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An Archeological Survey of a Fall Line Creek: Crane Creek Project, Richland County, South Carolina

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AN ARCHEOLOGICAL SURVEY OF A FALL LINE CREEK: CRANE CREEK PROJECT, RICHLAND COUNTY, SOUTH CAROLINA

by

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INTRODUCTION

The Crane Creek archeological survey was performed to examine approximately twenty three miles of proposed sewer in the valleys of the Crane Creek drainage system (Fig. 1). This sewer is a Richland County project, and the county has retained B. P. Barber and Associates of Columbia, South Carolina to serve as design consultants. B. P. Barber and Associates made arrangements with the Institute of Archeology and Anthropology of the University of South Carolina for an archeological survey of the impact zone pursuant to regulations of the National Environmental Protection Agency, Department of the Interior.

During March and the early part of April 1976, Leland Ferguson and Richard Carrillo of the Institute conducted the field work for this project. During all aspects of the field work 22 sites were recovered, however only two of these sites (38RD105 and 38RD115) are in the direct path of impact. These sites have been specifically pointed out to the consulting firm and mitigation plans have been arranged.

There are two distinct aspects to this report. The first and primary consideration was to determine if there were any archeological sites within the path of the sewer that would be damaged by construction. The second consideration was the evaluation of the significance of these sites so that mitigation plans could be considered.

Significance, of course, is determined by the amount of information that a given site can tell us about the past. As such it is necessary to understand at least the rudiments of the cultural system of which that site was a part. While we understand the basic outline of cultural history in the Southeastern United States (Table 1) there has been very little archeological work done in South Carolina and hardly any of this has been in the piedmont

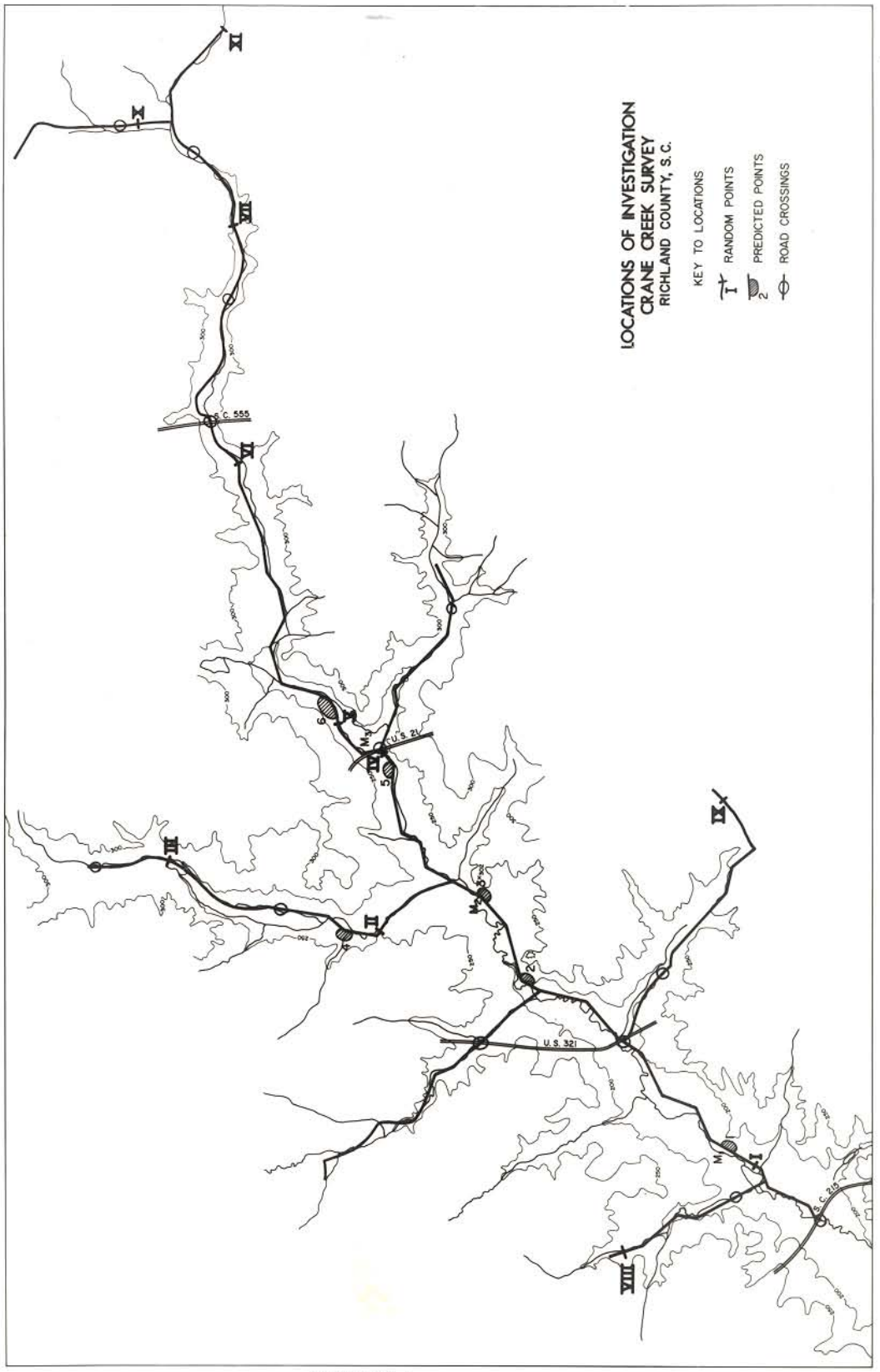

FIGURE 1.

