WARM MINERAL SPRINGS PARK MASTER PLAN
ARCHAEOLOGICAL BACKGROUND
RESEARCH SUMMARY REPORT

Prepared for:
The City of North Port
4970 City Hall Boulevard
North Port, Florida 34286

1971 Excavation at Warm Mineral Springs
Courtesy of State Archives of Florida, Florida Memory

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1971 Excavation at Warm Mineral Springs
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Prepared by:
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FEBRUARY 2019

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REVISED DRAFT

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February 2019

EXECUTIVE SUMMARY

At the request of the City of North Port, Janus Research conducted background research of the Warm Mineral Springs Park (the Park) project area in Sarasota County, as a sub-consultant to Kimley-Horn and Associates. The review was conducted in support of a Master Plan for the Park being conducted for the City of North Port. Relevant archaeological literature and files available through the Florida Master Site File (FMSF) were reviewed to develop an understanding of previous archaeological investigations and previously recorded archaeological sites within the 80-acre Park. Numerous archeological investigations have focused on the spring and environs and have resulted in the identification of two archeological sites. These include Warm Mineral Springs (WMS), which is listed in the *National Register of Historic Places* (National Register) and a precontact lithic scatter located south of WMS. The lithic scatter was located south of WMS in the area outside of a 325-foot archaeological sensitivity buffer that surrounds WMS. The Cultural Resource Management (CRM) firm that identified the lithic scatter considered it National Register–ineligible.

The summary of the extensive archaeological studies at WMS and the surrounding area that follows indicates that, apart from the National Register–listed WMS and its associated buffer, the surrounding acreage does not contain dense concentrations of artifacts or archaeological sites. The development of a Master Plan, is therefore, appropriate to direct the types and locations of activities in the upland areas as well as the significant WMS and its small buffer that will balance development needs with best management practices for the preservation of significant archaeological properties. Included in these best practices will be a process whereby any subsurface disturbance near the spring or within the archaeological buffer will ensure that unanticipated finds are

either discovered during archaeological monitoring or an appropriate notification process will be implemented.

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INTRODUCTION

At the request of the City of North Port, Janus Research conducted archaeological and historic resources literature and background research of the Park project area in Sarasota County, as a sub-consultant to Kimley-Horn and Associates. This summary report is in support of a Master Plan for the Park being conducted for the City of North Port. This review is intended to assist the City of North Port in balancing 'future development needs with best management practices for the preservation of significant archaeological properties.' The objective is to provide summary information regarding previous investigations and previously recorded archaeological sites within the project area. Based on this and the conceptual master plan (Attachment 1), recommendations are provided to help ensure the protection of the important archaeological resources associated with WMS.

The project area encompasses approximately 80 acres of land located at 12200 San Servando Avenue in North Port, Florida (Attachment 2). It is located in Section 25 of Township 39 South, Range 20 East, on the Myakka River (1973 Photorevised [PR] 1987) United States Geological Survey (USGS) quadrangle map (Attachment 3). The property is approximately 2 miles east of the Myakka River and 0.7 miles north of US 41 in an area surrounded by modern residential development. The Sarasota County property appraiser identified the Park as parcel 0769070014 and the official legal description is as follows:

> THOSE LANDS LYING & BEING IN N 1/2 OF SEC 25-39-20 BEING DESC AS, BEG AT NE CORNER OF INTERSECTION OF TRIONFO AVE & ORTIZ BLVD, BEING THE SW CORNER OF LOT 10 BLK 50 WARM MINERAL SPRINGS UNIT 86, TH NLY ALONG ELY R/W LINE OF ORTIZ BLVD TO ITS INTERSECTION WITH SLY R/W LINE OF MOSCOGEE RD TH NELY

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SUMMARY OF ARCHAEOLOGICAL SITES

Warm Mineral Springs Site – 8SO19

The Warm Mineral Springs Site (8SO19) was listed on the National Register in 1977 and is listed in Sarasota County's Significant Historic Resource List (Section 66-74 of Sarasota County Code). The site is a sinkhole with submerged burials and associated artifacts (Attachment 4). The site has been dated to 11,000 years before present (BP) (Cockrell and Murphy 1978).

The sinkhole measures approximately 240 feet (72 meters) in diameter and is approximately 225 feet (70 meters) deep. The sinkhole is hourglass-shaped and the burials are located on a ledge located 42 feet (13 meters) below the surface. Human remains were first recovered from the sinkhole in 1960. Investigations of archaeological deposits within the sinkhole and caves took place in the 1970s and 1980s. Archaeological investigation of the sinkhole

recovered preserved human remains, bone tools, shell tools, stone tools, animal bones, nuts, leaves, charred wood, and pollen.

The National Register and FMSF boundaries for the site are limited to the sinkhole. Cultural remains have been recovered from the area surrounding the sinkhole, but this area is not included within the boundary of the Warm Mineral Springs Site (8SO19). Archaeological testing has been conducted in the area immediately surrounding the sinkhole, but the locations of that testing are not included in any published report. Field notes for the work is archived at the Florida Bureau of Archaeological Research (BAR) in Tallahassee.

Flakelet Site - 8SO2667

The Flakelet Site (8SO2667) is a small lithic scatter. This site is situated on a sandy ridge approximately 650 feet (200 meters) south of the sinkhole (Attachment 4). The site measures 12.5 meters by 25 meters in size. It is represented by 11 chert flakes from five shovel tests. The flakes were recovered between 60 to 100 cm below surface (cmbs). Based on the small size of the flakes, the site likely represents a place where stone tool maintenance occurred, perhaps during a single episode. The lack of diagnostic artifacts prevents assigning the site to a cultural period. The significance of this site has not been evaluated by any federal or state agency.

Archaeological Occurrences

Archaeological Occurrences (A.O.) are isolated finds (one or two artifacts) that are non-diagnostic in nature and are typically not significant. Occurrences are likely to represent a single accidental event and do not yield valuable information about human behavior in the past. Archaeological occurrences are not recorded with the FMSF but are described in survey reports.

Four archaeological occurrences have been identified within the Park (Attachment 4). The occurrences are located between 400 and 800 feet (125 to 250 meters) to the east and to the south of the sinkhole. Two flakes were recovered from each of the two of the occurrences to the east of the sinkhole (AO #1 and AO #2). The occurrences to the south of the sinkhole (AO #3 and AO #4) each consisted of a single flake.

ENVIRONMENTAL CONTEXT

WMS is located in the Gulf Coastal Lowlands physiographic province (White 1970). Prominent features of the topography of the Gulf Coastal Lowlands south of the Tampa Bay area are five broad marine terraces that were formed during interglacial periods by the advances and retreats of the Pleistocene seas. Subsequent exposure to wind erosion, downcutting and meandering of streams and rivers, and subsidence of the underlying limestone has helped shape the surface topography of these remnant terraces. As a result of these processes of physical weathering, the terrain is generally flat to gently sloped with the present natural land contours ranging from 0 to 100 ft (0 to 52 m) above mean sea level in Sarasota County (USDA 1991). Low sand ridges parallel to the coast form slight, rolling hills. The low elevation creates a high-water table that results in poor drainage and an abundance of wetlands in the region (McNab and Avers 1996).

Since the termination of the Pleistocene Epoch at the end of the Wisconsin glaciation, roughly 11,550 BC, Florida has undergone significant climatic and environmental change. Although Florida was not glaciated, the glacial conditions associated with the Laurentide ice sheet affected the paleoclimates of Florida. Paleobotanical evidence suggests that between 31,050 and 11,550 BC, Florida was dry, windy, and cool (Whitehead 1973). By the early Holocene, roughly 11,550 BC, the climate in west-central Florida had warmed and it is

likely that precipitation increased; as a result, the aquifer and the shallow, perched lake levels rose. Temperatures were probably warmer than present (Wright 1971; Watts 1975, 1980) and rainfall was probably greater relative to the preceding period (31,050 to 11,550 BC); however, conditions remained more arid than at present. By 4050 BC, the Floridan Aquifer reached modern levels (Dunbar 1982:98). This resulted in fresh water discharge from springs and spring-fed rivers.

WMS was formed when sea levels and the aquifer were lower. The lower aquifer reduced support of the overlying limestone. The sinkhole was formed with the collapse of a cavern in the Miocene age limestone (Rupert 1994). Initially it was a dry sinkhole but after the rise in the aquifer, numerous springs and seeps developed and slowly filled the sinkhole.

ARCHAEOLOGICAL CONTEXT

Precontact peoples have inhabited Florida for at least 14,000 years. The earliest cultural periods are pan-Florida in extent, while later cultures exhibited unique, regional traits. The project area lies within the Central Gulf Coast cultural region as defined by Goggin (1947). This area has been divided into two closely related cultural regions by Milanich and Fairbanks (1980:24–26): The North Peninsular Gulf Coast region, stretching from Apalachee Bay to Pasco County, and the Central Peninsular Gulf Coast region, which extends from Pasco County to Charlotte Harbor (Figure 1). The dividing line in mid–Pasco County is somewhat arbitrary, but present evidence suggests that the majority of post–AD 100 precontact pottery found north of this line consists of limestone-tempered Pasco ware while the majority to the south is tempered with varying amounts of sand (Milanich 1994:211).

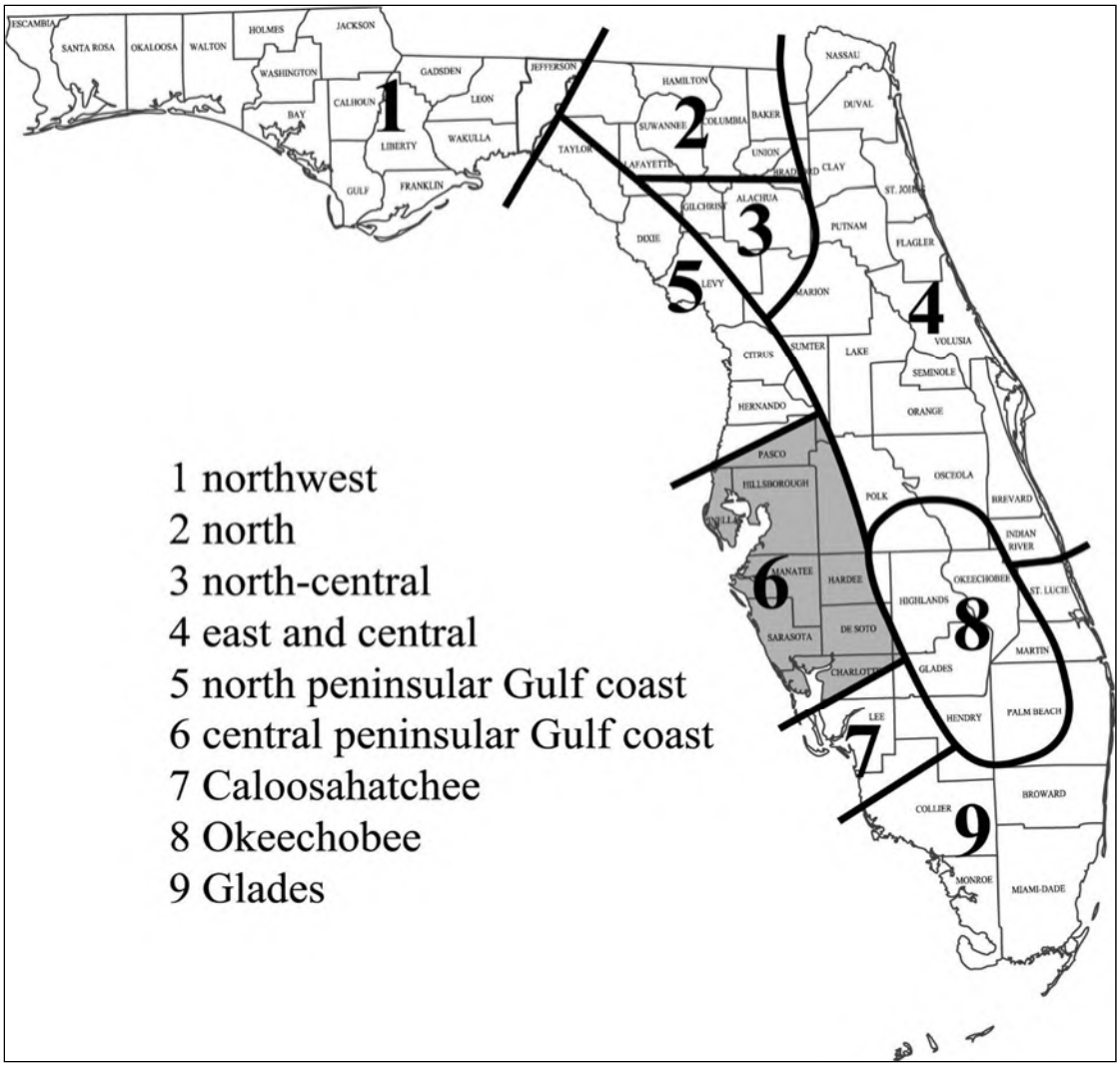

Figure 1: Central Peninsular Gulf Coast Cultural Region

Paleoindian Period (12,000–7500 BC)

The earliest period of precontact cultural development dates from the time people first arrived in Florida. The greatest density of known Paleoindian sites is associated with the rivers of northern and north-central Florida where distinctive lanceolate projectile points and bone pins have been found in abundance in and along the Santa Fe, Silver, and Oklawaha Rivers (Dunbar and Waller 1983). The majority of these have been found at shallow fords and river crossings where the Native Americans presumably ambushed

Pleistocene mammals. The bones of extinct species such as mammoth, mastodon, and sloth are commonly found preserved in the highly mineralized waters of the area's springs and rivers. Despite early claims to the contrary, evidence from early sites such as Sloth Hole, Old Vero Beach Man, and Harney Flats strongly support the contemporaneity of Paleoindians and these extinct mammals (Daniel and Wisenbaker 1987, Hemmings 1999, Halligan 2012, McFadden et al 2012, Hemmings et al 2014, Anderson et al 2015).

The climate of Florida during the late Pleistocene was cooler and drier than at present, and the level of the sea was as much as 160 ft lower (Milanich 1994:38–41). Rising sea levels are assumed to have inundated many coastal sites dating to the Paleoindian and Early Archaic periods (e.g., Ruppe 1980; Goodyear and Warren 1972; Goodyear et al. 1980; Dunbar et al. 1988). It is difficult to determine the dependence of Paleoindian groups on estuarine and littoral resources because little is known of these submerged archaeological sites.

The prevailing view of the Paleoindian culture, a view based on the uniformity of the known tool assemblage and the small size of most of the known sites, is that of a nomadic hunting and gathering existence, in which now-extinct Pleistocene megafauna were exploited. Settlement patterns were restricted by availability of fresh water and access to high-quality stone from which the specialized Paleoindian tool assemblages were made. Waller and Dunbar (1977) and Dunbar and Waller (1983), from their studies of the distribution of known Paleoindian sites and artifact occurrences, have shown that most sites of this time period are found near karst sinkholes or spring caverns. This suggests a somewhat more restricted settlement pattern than postulated for other Paleoindian groups in eastern North America. Paleoindian settlement appears to have been "tethered" to sources of fresh water such as rivers and

springs (Daniel 1985:264; Daniel and Wisenbaker 1987:169) and to cryptocrystalline lithic sources (Goodyear 1979; Goodyear et al. 1983).

Excavations in Hillsborough County have contributed to the development of increasingly sophisticated models of early hunter-gatherer settlement (e.g., Daniel 1985; Chance 1983), which take into account the adaptive responses of human populations to both short- and long-term environmental change. These models suggest that some Paleoindian groups may have practiced a more sedentary lifestyle than previously believed (Daniel and Wisenbaker 1987). For instance, evidence from the Harney Flats site in the Hillsborough River drainage basin indicates that Suwannee points were being manufactured from locally available materials (Daniel and Wisenbaker 1987). Although they noted that this was contrary to Gardner's (1977) argument that the availability and location of fine-grade cryptocrystalline materials dictated Paleoindian settlement, their results suggested that Paleoindian peoples, much like those of later cultures, moved about within defined, restricted territories.

The majority of Paleoindian sites in Florida consist of surface finds. The most widely recognized Paleoindian tool in Florida is the Suwannee point, typically found along the springs and rivers of northern Florida. Evidence from Harney Flats has provided information on the manufacturing process of Suwannee points: first, a blank was struck from a chert core; then, the blank was bifacially worked into a preform; finally, the preform was knapped into the finished point (Daniel and Wisenbaker 1987:44–53). Other points, including Simpson and Clovis points, are found in lesser numbers. Some of these, and other Paleoindian lanceolate points, were hafted by attaching them to an ivory shaft that was, in turn, attached to a wooden spear shaft (Milanich 1994:48–49).

Other Paleoindian stone tools are known from the Harney Flats site (Daniel and Wisenbaker 1987:41–97), the Silver Springs site in Marion County (Neill 1958), and other northern Florida sites (Purdy 1981:8–32). These Paleoindian tools tend to be unifacial and plano-convex, with steeply flaked, worked edges (Purdy and Beach 1980:114–118, and Purdy 1981). Bifacial and "hump-backed" unifacial scrapers, blade tools, and retouched flakes, including spokeshaves, have been found at these sites (Purdy 1981; Daniel and Wisenbaker 1987:62–81, 86–87). However, some tools are little more than flakes or blades that were struck from cores, used, and discarded (Milanich 1994:51). Other stone tools include an oval, ground stone weight that was found at the Page/Ladson site from a stratum dated to 12,330 years ago (Dunbar et al. 1989:479). It is thought to represent a bola weight, which is a stone weight attached by a leather thong and thrown to bring down water birds and other game (Milanich 1994:51).

The Dunbar et al. (1988) review of Paleoindian site/point locations in western Florida, and results from excavations at the Harney Flats site, reveal that 60 percent of the site clusters were located in and around mature karst river channels. In fact, 90 percent of all Paleoindian sites/points were located around karst depressions within Tertiary limestones. The most recent distribution maps of Paleoindian points in Florida show that 92 percent of Clovis and Suwannee projectile points are found in the region of Tertiary limestone features (Dunbar 1991).

Data on Paleoindian subsistence is scarce; although such data are dramatic where encountered. The best evidence consists of the remains of a giant land tortoise recovered from the Little Salt Spring site in Sarasota County (Clausen et al. 1979). Although human skeletal remains were associated with extinct Pleistocene fauna at Devil's Den (Martin and Webb 1974), Milanich (1994)

suggests that sloth, mastodon, mammoth, and bison probably formed part of the Paleoindian diet. There is very little information upon which to reconstruct the Paleoindian subsistence base. If, as Daniel and Wisenbaker (1987) suggested, there was seasonal movement along the river valleys, then not only is a seasonal littoral focus likely, but it also becomes likely that the majority of Paleoindian sites exist underwater (Dunbar 1988; Dunbar et al. 1988), rendering subsistence data for half of the Paleoindian year mostly inaccessible.

In addition to Little Salt Spring and Warm Mineral Springs, another Paleoindian inland spring site, a Paleoindian component was identified at the Myakkahatchee site (8SO397), located in the City of North Port (Luer et al. 1987:137). Reported artifacts recovered from the site include one broken Simpson point, one Tallahassee point, one Bolen Point, one Florida Spike, and three Florida Morrow Mountain Knives (Luer et al. 1987:146).

Archaic Period (7500–500 BC)

The Archaic period of cultural development was characterized by a shift in adaptive strategies stimulated by the onset of the Holocene and the establishment of increasingly modern climate and biota. It is generally believed to have begun in Florida around 7500 BC (Milanich 1994:63). This period is further divided into three sequential periods: the Early Archaic (7500–5000 BC), the Middle Archaic (5000–3000 BC), and the Late Archaic (3000–500 BC). The Late Archaic is subdivided into the Preceramic Late Archaic (3000–2000 BC) and the Orange Period (2000–500 BC).

Early Archaic (7500–5000 BC)

Cultural changes began after about 8000 BC during late Paleoindian times with the onset of less arid conditions, which correlate with changes in projectile-point types, specifically a transition from lanceolate to stemmed varieties. Beginning about 7500 BC, Paleoindian points and knives were replaced by a variety of stemmed tools, such as the Kirk, Wacissa, Hamilton, and Arredondo types (Milanich 1994:63).

Kirk points and other Early Archaic diagnostic tools are often found at sites with Paleoindian components, suggesting that Early Archaic peoples and Paleoindians shared similar lifeways (Daniel and Wisenbaker 1987:33–34). However, it appears that the distribution of Early Archaic artifacts is wider than that of Paleoindian materials. Sites having both Paleoindian and Early Archaic components have been found to be largely restricted to natural springs and the extensive perched water sources of northern Florida. Early Archaic points are found in smaller numbers at upland sites in northern Florida where there is a lack of Paleoindian materials (Neill 1964; Janus Research 1999a:58–61). Although this patterning is largely based on evidence from Alachua and Marion Counties, there is no reason to believe that patterning is different elsewhere in interior northern Florida (Milanich 1994:64).

One Early Archaic wetland site that does not have a Paleoindian component is the Windover Pond site near Titusville in Brevard County. This site is a precontact cemetery consisting of over 160 burials in the natural peat deposits of what was, during the Early Archaic, a woody marsh (Stone et al. 1990:177). It is the most thoroughly excavated early precontact site in the East and Central archaeological area of Florida and has produced normally perishable items such as samples of cloth in which the dead were wrapped before burial, wood artifacts, preserved brain and other soft tissue, and samples of proteins

and mitochondrial DNA. Radiocarbon dates indicate that the interments were made in discrete episodes of short duration between 6000 and 5000 BC. This indicates that a single social group used the pond to bury their dead in one small area, the location of which was somehow marked or memorized. Later, another group, probably the descendants of the first group, again used the pond for burial. After 5000 BC, increasingly wetter conditions most likely made it too difficult to bury people in the peat of the pond bottom (Doran and Dickel 1988).

With the wetter conditions that began about 8000 BC and the extinction of some of the Pleistocene animal species that helped to sustain earlier populations, Paleoindian subsistence strategies were no longer efficiently adapted to the Florida environment. As environmental conditions changed, surface water levels throughout the state increased and new locales became suitable for occupation. Early Archaic peoples might be viewed as a population changing from the nomadic Paleoindian subsistence pattern to the more sedentary coastal- and riverine-associated subsistence strategies of the Middle Archaic period.

Middle Archaic Period (5000–3000 BC)

Throughout the Middle Archaic, environmental and climatic conditions would become progressively more like modern conditions, which appear by the end of the period, circa 3000 BC. During this period, rainfall increased, surface water became much less restricted and, as a result, vegetation patterns changed. The Middle Archaic period is characterized by increasing population and a gradual shift toward shellfish, fish, and other food resources from freshwater and coastal wetlands as a significant part of the subsistence strategy (Watts and Hansen 1988:310; Milanich 1994:75–84). Pollen evidence from Florida and south-central Georgia indicates that after about

4000 BC, a gradual change in forest cover took place, with oaks in some regions giving way to pines or mixed forests. The vegetation communities that resulted from these changes, which culminated by 3000 BC, are essentially the same as those found in historic times before widespread land alteration took place (Watts 1969, 1971; Watts and Hansen 1988).

The Middle Archaic artifact assemblage is characterized by several varieties of stemmed, broad-blade projectile points. The Newnan point is the most distinctive and widespread in distribution (Bullen 1975:31). Other stemmed points of this period include the less common Alachua, Levy, Marion, and Putnam points (Bullen 1968; Milanich 1994). In addition to these stemmed points, the Middle Archaic lithic industry, as recognized in Florida, includes production of cores, true blades, modified and unmodified flakes, ovate blanks, hammerstones, “hump-backed” unifacial scrapers, and sandstone “honing” stones (Purdy 1981; Clausen et al. 1975).

Additionally, thermal alteration, a technique in stone tool production, reached its peak during the Middle to Late Archaic periods. This technique was usually used in late stage tool production (Purdy 1971, 1981:78). However, Austin and Ste. Claire (1982:101–106) observed that, at the Tampa Palms site in Hillsborough County, very few thinning flakes were thermally altered. They noted that at this and other Archaic sites in the region, thermal alteration and the presence of silicified coral were correlated (Austin and Ste. Claire 1982:104; Daniel and Wisenbaker 1981, 1987). It is apparent that there was a preference for thermally altered coral for technological and aesthetic reasons; not only is it more easily worked, but also it may have been valued for its color and luster (Purdy 1971; Austin and Ste. Claire 1982:104). At the Harney Flats site, Daniel and Wisenbaker (1987:33–34) found a Middle Archaic

component with corresponding increases in the amounts of silicified coral and heat-treated lithic material.

Middle Archaic settlement patterns are believed to have followed the Early Archaic patterns until after circa 3000 BC, when settlement patterns shifted toward coastal and riverine resources. Daniel (1985:265) postulated that a seasonal dichotomy existed between upland and lowland Middle Archaic sites in the Central Peninsular Gulf Coast archaeological area. According to his model, aggregate base camps were located along the upland boundaries of the Polk Uplands and were occupied during the fall and winter months. These upland sites are thought to be larger and contain a greater variety of functionally defined tools. These sites should also contain tools related to "maintenance" activities.

Dispersed residential camps were occupied in the Coastal Lowlands physiographic zone during the summer months. Daniel (1985) predicted these lowland sites would be smaller, more numerous, and exhibit a smaller number, and a more limited variety, of tool types. These sites are thought to contain tools related to "subsistence" activities. The lack of tool forms at these sites may also reflect an orientation towards activities that did not require the use of stone tools.

Middle Archaic sites are found in a variety of locations, including, for the first time, freshwater shell middens along the St. Johns River and the Atlantic Lagoon. Middle Archaic sites have been found in the Hillsborough River drainage northeast of Tampa Bay, along the southwestern Florida coast, and in South Florida locales such as Little Salt Spring in Sarasota County. In addition, Middle Archaic sites occurred throughout the forests of the interior of northern Florida (Milanich 1994:76).

Three common types of Middle Archaic sites are known in Florida (Bullen and Dolan 1959; Purdy 1975). The first are small, special-use camps, which appear archaeologically as scatters of lithic waste flakes and tools such as scrapers, points, and knives. These sites are numerous in river basins and along wetlands and probably represent sites of tool repair and food processing during hunting and gathering excursions (Milanich 1994:78).

The second common site type is the large base camp. This type of site may cover several acres or more, and contains several thousand or more lithic waste flakes and tools. A good example of this type of site is the Senator Edwards site in Marion County (Purdy 1975; Purdy and Beach 1980). One implication of this type of site is that a greater variety of tools were being used in this period than in the preceding one. It is possible that a more sedentary way of life led to the development of more specialized tools. Some of the tools indicate woodworking activity, possibly related to constructing more permanent houses (Milanich 1994:78–79).

The third common type of site is the quarry-related site that occurs in localities of chert outcrops. Chert deposits often outcrop along rivers or around lakes and wetlands as erosion cuts through the soil to the underlying limestone bed. The resulting outcrops provided opportunities for native peoples to quarry this raw material for stone tool production. Some of these sites have also produced evidence of late period tool production, including large flake blanks, bifacial thinning flakes, blades, and unifacial and bifacial tools (Milanich 1994:78–79; Purdy 1975).

A new site type was later identified in Hillsborough County. The West William site (8HI509) was identified as containing deposits of faunal remains, pit features, and structural remains, while lacking in the typical tool pattern

commonly associated with upland sites (Austin et al. 2001:10). With these features, Austin et al. (2001:10) hypothesized that the site represents a seasonal congregation camp for the purpose of "social interaction, ceremonial feasting, and/or mate exchange."

Other less common site types include cave camps in northern Florida and wetland cemeteries. Examples of the latter site type include the slough burials at Little Salt Spring in Sarasota County (Clausen et al. 1979), the pond burials at the Bay West site in Collier County (Beriault et al. 1981), and the Republic Grove site in Hardee County (Wharton, Ballo, and Hope 1981). Like the Windover site of the Early Archaic peoples, these sites provide a glimpse of the range of objects used by Middle Archaic peoples such as antler, wood, and bone tools not preserved on land sites (Milanich 1994:82).

Although most of the Early and Middle Archaic cemeteries throughout peninsular Florida appear to have used aquatic environments, at least two exceptions are noted: the Tick Island and Gauthier sites. Interments at the Tick Island site, located in the St. Johns River basin, were made in an existing freshwater shell midden subsequently covered with a mound of sand (Bullen 1962). Over time, this process was repeated as other groups were interred. Later, post–Middle Archaic people re-used the site, depositing shell refuse on top of the burial area (A. K. Bullen 1972:166; Jahn and Bullen 1978).

The other unique Middle Archaic burial site is the Gauthier site, located in Brevard County about six miles from the coast. Interments were made by creating a shallow depression in the soil and laying bodies in it, at times, one on top of another. Artifacts found with the flexed burials include limestone throwing-stick weights, antler "triggers" from throwing sticks, projectile points, tubular *Busycon* shell beads, ornaments of bone, and worked shark

teeth that had probably been hafted and used as knives or scrapers (Carr and Jones 1981).

Both of the sites described above contained artifacts securely dating the sites to the Middle Archaic period. It is possible that these two sites represent the development of new burial patterns which correlated with the end of the Middle Archaic period, at which time pond burials fell into disuse and were replaced with the new burial patterns (Milanich 1994:84).

Late Archaic Period (3,000–500 BC)

After 3000 BC, there was a general shift in settlement and subsistence patterns emphasizing a greater use of wetland and marine food resources than in previous periods. This shift was related to the natural development of food-rich wetland habitats in river valleys and along the Atlantic and Gulf coasts (Bense 1994). By the Late Archaic period, a regionalization of precontact cultures began to occur as human populations became adapted to specific environmental zones. Relatively large numbers of Late Archaic peoples lived in some regions of the state but not in others. For example, large sites of this period are uncommon in the interior highland forests of northwestern Florida and northern peninsular Florida, regions where Middle Archaic sites are common. The few Late Archaic sites found in these areas are either small artifact scatters or components in sites containing artifacts from several other periods. This dearth of sites in the interior forests suggests that non-wetland locales either were not inhabited year-round or were only inhabited by small populations (Milanich 1994:87).

Extensive Late Archaic middens are found along the northeastern coast inland waterway from Flagler County north, along the coast of southwestern Florida from Charlotte Harbor south into the Ten Thousand Islands, and in the braided

river-marsh system of the central St. Johns River, especially south of Lake George. The importance of the wetlands in these regions to precontact settlements was probably duplicated in other coastal regions, especially the Central Peninsular Gulf Coast and the Northwest (Milanich 1994:85). However, in many of these coastal areas, such as Tampa Bay, many of the Late Archaic sites are inundated (Warren 1964, 1970; Warren and Bullen 1965; Goodyear and Warren 1972; Goodyear et al. 1980).

Orange Period

By about 2000 BC or slightly earlier, the firing of clay pottery was either invented in Florida or the technique diffused from coastal Georgia and South Carolina, where early dates for pottery have been obtained (Milanich 1994:86). At one time, it was thought that the earliest pottery-manufacturing culture in Florida was the Orange culture of the St. Johns region in northeast Florida. But additional evidence from southwest Florida indicates fired clay pottery from northeastern and southwestern Florida is comparable to the early dates from sites in Georgia and South Carolina (Division of Archives 1970; Cockrell 1970; Widmer 1974; McMichael 1982; Russo 1991).

The earliest ceramics in Florida were tempered with plant fibers such as palmetto fiber or Spanish moss. The first use of pottery is well dated to the period from circa 2000 BC to 1000 BC, making fiber-tempered pottery a convenient horizon across the state. Although at first undecorated, various techniques were used to apply surface decoration, starting sometime around 1650 BC, providing an important tool for differentiating sites dating to the second half of the Late Archaic, known as the Orange Period (2000–500 BC) (Milanich 1994:86, 94). Table 1 illustrates the long-accepted Orange Period ceramic chronology.

Table 1. Orange Period Ceramic Chronology

Period	Dates
Orange 5	1000–500 BC
Orange 4	1250–1000 BC
Orange 3	1450–1250 BC
Orange 2	1650–1450 BC
Orange 1	2000[a]–1650 BC

Source: Milanich (1994) based on Bullen (1955, 1972).
[a] or slightly earlier.

However, data from sites in northeastern Florida suggest a revised Orange period chronology (Sassaman 2003:5-14). Sassaman (2003:9) indicates that "…the four major subperiods of Bullen's sequence (i.e., Orange 1-4) collapse down into one (Orange 1)." This revised chronology suggests that variations in Orange period ceramic paste, form, and decoration do not represent temporal changes.

Riverine middens in the East and Central cultural region have produced artifacts that illustrate aspects of Late Archaic subsistence technology, such as the throwing stick, use of which is indicated by the presence of steatite throwing-stick weights and stemmed projectile points. Russo (1992:198) suggests that, along the coast, fine-mesh nets were also used to catch fish from the estuarine tidal creeks. Also common in these midden sites were picks and hammers made of shell, pins, points, and other tools made of bone (Milanich 1994:92-93).

Late Archaic period sites, such as middens adjacent to the Gulf and smaller sites back from the coast proper have been identified in the Central Peninsular Gulf Coast region. The Interstate 75 archaeological surveys and excavations located several sites with Late Archaic components in the wetlands of the

Hillsborough River drainage basin. One of these, the Wetherington Island site, is a re-used quarry first used in Early Archaic-times (Chance 1981, 1982). Other inland sites include the Deerstand, Ranch House, and Marita sites (Daniel 1982; Estabrook and Newman 1984).

A cluster of unique Late Archaic sites was identified in Pasco County (Estabrook et al. 2001). The sites within this cluster, referred to as the Enclave sites, contain freshwater midden remains and represent a rarely seen inland site type. The evidence recovered indicates a heavy reliance on aquatic resources and suggests that coastal dietary practices were carried into the interior (Estabrook et al. 2001).

Coastal sites appear much more common in this region and include the Culbreath Bayou, Canton Street (Bullen et al. 1978), and Apollo Beach (Warren 1968) sites. Many Late Archaic sites in the Central Peninsular Gulf Coast region are probably either inundated or were destroyed around the turn of the century. The once numerous shell middens of all periods were used to provide road materials for towns like Bradenton and Tampa (Milanich 1994:100-101).

As more research is completed and regional differences among Late Archaic peoples in Florida are recognized, it is apparent that specific regional manifestations must be defined. These manifestations will undoubtedly be recognized as closely linked to the post-500 BC regional cultures of the Formative period discussed below.

