The purpose of this report is to identify and describe significant patterns of cultural development within the Green Swamp from the Paleoindian period into the post-European contact period in order to establish a framework within which future archaeological research and cultural resource management within the Swamp can be carried out. The organization and scope of the report follows that established by the Florida Division of Historical Resources for the *Archaeological and Historic Contexts* section (Payne and Milanich 1990) of the Florida Comprehensive Historic Preservation Plan.

This research design should be considered a dynamic document, one to be amended as more information about the archaeology of Green Swamp is collected and synthesized. Compared to other regions of Florida, the archaeology of the Swamp is relatively unknown. As more data is made available, new research questions undoubtedly will become apparent and old ones will warrant revision.

**GEOGRAPHICAL AND ENVIRONMENTAL SETTING**

Florida’s Green Swamp, designated an Area of Critical State Concern by the State of Florida (Division of State Planning 1974), is an approximately 870 mile\(^2\) pine and wetland region...
encompassing portions of Hernando, Lake, Pasco, Polk, and Sumter counties in west-central Florida (Pride, Meyer, and Cherry 1966:1; Green Swamp should not be confused with the Green Swamp Run in southern Lake and northeast Polk counties). The Swamp is roughly bounded by U.S. Highway 27 on its eastern side, State Highway 50 on its north, and U.S. Highways 98 and 301 on its west. Its southern side, cut by Interstate 4, is marked the transition to the sandhill and upland ridges of northern Polk County.

The Swamp lies almost entirely within the large triangle formed by Interstate 4 and 75 and the Florida Turnpike. Though twentieth-century road engineers chose to avoid the Swamp’s wetlands in planning those major highways, I-4 being the exception, both paved and unpaved roads criss-cross the Swamp.

Roughly 28 miles northeast-southwest and 45 miles northwest-southeast, the Swamp in the past was dominated by pine forests and wetlands. Though developments serving the ever-growing populations of the greater Orlando, Tampa, and Ocala metropolitan areas continue to expand into the Swamp, its natural setting and importance in recharging the Florida aquifer have served as something of a hindrance to recent human settlement. In addition, approximately 18 percent of the Swamp area, ca. 99,125 acres, is within the Southwest Florida Water Management District’s (SWFWMD) Green Swamp Wilderness Preserve (in the west-central Swamp), while the eastern portion of the Withlacoochee State Forest encompasses an even larger portion of the northwest section of the Swamp. The discussion which follows is based on several reports and articles (Anonymous 1995; Division of State Planning 1974; Ecological Consultants 1996; Pride, Meyer, and Cherry 1966; SWFWMD 1980, 1981; White 1970; also see Johnson

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1986), as well as Benjamin F. McPherson’s U.S.G.S. land cover map, which contains a general description of the Swamp (McPherson 1979).

The Swamp is a mosaic of wetlands and pinelands, with stands of hardwoods, some of which grow in water at least during a portion of the year. Wetland habitats, today comprising 34.2 percent of the area within the Swamp, include marshes and wet prairies (including sawgrass); cypress forests, flooded seasonally; river bottom swamp adjacent to creeks and rivers (especially the Withlacoochee River and its tributary system); and mixed swamp forests (not dominated by cypress, and including bay heads).

Open-water lakes are most common in the northeast (e.g., lakes Minnehana, Louisa, Nellie, Susan, Crescent, Gloria, and at least twenty other, small, named lakes) and southeast (e.g., lakes Juliana, Van, Mattie, Alfred, Gum, Swoope, Lowery, Bonnet, and Hammock) areas of the Swamp. Most of these lakes are thought to have originated from sinkholes (McPherson 1979). Higher water levels in the past undoubtedly would have increased the extent of open-water lakes.

Lakes Minnehana and Louisa, which connect with one another, are at the southerly end of the chain of central Florida lakes that includes Lake Harris and Lake Griffin and provide the headwaters of the Oklawaha River. Significant portions of the Withlacoochee River and some of its tributary streams also are found within the Swamp, and researchers (Pride, Meyer, and Cherry 1966:1) also trace the headwaters of the Hillsborough, Kissimmee, and Peace rivers to the Swamp, the latter from the lakes in the southeastern portion. However, approximately 80 percent of the swamp drains into the Withlacoochee River.

Pineland habitats, today 30 percent of the Swamp area, include sandhill uplands (well-drained with with various oaks and wiregrass) and pine flatwoods. These habitats are found on
low ridges, hills, and flatlands, depending on relative elevation (elevations within the Swamp vary from 75 feet above mean sea level in the west to 200 feet in the east; the wettest portions are nearly flat). Stands of live oaks and mixed hardwood forest still are found on a few small plots of higher ground near lakes and marshes and comprise 8.6 percent of the Swamp area. In the past nearly all of the 27.2 percent of the Swamp which today is pasture, citrus groves, cleared land, or otherwise developed most likely was either pineland or mixed hardwood forests. An even higher percentage of the total extent of the Swamp—nearly 41 percent, see below—has been altered in the recent past, though portions have been allowed to return to their natural vegetation (or nearly so).

The topography of the Swamp dictates that the distribution of water from rainfall determines the dynamic distribution of vegetative habitats. Low ridges (running north to northwest) are found in the eastern postion of the Swamp (the Lake Upland physiographic region), while the central portion is much flatter and wetter (the southern extension of the Tsala Apopka Plain). The southeastern and southern sides trail off into the low rolling sandhills of the Polk Upland with its Winter Haven and Lakeland Ridges, while west of the Withlacoochee River drainage is the higher ground of the Brooksville Ridge. The lakes in the northeast Swamp are within the Western Valley physiographic zone while the Hillsborough River drains to the southwest through the Zephyrhills Gap. East is the Lake Wales Ridge.

The exact boundaries between higher, drier land (with concomitant vegetative communities) and lower, wetlands continually shifts as water levels change. Thus the amount of land available in the past for human occupations within the Swamp also changed, probably seasonally and certainly in response to longer term climatic fluctuations.
The Green Swamp is well known to be a major recharge area for the Florida aquifer. The karstic formations of the aquifer underlie the Swamp and in a few places, especially in the western Swamp, limestone deposits of the Suwannee formation reach the ground surface. Most of the limestone deposits are buried, 50 to 200 feet below the ground surface (the latter in the eastern portion) and are overlain by clays and sands.

While those of us unversed in geology might expect that the lower, wetter portions of the Swamp are where surface water sinks down into the aquifer, that is not the case. Such areas are in reality the poorest recharge areas, both on the surface and below surface, which is why water stands in them, resulting in the wetlands. As might be expected, the soil associations are very poorly to poorly drained types. The prime habitats from which surface water reaches the aquifer are the higher ridges and hills that are found on the eastern, southern, and western fringes of the Swamp whose soils are well-drained.

The wetland and pineland habitats of the Green Swamp harbor a plethora of plant and animal species. In 1995, naturalists employed by Ecological Associates surveyed thirty-one locales within the Green Swamp Wilderness Preserve to assess the impact of modern alterations (or potential alterations) to those areas. In the course of the research data on plant and animal communities were collected. Those inventories recorded existence of nearly 500 species of vascular plants and more than 230 species of animals (Ecological Consultants 1996:4, 670). The latter include at least three introduced species (feral pig, Norway rat, and banded armadillo) among the 8 species of salamanders, 18 of frogs, 11 turtles, 1 alligator, 14 lizards, 29 snakes, 38 mammals, and 112 birds. SWFWMD’s 1980 environmental assessment of the Upper Hillsborough Flood Detention Area, a portion of which extends into the Swamp, recorded 20 fish.
species. It is likely all of the native species identified by these surveys lived in the Swamp in the past.

Specific information on the formation of the Swamp and changes in its nature during the Holocene period (prior to the twentieth century) is not available. However, based on what is known from elsewhere in Florida, we would expect that only the deeper sinkhole lakes contained water in the early Holocene (Watts, Grimm, and Hussey 1996:36), though water holes-catch basins might have been present in the karstic formation that would become the Withlacoochee River. Elsewhere in Florida, lake corings indicate essential modern climatic and vegetative conditions appeared about 5000 B.P. in north Florida and slightly later (4500 B.P.) in South Florida. By those same dates the Everglades and Okeefenokee swamps, respectively, had formed (Watts, Grimm, and Hussey 1996). Thus it is likely that by the Middle Archaic period, 5000 B.P., the Green Swamp also had formed and appeared much as it did prior to the twentieth century. Long-term fluctuations in the Holocene climate, such as periods of increased or decreased rainfall associated with warmer or cooler periods than at present (e.g., the Little Altithermal) likely affected the water regime Swamp, but to what extent is unknown.

More certain are the changes that occurred in the twentieth century, the result of human activities to take advantage of the Swamp’s resources. Those activities include timbering, establishing pasture for cattle, clearing for citrus groves, and mining sand and peat. Timbering began as early as 1928 when the Cummer Sons Cypress Company established a mill in Lacoochee and began to log the cypress trees in the cypress swamps adjacent to the Withlacoochee River (Anonymous 1995:6-7; Johnson 1986:37). Other, later mills also participated in the logging. In their report, Ecological Consultants (1996:9) says the cypress stands were “severely” logged. Though cypress logs could be floated on the river to help
transport them to the mills, a system of roads and trams was established and wetlands were drained, all to improve transportation to reach cypress stands and remove the logs. Many of the huge stumps left after trees were cut can still be seen today. Pines also have been timbered, a practice that was present in the mid-1970s when McPherson was doing the research for his land cover map (McPherson 1979). Pine plantations can be seen in the swamp today.

