monk and Brown (1965). Wharton et al. (1977) summarized much of the literature on the subject of cypress wetlands. Cypress heads are concentrated in the southern two-thirds of the study area, but are located throughout.

Only a relatively small part of the study area is non-forested wetlands. Included in that classification is the Freshwater Marsh, Level III category 641. This habitat occurs in areas where the soil is saturated or submerged during most of the year. Floating and emergent herbaceous plants dominate, including sawgrass, cattail, maidencane, pickerelweed, water lily and spatterdock.

2.2.8 Vegetation and Wildlife

The U.S. Fish and Wildlife Service (USFWS, 1980) has officially recognized 61 plants as Threatened or Endangered, of which only two are located in Florida. These species (*Harperocallis flava* and *Rhododendron chapmanii*) are only known to exist outside the study area (Ward, n.d.). Species of federal concern which are not officially classified but which are under consideration and known to be in central Florida are identified in Table 2-5 along with their tentative categories. Plants from this region on the official State of Florida list (Florida Department of Agriculture and Consumer Services, 1978), as well as plants identified by the Florida Committee on Rare and Endangered Plants and Animals (Ward, n.d.) are also included. Habitats of these species are included, with species-specific discussions provided in Section 2.2.8.2. Range maps are provided in Appendix C for all plant species except the four not listed under Ward.

The variety of the floral component within the study area has produced a diverse wildlife community. Field investigations of the proposed corridor and alternatives were designed to gather data on the biotic communities throughout the study area. Where possible, all segments of the proposed and alternative corridors were visually inspected. In segments where access to adjacent areas was available, extensive observations were made on foot; this was primarily in the Withlacoochee State Forest. In general, the remaining segments were intensively surveyed at road crossings and along parallel alignments within the statute right-of-way.

The northern portion of the study area is typical agricultural habitat characterized by improved pasture, isolated stands of live oaks, and citrus groves. Wildlife species found in this area are typically edge species and generally tolerant in their habitat requirements. Among the more common species are the armadillo, white-tailed deer, cottontail rabbit, fox squirrel, cattle egret, grackle, bobwhite, meadowlark and eastern bluebird (SWFWMD, 1980). Gopher tortoise also prefer this dryer habitat.

The central portion of the study area is characterized by pine flatwoods. The most common resident birds found in this area are the rufous-sided towhee, red-bellied woodpecker,

TABLE 2-5
THREATENED AND ENDANGERED PLANTS OF CENTRAL FLORIDA*

Name	Ward	Source of Listing State of Florida	USFWS, 1980	Habitat
<i>Asclepias curtissii</i>	T	T	N.L.	Sandhill scrub
<i>Asplenium auritum</i>	E	E	N.L.	Usually on live oaks
<i>Centrosema arenicola</i>	N.L.	N.L.	2	Pinelands (Small, 1933)
<i>Clitoria fragrans</i>	T	N.L.	1	Sandhill scrub
<i>Dicerandra frutescens</i>	T	N.L.	2	Sandhill scrub
<i>Drosera intermedia</i>	R	N.L.	N.L.	Aquatic
<i>Hartwrightia floridana</i>	R	N.L.	2	Wet, open areas
<i>Justica cooleyi</i>	T	N.L.	2	Southern mesic forest underlain by limestone
<i>Monotropis reynoldsiae</i>	E	N.L.	1	Parasitic on flowering dogwood roots
<i>Nemastylis floridana</i>	T	N.L.	1	Mesic (wet) environments (pers. comm. Dr. Robinson)
<i>Peltandra sagittifolia</i>	R	N.L.	N.L.	Aquatic
<i>Persea borbonia</i> var. <i>humilis</i>	N.L.	N.L.	2	Sandhill scrub (USFWS, 1981)
<i>Polygala lewtonii</i>	E	N.L.	1	Sandhill scrub
<i>Rhapidophyllum hystrix</i>	T	T	3C	Floodplain forest (pers. comm., Dr. Wunderlin)

TABLE 2-5 (Cont'd.)

Name	Ward	Source of Listing State of Florida	USFWS, 1980	Habitat
<i>Salix floridana</i>	R	N.L.	1	Mesic (wet) environments (pers. comm. Dr. Robinson)
<i>Vicia ocalensis</i>	R	N.L.	1	Mesic (wet) environments (pers. comm. Dr. Robinson)
<i>Warea amplexifolia</i>	N.L.	N.L.	1	Sandy areas
<i>Zephyranthes simpsonii</i>	N.L.	E	3C	Low pinelands

N.L. — Not Listed

*This table represents a combination of references (Florida Department of Agriculture and Consumer Services, 1978; USFWS, 1980; and Ward, n.d.) resulting from contacts with botanists who indicated which plants might occur in the study area. The source of listing indicates which agency/publication identified the species and placed it in a specific category.