LOCATIONS OF INVESTIGATION CRANE CREEK SURVEY

TABLE 1

A CULTURAL SEQUENCE FOR THE OCCUPATION OF THE SOUTHEASTERN UNITED STATES

Chronology	Cultural Sequence	Subsistence	Trends
1976			
		Industrial	
	Historic		
		Agricultural	
1670			
	South Appalachian Mississippian-Late Woodland	Developed horticulture, hunting and gathering	
1000			
500			
	Middle Woodland	Hunting and gathering with horticulture	
A.D. 0 B.C.			
	Early Woodland	Hunting and gathering with incipient horticulture	
2000			
	Archaic	Development of generalized hunting and gathering techniques	
7000			
	Paleo-Indian	Specialized hunting and gathering	

Increase in sedentism, population, and technological complexity

portion of the state. No archeological work has ever been done in Crane Creek Valley. A few studies similar to the present one have been conducted in the vicinity of Columbia (Ryan 1972; Kimmel 1973; Anderson, Michie and Trinkley 1974; Goodyear 1975), and even though these studies have proved valuable in this research they do not supply sufficient information for evaluating the significance of specific sites in the Crane Creek basin. In making an environmental statement concerning the archeological resources of this basin we are essentially starting from "scratch." Thus, this report includes not only a discussion of specific archeological sites, but an attempt to gain some basic understanding of the broader cultural patterns responsible for those sites.

THE IMPACT ZONE AND SURROUNDING ENVIRONMENT

Crane Creek flows from headwaters in the sandhills portion of the "Midlands" of South Carolina through a portion of the piedmont to a confluence with the Broad River near the Interstate 20 bridge. The trace of the impact is shown in Figure 1. The impact will be the excavation of a ditch that will average about ten feet deep and range up to ten feet wide at the surface.

Crane Creek roughly parallels the fall line which separates the crystalline rocks of the piedmont from the sedimentary formations of the coastal plain. This creek has an unusual drainage system in that a major portion of the headwaters are in the sandhills which are part of the coastal plain while the mouth and major course of the creek are in the piedmont. Intermediate between the two areas the creek flows along a "transition zone" near U.S. 21 and S.C. 555 where both piedmont and sandhills features were observed in the valley. This strange drainage may well have significant

implications for the settlement pattern of people who have exploited this creek system. The fall line is a particularly important environmental zone from the point of view of natural and cultural adaptation (Shelford 1963; Larson 1970; Ferguson 1971; Baker 1974), and this added variation within the creek valley may well have important implications for adaptation.

The piedmont portion of the valley is underlain by lithology described on the "Geological Map of the Crystalline Rocks of South Carolina" (Overstreet and Bell 1965) as,

> Argillite--white, gray, and brown, fine-grained laminated argillite; tuffaceous argillite, and graywacke; includes felsic and mafic agglomerates, breccias, tuffs, and volcanic flows; outliers having the same lithology occur in the Charlotte belt; in the Carolina slate belt typically muscovite-chlorite subfacies of greenschist facies.

Additionally, the most casual observation will indicate that there are many outcroppings of quartz that occur as veins in these metamorphic rocks. The quartz was extensively used for tools by prehistoric peoples, and there is a distinct possibility that the outcroppings of mafic rocks in the area were used as raw material for stone axes. Although slate and "slate-like" rocks were often used for tools, there is no evidence that the weathered argillite that outcrops in this valley was used for the production of tools.

In the natural state the soils of the piedmont have a few inches of topsoil with a residual clay subsoil (Craddock and Ellerbe 1966). In this natural state the creeks would be deeply intrenched and there would be rills and small waterfalls where resistant rock was encountered (Trimble 1972). However, this natural state is not what we see in the valley of Crane Creek today. Extensive farming in the uplands of the piedmont in the nineteenth and early twentieth centuries produced extensive erosion which filled most piedmont valleys with a thick bed of silt which in some cases extends to a depth of fifteen feet (Trimble 1972). Today the flood plain of the piedmont

portion of Crane Creek is covered with this silt and the old spurs and terraces of the valley are masked by the debris of the eroded uplands. Needless to say, many archeological sites probably lay buried beneath this cover of modern silt.

As the valleys and the soils are different today from those of the past, so also is the forest. The normal forest for the southern piedmont is one of oak, hickory and other hardwoods (Kuchler 1964). Today as a result of extensive farming and logging there are very few climax forests in the valley. Rather, most of the bottom lands are covered with a variety of subclimax growth including pines, sedge, blackberry, cane, and honeysuckle. In practically all cases the vegetation and leaves completely cover the ground, and in most cases in this valley the lowland vegetation is a thick jungle. Combining these observations with the geomorphological situation we may see that the hand of modern man has created a significantly different environmental setting in the main valley of Crane Creek from that which was there less than two hundred years ago. Consequently, archeological investigation must take these drastic differences into consideration.

The sandhills consist of (Overstreet and Bell 1965), "Sand, clay, and gravel, largely unconsolidated of Cretaceous to Recent age." Composed primarily of high sandy hills, this environment is well drained and supports a rather xerophytic plant community characterized by longleaf pine, scrub oaks, three awn grass and huckleberry (Langley and Marter 1973: 105). Due to lack of fertility and rapid moisture run-off this land has never been farmed as extensively as the piedmont. Unlike the piedmont, streams and creeks of the sandhills run clear and without silt. The creek valleys of this region are also free of silt. Excavation during the survey revealed that the small flood plains of these sandhills are filled with the accumulation of thousands of years of peat and perhaps should be referred to as bogs. The plant growth

of these lowlands consists of waterloving hardwoods and many small "bushy" plants. Thus, we find that unlike the piedmont, the sandhills have not changed drastically at the hand of modern man. The upland forests are probably similar to the way they were more than two hundred years ago, and the small swamps or bogs are also as they were in the past.