Altering wetlands to make transportation to (and on) the Withlacoochee River easier and efforts to drain land in the Swamp for development have involved ditching, draining, digging canals, and channelizing, all of which have reduced the extent of wetlands. That conclusion was reached by Ecological Consultants (1996:7-9), who noted in the past “water levels were much higher than present” and draining has caused “changes in regional hydrology and…vegetative patterns.” Most likely the extent of open water lakes in the northeast section of the Swamp was greater in the past with higher water levels. Heavy ditching for drainage purposes is also cited in the definitive hydrological study of the Swamp (Pride, Meyer, and Cherry 1966:21)

During their ecological survey, Ecological Consultants (1996:478, 508-509, 567-568, 608, 614) noted the presence in the Swamp of several peat mines and one abandoned sand mine. McPherson (1979) states at the time of his field studies limited phosphate mining also was underway in the Swamp.

The increased presence of people living in the Swamp and the monetary investments in developing property have led to a need to try and control what in the past may have been normal flooding of certain land. For instance, high seasonal rainfall once flooded pinelands or land along the Hillsborough River as a part of the yearly cycle of wet and dry. But with the clearing of pineland for cattle pasture and the building of houses on the river, governmental management
agencies are faced with trying to further control water to protect those investments by erecting levees and catchment ponds, still another impact on the Swamp.

All together, land clearing, and alterations for pasture, citrus groves, and development have impacted at least 41 percent of the non-wetland area of the Swamp, or about 237 miles². McPherson’s map indicates that the highest percentages of altered land are in the southern, northeast, northwest, and southwest portions. By no means is the Swamp a pristine environment, a fact archaeologists working there in the past have noted (e.g., Piper and Piper 1980). Many small sites have lost stratigraphic integrity and only exist as surface finds. One question to be answered in future archaeological research is whether or not the locales chosen for twentieth century development, e.g., clearing for groves, pasture, and commercial and residential developments, might be the same locales chosen by precolumbian peoples as occupation sites. Have significant portions of the archaeological record been damaged or destroyed?

ENVIRONMENTAL CONTEXT

The Green Swamp as defined as an Area of State Concern by the State of Florida (Division of State Planning 1974) is both an administrative unit and an ecological reality. In terms of environmental types, the swamps and marshes in the flat interior of the Swamp contrast sharply with the higher, better drained lands found around much of the Swamp. But no sharp divisions exist and none of the physiographic zones would have posed any hindrance to the movement of precolumbian people in and out of the region. Though a swamp, the Green Swamp was hardly isolated.

Certainly the five river/drainage systems originating in the Swamp could have provided canoe access. The Withlacochee River in particular provided a connection between the Green
Swamp and the Cove of the Withlacoochee wetlands south of Lake Tsala Apopka. In many ways the Cove on the west side of the Withlacoochee River in Citrus County shares physiographic and vegetative characteristics with the Swamp. Likewise, the lakes in the northeastern portion of the Swamp with their proximity to the extensive lakes of Central Florida could have served as a natural corridor for the movement of people from that direction. Sand ridges and hills of the Polk Uplands around the southerly portion of the Swamp also can be viewed as an extension of the similar pinelands extending northward from Polk County. To the southwest through the Zephyrhills Gap the Hillsborough River connects the Swamp with the Tampa Bay locale.

Viewed this way, the Green Swamp, rather than being a discreet region can be seen as a locality where physiographic zones converge. However, it is that very convergence, along with the extensive area of poorly drained topography of the interior wetlands, that defines the Swamp for modern researchers and governmental agencies. Those same characteristics, as discussed below in the section on “Archaeological Contexts,” might well have influenced the precolumbian, colonial, and nineteenth-century human occupation and use of the Swamp.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Professional archaeological research in the Swamp has been driven by management concerns related to government-sponsored land impacts and private development. Research mainly has been in the form of surveys in restricted areas, such as the proposed locations of levees or pipelines; judgmental or random sampling strategies to locate and evaluate archaeological resources have not been employed. The largest number of sites located to date are ephemeral, and artifacts collected are few in number. Many artifacts are surface finds or they
have been collected from sites which, once tested more thoroughly, were determined to have no stratigraphic integrity. Land development apparently has led to erosion of such sites.

In the discussion that follows, I have presented chosen to detail results of some of the early cultural resource assessments of the Swamp to highlight the types of data collected and the nature of the cultural resources. From this review, it will become obvious that the lack of long-term, problem- oriented excavation of selected sites and the concomitant lack of data makes it difficult to synthesize the archaeology of the Swamp.

Professional archaeological research in the Swamp is a relatively recent phenomena compared to other parts of Florida. Among the earliest work is Barry R. Wharton’s 1979 survey of the impact of planned construction in the Upper Hillsborough Flood Detention Area (UHFDA) in southeast Pasco County (Wharton 1979). That survey encompassed a portion of the upper Withlacoochee River within the Swamp proper and a portion of the upper Hillsborough River southwest of the Swamp. Ten sites were recorded, two of which (8PA53, 54) were on higher ground near the Withlacoochee River within the Swamp. One, with lithic artifacts, was interpreted as an Archaic period camp. The second, on a sinkhole pond 900 meters east of the river, contained lithics and two clay or Fuller’s earth-tempered potsherds and was interpreted as an agricultural homestead or a camp. The other eight sites were in the Hillsborough River drainage outside the Swamp (8PA46-52, 55). One was a lithic reduction workshop, a second was another Archaic period camp, and four others were possible quarries. Because of poor quality chert the lithic flakes recovered either were little used or no evidence of use was apparent. The nineth site was a potential quarry (lithics were found but no chert outcrop was observed), and the tenth site was a quarry with high quality chert. All the chert outcrops were associated with Suwannee formation limestone deposits.
The next year a pedestrian survey accompanied by subsurface testing was carried out by Piper Archaeological Research, Inc., in the Swamp (Piper and Piper 1980). The survey focused on proposed levee corridors for the Green Swamp Flood Detention Area (GSFDA) proposed by SWFWMD, as well as “immediate access roads and areas of four water control structures.” The proposed levee corridors were 200 feet wide and approximately 32 miles long, located primarily between the Little Withlacoochee and Withlacoochee rivers just east of State Road 471 in Sumter County, but extending into adjacent portions of Lake and Polk counties. The report by states that at the time of the research no sites were recorded in the Florida Master Site Files in the project area and “the Green Swamp in general…had never been the subject of a systematic professional archaeological survey” (Piper and Piper 1980:4).

The survey located eight sites in Sumter County (8SM14-20) and one each in Lake (8LA142) and Polk (9PO120) counties. All ten were prehistoric and nine of the ten contained only lithic artifacts. Of those nine, two were deemed quarries because of the range and amount of lithic artifacts and the availability of chert and/or agatized coral deposits close at hand, while the other seven were classified as “extractive camps” with the density and number of lithic artifacts varying from literally a handful to nearly 100. The only temporally diagnostic artifact (from site 8SM15) was a point that most closely resembled a Kirk Serrated, a type associated with the early Archaic period.

The tenth site, 8SM20, thought to represent a permanent occupation, consisted of four low mounds (middens), containing food bone, lithic artifacts, and Pasco Plain pottery; one possible St. Johns Plain sherd also was recovered.

At the time of the initial GSFDA levee survey the Pipers also surveyed Strand Hammock and Hart Hammock (Piper 1980). The former previously had been the focus of digging by the
Penninsular Archaeological Society, an avocational group, that had dug in a site later recorded by the Pipers as 8PO124. In Hart Hammock, the Pipers also recorded an “extensive quarry site” (8PO122) and “a mound site with associated lithic artifacts” (8PO121) (Piper and Piper 1980:19). The artifacts in the latter are identified as Bolen Beveled, Bolen Plain, Marion, Hernando, Sumter, Hillsborough, Newnans, Thonotosassa, and Pinellas. The point types suggest use of the site over a long period. Pipers also noted the presence of other sites investigated by the Peninsular Archaeological Society south of the Withlacochee River (Pilcher 1976) and they recorded “a large mound” and “additional prehistoric occupation” in northwest Polk County (8PO123 Raulerson Mound) (Piper and Piper 1980b:19-20). The mound, said by local people to be an “Indian burial mound,” is northeast of Hart Hammock nearer the Withlacoochee River (Piper 1980:2). The site file form notes Raulerson Mound is 60 meters east-west and 26 meters north-south with a height of 1.65 meters. It may be a midden. Another possible burial mound is site 8PA5 recorded in the University of Florida site file in the early 1950s. The site card states the mound is on the Withlacoochee River one mile northwest of Lacoochee. This location would place it on the fringe of the Swamp or just outside it (the site card does not state this was a burial mound; this site should not be confused with another mound--site 8PS5-- recorded by the Florida Park Service in 1949 in a nearby location. One documented Green Swamp mound is 8PO4137, east of Polk City.

As the first extensive archaeological research in the Green Swamp, the work by the Pipers is significant. Also important is their attempt to begin to understand the distribution of sites relative to typography, access to water, and other variables (Piper and Piper 1980:51-56). They concluded, however:
Apparently a river, spring, aquatic sinkhole or tributary stream was not necessary to the placement of any of the inferred sites types, even those of permanent habitation. Presumably the abundant water supply of the surrounding swamp was sufficient for fresh water requirements. The only consistent variable for quarry sites is the availability of a chert and/or coral outcrop. Generally, the campsites and permanent habitation sites can be expected on higher ground relative to surrounding swamps and near cypress heads which are parts of large, permanent swamps presumed to have existed during more arid times. (Piper and Piper 1980b:54-55).