T = Threatened E = Endangered R = Rare

- Category 1 Taxa for which the Service presently has sufficient information on hand to support the biological appropriateness of their being listed as Endangered or Threatened species. Because of the large number of such species, and because of the necessity of gathering data concerning the environmental and economic impacts of listings and designations of critical habitats, it is anticipated that the development and publication of proposed and final rules concerning such species will require several years.
- Category 2 Taxa for which information now in the possession of the Service indicates the probable appropriateness of listing as Endangered or Threatened, but for which sufficient information is not presently available to biologically support a proposed rule.
- Category 3 Taxa no longer being considered for listing as Endangered or Threatened. 3C. Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

Information, if not cited, from Ward, n.d.

bobwhite, ground dove, and yellow warbler (SWFWMD, 1980). The more common raptors reported in pine flatwoods include the red-shouldered hawk, red-tailed hawk, barred owl and black and turkey vultures. Also found here within appropriate habitats are wild turkeys (Fickett, 1981). Typical mammal species are the fox and gray squirrels, cottontail rabbit and white-tailed deer. The bobcat is an occasional species.

Along the southern alignment of the proposed corridor, the dominant habitat type is grazed land with isolated cypress heads. Typically, little has been done to improve the area for cattle grazing in the semi-forested area. The cypress heads are usually wet during some portion of the year. The fauna of the pasture land is very similar to that of the pine flatwoods and agricultural lands to the north. In the cypress heads, however, fauna are very diverse as the head serves as a source of water for the surrounding area. Many of the amphibians of the surrounding uplands return for reproduction. These include the leopard frog, squirrel tree frog, pine woods tree frog and pig frog. Reptiles commonly encountered include mud turtle, five-lined skink, banded water snake, brown water snake, and the eastern indigo snake.

Perching and nesting sites allow a very diverse community of birds in the cypress heads. Not only are there resident birds such as wren, rufous-sided towhee and common yellow-throat, but pine flatwoods species such as hawks, owls, woodpeckers, robins and grackles are also common. These cypress heads also serve as feeding areas for the wading birds such as the wood stork and white ibis (SWFWMD, 1980).

Mammals found in the cypress heads are typical of those found in the pine flatwoods. Common are small rodents, raccoon, opossum, deer, armadillo, marsh rabbit, and transient species in need of water and cover.

The freshwater marsh is an important habitat type found throughout the study area, although more common in the southern portions of the proposed corridor. These areas remain wet throughout most of the year and, like the cypress heads, are important for many species of wildlife. Members of the herptile community would include the southern wetlands cricket frog, pine woods tree frog, squirrel tree frog, southern five-lined skink, snapping turtle, peninsular cooter, Florida softshell turtle, eastern cottonmouth, black racer, eastern indigo, banded water snake, brown water snake, and American alligator.

These areas are also important for wading birds and migratory water fowl such as the wood duck. Among the mammals using these habitats would be the marsh rabbit, raccoon, river otter and white-tailed deer.

The Withlacoochee River in the southern portion of the study area was the only watercourse with flow during field reconnaissance. That segment within the proposed corridor has a natural canopy and can be expected to have a diverse warmwater fishery. The more common species would be the Florida gar, pickerel, golden shiner, brown bullhead, mosquito fish, brook silver sides, largemouth bass, warmouth, bluegill and swamp darter (SWFWMD, 1980). The lakes and small ponds in the northern portion of the study area can be expected to have well developed warmwater fisheries with the largemouth bass the top predator.

The location of the study area in central Florida includes the migratory corridor of many birds which migrate to or through Florida. The general north-south orientation of the various corridor alignments precludes the identification of a particular migratory pathway. Thus, the entire study area, as well as most of the peninsula of Florida, can be considered within the migratory corridor of waterfowl, shorebirds, raptors, and nearly all passerines that fly this far south along the Atlantic flyway.

2.2.8.1 Vegetation

Major vegetation types in central Florida, including the study area, are: 1) climax southern mixed hardwoods, 2) sand pine scrub, 3) sandhills, 4) pine flatwoods, 5) cypress swamps, 6) bayheads, and 7) mixed hardwood swamps (Monk, 1968). The latter three categories were discussed in Section 2.2.7.2. The sand pine scrub and sandhills are located primarily outside the study area and, therefore, will not be discussed in detail.

As an overview, the pine flatwoods, associated with cypress domes, constitute the dominant vegetation type in the southern two-thirds of the proposed corridor (Figure 2-4 A-M). To the north, scattered stands of southern mixed hardwoods are present. In most areas of the corridor, pasture and grazing are evident. An area which supports sandhill communities occurs in the Withlacoochee State Forest along Alternative Corridor E.

