

CULTURAL RESOURCES SURVEY AT CAMP SANTIAGO
SALINAS, PUERTO RICO

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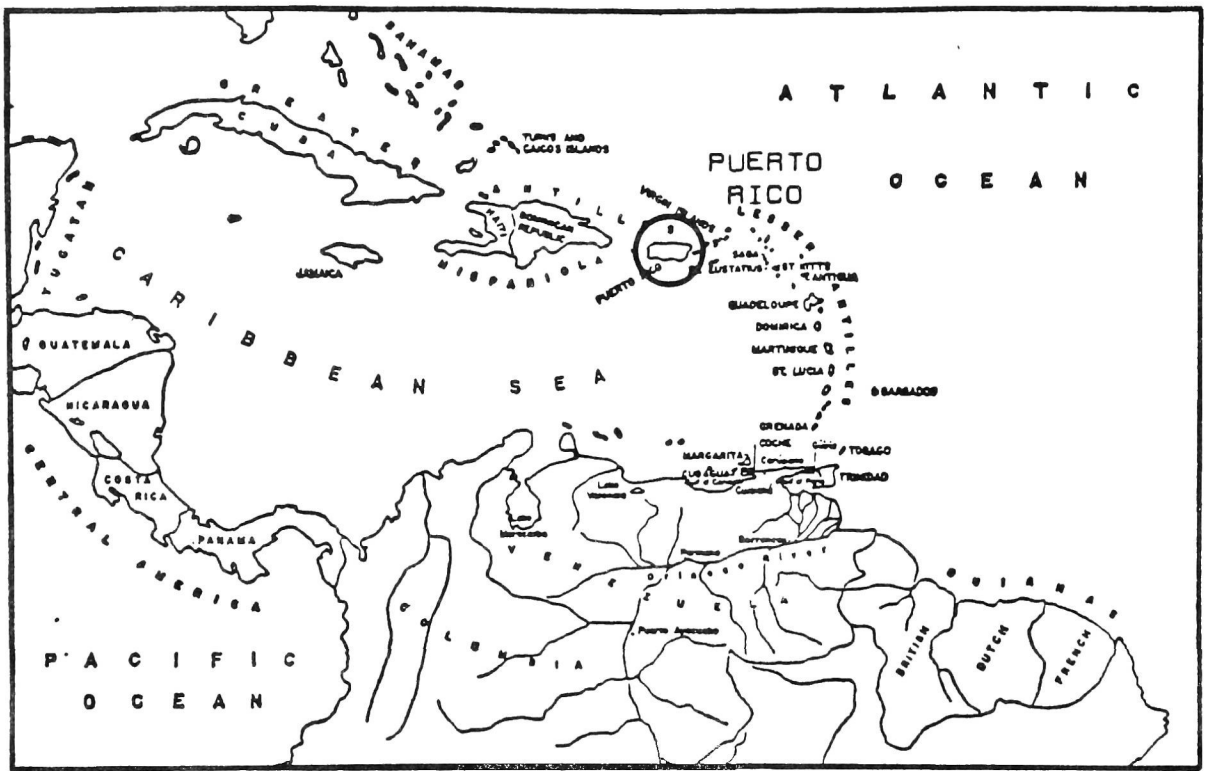
I. General Setting

Puerto Rico is the easternmost and smallest of the Greater Antilles. It is located between Hispaniola to the west and the U.S. Virgin Islands to the east (Fig. 1-A). As other Caribbean Islands, Puerto Rico has been subjected for centuries to intensive agricultural activities. One of its negative results has been the destruction of many of our archeological resources.

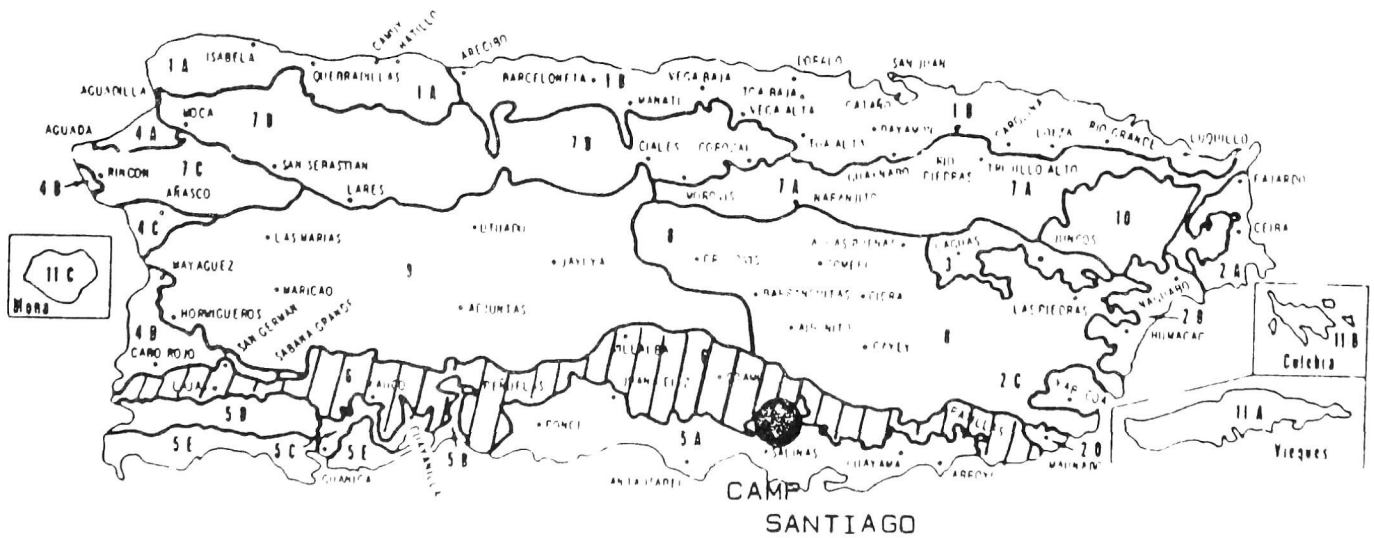
A. The Semi-Dry Foothills

Nevertheless, there are some physiographic zones in the island where, due to particular ecological and land use pattern, the damage seems less. One of them is the strip of Semi-Dry Foothills or Piedmont of the south coast of Puerto Rico, that comprises approximately 10% of the Puerto Rican territory (Fig. 1-B).