Following the Pipers survey, Barry Wharton, under the auspices of the SWFWMD, carried out additional surveys in the Green Swamp related to proposed levee corridors and associated flood control activities (e.g., Wharton 1981a, 1981b 1982). Wharton (1984) subsequently authored a monograph about the archaeological resources of the UHFDA, including presenting data on 55 sites, nearly all in Pasco County (and about half within the Green Swamp proper). The data were collected from these latter surveys and his earlier survey cited above (Wharton 1979). The 55 sites, which included one Seminole camp (8PA150; based on historical accounts, he notes another Seminole camp was likely in the area but no archaeological evidence was found) were divided into 144 constituent loci or site subareas. Wharton characterizes the sites and loci as lithic or lithic/potsherd scatters representing “temporary encampments and lithic workshop areas” with “no major camps or villages” (Wharton 1984:i). Activities represented by the temporary camps are said to have included chert quarrying, tool manufacturing, and hunting and butchering, with most camps dating to the Archaic period and thought to been associated with highly mobile bands.
In the early 1980s another survey by Piper Archaeological Research, Inc., for the Florida Power Corporation found one site in the Green Swamp (8SM23) and five others east of the Swamp (8SM24-28). **Site 8SM23, a significant midden containing lithics, Pasco ceramics, and faunal remains (Piper, Piper, and Hardin 1982:8-10), is on the south bank of Cross Creek in an oak hammock less than 0.25 miles south of the Withlacoochee River.** A portion of the site subsequently was mitigated, yielding lithic artifacts and sand and limestone-tempered potsherds, along with faunal remains (deer, squirrel, fish and turtles) (Hardin and Brooks 1984). A sample of lithic artifacts was sourced by Sam B. Upchurch (in Hardin and Brooks 1984:20-26), and the artifacts were attributed to three different, widely spaced quarry clusters in west-central Florida. Several lithic points from the sites are Late Archaic period types leading the excavators to suggest a ca. 2500-3000 B.P. date for the village. The site is one of the most important excavated in the Green Swamp to date and, with Wharton’s 1984 monograph, provides data crucial to understanding the archaeological potential of the Green Swamp.

In 1984, William Johnson, then a graduate student at the University of South Florida working as an intern under the direction of Barry R. Wharton of SWFWMD, surveyed levee corridors, log-tram roads, and dirt roads in the Swamp and used the data in his thesis, a test of a predictive model for site locations in the Green Swamp(Johnson 1986). Factors in the model were soil type (though at the time county-wide soil surveys were not available for Polk and Sumter counties), distance to water, and location of vegetative comunities (especially mesic hammock/live oak stands). It was assumed “seasonal and year-round water resources…are ubiquitous and considered of little use in stratifying projected site environments loci” (Johnson 1986:53). In other words, in the mosaic of micro-environments that make up the Swamp, water was easily available everywhere. On the other hand, it was assumed that major water drainages,
such as the Withlacoochee and Little Withlacoochee rivers and Devils Creek Swamp with their adjacent hardwood hammocks would be important site loci. It also was assumed that chert outcrops would be important in determining site location.

Potential site locations were ranked as high, medium, and low probability and sites were classed as either redeposited, non-site loci (few artifacts resulting from “very limited prehistoric human activities…which do not lend themselves to archaeological interpretations;” Johnson 1986:108), limited activity sites (limited range of tools and debitage and low density of artifacts), multiple activity sites with a dominant activity subset, and multiple activity sites without a dominant single activity subset. Examples of all five of these site types were found among the 19 new sites (8SM37-49; 8PO448-453) and 2 previously recorded sites (8PO122, 124) used in the analysis. Because some sites contained discreet concentrations of artifacts, each intra-site concentration or sub-site loci was given a letter designation (e.g. 8PO452a and 8PO452b). All together 39 sites and site areas were designated, of which 13 were deposited sites and seven were classified as non-site loci (with 1-2 lithic artifacts). The remaining 19 loci were modeled, all but one of which (8PO452b) contained only lithic artifacts. The latter had St. Johns Plain and plain sand-tempered ceramics.

Among the 19 sites were 12 limited activity sites, one of which was in mesic hammock with a chert outcropping, three in pine flatlands, and eight in rangeland (presumably former pine flatwoods or hammock). Ten of the latter 11 activity loci were near a cypress swamp; none were near chert outcroppings and only one was near a river or creek. The one mesic hammock site, 8PO124c, contained animal bone in addition to numerous lithic artifacts.

Four quarry sites (two in rangeland, and one each in mesic hammock and pine flatwoods) were classified as multiple activity sites with quarrying as the dominant activity. Two other
multiple activity sites were interpreted as camps, and only one loci (8PO124b) was classed as a multiple activity site without a single dominant activity represented. That site, with a variety of stone tools and faunal remains, was interpreted as a base camp.

Johnson also used data on sites (n=14) recorded previously in the Green Swamp by other surveys and interpreted them in the context of his classification system. His model predicted most sites would be “on relatively higher and better drained locales with chert outcrops, near or in hardwood hammocks and adjacent to a major drainage” (Johnson 1986:119-120). However, he found “just the opposite. The highest percentage of sites is located in the pine flatwoods or rangeland environments which do not exhibit a chert outcrop and are not adjacent to a major drainage. Most are located on discernible rises which are assumed to be the better drained locales in the swamp” (Johnson 1986:120).

Johnson then refined his model, noting:

relatively higher and better drained locales, with or without chert outcrops, in a hardwood hammock environment and adjacent to a major drainage have a higher probability of housing multiple activity sites without dominant activity subsets. Similarly, the relatively higher and better drained locales with chert outcrops in pineland environments that are not necessarily near a large permanent swamp and usually are not near a river or creek have a higher probability of …featuring quarrying activities. Opposite to this [similar] locales without chert outcrops… and near a river or a creek have a higher probability of … [being] short term residential camps. (Johnson 1986:121-122)

Limited activity areas, on the other hand, are most likely to be found on poorer drained soils near large permanent swamps, wth the probability dropping off as the distance to the
swamp increases. One might simplify this revised model, stating: more permanent settlements (base camps?) are in hardwood hammocks near rivers and creeks, quarrying activities occur where chert outcrops are found, and short-term (hunting?) camps are likely to occur almost anywhere in the environmental mosaic of Swamp wetlands and pine flatwoods. It may be important to note that the site data used in this model do not include data from sites from hammocks adjacent to the Withlacoochee River nor from the open water lakes of the northeastern Swamp.

Commenting on Green Swamp research, Barry Wharton has cautioned that predictive models may not be useful for modeling the past, particularly if the present vegetative configuration is not an accurate reflection of the environmental parameters guiding past site selection:

Especially during and since the Late Pleistocene and Early Holocene (roughly between 10,000 and 2,000 years B.P.), predictive models for the location of contemporaneous archaeological resources based on the modern location of environmental zones are simply going to be inadequate and misleading. For example, if it is hypothesized that Paleo-Indian or Early Archaic Period campsites will disclose a patterned distribution in relation to the distribution of swamps, marshes, bogs, and streams, etc., it would be invalid to employ the latter’s present-day distributions as a key to the distribution of the former since enough information is at hand which clearly demonstrates marked changes have occurred in the distributions of these environmental zones, although the exact nature and extent of these changes are not clearly understood. (Wharton 1979:22)
Beginning in 1987 and extending through the 1990s a series of cultural resource surveys were performed in the southern portion of the Swamp in Polk County, many related to construction in the Interstate 4 highway corridor. Those surveys (Archaeological Consultants, Inc. 1991, 1994, 1995a, 1995b; Janus 1995; Piper Archaeological Research 1991; Wharton 1997; Williams 1987) recorded approximately 30 sites. Three other sites, also in the southern portion of the Swamp, were recorded as a result of other surveys. Elsewhere during the same period (1987 through the 1990s) other cultural resource assessments were also carried out (e.g., Janus 1998; Piper Archaeological Research 1986, 1990), adding an additional approximately 28 sites to those known for the Swamp.

The approximately 58 sites uncovered in all these latter, post-1986 surveys are of the same types as the majority of those recorded earlier: lithic scatters of unknown temporal affiliation (generally classified as extractive camps), sites containing only a handful or less of chert flakes and occasionally a potsherd, and an occasional chert outcrop/quarry site. These surveys reinforce the contention that anywhere on dry land where one looks for archaeological sites, chert debitage, flakes, and a few other tools will be found. Soils need not be well drained to harbor sites (sites have been found on every soil type), and sites are know from both pine flatwoods (and former pine woods) as well as from oak hammocks (though larger sites may correlate with hammocks). Present proximity to water seems not to be a determining factor in site location, since water is accessible to most locales in the Green Swamp. In the past (e.g., the Early Archaic period), however, when the Swamp was not as wet as in latter times, such access may have been more important.

From the mid-1990s and continuing to the present surveys, some extensive, have been carried out to assess cultural resources that may be impacted by proposed gas pipeline
construction. These pipeline surveys (e.g., Sunshine pipeline project by Environment Services Inc., in 1994; the Gulfstream pipeline project by Janus Research in 1999-2001, see Janus 2000a, 2000b, 2001; and the Buccaneer pipeline project by Panamerican Consultants, Inc., in 1999, see Panamerican Consultants, Inc. 1999), have located approximately 111 additional sites, of which 80 percent contain only lithic artifacts and 20 percent contain lithic artifacts and one or more potsherds.

Though a relatively large number of new sites were recorded, the types of sites found in these pipeline surveys are essentially the same as those first reported by Wharton (1979) in his report on the Upper Hillsborough Flood Detention Area on the west side of the Swamp and his monograph (Wharton 1984); most are lithic scatters or lithic/ceramic scatters indicative of short-term encampments.

As a part of the planning for the gas pipelines it has become necessary to resurvey some sites to gather more data. When that has been done, resurveys (e.g. Janus 2000-1st supplement) at times have added important new information on the size and clustering of lithic scatters. What were originally recorded as very small sites with a handful or less of artifacts have been shown to be larger in extent, though not necessarily with a greater density of artifacts. Some sites thought to be one-time, temporary encampments may be areas of contiguous camps (or, an area of temporary encampment by a large group of people).