Finally, the examination of the environment of the impact zone indicates that it was potentially an important location in the past, being located in close proximity to the changing environmental situation of the fall line. Yet, a representative sample of the archeological materials from this valley will be difficult to secure. While the sandhills portion of the zone does not appear to have changed significantly since colonization, the piedmont area has probably changed drastically in the last two hundred years. Of course, the archeological methods and interpretation have had to carefully take these factors into consideration and the following sections of this report reflect this consideration.

THEORY AND METHOD

Theoretical Considerations and Research Design

The research strategy necessary for this survey is founded in the philosophy that cultural systems adapt to their environment and that that adaptation is represented by patterns available in the archeological record. As such, this research is dedicated to determining patterns of archeological materials for their value in testing preconceived hypotheses as well as their heuristic value in generating new ideas about the past.

The process of testing established hypotheses concerning the past is better facilitated by the statement of a research design with explicit hypotheses and test implications. While in some cases these may seem trivial they serve to guide and stabilize research.

Recently, John House of the Institute of Archeology and Anthropology has been examining the impact zone of Interstate 77 between Columbia and Rock Hill, South Carolina. In preparation for that work House constructed a research design for the inter-riverine piedmont (House, personal communication). Since the impact zone of much of the Crane Creek survey is within the piedmont and since the sandhills are a contiguous environmental zone, much of House's research design was directly applicable. Obviously, a few elements had to be changed to adapt his design, which focused primarily on the uplands, to one which focused on a creek valley. However, this modification was easily accomplished, and the results of the two projects, one in the uplands and one from a creek valley, should be complementary. The research design with appropriate modifications is presented below:

I. Identification of prehistoric peoples using or occupying the Crane Creek Valley. Identification and tabulation of culturally and/or historically diagnostic artifacts recovered on survey.

II. Investigation of aboriginal utilization of the fall line creek valleys.

A. Identification of site variability.

H (Hypothesis) 1 Intensive habitations sites are present.

I (Implication) 1 Presence of midden.

I2 Presence of artifact classes strongly suggestive of habitation as fire-cracked rock, steatite and ceramic sherds.

I3 Wide range of tools and debitage.

I4 Favorable location (level, extensive area, sheltered).

H2 Less intensive habitation sites are present.

I1 Favored location, especially proximity to water.

I2 Wide variety of tools and debitage.

I3 Relatively high density of artifacts.

H3 Sites for extraction of specific biotic resources are present.

I1 Less favored location, not particularly accessible to large water.

I2 Narrow range of tools and debitage.

I3 Sites will probably be numerous.

I4 Low density of artifacts.

H4 Extraction sites for various lithic resources are present.

I1 Sites are present in locations in very close proximity to the resource.

I2 At these sites, modified pieces representing debitage and rejected "blanks" or "preforms" are present in high density.

B. Identification of critical biotic resources exploited by prehistoric systems in the creek valleys.

H1 Deer exploited.

I1 Limited range of artifacts around cutting functions present in numerous loci and low density.

I2 These loci correspond to zones of optimum deer habitat at least at some season of the year.

H2 Acorns and hickory nuts were exploited.

I1 Numerous loci with limited range of artifacts.

I2 These loci in zones of maximum availability of most nutritious acorns and hickory nuts.

I3 Stone plant processing tools at these loci (assuming use of stone vs. wood processing tools and processing at extraction rather than habitation loci).

H3 Exploitive subsystem centered on largest creek banks with their distinctive resources (fish, turtles, raccoons, oppossums etc.).

I1 Numerous habitation and/or extractive sites located in close proximity to large creeks.

C. Patterns of exploitation (difficult to control temporally).

H1 No exploitation with a durable technology.

I1 No cultural remains.

H2 Activity proportionate to the rank of streams and the relationship of one stream to another.

I1 A greater density of material will be found in association with the larger streams.

H3 Activity limited to occasional use for varied reasons.

I1 Many small widely dispersed loci with low density and narrow range of artifacts.

H4 Activity involving permanent or prolonged seasonal occupation of the creek valleys and exploitation of a variety of resources.

I1 Habitation sites present.

I2 Sites in a wide range of stream situations.

I3 A broad range of artifacts present in the impact zone.

H5 The deciduous forest of the piedmont was more intensively utilized than the xerophytic forest of the sandhills.

I1 More sites of all types will be recovered in the piedmont.

III. Look for new patterns in the data and construct new hypotheses to be tested in the future.

Methods and Field Techniques

The approach to examining the archeological resources in the Crane Creek Valley involved several steps. First, the office of the Historic Preservation Officer for the State of South Carolina was contacted to determine if there were any sites within the valley on the National Register of Historic Places: there were none. Next, the 1825 Mill's Atlas of South Carolina (1965) was examined to determine if there were any historic structures from the early eighteenth century located within the impact zone: three mill sites were noted from the Atlas and were located as closely as possible on the United States Coast and Geodetic Survey maps for the region. In addition to examining Mill's Atlas, the files of the Institute of Archeology and Anthropology were examined: only one site (38RD8) had been previously recorded in the valley and the Institute did not have any artifacts from this site. The site was not in the impact zone and had been covered by landfill. The last stage of investigation involved an on-the-ground survey of a sample of the impact zone to locate any unrecorded sites.

The pedestrian survey of the impact zone involved three aspects-- a search for the sites shown in Mill's Atlas, an examination of locations predicted to have archeological sites on the basis of general knowledge about human settlement, and an examination of random locations to determine if there may be sites in locations that we would not predict to have sites. Results of these implications are shown in Tables 2 and 3.