The land of this strip of low foothills has been dedicated mainly to cattle pastures and few fields have been plowed. The region is very dry and gets only from 40 to 60 inches of rain per year. There are periods of intense drought between December and April, when less than 2 inches of rain hardly fall per month (Picó 1969). Moreover, it is a region of sparse population as it has less than 2% of the whole island inhabitants.



A



B

FIG 1 - A. Puerto Rico in the Caribbean Region.
 B. Camp Santiago and Major Physiographic Zones in Puerto Rico.

B. Camp Santiago

Camp Santiago Military Reservation is located toward the center of this region, between the towns of Salinas and Coamo (Fig. 2). This is the primary training installation for the Puerto Rico National Guard Forces. The base occupies a large area of 12,750 acres (51.6 Km. 2), which represents half of 1% of the whole territory of Puerto Rico. According to the Holdridge classification of life zones, Camp Santiago and the south central coast of Puerto Rico is part of the Dry Sub-Tropical Forest Zone (Ewell and Whitmore, 1973).

Until the first half of the present century, the area of Camp Santiago was devoted to cattle raising and subsistence agriculture. Its few inhabitants were forcefully dislodged from their properties and homes in 1952 by the local government, as part of an agreement with U.S. military authorities. Since then civilian entrance has been strictly regulated. The southern and eastern half of Camp Santiago is used for aerial bombings, artillery firing and infantry training. On the other hand, the northern and western half is made up of a large dry sub-tropical forest of native trees that act as a buffer zone around some sections of the base.

C. Archeology of Salinas

The main gate of Camp Santiago is located about two kilometers from the Caribbean Sea Coast, just north of the small coastal town of Salinas (Fig. 2). From an archeological point of view, Salinas is one of the richest regions of Puerto Rico. Distinguished American and Caribbean archeologist, such as Samuel

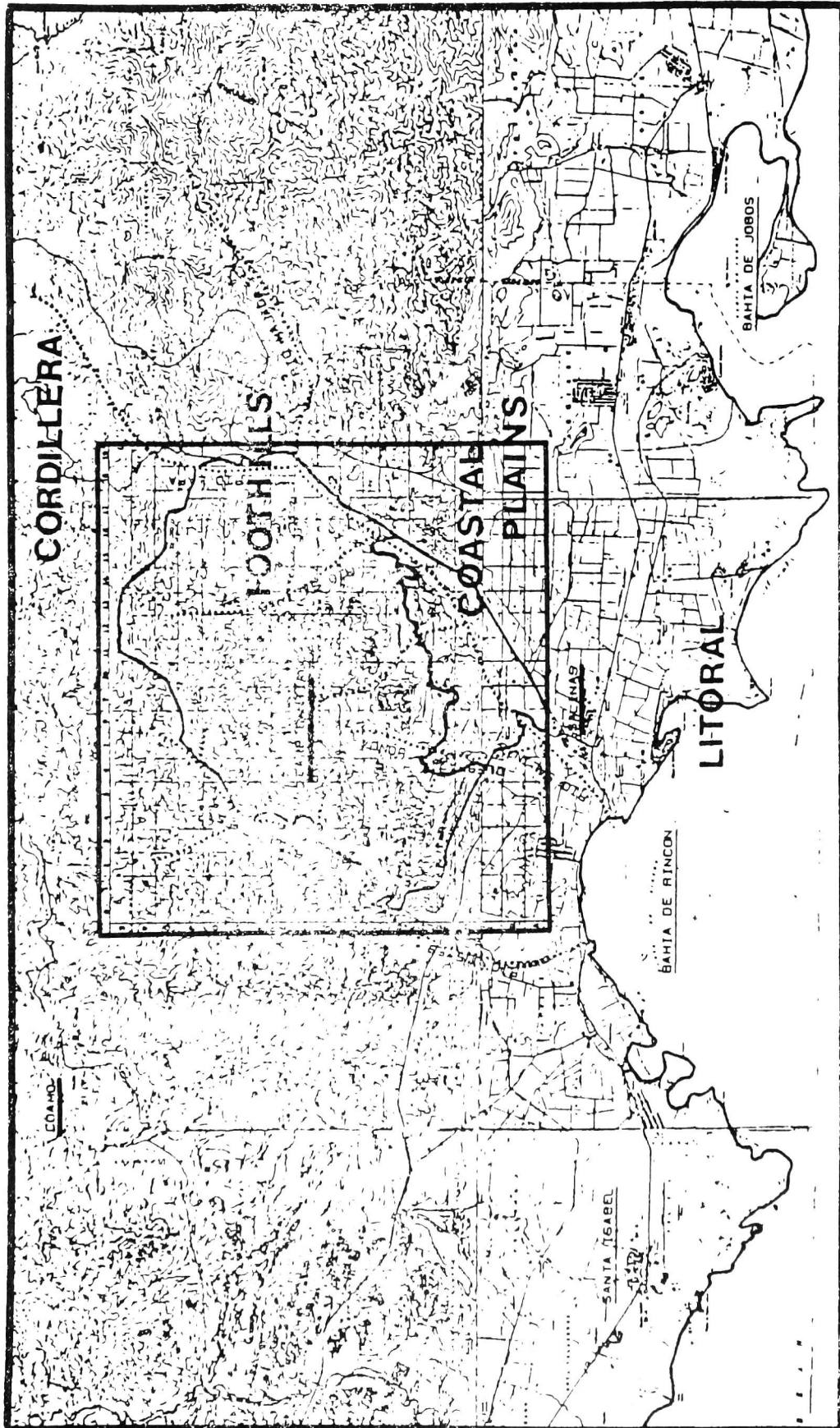


FIG. 2 - MAJOR PHYSIOGRAPHIC REGIONS AND RIVER SYSTEMS IN CAMP SANTIAGO.