The above are not the only cultural assessment surveys carried out in the Green Swamp from the 1970s to the present. Surveys, some limited, have been carried out along S.R. 50 near the Withlacoochee River bridge (by the Florida Department of Transportation and Janus Research); in Lake Louisa State Park (by Janus Research); Lost Lake Reserve (by Southarc,
Sites other than those recorded in the projects cited here also have been documented by state agencies, SWFWMD, consulting firms, universities, and local individuals. When all the sites are totaled (loci within sites are not counted individually), preent records indicate there are approximately 357 aboriginal sites or sites with aboriginal components recorded in the 870 mile² of the Green Swamp. The county breakdown is: Hernando 12; Lake 51; Pasco 70; Polk 179; and Sumter 45. Two Seminole War period forts in Pasco County also have been recorded (8PA24, Fort Broome, and 8PA25, Fort Dade, both on the western side of the Swamp just east of U.S. 301), as has an aboriginal canoe recovered from Erie Lake in Lake County (8LA2612; the bow of an aboriginal canoe refitted with tar paper, a plank, and square-cut nails to make a “toy” canoe, perhaps in the nineteenth century).

This is a large database. Yet, because nearly all the sites were recorded on an ad hoc basis (from surface collections) or from Phase 1 cultural resource assessment surveys, our knowledge of precolumbian people in the Swamp is not great. The number of artifacts from any one site is small, and the number of diagnostic artifacts is even smaller. Most sites are recorded only as lithic scatters. Because of the requirements surrounding the assessment needs of the various agencies and companies funding archaeological research, surveys have been restricted to specific locales and corridors. For the most part, archaeologists have not been able to survey judgementally to inspect locales where sites other than small campsites might be found, such as along the Withlacoochee River and other riverine settings, in hardwood hammocks, and around open water lakes.
EXCAVATIONS BY THE PENINSULAR ARCHAEOLOGICAL SOCIETY

Were it not for the excavations of the Peninsular Archaeological Society we would have a biased view of the types of sites in the Green Swamp, one derived almost entirely from Phase I surveys. From the 1970s into the early 1990s the Society’s members excavated more than a dozen sites in the Swamp. It is no exaggeration to state that only one site investigated by that group yielded more diagnostic lithic artifacts than all the archaeological surveys carried out in the Swamp to date. [The Society excavated the following points from the Spring Grade Road site in Polk County: 181 Florida Archaic Stemmed (124 intact/57 broken), 13 Kirk Serrated (12/1), 2 Hillsborough, 32 Thonotosassa (19/13), 7 Culbreath, 2 Morrow Mountain (1/1), 2 Lafayette, 3 Sumter, and 1 Newnan; I believe the site, which the Society named the Spring Grade Road site, is at the eastern end of Hart Hammock at the edge of the Withlacoochee River swamp in the north-central portion of Section 19, Township 25S, Range 24E (Pilcher and Howell 1986:24-25).]

Why is that? The Society’s investigations were not limited by constraints of geography, time, and research design. They could investigate likely site locations, they could return repeatedly to the potential locations and dig numerous tests, and they could then open large excavation units within sites. Their goal was to recover artifacts and they accomplished it very well, though basic archaeological field methods to record intra-site contexts were not employed. Even so, the Society’s efforts are useful in helping to understand the archaeology of the Green Swamp.

In 1976 the Society dug in a site(s) members called District Site 1 located on SWFWMD land near the headwaters of the Withlacoochee River in Strand Hammock on the south edge of the Withlacoochee River Swamp (Pilcher 1976). Carried out under an agreement with
SWFWMD, the excavations investigated “mounds and complex.” What were believed to be human bones were observed. This is the site given site number 8P0124 by the Pipers (and revisited by other archaeologists; site 8PO449 with six intra-site loci is recorded as being to the east and northeast of 8PO124, also along the southern edge of the Withlacoochee River Swamp). Another mound dug in by the Society apparently is the Raulerson Mound, recorded as 8PO123 by the Pipers, about two miles northeast of Hart Hammock just south of the Withlacoochee River. The site form notes “Mr. Raulerson reports additional mounds to the WNW about ¼ mile,” which would place them just south of the Withlacoochee River.

A later report by Pilcher (1978) appears to refer to the former site (8PO124) as Strand Hammock Site 1 and notes the site was 100 yards south of the Withlacoochee River in S14, T25S, R23E. The Society’s digging in the site recovered a host of lithic tools which they identified using Ripley Bullen’s projectile point typology (Bullen 1975) as Thonotosassa-like, Florida Spike, “Simpson” (in the published photograph—Pilcher 1978—the points labeled Simpson do not appear to be that type), Kirk Serrated, Hamilton, and Florida Archaic Stemmed. One fiber-tempered potsherd was also noted. The report says that the artifacts were in a layer of “gumbo” which had six inches of humus above it. By gumbo, a sandy-clay mixed with limestone, the eroding surface of a limestone formation, may be meant. In the published report it also was noted that the oldest point types were nearest the river and it is suggested the site’s occupants moved back from the river over time, perhaps in response to higher water levels.

In a 1980 report, Society members (Pilcher, Russell, and Bray 1980), apparently discussing the same site, concluded that their earlier contention that agatized coral was brought to the site from the coast was in error; outcroppings were likely present in the Green Swamp in exposed limestone formations. They also mentioned finding Bolen point(s) and noted that the
lithic artifacts both were in the top of the “gumbo-typoe clay” or just above it. Deer bones were excavated with the lithics.

Over the years the Society continued to work in the Green Swamp, though not on SWFWMD land, as well as other locations in Polk County, such as on Lake Hancock (Russell and Bray 1977, 1980) and London Creek Ranch (Pilcher 1991). The Swamp excavation report (Pilcher and Howell 1986) covered twelve sites “along the Natural Drains and Riverine Areas of the Green Swamp.” The latter, some “no more than ten feet in diameter” were on Dr. E. L. Kinsinger’s property in Polk County east of Hart Hammock (but with one site—perhaps—to the north and one to the south). The twelve sites yielded a large number of lithic artifacts (952, not counting “waste flakes, shatter flakes, and decr otication flakes,” which numbered more than 1250; hundreds of other flakes were not recorded). Many of the lithic artifacts were classified using Bullen’s typology as projectile points (607). Potsherds were many fewer in number (66), and a few bone tools and pieces of food bone also were recovered. A hand-drawn map with the report (I believe the map should show north to the right) shows the sites’ locations relative to unpaved roads and Mattress Drain, a creek draining into the Withlacoochee River. The report carefully charts artifacts from each site.

Using Bullen’s projectile point guide and Florida Archaeology (Milanich and Fairbanks 1980) the authors attempted to interpret the cultural chronology of the Green Swamp and the sites they had found, sometimes incorporating their own experience in traveling in the region. A number of their observations (page numbers are to Pilcher and Howell 1986), including methodological ones, are worthy of note: (1) “Travel…is limited to the very dry season due to annual flooding…(which was probably true for) thousands of years” (p.7); (2) “Many forest fires have occurred in the Swamp over the millenium (sic)...and when exposed to fire the (chert and
It was found that chips of this nature may become very confusing to investigators” (p. 8); (3) “Some sites were found in unlikely places as a result of the changing landscape. It is apparent that seasonal, temporary campsites existed when water was available in bay heads and drains during the rainy season” (p. 8); (4) “hunting camps scattered throughout this area…apparently were used temporarily over thousands of years, and in some cases appear to have been taken over by later cultures” (p. 9); (5) no fiber-tempered pottery was found in any of the twelve sites (p. 9); (6) many of the sites…were no more than ten feet in diameter” (p. 11); (7) “The extensive efforts…involved in locating these small sites are not attractive to some archaeologists…” (locating buried sites which are not apparent from the ground surface) can be an exasperating experience” (p. 11); (8) “The first consideration in the location of (upland) sites would be a source of water supply, however, this is not true for hunter-gatherer (small sites)…. Small sites were located some distance from a water source” (p. 11); (9) excavations went “down to (the) hardpan (sandy clay) layer. No clear occupation layer was observed within the (excavation units)….In some cases false bottoms were found…. (In such situations) it was determined that flood waters had formed a layer over the existing natural formation (hardpan), thereby concealing (cultural deposits)” (p. 12); (10) at sites there seemed to be a correlation between a lack of chert or coral outcrops and a lack of recortication flakes (p. 19); (11) forest fires had caused some lithic artifacts on the ground surface to explode (pp. 15 and 28); (12) because little was found around a spring, a locality thought to be a high probability as a site location, it was thought the present spring was not flowing in the distant past when ground water levels were lower (p. 12); and (13) the lithic assemblages present at sites and in loci within sites was widely
varied; some sites produced points but were notable for few flakes, lithic debris, and/or other lithic tools (e.g., pp. 29 and 37).

The information contained in the Pensinsular Archaeological Society’s reports provides important perspectives on the archaeology of the Green Swamp and nearby areas (especially Polk County). Archaic period sites other than small encampments and lithic scatters are present in the Swamp in hammocks near the Withlacoochee River.

In synthesizing what is known about the archaeology of the Swamp, the information collected by the Society needs to be interpreted along with that gathered in cultural resource assessment surveys by professional archaeologists. Before presenting such an overview, the archaeological context of the Swamp needs to be examined. Understanding the archaeology of surrounding areas may help us better interpret what is known from the approximately 370 aboriginal sites in the Swamp discovered to date.