Approximately 50 percent of peninsular Florida is composed of pine flatwoods which represent a matrix within which other vegetation types merge (Edmisten, 1963). Three

overstory species (slash, longleaf, and pond pine) are dominant in different stands. The slash pine-dominated flatwoods were found to possess a greater diversity of vascular plants while pond pine flatwoods had the least diversity. A major conclusion by Edmisten was that succession to hardwood species was occurring in all stands sampled. Similarly, it is evident in the proposed corridor that hardwoods are invading many of the pine areas.

Southern mixed hardwoods, present in northern portions of the proposed corridor, are occasionally found in the southern alignment. This vegetative type is best developed in areas where limestone and phosphate deposits outcrop (Monk, 1965), a situation which exists in the study area along the proposed corridor. Monk (1968) indicated that for central Florida, mixed hardwoods are the most variable floristically. The variations are due, for the most part, to geographic location, soil moisture, and soil fertility (Monk, 1965).

The sandhill communities have long been the object of botanical studies, often in association with sand pine scrub communities. Laessle (1958) addressed sandhills in relation to origin and successional trends, as well as enumerating characteristic species. Apparently, the sand pine scrub community does not occur within the proposed corridor, but has been identified north of the study area near Wildwood. The sandhills are located primarily east of the proposed corridor, though an area of sandhills does occur near Alternative E.

2.2.8.2 Rare, Endangered and Important Species

Discussion of species will concentrate on those deemed rare, endangered, and important by the State of Florida. The Florida Department of Environmental Regulation Form 17-1.122 (118) entitled "Application for Certification of a Proposed Electrical Transmission Line Corridor" states in Chapter 2 Section 2.2.8.2 that a species is important if it: (1) is commercially or recreationally valuable; (2) is rare, endangered, threatened or protected; or (3) has unique ecological value. Further, it states that a rare, endangered, threatened or protected species is any species officially designated as such by the Florida Game and Fresh Water Fish Commission, the Florida Department of Agriculture and Consumer Services' Division of Forestry or the U.S. Fish and Wildlife Service.

Plants of importance have been presented in Table 2-5, while those wildlife species deemed important (by the Florida Game and Fresh Water Fish Commission) are presented in Table 2-7. This listing was presented to FPC on December 29, 1980 by the GFWFC.

Regarding plants, the methodology involved in ascertaining the species of concern followed the procedure of McFarlane and St. Clair (1978). Basically, it involves a review of pertinent state and federal lists, contacts with knowledgeable individuals, obtaining natural history information, and comparing the species habitat requirements and distribution with the environmental conditions in the study area. Table 2-6 summarizes contacts and references utilized to construct the list of important species portrayed in Table 2-5.

A majority of the important plants under consideration occur in the sandhill scrub or sandhill communities. These community types are located east of the study area for the most part and are commonly referred to as the Lake Wales Ridge or the Central Florida Ridge. Ward (n.d.) places the sandhill type in Highlands County north to southern Marion County. James (1961) also addresses the ridge, as well as the Brooksville Ridge located west of the study area, and indicates many of Florida's endemics are restricted to them. After contacting knowledgeable individuals, consulting soil surveys and conducting field investigations, it appears that the only areas which may support sandhill or scrub communities are located near Alternative Corridors A and E.

The following species-specific discussion is restricted to plants which have either been collected within or near the proposed corridor, or which have the potential for occurrence based on range descriptions provided by Ward (n.d.), ecological literature, and recommendations from state and regional botanists. Ranges are provided for species identified at the state level.

Asplenium auritum (Auricled spleenwort), an epiphyte, was located in 1894 in Cedar Hammock, which was at that time a virgin hardwood forest (Ward, n.d.). This area is located along Alternative Corridor D, but recent efforts to locate the species have been futile (Ward, n.d.). According to Ward, present populations are known in Collier County, Florida, the West Indies, and Central and South America.

TABLE 2-6
PERTINENT CONTACTS FOR COMPILATION OF IMPORTANT PLANT SPECIES

Agency/Individual

Dr. Ken R. Langdon, Florida Department of Agriculture and Consumer Services

Mr. Kent Perkins and Dr. Walter Judd, University of Florida, Vascular Plant Herbarium

Dr. Richard Wunderlin, Herbarium Curator, University of South Florida

Dr. Gail Baker, U.S. Fish and Wildlife Service, Jacksonville Office

Dr. Andrew Robinson, U.S. Fish and Wildlife Service, Atlanta Office

Publications

Florida Committee on Rare and Endangered Plants and Animals: Rare and Endangered Biota of Florida. Volume 5 — Plants. D. B. Ward, Ed. for University Presses of Florida.

Florida Department of Environmental Regulation, October 1980. Endangered and Potentially Endangered Plants in Florida. Mimeo.

U.S. Fish and Wildlife Service, 1980. Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species. Federal Register 45 (242):8240-82560

Source: Commonwealth Associates Inc., 1981.