Lothrop (1934), J. Alden Mason (1941). Irving Rouse (1952), Veloz Maggiolo (1975) and others, have carried out archeological research in many important sites of Salinas, some of them in the periphery of Camp Santiago. But, until this year, when we started our project, there was not one report concerning prehistoric sites within the limits of the military reservation (Fig. 3).

II. The Project

Due to all the above mentioned reasons, Camp Santiago has been for many years a sort of dream for many local archeologists. It is right in the middle of a highly sensitive region and presents the most ideal conditions for a research project. At the end of 1982, the dream started to come true. The National Guard Bureau and the Puerto Rico National Guard signed a contract with the University of Turabo Museum in Caguas, Puerto Rico, for the purpose of carrying out the first phase of a Cultural Resources Survey of Camp Santiago.

A. Goals

The following goals were established on the basis of the available funds:

1. to carry out a systematic sample survey of at least 10% of the base
2. to prepare an overview of the cultural resources at Camp Santiago
3. to design a predictive model for site densities and locations within the reservation, using soil types and other ecological variables
4. to provide management recommendations for the cultural resources at Camp Santiago

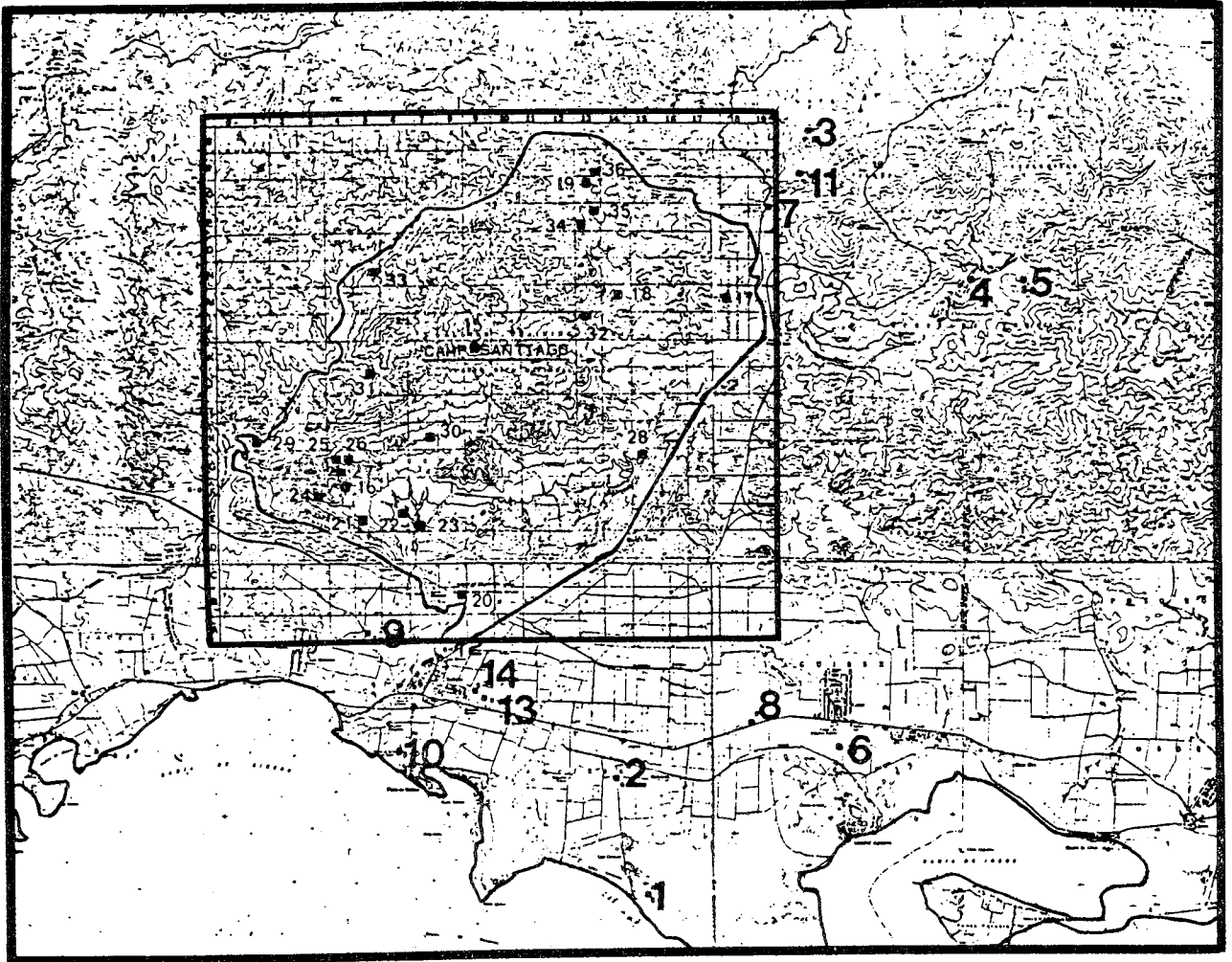


FIG. 3 - Archaeology of Salinas, Puerto Rico.

From No. 1 to No. 14 - Known archaeological sites known in Salinas, prior to our survey.

From No. 15 to No. 36 - New archaeological sites discovered in Salinas during our survey of Camp Santiago in 1983.

In my opinion, there are some important aspects of this project that might be relevant to Caribbean Archeology. They are: first, the general strategy for the systematic reconnaissance and, second; the methodology and findings of the field work.

III. Research Strategy

For the systematic selection of 10% of the base land we develop a stratified random sample survey in which three different ecological strata were taken into consideration.

A. The Grid System

First of all we divided Camp Santiago into a system of 204 square units of 500 mt. X 500 mt. each (Fig. 4). The grid system has two scales, and each of the units will, therefore, have a special code composed by the letter and number of its coordinates.

B. Definition of Ecological Strata

The second step was the definition of the ecological strata to be used for the selection of the sample. The first level of strata belongs to the two main hydrographic systems that serve as drainage to the base. There are the Río Jueyes and the Salinas River (Fig. 5).