ARCHAEOLOGICAL SETTING--PRECOLUMBIAN TIMES TO THE NINETEENTH CENTURY

Located within relatively close proximity to two interstate highways and the Florida Turnpike, the Green Swamp can hardly be said to be isolated. Nor was it in the precolumbian past. For instance, from the heart of the Green Swamp Wildlife Preserve it is less than 30 straight-line miles eastward to the east side of Lake Apopka where a number of Late Archaic period Orange and St. Johns culture sites are located. Distance from the same point in the Wildlife Preserve on a southeast line to Lake Kissimmee within the northern region of the Belle Glade culture is less than 50 miles, about two days travel by foot. The Safety Harbor culture type site on the northwest side of Old Tampa Bay is 48 miles to the southwest, while it is only 51
miles northwest to the Crystal River site, utilized from Deptford times into the early Weeden Island period. The Bayonet Field and Tatham Mound Safety Harbor culture sites in the Cove of the Withlacoochee are an easy one-day canoe trip down the Withlacoochee River; the Harney Flats Paleoindian site in Hillsborough County is an even shorter distance down the Hillsborough River and then overland to the site.

In the nineteenth century as Anglo settlers began moving southward down the Florida peninsula, cartographers and surveyors first mapped trails and then demarcated townships and sections. William Johnson (1986:34-35) has recounted this process for the Green Swamp, noting that the earliest map was made in 1837 (at the time of the First Seminole War). In the 1840s townships were established within the Swamp (see Wharton 1984a:1-2). Early maps show what are most likely aboriginal paths later used as military roads.

Documented early nineteenth-century Seminole Indian towns are known to have been in Sumter, Marion, and Citrus counties surrounding the Swamp, while archaeological surveys have located other Seminole settlements to the north in the Cove of the Withlacoochee (e.g., Weisman 1986b, 1989), north near Lake Panofsoffkee (Baird 1988), and northeast in Marion County (Dickinson and Wayne 1985; Wayne and Dickinson 1985). It would be surprising if native Americans did not utilize the Swamp from earliest times into the nineteenth century, frequently traveling through it on established paths, but also hunting and living there as well.

Did precolombian people in Florida indeed live in swamps? No one ever lived in the swamp itself, but, as we have seen, the term swamp is something of a misnomer. Within the Green Swamp only 34.2 percent of the area is actually wet (and uninhabitable in times of normal water levels) while 65.8 percent is dry land adjacent to wetlands; both land and wetland wild resources could have supported native populations.
Deming (1980:26), writing about interior Hillsborough County, has hypothesized that for that region, some wetlands would have drawn precolumbian occupation of adjacent higher ground, even if poorly drained, so that the people could utilize wetland resources. As we saw below in the section on previous research, this certainly was the case with the Green Swamp. Other wetland regions of Florida also were inhabited by precolumbian peoples who established settlements on tracts of dry ground in close proximity to freshwater sources. Notable examples include the Everglades (Griffin 2001) and Big Cypress Swamp in southern Florida (Athens 1983) and the Cove of the Withlacoochee (Mitchem and Weisman 1987; Weisman 1986) down river from the Green Swamp.

The notion that “swamps” somehow were not suitable as occupation zones for precolumbian people is not tenable. Moreover, when the temporal and geographical entirety of Florida is considered, archaeologists now recognize “that water and wetlands were extremely significant resources for precolumbian people. Marine, brackish, and freshwater habitats provided quantities of food for every precolumbian society and the necessity to live in proximity to wetlands, either all or part of the time, was a determining factor in settlement systems” (Milanich 2001). We should expect that wetlands harbor archaeological sites reflective of permanent settlements such as villages. When they do not, our task may well be to ask, why.

**ARCHAEOLOGICAL CONTEXT**

It is perhaps no coincidence that in the latest synthesis of Florida archaeology three post-500 B.C. culture regions—north peninsula Gulf coast, central peninsula Gulf coast, and east and central Florida—intersect at approximately the Green Swamp (Milanich 1994:xix). A portion of each of those three regions geographically correlates with one or more of the major
physiographic zones noted above that together shape the Swamp. Thus, the open-water lakes in
the northeas portion of the Swamp can be seen as an extension of the central Florida lake district,
a sub-region of the culture region known as east and central Florida. East and central Florida is
the region of the post-500 B.C. St. Johns culture (Milanich 1994: 243-274), and it would be
surprising if St. Johns sites are not present in the Green Swamp, especially around the lakes.
Surveys to date indicate that Johns pottery (along with sand-tempered plain pottery and
limestone-tempered, Pasco pottery; both St. Johns Plain and St. Johns Check Stamped potsherds
have been found) is one of the three majority wares present in the Swamp. Excavations of
mounds west of the greater Orlando area (e.g., see the summaries in Mitchem 1989; also see
Baird 1988) indicate that St. Johns mounds in that area contain Safety Harbor and Weeden Island
ceramics, perhaps a result of the areas’s relative nearness to the Gulf coast.

The Cove of the Withlacoochee (Mitchem 1989; Mitchem and Weisman 1986; Weisman
1987), a wetland within north peninsula Gulf coast culture region, and the Gulf coastal zone
proper of that culture, have been shown to be associated with the Deptford, Weeden Island, and
ceramics, with their carved paddle designs, are distinctive and easily reconizeable. Less easily
placed in time is the secular, limestone-tempered (Pasco) ware found in Weeden Island and
Safety Harbor period sites (Pasco ware and sand or quartz-tempered secular ware also are
common at Weeden Island and Safety Harbor period sites in the North Peninsula Gulf Coast;
both contrast with the ceramonial ceramic found in associated mounds; e.g., see Willey 1949).
Through the Withlacoochee drainage the Swamp connects with the Cove of the Withlacoochee
and interior Pasco County, thus it is not surprising that ceramics associated with the North
Peninsula Gulf Coast Deptford, Weeden Island, and Safety Harbor cultures all have been
identified in the Swamp. A few sherds of Weeden Island Plain and Pinellas Plain pottery have been found, further documenting occupation of the Swamp during the Weeden Island and Safety Harbor periods.

Down the Hillsborough River Drainage and through the sand hills of northern Polk County the Green Swamp is connected to the central Gulf coast culture region, home to post 500 B.C. Deptford, Manasota (Milanich 1994:221-227), late Weeden Island, and Safety Harbor cultures, all associated with sand (quartz)-tempered pottery (in contrast to limestone-tempered pottery). Inland Manasota, late Weeden Island and Safety Harborsites have been found east of Tampa Bay away from the coast and it would not be surprising to find such sites in the Green Swamp. Though pottery types are useful in differentiating the post-500 B.C. precolumbian cultures, it is likely that at times one group of people may have made sand- and limestone tempered pottery as well as St. John pottery. At the boundaries of culture regions in Florida there often is considerable overlap of ceramic wares, what has been called the “ceramic transition problem” (Milanich 1994:150), perhaps making it futile to try and tie specific potsherds to one of the three post-500 B.C. culture regions.

What about pre-500 B.C. influences on the Green Swamp? Archaeologists recognize the presence of Late Archaic period (ca. 2000 B.C. to 500 B.C.) sites in the greater Tampa Bay region which are associated with fiber-tempered pottery (the Culbreath Bayou culture; Milanich 1994:100-101). Collections at the Florida Museum of Natural History indicate Late Archaic sites with fiber-tempered pottery (Orange series) also are known from the Lake Apopka area northeast of the Swamp. Small numbers of fiber-tempered potsherds have been found in the Swamp. Late Archaic styles of projectile points (Culbreath and Lafayette) also have come from Swamp sites.
More common than Late Archaic artifacts in the Swamp are Middle Archaic period (5000 B.C. to 2000 B.C.) points, including Newnans and a variety of stemmed types. The sites excavated by the Peninsular Archaeological Society in the Green Swamp (Pilcher and Howell 1986) and in the interior of Polk County (Russell and Bray 1980; Pilcher 1991) suggest Middle Archaic sites are found near water sources in the sand hill regions of that county. Middle Archaic occupation also have been noted in interior Hillsborough County (Chance 1981, 1982), including in the Hillsborough River drainage (Daniel 1982; Daniel and Wisenbaker 1981, 1987:33-34; Estabrook and Newman 1984; Gagel 1981). We might expect to find some Middle Archaic sites in the Swamp in those locales which mirrored the locales of similar sites in Polk and Hillsborough counties.

In the same general locales in Polk and Hillsborough counties where Middle Archaic period sites have been found, Early Archaic and Paleoindian sites have been found. Lithic tools from both periods also have been found in the Green Swamp, though the latter have only been found in small quantities. As in collections reported from interior Polk County (Russell and Bray 1980; Pilcher 1991) Early Archaic period Thonotosassa points have been reported in some quantities, as have Kirk points. On the other hand, Arrendondo points, so common in north and north-central Florida at Early Archaic period sites seem absent or nearly so in both the Green Swamp and in interior Polk County. Such differences in lithic assemblages over time may well signal shifts in social and environmental factors over time.

ARCHAEOLOGY OF THE GREEN SWAMP

Who did live in the Green Swamp and when? Why are the vast majority of the ca. 370 sites found to date small extractive camps, quarries, lithic reduction loci, or simply scatters of
several chert flakes, perhaps representing discarded materials? Why have literally only a handful of dense, easily discernible middens been found? Are burial mounds more common than documented thus far? Are there Seminole Indians sites from the late eighteenth or early nineteenth century in the Swamp? These are not easy questions to answer, but it is informative to summarize what is known about the archaeology of the Swamp, information gleaned almost entirely from the cultural resource surveys and research discussed above. Summarizing these data can help inform questions addressed in future research.
CULTURAL CHRONOLOGY

To date, diagnostic lithic projectile points of every pre-500 B.C. time period have been identified in the Swamp: Paleoindian, Early Archaic, Middle Archaic, and Late Archaic. Likewise, pottery reflective of the ceramic assemblages associated with all of the various cultures of the post-500 B.C. culture regions which intersect in the general region of the Swamp have been identified, including Orange, Culbreath, Deptford, Manasota and Weeden Island, St. Johns (I and II), Safety Harbor. Few of these artifacts, however, are from contexts excavated with stratigraphic or other controls other than general site location data.