Formative and Mississippian Periods (500 BC–AD 1513)

Changes in pottery and technology occurred in Florida during the Late Archaic period, also known as the Florida Transitional period; these changes mark the beginning of the Formative period. Fiber-tempered wares were replaced by sand-tempered, limestone-tempered, and chalky temperless ceramics. Three different projectile point styles (basally-notched, corner-notched, and stemmed) occur in relatively contemporaneous contexts. This profusion of ceramic and tool traditions suggests population movement and social interaction between culture areas.

Mississippian cultural development began in the central Mississippi Valley around AD 750 and was adopted by cultures in Florida between AD 800 and AD 1000. It was characterized by elaborate community developments including truncated pyramidal mounds, large plazas, and a chiefdom-level of socio-political organization. Other distinctive traits include small, triangular-shaped projectile points, the use of the bow, religious ceremonialism, increased territoriality and warfare, and, in some areas, development of agriculture (Milanich 1994:355–412).

Manasota Culture

During the Formative period, the Central Peninsular Gulf Coast region was dominated by the Manasota culture, primarily known as a coastal dwelling people. A dominance of sand-tempered plain ceramics as well as shell and bone tools characterize their material culture (Luer and Almy 1982). The identification of interior Manasota sites has been hindered by the difficulty in distinguishing between the various types of undecorated, sand tempered ceramic wares used by the different precontact cultures of South Florida

(Milanich 1994: 224–226). A chronology for the Manasota Culture based on variations in ceramics and burial, is presented in Table 2.

Table 2. Manasota Culture Chronology

Period	Dates
Safety Harbor	AD 900–1513
Late Weeden Island	AD 700–900
Early Weeden Island	AD 300–700
Manasota	500 BC–AD 300

Source: Milanich (1994), modified from Luer and Almy (1980, 1982)

Despite its characterization as a primarily coastal culture, a number of inland Manasota sites have been documented (Deming 1976; Wood 1976; Wharton 1977; Ellis 1977; Wharton and Williams 1980; Piper and Piper 1981; Piper, Hardin, and Piper 1982; Almy 1982; Austin and Ste. Claire 1982; Austin and Russo 1989; Janus Research 1999b). These sites share characteristics that distinguish them from the typical Manasota site, which has been defined using characteristics from coastal sites. However, they are similar to what Luer and Almy define as "inland from the shore" sites. These sites are described as existing in the pine flatwoods, often occurring on a small, low hillock or "mound" of sand near a freshwater source, and having artifact assemblages similar to the coastal sites except for a significantly lesser amount of shell and shell tools (Luer and Almy 1982:39–43). Luer and Almy distinguish these sites from "inland" sites, which are situated in interior regions of the peninsula (1982:51). Aside from the occasional shell tool, the one characteristic that precludes the above sites from being defined as "inland from the shore" Manasota culture sites is that they are situated beyond 30 km from the shore (Luer and Almy 1982:51).

Weeden Island–Related Manasota Culture

During its later periods, the Manasota culture was influenced by the extensive Weeden Island socio-political complex, which is best known in northern Florida, southern Georgia, and Alabama—the recognized "heartland" of Weeden Island cultures. Present evidence suggests a date of circa AD 200 for the beginning of the Weeden Island period. Mound burial customs, artifact evidence of an extensive trade network, and settlement pattern data suggest a complex socio-religious organization, while technologically and stylistically Weeden Island ceramic types are considered outstanding examples of precontact pottery. Evidence for the adoption of Weeden Island customs by local Manasota groups appears in the archaeological record around AD 300–900. This period of Manasota development is often referred to as "Weeden Island–related" (Milanich 1994:227; Luer and Almy 1982:46–47).

Early Manasota period burials were flexed, primary interments in shell middens or in cemeteries. Burial in intentionally constructed burial mounds apparently was not practiced until after AD 100. These early mounds, at least until about AD 300, also contained primary, flexed interments, and occasional extended or semi-flexed burials. These mounds are generally located adjacent to villages and often contain locally made ceramics (Luer and Almy 1982:42, 46–47; Milanich 1994:227).

Early Weeden Island burial mounds contained secondary interments accompanied by almost the full range of Weeden Island ceramics and, often, complicated-stamped sherds. These secondary interments were usually bundle burials, indicating that they were placed in a charnel house prior to interment. Late Weeden Island peoples continued these traditions, and their wares often include Wakulla Check Stamped, St. Johns Check Stamped, and occasional Safety Harbor sherds in addition to the Weeden Island ceramics.

The inclusion of Safety Harbor wares within these Weeden island mounds indicates they were used for many generations (Luer and Almy 1982:42, 46–47; Milanich 1994:227). The re-use or continued use of mounds was apparently a common practice in the Central Peninsular Gulf Coast region during Manasota and later periods. There are several examples, both inland and coastal, of such continually used or re-used mounds (Fewkes 1924; Willey 1949:332–333; Sears 1960; Bullen 1971; Luer and Almy 1980, 1982; Janus Research 1999b).

Safety Harbor Culture

The final precontact cultural manifestation to occur in this region was the Safety Harbor culture, which evolved out of the Manasota and later Weeden Island–related Manasota cultures. Although similar to the Mississippian cultures of northern Florida, Safety Harbor peoples apparently borrowed only certain ideas and practices that helped them adjust to larger populations and to maintain the greater level of political complexity needed to support stronger territorialism. Other ideas and practices associated with a fully Mississippian way of life were not adopted because the agricultural economic system at the base of the Mississippian culture was not possible in coastal Florida. Similar to the preceding Manasota and Weeden Island–related cultures of the region, the Safety Harbor culture had a subsistence economy based on gathering shellfish and other marine resources (Grange et al. 1979; Milanich 1994:412).

A subdivision of the Safety Harbor phase was proposed by Mitchem (1989). Based on the presence of dateable European artifacts, as well as on radiocarbon dates from components with Englewood ceramics, Mitchem suggested dividing the Safety Harbor into two precontact phases (Englewood [AD 900–1100] and Pinellas [AD 1100–1500]) and two colonial period phases

(Tatham [AD 1500–1567] and Bayview [AD 1567–1725]) (Mitchem 1989:557–567).

The Safety Harbor culture, known after Spanish contact to be the culture of the Tocobaga, is typified by ceremonial centers with truncated, pyramidal temple mounds and open village plazas surrounded by middens, as well as burial mounds with associated charnel structures. Most Safety Harbor sites are found along the coast; although inland villages, camps, and mounds are also present (Milanich 1994:395, 403). Although the Safety Harbor culture is centered on the Tampa Bay area and the adjoining river drainages, it extends well to the north into Pasco, Hernando, and Citrus counties, and to the south and west into Sarasota, Polk, Manatee, Hardee, and Desoto counties. Safety Harbor pottery has also been found in mounds south of Charlotte Harbor in the Caloosahatchee archaeological area (Milanich 1994:391). Safety Harbor sites within Sarasota County include site 8SO403, a burial site along the Myakka River (Hazeltine and Luer 1983); the Englewood Mound (8SO1), which dates to the Englewood and Pinellas phases of the Safety Harbor period (Luer 1999); and the Blackburn site, which reportedly contained European glass beads as well as Culbreath and Pinellas points/knives (Deming 1989). This latter site is thought to date to the Englewood Phase of the Safety Harbor period and the later Contact periods.

Regional Variants: Northern, Inland, Circum-Tampa-Bay, and South-Central Sub-regions

The ceramic traditions of the previous Weeden Island cultures of this region continued into the Safety Harbor phase. Along with differences in settlement patterns and subsistence strategies related to specific environments, ceramic distributions have allowed Mitchem (1989:567–579) to define four sub-regions within the Safety Harbor culture area. These sub-regions shared

patterns of burial mound ceremonialism, ideology, and, perhaps, socio-political organization, but different environmental settings allowed for changes in economic patterns (Milanich 1994:392).

The Northern Safety Harbor variant encompasses Pasco, Hernando, and Citrus counties. Pasco plain pottery is most common at non-mound villages and campsites, along with sand-tempered plain, St. Johns plain, St. Johns Check Stamped, and cord-marked ceramics. Most settlements, including residential sites and isolated mounds, are dispersed. Inland riverine and coastal shell middens are common (Mitchem and Weisman 1987; Mitchem 1989).

Within this sub-region, subsistence strategies both in coastal and inland settings continued to reflect the marine- and freshwater-based economies of the previous Weeden Island period, although some agriculture was apparently present within the cove of the Withlacoochee River (Mitchem 1989:588). At a village site within the cove, excavations produced an array of terrestrial and riverine species, including mollusks, largemouth bass, deer, and freshwater snails as the most common meat sources (Fitzgerald 1987). Evidence for the use of bow and arrow throughout the Safety Harbor culture area is seen in the presence of Pinellas Points, small triangular-shaped points used to tip arrows (Bullen 1975:8; Milanich 1994:394). Except for these points, the types of stone and shell artifacts recovered from Safety Harbor phase sites are much the same as those recovered from Weeden Island period sites (Milanich 1994:399).

The best known of the sub-regions, and what might be considered the heartland of the Safety Harbor culture, the Circum-Tampa-Bay sub-region includes southern Pasco, Pinellas, Hillsborough, and northern Manatee

counties. Large and numerous shell middens identified in this sub-region suggest that subsistence strategies resembled those of the preceding Manasota and Weeden Island–related cultures. Data from analyses of materials from five of these sites support this contention (Kozuch 1986).

Utilitarian pottery within the Circum-Tampa-Bay Safety Harbor sub-region is predominantly Pinellas Plain, usually wide-mouthed bowl forms with serrated rims (Sears 1967; Luer and Almy 1980). The predominance of Pinellas plain around Tampa Bay is in contrast to the limestone-tempered Pasco ware of the Northern sub-region (Mitchem 1989; Milanich 1994:396).

Archaeologists have identified 15 major habitation sites in the Circum-Tampa-Bay sub-region, each consisting of a large platform mound and shell midden deposits thought to reflect associated village areas (Willey 1949:331–335; Bullen 1955:51; Griffin and Bullen 1950; Bushnell 1966; Sears 1967; Bullen et al. 1970; Luer and Almy 1981; Mitchem 1989). These sites occur on the shoreline in Tampa Bay, especially at the mouths of rivers and streams that drain into the bay, or along those rivers within a short distance of the coast, and along the western coast of Pinellas County. The plan of each is the same: a platform mound, probably the base of a temple or other important building, is placed adjacent to a plaza with surrounding village middens. Burial mounds are also present at the sites (Milanich 1994:396).

Many of the Circum-Tampa-Bay sites along the interior drainages of the Hillsborough, Alafia, Manatee, and Little Manatee rivers that were occupied during the Manasota and Weeden Island–related periods have Safety Harbor period components (Fewkes 1924; Willey 1949:332–333; Sears 1960; Bullen 1971; Luer and Almy 1980, 1982; Janus Research 1999a). It is evident that

inhabitants of these inland sites would have relied on freshwater resources for a large part of their sustenance. Some of the burial mounds recorded in the inland portion of the Circum-Tampa-Bay sub-region might have been isolated, as may have some of the habitation sites. Smaller sites, probably short-term hunting and foraging camps, are also located in inland locales in the river drainages (Milanich 1994:396).

The Inland Safety Harbor sub-region encompasses Polk and Hardee counties and the eastern portion of DeSoto County (Mitchem 1989:576–577). Although the density of settlements is sparse in comparison to those in coastal locales, numerous surveys in the phosphate district in Hardee County and surrounding areas indicate that some dispersed settlements and isolated burial mounds are present (Browning 1973; Wharton 1977; Wharton and Williams 1980; Piper et al. 1982; Janus Research 1999a). Most of these sites have not been completely excavated and their cultural affiliations remain uncertain. One site, however, contained a large number of Spanish artifacts along with Safety Harbor ceramics, suggesting the occupation of the Inland sub-region during the colonial period (Benson 1967).

St. Johns Plain and Belle Glade Plain ceramics are most common, possibly a reflection of the ceramic transition to the assemblages of the Okeechobee Basin region and the lake district of central Florida. However, the decorated ceramics found in inland burial mounds are the same types found throughout the Safety Harbor culture area, indicating a zone of peoples who borrowed traits from neighbors to the west, east, and south (Milanich 1994:401).

The South-Central Safety Harbor sub-region (Mitchem [1989] calls this variant the Manasota Safety Harbor) extends from Charlotte Harbor north to southern Manatee County and east to the Peace River drainage (Milanich

1994:400). Dispersed coastal and inland settlements are present, but these have not yet been studied extensively. Utilitarian pottery is predominantly an undecorated quartz sand-tempered ware (Mitchem 1989:575–576).

Marion Almy (1978:87–88) has found that the primary factors for site location in Sarasota County are the distance to water and soil type. This probably reflects the need for potable water, the preference for camping on well- or better-drained soils, and reliance on wetlands, both coastal and freshwater, for subsistence (Milanich 1994:400).

METHODS

The methods describe a summary of previous archaeological investigations included in the FMSF and represent studies that have been conducted to date. No new archaeological investigations were conducted for this report. Relevant archaeological literature and files available through the FMSF were reviewed to develop an understanding of previous archaeological investigations and previously recorded archaeological sites within the 80-acre Park. The FMSF represents the official inventory of historical and cultural resources maintained by the Florida Division of Historical Resources (FDHR) (http://dos.myflorida.com/historical/preservation/master-site-file).

The FMSF consists of a paper file and digital archive of previously recorded archaeological sites and historic resources in Florida. It represents an important inventory of resources for which information is available regarding their origin and a description of their physical appearance at a particular point in time. Because the inventory of historic resources is not all-inclusive on a statewide basis, data gaps exist. When using the FMSF as a primary reference source, users should be aware of the quality of the information and be prepared to verify accuracy through additional sources. Further

communications with Ms. Almy, who participated in the archaeological excavations conducted by Dr. Cockrell, were conducted to determine the location of the repository for the archaeological field notes related to the excavations and found them to be unavailable.

The FMSF maintains both hard copies and digital copies of the following categories of data:

- Archaeological sites, which include Precontact and post contact (defined in the FMSF as historic) period archaeological sites;
- Historic roads, ways, and trails;
- Historic earthworks such as ditches, earthen dams, dikes, canals, and irrigation ditches;
- Cattle dipping troughs;
- Historic landscapes such as historic city plazas, formal gardens, and golf courses;
- Watercraft such as canoes or log boats;
- Precontact period burials;
- Historic cemeteries, which include marked or unmarked graves that can consist of grave markers, grave depressions, fencing, and landscape elements;
- Historic structures, which include buildings, structures, and objects such as monuments and statues;
- Historic bridges, which include both pedestrian and vehicular bridges;
- Resource groups, which include historic districts, archaeological districts, multiple property listings, and building complexes;
- National Register–Listed Properties, which includes the list of properties officially listed in the National Register; and

- State Historic Preservation Officer (SHPO) survey areas, which includes those areas which have been subjected to some level of cultural resource survey and submitted to FDHR.

The literature review included a review of the FMSF Geographic Information System (GIS) data as well as a review of digital copies of FMSF forms, surveys, and other manuscripts relevant to the project area.

SUMMARY OF PREVIOUS INVESTIGATIONS OF THE PROJECT AREA

The FMSF review identified 12 manuscripts related to archaeological or historical investigations within the project area. As summarized in Table 3, the majority of these are technical discussions of the methods used to conduct the underwater investigations of the spring. The manuscripts most useful for this study include the 1984-1986 Progress Reports for the Warm Mineral Springs Archaeological Project (FMSF Manuscript No. 16057) and the 2003 Cultural Resource Assessment Survey ±84 Acres Surrounding Warm Mineral Springs, Sarasota County, Florida (FMSF Manuscript No. 8864).

Table 3. Previously Conducted Surveys within the Study Area

Survey No.	Title	Author(s)	Date	Comments
6481	Reconstruction of Prehistoric Environments: The Warm Mineral Springs Projects	Sheldon, Elisabeth, and Marguerita L. Cameron	1975	Journal article regarding precontact period environment
6506	Analysis of Pollen from Warm Mineral Springs, Florida	King, James E.	1975	Technical description and discussion of pollen analysis

Survey No.	Title	Author(s)	Date	Comments
17052	Some Useful Plants from Warm Mineral Springs, Sarasota County, Florida	Sheldon, Elizabeth	1975	Technical description of plants from South Sarasota County with a description of habitat and use.
1906	Preliminary Report of Mapping Operations Undertaken During Archaeological Excavations at Warm Mineral Springs, Florida	Smith, Roger	1976	Technical summary of mapping methods used during the excavation
16223	The Warm Mineral Springs Fauna (1975) and Additions to the Warm Mineral Springs Fauna (1976)	McDonald, H. Gregory	1976	Technical description and analysis of fauna
16309	Warm Mineral Springs Sinkhole and the Mud Hole Submarine Spring	Kohout, Francis Anthony	1977	Copy of article in Florida Bureau of Geology Special Publication No. 21 describing the geological processes of springs.
3852	8SO19: Specialized Methodological, Technological, and Physiological Approaches to Deep Water Excavation of a Prehistoric Site at Warm Mineral Springs, Florida	Murphy, Larry	1978	Technical summary of excavation methods

Survey No.	Title	Author(s)	Date	Comments
3837	The Human Skeletal Remains from Warm Mineral Springs, Florida: A Preliminary Assessment	Schmucker, B.J., and Linell Etcheson	1980	Technical description and analysis of human remains
16202	Vertebrate Remains from Warm Mineral Springs (8SO19), Sarasota County, Florida	McDonald, H. Gregory	1980	Technical description and analysis of animal remains
3838	A Paleo-Indian Mandible from Warm Mineral Springs, Florida	Haeussler, A.M., D.H. Morris, and C.F. Merbs	1990	Technical description and analysis of human remains
16057	Progress Reports for Warm Mineral Springs Archaeological Project	Cockrell, Wilburn A.	1992	Summary of underwater archaeological investigations conducted between 1984 and 1986.
22318	Radiocarbon Dates and Age of Human Remains at Warm Mineral Springs (8SO19)	Tesar, Louis	1997	Technical summary of methods and results of radiocarbon dates
8864	Cultural Resource Assessment Survey ±84 Acres Surrounding Warm Mineral Springs, Sarasota County, Florida	Archaeological Consultants, Inc.	2003	Comprehensive archaeological subsurface testing and historic resources survey
23066	Technical Memorandum: Historic Structure Survey Warm Mineral Springs at 12200 San Servando Avenue, North Port, Florida	Archaeological Consultants, Inc.	2016	Comprehensive historic structures analysis and evaluation

Progress Reports for the Warm Mineral Springs the Warm Mineral Springs Archaeological Project (FMSF Manuscript No. 16057)

The progress reports summarize the results of the archaeological investigations conducted from 1984 through 1986. These reports were prepared for Manatee Community College, the sponsoring institution, by Wilburn A. Cockrell, the Project Director for the Warm Mineral Springs Archaeological Project. The project was funded under an appropriation by the Florida Legislature and the reports provided a summary of the goals and activities for project activities from July 1, 1984 through March 30, 1985; April 1, 1985 through June 30, 1985; and from July 1, 1985 through March 30, 1986. A copy of this manuscript has been included in Attachment 5 for reference.

The progress reports note that the research focused on the terrestrial site on dry land surrounding the spring, the ledge within the spring that is located at approximately 13-meters below the water surface (13-meter ledge), and the debris cone at the bottom of the spring.

Of particular relevance for this project is the summary of the terrestrial archaeological investigations included in the July 1, 1984 through March 30, 1985 progress report. Excavations were conducted in conjunction with Manatee Community College in the Spring of 1985. Field investigations were under the direction of Marion Almy. No maps are included in the report showing the locations of any of the terrestrial investigations, but the report states that four 1 x 2-meter trenches were excavated on the north site of the spring.

Three stratigraphic zones were identified during the excavations. The uppermost zone consisted of fill dirt that contained no precontact artifacts. The middle zone was approximately 1-meter thick consisting of sand. The middle zone contained lithic artifacts. The upper 50 centimeters of the middle zone contained chert flakes and an Archaic Stemmed Point dating to the Middle or Late Archaic period. The artifact density in the lower 50 centimeters of the middle zone was lower but did contain chert flakes and one unifacial scraper that may date to the Early Archaic or Late Paleoindian Period. The third zone was identified as the old Pleistocene seabed. Excavations conducted at the site in the 1970s had found fossilized remains of horse and camel, as well as artifacts. The report states that based on all the excavations conducted to that date, the terrestrial portion of the site was not heavily used and that the sinkhole was primarily used as a burial site.

The April 1, 1985 through June 30, 1985 progress report mentions a terrestrial investigation. No details are included but the report does mention that several Archaic period tools were recovered.

There were no terrestrial excavations during the July 1, 1985 through March 30, 1986 fiscal year.

Cultural Resource Assessment Survey ±84 Acres Surrounding Warm Mineral Springs, Sarasota County, Florida (FMSF Manuscript No. 8864)

The *Cultural Resource Assessment Survey ±84 Acres Surrounding Warm Mineral Springs, Sarasota County, Florida* (Archaeological Consultants, Inc. [ACI] 2003; FMSF Manuscript No. 8864) identified one archaeological site (8SO2667) and four A.O. within the project area. Warm Mineral Springs

(8SO19) and a 325-foot archaeological sensitivity buffer surrounding the sinkhole were excluded from the archaeological survey area. A total of 348 shovel tests were excavated at offset 25-meter intervals during the survey. In addition, one excavation unit was excavated within the boundaries of 8SO2667. The location of the site boundaries and the excavation unit is shown in Attachment 4. A copy of the associated manuscript has been included in Attachment 6 for reference.

8SO2667 is a precontact lithic scatter located on a sandy ridge approximately 200 meters south of WMS. This significance of this site has not been formally reviewed and concurred upon by any state or federal agency. As part of the management plan, assistance will be provided to determine the appropriate level of agency review and local public input needed to identify the most appropriate types of activities within and adjacent to this site.

The site measures approximately 12.5 meters north to south by 25 meters east to west. It was defined by 11 non-diagnostic chert flakes recovered between 60 and 100 cm below the surface (cmbs). These flakes consisted of eight non-decortication flakes and three secondary decortication flakes. None of the flakes showed evidence of thermal alternation. The chert was not assigned to a quarry. A total of 23 shovel tests were excavated at 25-meter intervals in the area of the site and five produced archaeological material. Due to the similarity of this site to many others found in west-central Florida, ACI evaluated the site as National Register–ineligible. The SHPO has not evaluated 8SO2667 for its National Register–eligibility.

The four A.O.s consisted of six non-decortication chert flakes, two of which were thermally-altered. A quarry was not assigned to any of the flakes. Archaeological occurrences are isolated finds of fewer than three non-

diagnostic artifacts. Finds of this type likely represent a single accidental event, do not yield valuable information about past human behavior, and are considered not eligible for the National Register. Because of the limited nature of these finds, they are not recorded as archaeological sites with the FMSF and typically present no issues.

A.O. #1 was located approximately 150 meters east-southeast of WMS. It consisted of two thermally-altered flakes recovered from two shovel tests. One flake was recovered between 50 and 60 cmbs and the other at 95 cmbs. One of the flakes showed possible evidence of marginal retouching but does not appeared to have been used. A.O. #2 was located approximately 125 meters east of WMS. It consisted of two flakes recovered from two shovel tests at 60 and 80 cmbs. Neither flake had evidence of use wear. A. O. #3 was located approximately 250 meters southeast of WMS. It consisted of one flake recovered from 60 cmbs. It did not have any evidence of use wear. A. O. #4 was located approximately 175 meters south of WMS. It consisted of one flake recovered from 70 cmbs. It did not have any evidence of use wear.

Due to the significance of Warm Mineral Springs (8SO19), ACI made several recommendations regarding future archaeological work involving the site. They recommended that any future archaeological investigations within the sinkhole and the 325-foot buffer should be conducted “solely under the direction of a registered professional archaeologist (RPA)” (ACI 2003: i). They further recommended that prior to granting any permits, the spring owners should require that investigators prepare “a detailed research proposal including project rationale, research design with clearly identified objectives and methodologies, and a list of project personnel” and “submit it to the professional archaeological community for peer review and comment” (ACI

2003: i–ii). Their final recommendation is that no sport or recreational diving be permitted in the spring to protect the submerged resources.

RECOMMENDATIONS

The summary of the extensive archaeological studies at WMS and the surrounding area indicates that, apart from the National Register–listed WMS and its associated buffer, the surrounding acreage does not contain dense concentrations of artifacts or archaeological sites. The development of a Master Plan, is therefore, appropriate to direct the types and locations of activities in the upland areas as well as the significant WMS and its small buffer that will balance development needs with best management practices for the preservation of significant archaeological properties. In 2003, ACI provided several recommendations which can be considered as part of the current management plan. These include the following:

- Any future archaeological investigations within the sinkhole and the 325-foot buffer should be conducted "solely under the direction of a registered professional archaeologist (RPA)" and/ or an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) for archaeology.

- Prior to granting any permits, the spring owners should require that investigators prepare a detailed research proposal including project rationale, research design with clearly identified objectives and methodologies, and a list of project personnel. The research design should be submitted to the professional archaeological community for peer review and comment.

- No sport or recreational diving be permitted in the spring to protect the submerged resources.

Because of the community sensitivity to the WMS cultural resources, the following recommendations are also offered:

- Develop an unanticipated finds plan consisting of procedures to follow if potential artifacts are encountered and a brief contractor training to explain the procedures and the types of artifacts that may be encountered.

- Conduct archaeological monitoring of construction activities, particularly subsurface disturbance. Use the services of a professional archaeologist [RPA registered and/or Secretary of the Interior's Professional Qualification Standards (48 FR 44716)] to conduct the monitoring. The archaeological monitor should be able to monitor construction activities at her/his discretion and have the authority to request a suspension of construction activities in a particular area where artifacts or archaeological features are uncovered, until a resolution of the issue can be found through consultation with the commission.

- Include and highlight in interpretative material the contributions of the early explorers of WMS and the continued stewardship by the local anthropological society and residents. This would recognize the importance of early Native American use of the spring and the role of the springs in the history of Florida archaeological and early underwater exploration by SCUBA diving.

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Attachment 1:

Conceptual Master Plan

WARM MINERAL SPRINGS PARK
NORTH PORT, FLORIDA

CONCEPTUAL MASTER PLAN

02/12/2019 • CONTACT: JAMES PANKONIN, PLA, (941) 379-7600 • AERIAL DATA: © NEARMAPS 2017

Kimley»Horn

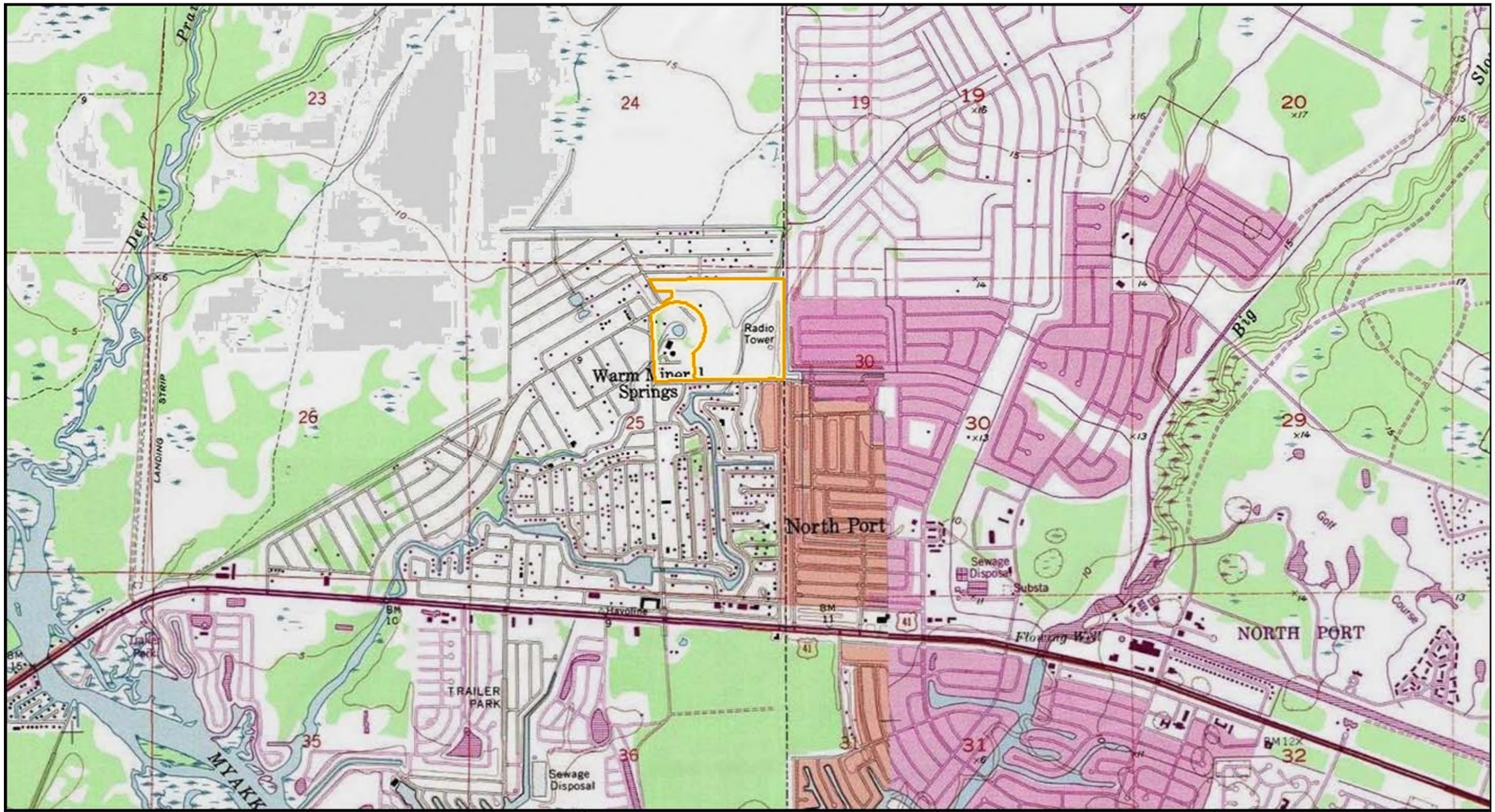
Attachment 2:

General Location of the Project Area


MANATEE
SARASOTA
CHARLOTTE
Hernando Rd
Loranza Ave
Durango Ave
Marco Ave
Mallorca Ave
Malaga Ave
Madrid Ave
Toledo Rd
Margarita Ave
De Leon Dr
Granada Dr
Sevilla St
Dorado Dr
Desoto Dr
D Allyon Dr
Ciboa Ave
Ortega Pl
Sarto Ln
Genoa Dr
Saragossa Ln
San Juan Ave
San Remo St
San Marino Ave
San Marco Ave
San Lorenzo Ave
Ortiz Blvd
Sanluca Ave
Venetia Ave
Ordona Ave
Espanola Dr
Suarez St
Urbino St
Monza Ave
Cahira Ave
San Miguel Ave
Granada Blvd
Grobe St
Florala St
Bewley St
Selover Rd
Zadrow Rd
Irondale Rd
Lancelot Av
Atmore
Attalia
Trico Rd
Lemley Rd
Sarletto St
Cerullo St
Denargo Rd
Tomaso Rd
Rocliff Ave
Holster Ave
Mossborger Ave
Chesebro Ave
Gisela Rd
San Pablo Ave
San Jacinto Ave
Culebra Ave
Lombra Ave
Alam Ave
Trionfo Ave
La Boca Ave
Porto Bello Ave
Kirk Park
Gorgas St
Nele St
Bayano St
Los Rios St
Chicopa St
Bullard St
Coco Solo Ave
Cristobal Ave
Herbison Ave
Shumock Ave
Bumford Ave
Dorothy Ave
Aero Ave
Agress Ave
Fay Ave
Pickwick Rd
Eager St
Allen Rd
S Biscayne Dr
Trott Cir
Green S
Tamiami Trl S
Tamiami Trl
41
Warm Mineral Springs
Port
Hyde Park Ave
Jeffery Ave
Labrea Park
Hoffman St
Talbot St
Freemont St
Jordan St
Sooner St
Safford Ter
S Biscay
Falcon
Pontiac Ln
Malaluka Rd
Mataro Ct
Marius Rd
Lino Rd
Blvd
Kenwood Dr
Elmwo
General Location of the Project Area
Warm Mineral Springs Park Master Plan
Project Area
Miles
0
0.25
0.5

Attachment 3:

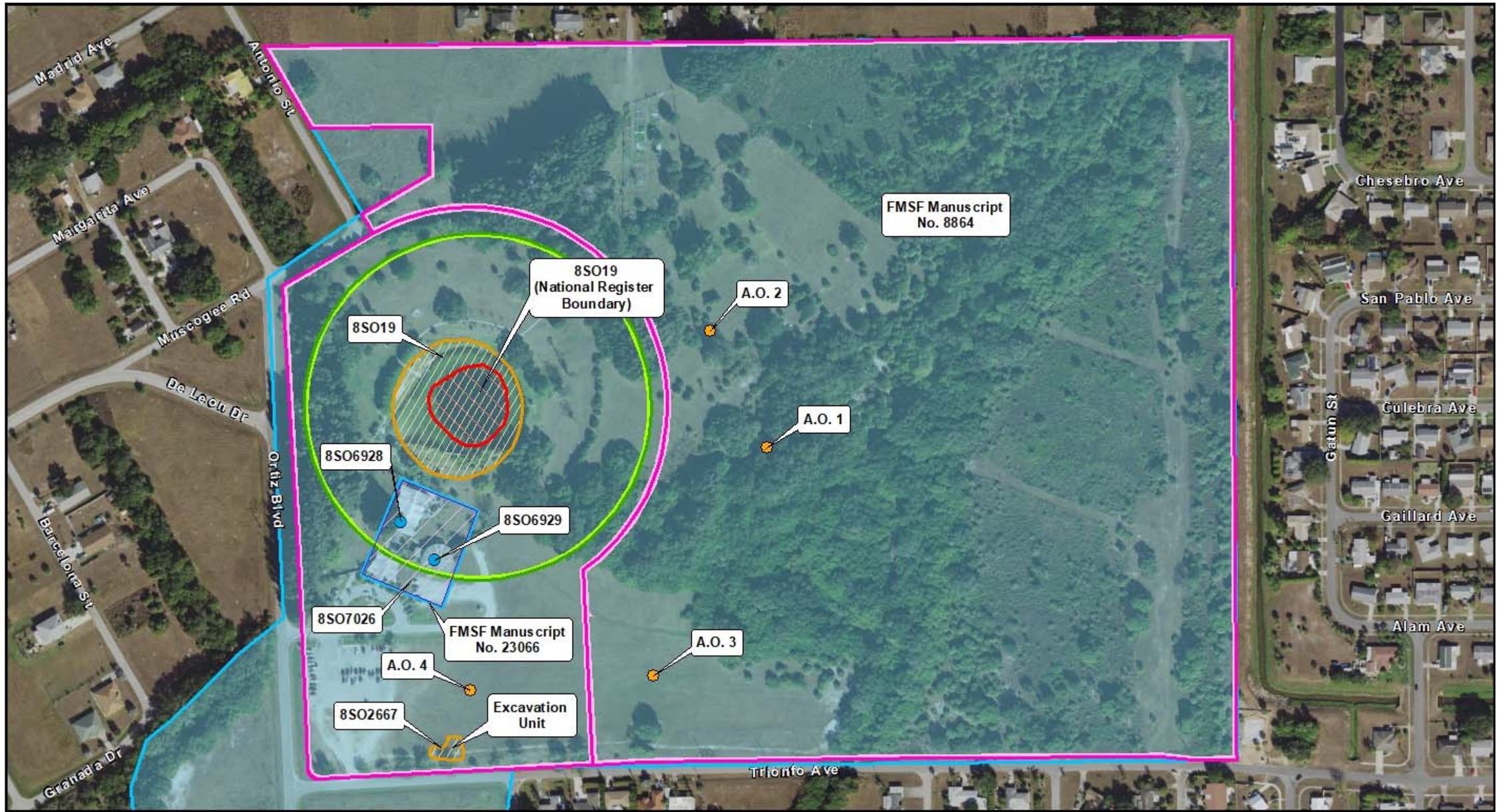
Project Area Illustrated on a Quadrangle Map



Project Area Illustrated on a Quadrangle Map	*Warm Mineral Springs Park Master Plan*	Project Area	**USGS Quadrangle Map:** Myakka River (1973)	**City of North Port, Sarasota County** Miles 0 0.25 0.5

Attachment 4:

Previously Conducted Cultural Resources Surveys and Recorded Cultural Resources within the Project Area



Previously Conducted Cultural Resources Survey and Recorded Cultural Resources Within the Project Area

Warm Mineral Springs Park Master Plan

Project Area
Archaeologically Sensitive Area
Survey Boundary
Archaeological Occurrence
Archaeological Site
National Register Boundary
Significant Historic Structure
Resource Group

City of North Port, Sarasota County

0 250 Feet

Attachment 5:

FMSF Manuscript No. 16057 (Cockrell 1992)

Survey Log Sheet

Florida Master Site File
Version 4.1 1/07

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Identification and Bibliographic Information

Survey Project (name and project phase) Warm Mineral Springs Archaeological Project Progress Reports & Memorandum

Report Title (exactly as on title page) Progress Report, Warm Mineral Springs Archaeological Project [Activities for First through Third Quarters, Fourth Quarter 1984-1985 Fiscal Year, First Through Third Quarters 1985-1986 Fiscal Year, 1991 Memorandum, 1992 Notes, Sarasota County, Florida]

Report Authors (as on title page, last names first) 1. Cockrell, Wilburn A. 3. _____ 2. _____ 4. _____

Publication Date (year) 1992 **Total Number of Pages in Report** (count text, figures, tables, not site forms) 53

Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*.)
Prepared for Manatee Community College, Bradenton

Supervisors of Fieldwork (even if same as author) Names _____

Affiliation of Fieldworkers: Organization _____ City _____

Key Words/Phrases (Don't use county name, or common words like *archaeology, structure, survey, architecture, etc.*)

1. Warm Mineral Springs 8SO 3. WMS Archaeological Resea 5. _____ 7. _____
2. Warm Mineral Springs = W 4. WMS Archaeological Socie 6. _____ 8. _____

Survey Sponsors (corporation, government unit, organization or person directly funding fieldwork)

Name Manatee Community College Organization Other

Address/Phone/E-mail 5840 26th St. W., Bradenton, FL 34207 941-752-5000

Recorder of Log Sheet Brinkley, Gerald **Date Log Sheet Completed** 9-15-2009

Is this survey or project a continuation of a previous project? ☐ No ☒ Yes:

Mapping

Counties (List each one in which field survey was done; attach additional sheet if necessary)

1. Sarasota 3. _____ 5. _____
2. _____ 4. _____ 6. _____

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)

1. Name MYAKKA RIVER Year _____ 4. Name _____ Year _____
2. Name _____ Year _____ 5. Name _____ Year _____
3. Name _____ Year _____ 6. Name _____ Year _____

Description of Survey Area

Dates for Fieldwork: Start _____ End _____ **Total Area Surveyed** (fill in one) _____ hectares _____ acres

Number of Distinct Tracts or Areas Surveyed _____

If Corridor (fill in one for each) **Width:** _____ meters _____ feet **Length:** _____ kilometers _____ miles

Survey Log Sheet

Survey # 16057

Research and Field Methods

Types of Survey (check all that apply): ☐archaeological ☐architectural ☐historical/archival ☐underwater ☐damage assessment ☐monitoring report ☒other(describe): Project review & notes

Scope/Intensity/Procedures Development of an overview of work done and proposed at Warm Mineral Springs

Preliminary Methods (check as many as apply to the project as a whole)

☐Florida Archives (Gray Building) ☐library research- *local public* ☐local property or tax records ☐other historic maps
☐Florida Photo Archives (Gray Building) ☐library-special collection - *nonlocal* ☐newspaper files ☐soils maps or data
☐Site File property search ☐Public Lands Survey (maps at DEP) ☐literature search ☐windshield survey
☐Site File survey search ☐local informant(s) ☐Sanborn Insurance maps ☐aerial photography

☒other (describe): Previous work

Archaeological Methods (check as many as apply to the project as a whole)

☒Check here if **NO** archaeological methods were used.

☐surface collection, controlled ☐shovel test-other screen size ☐block excavation (at least 2x2 m)
☐surface collection, uncontrolled ☐water screen ☐soil resistivity
☐shovel test-1/4"screen ☐posthole tests ☐magnetometer
☐shovel test-1/8" screen ☐auger tests ☐side scan sonar
☐shovel test 1/16"screen ☐coring ☐pedestrian survey
☐shovel test-unscreened ☐test excavation (at least 1x2 m) ☐unknown

☐other (describe):

Historical/Architectural Methods (check as many as apply to the project as a whole)

☒Check here if **NO** historical/architectural methods were used.

☐building permits ☐demolition permits ☐neighbor interview ☐subdivision maps
☐commercial permits ☐exposed ground inspected ☐occupant interview ☐tax records
☐interior documentation ☐local property records ☐occupation permits ☐unknown

☐other (describe):

Survey Results (cultural resources recorded)

Site Significance Evaluated? ☐Yes ☐No

Count of Previously Recorded Sites 0 **Count of Newly Recorded Sites** 0

Previously Recorded Site #'s with Site File Update Forms (List site #'s without "8". Attach additional pages if necessary.)

Newly Recorded Site #'s (Are all originals and not updates? List site #'s without "8". Attach additional pages if necessary.)

Site Forms Used: ☐Site File Paper Form ☐Site File Electronic Recording Form

*****REQUIRED: ATTACH PLOT OF SURVEY AREA ON PHOTOCOPY OF USGS 1:24,000 MAP(S)*****

SHPO USE ONLY	SHPO USE ONLY	SHPO USE ONLY

Origin of Report: ☐872 ☐CARL ☐UW ☐1A32 # ☒Academic ☒Contract ☐Avocational
☐Grant Project # ☐Compliance Review: CRAT #

Type of Document: ☐Archaeological Survey ☐Historical/Architectural Survey ☐Marine Survey ☐Cell Tower CRAS ☐Monitoring Report
☒Overview ☐Excavation Report ☐Multi-Site Excavation Report ☐Structure Detailed Report ☒Library, Hist. or Archival Doc
☐MPS ☐MRA ☐TG ☐Other:

Document Destination: Background, Useful **Plotability:** NO, Project is Not a Field Survey

PROGRESS REPORT

WARM MINERAL SPRINGS ARCHAEOLOGICAL PROJECT

Activities for the First through Third Quarters
of 1984 - 85 Fiscal Year
(1 July, 1984 - 30 March, 1985)

for

Manatee Community College

Prepared by
Wilburn A. Cockrell
Project Director
Warm Mineral Springs
Archaeological Project
Warm Mineral Springs, Florida 33596

BARBARA COCKRELL, PROJECT ASSISTANT
WARM MINERAL SPRINGS ARCHAEOLOGICAL
RESEARCH PROJECT
WARM MINERAL SPRINGS, FLORIDA 33596

I. INTRODUCTION

This report is being prepared for the sponsoring institution, Manatee Community College, and covers Project activities from 1 July, 1984, through 30 March, 1985, both in Tallahassee, the Project Director's base, and on site at Warm Mineral Springs (8So19). The Project is presently operating under an appropriation from the Florida Legislature of 100 thousand dollars for the 1984-85 Fiscal Year.

During the first quarter (July - September 1984) all Project activity was based in Tallahassee, where the archival and specimen collections are located. No on site activity was conducted during those months, as the appropriated funds were not accessible. During the second quarter (October - December 1984), we were given access to the appropriated funds and activity was divided between work in Tallahassee and at the Springs. Although several preparatory dives were made in 1984, diving operations formally began in January 1985, at the beginning of the third quarter (January - March 1985) and continue to the present.

The goals of the current Project were to recommence the archaeological research and exploration at the Springs with concentrations on the terrestrial and 13 meters below present surface ledge areas of the site, to coordinate research activities, to disseminate information about the Project, and to continue to seek private and public support of the Project. It is felt that these goals have been well met.

The body of this report is in two sections, entitled "Narrative" and "Dive Operations"; these sections attend to the land and underwater archaeological research, information dissemination, visiting participants, funding and other support, and the specialized diving activities on the underwater component of the site.

II. NARRATIVE

A. Archaeological Research

The Project activities have been most successful, and work is ahead of schedule. There are three physical areas of research concentration at this privately owned Spa: (1) the terrestrial site, on dry land, surrounding the water; (2) the 13 meter (below present water surface) ledge; and (3) the debris cone at the bottom (from 38 meters at its top, to 70 meters below present surface, at its base).

(1) Terrestrial

Activities at the terrestrial portion of the site picked up where the Project Director, as Florida's State Underwater Archaeologist, had last excavated, from 1973 through 1977. This portion of the current Project has greatly benefited by the creation of a field archaeology class offered for the first time this year by MCC, South Campus. The college, under the direction of Walter Packard, hired Marion Almy, a Sarasota archaeologist who had worked with the Project Director on this site in the 1970's, to be the class instructor. Nearly 30 students participated in the 1985 Spring Semester land excavations, and four 1x2 meter test trenches were dug on the north side of the Springs. Initial field surveying and trench layout was done by Project Staff, but a local surveying firm furnished a two man crew after the class had begun excavations, and provided great assistance by electronically plotting elevations, survey points, datum points, and cardinal reference lines. Trenches were dug through two basic "zones" of soil, and ended in a third, the old Pleistocene seabed. The uppermost zone consists of recent (post 1950) humic filldirt, and contained no prehistoric artifactual materials. The middle zone, consisting of approximately 1 meter of post-Pleistocene aeolian sand, was a sand zone which produced evidence of prehistoric human utilization of the site; this evidence consisted of stone artifacts and debitage. The upper 50 centimeters of the sand zone contained chert debris and a bifaced stemmed chipped chert tool which was probably used originally as a projectile point, and probably dates from the middle to late Archaic Stage, at sometime between 6 - 8 thousand years ago. The lower 50 centimeters of sand produced fewer flakes, but did contain a unifaced scraper, made from chipped chert, and probably dates from the early Archaic Stage or the late Paleo-Indian Stage, or sometime between 8 and 11 thousand years ago. Precise dating of these deposits is made difficult due to the lack of preservation of organic remains; however, attempts will be made to correlate the palynological (pollen) profiles from underwater cores (where organic preservation is excellent) with land profiles, thereby allowing a more precise estimate of the age of these strata. Regardless, the land portion of the site has proven to be productive and intriguing, as the work done in the 1970's produced fossilized remains of extinct horse and camel, as well as stone artifacts. Overall, however, the over 100 linear meters of

trenching done thus far on the surface has demonstrated that the uplands portion of the Warm Mineral Springs site was not heavily utilized for long periods of time, as was the case at neighboring Little Salt Springs (8Sol8) site, some 3 kilometers distant to the northeast. The question of paucity of artifactual remains on the land site is one of the intriguing aspects of the research, but evidence thus far seems to indicate that Warm Mineral Springs was used primarily as a burial site (now inundated by the Springs' waters as a result of approximately 100 meter of sea level rise in the last 12 thousand years) rather than as a village or encampment. The reasons for this are one of the multiplicy of mysteries at the site, and will be addressed further as work progresses.

(2) Thirteen Meter Ledge

The second area of research concentration is on the 13 meter (below present water surface) ledge which completely encircles the cavity of the sinkhole, or cenote. All prior research done to date by the Project Director indicates that the level of water in the spring-fed sinkhole was perhaps 30 meters below present water surface when the rich floral and faunal assemblages accumulated some 10 to 11 thousand years ago (by radiocarbon dating). At that time, according to participating hydrologists, the water was, as today, approximately 87°F on the surface, and approximately 92°F at the entrance to the main warm water source 70 meters below present surface, on the north side of the base of the hourglass-shaped sinkhole. The water was also then, as now, heavily mineralized, and anerobic (thus retarding bacterialogical destruction of the organic remains) and originated in the "Boulder Zone" of the Floridan Aquifer, some 1000 meters below present sea level. This anerobic water is capped by 3 to 6 meter of aerobic water on the present surface; the aerobic layer occurs due to ground water run-in, rainfall, and sunlight penetration, and contains a very few fish (gar and tarpon), many minnows and snails, and some vegetation. The aerobic layer is also photosensitive, and although remarkably clear at night and early morning, clouds up on a daily basis, and produces extremely poor underwater visibility. This diurnal murkiness increases in summer and decreases in winter.

The reconstruction of the 10 - 11 thousand years before present physical environment would be of a circular limestone solution feature, or sinkhole, with an hourglass-shaped shaft extending from the flat surrounding land down to a depth of 70 meters below present water surface. The cavity, at the 10 - 11 thousand years before present (BP) was approximately 50 meters across, opening to perhaps 60 meters across at 12 meters below surface, then restricting to perhaps 45 meters wide at 28 meters below surface, then opening wider at increasing depths until it reached a maximum width of 65 - 70 meters at 70 meters below surface. (These measurements are all approximate; currently mapping is being conducted which

will produce precise figures). There are many ledges circling the sinkhole, but major ones occur at 4, 9, 13, 24 and 28 meters below surface. Some of these ledges, particularly the 4 meter and 9 meter below surface ledges have major calcium carbonate formations suspended from them. These formations, or stalactites, constitute another proof that the water level in the Springs was once much lower than today, leaving the ledges dry. Dripstone formations occur as far down as 28 meters below surface. An unsuccessful attempt was made in 1977 to have isotopic dating done on one of the formations, in order to ascertain its time range. Presently, it is estimated that it would have required thousands of years of lowered water level for some of the larger formations to grow.

It is beneath the heaviest dripstone formations, on the 13 meter ledge, that the most spectacular finds have been made thus far (see attached publications section from the Project Director's Vita for a list of his previous publications and activities relating to the site). This ledge has produced artifacts, several humans, a sabre tooth cat, giant ground sloth, panther, deer and smaller mammals, birds, and reptiles. Current Project underwater activities have concentrated heavily on this ledge.

Mapping a site is one of the most basic of archaeological activities, and is exceptionally complicated and time consuming. In the 1970's, the underwater portion of the site was partially mapped, and many datum points were installed. Unfortunately, the highly corrosive nature of the waters on metals (see "Dive Operations" report) has destroyed many of these points in the intervening decade, necessitating their relocation and replacement, activities which require a great deal of underwater work. Furthermore, the deposition of recently introduced sand and sediments from above (put into suspension by the activities of the bathers above, sometimes as many as 6 to 8 hundred guests a day) is a continuous process, requiring continual cleaning. Much of the 13 meter ledge was cleaned in the mid-1970's, (down to ancient sediments) then covered with large sheets of builder's plastic to protect the ancient sediments from disturbance and/or contamination (see "Dive Operations" report).

The relocation of markers, cleaning, and replacement of plastic covers has been a most time consuming activity during the current Project. Additionally, a limited budget has necessitated the utilization of makeshift mapping, surveying, recording, and excavation gear. All excavation units underwater have been re-marked and relabelled, a prerequisite for photographic and videographic documentation.

Excavation has to this point been limited to re-exposing, photographing, and mapping underwater zones which contain the Paleo-Indian Stage remains. Zone I of this ledge consists of a dark brown subaqueously deposited gelatinous muck; it was deposited post 10,000 BP, apparently a product of decaying and organic matter, particularly algae from

the upper aerobic zone. This zone contains the remarkable ornate tufa formations; these calcium carbonate structures are thought to form and grow as a result of the slow passage of CO_2 bubbles through the heavily calcium charged water.

Zone II on this ledge consists of beautifully preserved organic remains, including the 10,240 year old human recovered in 1973.

Zone III on this ledge consists of a green-gray clay, which contains fewer organic remains than does Zone II; however, it is Zone III which produced, in 1976-7 the remains of saber tooth cat, ground sloth, and a human mandible, radiocarbon dating to 10,980 years ago, marking this site as the first in the Western Hemisphere to demonstrate the contemporaneity of humans and those extinct Pleistocene megafauna. Currently being worked are remains of deer, saber tooth cat, and ground sloth. The crevice in which the 10,240 year old burial was interred has been re-opened, and will be further explored during this current fiscal year. It is anticipated that 4 to 6 of these features (excavation units) will be explored this fiscal year. Previous disturbances by an amateur archaeologist and other unknown individuals have totally destroyed an estimated 80% of Zone I (the recent subaqueous muckish type deposition), an estimated 50% of Zone II, the 10,000 BP peat zone, and perhaps 30% of the Zone III clay. The work done since 1972 by the Project Director has been designed to be minimally disturbing to these sediments, while producing maximal archaeological and paleoenvironmental data. It is crucial, and of primary concern, that all current and future work be most conservative in sediment disruption. It is for this reason that diving access is strictly limited to those divers specifically approved by the Project Director, and only then in physical presence of a staff member. Actual excavation of sediments is only done by experienced well-trained underwater archaeologists; this results in a slow rate of excavation when compared to a land site, where limited experience volunteers or students can work with far less direct supervision.

The slow and meticulous excavation of the 13 meter ledge has, however, been a prime factor in the success of the archaeological research.

(3) Debris Cone

The third area of concentration is the debris cone on the bottom. As noted earlier, the sinkhole has the configuation of an hourglass; much as an hourglass, it has a cone of debris on the bottom. The peak of the cone is 38 meters below surface, and its base is at 70 meters (at this time, it is not known what underlies the cone, and it could, in fact, conceal deeper portions of the shaft) giving it a <u>minimal</u> thickness of 32 meters. As mentioned above,

this cone was probably never exposed to either air, or aerobic (and therefore not bacteria-free) water, having thus alwys been covered and protected by anerobic waters. It is reasonable to assume that, at or near the base of the cone will ultimately be found rockfall debris, dating from the initial opening (to the surface) of the sinkhole, via the mechanism of cave-roof collapse at a time of lowered water level. The dating of the sediments at the base is a long range objective, and will probably result in dates of 20,000 years BP or older. After the roof collapse, up to the present, the sediments of the cave were deposited chronologically in a layered fashion, with modern debris currently uppermost.

During the 1970's the Project Director recovered human skeletal remains from an eroded (by the mechanical action of sand) gulley at 49 meters, and a 4 meter sediment core was taken at the same depth. Additionally, this source-cave for the warm water, which opens to the shaft at 70 meters below surface on the north face was videographed by a team of expert cavedivers under the Project Director's directions.

It was anticipated that very little work would be done on the debris cone this fiscal year, but fourth-quarter acquisition of dependable life support equipment will permit limited testing on the core at 45 meters below surface during that quarter, with trench layout and excavation now scheduled to begin the first week of April. This excavation is designed to cut into the East side of the cone, in order to expose the stratigraphy so that sediment ages can be identified. Following the identification of prehistoric sediments, time permitting, excavation of the cone will proceed, although at a relatively slow pace, due to the current lack of sufficient funds for underwater excavation equipment, such as a motor driven hydraulic hand-held dredge, to be used for removal of excavated sediments and the concurrent murky water caused by these suspended sediments.

This area, the cone, promises to be fascinating, due to the continuous covering by anerobic waters for perhaps 20,000 years. The cone has the potential of containing the preserved organic remains, floral and faunal, of everything which has ever fallen into the sinkhole. In addition to plants and animals (including humans who fell, or were thrown, in), the excellent preservative environment should produce a wealth of artifacts from the Paleo-Indian and Archaic stages, and should provide a significant window to the past, and greatly increase understanding of early humans in Florida. New information pertaining to the natural history of the Florida peninsula promises to be as extensive and equally as significant.

B. Visitors

Archaeological sites of this significance are rare, and the current Project has, in the past, commanded the attention of other researchers, governmental agencies, elected officials as well as the general public. So far, current site visitors have included archaeologists from Brown University, Texas A&M University, the National Park Service (USDI), Minerals Management Service (USDI) and hydrologists from USGS (USDI), among numerous others. Public officials from surrounding municipalities, counties, and the State of Florida have been regular visitors to the Project, and Governor Graham, at the recent MCC South Campus dedication, has indicated a desire to visit the Project.

C. Information Dissemination

Information dissemination, one of the stated goals of the Project, has been extensive. Numerous written, telephoned, and personal requests for information have been processed, and lectures have been presented to school groups, college classes, civic organizations, archaeological and paleontological groups. Displays have been prepared on several occasions, and semi-permanent exhibit cases are on display at the Springs.

Public knowledge of the Project has been greatly enhanced by the wide range of attention received from both electronic and print media. On radio and television, numerous news and feature stories and interviews have been aired, but perhaps the greatest audience will derive from the airing of a BBC world-wide special series on underwater archaeology. The series, to be aired in late 1986 or in 1987, will have one segment solely on the Project. Derek Towers, the producer of the program, visited the site for one week in February to do preliminary review, and will return in April for two weeks of filming. The special promises to be of great significance in furthering world-wide knowledge of the site; Mr. Towers has called the site one of the most significant in the entire world, and indicated that, in addition to the April 1985 filming, he will return for further filming should the Florida Legislature fund the Project again in the 1985-86 fiscal year.

Most intensive of the coverage has been that of newspaper and magazines. Approximately 50 newspaper articles have already appeared, and more are being done presently. Thus far, writers for Paris Match, Omni, and People magazines have completed stories, and editors of Smithsonian are currently in communication with us over an article. In addition, several free lance writers have done, or will do, stories.

D. Administration

Administration of the Project is handled principally by the only two full time employees of the Project, the Project Director and the Project Assistant. In addition to their diving duties, which are often full-time, they handle the planning, execution and reportage of all Project needs. These duties were performed full-time, without pay, during the nearly two years prior to the 1984-85 fiscal year appropriation. Currently there are two paid consultants assisting the Project; one is Dive Officer and Assistant Archaeologist, the other is consulting in matters relating to site history

during the years prior to 1972, and site-related archival materials in his collections.

E. Funding and Other Support

One of the early stated goals of the Project was to continue to seek private and public support of the Project. We have been successful thus far. Of primary importance is the continuation of State support for the 1985-86 fiscal year; after much work, the budget request for the upcoming year was presented to Senator Robert Johnson, and MCC, in February. Other support comes from visiting scientists, as their participation on the Project is necessary to further understanding the complex interdisciplinary problems of the site, as well as disseminating information to the scientific community, and it is customary to pay travel expenses and consulting fees for such expertise; however, we have been fortunate in having the USDI (MMS) send a visiting archaeologist for one week, and presently several other scientists are planning visits. The National Park Service Submerged Cultural Resources Unit is currently planning on incorporating work here in their 1985-86 fiscal year activities. Numerous other agencies, individuals, and companies have assisted the Project by volunteering their time, services, and/or goods and money during the current Project, as well as in the incipient planning stages. Foremost among these have been the owners of the Warm Mineral Springs Spa, Florida Springs, Inc., Fred Daley, Jr., Mary Wheeler, and Dorris Herron, and their families. They have contributed cash, office space, housing, field office and dive locker space, utilities, and the like. They and their employees have assisted the Project in ways too numerous to list, and have asked nothing in return. They are indeed owed great gratitude, as the Project could simply not have begun or continued without their wonderful support.

A debt of gratitude is also owed the sponsoring institution, MCC. Dr. Steve Korcheck, the President, readily recognized the significance of the Project, and graciously agreed to administer the Project. Our South Campus Project Liason, Professor Walter Packard, and South Campus Provost Dr. Jack Dale, have both been actively supportive of the Project and its needs, as have numerous staffers and students at the College. The College has been most ready to furnish personnel assistance and equipment when requested; one of the major contributions of MCC has been their willingness to undertake a new field archaeology class (which is currently carefully excavating the terrestrial portion of the site), and their hiring of a local land archaeologist to instruct the class.

III. DIVING OPERATIONS REPORT

A. First and Second Quarter Diving Operations July - December 1984

(NOTE: No official dives were logged during this time, as funds were not available until October 1984, and Project administrative requirements prevailed.)

The primary focus of all diving-related operations during late 1984 was to work toward those project goals set forth in the 1984-85 FY legislative budget request while establishing procedures and techniques that maximize safety and research data while minimizing down-time. Pursuant to this focus, the initial function of the Dive Officer was to establish an official diving policy to ensure that all Project and volunteer divers would have a set series of guidelines upon which to base diving activities. The basis of this policy statement was taken from an earlier policy written for the State of Florida Division of Archives, History and Records Management, Underwater Archaeological Research Section, by Larry Murphy during similar operations at Warm Mineral Springs. Changes were made to increase the margin of safety for divers and to better accommodate the position of Risk Management administrators on the college level. In an attempt to improve the chance of utilizing highly trained volunteers and consulting divers/scientists, it was established that no repetitive or extreme exposure dives would be made by anyone other than Warm Mineral Springs Archaeological Project (WMSAP) staff members. The safety record of state-funded archaeological research dives in Warm Mineral Springs (WMS) has been unsurpassed by similar projects and strict adherance to the established policy increases the chance for a continued absence of hyperbaric incidents.

Before actual diving commenced, a quantity of life support and other diving equipment had to be located and a secure place to store it during diving operations had to be constructed. Equipment came from many sources and tapped the resources of those individuals, both past and present, who have participated in the WMS research effort. Each staff member brought with him/her a limited quantity of personal gear, but the quantity of gear necessary to safely carry out safe, daily operations far exceeded the quantity of personal gear on hand. To these ends, a series of lend/lease agreements were made with friends and colleagues to secure additional tanks, wetsuits, regulators, cameras, strobes, etc. Furthermore, a number of low-dollar items were acquired through a property transfer from the Division of Archives in Tallahassee to Manatee Community College. These items included mostly broken, worn out, and replaced items including gutted dive lights, dry-rotted rubber goods, odd pieces of wetsuits, and other cast-off equipment. Additional high-dollar items requested, such as the Innerspace compressor, underwater video system, Pentax camera system, Sherwood-Selpac twin orifice dual manifolds, and additional Poseidon Cyclon 300 regulators, were all placed into a category requiring that they be insured for full-dollar coverage before they could be loaned to Manatee Community College. The Project was denied access to the Innerspace compressor despite the fact that it was purchased with funds from a former special appropriation for WMS archaeological research. Restricted budgeting and negotiations throughout 1984 failed to produce these items.

An older building on the northwest side of the Springs was cleaned out and remodeled by staff into a field office and diving locker. This facilitates having additional on-site work space and a secure area for the storage of diving equipment. The building was painted, shelves and desks installed, light fixtures installed, and security devices installed to insure that equipment would be safe from burglary.

The question regarding the use of volunteer divers or visiting scientists in day-to-day diving operations has remained unresolved since the earliest stages of the Project. The official position of the Risk Management Consortium has remained a negative one. Repeated requests to the administrators of Risk Management on the college level to reevaluate the Project diving policy and waivers of liability have failed to resolve the problem. The resolution of this problem is essential if work is to proceed with maximum safety and efficiency.

Ongoing product research continued throughout 1984 to insure that future budgeting will reflect accurate cost figures. Furthermore, expenditures during the remaining fiscal year can be made in such a way as to maximize quality and safety while minimizing initial cost and subsequent repair/maintenance costs as well. Part of the product research involved investigation into replacement parts and repair for old and worn items. This included plans to refurbish an old Army surplus JOY MDL H-50 compressor, which belongs to Florida Springs, Inc. The repair of this compressor would greatly benefit the Project by providing an on-site compressor with capacity for filling scuba cylinders with breathing quality high pressure air. It was discovered that the entire compressor, tank, and filter system had been contaminated by the introduction of a petroleum-based lubricant into the compressor itself. The source of this oil is unknown at this time. Initial estimates for refurbising this compressor began at $3,000 and there would be no guarantee that, once repaired, the aging compressor would continue to function for the duration of the Project. Investigation into the resolution of this problem is continuing.

Research into diving physics, technology, and safety began during the initial stages of the Project, and continued uninterrupted to insure that any input into the program that would increase the margin of safety could be immediately incorporated.

Although no officially logged work dives were made during this period, several preparatory and security dives were made by staff members. These dives aided the staff in refamiliarizing themselves with the springs, assessing condition of available equipment, and planning more efficient work dives scheduled to begin in the third quarter.

B. Third Quarter Diving Operations
January - March 1985

The ongoing focus of all diving operations during the first three months of 1985 was to continue working toward the established project goals as set forth in the legislative budget request while developing additional techniques that further the safety of Project staff members and contribute to the maximization of data recovery.

It has been the duty of the diving officer to maintain a program of product research to insure that all equipment expenditures will be made in such a way as to maximize safety for diving personnel while minimizing initial cost and subsequent repair/maintenance costs. Continued research into diving medicine and underwater technology also became an important task so that the latest developments could be incorporated into standard operating procedures.

Actual work diving operations got underway in January 1985 and continued throughout the third quarter. These operations were conducted with the greatest possible safety and suffered minimal down time despite the limited amount of equipment, and the poor quality of life support gear which required constant maintenance. If one piece of gear malfunctioned, a whole working dive was cancelled since no backup gear was available. These cancellations were infrequent due to rigorous preventive maintenance.

The high standard of safety set forth in the diving policy statement as issued in 1984 continued throughout the third quarter as well with no incidence of hyperbaric trauma in any of the diving team members. Strict adherance to the rules was demanded of all divers. A total of over 85 manhours were spent underwater during over 90 individual working dives. The majority of dives made during early 1985 were made to continue the cleaning efforts on the 13 meter ledge. Although large areas of the 13 meter ledge were draped with builder's plastic in 1976 to protect excavated features and previously cleaned areas, large quantities of precipitated sand and debris had accumulated on top of the plastic during the intervening years. The majority of these subaqueous depositions had been stirred by swimmers in the beach area which surrounds the springs and precipitated down to accumulate on the ledge. This constant precipitation of sand and debris continues daily. Deposition varies from area to area and averages between 2 centimeters and 1 meter. These sediments were removed entirely by hand fanning. The time factor in this activity was extensive and made up the majority of early dives in the third quarter. A by-product of these cleaning efforts was the refamiliarization of all staff members with the 13 meter ledge topography, previously excavated feature locations and mapping points.

A technique has been developed to insure the sterility of ongoing working sites. Sheets of builder's plastic are prepared and one edge is then nailed to the inner wall of the springs a meter above the wall/ledge interface. The plastic is draped over the excavation and ledge between work intervals. During work periods, the downslope edge is connected to a series of floats which, when filled with air, raise the plastic up to form a flume which carries away the working divers exhaust bubbles. Uncontrolled exhaust bubbles can scrub algae and loose sediments off the walls and stalactites above, precipitating it into the newly excavated area, where it contaminates the feature and obscures visability. At the conclusion of a working dive, the air is spilled from the floats, allowing them and the plastic to settle down to cover the excavation area again.

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An effort to reestablish the locations of features and mapping points got underway during early 1985. During a visit from Larry Murphy, a National Park Service Underwater Archaeologist and former participant in WMS research, a number of dives were conducted to find and label all the recognizable features. Murphy also participated in a deep dive to begin laying the groundwork for limited testing in the debris cone at the lower portion of the springs.

A series of dives were also conducted with Derek Towers of the British Broadcasting Company (BBC), who came to Warm Mineral Springs to evaluate the potential for including the WMSAP in a series of films about underwater archaeology sponsored by the BBC and American Public Broadcasting System. After making several dives in the springs and interviewing the Project Director, it was decided that a crew of underwater cinematographers would come back under Towers' direction in April for the purpose of making the BBC film, to be broadcast in 34 countries and on American PBS stations. This film is scheduled to air in 1986.

A series of dives were also made with visiting scientist James M. Parrent of the Texas A&M University and U.S. Department of the Interior, Minerals Management Service (MMS). In his capacity as a consultant for the Department of Interior, Parrent came to collect data which might contribute to a research design being developed for creating predictive models for MMS to use in evaluating the cultural resource potential of outer continental shelf oil lease plots. Dives at Warm Mineral Springs contributed to Parrent's understanding of the geological and environmental factors involved in examining karst topography for cultural resources. Additionally, Parrent advised Project members on updated waterlogged wood conservation techniques.

The constant problem of metal deterioration due to the effects of the springs' mineralized water, as mentioned earlier, has presented numerous problems in maintaining mapping points and field specimen tags. Many mapping points have rotted out and must be replaced. The only metal substance which has proven to be highly resistant to deterioration is high-grade stainless steel wire. Wire tags placed in the springs during the mid-1970's are still new looking. Additionally, the corrosive water requires that extraordinary care and maintenance of the life support gear be taken, requiring much time before and after each dive.