Centrosema arenicola (Butterfly-peas) has been found along Clay Sink Road (personal communication, Wunderlin, January 26, 1981), and is west of the proposed corridor. Since its habitat, pinelands, is fairly abundant along the various corridors, its presence elsewhere can be expected.

Dicerandra frutescens (Scrub balm), a member of the sandhill scrub community, has been reported from northern Sumter County (personal communication, Langdon, 1980; Ward, n.d.). Records at the University of South Florida identified areas west of Wildwood (personal communication, Dr. R. Wunderlin). While the plant is known from the general area, specific information indicates it does not exist within the proposed corridor.

Drosera intermedia (Water sundew) has been collected from the study area (personal communication, Langdon, 1980). The species is restricted to aquatic habitats consisting of clear streams, ponds, and bogs. Its distribution in Florida covers many counties in the peninsula and panhandle as well as much of eastern North American (Ward, n.d.).

Hartwrightia floridana (Hartwrightia), while not known from the study area (Ward, n.d.), is considered likely to be present by personnel at the Vascular Plant Herbarium, University of Florida. Ward (n.d.) cites specific habitat as marshy grassland or among sphagnum in boggy swales. Ward also commented that its status should more appropriately be categorized as threatened. It is located in scattered locations from southern Highlands County north to Nassau County (Ward, n.d.).

A southern mesic forest inhabitant, *Justica cooleyi*, was collected in 1925 near Mascotte (Ward, n.d.). This community is located several miles east of the proposed corridor. Besides this old locality, it is endemic to a small area in Hernando County (Ward, n.d.) outside the study area.

Monotropis reynoldsiae (Pigmy-pipes), a root parasite on flowering dogwood, is known from the Withlacoochee State Forest. However, after examining the extant location near Brooksville and talking with local foresters, it was ascertained that appropriate habitat (i.e., flowering dogwood) does not exist within the confines of the proposed corridor. Present populations are restricted to Hernando County, with older collections (late 1800's) from St. Johns and Brevard Counties and a 1953 observation in Marion County (Ward, n.d.).

Although Ward (n.d.) placed *Nemastylis floridana* along the east coast of peninsular Florida, it has been identified as a possible candidate to be found locally. It occurs in a variety of wet habitats.

Another aquatic, *Peltandra sagittifolia* (Spoon-flower), ranges throughout the study area. It is known on the coastal plain from North Carolina southward along the central peninsula of Florida to Harlee and Highlands Counties (Ward, n.d.). Ward also documented a location in the Florida panhandle on the Eglin Air Force Base Reservation. Its wide ranging habitat requirements include both high and low light situations within boggy areas, ditches, valley bottoms, cypress swamps, and along lake margins and streams (Ward, n.d.).

Rhapidophyllum hystrix (Needle palm), according to Ward (n.d.), occurs in a variety of habitats based on its range. Wunderlin (personal communication, 1981) indicated it might be located in floodplain forests in the study area. Its range apparently covers southern Mississippi along the Coastal Plain and north to Georgia. In Florida, it occurs sparingly from Highlands County north to Clay County with disjunct populations along the Apalachicola River in Walton County (Ward, n.d.). Arcuri (1979) located this species in Oak and Cabbage Palm Hammock in the Hillsborough River State Park, southwest of the study area. As this hammock type borders the river, the community would be similar to the floodplain forest type mentioned for the study area.

Salix floridana (Florida willow) is located throughout central Florida, and consequently could be located in the study area.

Regarding wildlife, those species identified by GFWFC (December 29, 1980) as being threatened, endangered, of special concern, or of unique ecological value, and which may occur in the vicinity of the proposed corridor are addressed in Table 2-7 and the following text. Species range maps appear in Appendix C.

The Florida gopher frog (*Rana arcolata aesopus*) is found throughout the northern part of the state in sandhill communities of bluejack oak, blackjack oak, turkey oak and in sand pine scrub habitat (Fogarty, 1978). The preferred habitat is in the burrows of the gopher

TABLE 2-7
RARE, ENDANGERED, AND IMPORTANT WILDLIFE SPECIES THAT MAY OCCUR IN
THE VICINITY OF THE PROPOSED CENTRAL FLORIDA – KATHLEEN 500 kV
TRANSMISSION LINE CORRIDOR AND ALTERNATIVES^a