The general locations of the mills were examined to determine if there was any present day evidence of these industries. Save for two artificial ditches at M_1 and M_2 (Fig. 1) there was no evidence of any construction. While the ditches might have been associated with the mills it is more likely

TABLE 2.

SITE SURVEY DATA

Sites Identified	Predicted	Random	Road Crossing	Utility Crossing	Going to Sites	Other		Piedmont	Transition	Sandhills		Surface Evidence	No Surface Evidence	Subsurface Testing		Isolated Find
38RD105	x							x				x		x		
106				x						x		x				
107				x						x		x				
108			x							x		x				
109		x								x			x	x		
110			x							x		x				
111			x							x		x				
112			x	x						x		x				
113		x								x			x	x		
114			x							x		x				
115		x							x				x	x		
116					x			x				x				x
117		x						x					x	x		
118	x							x					x	x		
119					x			x				x				x
120	x							x				x		x		
121						x		x				x		x		
122	x	x							x				x	x		
123		x						x				x				
124			x					x				x				x
125			x					x				x				
126					x			x				x				x
134					x			x				x				x

TABLE 3.

SAMPLE POST HOLES EXCAVATED IN SURVEY

	Sample Post Holes	Soils Encountered+					Random Points	Predicted Points	Cultural Material	
		Topsoil	Silt	Sand	Clay	Peat			Random	Predicted
PIEDMONT	60	36	19	16	38	0	49	25	9	14
TRANSITION	9	0	0	2	5	2	9	0	2	0
SANDHILLS	34	26	0	30	3*	6	20	0	9	0
TOTAL	103	62	19	48	46	8	78	25	34	
% of TOTAL		60	18.5	46.6	44.6	6.76	75.7	24.2	52.4	

* Good potting clay (Random Sample VII)

\+ Some holes had more than one soil type

that they are of modern construction since all evidence of the mills is probably now under several feet of silt.

On the basis of geomorphology, looking for terraces and spurs adjacent to the creek, six locations were predicted to have archeological sites (Fig. 1). The process of examining these predicted sites was to find the potential site location on the ground and first to examine all bare ground available. In many cases this involved looking at up-turned stumps, animal burrows, washes, creek banks and sand and gravel bars. When there was extensive ground cover, which included all cases, subsurface testing was used to more fully examine the site. This subsurface examination consisted of digging a pattern of post holes designed to cover the predicted site area. The soil was excavated in arbitrary one foot units and all soil was sifted through one quarter inch hardware cloth. Four (66%) (Fig. 2) of the predicted site locations proved to have archeological sites.

In addition to the six predicted locations eleven sections of the impact zone measuring 1000 feet each were selected for examination. The number of these sections was determined by the amount of time available for the survey. This sample involved close examination of approximately 9% of the impact zone. In order to eliminate the possibility of all of the points falling on the larger or smaller portions of the drainage, the sampling universe was stratified according to stream rank as defined by Weide and Weide (1973). The stratification separated the smaller streams that ranked one through three from the larger streams ranking four and five. Next, the proportional amount of impact zone in each of the two strata was determined and that proportion of the eleven sample units was assigned to that particular strata. The larger streams received five sampling units and the smaller streams received six.