The major limiting factor in diving operations to date, besides using an insufficient quantity of inferior, high-maintenance equipment, has been the absence of an on-site compressor with capacity for filling scuba cylinders with breathing quality high pressure air. Initial plans for refurbising an old Army surplus Joy MDL H-50 compressor, which belongs to Florida Springs Inc., were scrapped when it was discovered that the entire compressor, tank, and filter system had been contaminated by the introduction of a petroleum-based lubricant into the compressor itself. The source of this oil is unknown at this time. Initial estimates for refurbishing this compressor began at $3,000, and there would be no guarantee that once repaired the aging compressor would continue to function for the duration of the Project. Two alternatives presented themselves: 1) Purchase of a new compressor, or 2) Purchase of air from a local dive shop. The limited state of funding for the 84-85 fiscal year precluded the purchase of new equipment, so the possibility of outside air purchases was investigated. A decision was made, after several trials, to use open purchase orders to purchase air from Economy Tackle in Sarasota through Mr. George Guy, who agreed to fill scuba cylinders for $1.00 per fill and handle all pickups and deliveries with a twenty-four hour turn around time. The reasonable price (half any other dive shop discounted price) and free

pickup and delivery (saving a large number of Project manhours) were a viable alternative, although not as logistically favorable as having an on-site capability of refilling cylinders upon demand. Even with careful planning and coordination with Mr. Guy, several dives had to be cancelled because of the unavailability of filled tanks. The diving officer has continued to research compressor specifications for future rebudgeting.

In accordance with the Project's ongoing efforts to cooperate with local citizenry and governmental agencies, the Project staff coordinated and participated in a training dive with members of the Sarasota County Sheriff's Office Sheriff's Underwater Recovery Force. Under the auspices of Florida Springs Inc., and in response to a letter from Capt. Edward Palmer of the Sheriff's Department, four members of the S.U.R.F. team were conducted on a 100 foot dive and tour of the 13 meter ledge areas. The training dive was mutually beneficial. S.U.R.F. team members were able to make a controlled deep training dive with good visability without a major expenditure of travel time. WMSAP divers benefitted by being able to give the closest available dive/rescue team an orientation toward conditions they might encounter in the event that an emergency might someday occur involving WMSAP personnel.

The question regarding the use of volunteer divers in day-to-day operations remains unresolved at the end of the third quarter.

A carefully prepared "Dive Log" is maintained in a master file, and each diver is required to submit a record of each dive immediately following the dive. These files are maintained as permanent records of the activities.

IV. CONCLUSION

To conclude the report for the first three quarters of the 1984-85 fiscal year, we are well underway in meeting all goals for this time period; the archaeological work is progressing well on the terrestrial component, as it is on the 13 meter ledge, and a bonus will be excavation, in the upcoming quarter, on the debris cone at 46 meters below surface. We will continue to have visiting scientists on site, in greater numbers as knowledge of the Project becomes more widespread. In the area of information dissemination, we anticipate a busy last quarter, particularly during the BBC filming: magazine and newspaper news and feature stories will continue, and provide greater public knowledge of the activities and needs of the Project.

Administrative duties, including the preparation of the fourth quarter progress report, and budgetary matters will require increasing amounts of time in the upcoming three months. It should be noted clearly that the current budget expires June 30, 1985, and no further budgeted activities will take place beyond that date unless we receive funds from the Florida Legislature for their continuation.

(NOTE: This report was written primarily by the Project Director. The section entitled "Dive Operations Report" was prepared by the Dive Officer, with assistance from the Project Assistant. The Project Assistant did overall final editing and preparation.)

Prepared May, 1985

PROGRESS REPORT

WARM MINERAL SPRINGS ARCHAEOLOGICAL PROJECT

Activities for the Fourth Quarter
1984 - 85 Fiscal Year
(April 1, 1985 - June 30, 1985)

for

Manatee Community College

I. INTRODUCTION

This report is being prepared for the sponsoring institution, Manatee Community College, and covers Project activities from April 1, 1985, through June 30, 1985.

A report covering the activities of the Warm Mineral Springs Archaeological Research Project is on file with MCC for the first through third quarters of the 84-85 fiscal year, and should be referred to for background information (i.e., description of site, working conditions, history).

The stated goals of the current Project are to preserve the geological and archaeological resources of Warm Mineral Springs itself, and its immediate environs; conduct archaeological research on the terrestrial and 13 meters below present surface ledge areas of the site; to coordinate research activities with other scientists, organizations and educational institutions; to disseminate information about the Project; to continue to seek private and public support for the Project. All goals have been well met.

This fourth quarter report for the 84-85FY is divided into two sections, entitled "Narrative" and "Dive Operations"; these sections attend to the land and underwater archaeological research, information dissemination, visiting participants, funding and other support, and the specialized diving activities on the underwater component of the site.

II. NARRATIVE

A. Preservation

(1) In response to a request from Senator Robert M. Johnson, legislative sponsor of the Warm Mineral Springs Archaeological Research Project, Project members began the intensive and tedious work of compiling an application for the purchase of Warm Mineral Springs by the State through its Conservation and Recreational Lands Program (CARL). This program would provide the most promising means to insure the continued preservation of the geological, hydrological, archaeological and cultural resources of the Springs. Although a vote by CARL Committee members for this and other proposed properties would not take place until October 1985, the deadline for submission of this application was set at August 1, 1985. Compilation of the extensive information required for this application was well underway by the end of the fourth quarter.

(2) As noted in the First through Third Quarters Progress Report, the unique waters of Warm Mineral Springs are responsible for the preservation of the archaeological and geological resources. The Project is committed to preserving the quality of the water, and in cooperation with the USGS, Tampa, water samples were taken by Project members for analysis by the USGS laboratory. These reports will enable monitoring of any changes which take place in the elements of the water. The tests will also help to determine whether controllable substances being introduced to the water by outside sources are contaminating its fragile nature.

B. Archaeological Research

(1) Terrestrial

Activities of the MCC field archaeology class, begun in the third quarter, continued through April. For the first time in the site's history, proof of Archaic Indian use of the Springs was established by the recovery of several Archaic period tools ranging in date from approximately 4,000 years BP to 8,000 years BP. The recovery of the older Archaic tool was documented by BBC cameras (see Information Dissemination, Part D). The MCC students benefitted by receiving a field archaeology course of the quality usually available only at the University level.

(2) Thirteen Meter Ledge

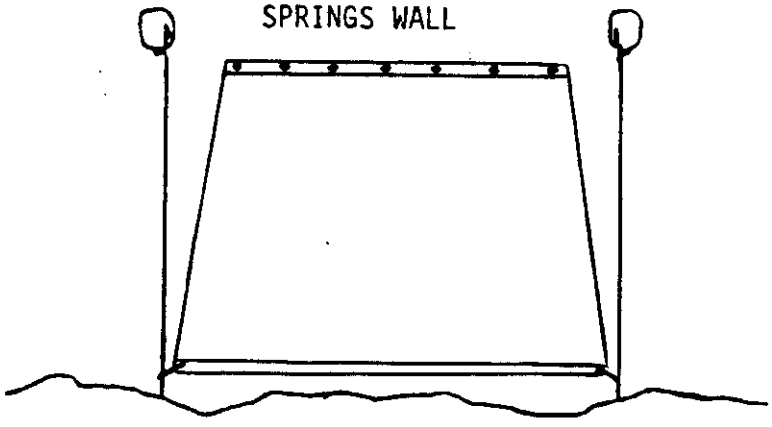
The time-consuming process of relocating and replacing mapping points and markers on the 13-meter ledge continued through the fourth quarter. Work was facilitated by the purchase of three Poseidon Cyklon 300 SCUBA systems which enabled more frequent diving activities to take place; diving operations had been more limited during the earlier part of the planned diving season because of the frequent break-downs of available poor-quality SCUBA systems.

During further excavation work at Feature 30 (location of earlier excavation where saber cat and giant ground sloth remains were recovered) additional ground sloth bones, of a younger animal than previously documented, were exposed and are presently being mapped. The bones will remain in situ until thorough mapping, documentation and research underwater is completed, at which time the remains will be brought to the surface for further study by scientists. The ground sloths recovered thus far are estimated to be of the age when their species was fast becoming extinct.

Project members continued to photographically document activities both underwater and on land. Because of the daily phenomenon of changing visibility in the water, most dives were planned in the early part of the day. Excellent photographs, of publication quality, were achieved during this quarter of animal remains exposed in the sediments. These photographs are valuable not only for permanent documentation of excavation progress, but for information for scientists, students and the general public as well.

Project members continued to work with the plastic tent concept designed earlier in this fiscal year. Each tent requires many long, tedious hours to construct. Two designs are now being used on the Project, each one using air-filled plastic jugs for floats. One design, the first installed, is a plain, clear sheet of builder's plastic with two reinforced edges; one edge is anchored against the wall of the Springs, the other is the front edge with its outer corners used as anchoring points to the floats' lines:

PLASTIC TENT BASIC DESIGN IN LOWERED POSITION



FRONTAL VIEW

The plastic tent, when in its lowered position, protects the excavation unit from falling sediment and debris. To inflate the tent for work at the feature, divers pull the lines attached to the plastic floats until the floats are at ledge-level. The clips which anchor the tent to the lines are removed from its ledge-level position and attached to the base of the float. The diver releases the line, the float slowly ascends to its original position, and the tent begins to rise. Divers carefully position themselves beneath the rising tent and their exhaust bubbles assist in raising the plastic tent to its proper position.

Several problems with the basic design were noted: 1) the Springs' wall to which anchors were secured sometimes crumbled and released the back-edge of the plastic; 2) a great deal of effort was necessary to return the plastic tent to its lowered position; and 3) the front edge of the plastic would not float in a straight-edge position. Instead, it would rise in an uneven arch and pull the float lines in toward the center of the feature. This added stress on the float-line anchors posed the threat of the anchors being pulled completely from the limestone ledge.

Although no solution to the rear anchor problem has been designed, decreasing the stress on the anchoring points when lowering the tent would help somewhat; project members cut slashes in the plastic tent to facilitate the release of air bubbles during lowering. The second design of the plastic tent was developed to solve the problem of the front-edge arch: PVC pipe was coupled to the width of the front edge and was laced to the plastic tent through grommets on its reinforced edge. It was found that PVC pipe is not rigid enough to hold the front edge in a straight position, but does provide a more controlled arch. Even so, efforts will continue to develop a more satisfactory method to protect the sterile condition of excavation units. Materials which can be utilized in future designs are limited to those which are lightweight and can withstand the corrosive elements of the water.

Cleaning efforts by Project members continued on a regular basis. It was noted during this quarter that cleaned rock formations would be covered by algae growth in 1½ to 2 weeks, in addition to the rapid accumulation of sand and sediments falling from the swimming area above. The giant stalactites on the East side of the Springs at 30' below surface were gently cleaned with scrub brushes during this quarter. Algae growth had been so heavy that it was difficult, in lower visibility dives, to even find these huge formations.

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(3) Debris Cone

For the first time in the site's history, an excavation trench at approximately 130' below surface, was established during the fourth quarter. A great deal of planning, design, and alteration of available equipment to meet the divers' special needs for this type of diving went into the overall success of this first test trench. The trench served as an experiment for future research on the debris cone, in that although some special problems related to this peculiar excavation unit could be projected in advance, only hands-on experience could provide the opportunity for determining more exactly the variables which need to be contended with in future major excavation. Some of these problems are: 1) a very short bottom time in proportion to the overall length of the dive; 2) danger of rock-fall from above; 3) proper and necessary lighting in this very dark environment; 4) shoring up the sides of the excavation unit to prevent landslides from sand movement; 5) more reliable equipment, measuring devices, and gauges. All solutions to these problems, and others, must be designed to minimally disturb the debris cone and excavation unit.

In the area of archaeological research, the Project had well exceeded its goals for the FY 84-85 by the close of the fourth quarter. The original intent had been to accomplish the repositioning of mapping points and markers and to reopen old excavation units which had been shut down in the late 70's. With excavation on the 13 meter ledge having proceeded beyond the reopening point to new discoveries, and an excavation unit established successfully on the debris cone, the Warm Mineral Springs Archaeological Research Project was, at the end of the fourth quarter, well into accomplishing its goals for the following fiscal year.

C. Visitors

During the fourth quarter, as in the third, numerous visitors were on site at Warm Mineral Springs. Many were experts in fields related to the research continuing here, contributing information and pledging support in our continuing and projected studies. Most visitors in this category were conducted on underwater tours to observe work underway there and to see first-hand the difficult working conditions with which Project members are confronted. Legislative visitors included Senator Bob Johnson, Senator Pat Neal, Representative Dave Thomas and Representative Jim Lombard. Members of the National Speleological Society contributed valuable information by mapping the cave at 230' from which flows the 92° highly mineralized anerobic waters of the Springs. NSS members will return during the next fiscal year to continue their mapping work of the Springs.

Dr. Nicolas Flemming, of the Institute of Oceanographic Sciences, Wormley, England, was one of many visitors to the site and as the world's leading authority in Old World research in drowned terrestrial sites has promised future visits to share research concepts. These specially noted visitors to the site, and others not specifically mentioned in this report, have made, and continue to make, valuable contributions to the overall success of the Project's research.

D. Information Dissemination

One of the farthest-reaching activities in the area of information dissemination took place during the fourth quarter with the two-week filming of the Project by the BBC. The scope of the film extends from the basic funding of such a Project through the overall accomplishments and contributions such research yields. Filming took place on land, the 13 meter ledge, and the excavation trench at 130'. The BBC crew was filming the land excavation by the MCC film class on the day the approximately 8,000 years BP tool was recovered. This segment of the film will be included in the broadcast scheduled for late 1986, to be aired on U.S. PBS stations and 36 other countries.

Initial contact was established with, and information of site history provided to Mr. Jack Skow, who is the assigned writer for a feature on the Project to be published in Smithsonian Magazine in 1986. Mr. Skow is scheduled to be on site in January 1986 for two weeks.

Over 20 newspaper articles covering the WMSARP site activities were published during this quarter, in addition to inclusion in several television news broadcasts and a radio talk show on WENG. As in other quarters, numerous requests from the general public for reading material on the site's history were answered.

An article was prepared for an upcoming book on the centennial history of Sarasota County under the heading "History Preserved." The article generally describes accomplishments of the Project and will be available in bookstores in mid-December 1985.

In addition to eight lectures given by Project members to civic and other organizations this quarter, a lecture, slide show and exhibit was provided for the surrounding general public at a family night sponsored by North Port Elementary.

E. Funding and Other Support

One of the stated goals for the 84-85 FY was to gain continued funding from the Florida Legislature. A great debt of gratitude is owed to all who are responsible for the successful accomplishment of this goal, with a special thanks to Senator Bob Johnson who, as always, has been most instrumental in acquiring such funding and support.

BARBARA COCKRELL, PROJECT ASSISTANT
WARM MINERAL SPRINGS ARCHAEOLOGICAL
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WARM MINERAL SPRINGS, FLORIDA 33588

Again, the Project is indebted to the owners of the Springs, Mr. Fred Daley, Jr., Mrs. Mary Wheeler, and Mrs. Doris Herron, who in addition to allowing the research to take place amidst their commercial operation, have selflessly contributed housing, office space, storage, utilities, supplies, services and money to the Project. Mr. Sam Herron, representative of the owners, and Mr. Dick Moore, Manager of the Spa, have been especially helpful in communicating our needs to the owners and staff, and in resolving any problems which were in their power to control.

The BBC contributed greatly to the Project, not only by giving the research world-wide attention, but also in cash contribution and the sharing of technical information. Mr. Derek Towers, Producer of the series, acted as ambassador with other Projects conducting related research throughout the world, opening communication with other scientists on our behalf. Mr. Towers also contributed to our library of related archaeological excavation.

Mr. Larry Murphy, National Park Service, has continued to provide invaluable information to Project members in highly specialized, technological areas. We are deeply grateful for his innumerable contributions to the success of the Project.

Other contributions to the Project, too numerous to list, have come from the local legislative delegation, scientists, community leaders, civic organizations, businesses, educational institutions, state agencies, and the general public. Their continuing support of the Project is much appreciated. Many individuals at MCC are owed a special thanks for their great assistance in accomplishing administrative tasks.

F. Administration

The administration of the Project continued to be a major time-consuming responsibility for both the Project Assistant and Project Director. One of the goals for the 85-86 FY is to find ways to reduce the administrative workload and thus increase working time in archaeological research. Both the Director and Assistant continue to work far in excess of the 40-hour work week. Investigation into computer systems which would lighten this burden for Project personnel continues.

An analysis of Project expenditures during FY 84-85 shows that of the $100,000 appropriated by the Legislature, 8% was spent in administrative overhead fees to MCC, 64.3% expended in salaries, consultant fees and benefits. The remaining approximately 27.7% was spent for diving equipment purchases, equipment maintenance and maintenance supplies, hardware, excavation tools, laboratory equipment and supplies, general office supplies and services.

Additionally, of this 27.7%, 2.9% was spent for telephone installation and service, .38% was spent for moving expenses incurred in physically relocating the Project's office from Tallahassee to Warm Mineral Springs, and .63% was spent in travel expenses for Project personnel. Moving and travel expenses were offset greatly by the personal contributions of the Project Director and Project Assistant, in addition to their contribution of most of the office equipment used by Project personnel this year. The Project Director also voluntarily reduced his approved salary by $5,000 to enable the Project to have more spending power for needed equipment. All purchases made by the Project were at reduced rates, with higher-ticket items tending to be purchased at distributor's wholesale prices. All purchases are well documented both at MCC and the Project's administrative office.

Dr. Robert Flynn, Dr. James Miller, and graduate student Mario Mitchell of the University of South Florida made two dives with staff members. One dive was made to the test excavation at 130'. Following a safe surface interval, they were conducted on a tour of the 13 meter ledge by the Project Director, who pointed out significant features and the stratigraphy therein. In return, they contributed significant data on deep excursion saturation diving and its application to archaeological research. Furthermore, Dr. Jim Miller pledged his support by promising to utilize his contacts in the diving industry to gain their expertise and to attempt to arrange for the loan of deep diving hardware.

A number of working dives were made by noted cave diving specialists from the National Speleological Society in an effort to map the lower Springs' cavity and the extent of the hot water source cave. The explorable, horizontal length of the cave was measured to be approximately 148' by I. Sheck Exley, Mary Ellen Exley, and Paul DeLoach in extended, extreme exposure dives. A map and report on their findings is forthcoming. Their visit also benefited the Warm Mineral Springs Archaeological Research Project's diving effort by exposing staff members to the state of the art equipment being utilized by the cave and cavern diving community. Their back-mounted and belly-pack type bouyancy compensators were well suited to the silt and sediment conditions which exist in Warm Mineral Springs and prototypes are currently being evaluated by the Dive Officer for future application. Likewise, the Dive Officer has continued to collect technical data on all types of diving equipment to insure that all of the latest developments applicable to the Project's diving operations are incorporated into the standard operating procedures to maximize staff diving efficiency and safety.

Early in the fourth quarter, the Warm Mineral Springs Archaeological Research Project was visited by six members of the BBC, under the direction of producer Derek Towers. British industrial diving regulations were interfaced with the Project's diving policies, and fifty-four individual dives were made to obtain underwater footage of the Springs' unique geological formations and film Project staff mapping and excavating at both the 45' ledge and the test excavation at 130'.

On April 27, 1985, an orientation and inspection dive was planned and executed for two of the Project's legislative sponsors, Senator Bob Johnson of Sarasota, and Senator Patrick Neal of Bradenton. Inspection of current Project excavation, mapping and progress on the 13 meter ledge served to demonstrate to the Senators the importance of continued legislative funding.

Scheduled diving operations included the collection of water samples for analysis by the U.S. Geological Survey in Tampa. Samples were taken at various depths, from the surface to 85'. It was determined that the utilization of glass sampling containers was superior to plastic, since glass is not subject to compression by ambient water pressure.

Study of the Springs' water quality was prompted by the observation of the high mortality rate of the garfish population; additionally, long-term observation (since 1972) has shown that tarpon, entering the Springs sighted, would become blind after 1 - 2 years of habitating the Springs. Staff members made frequent attempts to photographically document the degenerative state of the fish, and close-up photographs of the tarpon's eyes were made available to local Ophthalmologist Douglas Williamson for further study. Dr. Williamson made an on-site inspection during a dive conducted in May 1985.

In accordance with the Project's continuing efforts to cooperate with local government agencies, the Project staff coordinated and participated in another training dive with members of the Sarasota County Sheriff's Department Underwater Recovery Force. Five members of the team were led on a dive to the top of the debris cone to view the ongoing work at that depth. Once again, the merits of this cooperative training were two-fold: the SURF team members were able to make a controlled, deep training dive with good visibility and without a major expenditure in travel time, while Project staff benefited by being able to reinforce the orientation of the SURF team members to the Springs' conditions. This serves to better the quality of emergency response from the closest available dive/rescue team.

The question regarding the use of volunteer divers in day-to-day operations remained unresolved at the end of the fourth quarter. Letters from qualified volunteers have been filed pending a decision from the Community College Risk Management Consortium. Because the question of insurance coverage for divers other than Project personnel was never resolved by the Risk Management group, all dives made by non-staff divers were made under the auspices of Florida Springs, Inc. Prerequisite waivers of liability absolving Florida Springs, Inc. of any and all blame were signed by all visiting divers and kept on file. After consultation with Senator Johnson and MCC Liaison, a second waiver was prepared by the Project Director to absolve Manatee Community College and its employees of liability in case of a diving accident. All divers were required to sign this waiver.

MEMORANDUM

October 22, 1991

TO: Supporters of the Warm Mineral Springs Archaeological Research Project

FROM: Wilburn Cockrell,
President and Founder
Warm Mineral Springs Archaeological Society

RE: Preservation and Continuation of the Warm Mineral Springs Archaeological Research Project

As you know, one of the most basic goals of our Warm Mineral Springs Archaeological Society was and is to further the goals of Florida State University's Warm Mineral Springs Archaeological Research Project.

We have asked for your help in the past in attempts to have the State purchase Warm Mineral Springs. We are asking for your help again, this time not for the purchase of the property, but for the very preservation of the Project. The Project is in imminent danger of losing its funding and support after nearly two decades of highly successful scientific and technological achievements.

A list of some of the scientific and technological achievements and a history of the Project were printed in the current issue of the WMSAS Newsletter (Newsletter, Volume 2 No. 4). A brief list of some accomplishments is attached for those of you who do not have the newsletter immediately available to you.

After three years of preparation for deep work in the sinkhole, and acquisition of equipment and highly specialized training, we are finally ready to excavate on the bottom of the hour-glass shaped sinkhole; we have accumulated a significant amount of data that we are preparing for publication. For this past month, we have been intensively training; our crew consists of a total of six divers who are now trained on deep air, nitrox, and trimix diving, as well as decompression chamber operation. We have been collecting rock samples from the walls, and stalactite samples for isotopic dating. Only on this past Tuesday, October 16, 1991, we discovered remains of a fossil dugong (ancestral manatee, approximately 15 million years old) on the north wall of the Spring at 150' deep. We hope to have the rock samples from the wall dated soon by a geologist from the Florida Geological Survey, and we are working with a geologist at Florida State University to have the stalactites dated using uranium thorium dating techniques. The debris cone on the bottom, for which we have long endeavored to develop a working technology, is finally within our reach, and next week we are to begin coring and hand excavation in the debris cone at 162' below surface. We will continue this excavation through at least April of 1992.

If you would like to see our two decades of highly successful research continue, I am asking that you please immediately telephone our long-time sponsor and friend, Senator Bob Johnson of Sarasota (813-361-6122), and indicate your support to him, again. Senator Johnson's support has been unwavering from the beginning and it is unwavering now, but I would like for him to know, as I know, how many supporters

we have in the community. Additionally I am attaching a list of some who will decide upon the future of the Project, and I am asking that you write to at least two or more of those individuals, sending them a letter describing even if briefly, the meaning of our research to you. Again, please, recall that we are not addressing, at this point, the significance of the archaeological site. What we want to now convey to these addressees is that the research itself is important and that Florida State University should be allowed to continue its research.

If you will, please, send a letter to two of these individuals and send copies to the others; through this method, those of you who believe in what we have done at Warm Mineral Springs will be able support the Project.

I am personally making this request to you, and asking that you not delay, as decisions are being made now about whether or not to continue the Project next year; the decision-making process will continue throughout the upcoming months. I am requesting, therefore, that you immediately get your support letters out. We are not asking you to write form letters, or send petitions, as they are not viewed with any degree of validity. What I am asking is that you write, in your own words, using facts from the recent newsletter, or facts from the attached fact sheet, or just information that you happen to have about the research we have done at Warm Mineral Springs.

Please contact these individuals and let them know of the importance of the research of Florida State University's Warm Mineral Springs Archaeological Research Project. After you have sent the letters to the individuals listed on the attachment, if you still have a little energy left, I would appreciate your letting the newspapers know that you are behind this Project.

I realize that I am asking a lot of you, but please, recall that we have given much to the community. For the past few years we have averaged lecturing to one thousand school children a year, bringing many of them to the Springs for tours, and finding bus money for them when the schools could not afford the busses. We have made a free monthly lecture series available to the public, and we have provided an average of fifty lectures a year over the past several years. At Manasota Key we worked with 900 volunteers and gave lectures to several thousand interested citizens. We have provided exhibits seen by thousands during the past few years, and have received world-wide media coverage for our advances in science and technology. We are a part of this community; for two decades our research has given this community an appreciation for its great antiquity. Please, please help us keep the Project alive. It is in grave danger of being abolished.

Thank you.

WARM MINERAL SPRINGS ARCHAEOLOGICAL RESEARCH PROJECT

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OCTOBER 22, 1991

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* *

SIGNIFICANT VALUES OF THE WARM MINERAL SPRINGS ARCHAEOLOGICAL RESEARCH PROJECT

* Major contributions to the technology of deepwater archaeology
* Major discoveries about early human ecosystems in the New World
* Many scientific and technical publications and presentations
* Thousands of students lectured and toured onsite
* Millions of viewers have seen research results on Public TV
* Millions have read of in popular works such as Smithsonian
* Listed site on National Register of Historic Places
* Nominated site as National Historic Landmark (not yet designated)

BARBARA COCKRELL, PROJECT ASSISTANT
WARM MINERAL SPRINGS ARCHAEOLOGICAL
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WARM MINERAL SPRINGS, FLORIDA 33596

PROGRESS REPORT

WARM MINERAL SPRINGS ARCHAEOLOGICAL RESEARCH PROJECT

Activities for the First through Third Quarters
of 1985 - 86 Fiscal Year
(1 July, 1984 - 30 March, 1986)

for

Manatee Community College

Prepared by
Barbara O'Horo Cockrell
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BARBARA COCKRELL, PROJECT ASSISTANT
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I. Introduction

This report is being prepared for the sponsoring institution, Manatee Community College, and covers Project activities from 1 July, 1985, through 30 March, 1986.

A report covering the activities of the Warm Mineral Springs Archaeological Research Project is on file with MCC for the first through fourth quarters of the 84-85 fiscal year, and should be referred to for background information (i.e., description of site, working conditions, history, status of excavation units and research, etc.).

The stated goals of the current Project are to preserve the geological and archaeological resources of Warm Mineral Springs itself, and its immediate environs; conduct archaeological research on the debris cone on the bottom of Warm Mineral Springs and to continue cleaning efforts on the 13 meter ledge; to coordinate research activities with other scientists, organizations and educational institutions; to disseminate information about the Project; to continue to seek private and public support for the Project.

This report is divided into two sections, entitled "Narrative" and "Dive Operations"; these sections attend to the preservation efforts of the Project, underwater archaeological research, information dissemination, visiting participants, funding and other support, and the specialized diving activities on the underwater component of the site.

II. Narrative

A. Preservation

(1) As noted in the fourth quarter report for FY 84-85, in response to Senator Bob Johnson's request for the preparation of the Conservation and Recreational Lands (CARL) application, Project members worked diligently through mid-August of 1985 to compile the extensive information necessary for a complete application. Additionally, the Project Director and Assistant worked many hours with officials involved in the review and selection process to help them attain a better understanding of the importance of this site to the State of Florida. Much effort was expended with the general public to help them understand the CARL program and the benefits accruing to them from such an acquisition, and the media was kept informed of all issues and answers for reaching a greater number of the interested or potentially interested public and local and state officials.

The CARL Committee's first-cut vote took place in October of 1985 with a unanimous decision by the six committee members to include Warm Mineral Springs on a preliminary review list for further study. At this meeting a great deal of interest was expressed by all members, and the unusual decision was made that staff from each agency would partake in the assessment process. In accordance with assessment procedures, staff assignments were made. Of these assignments, only one staff member for the CARL Committee, Gary Knight of the Department of Natural Resources, actually visited the site. Assessments continued in Tallahassee and in the third quarter the final vote of committee members was held, and Warm Mineral Springs was placed on the list of proposed projects for review and approval by the Florida Cabinet.

As previously noted in other reports, preservation is the first goal of the Warm Mineral Springs Archaeological Research Project, and it had been determined last fiscal year that acquisition by the State of Florida would be the most effective long-range solution. The first major steps to achieving this goal have been successful; however, there remains a tremendous amount of work to be done by the Project with state officials to achieve a workable project/management design for the site.

(2) Although long-range preservation plans have been initiated, an immediate threat to the site's fragile environment was posed by a local utility corporation's (General Development Utility) proposal to inject secondary-treated effluent into the Floridan Aquifer, approximately 2,000 - 3,000 feet beneath the surface of the earth where the anerobic, highly mineralized waters of Warm Mineral Springs originate.

The Project Director discovered the plan during the first quarter in a newspaper story covering the company's plan to meet their franchise agreement requirement of disposing of 2-3 million gallons per day of effluent. Immediate steps were taken by informing local officials involved in the permit procedure of the threat to Warm Mineral Springs and the known consequences of deep-well injection, and by keeping the media informed of these issues. Speeches and presentations were made by the Project Director at public meetings despite attempts from those in favor of deep-well injection to prevent his speaking; the result was a greater community and government awareness of the dangers involved, and finally, official petitions by three parties to the Department of Environmental Regulation to disallow the corporation's permit. By the end of the third quarter the permit has not been issued and instead will not be issued until administrative hearings on these problems are held. Project members will continue to conduct research and work with officials in this matter.

B. Archaeological Research

(1) Terrestrial

There is no plan during this fiscal year to actually conduct a land dig on the property. Research goals during this year are aimed primarily at the debris cone on the bottom of the Springs.

(2) Thirteen Meter Ledge

As noted in previous reports a daily phenomenon takes place in the visibility of the water. While this can be noted on a daily basis, it can also be noted seasonally. The months of January through April provide the best visibility conditions for conducting research, and most diving activity is planned during that time. However, Project members do conduct, to some degree, limited research and preparation for the dive season during the remainder of the year which is set aside primarily for accomplishing the other stated goals.

The Warm Mineral Springs Archaeological Research Project was severely handicapped in its planned limited underwater work during the first quarter because of the unavailability of funds from its appropriation. All diving expenses were personally covered for the Project by the Director and Assistant. It is hoped that this problem will not arise in the future.

Relocating and replacing mapping points and markers on the 13 meter ledge continued as it has from the FY 84-85 activities,

as well as the continual cleaning necessary because of deposits from the swimmers above.

Project members continued excavation work at Feature 30 (giant ground sloth and saber cat) and reopened Feature 86-U-1 where Dugong (ancestor to the Manatee) remains, estimated at 20 million years old, are eroded out of the Miocene bedrock. Further investigation of this excavation unit is planned towards the end of this fiscal year.

Improvements to the plastic tent design were implemented. (See report for the fourth quarter of FY 84-85 for background.) As noted previously, while the tent would help prevent scuba-bubbles from scrubbing algae from the limestone walls above, closing down the excavation unit at the conclusion of the dive was difficult because of air bubbles being trapped between the ledge and the plastic covering it. Slashes had been made in the plastic tent to allow the bubbles to escape, but these slashes also allowed falling sediments from above to contaminate the unit to some degree. A modification of the anchor of the tent to the wall was implemented. Nails were replaced with long screw pins having circular heads. One end of double-headed brass spring clips is attached to the screw pins, and the other end clipped to the upper reinforced grommetted edge of the plastic tent. Approximately 3" of space to facilitate air bubble escape results. This modification accomplishes an additional desired effect: the plastic tent can easily be removed without destroying it or removing permanent anchors in the wall.

Additionally, tent preparation was modified by melting the reinforced edges together with a steam iron. These edges had previously been held together with duct-tape but adhesives will not hold for long periods of time in the corrosive water.

Long-range plans have been designed for the 13 meter ledge overall clean-up and mapping, but this work is secondary to this fiscal year's primary underwater research effort on the debris cone.

(3) Debris Cone

The Project Director has maintained for a number of years that the debris cone on the bottom of the Springs contains everything that ever blew, fell, was thrown, or pushed into it since it opened some 20-30 thousand years ago. We know, from research

conducted by scientists whom the Director called on to work here over the years, that the highly preservative anerobic waters have always covered the bottom of the Springs. All the remains contained in these waters would be, therefore, preserved to a very high degree.

The working theory, then, on the debris cone is this: on the bottom of the Springs, at 230' below surface, is the collapsed ceiling of the Springs. Over the millenia sediments, leaves, bark, reptiles, animals, humans, etc., blowing or falling into the open cavity would sink through the water and be deposited on the forming debris pile. This deposition is still occurring; divers first encounter, on the surface of the debris cone, recent sand from the swimmer's area on the surface put there by the owners for their patrons' comfort. On top of the sand and throughout it (depending on when it fell) divers find band-aids, swim-fins, glasses, etc., from the swimmers. The Project Director asserts that excavating on the cone would naturally produce the remains in the reverse order of their deposition - a perfect travel back in time to the opening of the sinkhole. Like no other known site, this research would provide a perfect, stratified window to Florida's past for 20-30 thousand years. This deeper exploration, at predicted depths from 140' to 180' is much more expensive and dangerous than the more shallow excavations on the 13 meter ledge, but the Legislature approved the needed additional funding.

The first steps to initiating the deep trench involved assessing the needs for safe and efficient excavation (see the fourth quarter report for FY 84-85). During the first quarter initial contact was made with individuals in the commercial diving industry. The Project's long-time consultant, Larry Murphy, had researched and recommended specific gear necessary to meet our needs. This gear, manufactured by Dive Systems International, would completely change the method of diving currently utilized by the Project. Rather than each diver carrying his own breathing tanks on his back and making hand-written notes on slates, the new equipment offers surface-supplied air and radio communications to the surface. The system allows for a video hook-up as well. Besides safety, the benefits of the system to more efficiently document research for further study alone makes it a worthwhile one.