The second level of ecological strata includes the two main physiographic zones in which the reservation is divided. They are a small zone of coastal plains to the south, whose limit is the 50 mt. high contour in the U.S.G.S. topographic maps, and the semi-dry foothills or piedmont that extend throughout the rest

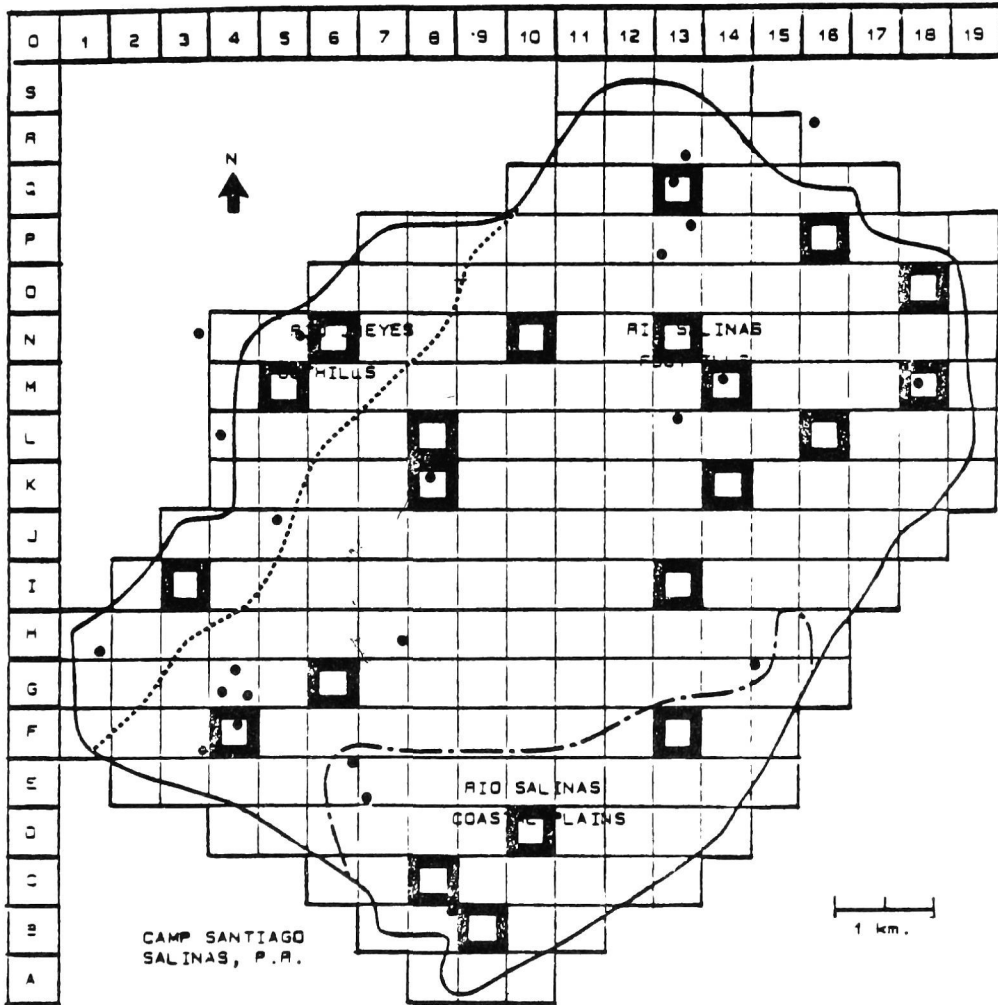


FIG. 4 - SURVEYED UNITS AND ARCHAEOLOGICAL SITES,
 (CAMP SANTIAGO GRID SYSTEM.)