Amphibians and Reptiles		Status^b
Gopher frog	<i>Rana areolate aeopus</i>	Special Concern
Striped newt	<i>Notophthalmus perstriatus</i>	Unique Ecological Value ^c
Suwannee cooter	<i>Chrysemys concinna suwanniensis</i>	Special Concern
Gopher tortoise	<i>Gopherus polyphemus</i>	Special Concern
Short-tailed snake	<i>Stilosoma extenuatum</i>	Threatened
Eastern indigo snake	<i>Drymarchon corais</i>	Threatened
Birds		
Wood stork	<i>Mycteria americana</i>	Endangered
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Southeastern kestrel	<i>Falco sparverius paulus</i>	Threatened
Florida sandhill crane	<i>Grus canadensis pratensis</i>	Threatened
Red-cockaded woodpecker	<i>Picoides borealis</i>	Threatened
Florida scrub jay	<i>Aphelocoma coerulescens</i>	Threatened
Mammals		
Sherman's fox squirrel	<i>S. niger shermani</i>	Special Concern
Florida mouse	<i>Peromyscus floridanus</i>	Threatened
Florida panther	<i>Felis concolor coryi</i>	Endangered

^aSee text for further explanation.

^bGWFC. 1980. Legal Status of Endangered and Potentially Endangered Species in Florida, 1 October 1980. GWFC, Tallahassee, Florida. 5p.

^cDetermined to be of "Unique Ecological Value" as per GWFC letter of December 29, 1980.

tortoise, however, when this tortoise is not found in the area the frog will use rodent burrows, stump holes, post holes, and crayfish burrows (Wright and Wright, 1975). The frog is generally nocturnal, feeding on insects, other invertebrates and small frogs. During the breeding season, which spans early spring to late fall, gopher frogs will travel great distances to breed in shallow ponds and cypress heads. Eggs are laid in masses and hatch in from 4 to 4.5 days; tadpoles transform into adults in 85 to 100 days (Wright and Wright, 1975). This species is unique in that it does share a burrow with the gopher tortoise and anything that will impact this reptile will also influence the gopher frog. In recent years, both species have experienced population declines from loss of habitat due to development of upland areas, exploitation for food, and destruction during the exploitation of other associated species (Hendry et al., 1980 and Bury et al., 1980).

The striped newt (*Notophthalmus perstriatus*) is restricted in range to northern Florida and southern Georgia. Its preferred habitats include the flatwood ponds in pine-palmetto forests, ponds of the cypress heads common in the Ocala National Forest and ponds in the scrub/sandhill areas (Christman and Means, 1978). The larvae (efts) are found in rather well drained sandy areas. Little is known about the ecology of the striped newt, however, Christman and Means (1978) report that the main portion of the diet consists of aquatic diptera larvae or anything of similar size. Breeding takes place in the spring when males develop morphological features to aid in mating. Hatching occurs approximately one month after egg deposition. Christman and Means (1978) also report larvae can be found from April through December in ponds as well as upland well drained habitats. This species has displayed neotenic characteristics (i.e., retaining the gills in the adult form). Bury et al. (1980) feel the destruction of habitat, particularly breeding ponds, should be prohibited where this salamander is neotenic.

The Suwannee cooter (*Chrysemys concinna suwanniensis*) is found along major rivers of central Florida that drain into the Gulf. Occurrence is highly unlikely in the study area. Habitat requirements restrict it to rivers with headwaters below 7.6 meters (Auffenberg, 1978b). The highest densities are found in grassy flats off river mouths. This turtle is almost completely herbivorous, feeding on aquatic plants. Reproduction begins in September and continues through May and may continue all year (Auffenberg, 1978b). Seventeen to

nineteen leathery-shelled elliptical eggs are laid in nests excavated in the soil. Young hatch in approximately 2.5 months. These turtles are highly adapted for swimming and are one of the few purely grazing turtles in the world. The Suwannee cooter has been undergoing a reduction in population densities in recent years, possibly from exploitation for food, and destruction by watercraft within its range. Habitat loss from dredging, which eliminates food plants, may also be a factor in its reduction.

The gopher tortoise (*Gopherus polyphemus*) has a range across the Gulf Coast from Mississippi to Florida and south into the northwest portion of the Florida peninsula. This species is found in appropriate habitats throughout the study area. Auffenberg (1978a) reports the gopher tortoise prefers the well drained soils of the xeric habitats consisting of beach scrub, sand pine, longleaf pine/turkey oak and the live oak hammocks. In addition, it will use old fields in successional stages leading to any of these. An unusual characteristic of this tortoise is that it digs a burrow which also serves as a home for many other animals. Behler and King (1979) report of one burrow being over 47 feet (14.3 meters) long. These burrows serve as a moisture and temperature regulator for the tortoise. Sexual maturity is attained at five to seven years. Breeding begins in early spring with nesting from late April to mid-July. Up to 15 eggs are deposited by the female in a nest usually excavated in sandy soil near the entrance of her burrow; these eggs are brittle and may be eaten by other residents of the gopher tortoise's burrow. The young hatch in about 65 days and construct their own burrows; they will remain in the general area for several years, which helps explain their tendency to form breeding colonies (Auffenberg, 1978a). The diet of the gopher tortoise is composed of several different types of grasses and occasionally leaves, wild fruit and berries. Young are omnivorous. Feeding is extremely habitual and can produce paths and clearings which are constantly grazed.