In terms of safety, each diver would be carrying 80-100 pounds less gear on his/her body. Hyperbaric trauma is less likely to occur in individuals experiencing less physical stress.

Additionally, divers are connected to the life-support system and surface tenders by "umbilicals" which include breathing hoses, communications wire and a life-line; divers need not exert energy to swim up to their underwater decompression stops since they are fully controlled by the surface-tender's manipulation of the umbilical, and all emergency procedures are surface controlled. This is noteworthy - surface tenders are not suffering the effects of nitrogen narcosis which the divers are subjected to at these greater depths. Should any failure of the surface regulator for air supply occur, directions are given by the tenders for the divers to turn their emergency air bottles on (connected to chest-harnesses) and the divers are then lifted to their decompression stops.

A number of experts in hyperbaric medicine and commercial diving equipment were contacted and worked closely with during the second and third quarter. Dr. Peter Bennett of Duke University provided the latest research results of deep diving physiology problems and made recommendations as to bottom time, decompression procedures and policies we should implement.

Mr. Jay Masters, Commercial Diving Consultant, spent many hours with the Project to help design the overall deep-diving system to fit our needs. Mr. Masters will be employed in a consultant capacity during the fourth quarter of this fiscal year to train Project members on the new gear when it arrives.

A decompression chamber, always necessary for safe decompression when making regular decompression dives, is still in a holding pattern. A requisition has been submitted to MCC to lease one through mid-June.

During the third quarter, on schedule, the diving season began. After many dives and testing of sediments, an excavation unit was selected at 150' below surface on the northwest slope (facing southeast). As predicted, the Project Director immediately began to recover more recently deposited remains:

Field Spec. #	Description
FS U-9-86F	Vertebra (Poss. Deer), 2 Fragments
FS U-10-86A	Coca-Cola Bottle with newspaper inside (Dates from early 1930's)
	Record Fragments (2)
FS U-14-86F	Gar Bones (entire skeleton)

The fourth quarter report will contain information from the radio-carbon dating as well as a full report on specimens collected from the more ancient sediments during that quarter.

C. Visitors

As always, the Warm Mineral Springs Archaeological Research Project continues to attract the attention of individuals from many scientific disciplines, educational institutions and local, state and federal governments.

Dr. Richard Gould, Chairman of the Anthropology Department at Brown University and Dr. Rey Ruppe of Arizona State University were visitors during the first quarter. Archaeologist Carl Clausen (formerly associated with Little Salt Springs) visited during the third quarter. All are interested in coordinating research efforts. Biologist Bill Fehring conducted limited fish studies and examination of debris cone sediments for bacterial analysis. Report of the diving operations for the first through third quarters of the fiscal year has a more complete listing of those visitors on site primarily to view the underwater work in progress.

Dr. Marlene Woodson and Andrew Scherer of MCC visited the site during the second quarter; Dr. Woodson was interested in aiding the Project's long-range goal of securing private funds for research, while Mr. Scherer was assessing photographic and art needs for displays and presentations.

Mr. Tom Hemphill, commercial diving specialist, was on site during the third quarter to demonstrate, and allow Project members to test, the Dive Systems International equipment.

The Sarasota County Historical Commission was also on site during the third quarter to help them attain a better understanding of Warm Mineral Springs as a key to understanding Florida's past.

Senator Bob Johnson, legislative sponsor of the Project was, as always, a frequent visitor to the site, keeping abreast of the latest developments in the research and newly acquired technology. He was an active participant as well in the information dissemination of the issues involved in the CARL acquisition proposal, deep-well injection permit, current research, and goals of the Project.

D. Information Dissemination

As stated in the fourth quarter report for FY 84-85, Mr. Jack Skow had been selected to prepare a major feature story for Smithsonian Magazine, to be included in the July 1986 issue. During the first and second quarters of this fiscal year, preliminary work with Mr. Skow and Project members continued, and in the third quarter Mr. Skow visited the site for one week. Mr. Skow has confirmed plans to be on site again for one week in May 1986 to update his information. Photographer Robert Holland was assigned by Smithsonian to photographically document Project activities, and visited the site

at the end of the third quarter, with two more scheduled in the fourth quarter.

Over 50 newspaper articles concerned with Project activities were published during these three quarters, in addition to inclusion in several television news broadcasts. Don Hatcher of WINK-TV was permitted to accompany Project members and Senator Bob Johnson on an inspection and work dive on the 13 meter ledge. Mr. Hatcher videotaped the work in progress for general public information for a December 24th, 1985, broadcast.

E. Funding and Other Support

As noted earlier in this report, funds to operate the Project were withheld during the first quarter. The Project is appreciative of MCC's willingness to continue salary payment to Project members during this difficult period. It is hoped that a solution to this type of delay, similar to that experienced in the 84-85 FY can be found in future fiscal years.

A budget request for FY 86-87 was finalized during the third quarter and forwarded to Senator Johnson. Follow-up information will be submitted to the Legislature as research continues during the fourth quarter.

Again, the Project is indebted to the owners of the Springs, Mr. Fred Daley, Jr., Mrs. Mary Wheeler, and Mrs. Doris Herron, who in addition to allowing the research to take place amidst their commercial operation continue to contribute housing, storage space, dive locker utilities and supplies to the Project. Mr. Sam Herron, representative of the owners and Manager of the Spa, continues to be helpful in communicating Project needs to the owners and in resolving any problems which are in his power to control.

Mr. Larry Murphy continues to be exceptionally helpful in providing the Project with information concerning the highly specialized, technological diving equipment needs of the Project. Mr. Murphy plans to be on site during the fourth quarter.

Mr. Jay Masters has been especially helpful in donating a great deal of his time to the overall design of the new deep-diving system and in the detailed work of purchasing necessary components of the system.

Other contributions to the Project, too numerous to list, have come from the local legislative delegation, scientists, community leaders, civic organizations, businesses, educational institutions, state agencies, and the general public. Their continuing support of the Project is greatly appreciated. MCC personnel involved in processing the Project's paperwork have been most helpful.

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WARM MINERAL SPRINGS, FLORIDA 33598

F. Administration

Thus far, no solutions to reducing the administrative workload for the Project have been identified. The Director and Assistant work, as always, far in excess of the 40-hour work week.

A major reorganization of personnel function was implemented at the beginning of the third quarter. The Project Assistant has assumed the responsibilities, functions, and working title of Project Manager, although staying at the same salary. The Manager is responsible for coordinating all activities (research, preservation and public education), making work assignments to all employees; overseeing all record-keeping by all Project members, designing and implementing all policies and procedures, supervising the Assistant Archaeologist and Dive Officer, and the newly appointed Assistant Archaeologist, in addition to all duties previously performed in the capacity of Project Assistant. This reorganization has resulted in greater efficiency and higher productivity, and has freed the Director to concentrate more heavily on long-range efforts and research.

III. DIVING OPERATIONS

The first three quarters of the fiscal year have featured a multi-faceted approach to both research and technological advancements. Ongoing archaeological efforts have been supplemented by continued efforts to utilize the latest in diving technology to maximize diver safety while maximizing efficiency of underwater work.

An all-out effort to establish excavation units in the debris cone at the bottom of the Springs was initiated. Initially, dives were spent surveying the topography of the area, so that areas which were covered with a minimum of modern sand deposits could be located. Drop lines from the edge of the cenote's constriction at sixty-five feet were installed so that divers could better judge the relationship of the drop-off to topographical contours on the surface of the debris cone. Based upon these initial efforts, a coring program was instituted to better understand the sub-surface stratigraphy while minimizing the destruction of sediments.

Based upon these coring efforts, an area on the north side of the debris cone was chosen as the site for the initial trench. Designated as Feature 86-U-2, the trench was established at a depth of approximately 150 feet. The excavation unit was established utilizing a rigid 2 meter frame[1] to triangulate the corner stake positions. The unit, oriented on the four cardinal directions, has its deepest profile on the South wall. The East and West profiles slope sharply down towards the North, and by the very nature of the slope, there is no North profile. There is an ongoing research effort to develop techniques to shore up the sides of the excavation unit as it continues to deepen.

To facilitate deep diving operations, two permanent structures were developed. First, 1½" PVC tubing was utilized to construct a framework for installation on the sheer wall of the Springs at 0° North for use as a decompression stage. Securely fastened to the wall, its crossmembers at 10', 20', and 30' serve as accurately measured stops during the decompression stages of deep diving operations. Secondly, a well-marked numbered down line was constructed which extends from a series of floats suspended at 20' to a depth of 150'. Attached firmly to the rim of the drop-off at 65', the down line serves as a guide line to the general vicinity of Feature 86-U-2 and as a visual reference for descending divers entering the narcosis zone below 130'. This visual reference is important in descents of this type in that nitrogen narcosis is frequently characterized by visual distortion, and in the low ambient light conditions of Warm Mineral Springs, the distortion is enhanced and can create vertigo.

During cleanup efforts on the 45' ledge, the highly fossilized bones of the extinct dugong were relocated at a depth of approximately 63', eroding from (what appears to be a fissure in) the limestone bedrock. This area was designated Feature 86-U-1, and a plastic cover was constructed over it to protect it from precipitates. Continued excavation of these

[1] Although current archaeological measurements are normally given in the metric system, the English system is used herein due to the fact that hyperbaric instruments and dive tables utilized by the Project are available only in the English system.

remains will require the utilization of pneumatic or hydraulically-activated tools to remove sections of overlying bedrock which cover the bones. Research into the technology available continues to date.

A number of working dives were made by staff members and visiting dignitaries throughout the first three quarters. Foremost among the visitors to the site was Senator Bob Johnson, who made numerous dives with staff members to keep abreast of current developments. In addition to Senator Johnson, the Project staff has been accompanied on working dives by such visitors as Al Moran, Assistant Secretary of the U.S. Department of Housing and Urban Development (who has a personal interest in the research and preservation efforts of the Project); Don Jakeway, Director of Redevelopment, Sarasota; Sue Holderman, Mote Marine Lab Museum; Judge Andy Owens, 12th Judicial District (interested in volunteer underwater work); former State Representative Ted Ewing; and Gary Knight, Florida Department of Natural Resources.

An essential portion of the Project's goals is the dissemination of data to the public through the media. The importance and the description of the appearance of the underwater component of the site are the most difficult to explain, and Project staff agreed, on a trial basis. to allow certain qualified journalists to tour the 45' ledge. Local journalist David Hughes (Editor, North Port News) toured the ledge and observed how work is accomplished underwater. A feature story was published by his paper one week later describing his experience and the Project's working conditions. Mr. Jack Skow, on assignment for Smithsonian Magazine, made a series of dives during the research phase of an article he is preparing. Mr. Skow observed work being conducted only on the 45' ledge during the third quarter, and will observe activities on the debris cone during the fourth quarter. Photographer Robert Holland, also on assignment for Smithsonian Magazine, made initial dives to the 45' ledge during the third quarter, and will return during the fourth quarter to document activities on the land, the 45' ledge, and the debris cone. WINK-TV cameraman Don Hatcher accompanied Project members and Senator Johnson on an inspection tour of the 45' ledge.

A firm commitment from members of the National Speleological Society was evidenced by visits from Dr. William Fehring and Tex Chalkley. Fehring, whose specialty is the biological examination of cave adapted creatures, made a dive to examine the debris cone sediments for destructive bacteria. Chalkley, an extremely experienced and recognized cave diving expert, came to the Springs to evaluate the potential for organizing special interest groups within the NSS-CDS to do specific scientific investigations in order to contribute to the multi-disciplinary research already underway.

A special request from Dr. Richard Gould, Chairman of the Anthropology Department of Brown University, was honored. Dr. Gould spent several days working with Project members both above and below the water so that he might have more experience in the techniques utilized in underwater archaeology for future application to the research he is conducting in the South Pacific and on the U.S.S. Monitor Project.

Ongoing product research which began in 1984 continues to date to insure that diving operations reflect the latest in diving technology. This uninterrupted research is aimed at the need to incorporate new technology immediately as it becomes available in an effort to increase the margin of safety for divers. As research on the debris cone was conducted, it became apparent that there was a need for more advanced technology than the SCUBA/sport diving industry could offer. A search for an outside consultant (hyperbaric expert) was instituted. Dr. Peter Bennett, Duke University, and Spencer Campbell, formerly of the Ocean Corporation in Houston, Texas, were contacted. Both are recognized specialists in deep-diving technology and recommended that a commercial diving consultant be contacted for guidance in establishing contact with commercial equipment manufacturers and sources of rental equipment. At their suggestion, Mr. Jay Masters of American Tech Corporation in Port Charlotte was contacted and the Project began working with him on a deep-diving system specifically designed for the unique diving situation at Warm Mineral Springs. In the interest of making the Project Dive Officer aware of the options open to the Project, Mr. Masters accompanied Skip Wood to a symposium offered by the Association of Diving Contractors in Houston, Texas, entitled "Man and Machine Underwater." Attendance at this meeting allowed hands-on exposure to the latest developments in the commercial diving industry and a chance to question manufacturers' representatives regarding the effects of exposure of their products to the unique water chemistry of Warm Mineral Springs. Ultimately, this allowed staff members to make useful contacts that made ordering and bidding equipment easier and more efficient.

Staff members were able to try out some of the deep-diving equipment prior to the ordering procedure during a visit from Tom Hemphill of Aqua-Tech, Inc. Assisted by Mr. Masters, Hemphill dressed out staff members in two different helmet/mask configurations and preliminary test dives to the 45' ledge were made. Both HeliOx 18A band masks and Superlite 17 helmets were demonstrated and tested. A Dive Systems International Diver Control System which incorporates the air supply and communication controls into one portable unit was also tested and chosen as the control unit the Project would order. At the close of the third quarter, purchase orders had been started to purchase the equipment.

The entire diving operation of the Warm Mineral Springs Archaeological Research Project has been characterized by a strong orientation toward the personal safety of diving personnel, while incorporating the latest in technological developments in an effort to maximize the efficiency of data recovery and recording. Continuous efforts to find the best combination of video equipment and video format have continued to date and through the help of Larry Murphy (National Park Service, Submerged Cultural Resource Unit) a self-contained video recorder and camera combination have been chosen for recording underwater Project activities.

The question regarding the use of volunteer divers in the day-to-day diving operations remains unresolved by the Risk Management administrators on the college level after one full year and the first three quarters of the current fiscal year.

Staff members continue to file completed dive logs following every dive so that accurate accounting can be made for all underwater activities. To date in the first three quarters of the 1985-1986 season over 86 individual dives have been made with no incidences of injuries of any kind.

-- Skip Wood
Assistant Archaeologist and
Project Dive Officer

WARM MINERAL SPRINGS ARCHAEOLOGICAL SOCIETY MEETING JAN.8, 1992

[NOTE: ------- indicate word or words not understood.]
THIS WAS TRANSCRIBED FROM A TAPE RECORDED AT THE MEETING. SOME ERRORS AND OMISSIONS ARE POSSIBLE, DUE TO POOR AUDIO QUALITY.

SPEAKER:SONNY COCKRELL

----printing the newsletter--- when you consider that membership dues are only $10 annually, the newsletter has been eating up----so we may end up making a last minute announcement or not having a speaker at all---you can check the newspaper or you can call the office. Our March speaker is tentatively scheduled to be Wilson Stiles, the director of the Department of Historical Resources of Sarasota County. As you recall, we had Ann and Bob tell us about the archives and historic preservation program and they mentioned that Wilton Stiles did an excellent architectural preservation program and would like to present it to us. Now you will probably have noticed, those of you who are members, you have not received the newsletter. That's because we don't have the money to publish one. Our treasurer was unable to get us a mailing permit yet and may be resigning soon as our treasurer to move out of town, in which case we're gonna be in trouble because he's a CPA. So it's costing us a lot of money to get the newsletter out and then it's costing us a lot of our budget to print the newsletter, so when you consider our membership dues are only $10 annually and the newsletter has been eating up, the mailing has been eating up seven or eight dollars, and we also have speaker expenses. We're lucky to get people like me. I figured I would be the speaker tonight because I'm free. And I haven't told you for over a year what it is that we're doing at the project.

We've made some remarkable accomplishments this past year. So I thought this would be an appropriate time, when somebody cancelled out that I hoped to have this month, for me to come and tell you what we've accomplished.

I was hoping to follow it up next month with Dr. McDonald on vertebrate paleontology of Warm Mineral Springs and the Southeast. He is presently completing an exhibit in a museum on the terminus of the Pleistocene glacier, in other words, what life would have been like right on the edge of the glacier. It's an incredible exhibit I've heard, at the Cincinnati Museum of Natural History. So that's the problem: we have speaker expenses, newsletter expenses without renewals of memberships, so if you haven't renewed, and you want to see the Society keep viable, I would suggest you do it. The membership materials are here tonight. T-shirts are here for sale. We try to keep things going on the T-shirt sales and last year I managed to get four tours, two to the Englewood mounds and two to the Springs, and a lot of people signed up on those. Also we had a lot of people sign up at the North Port Expo last year.

I got a call last night from the Expo chairman saying that a local organization was interested in sponsoring us again. It costs $250 just for the space. This local organization has offered to sponsor us. I was unable to make the phone connection. Isabel Eaton, on our board, has agreed to be coordinator and we have four volunteers for Saturday. Isabel and Stan may be able to help. Pat may be able to help. Steve and Jane Post will be there all day Saturday. And the crew will be able to take the material over there and set it up for you Friday morning. I urge all of you to go. It's the annual Chamber of Commerce Expo. It's an interesting thing: a $1,000 prize being given away on Saturday. We will have the booth there and we will be selling T-shirts and I hope we will be able to pick up enough money to renew the newsletter or at least pay for some out-of-town speakers. At this time we're simply unable to do that.

I'm going to sit down so I can quit leaning on this cane and tell you about what we've been doing. We've tape recorded all of our lectures. I'm not used to one of these [microphone hook-up].

First I want to tell you the project on the Manasota Key report. As you know, the $5,000 we asked Sarasota County to produce was given to us, given the state, and Dr. Dickle was able to get a report out. The state published it, so for those of you who are interested, it's available at the Bureau of Archaeological Research but they've got a pretty hefty price on it--it's around $15, I believe. And we are still in the process of working on the archaeological materials. Jane Post and Steve have worked diligently along with Mitchell Hope and they're near the completion of the counting and analysis of the food shell(?). So we're getting all that wrapped up. We have in the meantime been using funds from the T-shirt sales and the donations that our 900 volunteers helped us collect.

We have hired a draftsman, who is finished by now and is in the process of copying and getting camera-ready the graphics, the maps, the cross-sections, etc. All of this leading up to a publication. Beginning next month I will hire a half-time graduate research assistant to work with Steve. He is presently working on the project. I'll switch him from the project because he's going to school full time at USF now and is working with us part-time. I'm going transfer him to the Manasota Key Project, so that report will be finished by mid-year. That doesn't mean we'll have a publisher for it. The money I was saving for the publisher, I'm willing to use for some dating--radiocarbon dating--and for hiring a graduate assistant. So then we'll have to find a publisher, but the manuscript will be completed. We'll turn it over to the state and it's actually their responsibility to find a publisher anyhow. You recall we did about $70-100 thousand dollars worth of archaeology for free. A number of people in this room were volunteers there.

I said I was going to tell you tonight and I'll be fairly brief about it, about the accomplishments that we've made at Warm Mineral Springs, both scientific and technical. We've been a research project over the past several years, and we've always said we had a three fold goal. I was just reviewing the document yesterday that we send out every year to the legislature. This is what we're going to do: we're going to work first for state preservation and state acquisition of WMS, and also to keep the looters out. Second, we're going to do limited research, but doing something we pioneered there in the '70, we're going to try to get maximum data with minimum remains. There'd been so much of the Springs destroyed that what we had left we wanted to take very small samples and get as much data as we could. So when people would come to us and say, "Show us what you've found." We'd have jars of dirt, just a jar of dirt. That's paleo-environmental data. What archaeologists do is to attempt to reconstruct past ecosystems, and that's what we're doing at WMS.

We estimate that the debris cone on the bottom is 30,000 years old. We can do that on the basis of our radio-carbon dating. As we go down into the cone we find that the sediments have accumulated a meter every thousand years. So far four meters, four thousand years, on the north side of the debris cone at the bottom. The walls we are having analyzed now.I'll get to that in just a moment, but the age of WMS goes back 25-27 million years to the Hawthorne Group through the Arcadia Formation. This is recent information we just picked up on.

So in accomplishments for preservation, we succeeded twice in getting on the CARL list and neither time did the State buy it. The State is willing to put up 49 percent. Sarasota County voted $2 million but the last Sarasota commission deauthorized the bond issue without telling anybody. We only saw the document when we tried this letter-writing campaign this spring to get them to buy it again. So to get the State to buy it, we're going to have to find somebody to come up with 51 percent of the money . I did a lot of work in the '70s and '80s for our senior congressman and historian, Charles Bennett. I spoke with his chief of staff last week and they are willing to back appropriations and find federal sponsors to get the 51 percent money, federal dollars. If they do it will take forever. But still that's our only chance. So they said, "O.K., we'll do it if your local congressman initiates it." I called Senator Johnson's aide Ralph DeVitto and said, "Ralph, we've got a sponsor in Congress for this if Porter Goss will." So Ralph directed me to who to write in Congressman Goss' office and I did that, so we're waiting to hear back. If Congressman Goss and Senator Johnson decide to, then Congressman Bennett will go in with them to plea for federal money to help the State buy WMS. We haven't given up.

The property is still for sale. If the City of North Port annexes it, which is most likely, it will become emminently more saleable than it is now. It will have city water, city sewage and a differential zoning and fire-police protection. Of course it's got fire-police protection now. But police protection is slow in coming. It takes about, we've had as much as 35-45 minutes response time for a police call. So we'd like to see the state buy it. The owners will be in a better position to sell it after it's been rezoned. But I hope it's not developed before the state has a chance to buy it. So I haven't given up my dream of having the state buy WMS. And put a small museum there. Preservation, research.

Third activity was public information, and we've been doing, peaking out, at about a thousand school children a year coming to WMS--regular school lectures, bring 'em to WMS, plus we've been teaching classes at Florida State University. And I've given about 70 lectures. This year I was selected by the Florida Council (?) for the Humanities to be a sponsored lecturer for the entire State of Florida. The group wants me to come speak. The Council for the Humanities will pick up the tab and send out a brochure around the state. So we're getting some good coverage that way. Last year we attempted a satellite uplink system. We were going to have a live uplink from the Springs, sort of like the Jason Project into the schools of Florida. At the last minute it failed because a donated TV station truck didn't make it. This year the state is able to do it and the state Dept. of Education now has the satellite uplink capability and they want to broadcast from the bottom of WMS. You know we have these ---down there----divers at 165 feet with the helmets and voice communication talking to the surface--real time, hard line--at the same time we have the ROV, the remote operated vehicle, the robot and TV camera down watching us. So a person standing on the surface actually sees and talks to the person who is working deep.

We're doing the deepest, regular hands-on scientific research ever done. And we're the first institution to regularly use the experimental mixed gases, known as Trimix--helium, oxygen and nitrogen--and we've now logged 42 work work dives on the bottom on that mix and it's been very very successful. So that is a possibility, that if they get anything lined up OK, they can get a satellite linkup from the bottom of WMS. It can be broadcast live into the classroom and the students can actually talk back to the diver at the bottom.

Those are the three goals and we've accomplished them remarkable well over the years. This year we've shifted our amphasis to just working on the bottom and finishing up some of the mapping around the edge and to publishing, and that's what I'm going to tell you about--what we've accomplished this year in that way.

I've told you about the technology. In case you missed it, Skip Wood gave you a very good presentation on the technology. He did a good slide show and talked a lot about what we've done--the innovative techniques we've developed at WMS. A lot of what people do today in underwater archaeology was developed at WMS. The fact that people use oxygen to decompress with underwater was developed at WMS. Larry Murphy, one of my colleagues thought it up. We used ourselves as guinea pigs. The Navy experimental dive unit doctors said "You're going to kill yourselves." And now everybody does it. It's the way to go, decompress underwater with oxygen. We do it on a routine basis and it's exceptionally safe. We developed that. We developed this mixed-gas technology that's regularly used by commercial divers in the North Sea and then picked up by cave divers in North Florida. Once there was enough data available these data were gathered in by a scientist who's working with us, Dr. Bill Hamilton, a physiologist, and he fine-tuned it for WMS and we went before the university dive board, their lawyers, their risk management people, their insurance people, the university physician, the entire board, and said, "Will you let us do something that nobody has ever done before?" And how we did that is the subject of our papers. We held seminars at the American Academy of Underwater Sciences, we published the results, the 8 papers, we demonstrated how we did that. And what we did, we got the university to agree to let us use the experimental gas to dive at depths greater than anybody had regularly dived. We've had two successful seasons and now it's routine. Last spring when our friend Parker Turner was here, he got them to exceed the limit and they agreed to let us go down 180' and that was the base. Now Parker was here this spring mapping the cave for us. He broke the 180' floor and they extended the barrier to 240'. We're the only scientific institution or government institution in the United States now under OSHA and American Academy of Underwater Scientists Standards to be allowed to break that for the 190' foot barrier. And we're now authorized to do experimental gas dives to 240 feet. So we've made remarkable accomplishments in that direction and this technology will be utilized by other archaeologists and by scientists in other areas.

Dr. John Gifford, as you know has received a grant from the state to work Little Salt Spring. Parker Turner, as many of you know, died when a freak of nature occurred in a cave dive, a couple of months ago at Indian Spring. Parker was killed. Parker had been down and set up Little Salt Spring for Dr. Gifford and was going to be working with him on that. Parker and Skip Wood, who was formerly with us, Skip will continue to work with us and was going to be working with Parker and John. So that technology was already, not the gas technology but the deep dive technology was ready to be transferred to Little Salt Spring. And as some of you know, there are only four of us certified as cave diving archaeologists in North America. So we've managed to do that.

We are also in a position to go to the Bone Room of Wakulla Springs now. That is a mixed-gas dive. It's 240' deep and no archaeologist has ever seen this room full of giant extinct animal bones, and I hope to be able to do that. We now have the technology as well as the underwater camera. We've got a new underwater camera that our crew has put to use and it worked beautifully. So we hope to get the first video footage and the first scientific documentation out of what they call the Bone Room at Wakulla Springs-------So the mixed gas was a remarkable success--far better than we hoped. Nobody's been even injured. The people who set it up decided that the principal diver, me, would probably get bent several times. And the university agreed that they wouldn't call it an accident if they could treat it on the grounds. Didn't even get bent once. So we have a remarkable record with that and it means we've got a very safe diving technique. Plus on our shallow dives we've quit using air and most of our shallow dives--I see our dive officer, Dennis, sitting in the back, with Don, our two staff members. Dennis, I didn't ask you this. I'm gonna put you on the spot. How many mixed-gas dives have we done? You want to guess at how many total man-dives we've done this year?

"Probably about 300."

And almost all of them were nitrox dives, which is a very safe gas. It's all safer than air. There's a big controversy going on about it. So we have really fine-tuned this thing. We've been our own guinea pigs and we've come out very well. So this is being written up, as I mentioned, very shortly. That's technologically what we've done. Okay.

Scientifically, what have you done? I have to tell you here that I was told yesterday, "Well, education is more important than science." I had a community leader tell me this. I'm not going to tell you who it is. Everybody will recognize the person by position if not name. I probably turned red. I'm an educator too. Remember I'm the one who has been bringing thousands of schoolchildren in here a year and teaching courses here. And I said, "I want you to know that I resent what you just said." And I just sent a letter out to one of my colleagues remarking on the fact that if scientists didn't do research, educators wouldn't have much to educate people with. Keep that in mind. Even in the area of technology, the space program which is mixed pure science and mixed technology, is constantly having to justify its existence. And what do they do? They say we invented TANG, Velcro, and something else I've forgot, and they didn't really invent Velcro, so all they've got to show in the space program for the what-good-is-it-for-me people is TANG, I guess. The third thing is the GEO satellite, the earth monitoring weather satellite. That's been real effective. But, seriously, you've got to do scientific research in order to have something to educate people about. And there's a new anti-science (movement) that's sweeping the country now, the new federal law requiring repatriation of archaeological remains, requiring them to be returned to the Native Americans, take the scientific data out of the museums and returning it to Native American groups who lay claim to it.

And any ethnic group who can claim descent can collect these materials, and they can dispose of them any way they wish, including resale of them. So I, as a scientist, have mixed feelings about this new federal law that allows all museums except the Smithsonian to be required to turn over objects of Native American patrimony. That could be everything down to a pot or piece of pottery to any group that demands it. It almost reminds me of the anti-vivisectionists in the 18th and 19th centuries.

Now what have we accomplished in the area of science? First, archaeologically we have excavated further on the area of the 45' ledge and have recovered quite a bit of material, environmental material. We haven't found any human artifacts this year. As you know, last year in that area we found a beautiful polished bone pin, a shark's tooth knife, and on the other ledge we found a piece of a human foot. On physical anthropology, that's one of the more exciting things that's going on. You may recall in past discussions, to date a human bone it takes about a pound of really good, dense bone. And the rotten skeletons, the decomposed skeletons we had at Manasota Key, that was basically half the skeleton. The skeleton we dated was more than half--enough to date. There's a new method called accelerator dating. We're doing the accelerator dates in Switzerland right now, thanks to the Manasota Key Association, two from the pool area and one from the tent area. Accelerator dating takes from one to ten grams--a little bit of bone. It doesn't destroy. We found a human mandible in the same layer as the saber cat and the ground sloth, in the sediments. We radio-carbon dated the wood, mixed in with the bones, the saber cat bones, twice, 10,980 plus or minus 40, 11,000 years ago. This jawbone was in the same layer. We didn't find any wood next to the jawbone so we could date it. We assume that it's around that old and it's only 70 grams. You have to have 1,000 grams to do it. Couldn't do it. Now there's this new technique developed by a guy named Dr. Thomas Stafford, one of the students of Paul Martin who developed the Pleistocene Extinction Theory, the idea that man overhunted the ice age animals and killed them off. You've heard that discussed here many times. Well, his student is working on it and for $850 per sample he can get us amino acid studies, most important to my interest, radio carbon datings, using 1-10 grams, almost totally non-destructive. So here's what we're going to do and I got clearance from the university today to do this. Just this afternoon from the departmental chairman and the dean. Dr. McDonald has ground sloth and saber cat bones that the owners have allowed us to carbon date. So Dr. McDonald, Dr. Stafford and I are doing a joint study. Dr. Stafford is going to date the ground sloth and the sabercat. Not dating the wood next to it this time, we're actually dating the bone and doing amino acid studies.

Then I've already talked to the anthropologist who has the jaw bone out there. We're going to take the jawbone and do the same thing with that--this is non destructive. It just takes a little scrape. And then we're going to get the Burial #1, the one we radiocarbon dated. We have actually 19 radiocarbon dates up above 8,000, down inside the burial area dating 10,200-10,300, a total of 18 dates. But they're all wood dates. We didn't date the bones because we didn't want to burn the bone up. Now we can actually date the bone. So get this: the sabercat, the ground sloth, the Burial #1, the earliest intentional burial yet, and the human foot bone we found last year, and the jawbone that we think is about a thousand years earlier.And this will be a landmark scientific study. It will be the first time anybody has had this much ice age animal material with human material together. I was just on the phone twice today with Greg about that. So we got the approval for the funding today and that study will proceed. We sent off, we missed today's mail, to send off the stuff to Dr. Stafford the reading materials.

So hydrologically we have them making water measurements, temperature studies, a recorded thermometer system hasn't been there, and several years ago we put a pipe down into the springs so that the water could be tested monthly by an engineering firm. I've written a letter to the owners requesting that they turn over, that they allow us to publish that--those data so that we can do hydrological studies. We jointly work with their engineering firm and publish in a scientific journal the results of the water study. The last time anything was published was in a publication called 'Springs of Florida', Florida Geological Survey. They published all they had available, but we have since then learned that the USGS continues to make annual measurements of the water flow and when Parker Turner was here he made measurements of the cave water flow, the main tunnel that Dr. Fran Kohout measured at 19,380,000 gallons a day coming into the Springs. Parker took a recent measurement. So we have those data available to us if the owners agree. Then we will get that done.

Geologically we have gone into the Springs and gone every ten feet, every three meters, from the surface to limestone, you drop down about ten feet in the water and you get out of the sand and shell and you're in limestone. And that's what it is from there on down. You get down to molten rock. Just rock and cavern, rock and cavern. It's a clay mix. We went every ten feet, collected samples of the rock and sent those to Frank Rupert of the Florida Geological Survey. He's presently doing a microscopic analysis of it. And he'll be able to tell what each formation is of. Frank has told me that he thinks that, well, we knew this: we start off at the top of the Hawthorne Group, we used to call it Formation, but now they call it the group, the Hawthorne Group as much as 5-7 million years ago. That's the first rock you encounter. You dig a hole right here, that's the first rock you hit, that's the top of it. And as we go down in WMS, we want to know how old is this spa. We always said it was 230 feet deep. We were using primitive instruments.

Parker went in with three sets of instruments and measured the mouth at 208' and the base of the tunnel at 220. He did the first accurate map of the tunnel that's ever been done. Parker and I worked on it for quite a while. He did a beautiful job and it will be out in publication in this geological publication I mentioned. So we have the cave accurately mapped and videotaped. We've got rock samples every ten feet---------and in addition we have mapped dugong, the ancestor of the manatee remains, newly found remains, at 43' and some earlier located remains at 78', we got spine and ribs and you may know from the press release about six weeks ago, while we were collecting rock samples, we found a dugong at 163'. We got video tape. And that is one of the earliest dugongs ever found. And it's down in the Arcadia Formation and Frank said it's 17(?)-25 million years old. After he's studied these rock samples, he may get us a closer date. In addition we tried a new technique in 1978, known as uranium thorium dating by McMasters University to date the stalactites, using isotope dating to tell how old they were. At the time the person doing it said he wasn't pleased with it. They were too porous, too rotten. They'd been underwater decomposing. Dr. Ken Osmond (sp?) at Florida State University has refined this technique and I told him about the earlier technique and he said, "They were nice, but I think I can do it (better)." So we went down and we sawed off small pieces of fallen stalactites on the 45-foot ledge. We sawed small piece off a stump at about 25' down where one had broken off, so we got the base of it and we got the tip of it. We got the oldest and the newest part of that one. And then we went down to a deeper stalactite and cut with a saw cut the tip off that and then we got some of the tufa, the rock that grew after the water rose and Dr. Osmond has all that. All this analysis is going on right now on a daily basis. And that will be published ultimately in a special publication by the Florida Geological Survey, but I'm also targeting the Florida Scientist, hopefully for it. So that will be jointly authored by several of us with the study that Parker Turner did for us included in there.