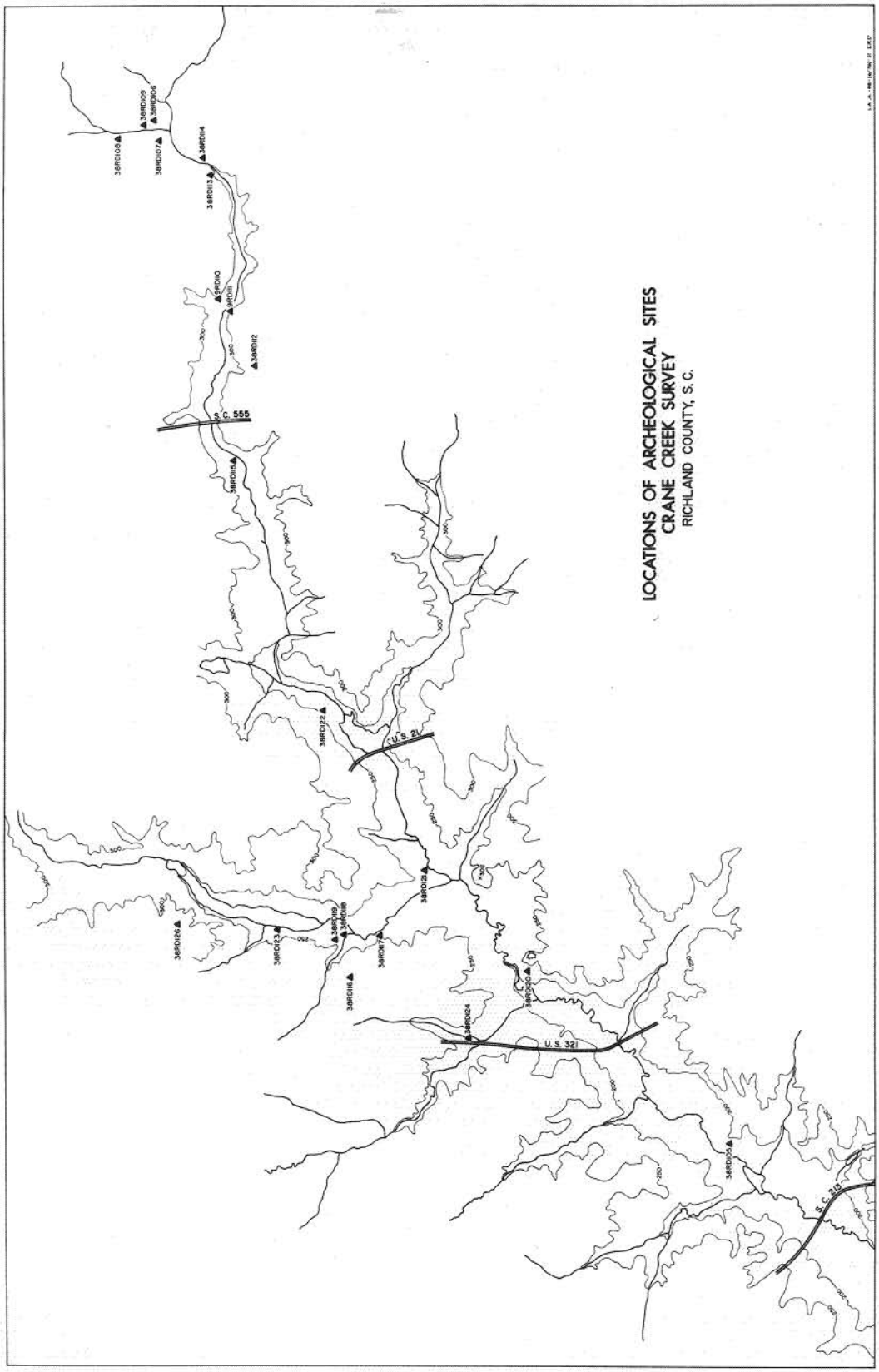

FIGURE 2.

LOCATIONS OF ARCHEOLOGICAL SITES CRANE CREEK SURVEY

With only a few variations, the technique of examining the random locations closely paralleled the technique of examining the predicted points. As in the case of the predicted points all open ground was carefully examined as were creek banks and sand bars. However, in addition, at least one post hole was excavated every 250 feet along the survey section. These holes were usually taken out in arbitrary one foot levels and the material sifted through one quarter inch hardware cloth. One site, 38RD115 was found from the excavation of the random post holes. Additionally, a very small quartz flake found in Random Sample II-A led to the discovery of 38RD117 which was located on a spur above the sample point. In several of these cases, areas were identified during the random survey that were thought to have sites but extensive ground cover hid the surface. In these cases a pattern of post holes was designed and excavated. Sites 38RD109, 38RD113, and 38RD117 were found in this manner. The final tally of sites recovered using the random sampling technique was four or 36.3% of the eleven locations examined.

In addition to the formal loci of the survey other areas were examined because they were convenient. All points where roads crossed the impact zone were examined for sites. Seven archeological sites were recovered in the ten road crossings examined. Likewise, on the way in and out of the valley to examine the formal sample points all bare ground (very little) was examined for archeological material. Three sites were recorded in this manner.

Totally 27 locations were examined for sites in addition to the paths going to and from these locations. Six of these locations were predicted, eleven were chosen randomly and ten were at road crossings. A total of 103 post holes (Table 3) was excavated to look for subsurface evidence of artifacts. Twenty-five of these were excavated at points predicted to have archeological sites and 58 were in random locations. The high percentage of positive test results at the predicted locations suggests that the criteria

utilized for identifying site location has validity and may be used to identify some types of sites given the present geomorphological situation.

ARTIFACT ANALYSIS

Following the field work the artifacts from the several sites were analyzed. Temporally diagnostic items were singled out and used to construct a cultural-historical sequence for the valley as well as the materials would allow. This sequence given in Table 4 serves to fulfil the first goal of the research design. In addition to cultural-historical identification, the sites and all identified artifacts were associated with physiographic area, landform, and stream rank. These identifications and associations are shown in Table 5. This table forms the basis for the testing of hypotheses in the research design as well as the foundation for suggesting new patterns of site configuration within fall line creek valleys.

Since Table 5 is so important to the interpretation several precautionary considerations should be discussed before preceeding to the next section. The information in the table may be biased as a result of silting in the piedmont valley and inconsistent data collection.

In the course of the survey an equal number of sites were recorded in the piedmont and the sandhills. The extreme silting of the piedmont valley as indicated in the previous section may have seriously biased this data. Extensive subsurface examination of piedmont valleys will be the only means of clarifying this possible bias in our research.

Another inconsistency in the sample involves the treatment of upland and valley sites. This survey concentrated on sites in the Crane Creek basin. Sites in the uplands were recorded only as they were encountered going to and from the impact zone. While these sites are considered in the statement of survey patterns they should be considered extremely tentative.

TABLE 4.

CULTURAL-HISTORICAL PATTERN FROM SURVEY

		Archaic?						
		Similar to Morrow Mountain II	Long Ovate	Stemmed or Broad Bladed	Early Woodland Type I	Middle Woodland Type II	Mississippian Type III	
PIEDMONT	38RD125						x	
	38RD105			x			x	
	38RD126							
	38RD120	x	x					
	38RD116	x						
	38RD117							
	38RD118			x				
	38RD119							
	38RD123							
	38RD134							
	38RD121						x	
	38RD124		x					
TRANSITION	38RD122							
	38RD115							
	38RD112				x	x		
	38RD111		x	x	x		x	
	38RD110		x					
	38RD113						x	
	38RD114						x	
SANDHILLS	38RD106	x	x			x	x	
	38RD107	x		x				
	38RD109							
	38RD108					x	x	

SANDHILLS TRANSITION PIEDMONT

TABLE 5.