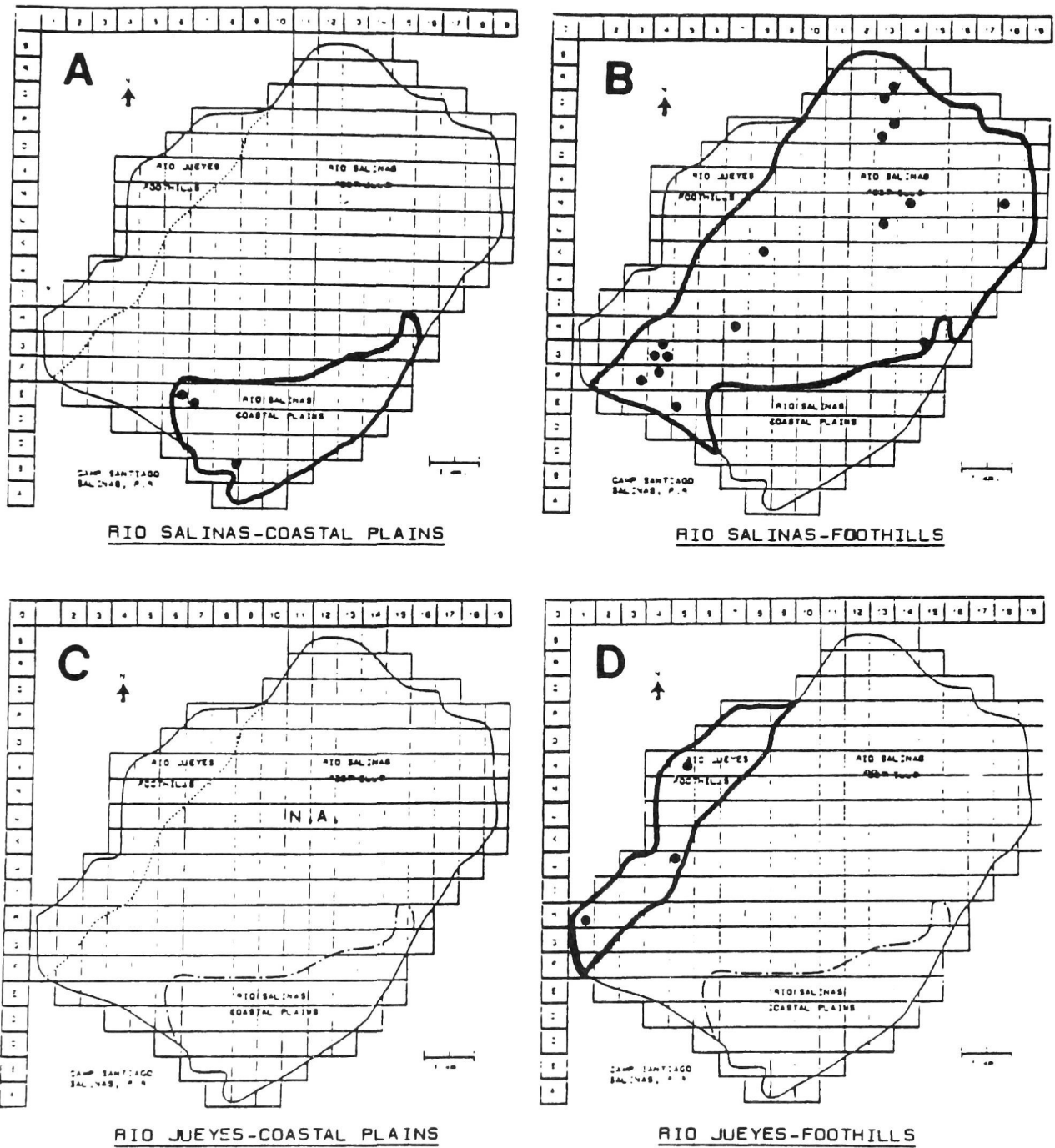


FIG. 5 - MAYOR PHYSIOGRAPHIC ZONES AND RIVER SYSTEMS IN CAMP SANTIAGO.
 (• ARCHAEOLOGICAL SITES)

of the base (Figs. 2 and 5). Between these hills there are, also, some interior valleys well defined by the topography.

As third level of strata, we select the seven different kinds of soil series that according to the maps of the Soil Conservation Service are to be found in Camp Santiago. These are; Amelia, Coamo, Jácana, Guamaní, Descalabrado, Rockland and Cobbly Alluvial Soil Series (Fig. 6).

C. Selection of the Sample

A map indicating both river systems and the two physiographic zones was then overlaid by one indicating the extension of the seven soil series. The number of possible combinations was reduced considerably because, for example; there are no Río Jueyes coastal plains within the limits of Camp Santiago, and not all seven soil series are present in each physiographic zone. Finally, nine different combinations of strata were defined.

Then, we selected 21 square units of the grid systems by means of a random number chart in such a way that 10% of each of the nine combinations of strata were proportionally represented in the sample. In that way, the systematic field survey included the entire range of ecological and physiographic zones within Camp Santiago (Fig. 4). Alternate units were also chosen in the same manner.

IV. Field Work Procedures

The field team work was made up of a group of my outstanding archeology students from the University of Turabo at Caguas, and was

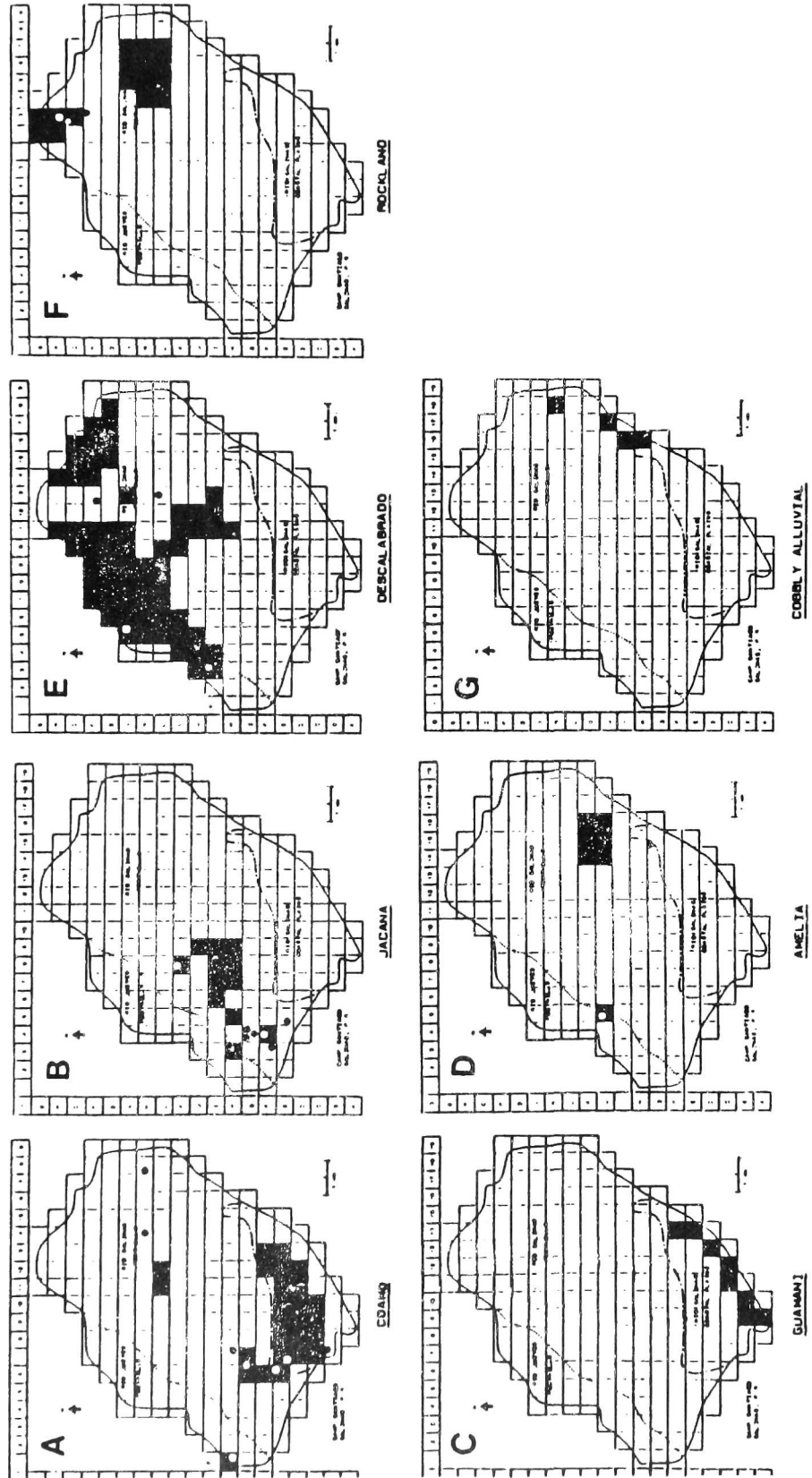


FIG. 6 - SOIL SERIES AND ARCHEOLOGICAL SITES IN CAMP SANTIAGO, SALINAS.

conducted under my direct supervision. Some active members of local archeological organizations of the Salinas area were full-time participants, too.