Vertebrate paleontology: I told you that already what Dr. McDonald is doing. Dr. McDonald is----two papers and we are presently co-authoring a paper that we are jointly authoring on the archaeology and paleontology that we expect to have finished in a month or two. We were talking about that today. So we are about to, since we changed our direction this year, into only diving and only doing research rather than working for the preservation and you know, we've had to turn away school children. We're not getting a thousand school children . We've had zero school children. And I have routinely turned down all but two public speaking requests. We turn down two or three requests a week, I guess. Spending all our time diving and publishing. So the vertebrate paleontology will be ------on paper.

Pollen: Dr. Linda Scott-Cummings--we sent her a lot of alligator coprolites from the bottom, alligator feces, and she studied the coprolites for all kind of things, including thiolists (?) which are kinda like plant excrement. There's no such thing as plant excrement, but plants leave some residue, a fossil silica residue called thiolists and different plants leave different kinds and different shapes of microscopic thiolists. She's an expert on coprolites, animal dung, thiolists and botanical pollen studies. She did her dissertation on coprolites. So she studied alligator coprolites and was able to tell us a great deal about past times from the alligator coprolites . Now she has taken that and we had Dr. Elizabeth Sheldon, who has studied for us this past year on the botanical remains from amongst the ground sloth and sabercat that our volunteers helped us gather this year. Jane Post worked on that a tremendous amount and a lot of other volunteers-----So she studied the actual leaves and sticks and I've sent Dr. Sheldon's report to Dr. Scott-Cummings and she and I are currently co-authoring a paper on the botanical, pollen and archaeological significance of the Springs. We just Monday submitted a new paper, to a journal for publication. We mailed it out Monday. So in closing to sum up what we've done, here this year and I'm very proud of it. We published a review in the newsletter---------- what we've done and the next newsletter, the one that we didn't have the money to print, was to contain among the regular things, a full bibliography of project publications, either things I've written or Skip's written or our contract people have written, as well as the videos that we've produced. So unfortunately you don't have that, you just have the first part of it. As I said Monday we submitted a paper so we have that paper submitted by me, a paper on the geology, a publication coming out on the pollen, one on vertebrate paleontology, one on the physiology with Dr. Hamilton, one on technology with Skip Wood, one on the hydrology if the owners will permit, and the C-14 publication I'm working on by myself with the assistance of a number of our research people and then the three-part study with Dr. Stafford on the accelerator dates as well as the Manasota Key project. And that comes up to ten, so we'll have ten scientific publications out for what we call "peer review" for juried journals this year. They won't be published this year. It takes longer than that, but they will have been submitted by summertime. We've also produced videos. The library has purchased the BBC video, "The Infinite Voyage" video and "The Window Below " video. The first one has 30 minutes on WMS, the second one has 15 minutes on WMS and the third one has 30 minutes on WMS. Any person in any Sarasota County library can go check those out. The last one is a WMS video tape. I've put them in the North Port Area Library, which of course has its grand opening-----the last week in March. And that's going to blow you away. They're going to have ...equipment in there, they have the video tapes. Go there, watch the tapes, take them home.

In addition to that, we just got a call from the British Broadcasting Company and they sold their program, which the first show was seen by one-half billion people, that 30 minute show on our work, that's the first time they showed it. It's been rerun over and over, they just sold that to Discovery Channel. The producers of BBC just called me to say that we just sold it and the producers of Discovery Channel will be calling you because they want to re-narrate it, they want to update it, since it was shot in 1985 ------ Now they want to do an update and they will re-release it and he said, "You know, I think that these guys will want to come down and do a whole new special in addition." So we'll see about that. But nevertheless that's coming your way this year on the Discovery Channel, so watch for that. I don't think they'll re-name it. The name of the show was " Discoveries Underwater". It's an eight-part series. Eight one-hour series. We had one-half hour of that. One of the things I'm very pleased with, we're in final scripting, all the shooting and they're doing the graphics and computer animation.

We commissioned, this year, three video tapes to be distributed to public schools. Each one of those tapes I told you about was nice in its own way but none of them was targeted at a definite school audience. And so Barbara Benton, our former project manager and I are co-executive producers of three videos, tentatively called "Archaeology and Paleo Environment in Warm Mineral Springs." One is of 15-20 minutes for elementary schools, two: 15-20 minutes for middle schools, and three: the same for high schools and above. They will be distributed free by the Dept. of Education to all 67 schools districts in all 67 counties, and also distributed free to the state library Systems. So we'll make the announcement in a press release when they're finished. You can check those out from your local library or if you're a teacher or tell your teacher that you can get this from the Dept. of Education for nothing. So we have in addition to everything else I've told you produced two or three video tapes at a very small cost this year. They will be distributed free to all schools and they'll be available to any public library ----

That is a wrap-up of what we've done at Warm Mineral Springs this year. Our research has been in the area of science and technology and I think we've made big strides forward and I want to thank you all. You've been a wonderful support group. We asked you to do the CARL letters, the state land-buying committee. We did a mail-out, we had you write letters. As I've told you before, I was told by one of the staff members who votes that it was the most effective card and letter campaign they've ever had. It worked. We got passed on the first vote, it just didn't make it the second time. But we're not through yet. I want to thank you for the support letters you did we recently asked you. We've got some very good response back.

Senator Johnson's office told me last week the head of the State University system has told him he will support continued funding for--I say last week, it was week before last--for the Warm Mineral Springs Project in next year's budget.

We've asked, we've told them that we expect to do less work here, we're winding it down, but that's what Chancellor Reed told Senator Johnson. That doesn't mean we'll get the money, but that's what we've been told. ----------

[---------- more here about the North Port EXPO which was not not transcribed]

Question from the audience: "I think you said you were going to go to Wakulla?"

Sonny: "I said I want to go to Wakulla. We've now been authorized to work that deep---the floor has always been 190 feet. Under federal regulations. And now because of what we've done here, FSU has, by board decree, gone to 240 feet. That's where the Bone Room is! So we were really sad-----Parker was killed. And Parker was the one who was setting all this up, so we've had a major set-back, aside from the great loss of a great friend. Parker trained our people. Parker certified Skip and me for cave diving. That's the scariest thing that I've ever done. I've been chased by sharks, I've been real badly scared a whole lot of times in my life, but that was the most scared I ever was. And Parker made me calm down and----I'm sorry to lose him, but that study will have to wait. Getting somebody I have as much confidence in as I did Parker-----because I won't go to 240 feet with just anybody.

Attachment 6:

FMSF Manuscript No. 8864 (Archaeological Consultants, Inc. 2003)

FMSF USE ONLY
FMSF Survey # 8864

Form Date 04/14/03

Survey Log Sheet

Florida Master Site File
Version 2.0 9/97

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Recorder of Log Sheet Marion Almy

Identification and Bibliographic Information

Survey Project (Name and project phase) CRAS 84 Acres Surrounding Warm Mineral Springs, Sarasota County, Florida.

Is this a continuation of a previous project? [X] No [ ] Yes Previous survey#(s)

Report Title (exactly as on title page) Cultural Resource Assessment Survey 84 Acres Surrounding Warm Mineral Springs, Sarasota County, Florida.

Report Author(s) (as on title page-individual or corporate) Archaeological Consultants, Inc. (ACI)

Publication Date (month/year) 4/03 Total Number of Pages in Report (Count text, figures, tables, not site forms) 49

Publication Information (if relevant, series and no. in series, publisher, and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*. See *Guide to the Survey Log Sheet.*) Archaeological Consultants, Inc. P.O. Box 5103, Sarasota, FL 34277-5103

Supervisor(s) of Fieldwork (whether or not the same as author[s]) Jodi Pracht

Affiliation of Fieldworkers (organization, city) Archaeological Consultants, Inc.

Key Words/Phrases (Don't use the county, or common words like *archaeology, structure, survey, architecture.* Put the most important first. Limit each word or phrase to 25 characters). Warm Mineral Springs, North Port

Survey Sponsors (corporation, government unit, or person who is directly paying for fieldwork)

Name Golden Springs, LLC

Address/Phone 12200 San Servando Ave., North Port, Florida 34287

Mapping

Counties (List each one in which field survey was done-do not abbreviate) Sarasota

USGS 1:24,000 Map(s): Names/Dates: USGS Myakka River, Fla. 1973 PR 1987

Remarks (Use supplementary sheet[s] if needed) No historic archaeological sites found; one prehistoric archaeological site found; no historic structures located.

Description of Survey Area

Dates for Fieldwork: Start 03/05/03 End 03/18/03 Total Area Surveyed (fill in one) ____ hectares 84 acres

Number of Distinct Tracts or Areas Surveyed 1

If Corridor (fill in one for each) Width ____ meters ____ feet Length ____ kilometers ____ miles

Types of Survey (check all that apply) [X] archaeological [ ] architectural [X] historical/archival [ ] underwater [ ] other: ____

Survey Log Sheet of the Florida Master Site File

Research and Field Methods

Preliminary Methods (Check as many as apply to the project as a whole. If needed write others at bottom).

- [ ] Florida Archives (Gray Building)
- [ ] Florida Photo Archives (Gray Building)
- [X] FMSF site property search
- [X] FMSF survey search
- [ ] other (describe)
- [ ] library research - *(local public)*
- [ ] library-special collection- *(non local)*
- [X] Public Lands Survey (maps at DEP)
- [ ] local informant(s)
- [ ] local property or tax records
- [X] newspaper files
- [X] literature search
- [ ] Sanborn Insurance maps
- [X] windshield survey
- [X] aerial photography

Archaeological Methods (Describe the proportion of properties at which method was used by writing in the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%, S(-ome: 20-50%); M(-ost: 50-90%); or A(-ll, Nearly all: 90-100%). If needed write others at bottom.

- [ ] Check here if NO archaeological methods were used.

- ___ surface collection, controlled
- ___ surface collection, uncontrolled
- A shovel test-1/4" screen
- ___ shovel test-1/8" screen
- ___ shovel test-1/16" screen
- ___ shovel test-unscreened
- ___ other (describe):
- F other screen shovel test (size: 1 x 1)
- ___ water screen (finest size:)
- ___ posthole tests
- ___ auger (size:)
- ___ coring
- ___ test excavation (at least 1x2 m)
- ___ block excavation (at least 2x2 m)
- ___ soil resistivity
- ___ magnetometer
- ___ side scan sonar
- ___ unknown

Historical/Architectural Methods (Describe the proportion of properties at which method was used by writing in the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%, S(-ome: 20-50%); M(-ost: 50-90%); or A(-ll, Nearly all: 90-100%). If needed write others at bottom.

- [ ] Check here if NO historical/architectural methods were used.

- ___ building permits
- ___ commercial permits
- ___ interior documentation
- ___ other (describe):
- ___ demolition permits
- M exposed ground inspected
- ___ local property records
- ___ neighbor interview
- ___ occupant interview
- ___ occupation permits
- ___ subdivision maps
- ___ tax records
- ___ unknown

Scope/Intensity/Procedures Background research; archaeological fields survey; 348 shovel tests (STs) excavated at 25 m offset intervals and 10 m intervals to bound positive STs; artifacts anyalized; photos taken; report prepared.

Survey Results (cultural resources recorded)

Site Significance Evaluated? [X] Yes [ ] No If *Yes* , circle NR-eligible/significant site numbers below.

Site Counts: Previously Recorded Sites 1 Newly Recorded Sites 1

Previously Recorded Site #'s (List site #'s without "8." Attach supplementary pages if necessary) SO19

Newly Recorded Site #'s (Are you sure all are originals and not updates? Identify methods used to check for updates, ie, researched the FMSF records). List site #s without "8." Attach supplementary pages if necessary. SO2667

Site Form Used: [ ] SmartForm [ ] FMSF Paper Form [X] Approved Custom Form: Attach copies of written approval from FMSF Supervisor and Supervisor-signed form.

DO NOT USE **********SITE FILE USE ONLY ************DO NOT USE**

BAR Related
- [ ] 872
- [ ] 1A32
- [ ] CARL
- [ ] UW

BHP Related
- [ ] State Historic Preservation Grant
- [ ] Compliance Review CRAT #

ATTACH PLOT OF SURVEY AREA ON PHOTOCOPIES OF USGS 1:24,000 MAP(S)

Location and Environmental Setting of the Project Area, Township 39 South, Range 20 East, Section 25 (USGS Myakka River, Fla. 1973, PR 1987).

FMSF NOTE TO IMAGE VIEWER

Some material contained in the corresponding paper manuscript has not been scanned.

Check material affected:

☐ Blueprints

☐ Map

☒ Site Forms

☐ Other, specify _____

This material can be viewed at the Florida Master Site File.

8864

CULTURAL RESOURCE ASSESSMENT SURVEY
±84 ACRES SURROUNDING
WARM MINERAL SPRINGS
SARASOTA COUNTY, FLORIDA

Prepared for:

Golden Springs, LLC
12200 San Servando Avenue
North Port, Florida 34287

April 2003

ARCHAEOLOGICAL CONSULTANTS INCORPORATED
SARASOTA, FLORIDA

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Performed for:

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12200 San Servando Avenue
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By:

Archaeological Consultants, Inc.
8110 Blaikie Court, Suite A
Sarasota, Florida 34240

Marion Almy - Principal Investigator
Jodi B. Pracht and Jeff Moates - Project Archaeologists

EXECUTIVE SUMMARY

Archaeological Consultants, Inc. (ACI) performed a cultural resource assessment survey of a specifically defined (±84 acre) area surrounding a 325 feet protective buffer at Warm Mineral Springs in Sarasota County, Florida. The purpose of the survey was to locate and identify any cultural resources within the project area and to assess their significance in terms of eligibility for listing in the National Register of Historic Places, hereinafter referred to as the NRHP. The survey was required by Sarasota County (White 2002). The field survey, described in this report, was conducted in March 2003.

Findings

A review of the NRHP and the Florida Master Site File (FMSF) indicated that one archaeological site had been previously recorded within the project area. The Warm Mineral Springs (WMS) Site (8SO19) is listed in the NRHP and the FMSF; it is also listed as a significant resource in the County's Significant Historic Resource List (Section 66-74 of Sarasota County Code). A review of relevant site locational information for environmentally similar areas within Sarasota County and the surrounding region indicated a moderate to high potential for the occurrence of prehistoric sites in the ±84 acre survey area. The background research also indicated that sites, if present, would most likely be small lithic scatter type sites. As a result of field survey, one prehistoric archaeological site was found. It is not eligible for listing in the NRHP.

Thus, project development will have no involvement with any significant archaeological sites within the ±84 acre survey area. However, the NRHP listed spring and its 325 feet surrounding buffer remain archaeologically sensitive areas which contain, rare and irreplaceable evidence of Florida's earliest inhabitants.

Recommendations

As with any archaeological resource, but particularly in the case of the highly significant WMS, it is recommended that future archaeological investigations of the terrestrial (buffer area) and/or submerged components of the site be conducted solely under the direction of a registered professional archaeologist[1] (RPA). Additionally, prior to granting permission for research, spring owners should require potential investigators to prepare a detailed research proposal including project rationale, research

[1] A directory of Registered Professional Archaeologists and the Code of Conduct and Bylaws of Professional Archaeologists can be found at www.rpanet.org. Qualified professional archaeologists for peer review are associated with these institutions: Bureau of Archaeological Research, Florida Division of Historical Resources, 500 S. Bronough Street, Tallahassee, Florida 32399, telephone: 850/245-6444; Department of Anthropology, Florida State University, 1847 W. Tennessee Street, Tallahassee, Florida 32304, telephone 850/644-4281; Florida Museum of Natural History, P.O. Box 117800, Gainesville, Florida 32611, telephone 352/392-1721; University of West Florida, Department of Anthropology, Building 13, Room 131, Pensacola, Florida 32514, telephone 850/474-3015; Sarasota County History Center, 701 N. Tamiami Trail, Sarasota, Florida 34236, telephone 941/861-1180.

design with clearly identified objectives and methodologies, and a list of project personnel. The research proposal should be submitted to the professional archaeological community for peer review and comment.

Finally, to ensure complete protection of the submerged resources, no sport or recreational diving should be permitted.

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1.0 INTRODUCTION

1.1 Project Description

The project area consists of approximately ±84 acres surrounding WMS which was recently annexed into the City of North Port, Sarasota County, Florida (Figure 1.1). Sarasota County required this cultural resource assessment survey because WMS (8SO19) is an archaeological site listed in the NRHP and as a significant resource in the County's Significant Historic Resource List (Section 66-74 of Sarasota County Code; White 2002). This resulting report meets specifications set forth in Chapter 1A-46, Florida Administrative Code (revised August 21, 2002), and is in compliance with the Historic Preservation Chapter 66 of the Sarasota County Code and the Historic Preservation Chapter of Apoxsee.

1.2 Purpose

The purpose of this cultural resource assessment survey was to locate and identify any prehistoric and historic period archaeological sites within the ±84 acre project area, and to assess, to the extent possible, their significance as to eligibility for listing in the NRHP. The archaeological survey was conducted in March of 2003. Background research preceded field survey. Such research served to provide an informed set of expectations concerning the kinds of cultural resources that might be anticipated to occur within the project area, as well as a basis for evaluating any new sites discovered.

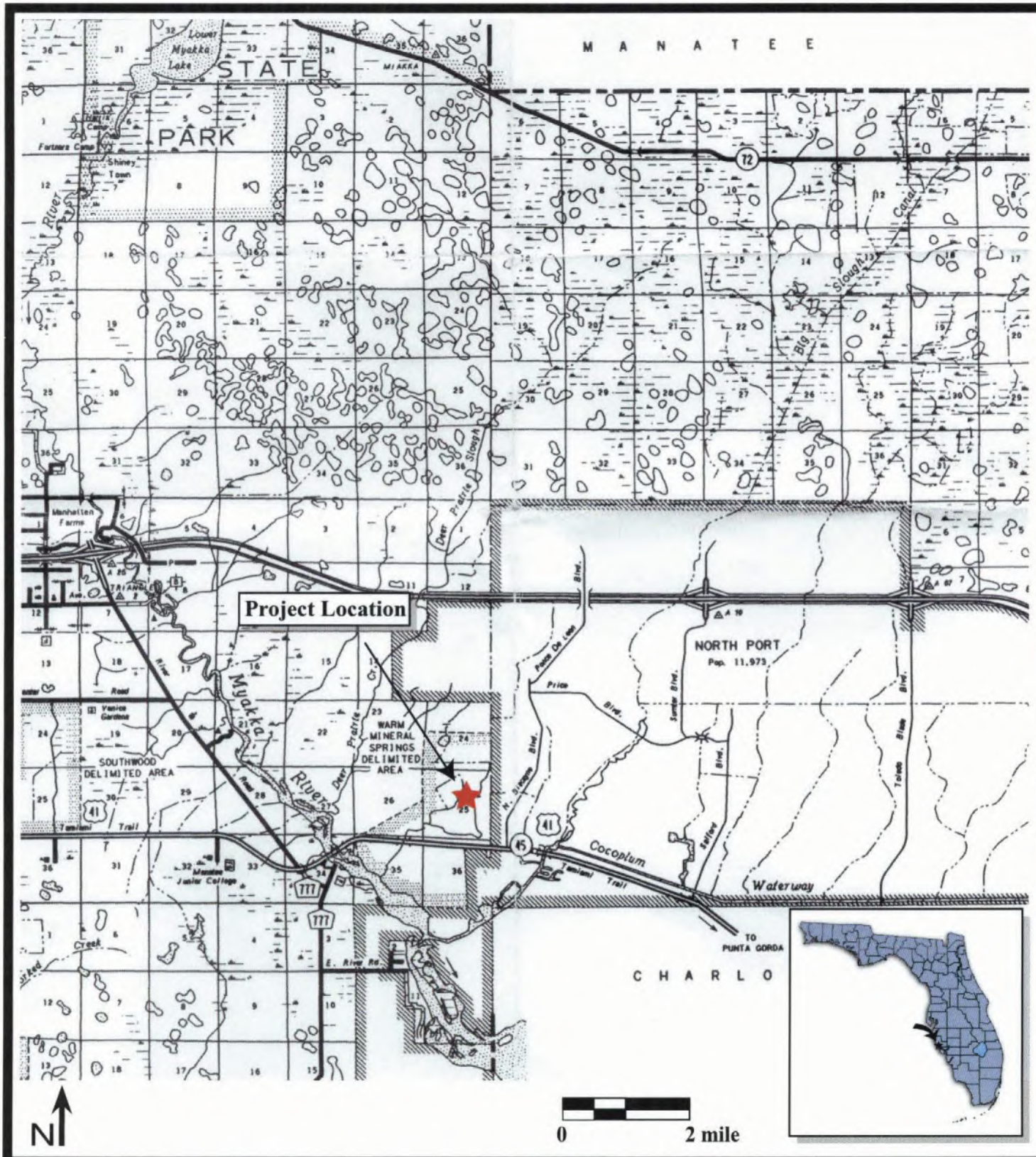


Figure 1.1. Warm Mineral Springs Project Location. Sarasota County, Township 39 South, Range 20 East, Section 25 (State Topographic Office 1996).

2.0 ENVIRONMENTAL OVERVIEW

The project area is located in Township 39 South, Range 20 East, Section 25 in Sarasota County, Florida (USGS Myakka River, Fla. 1973, PR 1987; Figure 2.1). The project area is situated in southeastern Sarasota County, north of the Charlotte County line. U.S. 41 is south of the project, and the Myakka River is approximately one half mile to the west. Originally known as Salt Springs, the site was renamed in the late 1950s by Fred Dailey, Sr., who purchased the spring, surrounding lands, and nearby trailer park and primitive bathing facilities. Along with his investors, Dailey hoped to attract people to the restorative mineral waters of the spring (Cockrell 1988:20).

North Port and Warm Mineral Springs lie within the Gulf Coastal Lowlands, the physiographic zone that typifies the entire coastline of the state of Florida. The Gulf Coastal Lowlands are, as the name implies, flat, and are characterized by surficial streams with little to no down cutting. Coastwise parallel, low sand ridges form slight, rolling hills within the zone. Ocean waters constructed these ridges during the interglacial Pleistocene Epoch. The lack of elevation in the Gulf Coastal Lowlands creates the near-surficial to exposed water table throughout the region. This high water table results in the poor natural drainage and abundance of wetlands in the region (Davis 1943; McNab and Avers 1996).

Soil types within the project area include Pomello and Immokalee fine sand. The former is moderately well-drained, and occupies higher, better drained terrain in broad flatwoods. Immokalee fine sand is a poorly drained soil of the broad pine and palmetto flatwoods (USDA 1954). Two, now-dry, drainages once flowed south through portions of the survey area and emptied into the spring's runoff creek (Figure 2.2 features A and B).

WMS itself was formed during a glacial period when sea levels were lower. Because Florida's aquifer rides on top the ocean waters that permeate the peninsula, the lowered sea levels of the late Pleistocene translated into a lowered aquifer. In turn, the depressed aquifer reduced support of the overlying karst (weathered limestone strata). WMS originated with the collapse of a cavern in the Tampa Limestone Formation. At its birth, WMS was a dry sinkhole. With deglaciation, rising sea levels, and the subsequent rise in the aquifer, mineralized waters seeped into the sinkhole, creating a spring which slowly filled the sink.

One of the earliest accounts of WMS and environs can be found in F. Trench Townshend's 1875 book, *Wildlife in Florida*, "... Mr. Townshend provides a poignant account of Florida -- and Warm Mineral Springs -- that existed before 20th Century civilization took its toll. He describes a pristine springs where nature has provided 'the sweetest food, the thickest covert, the coolest shade, [where] wild animals, birds and reptiles of every description seek these tempting haunts..." (Sheehan 1994).

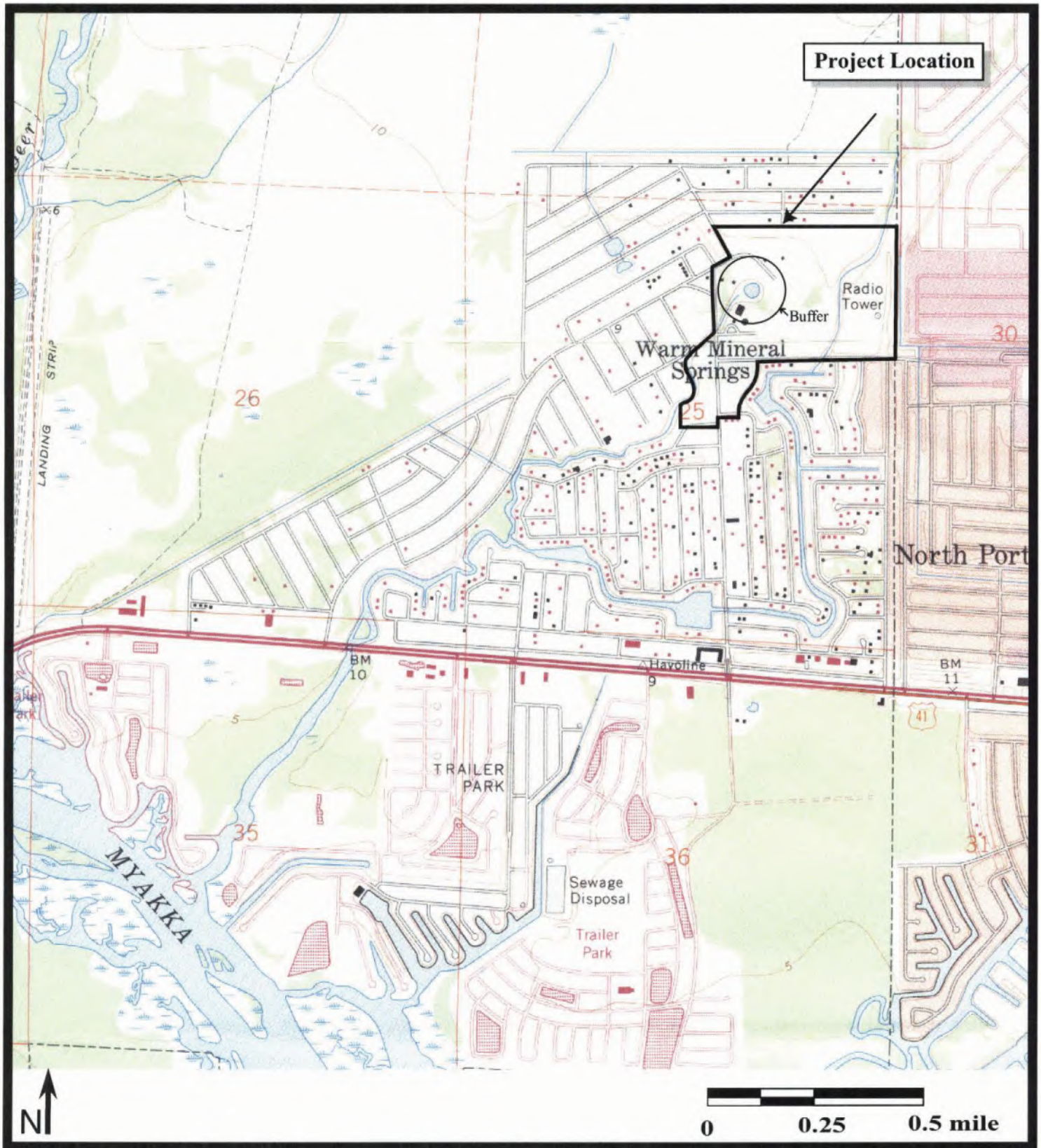


Figure 2.1 Location and Environmental Setting of the Project Area, Township 39 South, Range 20 East, Section 25 (USGS Myakka River, Fla. 1973, PR 1987).

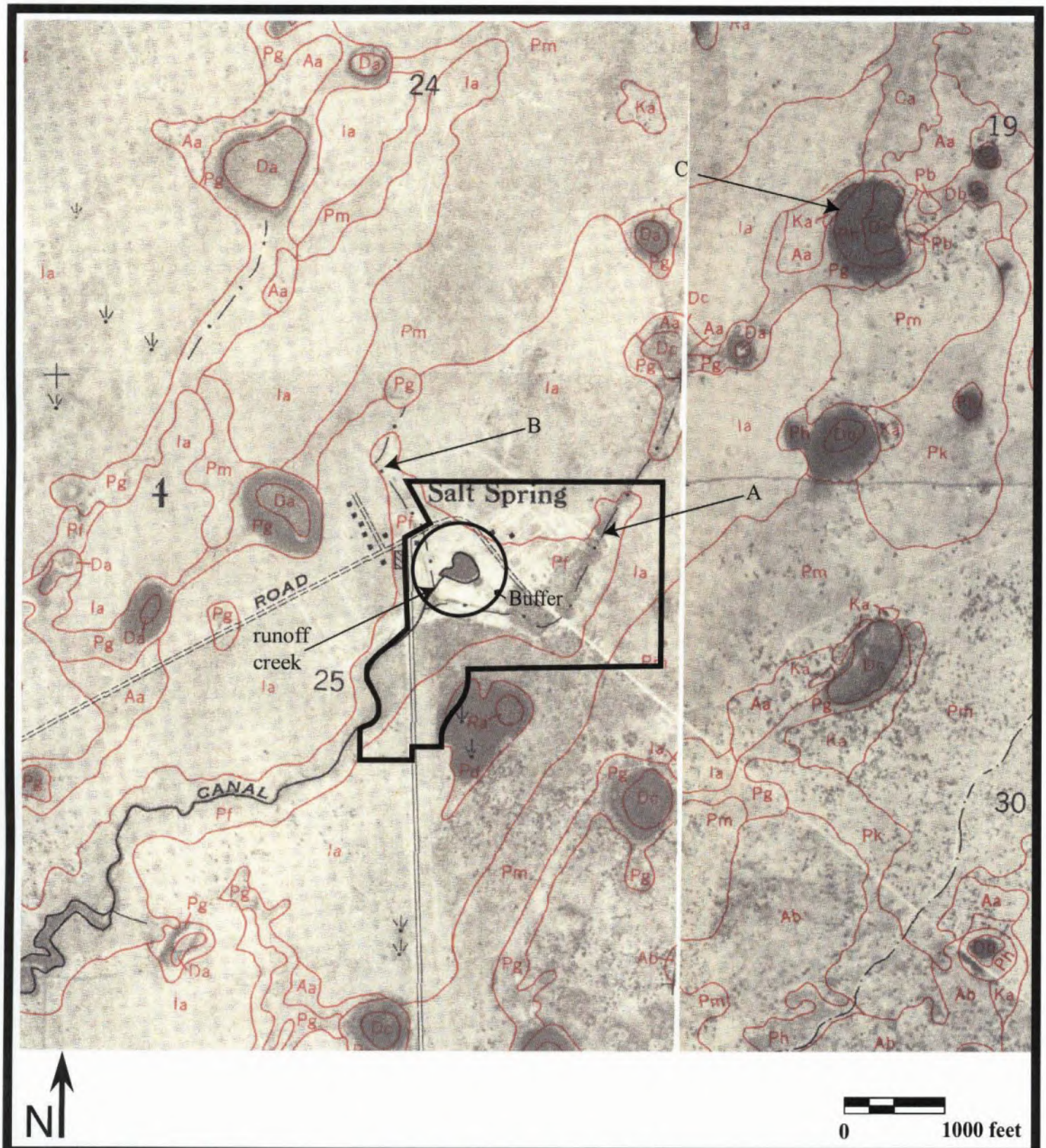


Figure 2.2 Soil Types of Project Area and Vicinity (USDA 1954). "A" and "B" are relict drainages into the Warm Mineral Springs runoff creek. "C" is possible source of "A". Warm Mineral Springs was originally called Salt Spring.

Making our way across the prairie in that direction, as we approached the spring a strong smell of sulphur impregnated the air, and a light mist overhung the water. We had some difficulty in forcing our way through the dense growth of scrub-palmetto higher than our heads, acacia, oak and other trees which bordered the spring, but at last we stood on its brink. We found the spring consisted of a circular basin about sixty yards in diameter: the water was clear as crystal except at the south-west edge, where it had a milky appearance, which our guide said sometimes extended over the whole basin. The bottom was covered with shells, and a brown slime which occasionally bubbled up to the surface and smelt like sulphur: the depth was from four to eight feet. Sinking my thermometer in the water I ascertained that the temperature at a depth of five feet was ninety degrees Fahrenheit, while that of the air was eighty-two degrees. To the taste, the water was salt and sulphurous, peculiarly nasty and offering a strong contrast to its marvellously clear and tempting appearance. I was about to test the buoyancy of the water by bathing, when the scaly body of an alligator emerged from the opposite bank, and swimming rapidly towards us, made me alter my intention, and determine to remain on the safer element.

Proceeding carefully to examine the basin, we found that two streams of most excellent fresh water flowed into it, one on the north, the other on the south-west, while a considerable body of salt water flows out of the basin, within a few feet of the spot where the fresh-water stream flows in on the south-west. I saw no fish in the basin, but large shoals of mullet in the salt stream flowing out, the bed and banks of which were very remarkable, being entirely composed of trap rock without a particle of sand or mud covering it. Oleander, thorny acacia, laurel, bay, paw-paw, cabbage-palm, and many flowering shrubs unknow to me, formed a dense growth which marked the winding course of the two fresh streams across the prairie, while the salt out-flow, which formed quite a small river, was fringed with forest trees, and a growth of palmetto almost impenetrable.

The prairie and pine forest in the vicinity of the salt spring abounds in savannas of the sweetest grass, with circular clumps of the saw-palmetto scattered through them, and numerous round ponds where the grass, rushes and water-lilies grow to a height of six or seven feet, having a depth of about two feet of water beneath. Nature having thus provided the sweetest food, the thickest covert, and coolest shade, wild animals, birds, and reptiles of every description seek these tempting haunts, and afford capital sport to the hunters, both red and white, who may chance to visit the neighbourhood.