ARTIFACTUAL AND LANDFORM DATA FROM SURVEY

	Chunks			Flakes			Thinning Flakes			Flake Tools													
	Quartz	Slate	Chert	Quartz	Slate		Quartz	Slate	Chert	Quartz	#T/#Edges Slate	Whole Points	Point Frags.	"Preforms"	Other Bifaces	Fire Cracked Rock	Type I Pottery	Type II Pottery	Type III Pottery	Stream Rank		TOPOGRAPHY
38RD125	4			4			7	1							1*				5	5		Valley Hillside (Level)
38RD105	43		1				29	2	2	2/5	1/3		1	6	3	29			6	5	A	Spur (Level)
38RD126								1												2		Valley Hillside (Slope)
38RD120	10			3			11			1/1		1	1	2						5	B	Valley Hillside (Slope)
38RD116													1							1(4)+		Upland (Slope)
38RD117	64			2			20													4		Spur (Level)
38RD118	10			1			2						1			1				1(4)+		Spur (Level)
38RD119							1			1/3										1(4)		Upland (Slope)
38RD123				5			5	2	1					1						4	C	Terrace (Level)
38RD134								1														Upland (Level)
38RD121	11						13	1	3		1/1					17			1	4		Terrace (Level)
38RD124															1							Valley Hillside
38RD122	8						6													4		Terrace (Level)
38RD115	8				2		1													3		Terrace (Level)
38RD112	18			8			13									6	3	10		1(3)+		Swamp Edge (Level)
38RD111	30			19			16	1					1*	3		4	3		3	3		Swamp Edge (Level)
38RD110				2			33	1				1								3		Swamp Edge (Level)
38RD113	1			4	1		8	1								1			2	3		Swamp Edge (Level)
38RD114	3			1			4	2											3	3		Swamp Edge (Level)
38RD106	6	1		22			10	1			1/2	2				1		18	6	2		Swamp Edge (Level)
38RD107	15			16			21						3							2	D	Valley Hillside (Slope)
38RD109							1													2		Swamp Edge (Level)
38RD108							1											1	1	2		Swamp Edge (Level)

* Slate

\+ Indicates stream of one rank running into exceptionally higher rank stream

A: 1 Quartz Core; B: L Quartz Core/1 Steep Angle; C: 1 Uniface; D: 1 Broken Mafic Cobble/1 Green Slate

A final point of bias is in the quantification of the artifacts. Absolute quantities of artifacts are presented in Table 5. Unfortunately, this information does not represent consistently collected data. Archeological data are extremely difficult to collect in a consistent manner. Some sites were collected on open ground with good visibility; others were collected from stump holes, washes or road banks; while others were excavated with post hole diggers. Obviously, these data cannot be directly compared in any statistical sense. Nevertheless, the general trends of quantified material when used with caution may prove useful in the construction of general models of the archeological material, and they have therefore been presented and will be generally considered.

PATTERNS AND HYPOTHESIS TESTING

After the analysis and tabulation of the archeological and environmental information pertinent to the problems being considered the information was examined for patterns. As the patterns were recognized they were compared with the research design to determine if they supported or failed to support any of the hypotheses. When patterns were recognized that did not relate to those questions considered in the research design those patterns were evaluated for cultural implications.

In the outline presented below a verbal statement of patterns, their relationship to hypotheses, and/or their implications are given.

Patterns and Hypothesis Testing

I. General Patterns for the Valley

A. The larger sites recovered during the survey were found on spurs, valley hillsides, or swamp edges with only a few artifacts being found in the uplands.

Supports: Intensive habitation and exploitation of a variety of resources (A.H1I4, C.H4I1).

B. Pottery was found only on those sites referred to in the field as being "level."

Supports: Intensive habitation (A.H1I2).

C. Fire cracked rock was recovered only from those sites referred to in the field as being "level."

Supports: Intensive habitation (A.H1I2).

D. The majority of lithic material from the survey is quartz, slate is second in frequency and chert is the most rare.

Supports: Extraction of quartz (A.H4I2).

Implies: Slate and chert are imported into the valley.

E. While there is quartz debitage from all stages of tool manufacture, the flakes of slate and chert are all thinning flakes.

Supports: Extraction of quartz (A.H4I2).

Implies: Slate and chert were brought into the valley in the form of bifaces.

F. The two largest sites identified (38RD125 and 38RD105) are on the largest (rank 5) stream in the valley.

Supports: Exploitation of large valleys (B.H3I1).

G. Three general kinds of pottery were noticed from the small sample.

Type 1. Sherds with fine sand temper or no temper at all. One of these sherds has a Thom's Creek punctate design. This is probably Early Woodland pottery.

Type 2. Sherds tempered with fine quartz gravel (larger than sand). These sherds are friable and are similar to Yadkin pottery defined by Coe (1964: 30-32). This is probably Middle Woodland pottery.

Type 3. Sherds with coarse sand tempering. These sherds are well fired and some of them are complicated stamped. This is probably Mississippian Period pottery.

Implies: The valley was utilized from Early Woodland through Mississippian times.

H. All points from the valley are made of quartz and are similar to either Morrow Mountain II, Guilford or Savannah River points as defined by Coe (1964: 39-45).

Implies: 1. The valley was utilized during Middle Archaic, Late Archaic and Early Woodland times.

2. More points were being discarded during Middle and Late Archaic and Early Woodland times than during subsequent period.

I. The count of total sherds and an index of bifacial discard suggest heaviest use of valley to be in the lower portion and the headwaters (see Fig. 2).

II. Piedmont Patterns.

A. The total collection of chert found during the survey is from the piedmont portion of the valley.

Implies: 1. The sandhills were not exploited by the people who brought chert into the valley

or,

2. The pattern of exploitation in the sandhills did not call for the utilization of chert tools.

B. The only slate biface recovered during the survey was found at the site nearest the Broad River (38RD125).

Implies: More unusual tool types are found on the larger sites near the larger streams.