One nineteenth-century Seminole Indian encampment is historically documented to have been in the western side of the Swamp, though its archaeological manifestation has yet to be found. Two Second Seminole War forts are known, both from documentary records and archaeological evidence.

MATERIAL CULTURE

As noted in the narrative above, the most common artifacts found at Swamp sites are lithic flakes, thought to be debris from working chert (and some fossilized coral). Because of a lack of contextual data, whether or not these ubiquitous flakes are from all time periods or not is unknown. Less common are flakes showing secondary use chipping, diagnostic projectile points (many of which probably were actually used as knives), and other lithic tools, including hafted and unhafted scrapers of various types, preforms, drills, cores and blades, hammerstones, chopping tools. Though examples have been found in the Swamp, they are not from well-documented contexts.
Compared to lithic artifacts, pottery (of the types mentioned above) is scarce; potsherds have been found at approximately 16 percent of the sites in the Swamp. Most common are sites with only one potsherd. Other artifacts recovered to date are food bones, presumably animals eaten by people.

SETTLEMENT PATTERNS

Sites within the Swamp appear to be of several types. Most ubiquitous are the small artifact scatters of chert chips and/or potsherds which archaeologists label “extractive camps,” though what is being extracted is uncertain (hunting game? foraging for small animals? collecting a plant resource?). These camps are thought to be associated with a very limited range of activities. Typically, at such sites shovel tests and/or surface collections have recovered less than ten artifacts. Most commonly the chert chips do not show secondary use. At several of these sites most extensive testing have turned up additional artifacts, but as yet no activity areas or features have been identified, reinforcing the contention that the sites represent extremely short-term occupations. Sites of this type are found on all soil types and in all present-day vegetative communities. Likewise, distance to freshwater sources seems not to be a determining factor in site location. One has the impression after reviewing site data from the Green Swamp that, given enough time and effort, one such site could be found anywhere in the swamp.

Another type of site, one associated with a variety of lithic artifacts and, at times, more than a handful of potsherds, is the multi-activity settlement. Much rarer than extractive camps, these sites may represent camps occupied for relatively longer periods of time whose occupants were engaged in extraction of one resource. On the other hand, many of these sites exhibit a variety of projectile points from Early, Middle, and Late Archaic periods (and more recent
times), and may be a series of extractive camps at historically valued locations occupied intermittently over thousands of years. Such sites have yet to be excavated under controlled conditions that would yield vertical and horizontal stratigraphic information pertinent to understanding the intensity of occupations through time.

Chert quarry sites also have been identified in the Green Swamp. Typically they are associated with chert outcroppings (especially in the Hillsborough and Withlacoochee river drainages) and evidence of lithic reduction activities. Diagnostic points associated with quarries suggest use throughout all pre columbian periods.

Several sites—less than a dozen—interpreted as villages based on the density and quantities of lithic and/or ceramic artifacts have been identified in the Swamp, though only one, 8SM23, near the Withlacoochee River, has been excavated (Hardin and Brooks 1984). That site was associated with Pasco ceramics and late Archaic period points leading its excavators to suggest an occupation within the period ca. 2500-3000 B.P. Significantly, faunal remains were recovered, suggesting the potential for subsistence studies. However, features such as house structures and storage pits indicative of long-term occupation were not identified (nor have they been encountered anywhere in the Swamp). Neither riverine middens containing freshwater snails \textit{(Viviparus)} or mussels \textit{(Unio)} like those present in the Cove of the Withlacoochee, nor dense middens like those in the Central Florida lake district have yet been found in the Swamp.

Several sand burial mounds have been located in the Swamp. Their cultural affiliation is unknown and none have been studied by professional archaeologists. There also are sites called “mounds” which probably are occupation sites on natural rises adjacent to rivers.
SUBSISTENCE

As noted, faunal remains have been identified from only a handful of sites. No samples large enough to yield significant subsistence data have been analyzed. Other subsistence data also are lacking.

RESEARCH GOALS

Our view of the archaeology of Green Swamp is heavily biased. Overwhelmingly the data gathered to date is from non-judgemental and non-random Phase I cultural resource assessment surveys. There is a lack of data from surveys and excavations designed to answer specific research questions. Because of this lack of data, some alternatives to the usual cultural resource assessment surveys are suggested. Such methodological approaches could yield important data not presently on hand, data which might help guide future research. It is recognized that such deviations from standard procedures would require consensus among field archaeologists, land-owners and corporate entities, and governmental and other regulatory agencies. Because of the unusual nature of our knowledge of Green Swamp archaeology—i.e., it is derived largely from CRM research—perhaps non-traditional approaches are warranted. Indeed, the Green Swamp offers an opportunity to break new ground in CRM by employing novel strategies.

In this section research questions that might be answered through various projects also are addressed. Because the Green Swamp touches on at least three post-500 B.C. culture regions and exhibits artifacts indicative of Paleoindian and Archaic occupations, the research designs/historic contexts previously prepared under the auspices of the Bureau of Archaeological
Research (BAR), Florida Division of Historical Resources (Payne and Milanich 1990) have been utilized in formulating research questions for the Swamp. Specifically the contexts for the Paleoindian period (originally drafted by Nina Borremans and revised by BAR staff), Archaic periods (drafted by Michael Russo), East And Central Florida (drafted by Michael Russo), Central Peninsular Gulf Coast (drafted by Jerald T. Milanich), North Peninsular Gulf Coast (drafted by Nina T. Borremans), Safety Harbor culture (drafted by Jeffrey M. Mitchem), and Seminole archaeology (drafted by Claudine Payne) have been considered (contexts can be seen on-line at: http://dhr.dos.state.fl.us/bar/hist_contexts/index.html).

**METHODOLOGICAL/MANAGEMENT CONSIDERATIONS**

Is it better for the long-term management of cultural resources in the Green Swamp to continue to record sites that have yielded only one or two artifacts, or might it be more productive to use funds that would have been spent doing the paperwork required to record those sites with the state to carry out problem-oriented excavations of a sample of those sites? Or can funds be obtained from other sources—e.g., the Division of Historical Resources grant-in-aid and special category grants programs—to perform focused surveys and excavations? For instance, knowing what is actually represented by sites designated “lithic scatters” and “extractive camps” would allow informed recording and protection of such sites in the future. How can we protect or manage the resource without understanding what the resource is?

As noted above, novel solutions may be warranted. Perhaps a consortium of CRM companies or even individual companies could set up not-for-profit entities which could apply for and receive funds for such research from the special category projects and grant-in-aid program of the Florida Division of Historical Resources. A public educational component might
also be be considered in conjunction with such funding. Another solution would be for the Division to fund the research directly through contracts. Perhaps a Green Swamp Archaeology working group needs to be formed to address these possibilities and to help guide future CRM surveys and other research in the Swamp. That groups also could help graduate students in obtaining access to collections and money to carry out research related to the Swamp.

A Green Swamp Archaeology working group could also help in the formation of databases relative to the Swamp (e.g., a GIS compilation of diagnostic point types, see below). The compilation of such databases (and initial use of them) might be done by graduate students and technicians funded by Division of Historical Resources through universities or not-for-profit entities.

- Several field initiatives seem warranted. Excavation of a sample of various types of sites from different periods and cultures is needed. Using recorded site data and other available information, archaeologists and governmental and regulatory agencies (the Green Swamp Archaeology working group?) should select specific sites for Phase II investigation. Sites that prove to be the most interesting should then be further investigated, with research guided in part by this research design and its future revisions. Data from such excavations are crucial to management of the Swamp’s cultural resources.

- Another initiative is planned surveys, both random surveys of different habitats and physiographic situations and judgemental surveys. Using what is know about the natural setting of the swamp non-random, stratified surveys could provide quantified data on site locations (including types of sites, environmental settings, and chronological differences). Judgemental
surveys are needed to determine the presence of sites in likely locales. For instance, based on surveys in the Cove of the Withlacoochee, we might expect riverine shell middens near the Withlacoochee River in the Swamp. Also, based on what is known about St. Johns sites in the Central Lake District we would expect to find village sites around the open water lakes in the Swamp.

● A third strategy is to test sites that have yielded Early and Middle Archaic lithic artifacts to determine if deeply buried Paleoindian period sites are underneath. Such information would inform future survey strategies in the Swamp (e.g., is shovel testing adequate to locate Paleoindian sites in all areas of the Swamp?). Still another survey strategy is to search for wet sites. We know that during the Archaic period at least some cultures buried their dead under water in shallow (?) ponds. Such burials have been found in peat deposits in ponds and wet areas. The peat deposits in the Swamp—some of which have been mined—should be examined. Other wet sites may exist, debris and settlement areas inundated when rising ground water tables raised the levels of lakes and rivers. Elsewhere in Florida such sites have been found as extensions of land sites adjacent to the water bodies. There also is the possibility that aboriginal canoes might be found in the floor of lakes in the Green Swamp. Low water stands, such as those in 1999-2000 in Florida, offer opportunities to search for wet sites and canoes.

● Lastly, the contention by the Peninsula Archaeological Society, Inc., that some of the chert flakes observed in the Swamp are actually spalls resulting from forest fires deserves consideration and either supported or disproved.
RESEARCH QUESTIONS

Some of the research questions discussed here are general, while others are pertinent to a specific culture. Even so, they are grouped in broad categories, e.g., Chronology, Settlements and Settlement Patterning, Technology, etc. (it should be noted many questions do not fit neatly into a single category and there are redundancies). Research questions for the study of Seminole sites are presented separately.