While conditions similar to those described by Townshend may have existed for the last several thousand years, the paleoenvironment of WMS was quite different than that of today. Several lines of evidence suggest that as recently as the terminal

Pleistocene (ca. 15,000 to 10,000 B.P.[2]), the spring was a dry sinkhole (Cockrell and Murphy 1978). It was during this period of lowered water levels that the 13 m (43 ft) ledge was utilized for human interments. Macro and micro botanical analyses indicate that, in lieu of the palmetto flatwoods of the past few centuries, the ca. 10,000 B.P. environment of WMS supported a mixed hardwood forest. Vegetation included oaks, myrtle, hazelnut, and birch. Ash, willow, cypress, cattail, and elm are also represented in the botanical samples (Sheldon and Cameron 1976). Also, Cockrell (1980) reports that in addition to extant (modern) faunal forms, ranging from rat to raccoon, deer, and panther, investigations in WMS have produced ground sloth (*Megalonyx*) and sabre cat (*Smilodon*) radiocarbon dated at 11,000 B.P. These stratigraphically related finds mark the first time in North America that sabre cat, ground sloth, and humans have been shown to be coeval. However, Cockrell is quick to point out there is no direct evidence whatsoever of any contact between the people and these extinct faunal forms.

Present Environmental Conditions of 84 Acre Parcel: Almost all of the natural vegetation on the ±84 acre WMS project area has been removed by clearing, ditching, and road and parking lot construction (Photos 2.1 and 2.2). In addition, Australian Pines have been planted as landscape ornamentals in several areas including along Ortis Boulevard and due north of the buffer zone (Photos 2.1 and 2.2).

Photo 2.1. Looking Southwest at Eastern Portion of Property with Natural Vegetation.

Photo 2.2. Looking West at Northern Portion of Property with Australian Pine and Cleared Field.

[2] "B.P." = years before present, with "present" being A.D. 1950, when the atmospheric testing of hydrogen bombs loaded the atmosphere with Carbon[14], irrevocably altering Carbon absorption rates. Geologic and paleoenvironmental time is typically measured in years B.P.

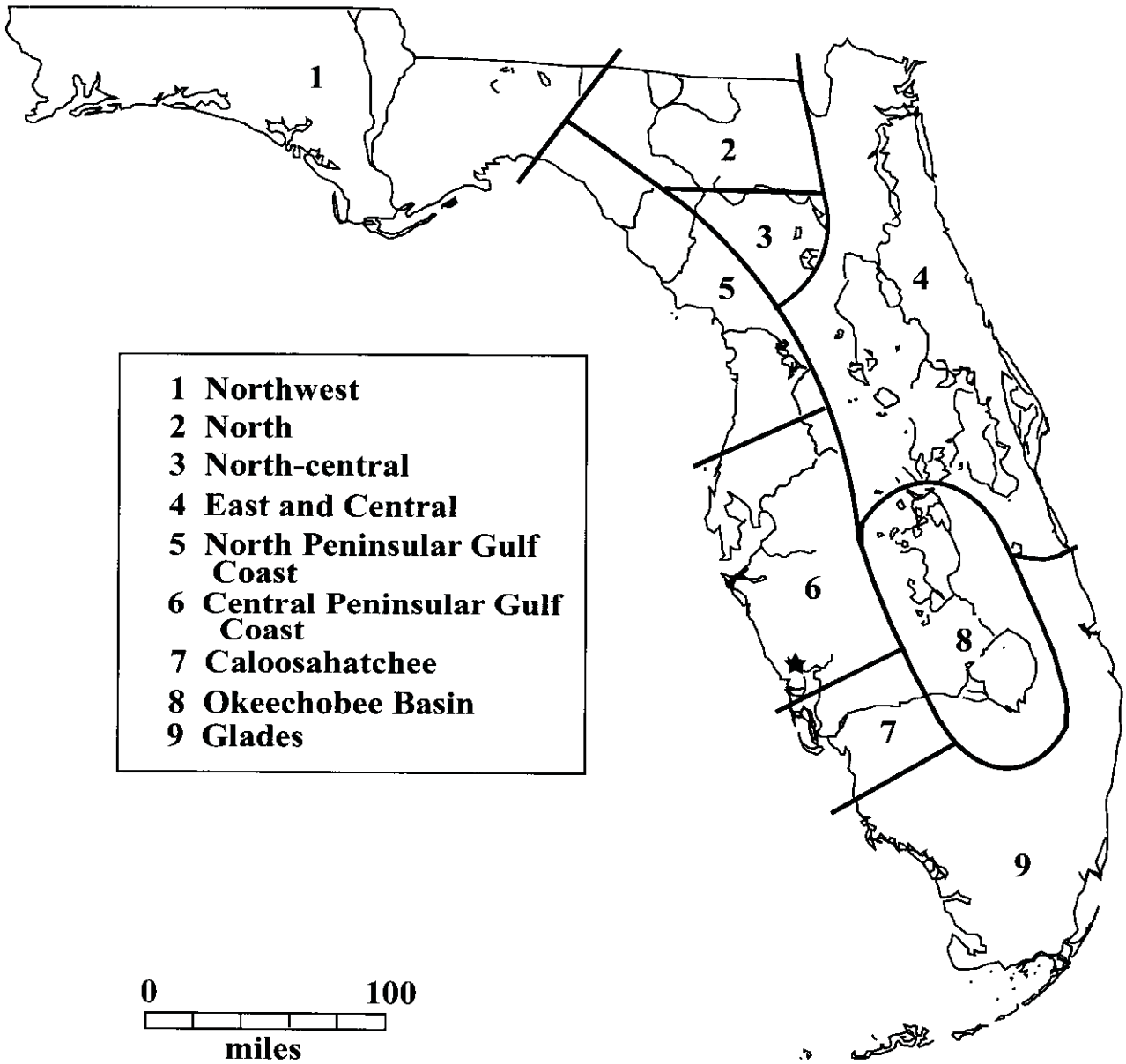
3.0 PREHISTORIC REVIEW

In general, archaeologists summarize the prehistory of a given area, that is, an archaeological region, by delineating a sequence of cultural periods in order to provide a chronology or a time frame for an archaeological culture that is present in a given geographical area. As a result, archaeological cultures are defined largely in geographical terms, but also reflect shared environmental and cultural factors. The project area is located in the Central Peninsular Gulf Coast archaeological region, as defined by Milanich (1994) and Milanich and Fairbanks (1980). This region extends from just north of Tampa Bay southward to the northern portion of Charlotte Harbor (Figure 3.1). The prehistoric occupation in the interior part of this region is relatively poorly understood. Thus, this summary is based, to a considerable extent, on information pertaining to sites located outside the specific project area.

3.1 Paleo-Indian

The Paleo-Indian Period is the earliest cultural manifestation in Florida, dating from roughly 13,000 to 10,000 B.P. (Austin 2001). Archeological evidence for Paleo-Indians consists primarily of scattered finds of diagnostic lanceolate projectile points. The majority of these sites are associated with the rivers in the north-central portion of Florida. During this period, the climate was cooler and drier. Vegetation was typified by xerophytic species with scrub oak, pine, and open grassy prairies (Milanich 1994:40). Since sea levels were as much as 115 feet below present levels and the coastal regions extended miles beyond present day shorelines (Milliman and Emery 1968), many of the sites dating from this time period have been inundated (Clausen et al. 1979; Ruppé 1980; Scholl et al. 1969). Much of the information about the Paleo-Indian period in Sarasota County is derived from underwater excavations at two inland spring sites: Little Salt Spring and Warm Mineral Springs. The latter, located within a 325 feet buffer situated within the project area (Figure 2.1) is: "...a 70 m deep vertical cavern which was dry during the terminal Pleistocene and is now submerged, due to the ground water rise which accompanied the Holocene sea level rise....A ledge 13 m below present water level has produced a human burial dated ca. 10,310 radiocarbon years before present ...Recovered with this burial was a worked shell spear thrower spur, the first evidence of compound tool used in North America" (Cockrell and Murphy 1978).

Traditionally, the Paleo-Indian period was thought to be characterized by small nomadic bands of hunters and gatherers. However, Daniel (1985) has proposed a model of an early hunter-gatherer settlement which suggests that some Paleo-Indian groups may have practiced a more sedentary lifestyle than previously believed. Archaeologists also speculate that since the climate was cooler and much drier, it is likely that these nomadic bands traveled between permanent and semi-permanent sources of water, exploiting seasonally available resources. This has been referred to as the Oasis hypothesis (Dunbar 1991). These watering holes would have attracted the animals upon which the Indians hunted, providing both food and drink.



Post- 500 B.C. regions of precolumbian Florida

Figure 3.1 Florida Archaeological Regions (Milanich 1994:278). The project area (★) is located in the Central Peninsular Gulf Coast Region.

Excavations at the Harney Flats Site in Hillsborough County (8HI507) have provided a rich body of data concerning Paleo-Indian lifeways in west central Florida (Daniel and Wisenbaker 1987). Such data supports the theory that Paleo-Indian settlement may "not have been related as much to seasonal changes as generally postulated for the succeeding Archaic period," but instead movement was perhaps related to the scheduling of "tool-kit replacement, social needs, and the availability of water," among other factors (Daniel and Wisenbaker 1987:175). During the late Paleo-Indian Period, the large lanceolate Suwannee and Simpson points were replaced by the smaller Tallahassee, Santa Fe, and Beaver Lake types (Milanich 1994:53). Other research in the region has shown that at least portions of coastal shell deposits, bordering now submerged river channels in Tampa Bay, were probably middens deposited during the Paleo-Indian period (Goodyear and Warren 1972; Goodyear et al. 1983). Austin (2001), however, notes that while some researchers have suggested that the disappearance of Pleistocene mega fauna forced early Holocene groups to the coast to exploit terrestrial resources, such a change seems unlikely.

In addition to Warm Mineral and Little Salt Springs, evidence of the Paleo-Indian period in Sarasota County has been identified at a lithic scatter component of the Myakkahatchee Site in the City of North Port and along the Gulf beach at Venice where a Simpson-like projectile point was recovered near a spring (ACI 1985).

3.2 Archaic

As the Paleo-Indian Period gradually came to a close, climatic changes occurred, and the last of the Pleistocene megafauna disappeared from the landscape. Archaeological evidence suggests a slow cultural change which led toward an increasingly intensive exploitation of localized food resources. These changes may reflect a transition from the Late Pleistocene to a more seasonal, modern climate when the pine-dominated forest began to cover the landscapes. With loss of the ice age mammals, some archaeologists have hypothesized that Archaic populations turned to the hunting of smaller game like deer, raccoon, and opossum, as well as a reliance on wild plants and shellfish (Milanich 1994).

The Archaic Period has been divided into three sub-periods: Early, Middle, and Late (or Ceramic) Archaic. The Early Archaic period, ca. 8000 to 7000 B.P., is well documented in Florida, and generally recognized by the presence of Dalton and/or Bolen type projectile points (Bullen 1975). The archaeological record appears to indicate a diffuse, yet well-scheduled pattern of exploiting both coastal and interior resources. The Early Archaic tool assemblage is more diverse than the preceding Paleo-Indian tool kits, and includes specialized stone tools for performing a variety of tasks. Also, many Early Archaic sites are small, seasonal campsites suggesting seasonal migrations or travel in search of food (Milanich and Fairbanks 1980). Widmer (1988) has hypothesized a post-Kirk Horizon within the Early Archaic for South Florida as a bridge between the preceding late Paleo-Indian (Kirk Horizon) and the subsequent Middle Archaic. Austin (2001) notes possible post-Kirk Horizon sites such as the Fletcher Davis, Tampa Palms,

and West Williams sites in Hillsborough County. Discoveries at Little Salt Spring in Sarasota County (Clausen et al. 1979) and the Windover Site (Doran 2002) in Brevard County indicate that bone and wood tools were also manufactured and used for a variety of tasks during the Early to Middle Archaic.

During the Middle Archaic, ca. 7000 to 5000 B.P., the archaeological record (a procession of Middle Archaic projectile point types) indicates the spread of people across Florida (Milanich 1994; Purdy 1981). There may have been a shift from the dispersed settlement pattern of the preceding period to a system of central-base camps with numerous, smaller satellite or special-use camps. These changes in settlement pattern may have resulted in maximizing the use of forest resources and the ability of larger bands of people to live together for part of the year. Russo (1991) has also suggested that research on Horr's Island in southwest Florida provides evidence of a large, permanent (year-round) preceramic Archaic habitation with a large and diverse assemblage of shell and bone tools.

Lithic artifacts associated with the Middle Archaic include broad bladed, stemmed projectile points such as the Newnan, Marion, and Putnam types. Also, specialized tools such as microliths and burins, large chopping implements, as well as an array of expedient tools, have been found at archaeological sites. Ste. Claire (1987) has reported extensive use of thermal alteration which enabled poor-quality, raw material to be used for the manufacture of tools, principally hafted bifaces. Other researchers report a noticeable decrease in the use of shaped tools other than bifaces as well as a dependency on flake tools (Austin 2001). In addition, several cemetery sites, with human burials in bogs, springs, and other wetlands, provide the first evidence for mortuary ceremonialism during the Middle Archaic. One of these, the Little Salt Spring Site, is associated with a large Archaic period camp or village site in southern Sarasota County (Clausen et al. 1979).

During the Late or preceramic Archaic, ca. 5000 to 3000 B.P., many settlements were located near wetlands. The abundance of resources located in and near the wetlands permitted larger settlements. Broad bladed, stemmed projectile points of the Middle Archaic continued to be manufactured. However, hafted scrapers, "thumb" scraper and discordal scrapers appear in the archaeological records. Austin (2001:47) writes that "...presumably this is related to maintenance activities associated with habitation..." Other researchers note that a greater reliance on marine resources is indicated at coastal sites as subsistence strategies and technologies were adapted to maximizing the rich source of aquatic foods. In Sarasota County, a number of very large coastal and riverine shell middens begin to accumulate along the bays (Almy 1976; Williams et al. 1990).

One of the best known and preserved sites of this type in Sarasota County is the Palmer Site. It is situated northwest of the project area in Osprey where a horseshoe shaped shell midden circled a freshwater spring adjacent to Sarasota Bay (Bullen and Bullen 1976; Kozuch 1998; and Quitmyer 1998). Also during the Late Archaic, the earliest pottery, a fiber-tempered ware, was introduced in Sarasota and elsewhere in Florida (Bullen and Bullen 1976). To the south in Collier County, recent investigations at

Heineken Hammock (8CR231) have evidenced a temporary camp site dating 4500 B.P. and situated "...well back from the Gulf shore suggesting the presence of a stable community within a practical hiking or canoeing distance..." off the coast (Lee et al. 1998:223). Also, based on a surface collection at Cedar Point shell midden (8CH18/8CH61) on Lemon Bay which consisted of sand and fiber tempered sherds and a thick, chalky fiber-tempered ware, Luer (1999b) has hypothesized a "Late or Terminal Archaic Period occupation just north of Charlotte Harbor."

3.3 Transitional

The Transitional period (4000-2500 B.P.) was defined by Bullen (1959) to explain the transition from the Late Archaic, fiber tempered period to the Formative or Woodland Period era which manifest a greater regional diversity. However, the period remains difficult to identify clearly in the archaeological record (Milanich 1994). Nonetheless, it appears that as population size increased, fiber-tempered pottery was replaced by sand-tempered or limestone- and sand-tempered wares. In addition, there is evidence of regional interaction with other cultures such as the Poverty Point complex of the lower Mississippi Valley. Among the west central Florida sites dating to the Transitional are the Canton Street Site in St. Petersburg (Bullen et al. 1978) and the Apollo Beach Site on Tampa Bay (Warren 1968). Throughout Florida, between 4000-2500 B.P., there is evidence that the fiber-tempered ceramics of the preceding Late Archaic were gradually replaced by pottery of different traditions. For example, limestone-tempered and sand-tempered pottery developed along the west-central and southwest coast, where as a temperless chalky ware developed along the St. Johns River and northeast coast of Florida.

3.4 Woodland

The Early Woodland stage (ca. 2500 to 1300 B.P.) in the Central Peninsular Gulf Coast archaeological region is known as the Manasota culture period. The subsistence practices of the Manasota people combined marine and hinterland exploitation. Large shoreside sites, i.e., major villages, were located on or very near the mainland. Small, perhaps seasonal villages or camp sites were located 12 to 18 miles inland from the shore. During this long period, sand-tempered pottery became the dominant ceramic type, and burial practices became more elaborate, evolving from interments, often in shell middens, to sand burial mounds (Luer and Almy 1982). As currently defined, the Manasota culture is a coastal manifestation. While not directly assignable to the Manasota Period, several small sites in the interior part of the region may be contemporaneous with coastal Manasota sites, including those along Fox and Salt Creeks (Williams et al. 1990).

Gradually, the people of the region were influenced by the Weeden Island culture from the north, and became what archaeologists refer to as a Weeden Island-related culture, one of the peninsular Weeden Island-related cultures identified and described by Milanich (1994). The subsistence pattern continued to be based on a hunting and

gathering of land, marine, riverine, and swamp resources. However, as populations increased late in the Weeden Island-related period, increased dependence on horticulture has been hypothesized. The people seem to have led a fairly sedentary lifestyle, with villages located along the coast as well as at inland areas. Barrier islands like Manasota, Longboat and Siesta Keys were utilized for both habitation as well as burials (Dickel 1991; Luer and Almy 1979; ACI 2001).

Usually sites are identified by the presence of shell middens or habitation areas and a sand burial mound. As not all villages possessed the labor force to construct a mound, it is likely that many communities shared a single continuous-use mound (Willey 1949). Burial mound customs, artifactual evidence of an extensive trade network, and settlement pattern data suggest a complex socio-religious organization for this period. Weeden Island-related sites in the interior portion of the Central Peninsular Gulf Coast region include the Parrish Mound 5 (Willey 1949) and Stanley Mound (Deming 1976) in Manatee County, as well as the South Prong I Site in Hillsborough County (Martin 1976). A sand mound situated to the south of Payne Creek in Hardee County, discovered by Batcho (Batcho and Milanich 1978), may also date to this period. Closer to the project area, 8SO98, the Laurel Mound (now destroyed) has been tentatively dated to the Weeden Island period based on the limited information available (FMSF).

3.5 Mississippian

The final aboriginal cultural manifestation of the Central Peninsular Gulf Coast region is Safety Harbor, named for the type site in Pinellas County. In the late 1980s, Mitchem (1989) subdivided the Safety Harbor period into four phases: Englewood Phase (A.D. 800 to 1000), Pinellas Phase (A.D. 1000 to 1500), Tatham Phase (A.D. 1000 to 1567), and Bayview Phase (A.D. 1567 to 1625).

In general, further influences from the north led to the incorporation of many features of the Mississippian culture into the late Weeden Island-related peoples which became the Safety Harbor culture. To the south of Tampa Bay, there is evidence of a complex social hierarchy and the appearance of chiefdoms by A.D. 700-900. Luer (1986) has hypothesized increasing social complexity through the controlled production and access to valued shell tools, particularly those fashioned from robust whelk shells. Also, Widmer (1988) has argued for the appearance of chiefdoms in the region as a result of population growth and a need to control fixed territories and limited fishing resources. As in the previous culture periods, major Safety Harbor sites remained primarily along the shore; many were situated at the same locations as late Manasota sites (Luer and Almy 1981). Large towns, many having a temple mound, plaza, midden, and nearby burial mound, characterized the Safety Harbor period which can be correlated with the growth of a religious-political complex. This is evidenced in the archaeological record as increasingly complex mortuary practices and burial goods (Luer 1999b:Table 2). Research by Luer and Almy (1981) also supports earlier suggestions that some maize agriculture may have been practiced by the Safety Harbor peoples as they continued marine and terrestrial exploitation of the region's food resources. Although most Safety Harbor sites are located along coastal bays and rivers, inland sites are also known (Willey

1949) in Sarasota County. For example, 8SO403, a burial site located on the Myakka River, has produced evidence of a Safety Harbor component (Hazeltine and Luer 1983), and the Englewood Mound (8SO1) has been dated to the Englewood and Pinellas Phases of the Safety Harbor Period (ca. A.D. 1200-1500) (Luer 1999a, 1999b).

The Timucuan Indians, locally the Tocobaga and other local groups (Tampa Bay area), are recognized as the bearers of the Safety Harbor culture. Their large sites on the coast were probably ceremonial centers with temple mounds, villages, and burial mounds. Large population centers dating to the Safety Harbor period near Tampa Bay were located at Safety Harbor (Sears 1958; Griffin and Bullen 1950), Maximo Point (Bushnell 1962; Sears 1958), the Narvaez Midden (Bushnell 1966), and Tierra Verde (Sears 1967), all in Pinellas County. Inland Safety Harbor sites include Parrish Mounds 1, 2, and 3 in Manatee County (Willey 1949), the Davis Mound in Hardee County (Bullen 1954), and the Arcadia Site (Willey 1949) and Keen Mound (Willis and Johnson 1980) in DeSoto County.

South and east of Tampa Bay, in Sarasota County, there is some evidence of the Late Safety Harbor and Contact periods. The Blackburn Site (8SO403) reportedly contained glass beads as well as Culbreath and Pinellas type bifaces. Deming (1989) placed the mound in the Englewood/Safety Harbor and Contact periods. Similarly, glass beads were reported from the Crowley Homestead Mound (8SO72) suggesting a Contact period of utilization.

While European contact decimated native populations and repeated conflicts dispersed populations, there is evidence on Florida's southwest coast of Indians who had direct or indirect contact with the Spanish Missions in north-central and northern Florida (Luer 1999b). Historic accounts indicate that in the sixteenth, seventeenth, and the first half of the eighteenth centuries, Indians of the Tampa Bay area, including the Tocobaga, Pohoy, and Alafay, were interacting with other southern and south-central Florida Indians (Luer 1994). Such evidence is found around Tampa Bay at locales like the Safety Harbor and Narvaez sites, and at the Fort Brook Midden in downtown Tampa. South of Tampa Bay, archaeological evidence is scarce, but historic documents mention various activities along the Gulf coast in the 1600s and early 1700s, as refugees fleeing mission sites probably joined indigenous Indians (Luer 1999b). However, by the mid-18th century, the native populations had all but vanished from the Tampa Bay area and vicinity (Neill 1968).

4.0 HISTORICAL OVERVIEW

The cultural traditions of the native Floridians ended with the European expeditions to the New World. The initial events, authorized by the Spanish crown in the 1500s, ushered in devastating European contact. After Ponce de Leon's landing near St. Augustine in 1513, Spanish explorations were confined to the west coast of Florida (Narvaez in 1528; DeSoto in 1539) and European contact along the east coast was left to a few shipwrecked sailors from treasure ships which, by 1551, sailed through the Straits of Florida on their way to Spain. When the first Europeans arrived in coastal southwest Florida in the sixteenth century they encountered the Calusa, a powerful, complex society ruled by a paramount chief. The principal town of the Calusa is thought to be the site of Mound Key in Estero Bay near Fort Myers Beach. Historic documents suggest that the Calusa chief ruled over fifty towns, from which he exacted tribute (Widmer 1988). By the middle of the eighteenth century, the Calusa population had been almost totally decimated and dispersed as a result of conflicts with the Europeans and exposure to their diseases.

As the Calusa disappeared, fishing communities, or "ranchos," were established by Cuban and Spanish fisherman on various islands and along the coast between Charlotte Harbor and Tampa Bay. The earliest recorded ranchos may have been at Useppa Island and San Carlos Bay in Charlotte Harbor ca. 1765 (Hammond 1973). However, there is some evidence that remnants of the once powerful Calusa joined the Cuban-Spanish fishermen at the ranchos in Charlotte Harbor during the early eighteenth century (Almy 2001). The ranchos supplied dried fish to Cuban and northern markets until the mid-1830s, when onset of the Seminole Indian Wars and customs control ruined the fisheries.

The area which now constitutes the State of Florida was ceded to England in 1763 after two centuries of Spanish possession. England governed Florida until 1783 when the Treaty of Paris returned Florida to Spain; however, Spanish influence was nominal during this second period of ownership. Prior to the American colonial settlement of Florida, portions of the Muskogean Creek, Yamassee, and Oconee Native American Indian populations moved into Florida and repopulated the demographic vacuum created by the genocide of the original aboriginal inhabitants. These migrating groups of Native Americans became known to English speakers as Seminioles or Seminoles. This term is thought to be either a corruption of the Creek *ishti semoli* (wild men) or the Spanish *cimarron* (wild or unruly). Many Indians who escaped death or capture fled to the swamps and uncharted lands in South Florida. The Seminoles formed at various times loose confederacies for mutual protection against the new American Nation to the north (Tebeau 1971:72).

The bloody conflict between the Americans and the Seminoles over Florida came to a head in 1818, and was subsequently known as the First Seminole War. As a result of the war and the Adams-Onis Treaty of 1819, Florida became a United States territory in 1821, but settlement was slow and scattered during the early years. Andrew Jackson,

named provisional governor, divided the territory into St. Johns and Escambia Counties. At that time, St. Johns County encompassed all of Florida lying east of the Suwannee River, and Escambia County included the land lying to the west. In the first territorial census in 1825, some 317 persons reportedly lived in South Florida; by 1830 that number had risen to 517 (Tebeau 1971:134). Although the project area in present-day Sarasota County was initially included in St. Johns County, the area transferred to Mosquito County when it was created in 1824 and then to Hillsborough County when it was established in 1834. The earliest attempts to settle what is now Sarasota County occurred in 1842 when William H. Whitaker homesteaded 145 acres along Sarasota Bay (Marth 1973:12).

Although the First Seminole War was fought in north Florida, the Treaty of Moultrie Creek in 1823, at the end of the war, was to affect the settlement of south Florida. In exchange for occupancy of approximately four million acres of reservation land south of Ocala and north of Charlotte Harbor, the Seminoles relinquished their claim to the remainder of the peninsula (Mahon 1967:46-50; Covington 1958). The treaty satisfied neither the Native Americans nor the settlers. The inadequacy of the reservation, the desperate situation of the Seminoles, and the mounting demand of the whites for their removal, soon produced another conflict.

By 1835, the Second Seminole War was underway. As part of the effort to subdue Indian hostilities in southwest Florida, military patrols moved into the unchartered and unmapped wilderness in search of Seminole populations outside the reservation. As the Second Seminole War escalated, attacks on isolated settlers and communities in southwest Florida became more common. To combat this, the combined service units of the U.S. Army and Navy converged on southwest Florida. This joint effort attempted to isolate the southern portion of the Florida peninsula against the estimated 300 Seminoles remaining in the Big Cypress Swamp and Everglades (Covington 1958:7; Tebeau 1966:39). The federal government ended the conflict by withdrawing troops from Florida. At the war's end, some of the battle-weary Seminoles were persuaded to emigrate to the Oklahoma Indian Reservation where the federal government had set aside land for Native American inhabitation. However, those who wished to remain in Florida were allowed to do so, but were pushed further south into the Everglades and Big Cypress Swamp. This area became the final stronghold of the Seminoles (Mahon 1967:321).

Encouraged by the passage of the Armed Occupation Act in 1842, which was designed to promote settlement and protect the Florida frontier, settlers moved south through Florida. The Act made available 200,000 acres south of Gainesville to the Peace River, barring coastal lands and those within a two mile radius of a fort. The Armed Occupation Act stipulated that any family or single man over 18 years of age able to bear arms could earn title to 160 acres by erecting a habitable dwelling, cultivating at least five acres of land, and living on it for five years. During the nine month period the law was in effect, 1184 permits were issued totaling some 189,440 acres (Covington 1961:48; Dunn 1989:24-25).

Following the second Seminole War, incoming settlers registered stock cattle purchased in north Florida and drove them south to open ranges near Indian territory (Matthews 1989:45). In response, the federal government began surveying land in south Florida, including land in the vicinity of the project area. In 1843, Samuel Reid surveyed the exterior lines of Township 39 South, Range 20 East (State of Florida 1843). Four years later, in 1847, A.H. Jones surveyed the interior lines of the Township and Range. Jones describes the project area as "3rd rate open land with scattering of pines." Jones also notes a "saltwater creek" along the eastern boundary of Section 25 (State of Florida 1847a:532). The resulting Plat depicts no manmade features (State of Florida 1847b).

In 1845, the Union admitted the State of Florida with Tallahassee as the state capital. Ten years later, Manatee County, which at that time included the project area, was carved from portions of Hillsborough and Mosquito Counties with the village of Manatee as the county seat (Marth 1973:13; Purdum 1994:82). In December of 1855, the Third Seminole War, or the Billy Bowlegs War, started as a result of additional pressure placed on the few remaining Native Americans in Florida to emigrate west (Covington 1982). The war started when Seminole Chief Holatter-Micco, also known as Billy Bowlegs, and 30 warriors attacked an army camp south of present day Immokalee, killing four soldiers and wounding four others. The attack was in retaliation for damage done by several artillerymen to property belonging to Billy Bowlegs. This hostile action renewed state and federal interest in the final elimination of the Seminoles from Florida. Despite this effort, military action was not decisive during the war. Therefore, in 1858 the U.S. government resorted to monetary persuasion to induce the remaining Seminoles to migrate west. Chief Billy Bowlegs accepted $5,000 for himself, $2,500 for his lost cattle, each warrior received $500 and $100 was given to each woman and child. On May 4, 1858 the ship *Grey Cloud* set sail from Fort Myers with 38 Seminole warriors and 85 Seminole women and children. Stopping at Egmont Key, 41 captives and a Seminole woman guide was added to the group. This made a total of 165 Seminoles migrating west. On May 8, 1858, the Third Seminole War was declared officially over (Covington 1982:78-80).

Cattle ranching served as one of the earliest important economic activities reported in Manatee County. Mavericks left by early Spanish explorers, such as DeSoto and Narvaez, provided the stock for the herds raised by the mid-eighteenth century "cowkeeper" Seminoles. As the Seminoles were pushed further south during the Seminole Wars and their cattle were either sold or left to roam, settlers captured or bought the cattle. By the late 1850s, the cattle industry of southwestern Florida was developing on a significant scale. Hillsborough and Manatee Counties constituted Florida's leading cattle producing region. By 1860, cattlemen from all over Florida drove their herds to Fort Brooke (Tampa) and Punta Rassa (south of Ft. Myers) for shipment to Cuba, at a considerable profit. During this period, Jacob Summerlin became the first cattle baron of southwestern Florida. Known as the "King of the Crackers," Summerlin herds ranged from Ft. Meade to Ft. Myers (Covington 1957).

In 1861, Florida followed South Carolina's lead and seceded from the Union as a prelude to the American Civil War. Florida had much at stake in this war as evidenced in a report released from Tallahassee in June of 1861. It listed the value of land in Florida's

35 counties as $35,127,721 and the value of the slaves in the state at $29,024,513 (Dunn 1989:59). Although the Union blockaded the coast of Florida during the war, the interior of the state saw very little military action. Florida became one of the major contributors of beef to the Confederate government (Shofner 1995:72). Summerlin originally had a contract with the Confederate government to market thousands of head a year at eight dollars per head. However, by driving his cattle to Punta Rassa and shipping them to Cuba, he received 25 dollars per head (Grismer 1946:83). In an attempt to limit the supply of beef transported to the Confederate government, Union troops stationed at Ft. Myers conducted several raids into the Peace River Valley to seize cattle and destroy ranches. In response, Confederate supporters formed the Cattle Guard Battalion, consisting of nine companies under the command of Colonel Charles J. Mannerlyn (Akerman 1976:91-93).

The cattlemen and the farmers in the state lived simply. The typical home was a log cabin without windows or chinking and settlers' diets consisted largely of fried pork, corn bread, sweet potatoes, and hominy. The lack of railway transport to other states, the federal embargo, and the enclaves of Union supporters and Union troops holding key areas, such as Jacksonville and Ft. Myers, prevented an influx of finished materials. As a result, settlement remained limited until after the Civil War.

Immediately following the war, the South underwent a period of "Reconstruction" to prepare the Confederate States for readmission to the Union. The program was administered by the U.S. Congress, and on July 25, 1868, Florida officially returned to the Union (Tebeau 1971:251). In most of the early settlements, development followed the earlier pattern with few settlers, one or two stores, and a lack of available overland transportation. Those communities along the coast developed a little faster due to the accessibility of coastal transportation. Venice, southeast of the project area on the Gulf coast, was originally named "Horse and Chaise" by sailors who saw a horse drawn carriage in the contours of an onshore hammock (Morris 1995). West of the project area, John and Eliza Webb and five children from New York homesteaded what is today known as Osprey in 1867.

A year later, Jesse and Caroline Knight moved with their family to Horse and Chaise. They built a settlement on high, well-drained land on a peninsula surrounded by Dona Bay and Shake It and Salt Creeks. Jesse Josiah Knight described the areas as "...new, covered with woods and open range, and stock raising was almost the sole industry" (Matthews 1989:69). The cattle grazing lands included Cow Pen Slough, which stretched over the north of Shake It Creek for about 20 miles. "It lay without apparent flow and its southern extreme before a final, meager water disembogued the slough into the Myakka River" (Matthews 1989:71). By the late 1870s, several families had moved into the general project area to grow vegetables, plant groves, graze cattle, and fish (Federal Writers' Project 1939:398).

During the 1880s the economy boomed with the increase of winter visitors seeking the favorable subtropical climate and an increase of agricultural production with the introduction of pineapple growing and truck farming of cabbage, eggplant, and

squash. Farmers experimented with citrus, coconuts, pineapples and sugar cane. Cattle continued to play a major role in the local economy as well. Also in the early 1880s, John and Belinda Blackburn filed a homestead claim and lived their first winter in a house built of palmetto thatch. John described his land (near present day Blackburn Point Road) as sparsely covered with pines. By 1885, his son Frank had built a frame house nearby (Matthews 1989:93).