Supports: Intensive habitation near mouth of creek (A.H1I3).

C. The majority of flake tools were found in the piedmont.

Supports: The piedmont more intensively used than the sandhills (C.H5)

D. The greatest variety of stone tools was found in the piedmont.

Implies: Varied activities utilizing stone tools in the piedmont.

Supports: The piedmont was more intensively used than the sandhills (C.H5).

E. All uniface tools were found in the piedmont.

Supports: The piedmont was more intensively used than the sandhills (C.H5).

F. Two exhausted quartz cores from which flakes had been removed were recovered from the piedmont.

Supports: Extraction sites for quartz in piedmont (A.H4I2).

G. More sites on sloping and upland ground were found in the piedmont than in other areas of the survey.

Supports: Deer exploited in the piedmont (B.H1I1,I2).

H. Only Type 3 pottery was recovered from the piedmont.

Implies: More pottery was used in the piedmont during the Mississippian period than during earlier periods.

III. Transition Zone Patterns

A. Sites in the transition zone are located on "level" terraces.

Supports: Intensive habitation (A.H1I4).

B. Material recovered from the sites includes only lithic debitage.

IV. Sandhills Patterns

A. More pottery by a ratio of 5.15:1 was found in the sandhills than in the piedmont. Subdivided the ratio is 1.17:1 for the Mississippian Period and 34:0 for the earlier periods.

Supports: Intensive habitation for Woodland and Mississippian Periods (A.H1I2).

Implies: 1) Habitation during Early and Middle Woodland times may have been more intense in the sandhills than in the piedmont portion of the valley.

2) Special procurement activities involving ceramics may have taken place in the sandhills.

B. With the exception of 38RD107 all sites in the sandhills were restricted to within fifty yards of the edge of the swamp.

Supports: Supports exploitation of swamp environment (B.H3I1).

PREHISTORY IN CRANE CREEK VALLEY

Data from the survey indicate that at one time or another practically all portions of the valley were utilized by prehistoric peoples. However, some portions were utilized more intensively by activities leaving a durable technology than others. The main creek valley in both the piedmont and sandhills seems to have been the most intensively utilized, the piedmont uplands were moderately utilized and the sandhills uplands show only scant evidence of utilization.

In general the larger sites were found on the larger streams in the valley, or on the "main course" of the creek connecting the sandhills with the lower portion of the creek. The North Branch of Crane Creek which extends into the piedmont between highways U.S. 321 and U.S. 21 is a large rank 4 stream which drains approximately the same amount of area as the main course of the creek above the confluence with North Branch. Despite the similarity in size, the North Branch produced only a few small sites none of which produced any significant evidence of habitation. On the other hand, many large sites were located on the main course of Crane Creek. Of course, this difference in distribution could result from sampling bias since only a small portion of the North Branch was examined. This is a point that should be carefully considered in further archeological work in this or similar valleys.

The density of artifacts in the main creek valley seems to have a bipolar distribution with large sites being located in the piedmont region east of U.S. 21 and in the sandhills west of S.C. 555 (Fig. 2). In the transition zone between these two regions few sites were found, and those sites that were recorded produced only a few artifacts. The implication of this survey is that the main course of the creek was the primary location

for habitation sites and that these sites cluster in the lower portion and extreme upper portion of the basin.

All of the stone tools and the majority of the stone debitage collected during the survey were made of quartz. This material is common in the form of outcropping veins in the piedmont and less common but present in the form of water worn cobbles in the sandhills. Quartz debris from all stages of manufacture were recovered. On the other hand with two exceptions (both small chunks) most of the slate and all of the chert resulted from the thinning of bifaces. These data imply that slate and chert tools were imported into the valley in the form of bifaces. Equal amounts of slate were recovered from the piedmont and the sandhills with two flakes coming from the transition zone. Chert, however, has quite a different pattern. All of the chert, which shows either the reddish color or pearly luster of heat treating, was found in the piedmont. This implies that the people who utilized chert did not exploit the sandhills as actively as other people or that they did not use chert in that exploitation to the degree that they did in the lower portion of the creek valley.

Evidence from the Archaic Period

The most secure evidence of Archaic Period utilization of the valley is in the form of projectile points and other biface tools. These tools are all made of quartz and most of them are similar in form to artifacts identified as being from the Middle and Late Archaic periods in North Carolina and Georgia. Since there is no distinct break between the biface tools of the Late Archaic and the Early Woodland some of these artifacts may date from a later period than the Archaic. These artifacts were recovered from the valley in both the piedmont and the sandhills, from the valley hillside in the sandhills and the piedmont and from the uplands in the piedmont.

Within the valley sites 38RD125, 105, 120, 111, 118, 110, 106, and 107 produced Archaic tools as well as a large amount of debitage. All of these sites are on level ground near the creek and many of them produced fire cracked rock. Although the fire cracked rock may result from a later occupation any of these sites may represent Archaic habitation locations.

Sites 38RD105 and 117 produced large amounts of quartz chunks that result from the primary reduction of quartz raw material, and 38RD105 produced six preforms or early stage examples of tools. Both of these sites are directly adjacent to outcrops of quartz that occur as veins in the metamorphosed argilliceous formations of the valley and both probably represent extraction loci for the raw material. Additionally, 38RD105 probably represents a location where Archaic tools were produced and used. Such a phenomenon should not be surprising in an area such as this valley where the raw material for stone tools is so frequently occurring.