This species is presently a game species with harvesting regulated by the Florida Game and Fresh Water Fish Commission regulations (GFWFC, 1980a). One bleached carapace was found at the intersection of the proposed corridor and SR 48. Five other carapaces, plastrons and skulls were found at the juncture of the Little Withlacoochee River and State Route 471. These latter shells were all located together and gave the appearance that the tortoise was harvested by man.

Very little is known about the short-tailed snake (*Stilosoma extenuatum*), which is endemic to Florida (Campbell, 1978). The snake has been collected in the central portion of the

state. It is reportedly restricted to longleaf pine/turkey oak forests, but is occasionally found in upland hammocks and sand pine scrub. Campbell (1978) reports that extensive stands of longleaf pine/turkey oak habitat in Marion and Lake Counties still maintain populations of this snake. The ecological factors limiting the range of the short-tailed snake are thought to be habitat availability and preference for certain soil types (Campbell, 1978). A unique feature of this snake is that it is a burrower, remaining underground through most of the year except during the spring and fall (April and October). Reproduction is oviparous with males slightly thicker than females (Wright and Wright, 1957). The paucity of information on the ecology of this burrowing snake has undoubtedly aided in its decline, for its role in the habitat and intraspecies interactions is unknown. Apparently habitat destruction is the most serious threat to this snake as its habitats are prime areas for development and agriculture.

The eastern indigo snake (*Drymarchon corais couperi*) is restricted to extreme southeastern United States, including peninsular Florida. Although the snake is found in dry sandy areas, it is actually more characteristic of moister habitats. Wright and Wright (1957) report its susceptibility to desiccation, which may explain why it usually seeks out the burrows of the gopher tortoise in the pine flatwoods and higher hammocks. The eastern indigo snake is large, ranging from five to six feet (1.5 to 1.8 meters) (Kochman, 1978). It is perhaps the largest of the New World snakes (Wright and Wright, 1957). The snake is active during the day and omnivorous in diet, preying upon small mammals, birds, frogs, lizards, and snakes. Behler and King (1979) report that courtship begins in November to February, with egg deposition in May. Usually five to twelve leathery eggs are laid, with the hatching of 19-26 inch young occurring in late July to October. The young grow rapidly and may attain the length of 48 inches in their first year (Hendry et al., 1980). Maturity is reached at two to three years. Historically, this snake has been a favorite with snake collectors and animal dealers due to its impressive size and docile nature. Although legally protected in Florida, the snake continues to be exploited. An immediate threat to the snake appears to be habitat destruction in its dryer range, the same fate suffered by the gopher tortoise.

The wood stork (*Mycteria americana*), the only true stork native to North America, is found throughout peninsular Florida, excluding the Keys, and into southern Georgia. This population is probably disjunct from the population in Mexico south through Central America.

The wood stork is a bird of fresh or brackish water wetlands, nesting primarily in cypress or mangrove swamps and feeding in marshes, flooded pastures and roadside ditches. The bird is highly colonial, nesting in rookeries and feeding in flocks. Nests are typically found approximately 100 feet (30.5 meters) above the water in the cypress marshes (Hendry et al., 1980); they are constructed of sticks and lined with leaves and cypress sprigs. In central Florida, the rookeries form during February to April. Storks lay from two to four eggs and average about two young fledged per year (Ogden, 1978b). Feeding is by a specialized technique called grope-feeding, where the bird moves its bill through the water snapping shut on any fish it touches. Feeding usually takes place in six to ten inches of water, and best results are where fish are in high concentrations due to seasonally receding water levels. Ogden (1978b) reports that the wood stork may travel up to 80 miles (129 kilometers) to feed, and when not involved in feeding or nesting activities, spends many hours inactively roosting in the rookery. Loss of feeding areas has contributed to the decline of the wood stork in Florida. Wood stork nest failures have occurred for several years and can be attributed to reduced availability of food (Hendry et al., 1978). Several active and empty rookeries (wading bird colonies) exist within the study area, some known to be used by this species, e.g. the Little Gator Creek rookery.

The southern bald eagle (*Haliaeetus leucocephalus*) occurs in peninsular Florida, excluding the east coast from Indian River County south to the Everglades National Park. The westward limit appears to be the Apalachicola River. Adult birds mate for life and prefer nesting sites on shores of large bodies of water or large rivers. Nests are constructed of sticks and are usually at the apex of tall living or dead trees (pine or cypress). Generally, nests are flat-topped heaps of sticks with a finer material such as grass, leaves, seaweed, pine needles, or Spanish moss in the center. Nests are used for more than one year with new construction taking place each year. Breeding activities begin in early fall with eggs laid as early as October. The usual clutch is two, but one and four are not uncommon; eggs hatch in about 35 days (Florida Bald Eagle Committee, 1978). Chicks spend from ten to twelve weeks in the nest, and both parents share in the parental duties. Bald eagles are opportunistic feeders.