Paleo-Environmental Reconstructions

* To fully understand the nature and tempo of the human occupation of the Swamp we must understand the environmental changes that took place in the past, especially in the water regime. Such data will have to be gathered in conjunction with specialists from other disciplines. Again, a cooperative effort among various state agencies, the water management district, and archaeologists is warranted. Specific questions related to environmental changes are contained in the sections which follow.
Chronology

Though the general cultural chronology for the Green Swamp can be derived from what is known about surrounding areas, the chronology for the Swamp remains to be documented; there is a dearth of radiocarbon dates from Swamp sites. The collection of dates is, of course, not a primary goal of research, but dates should be routinely gathered as tools to assist in answering other research questions.

- In Florida in general there are relatively few dates from land (as opposed to inundated or drowned) Paleoindian and Archaic period sites. Because many such sites recorded for the Swamp appear to be single component and are relatively small, Swamp sites offer the opportunity to provide absolute dates for specific assemblages that were deposited at discreet “moments in time.” Such dates would be important not only for Paleoindian and Archaic period sites, but for dating sites of most recent times that contain ceramic assemblages.

- Several chronological problems that might be approached through research in the Green Swamp are noted in the historic contexts developed for the Division of Historical Resources Comprehensive Plan. For instance, the development of the post-Archaic Central Gulf Coast sequence of Deptford/Perico Island(?), Manasota, late Weeden Island, and Safety Harbor needs to be verified through dating changing ceramic attributes and types [and see Luer and Almy (1982), Mitchem (1986), and Mitchem and Welch (1983)]. Another post-Archaic chronological problem related to artifact assemblages can be seen in the North Penninsula Gulf Coast region which is characterized by great areal ceramic diversity. Is such diversity reflective of temporal differences or are there different ethnic and/or socio-political entities who had differing ceramic
Assemblages? Small, single component sites like those documented for the Swamp may be ideal for addressing this problem (and can specific Swamp camp sites be tied to coastal sites?).

- As noted above, the tempo and intensity of human use of the Green Swamp most likely is related to past environmental changes, especially changes in water availability and vegetation. Were there periods in the past—e.g., at the end of the Pleistocene and at the beginning of the Holocene—when the Swamp contained wetter and more hospitable locales than many other areas of Florida? Over time, did different water regimes in Swamp locales (low wet vs. higher, less wet) have different temporal and cultural occupations? Again, the nature of the Swamp and its documented sites present archaeologists with a unique opportunity to focus on the relationships among early people and their environment. Such data, when combined with information from Harney Flats and from the Aucilla River Paleoindian and Early Archaic sites, promise to add immeasurably to our understanding of the early human occupation of the Americas.

- An initiative in this regard may be to establish a GIS database of all known diagnostic points and all potsherds from Swamp sites. Examining the distributions relative physiographic phenomena may produce interesting results. Such specific projects might well be done by graduate student theses or dissertations, funded by Division of Historical Resources and guided in part by the suggested Green Swamp Archaeology working group.

**Settlements and Settlement Patterning**
• What exactly are the small “extractive camps” so prevalent in the Swamp? Are they the result of very short-term occupations and for what purpose were they utilized? Careful excavation of a sample of such sites certainly is warranted. In his paper “Beyond Technology and Function: Assessing the Research Significance of Lithic Scatters Sites in Florida” Robert J Austin (2001) lays out a host of ideas that can be addressed through excavation of such sites.

• Other testable hypotheses need to be derived from the literature and tested in the Green Swamp. Certainly it would be important to test those sites which contain faunal and floral remains and other evidence that provide evidence beyond lithic and ceramic artifacts. Such materials could also help to answer questions about the seasonality of “extractive camps” and whether or not seasonality changed over time.

• To date, though sites have been identified that appear to be indicative of other than short-term use, it has not yet been shown that they are not the result of multiple short-term occupations. **Sites with house patterns, storage pits, dense middens, and other evidence indicative of long-term settlements have not yet been investigated.** Do such features exist in Swamp sites, or in only select portions of the Swamp? Are village sites present and where? Such questions are, of course, related to questions of past environmental change.

• For sites of all pre columbian periods we need to understand how the small Swamp sites articulate with larger, presumed village sites that lie outside the region, e.g., on the Gulf coast and among the lakes of central Florida. One way to do that might be to examine clay sources and chert sources to determine if they are the same both for Swamp and other sites.
Several sites have been identified as Paleoindian. Do Paleoindian sites exist in the swamp? What is their relation to past water availability, e.g., are they in karstic areas where water collected during periods at the end of the Pleistocene when the environment was drier than at present? Or did other areas of the Swamp hold water, providing potential camp locations for Paleoindians? How do Paleoindian sites articulate with the Paleoindian occupation at Harney Flats? Can analysis of chert sources help to answer questions about the movement of Paleoindians within geographical regions and within various types of sites (e.g., camps vs. the more intensive occupation suggested by Harney Flats)? Are there indeed kill sites and base camps? How nomadic or sedentary were the Paleoindians?

For northern Florida it has been suggested that late Paleoindian and Early Archaic peoples utilized the same sites amid a gradual transition from the Pleistocene and former culture into the Holocene and later Archaic cultures? Is such a transition reflected in the Swamp and do the data from such sites—e.g., types of artifacts—support the contention that Paleoindian and Early Archaic peoples were carrying out the same activities?

In Florida, a number of post-500 B.C. culture regions have been defined (Milanich 1994), several of which are hypothesized to intersect the Green Swamp. Is that true? Is there indeed a correlation between a culture and certain physiographic regions, e.g., at Swamp St. Johns sites located in the northeast portion of the Swamp where there are open water lakes like those of central Florida; are late Withlacoochee region Safety Harbor sites restricted to the Withlacoochee River drainage in the Swamp?
The problem of “border regions” or “ceramic transition regions” in post-500 B.C. Florida has been recognized. In such areas, such as the Green Swamp, ceramics from two or more cultures are present at a site and are apparently unstratified or otherwise non-patterned in their distribution. Do such zones represent a fluctuating border between cultures, each alternately advancing and retreating geographically in synchronization to the influence of the other culture and thus true geographical "transitional" areas, or are such zones actually a third, distinct region with real social and political groups distinct from bordering cultures but exhibiting traits commonly associated with their neighbors? This is a very interesting question that has ramifications for our understanding of all of Florida.

Several quarry sites have been identified in the Swamp. Building on the work of Samuel Upchurch (reported in Hardin and Brooks 1984; and see Austin 1997), chert source signatures for them should be developed. Those data will be pertinent to future research in the Swmap as well as elsewhere in Florida. Excavation of a sample of quarry sites to study the process of chert mining and the manufacture of lithic tools should be done. What differences exist over time? Is the range of reduction and knapping techniques represented in the collections from Swamp sites? Are people coming to the quarries from outside the region?

**Economy, Subsistence, and Health**

Few sites in the Swamp have yielded bones of animals and no paleo-floral remains have yet been identified. The site with the best context for faunal remains is 8SM23 (Hardin and Brooks 1984), thought to be a Transition period midden.
reported from sites (several excavated by the Peninsular Archaeological Society, Inc) are not as certain. However, the possibility that some Archaic period sites in the Swamp contain preserved food bone certainly warrants attention. There is a general lack of subsistence data from small camps dating from the Paleoindian and Archaic periods in interior Florida (as emphasized in the Division of Historical Resources Comprehensive Plan). Faunal remains also promise to inform lithic-use studies as well as helping to answer the question of what the small “camp” sites in the Swamp are. The reports by the Peninsular Archaeological Society of faunal remains should be followed up.

It is a bit surprising that middens containing faunal remains have not been found in the Swamp in riverine settings near the Withlacoochee River nor around the open water lakes in the northeast section of the Swamp. If such middens do exist, it would be expected that they would contain faunal (and floral) remains. If so, then questions regarding subsistence and seasonality could be addressed.

Questions regarding health and other questions regarding diet require analysis of human osteological remains. Should it become necessary to excavate human skeletal remains, analysis should be done according to established protocols (see Buikstra and Ubelaker 1994). Human populations are an excellent source of information about nutrition and health, especially when subjected to morphological, isotopic, and trace element analysis. There is a growing literature on this subject from Florida which provides a comparative context.

Social Organization

What type of groups occupied each of the many small sites in Green Swamp? Were they nuclear families? Several hunters? Did the composition of groups change over time as use of the
Swamp changed, e.g., from bands of mobile hunter-gatherers to even smaller groups, individuals traveling into the region from longer-term settlements to hunt or extract specific resources? These all are important questions that relate to other regions in Florida and are basic to understanding the archaeology of the Swamp. We have much to learn about the social organization of all pre-columbian Florida groups. At this point, our knowledge about the social organization of human living in the Swamp is based entirely on the presence of small “extractive camps,” and the assumption they were occupied intermittently by very small numbers of people.

- The post-500 B.C. ceramic assemblages along the North Peninsular Gulf coast appear to be highly differentiated, perhaps reflecting a lack of social and political unification beyond the villages level. Is such a pattern found in the Swamp?

- Should burial mounds in the Swamp ever be investigated they have the potential to provide models of social organization.
Technology

Excavations at quarry sites, in conjunction with analysis of lithic artifacts from other sites, can provide samples of tools for diachronic analysis of chert mining and the manufacturing of tools. Is thermal altering present?

- Analyses of tool use are needed. Does it change though time or by culture? If so, how does that reflect differing use of the Swamp?