A. First Part

The first part of the field work was carried out during the dry season, between the month of February and April. With the exception of the forested areas to the north of the base and some hills with xerophitic vegetation to the east, all surfaces were completely exposed. The timing for the reconnaissance was therefore perfect.

Lets look at the way in which we carried out the inspection of the selected units. The team went over on foot and examined the surfaces of the units following a system of paralel transects oriented in a noth-south and vice-versa direction. Each of the eleven transects of every unit had a length of 500 meters and we always kept a separation of at least 50 meters between the transects (Fig. 7). The small separation between transects and the good visibility made this inspection one of an intensive and meticulous type. The possibilities of having omitted any important cultural resource within the limits of the unit are, therefore, minimal.

B. Second Part

In the second part of the field work we returned to each of the discovered sites in order to document them in a preliminary manner. The recorded data included location of the sites in the U.S.G.S. maps, some idea about their horizontal extension, presence

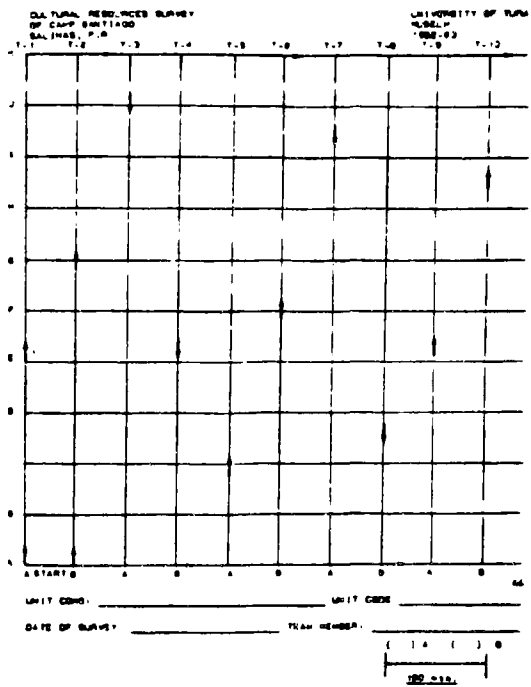


FIG. 7 - CONTROL SHEET FOR EACH UNIT.

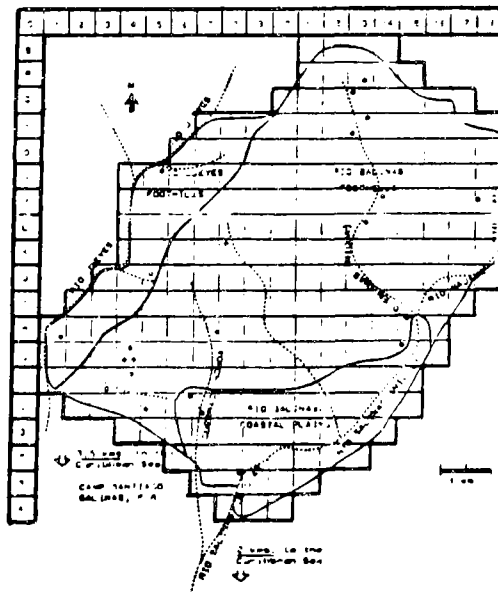


FIG. 8 - MAYOR RIVER SYSTEMS AND ARCHAEOLOGICAL SITES IN CAMP SANTIAGO.

of middens and/or associated prehistoric stone construction, such as central "plazas" and ballcourts and other basic information. In some sites we were able to topographic or sketch maps. In others, we did some small test pits or surface recollections.

V. Preliminary Results

Although we have not been able to finish the analysis of the data we will point out some preliminary results. A total of 22 prehistoric sites were discovered in Camp Santiago during the first phase of the field work. Five of them were located in the 21 pre-selected units and the other seventeen sites during our trips and walks inside the reservation (Fig. 4). Other six sites of historic importance were also identified at Camp Santiago, but will not be included in this report.

A. Sites and Ecological Strata

If we take into consideration the main ecological strata in which we based our 10% sample we can point out the following findings. As far as hydrographic basins are concerned three of the 22 sites or 14% belongs to the Río Jueyes system and the rest, 19 of 22 or 86% to the Salinas River system. In all the 22 sites, their location is along side or at short distance from the present or old river beds of these systems and their main tributaries (Fig. 6). On the basis of the main physiographic divisions, there are three sites or 14% in the coastal plains region, and 19 or 86% in the semi-dry foothills and its associated interior valleys and terraces (Fig. 5).

For both strata, the amount of archeological sites is in the same proportion with respect to the whole part of the land that belongs to each strata.

B. Sites and Soil Series

But, if we take a look to the Soil Series we notice that a majority of the prehistoric sites, sixteen out of twenty two or the 73%, are located in units or soil pockets that belong to Jácana, Coamo and Amelia soil series (Fig. 6). Although, they only represent 30% of the land at Camp Santiago these three soil series have almost 75% of all sites discovered. The Jácana, Coamo and Amelia series are made of deep soils with good drainage that are present in terraces and alluvial fans at the foot of the low hills of the region. They are of high natural fertility, and when irrigated and plowed, they offer the maximum agricultural productivity that can be obtained in Puerto Rican soils.