The main staples of the eagles' diet consist of fish, aquatic birds, and reptiles. Densities of eagles have declined in the past 30 years. Pesticides, habitat destruction, and disturbance of nesting pairs are precipitating factors in this decline (Hendry et al., 1978). Four eagle nests were identified in the study area (Figure 2-5).

The range of the southeastern American kestrel (*Falco sparverius paulus*) is restricted to the southeast portions of the United States including most of Florida. The bird prefers open habitats, but does use pine forests, open river bottoms, coastal regions, and urban areas (Wiley, 1978). The kestrel perches on telephone poles, wires, tops of dead trees, or dead stubs. It hunts by diving on its prey from these perches or while hovering; large insects, small rodents and some reptiles are the major components of its diet. Nests are located in enclosed cavities such as woodpecker holes, birdhouses, or the eaves of homes. Three to five eggs are laid from mid-March to early June directly on the nesting cavity floor. Eggs hatch in approximately 30 days, and the incubation is performed almost entirely by the female with the male feeding the female at the nest site. Young are fledged 30 days after hatching and remain in the area several weeks following. The southeastern American kestrel has experienced a decline in parts of Florida, and Wiley (1978) reports the magnitude and reasons for this decline are presently unclear. Numerous American kestrels were observed throughout the study area and the proposed corridor in many different habitat types. These observed birds may have been *Falco sparverius paulus* or *F. sparverius*, the northern migrant.

The Florida sandhill crane (*Grus canadensis pratensis*) is restricted to peninsular Florida, being rare in Dade and Monroe Counties in the south. It prefers wet prairies, marshy lake margins, and other shallow flooded open areas. The Florida subspecies, (*G. c. pratensis*) is very sedentary in that it will not attempt to return to its original home range when transplanted, and it will mix with the greater sandhill crane (*G. c. tabida*) when they migrate to Florida. The bird is colonial but large groups are rare. Breeding activities begin in early spring in central Florida with nest building. Nests are constructed of aquatic vegetation when the water levels and temperatures are right. Usually, the clutch contains two eggs and the male and female share the incubation duties. Williams (1978b) reports that both sexes will defend the nest against intruding animals. Young hatch in March and April and are precocial (i.e., fully feathered at hatching and can walk and feed within a few hours thereafter) (Hendry et al., 1980). The diet of the crane is varied, consisting of insects, frogs, small mammals, young shoots, grasses, tubers, and seeds. No systematic census has been made of the sandhill crane, but it is believed that the population is slowly declining. Williams (1978b) believes the major causes of this downward trend are low reproductive rates, specialized habitat requirements, inability to withstand human encroachments and, at one time, over-harvesting.

Historically, the red-cockaded woodpecker's (*Picoides borealis*) geographic range was primarily coastal plain pinewoods of the Southeastern United States, including most of Florida. Presently, its range is much reduced in Florida, being restricted to small colony sites throughout the state. The red-cockaded woodpecker is one of the very few species of birds which excavate their nesting cavities in live trees. The woodpecker appears to favor longleaf pine (*Pinus palustris*) but also utilizes loblolly (*P. taeda*), shortleaf (*P. echinata*) and slash (*P. elliotti*) (Baker, 1978). Cavity trees are mature or over mature pines that have been infected with red heart disease (*Fomes pini*). Colony sites often appear parklike with large mature pines and no understory or competing hardwoods. The bird drills through the living outer wood and excavates a chamber in the diseased heartwood. Resin wells are drilled around the entrance, and the bark is also chipped off, giving the cavity tree a characteristic "candle" appearance. The red-cockaded woodpecker does occur in more than one pair in a unit called a clan. However, generally only one pair will breed and have young within the clan. Unmated males in the clan may aid in the breeding cycle. Nesting occurs from late April through early June. The clutch is normally three to five white eggs and the incubation period is one of the shortest known: ten days (Baker, 1978). The young remain in the cavity approximately one month before joining the clan. Often only one or two birds are fledged. Roosting and nesting occur in the same colony site for many years, either in old cavities or new ones. The woodpecker is sedentary, foraging up to two miles from the colony. Food of the red-cockaded woodpecker is typical of many woodpeckers, including arthropods found in dead trees, seeds, and some berries. Florida has one of the largest remaining populations of this unique woodpecker. However, it is felt that current timber management practices, i.e., culling mature, over mature, and diseased trees are the major reason for the decline in the numbers of this bird (Baker, 1978). Although marginal red-cockaded woodpecker habitat does exist within the study area, no birds were observed during January field reconnaissance.