- Building on the work of Samuel Upchurch, chert source analysis studies can provide information on movements of people within the Swamp. One project is a database of sourced tools matched to quarry sites and tied to a chronology. Such a project might be undertaken as a graduate student thesis or dissertation.

- Though our descriptions of individual lithic types is reasonably well-developed, there needs to be more emphasis placed on tool assemblages. Can we identify a “hunting” assemblage and differentiate it from a “butchering assemblage” or a “cane basket-making” assemblage? Do such assemblage change through time and by culture?

- How do the lithic assemblages found at Swamp sites differ from presumed contemporary assemblages elsewhere in Florida? What does that mean? For instance, why aren’t there Early Archaic Arrendondo points at Swamp sites? Do different assemblages reflect ethnicity or other factors, such as different uses?
Can fossilized corals be sourced?

Are Paleoindian and Archaic period projectile points really points or are they hafted knives?

It has recently been suggested that the freshwater sponge spicules in St. Johns ware are not naturally occurring in the potting clays but were deliberately added. Are (were?) there freshwater sponges in the Green Swamp and is there evidence for their use as temper?

Can the limestone and Fullers Earth used as temper in aboriginal ceramics be sourced?

Technological studies of clays and pottery should be carried out to address questions pertaining to locus of manufacture, exchange, and general ceramic ecology.

SEMINOLE RESEARCH QUESTIONS

Our archaeological knowledge of Seminole sites in Florida has increased dramatically in the last fifteen years. That information includes the knowledge that in the first decades of the nineteenth century, prior to and during the Second Seminole War, some Seminole villages were located in remote locations, such as the wetlands of the Cove of the Withlacoochee. Documentation for literally hundreds of Seminole sites exists (Cline 1974; Fairbanks 1974; Mykell 1962;), including at least one site in the Swamp. Seminole archaeology might be viewed as a subset of the overall Green Swamp archaeology program and it deserves a specialized archaeology working group which includes representatives of the Florida Seminole and Miccosukee tribes.
● Historical research should be carried out to document Seminole towns and encampments within the Swamp.

● Surveys to locate the sites should follow. In the course of other research in the Swamp archaeologists should be aware that non-documented Seminole villages may exist as well as smaller sites associated with other activities.

Once Seminole sites are found consultations should follow concerning research and preservation goals. Research goals might include those highlighted in the DHR Comprehensive Plan, including:

● Can Seminole ceramics from sites that are chronologically well-document be seriated to provide a chronological tool for dating other sites?

● Do ceramic differences exist among contemporary villages, households, or other kin-based groups?

● Subsistence data derived from excavations is needed to supplement the historical records. Are their changes over time?

● Are early towns dispersed or nucleated?
Was there a shift from squareground towns to clan camp farmsteads as suggested by Weisman (1989)?

What do Seminole buildings look like? Do they change over time?

Is there evidence that increased trade with Europeans and Anglos led to the increased importance of matrilineal clan camp farmsteads and offered new entrepreneurial (and social) opportunities for individuals?

**SUMMARY: RESEARCH**

The opportunities for archaeological research in the Green Swamp are many and the efforts required to answer many of the questions outlined here may seem to be immense. Certainly, it would take many archaeologists backed by tremendous resources to carry out a thorough research program in the Swamp. On the other hand, archaeological research is on-going and more is certain for the future. A planned and focused research approach can only help to stimulate more economically efficient research and more productive results.

Six ideas presented above are important enough to reemphasize:

- Archaeologists and representatives of private corporations, state agencies, and other appropriate agencies involved in research in the Green Swamp should form a Green Swamp Archaeology working group to coordinate research and educational efforts and to formulate and implement ideas about how best to garner and use resources. The working group might consider collaboration with universities to involve graduate students in the research. [In return for providing universities with research opportunities for graduate students, the universities might
consider courtesy academic appointments for archaeologists employed by private firms so they can have direct input into guiding graduate student research. The working groups might consider adding other scientists whose research pertains to understanding the paleoenvironment of the Green Swamp (see below).

- The working group should include representatives of the Florida Seminole and Miccosukee tribes and other American Indians groups as appropriate.

- The working groups should consider how to create an entity (not-for-profit) that would receive special category and grant-in-aid funds from the Florida Division of Historical Resources.

- The presence of so many small sites in the Green Swamp, sites generally labeled “extractive camps” presents research opportunities. Such sites have been little studies in Florida. Also, small sites whose depositional history is uncomplicated and which reflect very short occupations may contain types of data that would help in interpreting more complicated and larger sites outside the Swamp.

- A major goal of Green Swamp research should be to understand the paleoenvironment, changes that have occurred over time, and the effect of those changes on human occupations. Especially for the late Pleistocene and early Holocene, such data would be a major contribution, one important to all areas of Florida.
● The working group should consider a GIS-related database for the entire Green Swamp, including site and artifact data.

PRESERVATION GOALS

The Green Swamp presumably has suffered a loss of sites in the twentieth century due to development, clearing for pasture, drainage, logging, clearing for pine plantations and citrus groves, other agricultural activities, and mining for sand and peat. Managing those resources which remain—and which are extensive—requires detailed knowledge of those same resources, information largely lacking at the present time. Preservation efforts must proceed in tandem with a program of research, as outlined above. Here are some activities that should be undertaken to aid preservation and management of cultural resources.

● State and other agencies responsible for managing land in the Green Swamp should have archaeological surveys of those lands carried out. Those surveys should be coordinated through the working group and tied to research and management needs.

● Excavation of sites of various types are needed. Testing of potentially deeply stratified sites should be done.

● The sites found and investigated by the Peninsula Archaeological Society should be revisited and recorded and efforts should be made to reanalyze the collections excavated from the sites and put them in public ownership, if possible.
• There should be an inventory of other extant collections from the Swamp.

• The working group should consider a central repository for all collections and data and work to consolidate existing materials.

• Consideration should be given to nomination of the Green Swamp as a National Register of Historic Places district or other appropriate designation.

• Cooperation is needed for public acquisition of lands that contain significant archaeological sites.

• An educational campaign on the importance of the Green Swamp’s cultural resources and the information gleaned from those resources should be undertaken. Ideally, this would be a joint effort involving local historical and anthropological organizations, museums, corporations, and state and other agencies. Such a project could be a pilot for similar programs elsewhere in the state.

REFERENCES CITED

Anonymous


Archaeological Consultants, Inc.
1991  Cultural Resource Survey of Two I-4 Rest Areas in Polk County, Florida.


Athens, William P.


Austin, Robert J.


Baird, Donald


Buikstra, Jane E., and Douglas H. Ubelaker
1994  *Standards for Data Collection from Human Skeletal Remains*. Arkansas Archeological Survey Research Series No. 44. Fayetteville, AR.

Bullen, Ripley P.


Chance, Marsha A.


Cline, Howard F.


Daniel, Randy


Daniel, I. Randolph, Jr., and Michael Weisenbaker

Bureau of Historic Sites and Properties, Florida Division of Archives, History and Records Management, Florida Department of State. Tallahassee.


Dickinson, Martin, and Lucy B. Wayne


Division of State Planning, Department of Administration, and Bureau of Land Planning


Ecological Consultants, Inc.


Ecology and Environment, Inc.

1994 [Sunshine Pipeline survey, Polk County.]

Estabrook, Richard W., and Christine Newman

1984 *Archaeological Investigations at the Marita and Ranch House Sites, Hillsborough County, Florida*. University of South Florida, Department of Anthropology, Archaeological Report 15. Tampa.

Fairbanks, Charles H.

Gagel, Katherine


Grange, Roger T., Jr., and J. Raymond Williams


Griffin, John W.


Hardin, Kenneth W., and Mark J. Brooks


Janus Research


1999 Cultural Resource Assessment Survey of the Gulfstream Natural Gas System Pipeline.


Johnson, William G.


Luer George M., and Marion M. Almy


McPherson, Benjamin F.


Milanich, Jerald T.


Milanich, Jerald T., and Charles H. Fairbanks


Mitchem, Jeffrey M.


Mitchem, Jeffrey M., and Brent R. Weisman


Mitchem, Jeffrey M., and James M. Welch


Mykell, Nancy

Panamerican Consultants, Inc.

1999 Cultural Resource Assessment of Williams Gas Pipelines, Proposed Buccaneer Gas Pipeline, Florida.

Payne, Claudine, and J. T. Milanich, eds.


Pilcher, H. G.


Pilcher, H. G., and David Howell

1986 Aboriginal Sites along the Natural Drains and Riverine Areas of the Green Swamp, Florida. Early Man (Published by the Peninsula Archeological Society, Inc.) 8(1):6-42


Piper Archaeological Research, Inc.

1990  Cultural Resource Assessment Survey of the Proposed Lexington Park DRI, Phase One, Development Site, Polk County, Florida.

1991  A Cultural Resource Assessment Survey of the Four Bifurcated Media Areas within Interstate 4 (SR 400), Polk County, Florida.

Piper, Jacquelyn G.


Piper, Harry M., and Jacquelyn G. Piper


Piper, Harry M, Jacquelyn G. Piper, and Kenneth W. Hardin


Pride, R. W., F. W. Meyer, and R. N. Cherry

Russell, Barry E., and Garlon E. Bray


Southwest Florida Water Management District (Staff)


Watts, William A., Eric C. Grimm, and T.C. Hussey


Wayne, Lucy B., and Martin Dickinson

1985 *Archaeological Mitigation of Two Seminole Sites in Marion County, Florida*. Gainesville: Water and Air Research, Inc.

Weisman, Brent R.


Wharton, Barry R.


Willey, Gordon R.

1949 *Archeology of the Florida Gulf Coast*. Smithsonian Miscellaneous Collections 113. Washington, DC.

Williams, J. Raymond