The only isolated finds of projectile points were recovered from the piedmont. One of these was from a site in the uplands (38RD116) and the other was from a site on the valley hillside (38RD124). The first of these (similar to Morrow Mountain II) had a broken tip and had been resharpened. The second point was ovate in shape and showed no evidence of resharpening. The finding of these artifacts in so casual a walk-over of the uplands as represented in this survey suggests an activity pattern that leads to the extensive deposition of bifaces from the Middle and Late Archaic in the piedmont uplands. Most certainly, some aspects of the exploitation pattern responsible for the deposition of these tools was significantly different in length or form of activity than any other period of prehistory.

The only other isolated tool found during the survey was a large quartz flake with three acute angle edges that had been utilized. This tool,

together with the points mentioned above, strongly suggests that deer exploitation resulting in the deposition of numerous quartz tools was an active part of the subsistence pattern during the Middle and Late Archaic Periods.

Early Woodland

The diagnostic evidence from the Early Woodland comes from two sites, 38RD111 and 112. Both of these sites are in the sandhills. They are on level ground and both fire cracked rock and lithic debris were found on the sites. As with the Archaic sites, we cannot directly associate these artifacts with one another, however the data is suggestive of Early Woodland habitation adjacent to the small swamplands in the sandhills. This implies an exploitation of this wet land environment during this period.

Middle Woodland

Three sites, 112, 106, and 108, produced sherds that are thought to have been manufactured during the Middle Woodland Period. The pattern of these sites is similar to the pattern of the Early Woodland sites, they are all in the sandhills adjacent to the edge of the swamp. The sherds all come from level sites, two of which produced fire cracked rock. Again, this implies habitation and exploitation associated with the small swampland in the sandhills.

Mississippian Period

Contrary to the Early and Middle Woodland Periods, sherds of the type produced during the Mississippian Period came from both the piedmont and sandhills sections of the valley. Three of these sites are in the piedmont (38RD125, 105 and 121) and five are in the sandhills (38RD111, 113, 114, 106, and 108). This information suggests that in this latter period

that all portions of the valley were more extensively utilized for activities involving the use of pottery. All of the sites are on level ground and five of the sites produced fire cracked rock. Again, these sites imply some type of habitation.

In the sand hills two of these sites also produced pottery from the earlier periods. This multiple occupation suggests that perhaps some of the same elements of the exploitation pattern were drawing peoples to similar locations in the sandhills.

Two sites, 38RD113 and 114, producing this later material are of special interest. Located directly across the creek from one another these sites produced only Mississippian Period pottery, thinning flakes of exotic slate and fine quality quartz and a few examples of other lithic materials. However, the primary lithic collection is from thinning and retouching bifaces. 38RD113 was discovered as part of the process of random sampling. In the course of excavating the test holes we noted that just below the surface of the ground was a fine gray clay of excellent quality. In any future investigation of this region these small specialized sites so closely associated with good potting clay should be carefully considered as special activity sites.

EFFECTS OF THE PROPOSED PROJECT

Based on the results of this survey the installation of the proposed sewer facility will have minimal overall effect on the archeological resources of the Crane Creek Valley. Of the 22 sites recorded in this survey only two, 38RD105 and 115, fall in the path of the sewer.

Site 38RD105 is one of the most important sites in the Crane Creek area, and damage to this site should be mitigated if at all possible. Suggestions for mitigation have already been discussed with representatives of B. P.

Barber and Associates, Inc. The revised plans call for placing the new sewer in an existing ditch between stations 47 + 38 and 49 + 13. This revision in the plans will require no new excavation and therefore will not damage the site.

The pattern of archeological evidence from the valley suggests that site 38RD115 is not as important as many other sites. There were very few artifacts recovered from the site and, this particular portion of the valley does not appear to have been utilized as intensively during prehistoric times as other areas. Nevertheless, the site should be avoided if possible. Revised plans recently provided the Institute of Archeology and Anthropology calling for a straight line between stations 492 + 00 and 496 + 79 will miss this and avoid any damage to archeological materials.

CONCLUSIONS

This archeological survey has been one of the first environmental impact statements to be written on a sewer project in South Carolina as well as one of the few archeological investigations of any kind in this locale. Environmental impact statements as well as the archeology of South Carolina are both new. Furthermore, archeology is an ever changing discipline, and as the discipline matures the questions being asked of the available data are continuously changing. As a result of these factors, this report represents a small element on the forefront of developing techniques for environmental protection and for archeological understanding. There have been only a few things that are "standard procedure" in this investigation. Undoubtedly there are rough edges; the result of attempting things that have not previously been done.

First and foremost, this report has been an attempt to determining the location and significance of archeological sites that might be affected by the construction of the sewer. However, this is the sort of goal that is simply stated but somewhat more difficult to effect. Producing this statement has called for the employment of new survey techniques.

The survey methods used in this investigation are new because both the environment being investigated and the questions being asked are different from those of a decade or two ago. Twenty years ago an archeologist might have performed an archeological survey in Crane Creek Valley by closely examining all of the plowed fields that lined the sides of the creeks. Today this is impossible. The creek valleys are so grown up that finding a site from surface evidence in Crane Creek Valley is about as likely as finding a Mayan temple in the jungles of Guatemala and almost as difficult. Also in the past an archeologist might have identified the largest and deepest sites as being the most important, because the most pressing questions of the period could be answered with data from those types of sites. Today our questions about the past are more inclusive than those of two decades ago, and we see other kinds of smaller, less impressive sites as being important in our quest for information. Thus, if the survey methods are new and novel it is because today we are asking different questions about an environment that has changed significantly in the past.

Archeologically this is a most modest effort. We have found some of the rudiments of pattern for the prehistory of Crane Creek valley and subsequently another element of the prehistory of the South Carolina region. Hopefully, the criteria that were developed for the determination of site significance in this investigation will be useful in future studies.

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