The Florida scrub jay (*Aphelocoma coerulescens coerulescens*) is restricted to scattered small patches of scrub oak in peninsular Florida. Their habitat requirements are very specific. They are very sedentary and remain within a small area for life. The scrub jay utilizes oak scrub consisting of live oak (*Quercus virginiana*), myrtle oak (*Q. myrtifolia*) and Chapman oak (*Q. chapmanii*); shrubby vegetation would consist of saw palmetto, sand palmetto, and rosemary (Woolfenden, 1978). The scrub jay generally mates for life and defends its territory. Nesting usually begins in early March to June. Clutch sizes vary from three to five eggs. A

pair may produce up to four clutches a year. Incubation lasts 17 days and generally coincides with the blooming of the oaks, which attracts hosts of insects and serves as food for the young (Hendry et al., 1980). The young remain in the vicinity of the nest for one year, helping to defend the territory and even to help in feeding the adult's brood. Breeding rarely occurs before the second year. The jay feeds on a wide variety of foods. Insects, especially arthropods, form the bulk of the diet. Woolfenden (1978) states that the eggs and nestlings of other birds are unimportant food as is the case with the western scrub jay. The Florida scrub jay readily takes artificial food and becomes tame where unmolested. Recent Florida scrub jay population declines may be attributed to its extremely narrow tolerances for habitat that is quickly being removed for development. Oak scrub habitat exists in the northern portion of the study area and several Florida scrub jays were observed along State Routes 48 and 469 in the proposed corridor.

Sherman's fox squirrel (*Sciurus niger shermani*) is a large tree squirrel, distinctly longer and heavier than the gray squirrel. It occurs throughout much of peninsular Florida east of the Suwannee River and north of Lake Okeechobee (Ehrhart, 1978). The fox squirrel's characteristic habitat is the longleaf pine/turkey oak forest of the sandhills, much of which have been removed for commercial timber. The biology of the fox squirrel is similar to that of the gray squirrel. It exhibits two breeding seasons with young born in January or February and again in June to August. Litter sizes range from one to four, with slow development. The young will spend up to six weeks in the brood nest. The fox squirrel does most of its foraging on the ground. Pine needles make up a large portion of its summer diet, then changing to acorns from the turkey oaks and other oaks the remainder of the year. The decline in recent years of the Sherman's fox squirrel can be attributed to the loss of habitat (Ehrhart, 1978). Apparently, the removal of longleaf pines leaves a forest dominated by the oaks, a suboptimal habitat. Habitat losses have also come from agricultural and residential development.

The Florida mouse (*Peromyscus floridanus*) is restricted to the northern portions of peninsular Florida. Its distribution is discontinuous, closely following the distribution of its habitat (Layne, 1978). The Florida mouse is found in sand pine scrub in early successional stages, but can also be found in pine-oak woods and scrubby flatwoods. Generally, the common characteristics of these habitats are the xeric conditions, open spaces, scrubby oaks

and other shrubs, and sandy soils. The mouse is a ground dweller, living in burrows, typically those of the gopher tortoise. Breeding takes place in the fall or early winter with litter sizes ranging from one to six. Natural enemies include those common to all small rodents, that is, snakes, birds of prey, foxes, bobcats, and raccoons. The main staples of the diet include seeds, nuts, fungi, plant material, insects, some small invertebrates and acorns. Layne (1978) feels that the Florida mouse and the gopher tortoise are an excellent example of commensalism between a reptile and a mammal. This species is threatened by the same problem which threatens the gopher tortoise, destruction of habitat. The sandy pine scrub ridges are prime lands for residential development because of draining qualities. Also, much of its habitat is being cultivated for agriculture.

At one time, the Florida panther (*Felis concolor coryi*) ranged throughout all of Florida. However, heavy pressures have reduced its populations to only occasional sightings. Early records show its habitat coincided with that of the white-tailed deer; this deer is very important to its diet. While the white-tail was able to adapt to man, the panther was not. Their densities were probably always very low as a result of the large territories required to maintain one animal. Up to six kittens are born to a female every two to three years. The young are born in dens, under logs, in caves, or in dense thickets. Panthers generally mature at three years of age. Adults are solitary and travel great distances while hunting, up to 20 miles (32 kilometers) (Williams, 1978a). It is believed that the species is on the verge of extinction and that there could not be more than 30 panthers remaining in Florida (Williams, 1978a). Hendry et al. (1980) feel hunting pressure, both legal (pre-1958) and illegal, reduction of habitat, and encroachment of man are the most important factors contributing to the decline of the species.

2.2.9 Other Environmental Features

The existing environmental characteristics of the study area, and particularly the proposed corridor, have been addressed in the preceding sections. Possible impacts to the environment resulting from construction and operation of the proposed Florida Power Corporation 500 kV transmission line can be addressed with information presented in this chapter.