The State of Florida faced a financial crisis involving title to public lands in the early 1880s. By act of Congress in 1850, the federal government turned over to the states for drainage and reclamation all "swamp and overflow land." Florida received approximately 10,000,000 acres. To manage that land and the 5,000,000 acres the state had received on entering the Union, the state legislature in 1851 created the Board of Trustees of the Internal Improvement Fund. In 1855, the legislature established the actual fund (the Florida Internal Improvement Fund), in which state lands were to be held. The fund became mired in debt after the Civil War and under state law no land could be sold until the debt was cleared. In 1881, the Trustees started searching for a buyer capable of purchasing enough acreage to pay off the fund's debt and permit the sale of the remaining millions of acres that it controlled. Hamilton Disston, a member of a prominent Pennsylvania saw manufacturing family, in 1881, entered into agreement with the State of Florida to purchase four million acres of swamp and overflowed land for one million dollars. In exchange, he promised to drain and improve the land. This transaction, which became known as the Disston Purchase, enabled the distribution of large land subsidies to railroad companies, inducing them to begin extensive construction programs for new lines throughout the state. Disston and the railroad companies, in turn, sold smaller parcels of land to developers and private investors (Tebeau 1965:252). All land in Section 25 in Township 39 South, Range 20 East was purchased by Sir Edward James Reed on March 5 of 1883; he also purchased all the land in the surrounding sections (State of Florida n.d.::215). Much of this land was later sold to European and American developers, who, in turn, subdivided the parcels for resale to developers and private investors throughout the state (Tebeau 1965:252).

During the early 1880s, Florida Southern Railroad acquired the old railroad charter and land grant of the Gainesville, Ocala, and Charlotte Harbor Railroad which was due to expire in 1885. To hold this charter and secure lands, immediate railroad construction was necessary. Construction started in the Bartow area in Polk County and continued southward to Punta Gorda. With the railroads as a catalyst, the 1880s witnessed a sudden surge of buying land for resale, agriculture, and settlement.

Settlers in the Sarasota area, most of whom had obtained their land under the Homestead Act of 1862, were disgruntled with the sale of the swamp overflowed land, which included nearly 700,000 acres in Manatee County (Sarasota was part of Manatee County at this time). In response, Sarasota area residents established the Vigilance Committee to retaliate against land speculators. In 1884, two men suspected of cooperating with the developers were murdered. The resulting trial in the county seat of Pine Level divided the county. Tax records reveal that most of the 700,000 acres in Manatee County was sold to eight companies, including three railroad companies and the

Florida Mortgage & Investment Co. of Britain, which is credited with founding the town of Sarasota (Marth 1973:15-16).

In 1885, the first group of colonists arrived in what is today the City of Sarasota from Scotland. Promised a 40-acre estate and a town lot by propaganda, the group was disappointed to find that the town and estates was little more than a plat on a piece of paper. Most of the settlers left within three months. However, settlers continued to arrive so that by the end of 1886, the community boasted a general store, a wharf, a rooming house, a clinic, a meat market, and a livery stable. John Hamilton Gillespie, the son of the Florida Mortgage & Investment Company's president, arrived in Sarasota to manage the project. He instituted further development in the community, including the construction of a hotel.

Settlers flocked to Florida's southwest coast until the Big Freeze of 1894 and 1895 damaged the citrus groves and dampened enthusiasm for the newly found paradise. The freeze, however, did not discourage brothers Herbert, Howard, and Ira Nichols, who purchased 2,000 acres of land and established Englewood, named after their hometown of Englewood, Illinois (Cortes 1976:56). On July 3, 1895, the community of Englewood established a post office, and the town plat was recorded on August 17, 1896. The Nichols brothers constructed a 16-room hotel, the Englewood Inn, on the shore of Lemon Bay. However, because travel to Englewood was difficult, the town was populated by fishermen and ranchers, rather than tourists (Cortes 1976:58).

The turn of the century prompted an optimism and an excitement over growth and development. In 1902, the United States & West Indies Railroad & Steamship Co., a subsidiary of the Seaboard line, started laying track from Tampa through Bradenton into Sarasota. The first train arrived in March 1903, and the track was extended into Venice by 1912 (Marth 1973:40). During this period, the Venice area was largely occupied by the Knight, Higel, and Roberts families. In March 1903, Wilson Stephens, a resident of Venice, purchased ten acres north of Dona Bay for $50 from the State of Florida. In July, he applied for a post office permit which he claimed would serve a population of 21, probably consisting of the Blackburn and Stephens families. The post office was located on the road between the Osprey and Venice post offices. The Laurel post office was officially established in August 1903, discontinued in 1909, and finally reestablished again in 1915 (Bradbury and Hallock 1962:47).

During this time the automobile, telephone, and electricity introduced a state and national perspective into the small communities of southwest Florida. The construction of U.S. Highway 41, or the Tamiami Trail, played a significant role in this development. Prior to its inception in 1915, portions of the Tamiami Trail existed in the form of county roads. When the (then newly formed) Florida State Road Department began joining these disparate roadways, traffic increased and southwest Florida's tourist industry was born. At its completion in 1928, the Tamiami Trail connected Tampa to Miami via Bradenton, Sarasota, Venice, and Englewood (Scupholm 1997).

As a result, new residents and tourists arrived by automobile as well as by boat. Developers used propaganda promoting Florida as the eternal garden to attract tourists and new residents. Osprey, Laurel and Nokomis, the small towns west of I-75, were described in 1920s promotional literature as "thriving communities within easy motoring distance of Sarasota" (Sarasota Chamber of Commerce n.d.). The area of North Port and Warm Mineral Springs remained undeveloped.

Residents relied primarily upon seafood harvesting, cattle raising, and citrus cultivation for sustenance. However, from the early 1900s through the early 1940s, the production of naval stores, including the harvesting of lumber for construction and resin for products such as glass, varnish, gunpowder, waxes, and paints, served as one of the largest industries in the area. The Laurel Turpentine Company opened a turpentine camp along Laurel Road west of I-75. The *Sarasota Times* applauded the action, predicting that the perceptions of Laurel as "that poor little old place" would change. The camp included the still, a church, a cemetery, and housing for the workers, which largely consisted of African-American men who had also brought their families. In 1919, a sawmill opened in Laurel, which also generally employed African-American men. Other men worked at a farm on Laurel Road harvesting vegetable crops and gladioli bulbs. The farm was owned by Dr. Fred Albee, who later founded the Florida Medical Center in Venice (ACI 1993:4-2-4-10).

Mrs. Potter Palmer and her family purchased more than 80,000 acres of land after her initial visit, including land in the Laurel area and a home near Osprey on Little Sarasota Bay, dubbed "The Oaks." The Palmers formed the Palmer Farms Growers Cooperative, the Palmer Farmers experimental station, and Palmer Bank. Most of Myakka State Park is comprised of lands sold or donated to the state by the Palmers (Marth 1973:55).

The investment in infrastructure contributed to the Florida land boom of the early 1920s. Several other contributing factors include the growing number of tourists, greater use of the automobile, prosperity of the 1920s, and, perhaps most importantly, the promise by the state legislature never to pass state income or inheritance taxes. Growing populations necessitated more governmental facilities, and in 1921, Sarasota County was formed from the southern portion of Manatee County, and Charlotte County was carved from Desoto County.

These halcyon days were short-lived, however, and during 1926-27, the bottom fell out of the Florida real estate market. Massive freight car congestion from hundreds of loaded cars sitting in railroad yards caused the Florida East Coast Railway to embargo all but perishable goods in August of 1925 (Curl 1986:84-84). The embargo spread to other railroads throughout the state, and, as a result, most construction halted. The 1926 real estate economy in Florida was based upon such wild land speculations that banks could not keep track of loans or property values. Financial troubles also plagued John Ringling in Sarasota after the decline of the Florida land boom. He managed to disguise his problems by constantly moving money from investment to investment and through well-timed promotional events such as the relocation of the circus winter quarters to

Sarasota in 1927. Through this action, Ringling gained his reputation as the savior of Sarasota. The city already suffered from falling land prices and decreasing construction due to the decline of the Florida land boom. The relocation of the circus winter quarters meant new jobs to construct and work at the winter quarters and increased tourism from winter visitors to the site. As a result, Sarasota became synonymous with the Ringling Bros. and Barnum & Bailey Circus as well as the whole circus subculture. However, the relocation of the circus did not renew interest in the local real estate market (Weeks 1993:150-51).

By the mid-1930s, federal programs, implemented by the Roosevelt administration, started employing large numbers of construction workers, helping to revive the economy of the state. The programs were instrumental in the construction of parks, bridges, and public buildings. Such programs as the Public Works Administration completed the construction of an airport hangar at Albee Field in Venice, a soft water treatment plant and municipal auditorium, both in Sarasota, a water works extension to Sarasota Heights, and the repairing and paving of a section of U.S. 41 in south Sarasota County (Wise 1995:102). Many former turpentine workers in the Laurel area worked for the Works Progress Administration and later the National Recovery Administration.

Florida's population increased from 1,897,414 to 2,771,305 from 1940 to 1950 (Tebeau 1971:431). After the war, car ownership increased making the American public more mobile, making vacations more inexpensive and easier. Many of the servicemen stationed in the area returned with their families to make Sarasota their home after the war. As veterans returned, the trend in new housing focused on the development of small tract homes in new subdivisions.

In 1954, Arthur Frizell sold massive tracts in Sarasota (approximately 72 square miles) and Charlotte Counties to Florida West Coast Land Development Company of Miami (Matthews 1983:150). Part of this tract encompassed both the Myakka River and Big Slough. The area eventually became known as North Port Charlotte and ultimately North Port. On June 16, 1959, the city of North Port became a city when 21 voters cast ballots to incorporate the 5.5 square mile area which was then owned by General Development Corporation; the city had a total of 23 residents at the time (*Englewood, Florida Herald* 1970; *The North Port Times Union* 1989).

In 1961, the Tamiami Trail, which had originally been constructed in the late 1910s and early 1920s, was widened to four lanes (Matthews 1983:160). In 1959, the winter quarters for the Ringling Bros. and Barnum & Bailey Circus moved from Sarasota to south Venice near U.S. 41, spelling the end of an era for Sarasota (*Sarasota News* 1960). Also in the late 1950s, an inland navigation route along Florida's west coast from Tarpon Springs south to Punta Rassa was planned. The West Coast Inland Navigation District, WCIND, constructed the intra-coastal waterway.

The construction of suburbs and malls changed the character of Florida's cities creating a string of development along coastal areas. Development and settlement patterns over the latter half of the twentieth century have pushed ever outward and

through the center of the state along the Interstate 4 corridor. In Sarasota County, development has concentrated along the coast with the completion of I-75 generating a spurt of activity that has continued into the 1990s. Since 1960, Sarasota County, along with the rest of Florida, has benefited from an influx of retirees and tourists, making Florida one of the fastest growing states in the nation.

5.0 RESEARCH CONSIDERATIONS AND FIELD METHODS

5.1 Background Research and Literature Review

A comprehensive review of archaeological and historical literature, records, and other documents and data pertaining to the project area was conducted. The focus of this research was to ascertain the types of cultural resources known in the project area, their temporal/cultural affiliations, site location information, and other relevant data. This research included a review of sites listed in the FMSF, NRHP, published books and articles, cultural resource survey reports, and from the files of Archaeological Consultants, Inc. No informant interviews were conducted as part of this project. In addition, in keeping with standard archaeological conventions, the metric form of measurement followed by the English equivalent is used in this and the following section of the report.

5.1.1 Archaeological Considerations:

For archaeological survey projects of this kind, specific research designs are formulated prior to initiating fieldwork in order to delineate project goals and strategies. Of primary importance is an attempt to understand, on the basis of prior investigations, the spatial distribution of known resources. Such knowledge serves not only to generate an informed set of expectations concerning the kinds of sites which might be anticipated to occur within the project corridor, but also provides a valuable regional perspective and, thus, a basis for evaluating any new sites discovered.

A review of the FMSF indicated that one archaeological site, the previously noted NHRP-listed Warm Mineral Springs Site (8SO19), has been recorded within archaeological buffer inside the study area (Figure 5.1). 8SO19 consists of a submerged burial site and an associated terrestrial component. The submerged burial site and associated artifacts have been dated to more than 11,000 years ago (Cockrell and Murphy 1978)[3]. The terrestrial component, located in the acidic sands upland from the spring, produced "...limited Pleistocene-Paleoindian Stage evidence: an undated uniface scraper and pressure flaking debitage, in the same stratigraphic layer as mineralized Pleistocene camel and horse remains. In the upper strata of the sand, ...more debitage and a contracting stem biface fragment, a characteristic Archaic Stage tool..." was found (Cockrell 1988; C.F. Cockrell and Murphy 1978:7, Figure 6a and Figure 5.1 in this report). Also, Cockrell noted that records at the University of Florida referenced a pottery sherd being recovered in the 1950s (1988:21).

[3]It is beyond the scope of this project to summarize the findings of three decades of research at this significant resource, however, the following publications provide an overview of research at the site: Natural Preservation of Human Brain, Warm Mineral Springs, Florida (Royal and Clark 1960), Reconstruction of Prehistoric Environments: The Warm Mineral Springs Project (Sheldon and Cameron 1976), Reconstruction of a Prehistoric Environment and its Useful Plants: Warm Mineral Springs (8SO19) (Sheldon 1976), The Early Man Site at Warm Mineral Springs (Clausen, Brooks, and Wesolowsky 1975), Pleistocene Man in Florida (Cockrell and Murphy 1978), The Warm Mineral Springs Archaeological Research Project: Current Research and Technological Applications (Cockrell 1986), Current Status of the Warm Mineral Springs Archaeological Research Project: 1987 (Cockrell 1988), and Advances in Research at the Warm Mineral Springs Archaeological Research Project (Cockrell 1990).

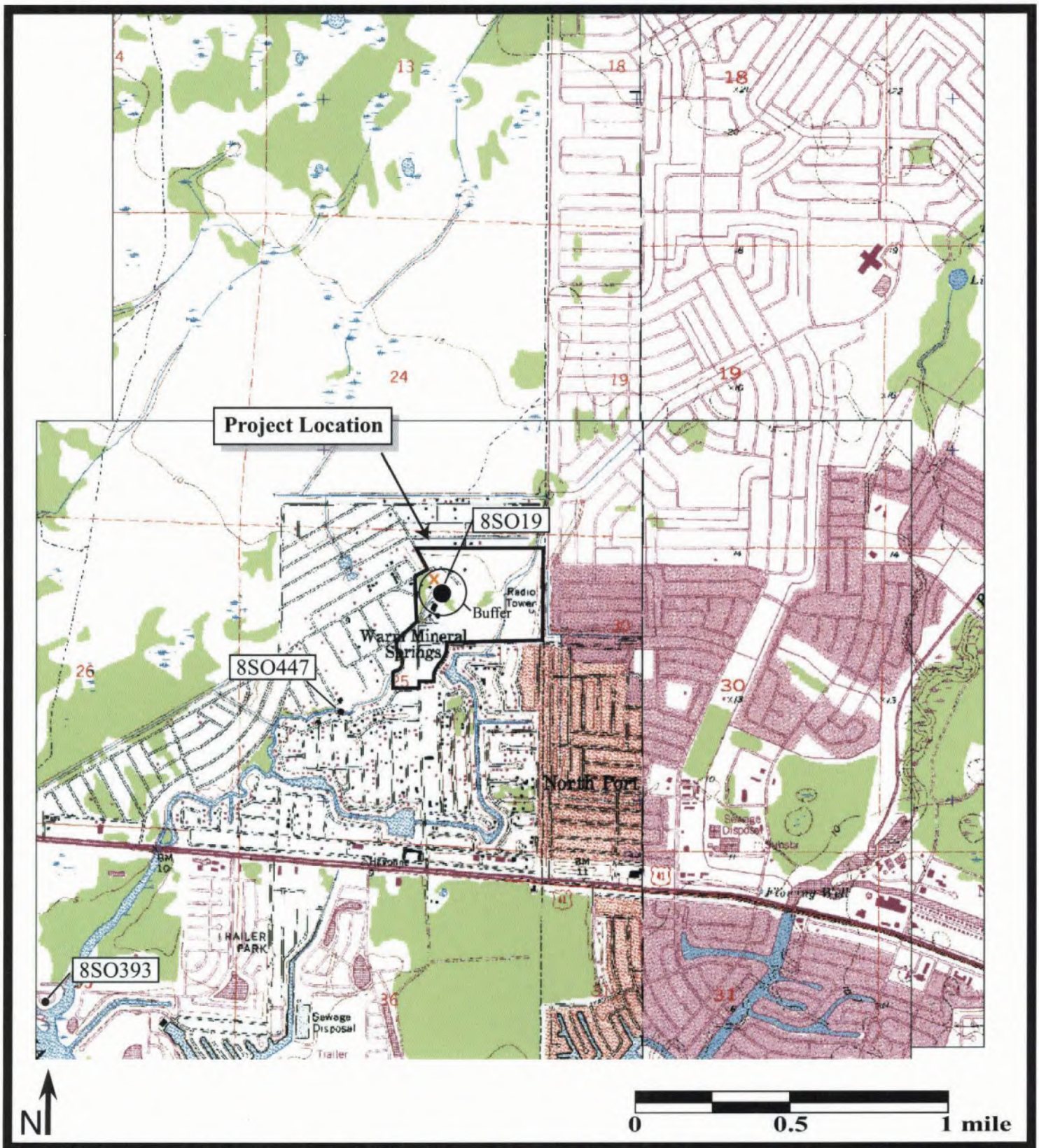


Figure 5.1 Location of Previously Recorded Archaeological Sites within 1.5 miles of the Project Area. Township 39 South, Range 20 East, Section 25 (USGS Myakka River, Fla. 1973, PR 1987).
X Denotes general location of terrestrial component (feature 44) described by Cockrell (Cockrell 1988; Cockrell 2003; Cockrell and Murphy 1978).

In addition to 8SO19, two archaeological sites have been recorded within two miles of Warm Mineral Springs (Figure 5.1). Nearby, the Lazy River Midden (8SO393) was recorded on the Myakka west of the project area in the Lazy River Mobile Home Park in 1978 by archaeologists working at the nearby Little Salt Springs Research Facility (FMSF). "The site was apparently a small outlying shell midden associated with the Brothers Midden and probable cemetery some 0.4 km to the northwest" (FMSF). When recorded in 1978, the Lazy River Site had been graded and fill placed over the midden during construction of the trailer park. The presence of sand-tempered plain sherds indicates the site is post Archaic in date. The Salt Creek Site (8SO447), where fossil bones of extinct megafauna were found in the shallows by amateur archaeologist Bill Royal, lies approximately one quarter mile southeast of the project. A single bone point and "bone flesher" were found near fossil animal bones in the creek (*Sarasota Herald Tribune* 1987). Also, the Brothers Site (8SO31), situated about two miles west of the project, was excavated by University of South Florida, Tampa students and faculty in 1977-1978 (Goodwin et al. 1978). The midden, which contained human skeletal materials, was dated to the Glades I-II period (ca. 500 B.C. - A.D. 500). "The research concluded that the site was probably a winter camp for a small group who utilized the local ecosystem for their subsistence, sometime within the Glades period" (Goodwin et al. 1978:125).

Based on these data, it was anticipated that one or more small lithic scatter type sites might be found in the sand ridge soils surrounding the buffer zone. It was also anticipated that such sites would probably date to the Archaic and/or Paleo-Indian periods, although the presence of a ceramic component, vis a vis University of Florida records, was not ruled out.

5.1.2 Historical Considerations:

Given the results of the historic research, no nineteenth century homesteads, forts, military trails, or historic Indian encampments were expected within the survey tract.

5.2 Field Methodology

Archaeological field methodology consisted of a windshield survey and subsurface testing. Following ground surface inspection, subsurface shovel testing was carried out in order to locate sites not exposed on the ground, as well as to test for the presence of buried cultural deposits in areas yielding surface artifacts. Shovel tests pits were circular, and measured approximately 0.50 cm (1.6 ft) in diameter by 1.0 m (3.3 ft) in depth, unless curtailed by an impenetrable substrate, fill material, or water. All soil removed from the test pits was screened through 0.64 cm (0.25 in) mesh hardware cloth to maximize the recovery of artifacts. The locations of all shovel tests were plotted on aerial maps, and following the recording of relevant data such as stratigraphic profile and artifact finds, all test pits were refilled.

5.3 Laboratory Methods and Curation

If found, artifacts were to be cleaned and sorted by artifact class. Lithics would be divided into tools and debitage on the basis of gross morphology. Tools would be measured, and the edges examined with a 10x hand lens for traces of edge damage. Lithic debitage would be subjected to a limited technological analysis focusing on ascertaining the stages of stone tool production. Flakes and non-flake production debris (i.e., cores, blanks, preforms) would be measured, and examined for raw material types and absence or presence of thermal alteration. Flakes would be classified into four types (primary decortication, secondary decortication, non-decortication, and shatter) on the basis of the amount of cortex on the dorsal surface and the shape (White 1963). If found, aboriginal ceramics would be classified into commonly recognized ceramic types based upon observable characteristics such as paste and surface treatment.

Any artifacts and all records will be curated at Archaeological Consultants, Inc. in Sarasota, unless the client requests otherwise.

5.4 Unexpected Discoveries

It was anticipated that if human burial sites such as Indian mounds, lost historic and prehistoric cemeteries, or other unmarked burials or associated artifacts were found, then the provisions and guidelines set forth in Chapter 872, F.S. (Florida's Unmarked Burial Law) would be followed. Although burial mounds have been recorded near Myakka River, based on background research, it was not anticipated that such sites would be found during this survey.

6.0 SURVEY RESULTS AND CONCLUSIONS

6.1 Archaeological Results

Archaeological field survey included both ground surface reconnaissance and the excavation of 348 shovel tests within the ±84 acre project area. These were systematically excavated at offset 25 m (82 ft) intervals. As a result of this subsurface testing, one archaeological site, the Flakelet Site (8SO2667), was discovered and four archaeological occurrences were noted. In addition, one 1 x 1 m (3 x 3 ft) unit was excavated within the boundaries of the Flakelet Site (Figure 6.1). A description of the site and the archaeological occurrences follow. A FMSF form for 8SO2667 is included in Appendix A.

8SO2667, the Flakelet Site, is a lithic scatter located in the northeast quarter of Section 25 in Township 39 South, Range 20 East, (USGS Myakka River 1973, PR 1987). The site is situated on a sandy ridge 3 m (10 ft) AMSL, approximately 200 m (656 ft) south of WMS. The ridge is comprised of Pomello fine sand, a moderately well-drained soil type typical of the pine flatwoods. It has a well-developed organic pan at depths greater than 1 m (42 in). The closest natural freshwater source may have been a small drainage, located to the east of the site, which is now dry (Figure 2.2, feature A). This creek may have drained a naturally occurring seep spring located approximately 700 m (2297 ft) to the northeast of the spring (Figure 2.2, feature C). Today, the Flakelet Site is located in a cleared field. Planted oaks are located along the adjacent road (Figure 6.1; Photo 6.1).

8SO2667 was discovered as a result of subsurface testing at a 25 m (82 ft) offset shovel testing interval. Of the 23 shovel test pits excavated in the site vicinity, five produced cultural materials between 60 to 100 cmbs (24 – 39 in) from stratigraphy which can be generally described as: 0 to 40 cm (0 – 16 in) brown/black clayey sand fill (apparently, this layer is associated with the construction of an adjacent parking lot approximately 30 m (98 ft) to the west); and 40 to 110 cm (16 – 43 in) of grey sand. Additionally, a 1 x 1 m (3 x 3 ft) excavation unit was placed within the small site and investigated in 20 cm (8 in) arbitrary levels to a maximum depth of 120 (47 in) cmbs. Based on subsurface testing, the site measures approximately 12.5 m (41 ft) north-south by 25 m (82 ft) east-west.

A total of 11 lithics was recovered. These consisted of eight non-decortication flakes and three secondary decortication flakes (Table 6.1). All were manufactured from chert that had not been thermally altered (TA). The non-decortication flakes consist of one small (< 1 cm/<0.4 in), six medium (1-2 cm /0.4-0.8 in), and one large (2-3 cm/0.8-1.2 in). All of the secondary decortication flakes are medium in size (1-2 cm/0.4-0.8 in). Based on the color and fabric of the chert, two different cherts were utilized. No identifiable fossils are evident in any of the flakes to indicate the quarry from where the material came. One chert, "type 1", is fine grained and honey colored. The three secondary decortication flakes from Unit 1, level 3, southeast quarter, and the single non-

decortication flake from ST 315 were manufactured from this material. The other chert, "type 2", is coarse-grained and light gray to white in color. This chert was recovered from the remaining proveniences (as well as the non-decortication flake from the southeast quarter of level 3 in Unit 1).

Based on the limited amount of material recovered and the overall small size of the flakes, the recovered assemblage appears to be indicative of stone tool maintenance as opposed to stone tool manufacturing. In addition, there is no evidence of use damage on any of the flakes, but their small size would not easily lend itself to utilization. Finally, the lack of diagnostics precludes assigning this site to a cultural period.

Table 6.1. Materials Recovered from the Flakelet Site.

FS	Provenience	Material	Type	TA	Size	count	weight (g)
6	ST 275, 70 cm	chert	non-decortication	no	M	1	0.1
8	ST 299, 90-100 cm	chert	non-decortication	no	M	1	0.3
9	ST 305, 70-80 cm	chert	non-decortication	no	M	1	0.3
10	ST 307, 90-100 cm	chert	non-decortication	no	S	1	0.1
11	ST 315, 80 cm	chert	non-decortication	no	M	1	0.2
12	EU 1, SE, 40-60 cm	chert	secondary	no	M	2	0.2
12	EU 1, SE, 40-60 cm	chert	non-decortication	no	M	1	0.1
13	EU 1, SW, 40-60 cm	chert	non-decortication	no	M	1	0.1
14	EU 1, NE, 40-60 cm	chert	secondary	no	M	1	0.1
15	EU 1, NW, 40-60 cm	chert	non-decortication	no	L	1	1.0

In addition to the small lithic campsite, four archaeological occurrences (AO) were also recorded within the ±84 acre tract. They are described below and the artifacts are summarized in Table 6.2.

Archaeological Occurrence (AO) #1 is located in the northeast quarter of Section 25 in Township 39 South, Range 20 East, approximately 150 m (492 ft) east-southeast of WMS. It consists of two pieces of lithic debitage recovered from ST 213 between 50 and 60 cmbs (20-24 in), and from ST 220 at 95 cmbs (37 in). Both flakes are thermally altered chert non-decortication flakes. The large-sized flake from ST 213 may have had some marginal retouch, but it does not appear to have been utilized. The other flake is medium-sized. Both pieces of chert are very glossy with a dense imbedding of quartz sand in the matrix. No diagnostic fossils were identified so the chert cannot be assigned to a specific quarry cluster.

Archaeological Occurrence (AO) #2 is located in the northeast quarter of Section 25 in Township 39 South, Range 20 East, approximately 125 m (410 ft) east of WMS. It consists of two non-thermally altered chert non-decortication flakes. These were recovered 80 cmbs (32 in) in ST 233 and 60 cmbs (24 in) in ST 255. The flake from ST 233 is medium-sized and the other is large. Both were made from a similar light gray chert material, although the one from ST 233 is finer grained. No evidence of use damage was noted on either artifact.

Archaeological Occurrence (AO) #3 is located in the northeast quarter of Section 25 in Township 39 South, Range 20 East, approximately 250 m (820 ft) southeast of WMS. This AO consists of a large, chert non-decortication flake that had not been thermally altered. It was manufactured from a somewhat coarse light gray chert and had not been utilized. No fossils were evident in the chert matrix and it cannot be assigned to a specific quarry cluster.

Archaeological Occurrence (AO) #4 is located in the northeast quarter of Section 25 in Township 39 South, Range 20 East, approximately 175 m (574 ft) south of WMS. It consists of a single small chert non-decortication flake that had not been heat treated. No evidence of use damage was noted, nor were any fossils evident in the chert.

Table 6.2. Materials Recovered from the Archaeological Occurrences.

FS	Provenience	Material	Type	TA	Size	count	weight (g)
1	AO#1, ST 213, 50-60 cm	Chert	non-decortication	yes	L	1	3.1
2	AO#1, ST 220, 95 cm	Chert	non-decortication	yes	M	1	1.0
3	AO#2, ST 233, 80 cm	Chert	non-decortication	no	M	1	0.5
4	AO#2, ST 255, 60 cm	Chert	non-decortication	no	L	1	0.6
5	AO#3, ST 272, 60 cm	Chert	non-decortication	no	L	1	2.9
6	AO#4, ST 281, 70 cm	Chert	non-decortication	no	S	1	<0.1

6.2 Conclusions

Intensive, subsurface shovel testing of the ±84 acre survey parcel discovered one site (8SO2667), a lithic scatter. This site is not considered eligible for listing in the NRHP, as it is similar to many others found on sandy soil near freshwater sources in west-central Florida (Austin 2001; Luer 1999b; Deming 1989; and Daniel 1985). Therefore, development of this ±84 acre parcel will not affect any significant resources. However, as with any archaeological resource, but particularly in the case of the highly significant Warm Mineral Springs, it is recommended that future archaeological investigations of the terrestrial (buffer area) and/or submerged components of the site be conducted solely under the direction of a registered professional archaeologist[4] (RPA). Additionally, prior to granting permission for research, spring owners should require potential investigators to prepare a detailed research proposal including project rationale, research design with clearly identified objectives and methodologies, and a list of project personnel. The research proposal should be submitted to the professional archaeological community for peer review and comment. Finally, to ensure complete protection of the submerged resources, no sport or recreational diving should be permitted.

[4] A directory of Registered Professional Archaeologists and the Code of Conduct and Bylaws of Professional Archaeologists can be found at www.rpanet.org. Qualified Professional Archaeologists (underwater and terrestrial) are associated with these institutions: Bureau of Archaeological Research, Florida Division of Historical Resources, 500 S. Bronough Street, Tallahassee, Florida 32399, telephone: 850/245-6444; Department of Anthropology, Florida State University, 1847 W. Tennessee Street, Tallahassee, Florida 32304, telephone 850/644-4281; Florida Museum of Natural History, P.O. Box 117800, Gainesville, Florida 32611, telephone 352/392-1721; University of West Florida, Department of Anthropology, Building 13, Room 131, Pensacola, Florida 32514, telephone 850/474-3015; Sarasota County History Center, 701 N. Tamiami Trail, Sarasota, Florida 34236, telephone 941/861-1180.

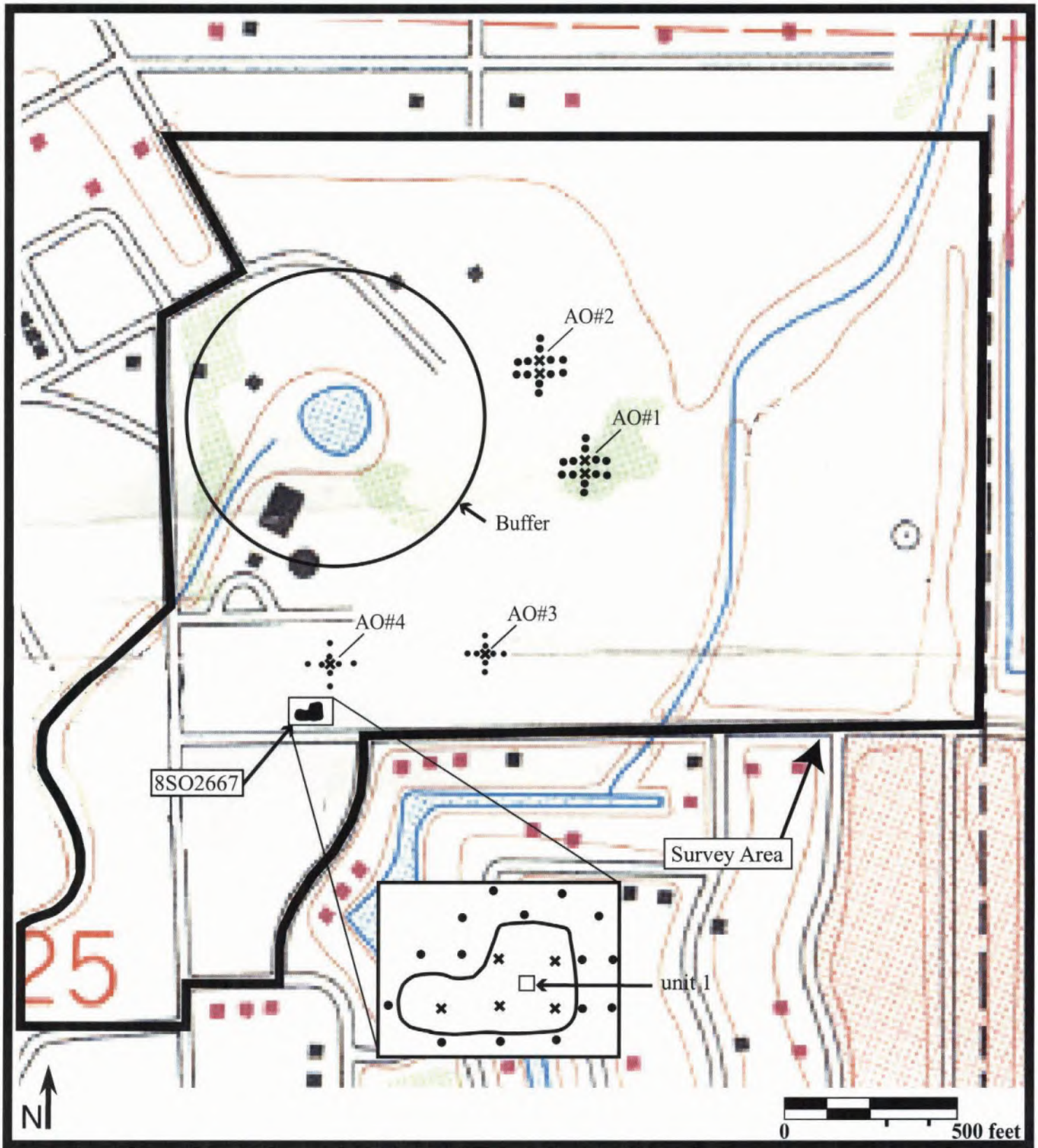


Figure 6.1 Location of 8SO2667 and Archaeological Occurences (AO# 1-4); Township 39 South, Range 20 East, Section 25 (USGS Myakka River, Fla. 1973, PR 1987). "✖" = a positive shovel test; "●"= negative shovel test.

Photo 6.1. Looking Southeast Toward the Flakelet Site (8SO2667).

Photo 6.2. Looking South Toward AO #1. Area has been invaded by Brazillian Pepper.

Photo 6.3. Looking South-Southwest Toward AO #2. WMS is in background.

Photo 6.4. Looking Northeast Toward AO #3.

Photo 6.5. Looking East Toward Archaeological Occurrence #4.

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