This is an outstanding fact because we know that the prehistoric inhabitants of Puerto Rico were farmers whose main crops were "cassava" and corn. The presence of adequate land for their crops must have been a main factor to be considered at the moment of the selection of a place for the construction of an aboriginal village. The preliminary findings at Camp Santiago should be considered as basis for the developing of a predictive model for site location at the region.

I must add that we also carried out an investigation among the small farmers who lived in the Camp Santiago grounds before 1950.

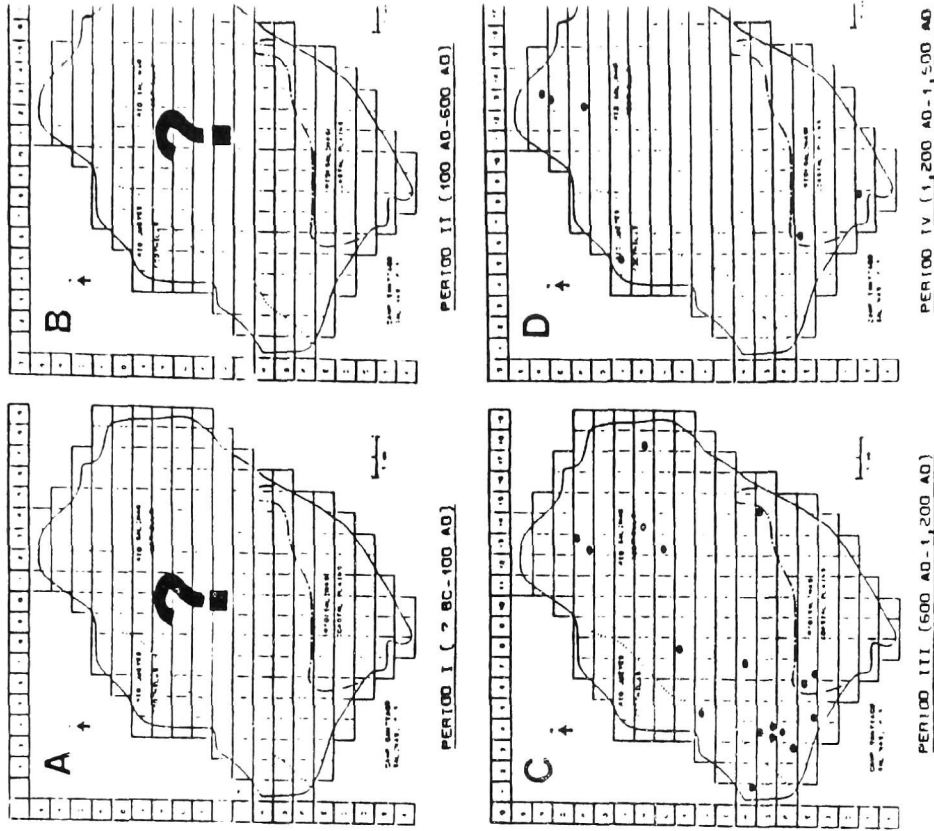
They indicated that "cassava" and corn were precisely the crops from which they obtained a greater output in the plots of these soil series.

C. Cultural and Chronological Aspects

Up to now we have been able to assign a tentative cultural and chronological classification to each of the 22 prehistoric sites already discovered. For these purposes, we have used the chronological and cultural theoretical framework originally designed and developed by Irving Rouse (1952, 1964, 1981) during his five decades of continuous work in the Caribbean.

Following Rouse's framework there is not one site of the 22 already discovered from Period I or before 100 AD, considered as a pre-ceramic or archaic site (Fig. 9). We have not found either sites belonging to Period II, that runs between 100 AD and 600 AD. This Period II correspond to the prehistoric inhabitants of the Igneri culture, whose pottery belong to the Saladoid Series or related ceramic styles (Figs. 9 and 10). According to most Caribbean archeologist, Saladoid or Igneri indians were the first pottery-making to colonize the Lesser and Greater Antilles some 2,000 years ago. We have at least one large early Saladoid or Igneri site in the Salinas coastal plains, less than two kilometers south of Camp Santiago.

But during Period III, between 600 AD and 1,200 AD an intense and apparently sudden aboriginal occupation occurred in Camp Santiago region and in the rest of the foothills of the south-central coast of Puerto Rico. These indians moved into the foothills region and established their villages on its interior valleys and terraces. We have



COSTA SUR-CENTRAL DE PUERTO RICO

PERIODO	ESTILO	ESTILO	PERIODO
1,500 AD	ESTILO CAYO	ESTILO ESPERANZA	V
1,200 AD	MODIFICADO	ESTILO SANTA ELENA	IV
900 AD	ESTILO OSTIONES	SERIE ELMO	III
600 AD	PUJO	ESTILO TIRES (MONSERATE)	A
400 AD	ESTILO CUEVAS	SERIE SALADIDE	II
100 AD	ESTILO HACIENDA GRANDE		A
2,000 BC	CAYO COPRESI (PRE-COPIACO)		B
			A

FIG. 9 - PREHISTORY OF THE SOUTH-CENTRAL COAST OF PUERTO RICO. (From Rouse, 1982)

FIG. 10 - PERIODS IN PUERTO RICAN PREHISTORY AND ARCHEOLOGICAL SITES DISCOVERED IN CAMP SANTIAGO.

identified 18 sites for this Period III (Fig. 10). Pottery of the Elenoid Series is present at those sites.

These sites are mostly shell middens, some of them clearly observed over the actual surfaces. But some sites such as G-15-01 (Fig. 11) and F-3-01 are complex sites. Both of them have a large number of middens and at least one associated prehistoric stone construction. In the G-15-01 site we have a large two-sided ball-court around which at least nine middens are located. On F-3-01 site there is another type of prehistoric stone enclosure surrounded also by large middens.

The Period IV, that extends from 1,200 AD to 1,500 AD corresponds to what generally is called the Taíno indian cultural component (Fig. 9). Taíno indians were the prehistoric people found by Columbus in the Greater Antilles at the time of the end of the XV Century. There are only 3 new sites for this Period III at Camp Santiago, but there are another 3 other sites previously inhabited during Period III that are still occupied in Period IV (Fig. 10). One of these bi-component sites, the P-13-01, is the largest of all sites already discovered at Camp Santiago. It must have been one of the large aboriginal villages of the Salinas region in this Period IV. The remaining 15 sites were abandoned before Period IV began.

VI. Sites Conditions and Military Activities

A question that must be in the minds of all of you is the condition of integrity of the sites, specially those located near the zones of military activities. We have seven (7) sites that have been partially impacted by bombings, construction of roads, buildings and

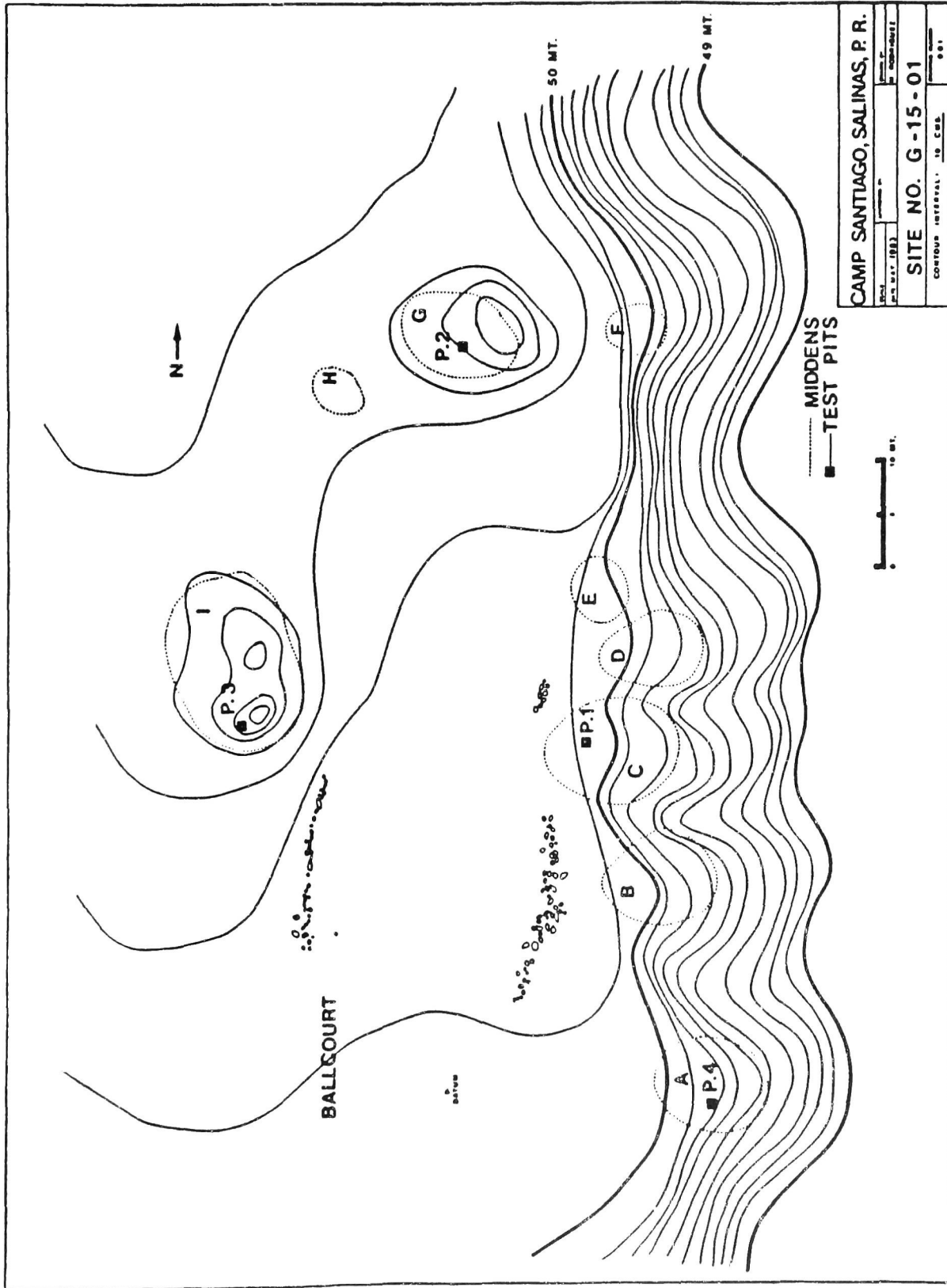


Fig. 11 - Site No. G-15-01

ranges. Nevertheless, almost all of them still present some basis for studies. The remaining 15 are in the most ideal conditions of integrity that should be expected from a prehistoric site in Puerto Rico. The Puerto Rico National Guard have offered guarantees that they will protect those most threatened sites until the other project's phases are put in effect. We hope that this will be so, inasmuch as up to this moment, we have relied on the most willing cooperation from the military authorities of Camp Santiago, the Puerto Rico National Guard and the National Guard Bureau.

VII. Final Words

This project is a challenge for the Puerto Rican Archeology. It is one of the most important projects of its type in Puerto Rico and the first one in charge of Puerto Rican archeologist and coordinated by a local university. I want to thank my student's dedication in the archeological work. Also, I must recognize the cooperation of leaders of the local archeological groups Iván Méndez and Angel Colón, without whom the work would have been more difficult. I want to thank also the colleagues and teachers who visited us during our field work at Camp Santiago, among them Dr. Ricardo Alegría, Juan González Colón, Edgar Maíz, Karen Anderson, from the Puerto Rico State Historic Preservation Office and William Russell, from the National Guard Bureau. Above all, I must emphasize the cooperation we have received from Dr. Víctor Carbone and the Archeological Services Branch of the National Park Services.

I must make special mention to archeologist Gary Vescelious, who recently died during his work at Vieques Island, east of Puerto Rico. Gary Vescelious was the first person who pointed out in the

Caribbean many of the ideas and methodological and theoretical concepts and approaches that we have followed in our research at Camp Santiago. The best way to pay tribute to his memory is to continue doing archeological work with the same dedication and professionalism that characterized his whole life.

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